

The Vocational Specificity of Educational Systems and Youth Labour Market Integration: A Literature Review and Meta-Analysis

Lieselotte Blommaert*, Ardita Muja, Maurice Gesthuizen and Maarten H. J. Wolbers

Department of Sociology, Radboud University, Nijmegen 6500 HE, the Netherlands

*Corresponding author. Email: l.blommaert@ru.nl

Submitted March 2018; revised February 2020; accepted March 2020

Abstract

Comparative research on the impact of the vocational specificity of educational systems on youth labour market integration has expanded rapidly in the past decades. The present study reviews this body of research, focusing on how it has conceptualized the vocational specificity of educational systems and theorized its effect on youth labour market integration. Moreover, this study synthesizes the empirical evidence compiled in this research using a meta-analytical approach. Our review reveals that this research area is theoretically fragmented. A commonly accepted definition of the vocational specificity of educational systems is lacking and various theoretical approaches and conceptual frameworks are invoked to theorize the effect of vocational specificity, while exact mechanisms that are assumed to underlie the effect are often left unspecified. Our meta-analysis includes 105 effect estimates nested in 19 studies, published between 2003 and 2018, that used methods enabling a formal meta-analytical comparison. Results show that the overall average effect is positive and statistically significant but its magnitude is modest and there is substantial variability in the size and even direction of observed effects. We find that this variability is partly driven by which aspect of labour market integration was examined and which measure of vocational specificity was used.

Introduction

The education-to-work transition is widely considered a key phase in young people's lives, with important consequences for their opportunities in the labour market and other life domains. Patterns of youth labour market integration differ considerably between countries, in terms of unemployment or job search duration as well as in terms of the quality of the jobs that young people have—their job status, job security, and/or whether they have jobs

that match their education (Shavit and Müller, 1998; Müller and Gangl, 2003; Van der Velden and Wolbers, 2003; Golsch, 2008; Bol and Van de Werfhorst, 2013; Verhaest and Van der Velden, 2013; De Lange, Gesthuizen and Wolbers, 2014; Levels, Van der Velden and Di Stasio, 2014; Verhaest, Sellami and Van der Velden, 2017; Barbieri, Cutuli and Passaretta, 2018). In the late 1980s, research on youth labour market integration started to study these cross-national differences, taking a 'comparative turn' (Raffe, 2014: p. 176).

Such comparative research focused on the role of institutional features in shaping youth labour market integration and features of educational systems take a central position in this work (e.g. Raffe, 2008, 2014). At first, national datasets were used to compare patterns of youth labour market integration in a limited number of countries. A key example is Allmendinger's seminal comparison of Germany, Norway, and the United States (1989). From the early 2000s, cross-national datasets became available, allowing researchers to conduct pooled analyses including larger numbers of countries and to incorporate quantifiable measures of institutional features in these analyses (Raffe, 2014).

The degree of vocational specificity¹ of educational systems is commonly seen as a crucial institutional feature in this respect (e.g. Scherer, 2005; Wolbers, 2007; Saar, Unt and Kogan, 2008; Bol and Van de Werfhorst, 2016; Di Stasio, 2017; DiPrete et al., 2017; Barbieri, Cutuli and Passaretta, 2018). There is no generally accepted definition of the vocational specificity of educational systems; it has, for example, been described as the extent to which an educational system focuses on teaching occupation-specific rather than general skills, but also as the degree to which institutional linkages exist between education and the labour market.² Yet, there appears to be broad consensus about the expectation that education-to-work transitions and the integration of youth in the labour market run more smoothly in countries with more vocationally specific educational systems (e.g. Iannelli and Raffe, 2007; Van de Werfhorst, 2011a; Bol and Van de Werfhorst, 2013; Levels, Van der Velden and Di Stasio, 2014; Di Stasio, 2017).

Over the past two decades, we have seen a considerable increase in the number of comparative studies that examined the effect of the vocational specificity of educational systems on youth labour market integration, not only in terms of opportunities for graduates to find employment or the time it takes them to find their first job but also concerning the quality of the jobs they find. However, although studies do sometimes provide brief summaries of this body of literature (e.g. Vogtenhuber, 2014; Forster, Bol and Van de Werfhorst, 2016; Di Stasio, 2017), a systematic literature review or meta-analysis of this growing body of research is still lacking. Therefore, much remains unclear about what this research has taught us so far.

Addressing that knowledge gap, this article reviews and synthesizes extant research on the effect of the vocational specificity of educational systems

on youth labour market integration. Our aims are as follows. First, we present a review of this body of literature, addressing the following research questions: *How has research in this field labelled and conceptualised the vocational specificity of educational systems (RQ1) and how has it theorised its effect on youth labour market integration (RQ2)?* Taking stock of how vocational specificity is understood and which theories and mechanisms are invoked to derive predictions about its effect on graduates' labour market outcomes can shed light on theoretical patterns and developments and hence on strengths and challenges in this literature. Moreover, it can inform the meta-analytical part of this study, pointing to features of studies and effect estimates that deserve attention when analysing the combined results of research in this field. Finally, the review helps us to interpret the outcomes of the meta-analysis, and by linking the observations from the review to results from the meta-analysis we may be able to pinpoint fruitful directions for future research.

A second aim of the present study is to synthesize the available evidence regarding the effect of vocational specificity on youth labour market integration. We do so by using a meta-analytical approach, rather than only providing a narrative review. The key strength of a formal meta-analysis is that it allows for a systematic and strict comparison of results across studies. This enables us to build on prior reviews of the broader literature on the impact of institutional features on education-to-work transitions (Ryan, 2001; Raffe, 2008, 2014) and on prior (empirical) studies providing brief summaries of this particular area of research. Such prior summaries of this body of research generally describe it as providing support for the notion that processes of youth labour market integration run more smoothly in countries with more vocationally specific educational systems (e.g. Vogtenhuber, 2014; Di Stasio, 2017). However, these summaries tend to be presented in broad strokes. Consequently, they provide little insight into how consistent the support for this notion really is. Moreover, based on these summaries it remains rather unclear how important the vocational specificity of educational is for shaping graduates' labour market outcomes, or, in other words, how substantial its impact is. To shed light on these matters, our meta-analysis first of all addresses the following research question: *What is the average effect of the vocational specificity of educational systems on youth labour market integration across existing empirical research in this field (RQ3)?*

Third, using the meta-analytical approach, this study aims to explore potential variation in the observed effects of vocational specificity on youth labour market integration, in terms of consistency and magnitude, as well as possible sources of this variation. Studies in this field have dealt with several aspects (or indicators) of labour market integration and often incorporate more than one indicator. For instance, research has included measures of integration pertaining to employment (e.g. whether a person has paid work, the time it took to find a first job), job level (e.g. occupational level or prestige, income), or if a job matches one's level or field of education (i.e. vertical or horizontal job matching). Similarly, studies in this field have relied on various different measures (or indicators) of the vocational specificity of educational systems and regularly include more than one measure of specificity in their analyses (e.g. the share of (upper secondary) students in vocational tracks, the share of vocational education taking place in the form of a combination of school-based and work-based learning). Finally, the data used in empirical studies in this field of research were collected under different macro-economic conditions. These conditions may affect the impact of the vocational specificity of educational systems on youth labour market integration. More vocationally specific education might be less beneficial for youth's chances in the labour market in periods that unemployment rates are high. General skills have been argued to enable graduates to adapt and find work outside of the occupation they were trained for, whilst specific skills are less easily transferred to other occupations. However, empirical research in this area has thus far provided very little insight into whether the impact of the vocational specificity of educational systems varies across different aspects of labour market integration, or in accordance with the measure of vocational specificity that was used, or the macro-economic conditions at the time of data collection. We therefore explore whether the indicators of labour market integration and measures of vocational specificity used or the unemployment rates at the time of data collection influenced which conclusions were drawn about the effect of the vocational specificity of educational systems on youth labour market integration. In sum, our final research questions—to be addressed in the meta-analysis—are: *To what extent is there variation in the direction and size of the effect of the vocational specificity of educational systems on youth labour market integration across and within the studies included in the meta-analysis (RQ4) and to what extent can this variation be explained by which indicators of labour market integration and which measures of vocational specificity*

were used, and under which unemployment conditions data were collected (RQ5)?

Literature Review

To address our first two research questions, we provide a review of existing literature on the effect of the vocational specificity of educational systems on youth labour market integration. This review will provide input for the subsequent meta-analysis and help us interpret the outcomes of this analysis.

How Has Vocational Specificity Been Labelled and Conceptualized?

