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Different but equal? Assessing European dual HE systems

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Abstract In higher education dual systems, graduates are qualified to apply for jobs in same professional fields along two separated educational routes. The research problem is whether the rival applicants for professional positions are treated equally in the labour market despite their different qualifications. From the graduates point of view, to be equal means to have an opportunity to be employed in accordance with one's professional skill. Applying European survey data, the article tests to what extent the 'distribution of work' between university and non-university graduates seems to be based on educational qualifications or actual competence. Among 4,000 German, Dutch, Finnish, and Swiss graduates primarily in business and administration and engineering, only slight and occasional evidence of 'status-based recruitment' was found. All in all, the research suggests that from the view of graduate employment, the European dual HE systems work very much following the principle of 'different but equal'.

Keywords Competence · Equality of opportunity · Graduate employment · Higher education dual systems · Labour market selection · Occupational status · Professional skill · Qualification

Equality in spite of difference?

It is typical to dual systems in higher education that graduates are qualified to apply for jobs in the same professional fields along two separated educational routes. In policy papers, the dual system is often characterized by the 'different but equal' principle. Applying European survey data, in this article we will examine to what extent rival applicants for professional positions are equal despite their different qualifications.

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As we see it, the question whether the two kinds of higher education graduates could be considered equal despite their difference is basically a question of equality of opportunity. In the labour market, graduates with different types of qualifications compete with each other for obtaining relevant jobs on grounds of their professional skills. Different but equal implies that graduates are equal to the extent their selection into respective jobs is based on competence rather than status.

The two alternative higher education routes to professional labour market, university and non-university, make up the core of our framework (Fig. 1). A kind of non-university higher education institution alongside traditional universities was created in some Western European countries decades ago. In the context of the massification of higher education, alternative routes equipping graduates with immediately applicable knowledge were considered appropriate for the growing variety of students and varying 'needs' of working life. (Teichler 1988; Neave 1992, 1996; Kyvik 2004). Germany and the Netherlands were among the first countries to establish their own dual systems. More recently, the idea of

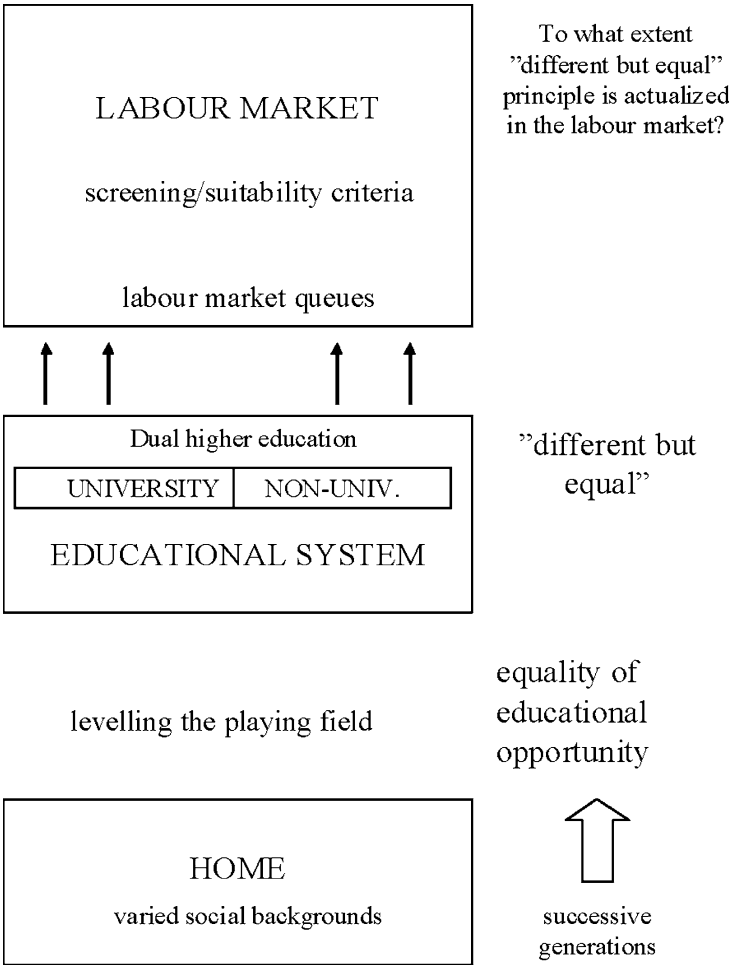

Fig. 1 Transition framework

two equal varieties of higher education was reiterated in the Finnish, Austrian and Swiss dual system reforms in the 1990s (Ahola 1997; Perellon 2003).

Today higher education is an integral part of extensive educational system following, in principle at least, the ideal of equality of educational opportunity. To some extent, education is 'levelling the playing field' (Roemer 2000) for young people from varied social and cultural backgrounds by offering possibilities to climb up the educational ladders as far as one's ability and aspiration reach to be qualified to compete for demanding occupational positions (cf. Kivinen et al. 2007). Modern educational system is following meritocratic ideals by transforming talent plus effort into certificates of individual competence to be used in competition for valued positions (Young 1958). Everybody has her opportunity to be a 'self-made man' since the individual herself and not the outward circumstances should be accountable for one's success or loss. On the other hand, merit-rewarding is justified by the 'valued consequences' of the individual efforts for the society as a whole (Sen 2000).

Meritocratic reasoning is evident in the sociological functionalism of industrial society where the function of education is to get in full use the whole talent pool of society and to prepare the members of a new generation for suitable work roles. Finding 'the right man in the right place' makes the 'economic system' work efficiently (Parsons 1951; Parsons and Smelser 1956). Analogous ideas are articulated in educational and economic policy of the European Union, deriving from human capital thinking (Schultz 1961; Becker 1993/1964). According to the European Commission (2003), the competitiveness of the EU economy depends on the availability of highly trained workforce whom the properly functioning labour market ensures appropriate incentives. Economic productivity is seen to be maximised when the most demanding positions will be occupied by the most capable and best educated individuals thus entitled to higher rewards.

Functionalistic human capital outlooks emphasize strong content-based interdependency between education and work. Education as a screening device (Arrow 1973; Berg 1970; Spence 1973) is a complementary viewpoint. Even if education would not actually produce valued individual capabilities as such, educational degrees can be interpreted as signals of a kind of quality, which is worthy to note in labour market queues. Educational degrees can be understood as indicators of employees' potential thus serving as a recruitment device for employers in their task to single out the most suitable candidates.

Credentialism may be seen as an opposite ideal type view to the meritocratic one of the relationship between education and work (Bills 2004). Putting aside the whole idea of content-based connection of education to the world of work, credentialistic thinking focuses on the role of educational credentials in serving vested interests in power relations (Collins 1979) privileged groups having the capacity to monopolize the valued merits to people with 'right' background (Perkin 1996). More generally, the darker side of meritocracy has been foreseen already in a classical pamphlet *The Rise of the Meritocracy 1870–2033* by Young (1958).

The focal point of our research is the transition from higher education to working life and professional employment (see Fig. 1). In contrast to educational system, selection criteria in the labour market do not derive from the idea of equality but suitability. Labour market patterns are persistent to change and graduates entering the labour market are faced with established links between educational qualifications and professional status (Neave 1992; Teichler 1994, 2007). It is obvious that the contribution of higher education to the world of work will depend on how educational qualifications are combined with the opportunities graduates have to carry on learning and training on the job (Salas-Velasco 2007).

