The impact of within country heterogeneity in vocational specificity on initial job matches and job status

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Abstract

This paper analyses the impact of vocational specificity on school-to-work transitions in terms of initial job mismatches and socioeconomic status at the individual level. Considering heterogeneity amongst the various qualifications in Austria, the study finds that the positive impact of specificity on initial labour market placement known from cross-country research also holds within the highly stratified Austrian system in which various vocational specialisations are provided at the upper secondary level. Independent of the level and field of the qualification obtained, vocational specificity facilitates initial labour market placement, resulting in a reduced mismatch risk and an increase in initial jobs status. In the course of subsequent labour market adjustments, however, holders of general qualifications attain higher status gains when changing jobs. Likewise, the overqualified can make up for a good part of their initial status penalty on labour market entrance through job changes. Implications for policy and practice are discussed.

1. Introduction

The financial and economic crisis again has shown that young and inexperienced job seekers are disproportionately vulnerable to be either unemployed or to find themselves in mismatched employment (e.g. Scarpetta et al., 2010; Bell and Blanchflower, 2011). Whilst some studies regard job mismatches amongst labour market entrants as a temporary phenomenon that diminishes over time after accumulating work experience and job-related skills (for a review see Quintini, 2011), a considerable body of evidence points to the long-term negative effects of a mismatched labour market entry (Brunner and Kuhn, 2010; Genda et al., 2010; Kahn, 2010; Oreopoulos et al., 2012). Job changes are more frequent amongst school leavers who start with a job that does not match their qualification as compared to well-matched labour market entrants. Even subsequent changes into better-matched jobs cannot fully compensate for the disadvantages of a poor initial job-match: it has been shown that the negative consequences in regard to job satisfaction, occupational status and career prospects as well as lifetime earnings are rather persistent (Wolbers, 2003; Scherer, 2004; Oreopoulos et al., 2012). According to Scherer (2004), this finding applies in particular to countries with strongly regulated and segmented labour markets, where labour market entrants are at risk to be entrapped in the entry position, whereas in more flexible labour markets it is easier to make up for a poor initial match.

School-to-work-transition is a complex process that is reflexively constituted by integrating individual agency with the opportunity structures in which young people find themselves in under conditions of increasing transition discontinuities, contingency and unpredictability. As a result, youth transitions have become increasingly fragmented and individualised (Heinz, 2002; Brzinsky-Fay, 2007; Schoon et al., 2007). At the same time, the individualised biographies are embedded in institutional arrangements at the national and regional level. These arrangements, which are established by education, training, employment and welfare systems, shape young people's transition processes and outcomes. Whilst young people actively decide to move between and within educational and vocational pathways (Raffe, 2008) according to their individual

characteristics and familial resources, the biographies are bounded by structural factors such as institutional environments and socio-economic conditions (Evans, 2002; de Graaf and van Zenderen, 2013).

Comparative research on country variation in youth labour market integration has increasingly paid attention to the structure of the education and training system and, more specifically, to the extent to which vocational specific skills and qualifications are provided within upper secondary schooling. Many studies found that young people in countries with strong initial vocational education and training (VET) systems fare better than their counterparts in countries that provide mainly general education (e.g. Müller and Gangl, 2003; Breen, 2005; Scherer, 2005; Brzinsky-Fay, 2007; Wolbers, 2007; de Graaf and van Zenderen, 2013). Education systems that provide specific skills within secondary schooling and through the dual system have been found to ease entry into the labour market because of their positive influence on employment opportunities of school leavers and on the speed of the transition process. As a result, not only youth unemployment is lower in such systems, but also the quality of the initial job match is higher, as compared to countries that offer mainly general education at the upper secondary level (Gangl, 2003; Wolbers, 2003; Wolbers, 2007).

Cross-country studies on the impact of VET on initial job placement rely on simple concepts of specificity of national education and training systems (ETS) that cannot adequately account for differences in VET across countries, let alone within country variation. However, difficulties related to youth transition from school to work vary not only across countries but also within: there is substantial heterogeneity within the whole spectrum of qualifications and certificates provided within national ETS, especially in highly differentiated and stratified ETS, which corresponds to strongly regulated and segmented labour markets. The Austrian ETS is a good example for studying within country variation in vocational specificity because it is stratified hierarchically and strongly segmented by occupational fields. At the upper secondary level, numerous vocational specialisations are offered, including full-time VET schools and colleges, as well as the dual system

(Lassnigg, 2011).[1] These programmes differ according to the extent of their entrance and process selectivity (Hefler and Zimmel, 2012) and to their labour market outcomes (Musset et al., 2013). Since most of the available cross-country studies do not account for within country variation, it has remained unclear how within-country differences in specificity relate to overall performance of national ETS. But knowledge about a countries configuration in the provision of different kinds of general and vocational skills is important for improving understanding of why national ETS fare better than others in responding to ever changing labour market demands.

Thus, the aim of this paper is to develop an approach to measure skill specificity at the programme level that is able to account for heterogeneity in the skills national ETS supply. Then, the impact of vocational specificity on the initial job-match and job-status is analysed based on the first significant job after entering the labour market. Though the approach is applied to the Austrian ETS in this paper, it is designed to be used in cross-country research by extending its multilevel framework to the country level, enabling cross-level interactions between the country and the programme level. Evidence on the impact of the vocational specificity on initial job placement that takes into account heterogeneity within national ETS allows for better-informed assessments of the responsiveness of ETS to labour market demands both at the national and the cross-national level.

This paper analyses whether conventional wisdom gained from comparative research that vocational specificity is beneficial in terms of initial job-matches and job-status, also holds within the context of a highly vocational specific system like the Austrian ETS. Within such a system, does the degree of vocational specificity of educational programmes make a difference beyond the average country effect captured by comparative studies? Besides bringing forward theory in the field, this paper is also relevant to policy makers and curriculum developers who have to decide about the weighting of general and specific skills. Practical implications are discussed against the backdrop of individual characteristics and human selection behaviours.