First, we examined how the vocational specificity of educational systems has been labelled and conceptualized in this body of literature. Our review shows that a variety of labels have been used to denote the feature of educational systems that we call 'vocational specificity' (following e.g. Wolbers, 2007; Kogan and Unt, 2008; De Lange, Gesthuizen and Wolbers, 2014; Di Stasio, 2017). Comparable terms used elsewhere are 'vocational orientation' (e.g. Van de Werfhorst, 2011b; Bol and Van de Werfhorst, 2013; Verhaest and Van der Velden, 2013; Levels, Van der Velden and Di Stasio, 2014; Barbieri, Cutuli and Passaretta, 2018) and 'occupational specificity' (e.g. Shavit and Müller, 2000; Müller, 2005; Iannelli and Raffe, 2007). Some studies use different terms interchangeably to refer to the same phenomenon (e.g. Scherer, 2005), while others use different terms to denote distinct (but related) features of educational systems (e.g. Heisig and Solga, 2015). Some research (e.g. De Grip and Wolbers, 2006; Iannelli and Raffe, 2007; Saar, Unt and Kogan, 2008) used typologies to capture differences in institutional settings. For example, the concepts 'internal labour markets' and 'occupational labour markets' (OLM), or 'qualificational spaces' and 'organizational spaces' are used to distinguish between systems with a strong vocational orientation and those 'characterized by a lack of clear vocational qualification signals to employers' (Brzinsky-Fay, 2007: p. 411; 2017) or 'where labour market allocation predominantly relies on experience' (Saar, Unt and Kogan, 2008: p. 37). However, as studies started to compare more countries they have increasingly rejected dichotomous or simple typologies of countries and increasingly used more nuanced and detailed measures, such as those described above (Raffe, 2008, 2014).

Second, we found that a generally accepted definition of the vocational specificity of educational systems is

lacking. Some studies refer to the share of (upper secondary) students enrolled in vocational tracks when defining the vocational specificity of educational systems (e.g. Breen, 2005; Levels, Van der Velden and Di Stasio, 2014; Ilieva-Trichkova and Boyadjieva, 2018). Other studies refer to the extent to which educational systems concentrate on school-based or workplace-based learning when defining vocational specificity. Important in this respect is the term ‘dual system’, which refers to systems in which a considerable share of education takes place in the form of a combination of school-based and workplace-based learning, for example through apprenticeships systems (e.g. Van der Velden and Wolbers, 2003; Müller, 2005; Golsch, 2008; Andersen and van de Werfhorst, 2010). There are also studies that define vocational specificity as the extent to which there are institutional linkages between education and the labour market (e.g. De Grip and Wolbers, 2006; Brzinsky-Fay, 2007; Wolbers, 2007; De Lange, Gesthuizen and Wolbers, 2014; Levels, Van der Velden and Di Stasio, 2014; Muja, Gesthuizen and Wolbers, forthcoming). Such linkages are typically argued to entail that employers, trade unions, and labour organizations are actively involved in the design, updating, and evaluation of vocational curricula (e.g. Iannelli and Raffè, 2007; De Lange, Gesthuizen and Wolbers, 2014; Levels, Van der Velden and Di Stasio, 2014; Di Stasio, 2017), that training ‘is managed jointly’ by schools, the labour market, and the state (Di Stasio, 2017: p. 124; Shavit and Müller, 2000: p. 34) or ‘involves extended periods of time on an employer’s premises’ (e.g. Breen, 2005: p. 126)³ or that teachers are involved in job placement processes (Shavit and Müller, 2000). These ways of defining vocational specificity appear close to ways of *measuring* this feature of educational systems. There are also ways of defining it that lean more towards a description of the mechanisms that are assumed to underlie the effect of vocational specificity on labour market outcomes. For instance, Bol and Van de Werfhorst (2016: p. 80) describe the vocational orientation of educational and training systems as ‘the extent to which education provides students with vocational skills, and the specificity of these skills’, and Barbieri, Cutuli and Passaretta (2018: p. 8) define it as ‘the extent to which they provide specific and easily identifiable occupational skills’ (see also Van der Velden and Wolbers, 2003; De Lange, Gesthuizen and Wolbers, 2014; Ilieva-Trichkova and Boyadjieva, 2018).

This raises the question whether these different conceptualizations refer to distinct aspects of educational systems. Most studies in this field of research do not address that question directly, but some do (e.g. Shavit and

Müller, 2000; Di Stasio, Bol and Van de Werfhorst, 2016). Breen (2005: p. 126) for instance, describes ‘the degree to which educational systems inculcate specific, rather than general, skills’ and ‘the extent to which there are direct links between the educational system and employers’ as distinct aspects of institutional settings. He goes on to say that these aspects of educational systems are interrelated, arguing that ‘systems that teach specific skills also tend to be embedded in institutional relationships that ensure a close link between job seekers and employers, and, in turn, such arrangements can only exist given the correct institutional arrangements among employers and a particular distribution of forms of production’. Likewise, Iannelli and Raffè (2007: p. 50) state that the different aspects of educational systems ‘tend to be correlated; countries with strong linkages tend to have strong OLM’s [...], and occupationally specific vocational programs’. Along similar lines, Bol and Van de Werfhorst (2013: p. 295) note that ‘educational systems [...] differ in the extent and the form of their vocational training programs and whether they offer a dual system’. They thus distinguish ‘vocational enrolment’ and ‘the strength of the dual system’ arguing that ‘although enrolment is a good indicator of the importance of vocational tracks, it says relatively little on the specificity of skills [...] taught in these programmes’.

How Has the Effect of Vocational Specificity Been Theorized?

Next, we examined how the effect of the vocational specificity has been theorized in this body of literature. We found that research in this field draws on a variety of theoretical approaches and possible mechanisms when discussing why the vocational specificity of educational systems might affect the labour market integration of youth. One of the most frequently invoked explanatory mechanisms draws on *human capital theory* (e.g. Becker, 1964) and focuses on *skills* acquired through education or training. The argument here is that in more vocationally specific systems, school-leavers are already well-prepared for practicing particular professions because their education and training supplied them with skills that are required for specific jobs and in demand by employers (e.g. Iannelli and Raffè, 2007; Van de Werfhorst, 2011a). Hence, labour market entrants are expected to be productive right away and to require less further training (e.g. Wolbers, 2003, 2007; Müller, 2005; Scherer, 2005; De Grip and Wolbers, 2006; Kogan and Unt, 2008; Verhaest and Van der Velden, 2013; De Lange, Gesthuizen and Wolbers, 2014; Levels, Van der Velden and Di Stasio, 2014). Some studies also

mention that selection and allocation costs for employers are lower in vocationally specific systems, as they can screen students during training and teach them skills that match the firm's needs (e.g. Van der Velden and Wolbers, 2003; Wolbers, 2003).

A second explanatory mechanism that is often invoked in studies discussing the link between vocational specificity and youth labour market integration draws on *signalling and screening theories*, including the job competition model (Arrow, 1973; Spence, 1973; Thurow, 1975; see e.g. Bills, 2003; Gesthuizen, Solga and Künster, 2011; Van de Werfhorst, 2011b for discussions about why education affects labour market outcomes). Key to this line of reasoning is the idea that educational qualifications send *signals* about the potential productivity of job seekers to employers, and that qualifications form clearer signals in more vocationally specific educational systems. Phrased differently, in more vocationally specific educational systems, employers are better able to assess the abilities of school-leavers with certain degrees (Breen, 2005; Scherer, 2005; Iannelli and Raffe, 2007; Kogan and Unt, 2008; Bol and Van de Werfhorst, 2013). Often, this is argued to be the case because there is more differentiation between degrees in more specific systems, and the more variability in degrees there is, the more recognizable, transparent, and informative qualifications are to employers (e.g. Müller, 2005; Bol and Van de Werfhorst, 2011; see also Heisig et al., 2019). This argument does not only hold for the vocational specificity of systems but is said to hold for all forms of differentiation in educational systems (e.g. also for the degree of stratification, see for instance Andersen and van de Werfhorst, 2010). Others emphasize that in more vocationally specific systems qualifications form clearer signals for employers because employers are actively involved in the design of vocational curricula in such systems and thus have more insight in and influence on skills that potential employees' with vocational qualifications have (e.g. Iannelli and Raffe, 2007; Di Stasio, 2017).

A third explanatory mechanism that is sometimes invoked in this area of research, although less often than theoretical approaches focusing on skills or signals, is based on *network theories*. The idea here is that students can use the social capital they acquire as a result of the workplace-based training that is typical for (some) vocationally oriented educational systems to gain entrance to the labour market. It allows students to get a 'foot in the door', for example because the employer who provided the training invites them to continue to work for the training firm or they are able to use the employer's network (Van der Velden and Wolbers, 2003; Iannelli and

Raffe, 2007; Wolbers, 2007; Levels, Van der Velden and Di Stasio, 2014; Di Stasio, 2017).