Our research question is to what extent the different but equal principle of dual higher education policy is actualized as equal labour market opportunities of university and non-university graduates in two long-standing (Germany and the Netherlands) and two novel

(Finland and Switzerland) dual system countries. Our empirical task is to analyze the extent to which the observed outcome of the selection process of the two kinds of graduates for professional positions is compatible with competence-based competition. In a given professional field, graduates are considered equal if neither of the two qualifications is preferred in recruitment at the expense of competence. A status-based recruitment, i.e., overrating one or other qualification in filling particular high-level positions, becomes visible in our empirical test as a greater average deficit of competence of the holders of that qualification as compared with the other group of graduates.[1]

Research setting

In our study, the data are gathered from two long-standing higher education dual system countries, Germany and the Netherlands, and two more novel cases, Finland and Switzerland, where the dual model has been established quite recently. The qualifications under scrutiny include masters' degrees granted by universities in each country, and the highly varied group of non-university degrees: *Fachhochschule* degrees in Germany and Switzerland,[2] HBO degrees in the Netherlands, and the Finnish AMK degrees.

Because our research problem reads out as to what extent graduates from separated routes of dual system higher education are treated equally in the labour market, the study is focused on such professional fields that are common to both university and non-university types of higher education. According to our research setting (Fig. 2), equality of labour market opportunities implies that university and non-university graduates can compete with each other for obtaining relevant jobs in a given professional field on the grounds of their professional skill. The *different but equal* principle is not realized if the selection of graduates for different kinds of jobs is based on formal educational status, so that one or the other qualification is preferred in recruitment at the expense of competence.

The most interesting occupational categories form the point of view of our study are managers and professionals, since the jobs included in these categories are supposed to be under competition between university and non-university graduates. The International Standard Classification of Occupations (ISCO-88) classifies jobs hierarchically according to the level of skills required to fulfil the tasks of the jobs. Thus, in the 'meritocratic world-view' of ISCO-88, the status hierarchy of occupational positions is based on a hierarchy of work requirements; high status is justified by having a requiring job.

In practice, we will test the equality hypothesis that the average competence rates C_{ij} of university and non-university graduates in a given occupational category are equal. If the different kinds of graduates have equal labour market opportunities—an opportunity to be employed in accordance with one's professional skill—there should not be any significant differences between the average competence rates of the educational groups in managerial, professional or, secondarily, associate professional positions. Our measure of professional skill is relative to actual work requirements. Competence rate C is measured as the difference between graduates' own skill level and the work requirements in their actual jobs.

[1] The article does not concern the question to what extent the possible inequality of the two kinds of graduates would be related to, for instance gender inequality. Let us just point out here that the expansion of higher education does not automatically lead to more equal labour market opportunities but includes, for instance, certain parallel female-dominated programmes that result in gender separation instead of equality (Berggren 2007).

[2] We use the German word *Fachhochschule* to refer also to Swiss universities of applied sciences.

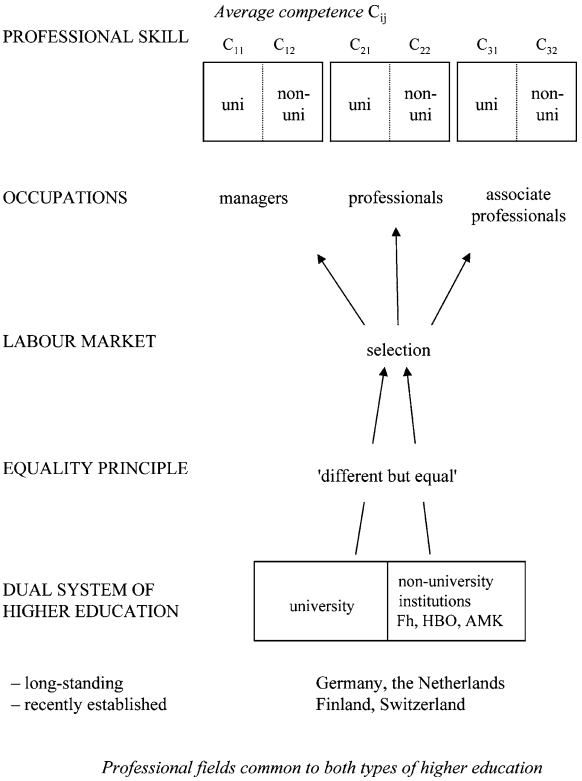

Fig. 2 Research setting

Our empirical analysis proceeds following two steps. First, we study the occupational distributions of university and non-university graduates in given professional fields in each country. Secondly we ask whether the share of the two types of graduates in a given occupational category is compatible with their average competence rates, i.e., $C_{i1} = C_{i2}$. Of course, even a very biased distribution of jobs can correspond to the distribution of professional skill; this would mean that one or the other qualification is actually preferred in recruitment but not at the expense of competence. However, if there is no significant difference between the competence rates of university and non-university graduates in a given field, we conclude that neither qualification is preferred at the expense of competence, thus the different types of graduates are in this sense equal. It is in our interest to explore whether the situations differ between the professional fields or the countries, especially between the 'old and new' dual system countries.

Our data come from the labour market survey carried out under the Reflex project.[3] It was focused on European higher education graduates of 1999/2000 5 years after graduation. For our purpose, we took a sample of 4,224 German, Dutch, Finnish, and Swiss university and non-university graduates in the fields of study common to both types of higher education.

[3] The REFLEX project was funded by the EU 6th Framework Program (contract no: CIT2-CT-2004-506-352). The project involved partners from fourteen countries and was coordinated by the Research Centre for Education and the Labour Market at Maastricht University. For more information, see: http://www.reflexproject.org.

Table 1 The research sample by field of study

	Germany		Netherlands		Finland		Switzerland		Total
	Uni	Non-uni	Uni	Non-uni	Uni	Non-uni	Uni	Non-uni	
Business and administration	58	96	186	442	105	211	364	233	1,695
Technology	155	185	81	241	228	213	261	511	1,875
Computing	18	15	20	31	22	33	24	69	232
Agrary and forestry	14	23	4	20	20	33	28	21	163
Arts	35	16	15	75	20	32	40	26	259
Total	280	335	306	809	395	522	717	860	4,224

Professional fields that are open to competition for high-level employment between different types of graduates are, in fact, quite rare. Most higher education graduates do not face any competition on behalf of labour market 'rivals' with alternative types of qualifications. Actually, the only fields suitable for full-scale analysis are engineering and business and administration. Other common fields—computing, agriculture and forestry, and arts—remain too small to provide more than suggestive results at best. The research sample is represented in Table 1.

The decision to take the field of study as our starting point may exclude certain professional fields open to competition between university and non-university graduates; the field of communication serves as a good example of this. Anyway, by defining professional fields simply according to the fields of study, we can avoid demarcation problems, above all in the category of managers. In cases where one's job does not correspond to one's field of study, the job is often classified as a manual job typical of 'workers', so these cases will be left out of our primary analysis in any case. Yet, the mere fact that our review only covers less than a third of university graduates and 45–75% of the non-university sector gives a hint of to which extent the distribution of work between different types of graduates can result from professional competence proved in a free competition situation.

Actually, the extent to which graduates are employed in their 'own' fields does not vary as much by type of qualification than between the countries. In Finland, nearly all graduates in engineering and business and administration are working in their respective fields. At the other end, we find a more flexible employment system in the Netherlands where it is not unusual that the occupations of graduates seem to not correspond to their training. (Cf. Kivinen and Nurmi 2003).

Occupational status of university and non-university graduates

Considerations about the *different but equal* principle as an adequate characterization of the relationship between university and non-university types of higher education are mostly based on analyses of educational choices on the one hand, and analyses of labour market opportunities on the other (e.g. Teichler 1994, 2007; Ahola 1997). In this article, we also analyse the occupational status of university and non-university graduates in various professional fields. In addition, we will take a step further by incorporating in our empirical analysis the idea that equality in the labour market is to have an opportunity to be employed in accordance with one's competence.