2. Vocational specificity and the transition from school to work

One reason for the positive impact of a strong VET sector is associated with the institutionalised links between ETS and the labour market, which facilitate the from-school-to-work transition (Allmendinger, 1989; Shavit and Müller, 1998). Depending on the strength of the coordination between skill supply and demand, the skills needed by employers are incorporated in the VET curricula. To the extent that the skills provided by VET programmes are transparent to the employers, VET is able to remedy the information problem in the matching process because it allows assessing the productivity of young school leavers. Hence, the relative advantage of VET is that employers recognise holders of a given (and known!) VET qualification to possess vocational skills that make them job-ready, i.e. they can start as a productive worker right away without the need for much additional training after labour market entry (Blossfeld, 1992). VET programmes that combine learning at school and at the workplace are held to be particularly conducive in this respect compared to school-based VET systems: strong and highly regulated apprenticeship systems have been shown to reduce the likelihood of young people entering low-skilled jobs (e.g. Müller and Jacob, 2008). Eurostat figures on youth unemployment in Europe regularly show that countries with a strong "dual system" like Germany, Austria, Switzerland and the Netherlands fare best. In addition to lowering training costs for employers, the dual system has the additional advantage of decreasing the hiring costs because it allows employers to screen the apprentices during their training and train them in a way that best fits the company's needs. The social partners, who are strongly involved in maintaining and developing the dual system (Streeck, 2012), help to organise pathways into the labour market and support public and private engagement in this particular type of training.

In contrast to VET and in particular to the dual system, general education is only weakly linked to the workplace and this situation translates into high training costs because vocational training has to take place mainly on the job after labour market entry. Moreover, hiring costs for employers are high because the skills acquired in school and the potential productivity of school leavers are not

transparent to employers (Breen, 2005; Andersen and Van de Werfhorst, 2010). To sum up, the hypothesised advantage of school leavers holding a vocational specific qualification is twofold: first they have a competitive advantage in regard to the position in the job-queue compared to job seekers with a more general qualification; and second, their disadvantages against insiders who are experienced and actually have a job is lower and might be outweighed by lower salary demands and up-to-date training. However, after acquiring some years of work experience, those with general or school-based VET qualifications catch up or even overtake apprentices regarding labour market returns (Gangl, 2003; Müller and Jacob, 2008).

The following hypotheses about the impact of vocational specificity are tested against the data: independent and beyond the level and field of the qualification obtained, the higher its vocational specificity

(H1) the higher the probability of finding an initial job,

(H2) the higher the quality of the initial job match (Scherer, 2005), i.e. the higher the odds that the first significant job matches the obtained qualification well and, likewise, the lower the odds of over- and underqualification,

(H3) the higher the status of the first significant job; whereas amongst those who have already changed their initial job, a higher degree of specificity is expected to translate into lower status gains.

One consistent result of the qualification mismatch literature is that overqualified workers suffer a wage penalty whilst underqualified workers enjoy higher wages, as compared to well-matched workers who hold the same qualification (e.g. Hartog, 2000; Béduwé and Giret, 2011; Quintini, 2011; Levels et al., 2013). Holding constant the educational attainment level, underqualified workers typically have more demanding jobs than well-matched workers and overqualified workers have less demanding jobs. Consequently, the expected marginal effect of overqualification on the socioeconomic status of the initial job should be negative and the effect of underqualification positive. If the incidence of overqualification is in part a temporary phenomenon, the initially

overqualified amongst those who have already left their first significant job should experience larger gains in job status than their initially well-matched and underqualified counterparts.

3. Measuring skill specificity

Recently, several scholars have pointed out that the notion of a simplified dichotomy between general and specific skills, as conceptualised within the framework of Asset Theory adopted in the Varieties of Capitalism approach, lacks analytical rigour in capturing differences in the skills provided by ETS (Busemeyer, 2009; Busemeyer and Trampusch, 2012; Iversen and Stephens, 2008; Streeck, 2012). This is because in many applications three dimensions are locked in the dichotomous distinction of general and specific skills, namely *level, breath* and *portability,* and as a result, these dimensions are expected to co-vary in a way that general (academic) skills are assumed to be high, broad and transferable, whereas specific skills are held to be low, narrow and immobile. Streeck (2012) retorts "that general skills need not always be high, and high skills not always broad or portable; that specific skills are not necessarily low, and low skills not always immobile; and that occupational skills in some countries may be as high and broad as academic skills in others, and far from firm or even industry-specific" (ibid., 342).

Most of the one-dimensional measures of skill specificity focus on the prevalence of vocational programmes in upper secondary schooling. Estevez-Abe et al. (2001) proposed to use the share in vocational education and training as an indicator. Breen (2005) recommended using the share of students in combined school- and work-based education and training instead, arguing that this measure better reflects the extent to which direct links between initial skills supply and demand exist as compared to the total share of VET students at the upper secondary level (including completely school-based VET). Whilst the argument makes intuitive sense and is in line with theoretical considerations, applying the definition of the Organisation for Economic Co-operation and Development (OECD), which classifies programmes as combined school- and work-based if less than 75% of the curriculum is presented in school (OECD, 2013), leads to a heterogeneous

group of programmes. Besides the fact that these ETS-based indicators cannot capture the multidimensional nature of the phenomenon, these country-level measures inevitably neglect the differences between systems with similar shares of VET students. But country variation in the organisation and outcomes of VET beyond the mere share of VET students is indeed substantial since the amount of practical training in VET qualifications vary markedly between countries and also within (OECD, 2010).