An explanatory mechanism that is discussed regularly in the broader literature on education and work draws on social closure theory. This approach assumes that elites monopolize access to resources and rewards (e.g. Van de Werfhorst, 2011b). In this literature, social closure is a process that occurs when legal or normative barriers restrict the supply of labour to certain labour market positions. Closure can take the form of educational qualifications as entry requirements, restricted access to opportunities to receive training or skills, apprenticeships, or licences required to practice certain occupations (Bol, 2014; Bol and Weeden, 2015; Di Stasio, Bol and Van de Werfhorst, 2016). Comparative research on the effect of the vocational specificity of educational systems on youth labour market integration does not often draw on social closure mechanisms. This approach is more often invoked in research on *inequalities* in labour market outcomes (e.g. between-occupation wage gaps, Weeden, 2002; Bol and Weeden, 2015) or on how and why education (at the individual level) is related to labour market outcomes (e.g. DiPrete et al., 2017; Di Stasio and Van de Werfhorst, 2016; Vogtenhuber, 2018). Some research on the relation between vocational specificity and labour market outcomes of youth does, however, draw on social closure theory. For example, Di Stasio, Bol and Van de Werfhorst (2016) argue that overeducation will occur more frequently in countries with less vocationally specific educational systems because in such settings individuals use overeducation as a defensive strategy to stay ahead in the labour queue.

An important observation in this regard is also that research in this area frequently leaves the detailed mechanisms that may underlie relations between the vocational specificity of educational systems and youth labour market integration unspecified (c.f. Van de Werfhorst, 2011a). When studies do go into (some) detail in this regard they often use a line of reasoning that blends various explanatory mechanisms together (e.g. Golsch, 2008; Saar, Unt and Kogan, 2008; Verhaest, Sellami and Van der Velden, 2017). For instance, Kogan and Unt (2008: p. 396) write that in more vocationally specific systems 'labour market entrants, who are already qualified for their occupation, do not need extensive on-the-job training at the beginning of their working lives' but also that 'being provided with valid signals of young employees' potential productivity, employers are expected to make job assignments for qualified individuals more rapidly'. Likewise, Müller (2005: p. 464) writes that the more vocationally specific a system 'the better recognisable are abilities and their signalling'

and ‘the more qualifications should be of direct use in specific jobs and require less training investment by employers’. Only a few studies do mention explicitly that they make use of different theoretical approaches to derive predictions (e.g. Korpi *et al.*, 2003; Iannelli and Raffe, 2007). For instance, Di Stasio (2017: p. 362) discusses two mechanisms, explaining that ‘clear signals’ as well as ‘employers’ recruitment networks’ may play a role. Similarly, Levels, Van der Velden and Di Stasio (2014: p. 345) discuss what they expect based on both ‘a human capital point of view’ and ‘network theories’.

Another important observation about how the impact of the vocational specificity of educational systems on labour market integration has been theorized is that this research area covers various aspects of labour market integration. Studies in this field examine a range of different indicators of labour market integration and many incorporate more than one indicator in their analyses. This raises the question whether vocational specificity is argued to have the same impact on these different aspects of labour market integration. Our review shows that it is certainly not the case that all studies theorize about how vocational specificity affects which outcome, also not if they analyse different labour market outcomes. Yet, there is some (mostly earlier) work in this field that did develop arguments regarding why different effects can be expected for different labour market outcomes (e.g. Shavit and Müller, 2000; Wolbers, 2007). Such work predicts that more vocationally specific systems reduce graduates’ risk of unemployment and the time it takes to find a (first) job, but at the same time reduces graduates’ chances of obtaining more desirable jobs, like those associated with higher status, prestige, or earnings. Here, the so-called ‘safety net’ or ‘diversion’ logics of are often mentioned in tandem to support these contradictory expectations for different aspects of labour market integration (e.g. Arum and Shavit, 1995; Shavit and Müller, 2000; Wolbers, 2007). Specifically, the ‘safety net’ logic is used to support the expectation that more vocationally specific systems increase graduates’ odds of finding employment (more quickly) whereas the ‘diversion’ logic is used to derive prediction such as that ‘the more vocational specific the educational system [...], the lower the occupational status attained by school-leavers in their first significant job’ (e.g. Wolbers, 2007: p. 192). Interestingly, our review also showed that that several, predominantly more recent, country-comparative studies expect positive effects on job quality as well. In contrast to the earlier work discussed above, some of these more recent studies predict that graduates’ odds of obtaining jobs with higher status or prestige are higher in more vocationally specific systems

(Barbieri, Cutuli and Passaretta, 2018; Spörlein, 2018). These studies argue that more vocationally specific educational systems ‘will lead to better-off job positions in terms of prestige upon labour market entry’ (Barbieri, Cutuli and Passaretta, 2018: p. 5) and that in such systems ‘employers should [...] offer higher positions with higher returns to labour market entrants’ (Spörlein, 2018: p. 110). In addition, some (mostly more recent) work expects positive effects on job quality in the sense that graduates in more vocationally specific systems are predicted to be less likely to be in temporary or part-time employment (Van der Velden and Wolbers, 2003; De Lange, Gesthuizen and Wolbers, 2014; Ilieva-Trichkova and Boyadjieva, 2018). Likewise, more recent studies more often expect positive effects on job matching. Such research argues that in more vocationally specific systems graduates’ chances of obtaining jobs that match their level and type of education are higher (Wolbers 2003; Verhaest and Van der Velden, 2013; Levels, Van der Velden and Di Stasio, 2014; Di Stasio, Bol and Van de Werfhorst, 2016; Verhaest, Sellami and Van der Velden, 2017; McGuinness, Bergin and Whelan, 2018). The ‘diversion’ logic is mostly not discussed in these latter studies. Instead, the notion that vocational specificity positively affects graduates’ labour market outcomes—more broadly defined—seems to take centre stage here.

A final observation we make based on our review is that only some studies in this field distinguish between graduates at different levels of education when theorizing the impact of the vocational specificity of educational systems on their labour market outcomes (e.g. De Grip and Wolbers, 2006; De Lange, Gesthuizen and Wolbers, 2014). That is interesting as these studies draw attention to the fact that, based on some of the explanatory mechanisms discussed above, one may expect the effect of vocational specificity to hold in particular or even *only* for graduates at certain educational levels. This is, for instance, argued by De Lange, Gesthuizen and Wolbers (2014: p. 2000), who write that ‘the vocational specificity of the educational system should especially be effective for intermediate educated school-leavers, as they actually possess vocational education diplomas and have the required knowledge and skills that employers reward with qualified positions’. Hence, based on the mechanism focusing on skills, one would not expect higher-educated graduates’ labour market outcomes to be better in countries with more vocational specific educational systems. The same can be said about versions of signalling theory which argue that educational degrees form clearer signals for employers in more vocationally specific systems because in such systems

employers are directly involved in the design of curricula and thus have more insight in the skills that graduates' with vocational qualifications have. This also applies to logics focusing on *networking* mechanisms. However, based on other mechanisms, one could also expect similar effects for the higher-educated graduates. For example, as De Lange, Gesthuizen and Wolbers (2014: p. 2000) argue, in countries with more vocationally specific educational systems, 'the tertiary education sector is usually smaller, as education is less so a positional good, than in countries with a general educational system, where it is rational for individuals to attain more and more education, thereby triggering educational expansion at the macro-level. Consequently, tertiary education in countries with a vocationally specific educational system is more exclusive, which would benefit the labour market chances of graduates' (see also: Di Stasio, Bol and Van de Werfhorst, 2016). Based on this, these authors expect that both intermediate and higher-educated graduates 'face better labour market opportunities in countries with more specific vocational education, while lower educated are likely to experience even more difficulties in finding a stable job, as access to jobs in these countries is much more restrictive for individuals without the required skills' (De Lange, Gesthuizen and Wolbers, 2014: p. 2000). Other logics also lead to the expectation that higher-educated graduates' labour market outcomes may be more positive in vocationally specific educational systems. For example, versions of the signalling logic emphasizing that in more specific systems degrees are more informative to employers because of the greater differentiation between qualifications in such systems (Müller, 2005; Bol and Van de Werfhorst, 2011) imply that this improved signalling capacity should apply to and therefore benefit graduates at all levels.

In sum, prior reviews of the broader literature on effects of institutional features (or combinations of such features, often referred to as 'transition systems') on education-to-work transitions (Ryan, 2001; Raffe, 2008, 2014) concluded that this literature is characterized by a high degree of 'theoretical eclecticism', drawing from and informing a broad range of theories and conceptual frameworks (Raffe, 2008: p. 291). Our review shows that this also holds true for comparative research on the effect of the vocational specificity of educational systems on youth labour market integration.

Meta-Analysis

Next, to summarize the evidence accumulated in extant comparative research on the effect of the vocational

specificity of educational systems on youth labour market integration and thus address our remaining research questions, we conduct a meta-analysis.