In our case, graduates' occupational status 5 years after graduation is determined by the major groups of the ISCO-88 classification. The most interesting categories include

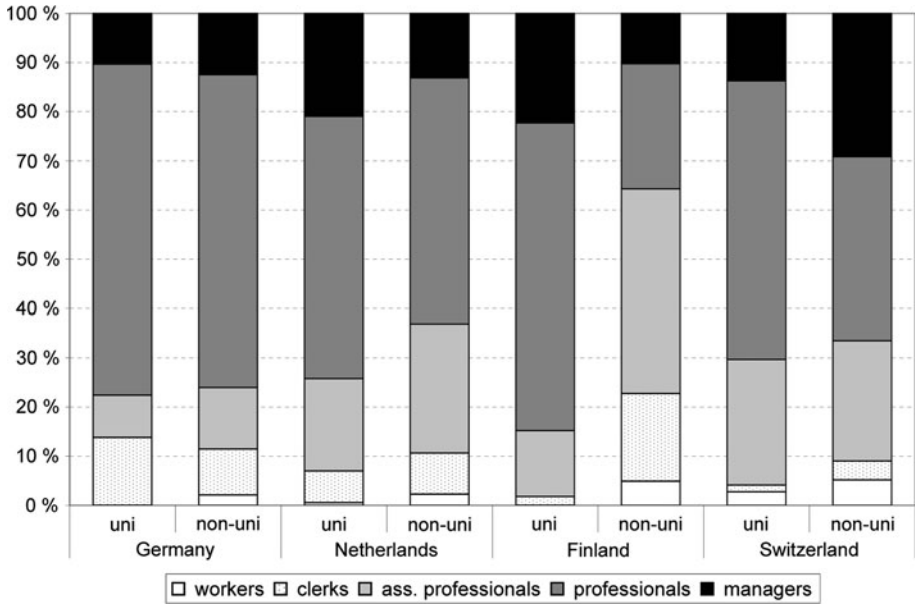

Fig. 3 Occupational status of university and non-university graduates in the field of business and administration

managers[4] and professionals; the others are associate professionals, clerks, and workers ('worker' categories 5–9 combined).

In Fig. 3, the distribution of occupational status between university and non-university graduates in the field of business and administration shows that the roles of university and non-university training in the field differ remarkably by country. In contrast to Germany, in Finland the distribution of work between the two educational routes seems clear. Finnish university graduates hold, in fact, the highest average occupational position of all groups in our comparison, whereas the status of Finnish AMK graduates is the lowest. In the Netherlands, the relationship between the two qualifications is analogous but not as 'polarized' as in Finland. With the exception of Finnish non-university graduates, 'professionals' is typically the largest of the occupational categories included here. In Switzerland, *Fachhochschule* graduates are relatively often employed in managerial posts as well as in the lower positions in the hierarchy.

In the field of engineering (Fig. 4), the situation is much the same as in business and administration. Contrary to the Netherlands and Finland, in the '*Fachhochschule* countries', i.e. Germany and Switzerland we do not find any clear distribution of work between the two educational routes. As concerns business and administration, also in the technical field the Finnish university graduates have on average the highest occupational position. In the Netherlands, also university graduates are relatively often employed in occupations classified below the professional level.

Occupational status distributions in the fields of computing, agriculture and forestry, and arts are given in Table 2 in Appendix 1. With regard to the field of computing, we may

[4] A remarkable amount (from one-fifth to more than one-third by country) of graduates who according to their occupational titles were classified as managers did not have any subordinates. These cases were recoded as professionals or associate professionals, following respondents' description of their jobs.

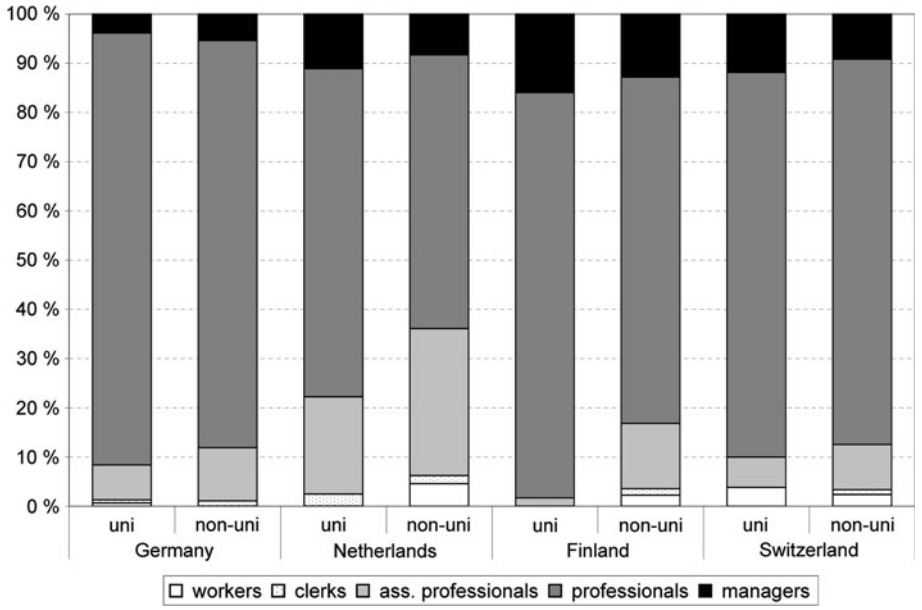

Fig. 4 Occupational status of university and non-university graduates in the field of engineering

note that, in contrast to the other countries, there is a clear status difference between university and non-university graduates in Finland. Almost the same may be said about the field of agriculture and forestry, even if in this case the general picture is more complex. In the field of arts, instead, we can see a status difference between university and *Fachhochschule* graduates in Germany and notably in Switzerland.

Measuring competence

Next, we will test our equality hypothesis that university and non-university graduates employed in same-level jobs in given professional field in given country, have equal average rates of competence. In a way, this is to study whether the distribution of occupational status between different types of graduates is compatible with the distribution of professional skills. If so, then regardless of the shape of the occupational status distribution, graduates with different types of qualifications are to be considered equal since neither of the two qualifications is preferred in recruitment at the expense of competence.

First, we construct an empirical measure of competence by applying a set of variables in our data designed to cover a whole range of abilities constituting professional skills in graduate employment. Respondents themselves have assessed the requirements of their jobs as well as their 'own level' on 19 separate skill dimensions (see Table 3 in Appendix 2).[5] Note that one's actual mastery of any specified skill, personal knowing how, is

[5] The procedure is based on the principle that higher education graduates, if anyone, should be able to assess their own activity through these kinds of conceptualizations. Any other more 'objective' method is equally vulnerable to critics saying that these presumed skills and capabilities are nothing but conceptual constructions.

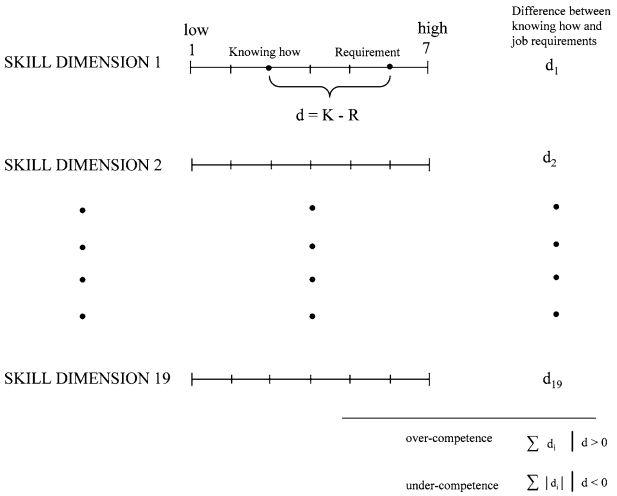

Fig. 5 Determining over- and under-competence of an individual employee as sums of differences between possessed and required 'skills' (see also Kivinen and Nurmi 2007)

relative to the actually recognized job requirements.[6] Therefore, our measure of competence of an actor in a given job is based on the difference between one's knowing how and the job requirements. Knowing how can fit with the requirements, or there may be a case of over-competence or under-competence. We are primarily interested in the rate of relative under-competence of a given group of graduates since, according to our research setting, it reveals an instance of status-based recruitment.