4. Developing a flexible empirical approach to vocational specificity

In devising a flexible approach to skill specificity, I draw on Culpepper (2007) who suggested that "we need to focus on skill levels and on training type in determining the assignment of skill specificity scores" (ibid., 622), and include VET at the tertiary level. Accordingly, a classification of distinct education and training programmes in which similar educational certificates, i.e. qualifications, are grouped by educational levels *and* fields serve as a basis for the empirical assessment of vocational specificity. This classification covers the whole initial skill supply, from lower secondary to tertiary education levels, and from general programmes to the various fields of education and training (Andersson and Olsson, 1999). I refer to this classification as the qualification level, which links the individual level to the system level and allows for within country heterogeneity beyond the individual level. Each qualification category is assigned an empirical measure of vocational specificity that indicates the extent to which holders of a given qualification disperse across occupational categories in their initial job placements. Holders of specific qualifications are placed in relatively few different occupations for which their training is highly suitable. In contrast, labour market entrants with a more general qualification find their initial jobs in many different categories. A general qualifications skill set is not particularly suitable for certain occupations because it is—according to the data—utilised in a wide range of different occupational tasks and settings. Since this one-dimensional empirical measure is in fact independent of the level

and content of the skills attained,[2] it does not dictate to co-vary with the level and content and can be independently assigned to any qualifications as a distinct dimension.

Using a classification that distinguishes 43 qualification groups, vocational specificity is assessed using the Gini concentration index, which reflects the extent to which each of the 43 groups disperse or concentrate over different occupations as empirically observed by the initial job-matches. The Gini takes the mean difference per qualification category over all pairs of occupations, divided by the mean size (e.g. Damgaard and Weinert, 2000):

$$G = \frac{1}{2\mu n(n-1)} \sum_{i=1}^{n} \sum_{j=1}^{n} | x_i - x_j |,$$

where x is a qualification category and $x_{i,j}$ is the number of workers with this particular qualification who are in occupation i, j and n is the number of distinct occupational categories. μ is the average number of workers in these occupational categories. G ranges between 0 and 1. A value of 0 would indicate that workers who hold a particular qualification are equally distributed across the different occupations,[3] i.e. there is no concentration at all. Conversely, a value of 1 would indicate that all workers holding this qualification are employed in one occupational group only. Measured this way, G varies between 0.65 and 0.97 across the 43 ET programmes (See Table 1).

5. Data, measurement and modelling

Data from the 2009 ad-hoc module of the Austrian Labour Force Survey (LFS) on entry of young people into the labour market was used. In Austria, the LFS is based on a regionally (NUTS-2) stratified random sample of about 22,500 private households per quarter, which are drawn from the central population register. Whilst all members of the selected households are legally bound to participate in the basic LFS, participation in the ac-hoc module, which was carried out in the second quarter of 2009, was voluntary. The target population of the ad-hoc module was 15 to 34 year olds: around three quarters of the 10,878 sampled individuals in this age group participated (8,188). Of the sample, 3,151 individuals who have not finished formal education or who have finished it in the

year of the survey, 96 young males in compulsory military or civilian service, 21 individuals in military occupations and 22 individuals with implausible values on the year of finishing formal education were removed, leaving a final sample size of 4,898 individuals.

The outcome of the first hypothesis is whether the first significant and paid job of more than three months after leaving formal education has already been found or not. A first significant job was found by 4,567 individuals, whilst the remaining 331 have not. The quality of the initial job-match (Hypothesis 2) is based on the method of direct self-assessment (DSA). All individuals with a first job were asked whether this job matched their qualification well. If they answered no, they were asked whether they were under- or overqualified. DSA has been criticised for yielding an unbalanced measure of the quality of the match because workers may not correctly report on their own ability and/or on the skill demands of the job. However, studies that used this approach have been found to yield quite reasonable results (Allen and van der Velden, 2001). Indeed, the DSA measure reflects the lower bound of the mismatch in the initial job, in particular regarding the incidence of underqualification.

The outcome of the third hypothesis is measured by the International Socio-Economic Index of Occupational Status (ISEI; Ganzeboom and Treiman, 2003), which is coded according to the Unit groups of occupations (ISCO three-digit codes). Whilst the status of the first significant job is modelled based on all individuals with a first job, the change in the ISEI score between the first job and the current job is modelled for those 2,244 individuals who left their initial job and were employed at the time of the survey. Finally, the current job model is applied to the currently employed, who are either still in their first job (1,825) or in another job. In the third model, the outcomes of the second model (over- and underqualification) are modelled as explaining variables at the individual level.

(Insert Table 1 about here)

The outcome models are fit to the data by a series of generalised linear multilevel regressions using the logit function to link the binomial outcomes at the individual level to the linear model (hypotheses 1 and 2). For the continuous outcome of the ISEI score (Hypothesis 3), two-level linear models are fit. The random intercept models are specified within the R environment (R Core Team, 2013) using the lme4 package (Bates et al., 2013), which allows for modelling non-nested structures at the group levels by specifying varying intercepts across the 43 groups of qualifications and the 19 different years of labour market entry (i.e. in which the qualification was obtained).

For example the binary outcomes are modelled as follows:

$\Pr(y_i = 1) = \mathrm{logit}^{-1}(X_i\beta + \alpha_{j[i]}^{qual} + \alpha_{t[i]}^{entry} + \varepsilon_i)$, for $i = 1,...,n$ observations at the individual level,

where *j* indexes qualification categories and *t* indexes years of labour market entry. *X* is the matrix of individual level predictors. The multilevel structure is modelled by separate regressions for the qualification level and the year level:[4]

$\alpha_j^{qual} \sim N(U_j a, \sigma_{qual}^2)$, for $j = 1,...,43$ qualification categories, and

$\alpha_t^{entry} \sim N(V_t g, \sigma_{entry}^2)$, for $t = 1990,...,2008$ year of labour market entry,

where *U* and *V* are matrices of qualification and year level predictors, respectively, *a* and *g* are vectors of coefficients and σ are the standard deviations of the group-level model errors. To make the model identifiable, an intercept is included in the data level regressions, whilst the group-level effects $\propto$ are centred at zero. This means that the intercept is varying across the groups whilst it is assumed that the individual level predictors have the same slopes across all groups, and the group level predictors have the same slope across the other group.