Data Collection

Inclusion criteria for studies and effect estimates

We selected studies that met the following inclusion criteria. First, a study had to contain at least one indicator of youth labour market integration as a dependent variable and at least one quantifiable measure of the vocational specificity of educational systems as an independent variable. In other words, a study should contain an empirical test of the effect of (at least one measure of) the vocational specificity of educational systems on (at least one measure of) youth labour market integration. This implies that we focus on country-comparative studies. Second, studies had to employ a method generating data in a quantitative form that permitted us to calculate an effect estimate. Our meta-analysis takes into account research in which at least one quantifiable measure of vocational specificity of educational systems is included; this means that—unlike the literature review presented above—the meta-analysis is restricted to studies based on pooled analyses for larger numbers of countries. Phrased differently, the meta-analysis excludes research estimating separate analyses for (a small set of) countries that are considered to be representative of different types of educational systems (e.g. Shavit and Müller, 1998, 2000; Scherer, 2005; Brzinsky-Fay, 2007; Kogan and Unt, 2008; Saar, Unt and Kogan, 2008). These studies do not include a direct and quantifiable measure of vocational specificity but examine cross-national variations in the labour market integration of (specific categories of) youth and see these variations as being driven by differences in educational (and labour market) systems. Such research does not yield any effect estimate of the relationship between vocational specificity and youth labour market integration. We need such an estimate for our formal meta-analysis and for that reason cannot include these studies in this part of our study. Third, we included studies that were published as a peer-reviewed journal article or book chapter.⁴ Finally, to be eligible, studies had to be written in English.⁵

Studies in this field regularly include multiple measures of the vocational specificity of educational systems, more than one indicator of labour market integration, or both. Also, some research reported findings for multiple samples or different sub-groups. As the unit of analysis for our meta-analysis is the individual effect estimate rather than

the published study, we included all effect estimates in a study that met our inclusion criteria.⁶

Search strategies

We used the following search strategies to identify relevant studies and effect estimates. First, an initial search for studies was conducted via the electronic database Web of Science. We used carefully selected (combinations of) search terms, such as ‘vocational specificity’, ‘vocational orientation’, ‘educational institutions’, ‘educational systems’, ‘school to work transition’, ‘youth labour market integration’, and ‘early labour market career’ (see Supplementary Table SA1, Supplementary Appendix SA for a complete overview of search terms used). This initial search yielded 3,384 studies; 1,655 after duplicates were removed. The title and abstract of these studies were examined to assess whether they were expected to meet the inclusion criteria. The assessments were made by two independent raters, who assigned scores to the studies indicating whether these were considered unlikely (0), somewhat likely (1), or very likely (2) to meet the inclusion criteria. In other words, a lower score was assigned if the title and abstract of a study gave reason to believe that one (or more) of our inclusion criteria was not met by a specific study (i.e. did not contain an empirical test of the effect of at least one measure of the vocational specificity of educational systems’ on at least one measure of youth labour market integration, did not employ a method generating data in a form that permitted us to calculate an effect estimate, was not published as a peer-reviewed journal article or book chapter, or was not written in English). We then selected studies that were rated as somewhat likely or very likely to meet the criteria by the both raters (i.e. studies that had sum scores higher than 3). For those 79 studies, full texts were retrieved and carefully examined, and nine of them were found to meet our inclusion criteria.⁷

A second search strategy involved checking the reference lists of the studies that were found via the electronic database for studies that were eligible but were not found during the primary search. Third, using Google Scholar, we searched for studies that cited the ones that were found via the electronic database but were not identified in the primary search. Using these strategies, we found nine other studies that were suitable for inclusion.⁸ Finally, information on relevant studies was requested from experts in the field, which led to the identification of one additional study that was suitable for inclusion. Ultimately, the search and selection process yielded a total of 105 estimates within 19 studies

that were identified as meeting our criteria. Those were included in the meta-analyses (see Supplementary Table SB1, [Supplementary Appendix SB](#) for an overview).

Sample overview

To estimate effects of the vocational specificity of countries’ educational systems on (aspects of) youth labour market integration, data are required that cover multiple countries. Hence, all of the studies included in our meta-analysis make use of country-comparative data. The vast majority of the included studies use survey data (i.e. individual-level data), supplemented with information about (country-level) features about educational systems (e.g. the share of students in vocational education or in dual systems). More specifically, these studies mostly rely on a limited number of cross-national data sources which are suitable to address this type of question; nine of the included studies use Labour Force Survey data (collected in 2000 or 2009), three use European Social Survey data, two use Adult Literacy Survey (IALS) data, and two others use REFLEX survey data. Among the included studies, three rely solely on country-level data. These studies measure youth labour market integration at the aggregate level, focusing for example on youth unemployment rates or the average time it takes graduates to find their first job.

The number of countries on which the studies included in the meta-analysis base their analyses ranges from 9 to 29. More recent publications often incorporate larger numbers of countries. All of the included studies cover predominantly European countries. The countries that are included most often are North-Western European, Central European, and Southern European countries, followed by Eastern-European countries and those that joined the European Union more recently. Non-European countries are included in only a few of the studies incorporated in the meta-analysis. This concerns mainly Western countries (e.g. Japan, Korea, Turkey, Canada, the United States, and Chile).

The studies included in the meta-analysis were published between 2003 and 2018. The data used in the studies included in the meta-analysis were collected between 1988 and 2012. Of the included studies, a minority (five studies) make use of data from repeated cross-sections. The other studies use (cross-sectional) data collected at one point in time.⁹

Data Extraction and Variables

Data extraction

Data were extracted from the included studies using a coding tool. We developed the tool specifically for this

meta-analysis and used our research questions to guide the development. The initial tool was refined as coding progressed.

Dependent variable

First and foremost, we extracted information on the effect estimates from the included studies. This information will form our *dependent variable*. Specifically, we coded the effect estimate itself, a measure of variance of the effect estimate if it was reported (e.g. standard errors) and information about the statistical significance of the effect that was provided. Moreover, we coded which statistic was used to estimate the effect (e.g. (un)standardized regression coefficients, logits, probits, odds ratios), its direction (i.e. whether a positive effect indicated more or less labour market integration), and any other information presented in the study that was necessary to translate estimates to a common metric in order to make them comparable.

A meta-analysis produces an overall estimate of an effect of interest. However, the (primary) studies included in meta-analyses typically rely on different analysis techniques to estimate the effect of interest. Hence, to be able to compare the different estimates to each other, the statistical information regarding each effect has to be converted into a common metric (Borenstein *et al.*, 2009). In our case, the included studies did indeed use a variety of analysis techniques to estimate the effect of educational systems' vocational specificity on youth labour market integration. In order to compare them, we converted each effect into a correlation coefficient, Pearson's r , because various other statistics can be converted into correlation coefficients and because these coefficients are easy to interpret. To be able to accurately estimate an average effect of educational systems' vocational specificity on youth labour market integration we also coded the variance (for details, including the formulas used, see [Supplementary Appendix SC](#) and Borenstein *et al.*, 2009).

Independent variables

In addition, we coded information about the studies and effect estimates that are included in the meta-analysis. These features of studies and estimates form the covariates in our analysis (in the framework of meta-analyses such variables are often referred to as 'moderators', see Borenstein *et al.*, 2009). Two key covariates in our analysis pertain to the indicator(s) of labour market integration and measure(s) of the vocational specificity of educational systems included in the studies incorporated in our analysis (i.e. the measures and indicators that

were used to estimate the effect of vocational specificity on youth labour market integration).

A first key covariate pertains to the aspects or *indicators of labour market integration* used in the studies included in the meta-analysis. In line with what the literature review showed for the broader field of research, the studies included in the meta-analysis cover a variety of indicators of labour market integration. In fact, many of them incorporated more than one indicator (i.e. in these cases, several effects were estimated within one study). To be able to analyse whether which aspect of labour market integration was analysed matters in terms of the results, we categorized the indicators that the included studies took into account. Accordingly, the following four types of indicators form the categories of this covariate. First, 31 effect estimates refer to analyses in which (un)employment or the duration of *unemployment* or job search formed the indicator of labour market integration. Second, 29 estimates are based on analyses in which *job level* was used as indicator labour market integration (measured for example as job status, job prestige, or income).¹⁰ Third, 28 estimates are based on analyses in which the labour market integration indicators used referred to *job matching*, indicating for instance whether someone had a job that fits their education in terms of level, sector or type, or a combination of these two. Fourth, 16 estimates are based on analyses in which some measure of job security (i.e. permanent or temporary contracts, flexible contracts, or tenure) was taken as an indicator of labour market integration (see also Table SB1, [Supplementary Appendix SB](#)).

A second key covariate refers to the *measures of vocational specificity of educational systems* that were used in the included studies. In line with what the literature review revealed, different studies within this field use different measure of vocational specificity, and some of these studies incorporate more than one measure (i.e. several effects were estimated within one study). In order to be able to analyse whether how vocational specificity was measured mattered for the results, we categorized the measures used in the included studies. Hence, the following three types of measures form the categories of this covariate. First, 67 of the 105 effects in our analysis refer to a measure indicating how many students are enrolled in *vocational education or training*. Second, 34 pertain to a measure that expresses how many students are in school-work-based training, or—in other words—to what extent education or training takes place in the *dual system*. Third, four pertain to *other* types of measures (see also Table SB1, [Supplementary Appendix SB](#)).