For each of the 19 skill dimensions, the skill level required in a job as well as respondents' own ability were measured using 7-point scales. Thus, for each individual employee, we receive a set of 19 differences between knowing how and job requirement ranging between −6 and +6. Adding up positive differences (one's own level above the required level) on the one hand, and the absolute values of negative differences on the other, provides us with indicators of over-competence and under-competence for each graduate.[7] Since a worker can at the same time have a competence deficit in one skill area and a surplus in another, operating with only one average measure would hide essential information (See Fig. 5).

We are fully aware that by using these kinds of sum counts of competence, we are actually adding up very different kinds of 'abilities'. Yet, we consider this procedure well suited to the specific purpose of our study, which is to compare average competence rates of different types of graduates in varied instances to see whether one or the other qualification was preferred at the expense of competence, without paying much attention to the nature of that competence.[8] Our view of field-specific professional competence applied here draws on

[6] In our vocabulary, knowing how equals doing something skilfully. Typically, knowing how is tacit, mostly it does not originate in 'knowledge that' and certainly cannot be reduced to it. (Polanyi 1969; Ryle 1984/1949). As Dewey (1983/1922, MW14, 124–125) says, we know how to do something on the strength of our habits. (Cf. Kivinen 2002).

[7] Relatively many cases missed data for only one or two items. Therefore, in summing the differences we included cases with four missing items at the most. In practice, the missing differences between requirements and skills were set to zero.

[8] Elsewhere, we will take a more analytical approach to separate skill dimensions and their relationships as well as the general problem of measuring competence in survey data.

the idea of a 'continuum of work requirements'. Different jobs certainly require different skills, but for the sake of our argument, we suppose here that the more requiring the job, the more and the higher skills are needed to carry out all its tasks (cf. Gale et al. 2002).

The procedure that adds up various skills and capabilities treats all the different dimensions as equal. However, our calculation method 'automatically' weights the dimensions considered important in the job in question. Namely, if a particular dimension is not highly required, then the negative difference between acquired and required levels cannot become high and therefore cannot contribute remarkably to the sum of differences.

Utilizing the indicators of under-competence and, secondarily, over-competence, we compare the average competence of university and non-university graduates by countries, professional fields, and occupational categories. For instance, managers in the field of business and administration in Germany will be analyzed separately, as well as Dutch engineering professionals and so on. The divergence between the rates of under-competence of university and non-university graduates would reveal the overrated status of one or the other qualification. The arithmetic mean shows the average competence deficit in a group adequately, on the condition that the distribution of the indicator value is rather regular.

Qualification versus competence by country and field

The final step of our empirical analysis is to test whether the 'equality hypothesis' stands in each occasion. If there is no significant difference between the average under-competence rates of university and non-university graduates, then neither of the two qualifications is overrated in recruitment.

Figure 6 sums up the findings about competence differences between university and non-university graduates in the field of business and administration. (The detailed analysis is presented in Table 4 in Appendix 3.) We see that in the Netherlands the differences in average under-competence rates are minute in each occupational category. The same holds true in Finland with regard to the categories of managers and professionals; instead, the relatively few Finnish university graduates who are employed as associate professionals display a somewhat greater average competence deficit than non-university graduates in similar jobs. In the case Switzerland our results suggest that the competence of university graduates might suit managerial jobs better and be less well suited to associate professional and lower status jobs as compared to the non-university graduates (for lower-level jobs see Table 4 in Appendix 3). Preferring *Fachhochschul*e graduates in recruitment to managerial jobs seems not to be primarily based on competence (cf. Fig. 3).

In Germany, regardless of occupational status, the university graduates in business and management have somewhat higher average under-competence rates than the *Fachhochschul*e graduates, yet the number of cases is low for statistical conclusions. As at the same time the university graduates have a greater surplus of competence not made use of in their work (see Table 4 in Appendix 3), we are left with the impression that university graduates are less well prepared for work practices in the business and management sector than their professional rivals with non-university qualifications. The deficiency of German university training seems to lie in the dimensions of self-management and social relations.[9] In fact, these particular dimensions of work requirements seem to be a kind of problem for business and management

[9] The specified under-competence rates calculated for the sub-categories of skill dimensions (Table 4 in Appendix 3) show directly what kinds of deficit the total under-competence count consists of.

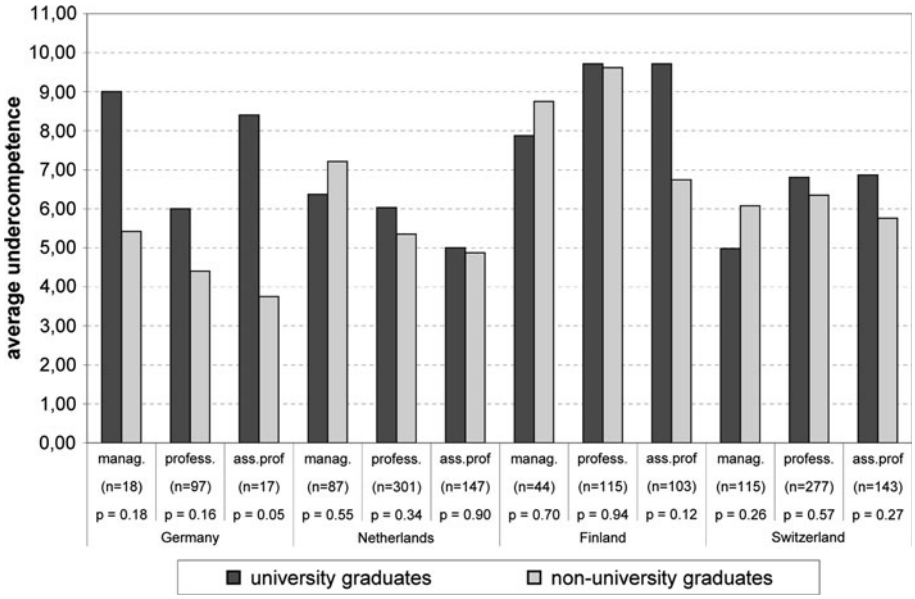

Fig. 6 Average under-competence of university and non-university graduates in the field of business and administration

graduates in working life in all countries, but, with the exception of Germany, university and non-university graduates do not diverge that greatly from each other in this respect.

Let us sum up that with certain minor exceptions,[10] in the field of business and administration, the skills of university and non-university graduates correspond to their work requirements equally well in each occupational category; thus, the occupational status distributions of the two groups (cf. Fig. 3) does not contradict with their distribution of professional competence. For instance, university graduates in the Netherlands and Finland as well as non-university graduates in Switzerland are over-represented in managerial positions. However, it does not mean that even less capable candidates from the dominating educational group would have been taken on as managers in place of more competent applicants from the other group; thus, formal qualification is not preferred at the expense of actual competence.

In the field of engineering (Fig. 7) we find still less evidence of status-based recruitment than in business and administration, particularly in Switzerland where the average under-competence rates of university and non-university graduates does not diverge at all. With regard to the Netherlands, it might only be noted that, relatively speaking, university training in engineering seems to be best suited to professional work. As a detail we can pick up the relatively high under-competence with regard to social relations of Dutch university graduates in managerial positions (see Table 5 in Appendix 4).