The motivation for fitting multilevel models is that people holding similar qualifications that they have earned in the same year share important characteristics regarding their skills accumulation in ETS and cyclical effects on labour market entry conditions. The partial pooling feature of multilevel regression is a compromise between overly noisy within group estimates and OLS estimates that ignore grouping characteristics (Gelman and Hill, 2007). Whilst OLS can account for grouping by

including dummy variables for each group, individual and group level covariates can only be modelled simultaneously within a multilevel approach and appropriate uncertainty estimates for the coefficients at either level.

Heckman (1979) type correction is employed to account for potential selectivity bias. Therefore, a probit model estimated whether a first significant job was found or not.[5] The estimated parameters are used to calculate the inverse Mills ratio, which is then included as a covariate at the individual level. Generally, an exclusion restriction is required to generate credible estimates: there must be at least one variable that appears with a non-zero coefficient in the selection equation but does not appear in the equation of interest. Following Büchel and van Ham (2003), age is used in the selection equations whilst experience is used in the outcome models, in which sex, experience and degree of urbanisation are included as individual level controls. In addition to testing the hypotheses, the following covariates are analysed and reported because of their expected strong relationships with the outcomes and because they are surveyed within the Austrian LFS for the first time: education attainment *and* birth in a foreign country (immigration background), drop-out of formal education and work experience during education. Moreover, the aggregates of these covariates are analysed at the qualification level as well.

6. Findings

Table 2 contains the model results. Model M1, which is essentially the multilevel version of the selection model that includes group level predictors and errors, does not support Hypothesis 1. According to the data, qualifications with higher degrees of vocational specificity are not conducive to the transition from school to work, compared to more general qualifications. Instead, the measure of vocational specificity makes no difference in finding a first significant job or not, nor does it seem to correlate with the speed of the transition process, if a first job has already been found. According to the method proposed by Nakagawa and Schielzeth (2013), 35% of the total variance

in the outcome are explained by the fixed effects (marginal R^2) whilst 39% are explained by both fixed and random factors (conditional R^2).

The model results confirm Hypothesis 2 regarding the positive influence of vocational specificity on the quality of the initial job match. A one standard deviation (SD) increase in a qualifications' Gini Index of vocational specificity is on average associated with a 0.28 unit increase in the expected log odds that holders of this qualification are well matched in their initial job (M2a). Consequently, qualifications with a higher vocational specificity are associated with lower probabilities of initial mismatches: a higher Gini index by one SD translates into a decrease in the log odds of being overqualified and underqualified by 0.23 and 0.37, respectively (M2b and M2c). This means that labour market entrants who have obtained qualifications that are empirically found to disperse more across occupations, i.e. with a lower Gini index, are more at risk of entering the labour market in a mismatched first job. The average change in the predicted probability of the respective outcome associated with a difference in the vocational specificity index can be calculated based on the model coefficients and the observed values from the sample for the other variables. Calculating the average marginal predicted probability (AMPP) this way for holders of a qualification with vocational specificity of one SD below the mean yields an AMPP of 0.87 to be adequately qualified, 0.10 to be overqualified and 0.04 to be underqualified. Holding a qualification with one SD above the mean vocational specificity increases the AMPP of being adequately qualified by 0.05 up to 0.92, whilst decreasing the risk of being overqualified by 0.04 (to 0.06) and of being underqualified by 0.02 (to 0.02). Thus, the risk of entering the labour market in a mismatched job reduces markedly with vocational specificity.

Hypothesis 3 is also supported by the analyses. An increase in a qualifications vocational specificity by one SD on average increases initial job status by 3.43 points (M3a), which amounts to about one-quarter SD on the ISEI scale (see Table 1). However, if the first job has been left in the meantime, the ISEI score gain between the first and the current job decreases with the vocational specificity of qualifications (M3b). This supports expectations that vocational specificity is

conducive to a smooth labour market entry, whilst a more general education is of higher value in terms of progression and career mobility. However, the findings suggest that a job change cannot make up for the initial gap associated with more general qualifications because significant differences in the current job status remain, although to a lesser extent (M4c). Whilst this seems to be true for the medium term,[6] it might be possible that the positive effect of vocational specificity diminishes over time and that general qualifications become more beneficial than specific ones with regards to job status in the long run.

The link between training specificity and transition outcomes found here may be confounded by unobserved individual characteristics that are both related to the educational decision and the performance on the labour market. Human factors like ability, personality traits, academic aspiration and motivation are known to influence the quality of the school-to-work-transition and subsequent career adjustments. Career adaptability as a strategic psychosocial resource can be conducive to a successful transition into a well-matched first job (Hirschi, 2010; Koen et al., 2012). In the case of an initial mismatch, work engagement and the will to adapt to the skills needed for the job can contribute to an increase in the person-job fit by proactively crafting ones job (Lu et al., 2014). Openness to experience and extraversion have been found to relate positively to career change and to improved job security as well as job satisfaction (Carless and Arnup, 2011). Moreover, social origin is still a significant predictor of educational attainment and job-status. Beyond that, parental educational expectations and net of family resources have been found to affect motivation, job aspirations and exam performance (Schoon et al., 2007). If differences in these job-related characteristics are systematically associated with differences in the choice of general versus specific training programmes, the findings may be prone to selection bias. However, the nature of the vocational specificity measure used here reduces the risk of this potential bias because it is independent of some educational characteristics that are associated with individual and socio-economic characteristics, namely level and breath. It is therefore unlikely that educational path with different levels of specificity are systematically chosen by different groups. Moreover,

work-related individual characteristics are influenced and formed by the educational tracks pursued because vocational specific training can help to establish occupational identities and motivation (Kuijpers et al., 2011).