Unemployment rates at the time of data collection constitute our third key covariate. This factor was operationalized by first extracting information from the included studies about the year(s) in which the data used for their analyses were collected and about which countries were included in a study. In a subsequent step, we enriched these data with information on unemployment rates in the countries included in a study at the time that the data used in this study were collected.¹¹

Control variables

In addition to these three key covariates, we coded information on a range of other features of the included studies and effect estimates. We included several of these features in the analysis as control variables. First, we controlled for the year of publication of the studies. Second, we took into account how many variables were included in the analyses at the contextual level and the individual level. Third, we controlled for whether key variables (i.e. indicators for level or type of education or skills at the individual) were included in the analyses. Fourth, we took into account whether the aims or research questions in studies mentioned vocational specificity and whether hypotheses were formulated about the effect of vocational specificity, or if it was included as a control variable (see Table SD1 [Supplementary Appendix SD](#) for a full list of coded features).

Analyses

To analyse these data, we first present descriptive results, graphing the distribution of the included effect sizes ([Figure 1](#)). To formally address our research questions, we then estimate meta-regression analyses, controlling for the clustering of estimates in studies, in other words, accounting for the multilevel-structure of our data (we use the metaphor package in R, [Viechtbauer, 2010](#))¹². In meta-regression analyses (hereafter: meta-regressions), the dependent variable is the effect size in the included studies (i.e. ‘primary studies’), and other features of the included studies or effect estimates form the covariates (called ‘moderators’ in the context of meta-analysis, [Borenstein et al., 2009](#)).

Meta-regressions differ from regression analyses in primary studies in several ways that are noteworthy here. First, meta-regressions take into account the precision with which the effects in the included studies were estimated. Effects estimated with more precision are given more weight than those estimated with less precision. The precision is determined (mostly) by the number of cases based on which the effects were estimated. Because the effect of interest in this study pertains to a country-level predictor,

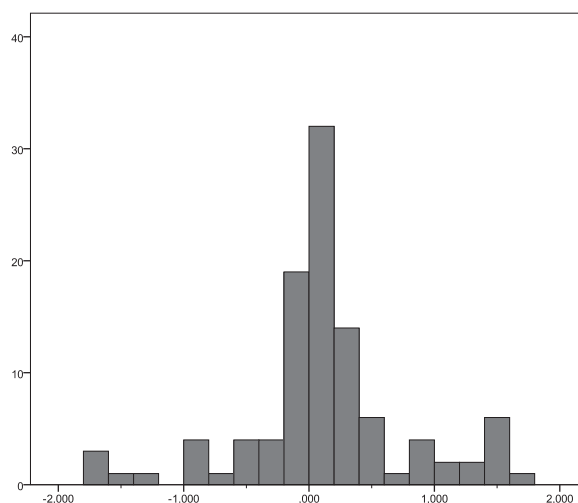


Figure 1. Distribution of effect sizes (Pearson's r) across included studies and estimates (frequencies)

the relevant number of cases here is the number of countries (or, in a few studies, country-time combinations). A second key way in which meta-analysis differs from regular regression analysis is that it allows researchers to not only estimate an average effect, but to also formally assess the variability in effects. We examined the variability in effects by calculating the homogeneity statistic Q ([Borenstein et al., 2009](#)). A third crucial way in which meta-analysis differs from regular regression analysis is in the way the distinction between random-effects or fixed-effects models can be understood and in the logic underlying researchers' choice for one or the other. In the context of meta-regression analysis, random-effects models are based on the assumption that differences in effects across studies are (partly) random and involve unidentified sources. This approach is recommended if the included studies are more heterogeneous and effects are more complex. By contrast, a fixed-effects approach assumes that the effects in included studies represent a single underlying effect that is constant over the entire population of studies, a ‘true effect size’ ([Borenstein et al., 2009](#): p. 6). This approach is considered suitable when the included studies are more homogenous. For our analyses, we opted for random-effects meta-regression analysis, given that the included studies are heterogeneous in terms of their approaches and given the facts that the effects of interests are more complex (compared to, e.g. clinical trials set up in very similar ways).

Our modelling strategy is as follows. First, we estimate a ‘null model’ (i.e. without covariates) to gauge the overall average effect, as well as the variability in, or distribution of, the estimates in the included studies. The

results of this model are presented in Table 1. Next, we examine to what extent the variability in effects is accounted for by features of the included studies and effect estimates. To this end, we estimate the mean effect size for each different category of a covariate (moderator), by running series of models and switching the reference category for the covariate in each model.¹³ We summarize the results of these analyses in Table 2 (full results available on request). Some rules of thumb exist regarding the number of effect estimates required for meta-regressions. Borenstein *et al.* (2009: p. 188) suggest a minimum of 10 estimates per covariate. Hence, we cannot include all covariates—the key independent variables *and* control variables—in the same model. We therefore present results of analyses in which we estimated separate models for each moderator (for a similar approach see Gallupe, McLevey and Brown, 2019). We also briefly discuss the results of additional analyses in which we estimated multivariate models, entering multiple covariates simultaneously.

Results

Examining the Overall Average Effect across the Included Studies

A first question that we address using a meta-analytical approach is what the average effect of the vocational specificity of educational systems on youth labour market is across the included studies (and effect estimates embedded in them). In other words, we assess what the available evidence of comparative research in this area tells us about how the vocational specificity of educational systems relates to youth labour market integration. Figure 1 provides a first indication, showing that the observed effect estimates vary considerably—both negative and positive effects were observed—and the average effect is slightly above zero. Table 1 confirms that the estimated overall average effect is positive and statistically significant—that is, significantly different from zero ($r = 0.082$; 95% CI = 0.001–0.163; $P < .05$; $k = 105$). At the same time, the mean effect is modest in size—the Pearson's correlation coefficient being 0.082.

Next, we explore to what extent there is variation in the size of the effect of the vocational specificity of educational systems on youth labour market integration across and within the studies included in the meta-analysis. The outcomes presented in Table 1 show that there is considerable variation in the magnitude and direction of the effects (0.082; 95% CI = 0.001–0.163; $P < .05$; $k = 105$). The lower bound of the 95% confidence interval is virtually equal to zero (0.001), whereas the upper bound is 0.163. The test for heterogeneity (Q) clearly confirms that the variability in the size of the effects is statistically significant ($P < .001$).

As a robustness check, we also converted all effect estimates into Cohen's d . This is a standardized effect size measurement, which is in many ways equivalent to a standardized regression coefficient; it expresses the effect size in terms of standard deviations. Results of this model based on d confirm our prior conclusions ($d = 0.145$; 95% CI = $-0.001 - 0.293$; $P < .05$; $k = 105$). A commonly used rule of thumb when interpreting Cohen's d is that effects around 0.2 are considered small, those around 0.5 as medium sized and those around 0.8 as large. As such, our results not only show that the observed overall average effect is (very) small, but also reveal quite some variation, with effect sizes ranging from virtually zero to medium sized.

Examining Sources of Variability in the Effect across and within Included Studies

Given this variability in the effect size, we subsequently ask to what extent this variation can be explained by which indicators of labour market integration and which measures of vocational specificity were used, and under which unemployment conditions data were collected. Hence, we explore which features of the studies and estimates included in the meta-analysis may help us understand the observed variability in effect sizes.

First, we assess whether the average effect is different for different indicators of labour market integration. Table 2 shows that the positive mean effect is only statistically significant for those cases where the indicator of labour market integration that was used pertained to

Table 1. Overall mean effect size vocational specificity-labour market integration (Pearson's r) across included studies and estimates

| | r | se | 95% CI | Z | k | Q |
|--------------------------|--------|-------|-------------|-------|-----|------------|
| Overall mean effect size | 0.082* | 0.041 | 0.001–0.163 | 1.985 | 105 | 242.124*** |

Notes: r , correlation coefficient representing mean effect size; se, standard error of r ; 95% CI, 95% confidence interval of r ; z, test mean effect equals zero; k , number of effect estimates associated with mean effect size; Q , test of heterogeneity in effect sizes (null-hypothesis = effect is consistent across the sample). $P < .05$, ** $P < .01$, *** $P < .001$.