Germany is the most striking case. Unfortunately, the number of graduates classified as managers is low. Yet it seems that in managerial work in the field of engineering, contrary to business and management, *Fachhochschule* graduates have higher under-competence

[10] The low statistical significance of the differences between university and non-university graduates is partly due to wide individual dispersion of the under-competence and, particularly, over-competence values (see standard deviations in Table 4 in Appendix 3).

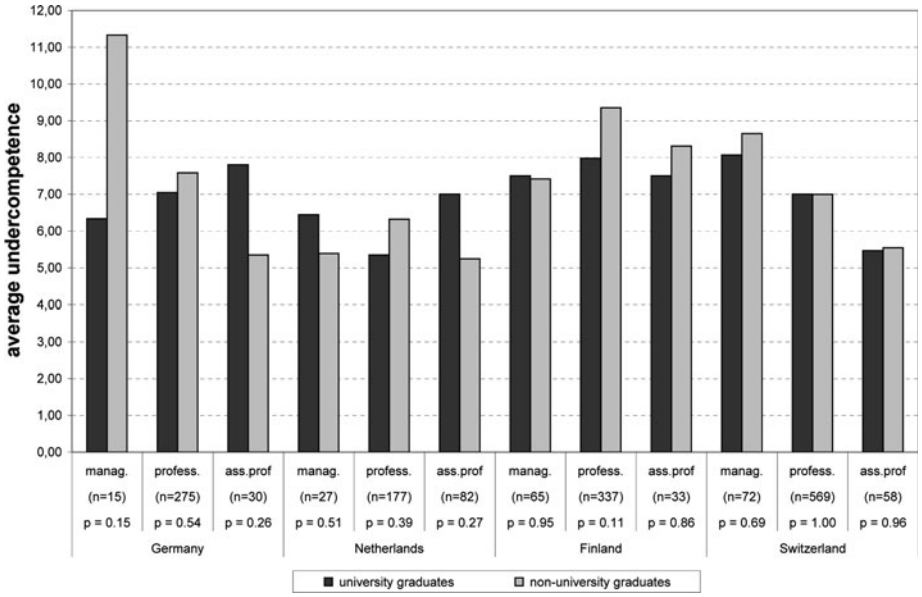

Fig. 7 Average under-competence of university and non-university graduates in the field of engineering

rates as regards self-management and social relations than the university graduates. In associate professional work, instead, these dimensions of work requirements, together with the dimension of flexibility, are the relative strength of the *Fachhochschule* graduates.

In Finland, the under-competence rate of the non-university graduates employed as professionals is relatively high. Since there are only few Finnish university graduates in lower positions (cf. Fig. 4) we might think that in filling professional positions, university graduates would have 'run out' and non-university graduates would have been recruited instead. The impression is affirmed by the fact that the competence difference between the two educational groups appears consistent in all five main dimensions of work requirements, most clearly in using tools (see Table 5 in Appendix 4).

We can conclude that in the field of engineering, we cannot see any notable sign of preference of a university or non-university qualification at the expense of competence. The distribution of professional skills does not stand in conflict with occupational status distribution, which is remarkably constant in Germany and Switzerland but more diverged in the Netherlands and Finland (cf. Fig. 4).

In the fields of computing, agriculture and forestry and arts (Fig. 8), the occupational category of professionals contains only just enough employees to complete our analysis by suggesting that we would hardly find many more instances of status-based recruitment with more extensive data, either.

As comes to the field of computing, only with regard to Switzerland can we see a slight difference in the average competence deficit between university and non-university graduates employed as computing professionals. The total under-competence rate of the *Fachhochschule* graduates is not much higher, but their margin against university graduates shows up as significant with regard to the dimensions of academic learning and flexible working (see Table 6 in Appendix 5).

Let us also note that in Germany the total under-competence rates of university and non-university graduates are even, but a detailed analysis reveals that they are composed of

relatively different kinds of capability deficits. We might actually think that a combination of German university and *Fachhochschule* training could produce an ideal computing professional, yet with a substantial surplus of capabilities currently not utilized.

An interesting additional detail is the high under-competence rate of Finnish university computing graduates in managerial positions, being in a majority to their rivals with non-university qualification (see Tables 2, 6 in Appendices 1, 5, respectively). Unfortunately, we have too few cases in our data to note this as an instance of evident status-based recruitment.

With regard to agriculture and forestry professionals in Germany, Finland and Switzerland, we may shortly note that in each country non-university graduates are little better prepared to their work tasks, even if any significant differences seem not to be found.

In the field of arts, the situation is more complicated. Only in Finland the under-competence rates of university and non-university arts graduates employed in professional work do not diverge. In other countries, one or the other educational group remains small for genuine comparison because a clear majority of higher education graduates in arts has followed one of the alternative routes, university in Germany and Switzerland, and HBO in the Netherlands (see Table 6 in Appendix 5). In each country, the graduates with the minority qualification seem to be more competent in their professional jobs. In Germany and Switzerland, however, there is only a slight margin in favour of the *Fachhochschule* graduates. In the Netherlands, instead, the small group of university graduates have a clearly lower under-competence rate than the non-university graduates. It appears like HBO graduates have been recruited in professional jobs that appear to be short of more preferable graduates with university qualification. Let us also note that, contrary to most other instances, in the field of arts in the Netherlands and Finland, the competence deficit in the social relations dimension is a problem of the non-university graduates in particular.

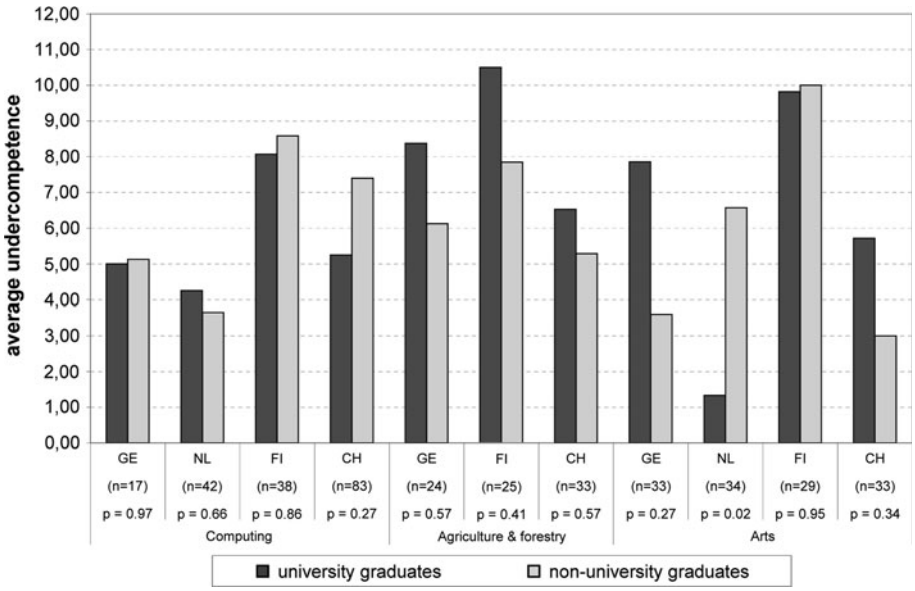

Fig. 8 Average under-competence of university and non-university graduates working as professionals in the fields of computing, agriculture and forestry, and arts

Conclusions

As the analyses in this study point out, the answer to our research question is quite straightforward. In the plain majority of instances that we had the opportunity to analyse in detail, neither of the two alternative qualifications was preferred at the expense of competence. In empirical tests among 4,000 university or non-university graduates employed in five different professional fields in four countries, we found only slight evidence against the 'equality hypothesis' that the average competence rates of both educational groups in given occupational categories are even.