One general result from the literature on wage effects of overqualification is that—holding constant the level of education obtained—overqualified workers experience a wage penalty compared to well-matched workers (Quintini, 2011; Levels et al., 2013). As the results of model M3a clearly show, this is also true for the socioeconomic status of the first job. On average, overqualification is associated with a lower ISEI score of 6.51 points, which amounts to about half of one SD on the ISEI scale. Young people who were overqualified in their labour market entry position tend to benefit considerably when changing jobs: on average, the current job socioeconomic status is 5.65 points higher on the ISEI scale than their initial job status (M3b).[7] Whilst those initially overqualified workers who were able to find a new job on average succeed and compensate for a good part of their initial status lag, the overqualification penalty still exists after the adjustments observed in the sample of young people up to the age of 34 years. However, the overqualification penalty has markedly reduced to 2.49 points on the ISEI scale (M3c) when looking at all workers who currently are holding jobs, including those who are still in their entry position. This result suggests that at least part of the overqualification problem is a temporary phenomenon, which is mitigated in the course of adjustment processes following labour market entry (Hartog, 2000; Quintini, 2011). Heterogeneous skills amongst workers with similar qualifications, an explanation put forward by Allen and Van der Velden (2001) to explain qualification mismatch when in fact skill demand and supply match,[8] seems not relevant here because of the mismatch measure used. In contrast to the method of job analysis and realised matches the method of worker self-assessment used in this paper is in fact a method that refers to skills that are needed for the job.

Underqualification is estimated to be associated with a lower initial ISEI score as well, which is somehow at odds with prior research results. However, the uncertainty of the estimate as indicated by the standard error is large due to the low number of self-assessed underqualified individuals.

Moreover, the respective coefficients of the ISEI score gain model (M3b) and the current job model (M3c) are not significant. Hence self-reported underqualification seems to make no systematic difference in job status amongst Austrian labour market entrants though an underestimation of the incidence of underqualification might trigger this result. It is likely that the individuals who assess themselves as underqualified rather face serious skill deficiencies than having entered a first job for which a higher level of education than their own is typically required. This is in line with the result of Allen and van der Velden (2001) who did not find any relationship between self-reported skill deficits and wages.

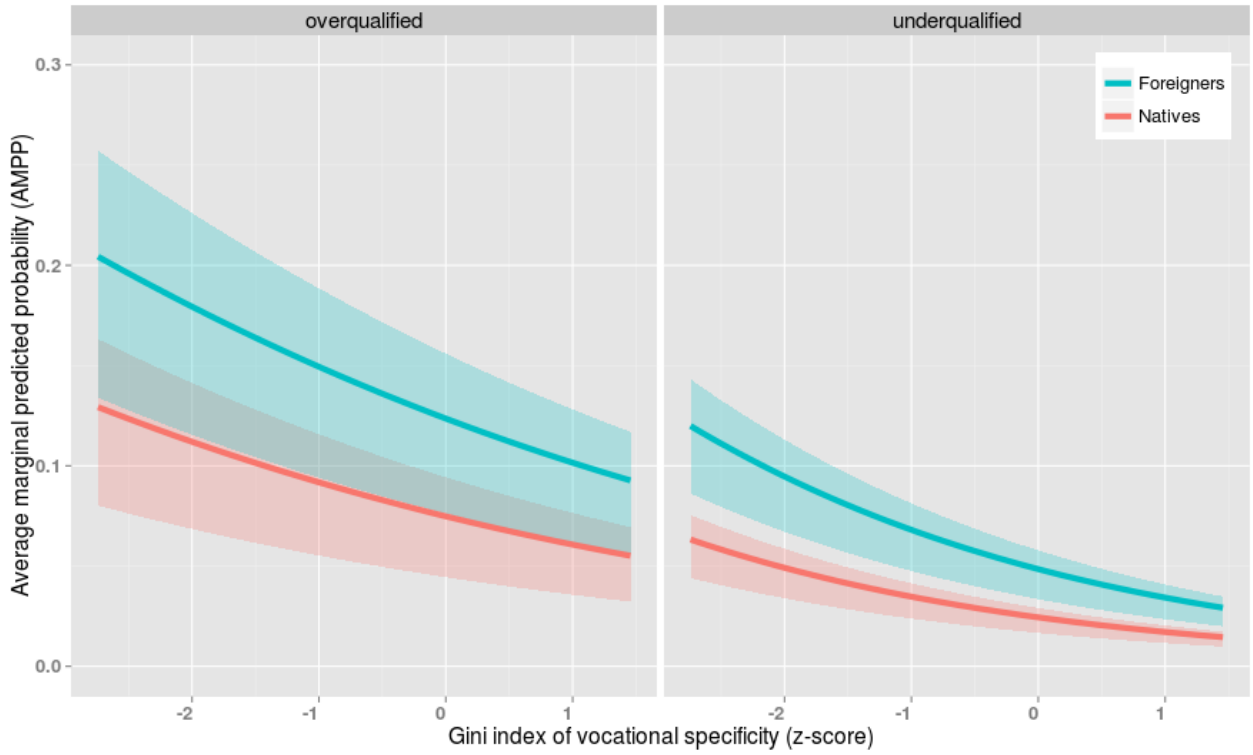
(Insert Table 2 about here)

Immigrants, work experience and dropouts

Being an immigrant significantly reduces the log odds that an initial job has been found. Estimating the AMPP based on the model results unfold a probability of 0.94 for natives and 0.85 for young people who were born and have obtained their qualification in a foreign country. Moreover, having an immigration background significantly decreases the odds of entering the labour market in a well-matched first job by a marginal effect of 0.08 (0.81 vs. 0.89), whilst increases the overqualification probability by 0.05 (0.13 vs. 0.08) and doubles the expected probability of underqualification (0.06 vs. 0.03). However, immigrants tend to benefit more from obtaining a qualification with a high vocational specificity because the mismatch-gap between natives and immigrants decreases with specificity, in particular regarding underqualification. Figure 1 depicts the change in predicted probabilities of being over- or underqualified for natives and foreigners across the spectrum of vocational specificity of the 43 qualification categories. In addition to transition problems, the initial job status of foreigners is on average significantly lower than those of natives with the same qualification and background characteristics. Moreover, in the course of subsequent adjustments migrants lose again: the current job of those who have left their initial post is on average another

3.33 points lower on the ISEI scale. This almost doubles the initial job status difference between foreigners and natives from initially 3.56 up to 6.54 ISEI points in the current post.