Table 2. Variables moderating the effect size: indicators of labour market integration, measures of vocational specificity of educational systems and unemployment at the time of data collection (mean effect size for different categories)

| Moderating factors | <i>r</i> | se | 95% CI | <i>z</i> | <i>k</i> | <i>Q</i> |
|-------------------------------------|----------|-------|----------------|----------|----------|------------|
| Indicator labour market integration | | | | | | |
| (Un)Employment (duration) | 0.122* | 0.054 | 0.015 – 0.229 | 2.229 | 31 | 240.145*** |
| Job level | 0.061 | 0.055 | –0.048 – 0.170 | 1.090 | 29 | |
| Job matching | 0.058 | 0.075 | –0.088 – 0.206 | 0.781 | 28 | |
| Job security | 0.038 | 0.083 | –0.123 – 0.201 | 0.467 | 16 | |
| Measure vocational specificity | | | | | | |
| Vocational education/training | 0.107* | 0.048 | 0.013 – 0.202 | 2.219 | 67 | 241.761*** |
| Dual system | 0.030 | 0.063 | –0.094 – 0.154 | 0.476 | 34 | |
| Other measure | 0.056 | 0.167 | –0.271 – 0.384 | 0.338 | 4 | |
| Unemployment at data collection | | | | | | |
| 0.0–7.5 per cent | 0.049 | 0.046 | –0.042 – 0.140 | 1.061 | 47 | 241.292*** |
| 7.5 per cent and higher | 0.107* | 0.038 | –0.134 – 0.017 | 2.419 | 58 | |

Notes: *r*, correlation coefficient representing mean effect size; se, standard error of *r*; 95% CI, 95% confidence interval of *r*; *z*, test mean effect equals zero; *k*, number of effect estimates associated with a mean effect size (in a category); *Q*, test of heterogeneity in effect sizes (null-hypothesis = effect is consistent across the sample).

**P* < .05,

***P* < .01,

****P* < .001.

(un-) employment ($r = 0.112$; $P < .05$; $k = 31$). The mean effect is also positive but considerably smaller and not statistically significant for the categories where the indicator used referred to job level ($r = 0.061$; $k = 29$), job matching ($r = 0.058$; $k = 28$), or job security ($r = 0.038$; $k = 16$).

Second, we examine whether the average effect is different for different measures of the vocational specificity of educational systems. Results show that the mean effect is positive and statistically significant if vocational specificity was measured in terms of enrolment in vocational education or training ($r = 0.107$; $P < .05$; $k = 67$). By contrast, the average effect is also positive, but considerably smaller and not statistically significant if vocational specificity was measured in terms of enrolment in school-work-based education ($r = 0.030$; $k = 34$) or using another measure ($r = 0.056$; $k = 4$).

Next, we explore if the mean effect size differs in accordance with the unemployment rates at the time that the data for the included studies were collected. Table 2 shows that the average effect is positive and significant if data were collected when unemployment rates were higher ($r = 0.107$; $P < .05$; $k = 58$). The mean effect is considerably smaller and not statistically significant for the category that refers to data collected during times of lower unemployment rates ($r = 0.049$; $k = 47$).

Additional Analyses

To explore whether, in addition to our key covariates, other characteristics of the included studies and

estimates affect the average effect of vocational specificity, we estimate additional models. As before, we enter these covariates one by one. The results of these models (presented in Table 3) show, first, that there is no significant difference in the average effect size in accordance with the year of publication of the study. Second, results show that the positive effect is statistically significant in both cases that including few and cases including many contextual-level variables in their analyses. Furthermore, our results indicate that the average positive effect is larger and more likely to be statistically significant if the included studies incorporated more controls for individual-level education. Specifically, the average positive effect is statistically significant if more individual-level variables pertaining to education are included, and if controls were included for vocational or general education, level of education, and skills.

To explore if publication bias played a role in driving our findings, we examined whether the average effect is different for studies that formulated research questions (or aims) and hypotheses mentioning vocational specificity compared with those that did not. Our results do not provide any reason to believe that publication bias affected our outcomes; the size of the mean effect does not appear to be larger in studies where research questions or hypotheses concerning vocational specificity were formulated (Table 3).

Finally, as discussed above, we cannot include all covariates in one model simultaneously. Yet, the number of effect estimates in our data does allow us to explore

Table 3. Variables moderating the effect size: control variables (mean effect size for different categories)

| Moderating factors | <i>r</i> | se | 95% CI | <i>z</i> | <i>k</i> | <i>Q</i> |
|-----------------------------------|----------|-------|--------------|----------|----------|------------|
| Year of publication study | | | | | | |
| 2003–2007 | 0.021 | 0.094 | –0.163–0.204 | 0.219 | 34 | 237.018*** |
| 2008–2014 | 0.093 | 0.069 | –0.042–0.228 | 1.350 | 40 | |
| 2015–2018 | 0.107 | 0.069 | –0.029–0.243 | 1.539 | 31 | |
| Nr of variables contextual level | | | | | | |
| 1–3 | 0.149* | 0.067 | 0.018–0.281 | 2.229 | 29 | 236.654*** |
| 4–8 | 0.044 | 0.077 | –0.106–0.195 | 0.573 | 47 | |
| 9–15 | 0.111~ | 0.062 | –0.009–0.233 | 1.800 | 43 | |
| Nr of variables individual level | | | | | | |
| 0 (only contextual level data) | 0.063 | 0.069 | –0.073–0.198 | 0.909 | 19 | 230.903*** |
| 1–5 | 0.026 | 0.058 | –0.088–0.141 | 0.455 | 53 | |
| 6–9 | 0.171** | 0.059 | 0.054–0.287 | 2.874 | 33 | |
| Vocational/general included? | | | | | | |
| Yes | 0.094~ | 0.051 | –0.006–0.193 | 1.843 | 59 | 242.112*** |
| No | 0.069 | 0.055 | –0.037–0.176 | 1.268 | 46 | |
| Level education included? | | | | | | |
| Yes | 0.104* | 0.047 | 0.010–0.197 | 2.173 | 75 | 238.289*** |
| No | 0.043 | 0.058 | –0.072–0.158 | 0.738 | 30 | |
| Field education included? | | | | | | |
| Yes | 0.104 | 0.084 | –0.060–0.268 | 1.243 | 27 | 239.218*** |
| No | 0.075 | 0.049 | –0.021–0.171 | 1.528 | 78 | |
| Skills education included? | | | | | | |
| Yes | 0.175* | 0.073 | 0.033–0.317 | 2.417 | 16 | 233.675*** |
| No | 0.065 | 0.042 | –0.017–0.148 | 1.557 | 89 | |
| Specificity in research question? | | | | | | |
| Yes | 0.070 | 0.065 | –0.057–0.197 | 1.085 | 44 | 241.878*** |
| No | 0.092 | 0.057 | –0.019–0.204 | 1.624 | 61 | |
| Specificity in hypothesis? | | | | | | |
| Yes | 0.071 | 0.047 | –0.021–0.163 | 1.509 | 81 | 241.924*** |
| No | 0.113 | 0.070 | –0.025–0.250 | 1.606 | 24 | |

Notes: *r*, correlation coefficient representing mean effect size; se, standard error of *r*; 95% CI, 95% confidence interval of *r*; *z*, test mean effect equals zero; *k*, number of effect estimates associated with a mean effect size (in a category); *Q*, test of heterogeneity in effect sizes (null-hypothesis = effect is consistent across the sample).

~*P* < .10, **P* < .05, ***P* < .01, ****P* < .001.

models in which we include *more than one* indicator at the same time. This enables us to get an idea of whether our findings regarding the role of the key covariates remain the same if we include these three simultaneously rather than one by one, as we did in the main analyses. Results of these analyses (available on request) are very similar those of our main analyses, underlining the robustness of our main results. In fact, the size of the average effect (i.e. the intercept) increased when we included the three key covariates (aspects of labour market integration, measures of specificity, and unemployment rates at the time of data collection) at the same time. This suggests that larger positive effects are particularly likely to be found when the effect pertains to—for example—employment as a measure of labour market integration *and* relies on a measure of vocational

specificity that is based on enrolment in vocational education or training.

Conclusions and Directions for Future Research

In this study, we presented a review and meta-analysis of existing comparative research on the effect of the vocational specificity of countries' educational systems on youth labour market integration. In this concluding part of the study, we reflect on what this has taught us about where we stand in this field of research and whether we can pinpoint promising directions for future work based on these conclusions. What theoretical patterns and developments did the literature review bring to light? What did the meta-analysis tell us about what the combined results of

research in this field show? Can we identify fruitful directions for further research by connecting the results from the meta-analysis to the observations from the review?

Conclusions

Our first aim was to review existing research in this field and examine how this research has labelled and conceptualized the vocational specificity of educational systems (RQ1) and how it has theorized the effect of vocational specificity on youth labour market integration (RQ2). This review revealed several noteworthy features of this body of literature.

First, it showed that whilst there is broad agreement about the idea that education-to-work transitions run more smoothly in countries with more vocationally specific educational systems (e.g. Iannelli and Raffe, 2007; Van de Werfhorst 2011; Bol and Van de Werfhorst, 2013; Levels, Van der Velden and Di Stasio, 2014; Di Stasio, 2017), there is much less consistency (or consensus) regarding how vocational specificity is conceptualized and how it is argued to affect youth labour market integration. Providing an answer to our first research question, we observed that there is no generally accepted definition of the vocational specificity of educational systems and a variety of labels is used to denote this feature. This seems indicative of the fact that research in this area draws on a range of theoretical approaches and conceptual frameworks. What is striking is that the precise mechanisms which are thought to underlie the effect of vocational specificity are often left unspecified and that studies that go into more detail in this regard regularly use lines of reasoning that blend different mechanisms together. Providing part of the answer to our second research question, we thus conclude that this literature is not only characterized by ‘theoretical eclecticism’ but at times also by theoretical ‘confusion’ (see also Raffe, 2008: p. 291). Partly because of this, we may learn something about *whether* there is an effect of the vocational specificity of educational systems on labour market integration when interpreting results of studies in this field, but we have limited insight in the *why*—in the mechanisms that underlie this effect.