Thus, the so-called status-based recruitment, i.e., overrating one or the other qualification in filling high-level occupational positions, proved to be a rather uncommon feature in the employment of recent dual system higher education graduates. The few occasions of preferring either qualification at the expense of competence seem to be found in the field of arts in the Netherlands, in engineering in Germany and Finland, and in the field of business and administration in Germany. It should be noted that excluding the case of the German business graduates, all the observed 'biases' were in favour of the non-university qualification, contrary to expectations of the idea of status-based recruitment. In any case, the observed competence differences between university and non-university graduates are mainly small and of little consequence. Occasional findings of status-based recruitment are interesting as such but no more than minor deviations from our main result, which reads that higher education graduates with different types of qualification are employed in concordance with professional skill and are thus, in this sense, treated equally in the labour market.

Still, various studies of graduate employment show that the labour market opportunities of different types of graduates are not equal (e.g. Teichler 1994, 2007). As we saw in the first part of our analysis, university and non-university graduates often have relatively different employment patterns. In some fields, occupational status varies notably by the type of qualification, typically in favour of university graduates. This is often the case in Finland, but less frequently in Germany and Switzerland.

In the fields of business and administration and engineering, for instance, university and *Fachhochschule* graduates in both Germany and Switzerland are equal in terms of occupational status, whereas in the Netherlands and Finland certain jobs appear to be distributed differently between university and non-university graduates. Yet, the fact that in the Netherlands and Finland university graduates seem to be preferred in recruitment does not show up as biased competence patterns, and the occupational distributions are, in this sense, in concordance with the distribution of professional skills. In contrast, in the field of arts, university graduates in Germany and Switzerland seem to be preferred, to some extent even at the expense of competence.

Thus, as far as there is any consistent variation between the countries, the demarcation line seems not to go between the old and new dual system countries. Instead, with regard to labour market opportunities of higher education graduates, the *Fachhochschule* countries Germany and Switzerland have more in common than in comparison with the Netherlands or Finland.

There are still two concluding remarks to discuss. The first one concerns the fact that we do not have a measure for professional skill independent of the actual job. As a borderline case, let us consider the Finnish field of business and administration, where the university degree holders override non-university graduates in numbers in highest occupational positions; nonetheless, our analysis did not reveal any difference in average competence between the educational groups, therefore the university qualification is apparently preferred in recruitment but not at the expense of competence. Whether non-university graduates employed in lower level jobs would do as well in higher level positions if they

just had an opportunity, goes beyond the reach of our study since, as we see it, we cannot have a separate indicator for professional skills; 'proficiency as such', independent of work practice, is not a sensible idea.

Secondly, one can ask to what extent a higher education qualification is, in fact, relevant to work practice 5 years later. All in all, it is good to remember that in the changing labour market higher education generally is more or less human risk capital (Kivinen and Ahola 1999; Teichler 1999). In any case, if we think that most skills required in a given position are actually learned in practice, then the main result of our analysis is expected: the rate of 'acquired' competence varies individually rather than by the type of qualification. Still, the source of competence is irrelevant to our prime finding that in most instances explored here, neither of the two higher education qualifications was preferred in the labour market at the expense of competence and, therefore, university and non-university graduates actually are in this sense different but equal.

Appendix 1

See Table 2.

Table 2 Occupational status of university and non-university graduates in analyzed professional fields (%)

	Germany		Netherlands		Finland		Switzerland	
	Uni	Non-uni	Uni	Non-uni	Uni	Non-uni	Uni	Non-uni
Business and administration								
Managers	10	13	21	13	22	10	14	29
Professionals	67	64	53	50	63	25	57	37
Ass. professionals	9	13	19	26	13	42	26	24
Clerks	14	9	6	8	2	18	1	4
Workers	0	2	1	2	0	5	3	5
Total	100	100	100	100	100	100	100	100
N	58	96	186	442	112	224	364	233
Engineering								
Managers	4	5	11	8	16	13	12	9
Professionals	88	83	67	56	82	70	78	78
Ass. professionals	7	11	20	30	2	13	6	9
Clerks	1	1	2	2	0	1	0	1
Workers	1	0	0	5	0	2	4	2
Total	1	100	100	100	100	100	100	100
N	155	185	81	241	238	226	261	511
Computing								
Managers	11	0	5	3	36	12	13	3
Professionals	50	53	85	87	64	73	83	96
Ass. professionals	39	40	10	6	0	9	4	1
Clerks	0	7	0	3	0	3	0	0
Workers	0	0	0	0	0	3	0	0
Total	100	100	100	100	100	100	100	100
N	18	15	20	31	22	33	24	69

Table 2 continued

	Germany		Netherlands		Finland		Switzerland	
	Uni	Non-uni	Uni	Non-uni	Uni	Non-uni	Uni	Non-uni
Agriculture and forestry								
Managers	14	4	25	25	10	6	14	19
Professionals	57	70	25	25	60	39	71	67
Ass. professionals	14	26	50	30	10	24	7	5
Clerks	7	0	0	10	0	0	0	5
Workers	7	0	0	10	20	30	7	5
Total	100	100	100	100	100	100	100	100
N	14	23	4	20	20	33	28	21
Arts								
Managers	3	6	13	5	10	6	8	8
Professionals	80	38	40	47	55	56	73	19
Ass. professionals	14	50	47	36	20	22	13	46
Clerks	0	0	0	3	0	6	0	4
Workers	3	6	0	9	15	9	8	23
Total	100	100	100	100	100	100	100	100
N	35	16	15	75	20	32	40	26
Business and administration								
Managers	6	12	39	58	25	23	50	68
Professionals	39	61	99	221	70	57	206	87
Ass. professionals	5	12	35	116	15	93	93	57
Clerks	8	9	12	37	2	40	5	9
Workers	0	2	1	10	0	11	10	12
Total	58	96	186	442	112	224	364	233
Engineering								
Managers	6	10	9	20	38	29	31	47
Professionals	136	153	54	134	196	159	204	400
Ass. professionals	11	20	16	72	4	30	16	47
Clerks	1	2	2	4	0	3	0	5
Workers	1	0	0	11	0	5	10	12
Total	155	185	81	241	238	226	261	511
Computing								
Managers	2	0	1	1	8	4	3	2
Professionals	9	8	17	27	14	24	20	66
Ass. professionals	7	6	2	2	0	3	1	1
Clerks	0	1	0	1	0	1	0	0
Workers	0	0	0	0	0	1	0	0
Total	18	15	20	31	22	33	24	69
Agriculture and forestry								
Managers	2	1	1	5	2	2	4	4
Professionals	8	16	1	5	12	13	20	14
Ass. professionals	2	6	2	6	2	8	2	1
Clerks	1	0		2				1

Table 2 continued

	Germany		Netherlands		Finland		Switzerland	
	Uni	Non-uni	Uni	Non-uni	Uni	Non-uni	Uni	Non-uni
Workers	1	0		2	4	10	2	1
Total	14	23	4	20	20	33	28	21
Arts								
Managers	1	1	2	4	2	2	3	2
Professionals	28	6	6	35	11	18	29	5
Ass. professionals	5	8	7	27	4	7	5	12
Clerks		0		2	0	2		1
Workers	1	1		7	3	3	3	6
Total	35	16	15	75	20	32	40	26

Appendix 2

See Table 3.

Table 3 Skill dimensions classified in main groups

Academic learning
Mastery of your own field or discipline
Knowledge of other fields or disciplines
Analytical thinking
Flexible working
Ability to rapidly acquire new knowledge
Ability to come up with new ideas and solutions
Willingness to question your own and others' ideas
Using tools
Ability to use computers and the internet
Ability to present products, ideas or reports to an audience
Ability to write reports, memos or documents
Ability to write and speak in a foreign language
Self-management
Ability to perform well under pressure
Ability to coordinate activities
Ability to use time efficiently
Alertness to new opportunities
Social relations
Ability to negotiate effectively
Ability to work productively with others
Ability to mobilize the capacities of others
Ability to make your meaning clear to others

Appendix 3

See Table 4.