Figure 1: Predicted probabilities (estimated fit lines) for over- and underqualification by migration background and vocational specificity.



Average marginal predicted probability plotted within lower and upper quartile range. Source: Statistik Austria, LFS ad-hoc module 2009.

Work experience during formal education increases the prospects to find and keep a job for at least three months after finishing education, with an AMPP of 0.96, as compared to 0.92 for young people who have not acquired any work experience during education. At the qualification level, however, the higher the share of labour market entrants with any prior work experience during education within qualifications, the lower the probability of finding a first significant job: One standard deviation (SD) below the mean is associated with an AMPP of 0.95 whilst holders of qualifications in which the average work experience is one SD above the mean have an AMPP of

0.88. Regarding initial job matches, the acquisition of work experience beyond mandatory practical training during education seems to increase the risk of overqualification, both at the individual and at the qualification level. At the same time, a strong positive relationship exists between the qualifications share of young people with work experience and the average ISEI score of both the initial and the current job.

Dropping out of formal education at a higher level than the one obtained before entering the labour market is associated with an increased predicted probability of over- and underqualification. Based on the original data, the average marginal effect of dropping out from additional education as compared to young people with the same characteristics who have not dropped out is -0.06 to get an adequate first job (0.83–0.89), 0.04 for overqualification (0.12–0.08) and 0.02 for underqualification (0.05–0.03). Despite the higher risk of an initial job mismatch, the initial jobs of drop-outs are on average 2.14 points higher on the ISEI scale than those of comparable non-drop-outs. Whilst this result suggests that acquiring additional education that has not been certified pays off at labour market entry in Austria, those drop-outs who have left their first job and who are currently employed had to accept job status losses. As a result, the positive effect diminishes in the medium term, as shown by the current jobs model. Hence, uncertified additional human capital accumulation may signal greater productivity on labour market entry whilst these expectations are not met in many cases, and are apparently subject to subsequent adjustments.

At the qualification level, the model results suggest that there is a gender disparity regarding job status: whilst a higher share of females among the holders of a qualification is conducive to finding a first significant job, at the individual level males are more likely to find a first job. The socioeconomic status of the initial job decreases with the percentage of women amongst the qualification holders, and subsequent job changes in the medium term mitigate this effect only to a minor extent. At the individual level, no gender differences are observable in the quality and the status of initial job placements but males tend to benefit from subsequent labour market adjustments resulting in a higher average ISEI score amongst those with a current job (M3c).

Whilst there is considerable variation in the outcomes across the different years of labour market entry, in particular regarding the question whether a first job has already been found or not, the unemployment rate at the year of the labour market entry does not make a difference according to the models. Note that both the level and the variation of the employment rate across the labour market entry years are very low in Austria (see Table 1).

Nakagawa and Schielzeth (2013) R^2 measures are quite low for the models explaining initial job matches. The fixed effects of the models are estimated to explain between 9% (M2a) and 14% (M2c) of the outcomes variances while both fixed and random effects explain between 13% and 19%. However, this should not discredit the significance of the reported coefficients estimates because "low R^2 values in logistic regression are the norm" (Hosmer and Lemeshow, 2000, 167). Consequently, the models fit the data very well when it comes to the continuous outcome of job status attainment. The fixed effects alone explain 37% of the variance in the job status of the first significant job (M3a) and in the current job (M3c), whilst more than half of the total variance in these outcomes is explained by both fixed and random effects. The findings related to job-status changes in early labour market careers have to be interpreted with caution because model M3b fails to explain much of the variance in the difference between the ISEI score of the first and the current job.

7. Discussion

This paper analyses the impact of vocational specificity on school-to-work transitions in terms of initial job mismatches and socioeconomic status, as well as its evolvement in early labour market careers in Austria. To this end, a multilevel approach is developed that also allows for modelling within country heterogeneity of vocational specificity in cross-national comparisons. Except for the expected impact on finding a first job, the results found in this paper are in line with the hypotheses on vocational specificity and the expected effects of mismatches on job status.

A higher vocational specificity of a qualification is conducive to both the quality of the initial job match and the socioeconomic status of the first job for holders of this qualification. Hence, graduates who have finished an educational programme that is empirically concentrated on relatively few occupational categories face a lower risk of initial job mismatches and enjoy higher average job statuses as compared to their peers who have finished a more general education programme, i.e. whose graduates are more dispersed on different occupation groups. Although the initial job status is higher amongst holders of vocationally specific qualifications, the analysis confirms that holders of general qualifications have better promotion prospects and they tend to benefit more from subsequent labour market adjustments. Thus the finding of cross-country research that workers with general skills are preferably recruited by internal job markets in which relatively low entry positions occur with good options of career advancement also holds within the highly specific Austrian skill formation system and its strongly regulated employment regime. Workers with specific qualifications on the other hand more often stay in their entry position, and if they change jobs, the gain in job status is lower. In effect, the analyses suggest that holders of qualifications who empirically have access to various occupations more often manage to escape the initial mismatch state through job changes, whilst the relatively low number of mismatched labour market entrants amongst the holders of more specific qualifications are at risk to be entrapped in their unfavourable entry position. Though holders of general qualifications were not able to fully compensate for their initial status lag through adjustments in the medium term, it is likely that the returns to general qualifications outweigh the returns to specific qualifications in the long run. As discussed in the findings section, individual characteristics and family resources that are related to job status differences net of education and training may cause young people to choose general versus specific training. However, the chosen training pathway influences and forms job-related aspects of the person like interests, motivation and capabilities. Hence a strong case can be made that education and training characteristics such as vocational specificity make a difference in initial job matches and job status beyond human selection factors.