Second, providing another part of the answer to our second research question, our review also revealed other interesting patterns in how research in this field has theorized effects of vocational specificity on different aspects of labour market integration. Although this literature covers various indicators of labour market integration, only some (mostly earlier) studies explicitly argued that different effects of vocational specificity may be expected for different labour market outcomes

(e.g. Shavit and Müller, 2000; Wolbers, 2007). These studies predicted positive effects on graduates’ likelihood of finding a job (faster) or avoiding unemployment, but negative effects on indicators of job quality, like occupational status or prestige. By contrast, several—mostly more recent—studies expect positive effects on graduates’ odds of obtaining jobs with higher status or prestige as well (Barbieri, Cutuli and Passaretta, 2018; Spörlein, 2018). In addition, more recent research more often expects positive effects on job security (e.g. permanent or full-time employment; Van der Velden and Wolbers, 2003; De Lange, Gesthuizen and Wolbers, 2014; Ilieva-Trichkova and Boyadjieva, 2018) and job matching (Wolbers 2003; Verhaest and Van der Velden, 2013; Levels, Van der Velden and Di Stasio, 2014; Di Stasio, Bol and Van de Werfhorst, 2016; Verhaest, Sellami and Van der Velden, 2017; McGuinness, Bergin and Whelan, 2018). The latter studies rarely refer to the ‘diversion’ logic, which is often invoked in earlier work in this area, but rather focus on the idea that vocational specificity has a positive impact on youth labour market integration, more broadly defined.

Furthermore, providing the last part of the answer to our second research question, the review showed that, only some studies in this field explicitly distinguished between graduates at different levels of education when theorizing the impact of vocational specificity (De Grip and Wolbers, 2006; De Lange, Gesthuizen and Wolbers, 2014; c.f., Raffe, 2014). That is noteworthy because based on some explanatory mechanisms discussed in our review we would expect the predicted impact of vocational specificity to occur especially or *only* for graduates at certain educational levels.

Next, we conducted a meta-analysis with the aim of synthesizing the available evidence on the (average) effect of the vocational specificity of educational systems on youth labour market integration (RQ3) and exploring potential patterns of variation in this effect across and within studies in this field (RQ4) as well as possible sources of this variation (RQ5). This analysis brought to light several interesting patterns in the combined results of empirical research in this field.

First, answering our third research question, our meta-analysis showed that the average effect of the vocational specificity of educational systems on youth labour market integration across the included studies and estimates is positive and statistically significant (i.e. significantly different from zero). However, the magnitude of this average effect is very modest. This reflects the fact that not all of the included studies found evidence of a significant impact — a considerable part of the

observed effects is close to zero — and that among studies that did find significant effects, the magnitude of these effects varied quite a lot. Giving an answer to our fourth research question, we conclude that the meta-analysis revealed considerable (and statistically significant) variability in the size of the effects across and within the included studies. Studies summarizing existing empirical research in this area tend to describe it as supporting the idea that processes of youth labour market integration run more smoothly in countries with more vocationally specific educational systems (Vogtenhuber, 2014; Di Stasio, 2017; Muja, Gesthuizen and Wolbers, forthcoming; Muja *et al.*, 2019). Based on the results of our meta-analysis, we conclude that empirical support for this idea is not as clear-cut or consistent as it is sometimes portrayed to be. We argue that a more nuanced description is needed, and that a more accurate portrayal of the combined evidence so far would be that it shows that vocational specificity can—but does not always—improve youth labour market integration.

Third, results from the meta-analysis demonstrated that studying which features of the included studies and estimates are related to the observed variability in the size of the effect of vocational specificity helps us understand the patterns in the existing empirical evidence so far. Providing a first part of the answer to our fifth and final research question, one key result of the meta-analyses in this respect is related to the fact that existing studies used a variety of indicators of labour market integration. We found a statistically significant positive mean effect for cases in which indicators focusing on (un)employment or job search duration were used, but not for cases in which job level, job matching, or job security were used. These outcomes are in line with the idea that ‘educational systems matter in relation to some outcome variables, but not in relation to others’ (Korpi *et al.*, 2003: p. 21). They suggest that there is ample support for the idea that more vocationally specific educational systems enable school-leavers to find a job more quickly and to avoid unemployment, but much less support for the idea that it helps them to find a (first) job of better quality—e.g. a secure job or one at a higher level, or with higher status or rewards. This seems to provide (some) support for expectations based on the ‘diversion logic’ that featured in many earlier works but less often in more recent studies, as discussed above.

Another important outcome emerging from our meta-analysis, which provides another part of the answer to our fifth research question, relates to the fact that existing empirical research in this field used several different measures of vocational specificity. We found a statistically significant positive average effect for cases

that used a measure referring to enrolment in vocational education or training, but not for cases using measures referring to enrolment in a combination of school-based and work-based education (i.e. dual systems) or other measures. These results indicate that ‘the way vocational education is organised’ has an additional effect on integration (Van der Velden and Wolbers, 2003: p. 192), but the direction in which these outcomes point can be considered to be surprising. Most researchers in this field who theorized different effects of distinct indicators of vocational specificity expect the dual system (sometimes described in terms of the extent to which there are institutional linkages) to be particularly relevant in for example providing students with specific work-relevant skills (see e.g. Shavit and Müller 1998; Müller and Gangl, 2003; Breen, 2005; Bol and Van de Werfhorst, 2013; Barbieri, Cutuli and Passaretta, 2018: p. 8). The results of our meta-analysis run counter to this logic. In this respect, it is worth mentioning that the studies included in the meta-analysis incorporated a measure of specificity referring to enrolment in vocational programs about twice as often as a measure referring to dual-system enrolment. Consequently, the average effect of the former type of indicator is estimated here with more precision than the average effect of the latter. Moreover, few included studies incorporate both measures in their analyses. Because the correlation between these indicators is relatively high (the pairwise correlation is about 0.5, see e.g. Bol and Van de Werfhorst, 2013) analyses including only the former indicator may inadvertently (also) capture effects of the latter indicator. Therefore, some caution is advised when interpreting these results.

A next noteworthy result of the meta-analysis, providing yet another part of the answer to our fifth research question, is that the mean effect is smaller and not statistically significant for the category that refers to data collected during times of lower unemployment rates. These outcomes run counter to the idea that vocational education might be less beneficial for youth labour market integration in times that unemployment rates are high, because specific skills are less easily transferred to other occupations and graduates from vocational tracks may therefore be less flexible. However, we want to emphasize here that in the meta-analysis, we aimed to assess the impact of unemployment rates based on information on unemployment rates in all of the countries included in a study (combined) at the time that the data used in this study were collected. This constitutes a much more crude way of testing the above-mentioned idea than one may adopt in primary studies, which can estimate the impact of differences in unemployment rates across countries or over time. We

should therefore be cautious when interpreting this outcome.

A final important finding emerging from the meta-analysis, providing the last part the answer to our final research question, is that the average positive effect was larger and more significant if more individual-level variables pertaining to education were included in the analyses and if controls were included for vocational or general education, level of education, and skills.

Directions for Future Research

Our literature review drew attention to relevant patterns and distinctions in how existing research has theorized the effect of the vocational specificity of educational systems on youth labour market integration. Our meta-analysis revealed interesting patterns in the combined empirical evidence of comparative research on this effect. Connecting the results of the meta-analysis to observations from the literature review yields several suggestions for promising directions for future research.

One of the conclusions that we drew based on our literature review was that, partly because of the ‘theoretical eclecticism’ (Raffe, 2008: p. 291) which characterizes this literature, we have gained limited insight in the mechanisms that underlie the effect of the vocational specificity of educational systems on youth labour market integration. One of the key results of the meta-analysis, that there is considerable variation in the observed effects of vocational specificity, indicates that we need to learn more about the conditions under which this effect is found. In other words, our study shows that *why*, *when*, and *for whom* this effect is found are relevant questions for future research.

A first potential direction for future studies thus is to focus more on disentangling the various mechanisms that possibly drive the effect of vocational specificity. In comparative studies such as the ones included our meta-analysis, it is not always easy to draw conclusions about what drives the observed effects. One way forward can therefore be to devise other, more direct tests of assumptions about relevant mechanisms. Assumptions regarding, for example, whether or which graduates have more *skills* (see for example Heisig, Gesthuizen and Solga, 2019), but also if employers *perceive* (certain) graduates as having more skills or as being more productive (without further training) lend themselves well for empirical tests. Gaining insight in these mechanisms is also relevant for policymakers who want to know which policy measures or interventions can successfully promote the integration of (specific groups of) graduates in the labour market.