Table 4 Comparison of average under- and over-competence between university and nonuniversitygraduates in the field of engineering

	Managers			Professionals			Ass. professionals			Clerks		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
Germany												
N	6	12		37	60		5	12		8	8	
Under-competence (total)	9.00	5.42	0.18	6.00	4.40	0.16	8.40	3.75	0.05	4.13	2.13	0.09
Over-competence (total)	9.00	7.33	0.64	11.84	12.07	0.92	14.80	12.58	0.72	16.88	12.25	0.52
Under-competence (specified)												
Academic skills	0.83	0.58	0.60	0.89	0.73	0.48	1.40	0.83	0.36	1.00	0.22	0.04
Flexible working	0.83	0.92	0.86	0.62	0.52	0.64	1.80	0.17	0.01	0.13	0.38	0.41
Using tools	0.83	1.17	0.49	1.08	1.03	0.89	1.00	0.50	0.48	1.00	0.38	0.20
Self-management	2.83	1.00	0.07	1.65	0.90	0.02	2.20	1.00	0.07	1.00	0.63	0.33
Social skills	3.50	1.75	0.15	1.68	1.27	0.35	1.80	0.92	0.26	0.88	0.13	0.09
SD												
Under-competence	6.00	4.66		5.75	5.23		5.41	3.52		1.36	2.75	
Over-competence	8.32	6.21		11.53	11.49		19.49	5.93		13.26	14.96	
Netherlands												
N	35	52		94	207		35	112		10	36	
Under-competence (total)	6.37	7.21	0.55	6.03	5.35	0.34	5.00	4.88	0.90	3.50	5.11	0.47
Over-competence (total)	9.94	9.08	0.63	10.66	11.44	0.50	12.60	12.91	0.88	23.30	12.14	0.01
Under-competence (specified)												
Academic skills	0.67	1.00	0.31	1.04	0.89	0.40	0.86	0.90	0.84	0.40	0.92	0.31
Flexible working	0.51	0.77	0.34	0.66	0.66	0.99	0.43	0.52	0.63	0.20	0.53	0.33
Using tools	1.17	1.35	0.60	0.78	0.91	0.40	0.82	0.96	0.58	1.10	0.94	0.81
Self-management	1.49	1.79	0.50	1.41	1.25	0.46	1.03	1.06	0.91	1.20	1.03	0.75

Table 4 continued

	Managers			Professionals			Ass. professionals			Clerks		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
Social skills	2.77	2.35	0.43	2.01	1.68	0.18	1.89	1.49	0.31	0.70	1.75	0.16
SD												
Under-competence	4.99	7.11		5.20	5.89		4.54	5.50		5.19	6.43	
Over-competence	8.56	7.88		8.75	9.74		10.60	10.99		13.00	11.22	

	Managers			Professionals			Ass. professionals		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
Finland									
N	24	20		63	52		14	89	
Under-competence (total)	7.88	8.75	0.70	9.71	9.62	0.94	9.71	6.74	0.12
Over-competence (total)	6.58	5.00	0.33	8.29	8.12	0.93	15.43	10.91	0.21
Under-competence (specified)									
Academic skills	1.38	1.50	0.79	1.61	1.56	0.85	1.14	1.01	0.76
Flexible working	0.92	0.95	0.93	1.62	1.44	0.55	1.21	0.97	0.50
Using tools	1.33	1.35	0.98	1.67	1.44	0.46	1.93	1.22	0.15
Self-management	2.00	2.15	0.82	2.00	2.29	0.48	2.86	1.58	0.05
Social skills	2.50	2.90	0.67	2.84	2.69	0.78	2.64	2.01	0.34
SD									
Under-competence	6.86	8.31		6.93	7.98		9.62	6.13	
Over-competence	5.90	4.47		11.52	8.47		15.10	11.95	
Switzerland									
N	50	65		197	80		89	54	
Under-competence (total)	4.98	6.08	0.26	6.81	6.35	0.57	6.87	5.76	0.27
Over-competence (total)	12.00	12.23	0.89	11.66	13.13	0.25	11.98	12.91	0.60
Under-competence (specified)									
Academic skills	0.78	0.71	0.72	1.22	0.86	0.07	1.20	0.70	0.02

Table 4 continued

	Managers			Professionals			Ass. professionals		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
Flexible working	0.58	0.69	0.59	0.86	0.95	0.61	0.93	0.59	0.1 1
Using tools	0.74	0.98	0.25	1.21	0.94	0.17	1.11	1.02	0.68
Self-management	1.24	1.58	0.25	1.43	1.56	0.58	1.54	1.61	0.84
Social skills	1.82	2.18	0.39	1.97	2.03	0.86	2.00	1.98	0.96
SD									
Under-competence	4.09	5.91		6.41	5.23		5.88	5.74	
Over-competence	7.95	9.21		9.14	10.57		10.93	9.43	

	Clerks			Workers		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
Switzerland						
N	5	8		9	12	
Under-competence (total)	8.60	4.13	0.47	6.44	3.42	0.32
Over-competence (total)	14.80	24.63	0.34	22.00	16.08	0.43
Under-competence (specified)						
Academic skills	0.60	0.50	0.83	1.00	0.58	0.42
Flexible working	1.40	0.88	0.60	0.89	0.33	0.37
Using tools	2.20	1.00	0.47	0.67	0.58	0.84
Self-management	2.00	0.50	0.31	1.44	0.58	0.30
Social skills	2.60	1.50	0.64	2.67	1.58	0.34
SD						
Under-competence	14.86	6.56		9.84	2.84	
Over-competence	9.78	20.43		16.38	16.78	

Appendix 4

See Table 5.

Table 5 Comparison of average under- and over-competence between university and non-university graduates in the field of engineering

	Managers			Professionals			Ass. professionals		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
Germany									
N	6	9		128	147		10	20	
Under-competence (total)	6.33	11.33	0.15	7.05	7.59	0.54	7.80	5.35	0.26
Over-competence (total)	8.67	8.00	0.80	11.36	9.63	0.14	12.40	8.05	0.21
Under-competence (specified)									
Academic skills	0.83	0.67	0.76	0.99	1.04	0.78	0.70	1.25	0.29
Flexible working	1.67	0.89	0.28	0.88	0.84	0.85	1.40	0.35	0.03
Using tools	1.17	2.44	0.17	1.16	1.39	0.26	1.10	1.60	0.46
Self-management	1.17	4.22	0.04	1.71	1.86	0.59	1.80	0.80	0.08
Social skills	1.83	3.78	0.09	2.30	2.21	0.79	2.40	1.20	0.15
SD									
Under-competence	3.98	7.23		7.52	7.04		6.03	5.19	
Over-competence	5.35	4.58		9.68	9.52		9.02	8.65	
Netherlands									
N	9	18		49	128		16	66	
Under-competence (total)	6.44	5.39	0.51	5.35	6.32	0.39	7.00	5.24	0.27
Over-competence (total)	10.67	11.39	0.85	11.06	12.40	0.49	9.88	14.39	0.25
Under-competence (specified)									
Academic skills	0.56	0.67	0.81	0.66	0.99	0.14	1.00	0.90	0.76
Flexible working	0.33	0.33	1.00	0.67	0.77	0.65	0.81	0.56	0.39
Using tools	1.00	1.00	1.00	0.86	1.25	0.19	1.31	0.71	0.14
Self-management	1.67	1.17	0.03	1.29	1.52	0.44	1.50	1.20	0.53
Social skills	3.56	2.00	0.03	1.94	1.80	0.71	2.44	1.77	0.34
SD									
Under-competence	2.30	4.37		6.72	6.78		5.29	5.74	
Over-competence	5.20	10.75		9.55	12.24		14.66	13.80	
Finland									
N	36	29		188	149		4	29	
Under-competence (total)	7.50	7.41	0.95	7.98	9.36	0.11	7.50	8.31	0.86
Over-competence (total)	6.31	5.14	0.32	9.72	8.01	0.09	13.00	12.52	0.94
Under-competence (specified)									
Academic skills	1.06	1.00	0.85	1.22	1.42	0.23	0.50	0.97	0.51
Flexible working	1.00	1.28	0.35	1.27	1.40	0.49	1.25	1.66	0.74
Using tools	1.44	1.38	0.84	1.62	2.07	0.06	1.25	1.34	0.92
Self-management	1.61	1.52	0.82	1.67	1.91	0.28	1.50	1.83	0.81
Social skills	2.92	2.41	0.43	2.35	2.52	0.60	3.50	2.79	0.67