Overqualification on labour market entry is associated with a severe initial job status penalty, independent of the impact of vocational specificity, which is negatively related to the incidence of overqualification and positively to initial job status. However, the initially overqualified enjoy large status gains upon job changes, which are more frequent amongst mismatched labour market entrants. Although these status gains do not fully compensate for the initial status lag in the medium term, the analysis shows that overqualification is at least in part a temporary phenomenon in Austria, suggesting that its employment regime, which is classified as strongly regulated and segmented, is flexible enough to let this happen.

The results of additional variables, which have not been investigated with respect to mismatch so far in Austria, are as follows. Drop-outs face an increased risk of over- as well as underqualification. Although they enjoy higher average initial job statuses than non-drop-outs, this benefit diminishes in the course of subsequent labour market adjustments because drop-outs whose current job differs from their first have to accept job status losses. On average, higher productivity expectations associated with additional but uncertified education seem not to be met in the medium term. In contrast, the acquisition of work experience during education beyond mandatory practical training, which increases the risk of overqualification as well, is conducive to the socioeconomic status of both the initial and the current job. In line with prior research the study finds that the transition prospects of young immigrants are worse than those of natives. Immigrants have a significantly lower probability to find a first job and if they find one, they are disproportionally at risk of being in a mismatched job with low socioeconomic status. However, the entry benefits of a vocationally specific qualification are higher amongst immigrants because the mismatch gap decreases with specificity, in particular regarding underqualification.

Since the positive impact of vocational specific training can be attributed to the existing institutional links between ETS and the labour market, which facilitate the school-to-work transition, one practical implication is to maintain and enhance the interconnectivity between the educational and the workforce systems. This is especially relevant with the ongoing transformation of the Austrian

apprenticeship sector in mind, in which supra-company training becomes more and more important and the number of regular apprenticeship position decreases. Because supra-company training typically provides the practical part within workshops outside real world workplaces, it bears the risk of weakening the interconnectivity between the two systems as one of the main feature of the dual system (Hoeckel, 2010). In the absence of direct links to the workplace, as is the case in full-time vocational schools as well, the challenge is to create learning environments that enable the acquisition of career skills. Kuijpers et al. (2011) show that career guidance methods in schools which build on a dialogue with students about concrete experiences and future prospects can be successful in this respect. Indeed, quality career guidance requires adequate labour market information because "adolescents need relevant information pertaining to the different vocational options" (Tomasik et al., 2009, 46). Evidence like the one presented here could contribute to better informed counselling and career guidance methods and instruments as a key prerequisite for adequate career choices. Some restrictions to the results presented apply. First, the use of cross-sectional data restricts a causal interpretation, especially in regard to adjustment processes after labour market entry because relevant information is unobserved, e.g. the reason for leaving the first job and the episodes between the first and the current job. Second, since the data is all pre-crisis, it is likely that opportunities to leave a mismatched initial job for a better match have been reduced in the course of the crisis. However, this applies to all cross-sectional data available at the moment and it is an open issue as to how vocational specificity might affect this issue.

The methodological approach developed here can be easily augmented and used in cross-national comparative research through extending the multilevel framework by the country level. Allowing for cross-level interactions between the system and the programme level could bring about further knowledge about the relationship of between- and within-country heterogeneity in vocational specificity and its interrelation to other system level measures, like industrial relations and employment regimes.

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Endnotes

[1] Seventy per cent of upper secondary students pursue vocational tracks, half of which are apprentices in the dual system and the other half attends various forms of full-time vocational schools (OECD, 2013). While the dual system provides training for about 250 trades, full-time VET schools and colleges are offered at different levels in several fields (e.g. business administration, engineering, etc.) with various specialisations within each field.

[2] While in Asset Theory, the portability of skills is a property of their content, i.e. substantive breath, portability in Human Capital Theory as defined by Becker (1962) is related to the occupational structure of the labour market and the labour market institutions. For example, in a situation where labour markets are restrictive, or labour demand in some occupations is monopsonistic, even the broadest and highest skills may not be portable. Our empirical approach is thus appropriated to measure the portability of qualifications.

[3] The occupational classification used is a combination of Minor groups (two-digit codes) and Unit groups (three-digit codes) of the International Standard Classification of Occupations (ISCO), which resulted in 34 occupational categories.

[4] The model is non-nested though individuals are nested within groups of qualifications and years of labour market entry, but neither group level is hierarchically above the other.

[5] Since the majority (93%) in the sample actually has a first job, sample selectivity is expected to have only a minor influence on the estimates. For the outcome equations using the ISEI score of the current job and the ISEI score change, selection equations were specified accordingly.

[6] The sample at hand consists of individuals up to the age of 34 years and thus only early labour market career outcomes are observed, especially in regard to the higher qualified.

[7] A mismatched first job strongly increases the probability that this job has been left at the time of the survey: based on the sample data, the estimated log odds translate into an average marginal predicted probability for having quit the first job of 0.77 both for over- and underqualified initial jobs, as compared to 0.59 for well-matched initial jobs (the results of this model are provided on request).

[8] For example, low or medium qualified workers with high skills are adequately matched in jobs that typically require a higher level of education and they would be overskilled (but adequately qualified) in jobs that formally require their own level.

Table 1: Summary statistics of key variables

	Min	Max	Mean	SD	n
Outcomes (individual level)					
H1: found first significant job (D)	0	1	0.93	0.25	4,898
H2a: first significant job matched qualification well (D)	0	1	0.88	0.32	4,567
H2b: overqualified in first significant job (D)	0	1	0.08	0.28	4,567
H2c: underqualified in first significant job (D)	0	1	0.03	0.18	4,567
H3a: status of first significant job (ISEI score)	16	85	40.80	13.37	4,567
H3b: ISEI score difference between first and current job	-53	60	1.03	13.49	2,244
H3c: status of current job (ISEI score)	16	85	41.67	14.11	4,150
Predictors at the individual level (full sample)					
Male (D)	0	1	0.49	0.50	4,898
Age	15	34	27.16	4.60	4,898
Potential LM experience in years	1	19	8.17	4.80	4,898
Medium degree of Urbanisation (D)	0	1	0.27	0.44	4,898
High degree of Urbanisation (D)	0	1	0.45	0.50	4,898
Dropped out of higher level of education (D)	0	1	0.09	0.28	4,898
Immigrant and foreign qualification (D)	0	1	0.08	0.27	4,898
Mandatory work-experience as part of education (D)[a]	0	1	0.24	0.42	4,898
Paid job or work-experience during education (D)	0	1	0.29	0.45	4,898
Traineeship after completing education (D)	0	1	0.05	0.21	4,898
Predictors at the qualification level					
Gini index of vocational specificity	0.65	0.97	0.86	0.08	43
Share with any work-experience during education	0.04	0.89	0.36	0.30	43
Share of females (LFS average 2006-2008)	0.01	0.96	0.49	0.28	43
Share of unemployment (LFS average 2006-2008)	0.01	0.10	0.03	0.02	43
Predictors at the year of labour market entry level					
Average unemployment rate	5.40	7.30	6.53	0.57	19

[a]apart from apprenticeship training; (D) indicates Dummy: 1=yes. Source: Statistik Austria, LFS ad-hoc module 2009.

Table 2: Model results

	M1: found job		M2a: adequate		M2b: overqualified		M2c: underqualified		M3a: ISEI first job		M3b: ISEI score gain		M3c: ISEI curr. job	
(Intercept)	3.29	(2.25)	2.03	(0.15)	-2.35	(0.16)	-3.76	(0.25)	40.94	(1.08)	-1.10	(0.97)	41.52	(1.17)
Individual level														
Male (D)	0.34	(0.16)	0.09	(0.12)	-0.11	(0.14)	0.03	(0.21)	0.34	(0.38)	1.80	(0.74)	1.33	(0.44)
Age in years (z)	4.36	(0.81)												
Age in years squared (z)	-3.62	(0.84)												
Potential LM experience in years (z)			0.01	(0.22)	-0.16	(0.26)	0.51	(0.36)	0.53	(0.61)	1.67	(1.72)	1.04	(0.78)
Potential LM experience in years squared (z)			-0.02	(0.22)	0.12	(0.26)	-0.34	(0.33)	-0.57	(0.59)	-0.92	(1.41)	-0.77	(0.76)
Medium degree of Urbanisation (D)	0.49	(0.17)	0.14	(0.12)	-0.27	(0.14)	0.25	(0.23)	-1.02	(0.41)	-0.40	(0.77)	-1.04	(0.46)
High degree of Urbanisation (D)	0.42	(0.16)	0.36	(0.12)	-0.48	(0.13)	0.08	(0.22)	-2.14	(0.37)	-1.34	(0.70)	-2.50	(0.43)
Dropped out of higher level of education (D)	-0.13	(0.20)	-0.54	(0.16)	0.48	(0.18)	0.44	(0.26)	2.14	(0.61)	-2.72	(1.14)	0.96	(0.72)
Immigrant and foreign qualification (D)	-1.50	(0.20)	-0.69	(0.17)	0.58	(0.19)	0.68	(0.26)	-3.57	(0.64)	-3.33	(1.09)	-6.49	(0.77)
Mandatory work-experience during ed. (D)[a]	0.32	(0.20)	0.17	(0.14)	-0.09	(0.14)	-0.40	(0.30)	1.26	(0.52)	-1.59	(0.94)	-0.03	(0.60)
Paid job or work-experience during ed. (D)	0.77	(0.20)	-0.19	(0.13)	0.28	(0.14)	-0.15	(0.25)	1.10	(0.41)	1.92	(0.78)	1.88	(0.47)
Traineeship after completing education (D)	-0.47	(0.29)	0.29	(0.23)	-0.45	(0.26)	0.27	(0.42)	-0.22	(0.73)	-0.16	(1.35)	-0.46	(0.83)
Overqualified in first job (D)									-6.51	(0.54)	5.65	(1.16)	-2.49	(0.62)
Underqualified in first job (D)									-1.86	(0.84)	1.15	(1.56)	-0.67	(0.98)
(Inverse Mills ratio, z)			-0.20	(0.10)	0.12	(0.12)	0.31	(0.13)	-0.01	(0.34)	0.24	(0.77)	-0.18	(0.41)
Qualification level														
Gini index of vocational specificity (z)	0.04	(0.09)	0.28	(0.09)	-0.23	(0.08)	-0.36	(0.15)	3.43	(1.10)	-1.51	(0.64)	2.60	(1.16)
Share with any work-experience during ed. (z)	-0.71	(0.12)	-0.12	(0.09)	0.19	(0.09)	-0.23	(0.20)	9.60	(1.00)	-0.23	(0.64)	9.72	(1.06)
Share of females (LFS average 2006-2008, z)	0.35	(0.09)	-0.12	(0.09)	0.15	(0.08)	0.12	(0.16)	-2.58	(1.04)	0.81	(0.61)	-2.07	(1.10)
Share of unemployment (LFS av. 2006-2008, z)	-0.52	(0.09)	0.08	(0.10)	-0.16	(0.08)	-0.03	(0.16)	2.89	(1.23)	-1.81	(0.69)	1.85	(1.30)
Year of labour market entry														
Unemployment rate (z)	0.22	(0.13)	-0.10	(0.09)	0.11	(0.11)	0.04	(0.10)	0.19	(0.19)	-0.42	(0.47)	-0.05	(0.30)
Explained Variance (Nakagawa & Schielzeth R^2)														
Marginal R^2 (explained by fixed effects only)	0.35		0.09		0.10		0.14		0.37		0.05		0.37	
Conditional R^2 (expl. by fixed and random effects)	0.39		0.13		0.13		0.19		0.54		0.09		0.57	

Standard errors in parentheses; [a]beyond apprenticeship training; (D) indicates Dummy: 1=yes, (z) indicates standardized variable. Source: Statistik Austria, LFS ad-hoc module 2009.