Table 5 continued

	Managers			Professionals			Ass. professionals		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
SD									
Under-competence	6.51	4.73		7.47	8.27		5.07	8.76	
Over-competence	4.63	4.73		9.67	8.67		10.10	12.03	
Switzerland									
N	29	43		199	370		15	43	
Under-competence (total)	8.07	8.65	0.69	7.00	7.00	1.00	5.47	5.54	0.96
Over-competence (total)	10.90	9.98	0.67	11.44	12.29	0.38	16.33	14.48	0.59
Under-competence (specified)									
Academic skills	1.07	1.05	0.95	0.94	1.04	0.42	1.00	0.72	0.40
Flexible working	0.76	1.02	0.35	0.82	0.81	0.90	0.60	0.61	0.98
Using tools	1.59	1.53	0.89	1.23	1.25	0.89	0.60	0.83	0.49
Self-management	1.90	2.33	0.36	1.65	1.80	0.42	1.47	1.52	0.92
Social skills	3.00	3.07	0.91	2.27	2.11	0.51	1.60	2.04	0.56
SD									
Under-competence	6.14	5.92		7.09	6.71		4.44	6.11	
Over-competence	7.95	9.58		10.46	11.31		12.13	11.14	

Appendix 5

See Table 6.

Table 6 Comparison of average under- and over-competence between university and non-university graduates in the fields of computing, agriculture and forestry, and arts

Computing	Germany						Netherlands		
	Professionals			Ass. professionals			Professionals		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
N	9	8		7	6		16	26	
Under-competence (total)	5.00	5.13	0.97	6.43	5.50	0.77	4.25	3.65	0.66
Over-competence (total)	17.22	16.00	0.87	13.29	9.67	0.54	14.94	9.27	0.03
Under-competence (specified)									
Academic skills	0.11	0.88	0.21	1.00	0.17	0.12	0.60	0.35	0.37
Flexible working	0.44	1.13	0.23	0.43	0.17	0.48	0.19	0.31	0.53
Using tools	1.11	1.13	0.99	1.14	0.83	0.69	0.20	0.42	0.37
Self-management	0.89	1.38	0.53	2.00	2.00	1.00	1.56	1.12	0.42
Social skills	2.67	0.50	0.16	1.71	2.33	0.44	1.31	1.27	0.94

Table 6 continued

Computing	Germany						Netherlands		
	Professionals			Ass. professionals			Professionals		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
SD									
Under-competence	4.15	8.10		6.53	3.83		3.30	4.80	
Over-competence	12.54	17.07		12.57	6.98		8.00	7.74	

Computing	Finland						Switzerland		
	Managers			Professionals			Professionals		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
N	8	4		14	24		20	63	
Under-competence (total)	13.75	6.75	0.13	8.07	8.58	0.86	5.25	7.40	0.27
Over-competence (total)	7.88	3.00	0.24	12.14	9.71	0.59	11.50	11.13	0.87
Under-competence (specified)									
Academic skills	1.38	1.50	0.90	0.86	1.39	0.31	0.35	1.19	0.04
Flexible working	1.38	0.75	0.53	1.00	1.38	0.51	0.30	0.95	0.06
Using tools	2.50	1.00	0.17	1.43	1.42	0.99	1.05	1.27	0.61
Self-management	4.25	1.25	0.12	1.93	2.17	0.75	1.40	1.89	0.36
Social skills	4.75	2.75	0.18	2.79	2.33	0.67	2.00	2.17	0.80
SD									
Under-competence	7.15	6.08		9.21	7.86		6.92	7.78	
Over-competence	7.14	3.83		16.72	11.18		6.37	9.58	

Agrary and forestry	Germany			Finland			Switzerland		
	Professionals			Professionals			Professionals		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
N	8	16		12	13		19	14	
Under-competence (total)	8.38	6.13	0.57	10.50	7.85	0.41	6.53	5.29	0.57
Over-competence (total)	14.00	14.00	1.00	8.25	9.00	0.84	16.79	11.00	0.17
Under-competence (specified)									
Academic skills	1.00	0.56	0.36	1.50	1.31	0.70	0.58	0.86	0.42
Flexible working	0.50	0.56	0.88	1.33	1.23	0.88	0.63	0.86	0.55
Using tools	1.50	1.31	0.87	2.00	1.31	0.35	1.58	0.64	0.11
Self-management	2.25	1.06	0.26	2.58	1.38	0.20	1.63	0.93	0.30
Social skills	3.50	2.31	0.51	3.42	2.54	0.47	2.16	1.86	0.74
SD									
Under-competence	10.80	7.99		7.31	8.33		7.63	3.31	
Over-competence	10.00	14.37		6.74	10.68		12.99	9.32	

Table 6 continued

Arts	Germany			Netherlands					
	Professionals			Professionals			Ass. professionals		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
N	28	5		6	28		7	21	
Under-competence (total)	7.86	3.60	0.27	1.33	6.57	0.02	3.71	7.05	0.41
Over-competence (total)	14.07	15.40	0.82	21.00	10.57	0.05	24.57	9.76	0.02
Under-competence (specified)									
Academic skills	0.68	0.40	0.49	0.33	0.72	0.31	0.57	0.82	0.61
Flexible working	0.57	0.80	0.68	0.17	0.62	0.28	0.43	0.71	0.59
Using tools	1.82	0.40	0.18	0.00	1.57	0.06	0.29	1.57	0.29
Self-management	2.18	1.00	0.50	0.17	1.64	0.04	1.00	1.52	0.58
Social skills	2.93	0.80	0.13	0.67	2.32	0.17	1.29	2.33	0.50
SD									
Under-competence	8.27	2.70		2.34	5.12		5.15	9.92	
Over-competence	12.68	6.77		13.42	11.15		23.51	9.70	

Arts	Finland			Switzerland					
	Professionals			Professionals			Ass. professionals		
	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff	Uni	Non-uni	Sig of diff
N	11	18		28	5		5	11	
Under-competence (total	9.82	10.00	0.95	5.71	3.00	0.34	15.20	10.73	0.46
Over-competence (total)	10.09	7.22	0.44	15.71	22.20	0.35	3.40	11.45	0.10
Under-competence (specified)									
Academic skills	0.64	0.94	0.37	0.61	0.60	0.99	1.40	1.09	0.70
Flexible working	1.64	1.11	0.36	0.93	0.20	0.31	3.40	0.91	0.11
Using tools	1.82	1.44	0.42	0.68	0.20	0.32	2.40	2.09	0.83
Self-management	3.09	3.22	0.91	1.71	1.00	0.55	3.40	2.36	0.46
Social skills	2.00	3.28	0.14	1.54	1.00	0.56	5.40	3.91	0.57
SD									
Under-competence	6.26	7.93		6.08	2.92		15.87	7.96	
Over-competence	11.17	8.33		13.48	16.84		4.77	9.69	

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