Another potential avenue for future research focuses on gaining more insight into the conditions under which there is an effect of the vocational specificity of educational systems on youth labour market integration. A good explanation indicates under which circumstances the explanation holds. Moreover, learning more about these circumstances can be another way to gain more insight into underlying mechanisms. In this respect, one suggestion for future research relates to the question whether a more vocationally specific educational system is (equally) beneficial for *all* labour market outcomes. Our literature review drew attention to the fact that different studies have developed different arguments about whether similar or dissimilar effects can be expected on different aspects of labour market integration. The meta-analysis revealed that the available evidence shows that, on average, the degree of vocational specificity of educational systems does indeed have a different impact on different indicators of labour market integration. Our outcomes support the idea that in more vocationally specific educational systems graduates’ risk of unemployment and the time they need to find a (first) job are lower, but their chances of obtaining jobs associated with higher status, prestige, or earnings are not necessarily higher in such systems (e.g. Shavit and Müller 2000; Wolbers, 2007). The combined insights from the review and the meta-analysis thus indicate that in future research, potential differential effects on various aspects of labour market integration merit attention. More explicitly considering which labour outcomes are expected and found to be affected by vocational specificity (to a greater or lesser extent) might also be one possible way to advance our understanding of the mechanisms underlying the effect of vocational specificity. In a similar vein, future research might also further examine the possibility that more vocationally specific educational systems may be beneficial for a smooth education-to-work transition, but may have a negative impact on career chances later in life. Recent studies have proposed such arguments focusing on lifecourse effects and there is some evidence that supports this notion (Hanushek *et al.*, 2017; Forster and Bol, 2018) but also counter-evidence (e.g. Forster, Bol and Van de Werfhorst, 2016).

Our literature review also showed that different ways of conceptualizing the vocational specificity of educational systems exist in this field. The meta-analysis showed that different measures of the vocational specificity of educational systems appear to have different effects on youth labour market integration. Our outcomes in this respect run counter to the idea that education which combines school-based and workplace-based learning (i.e. dual system) or the extent to which there

are institutional linkages is particularly beneficial for graduates' integration into the labour market (e.g. Shavit and Müller 1998; Müller and Gangl, 2003; Breen, 2005; Bol and Van de Werfhorst, 2013; Barbieri, Cutuli and Passaretta, 2018: p. 8). However, relatively few studies in this field incorporate multiple measures of specificity (but see Van der Velden and Wolbers 2003; Wolbers, 2003; Bol and Van de Werfhorst, 2013; Levels, Van der Velden and Di Stasio, 2014; Di Stasio, Bol and Van de Werfhorst, 2016) and the different measures are correlated (Bol and Van de Werfhorst, 2013). Therefore, additional research is needed in order to draw more definitive conclusions in this regard. Hence, future research may devote more specific attention to deriving *and* testing predictions about which measure of vocational specificity affect youth labour market integration (most).

Furthermore, our review showed that only some studies in this field have theorized about whether the effect of the vocational specificity of educational systems are the same for all (young) people (e.g. De Grip and Wolbers, 2006; Andersen and van de Werfhorst, 2010; De Lange, Gesthuizen and Wolbers, 2014). Our review also underscored that some theoretical perspectives in this field assume that a stronger vocational system should help mainly or only graduates from vocational education and training programmes. Our meta-analysis showed that the average effect of vocational specificity is larger if we look at studies in which the analyses included more individual-level variables, in particular controls for vocational or general education, level of education, and skills. Yet, so far, few studies have truly tested micro-level and macro-level effects of vocational schooling simultaneously (c.f. Raffe, 2008; Andersen and van de Werfhorst, 2010; De Lange, Gesthuizen and Wolbers, 2014) or examined differential effects for graduates from different educational levels or social class backgrounds (De Grip and Wolbers, 2006; Wolbers, 2007; Bol and Van de Werfhorst, 2011; De Lange, Gesthuizen and Wolbers, 2014). Moreover, evidence from micro-level studies on the labour market opportunities of general versus vocational education graduates is rather mixed (Di Stasio, 2017). Hence, the combined results from the review and the meta-analysis indicate that a fruitful way forward may be to focus more on theorizing about individuals within institutional contexts, instead of only on the institutional level (c.f. Van de Werfhorst, 2011b), and empirically testing such predictions. That also means that future work may focus more on deriving and testing expectations about whether the impact of vocational specificity is the same for everyone. In addition to theorizing differential effects for

graduates from different educational levels and tracks, further research examining differential effects according to ethnic background (Lancee, 2016; Spörlein, 2018) or gender (Di Stasio, Bol and Van de Werfhorst, 2016) may advance our insights. The possibility of such differential effects also draws attention to potential trade-offs between improving education-to-work transitions in general on the one hand and the equality of educational opportunities on the other hand (e.g. Van de Werfhorst and Mijs, 2010). Some studies show that a stronger vocational orientation increases inequalities in labour market opportunities between students from different class and ethnic backgrounds (Bol and Van de Werfhorst, 2013; Lancee, 2016). Policy-makers may therefore want to take into account both the body of research that we summarized here and related research dealing with effects on social inequalities.

To conclude, although comparative research on the effect of the vocational specificity on youth labour market integration developed rapidly over the past decades, the number of studies suitable for inclusion in our meta-analysis remains relatively modest for now. In this respect, it is worth repeating that, in the meta-analysis, we could only take into account those studies that incorporated a direct, quantifiable measure of vocational specificity. This also meant that in this part of the article, we were unable to include some notable studies in this field, because they did not use a methodological approach that made a formal meta-analytical comparison possible (e.g. Shavit and Müller, 1998; Korpi *et al.*, 2003; Scherer, 2005; Brzinsky-Fay, 2007; Kogan and Unt, 2008; Saar, Unt and Kogan, 2008). Most of these studies, however, interpret their findings as providing support for the idea that the integration of youth into the labour market runs more smoothly in countries with more vocationally specific educational systems. Thus, the results of these studies do not appear to run counter to ours, although when we draw this conclusion, we cannot benefit from the strength of a formal meta-analysis, which is that it allows for a systematic and strict comparison of results across studies. The limited number of studies included in the meta-analysis means some caution is in order when interpreting our results and that future reviews remain relevant to summarize the available evidence. Nevertheless, it is possible—and, we believe, also worthwhile—to synthesize the evidence that exists today. The included studies often incorporated multiple indicators of labour market integration and sometimes multiple measures of vocational specificity. As such, the number of estimates on which our analyses are based is sufficiently high to permit us to draw reliable conclusions about the key patterns in the

accumulated evidence. The meta-analytical part of this study underlined the need for a more nuanced depiction of the role of the vocational specificity of educational systems in shaping youth labour market integration, one that clarifies that vocational specificity can, but does not always, improve graduates' labour market integration. It also shed some light on factors that account for the variability in effect sizes and thus the conditions under which (larger) positive effects of the vocational specificity of educational systems on youth labour market integration are likely to be found. Our literature review drew attention to the theoretical fragmentation and sometimes confusion that characterizes this literature. Partly as a result of this, we still have limited insight in the mechanisms that underlie the effect of the vocational specificity of educational systems on youth labour market integration. It also implies, however, that this literature provides ample starting points to devise more specific tests in the future.

Notes

- 1 Or kindred concepts; different terms have been used in the literature to describe this feature of educational systems or closely related characteristics. We discuss this in more detail in the next sections.
- 2 These are just two examples of the different ways in which 'vocational specificity' has been conceptualized in the literature; other ways of explaining this term also exist. We discuss this in more detail in the next sections.
- 3 The latter quote shows that the distinctions between the different conceptualizations of vocational specificity are—at times—not entirely clear; it shows overlap with definitions of vocational specificity that focus on the degree to which education and training is school-based or shared between schools and the workplace.
- 4 Some prior meta-analyses also included other types of studies, such as conference papers, unpublished papers, or master's theses, mainly as a way to minimize publication bias. We chose a different strategy, examining the potential role of publication bias by also including studies in which vocational specificity is a control variable, and comparing the average effect across these studies to the average effects across those that formulated research questions or predictions regarding the impact of vocational specificity. We opted for this strategy for three reasons. First, focusing on peer-reviewed studies ensures that included studies meet basic standards of quality. Second, our search located very few studies that were published in some other form (e.g. in the form of a report or dissertation chapter) that met the other (key) inclusion criteria. The ones that we did find were mostly studies that were later published as, for example, journal articles or books. Third, as it is less easy to find unpublished work (e.g. working papers) via electronic databases or (reference lists of) other included studies, biases regarding for example whose research is included (specific researchers or research groups) would be more likely to play a role if we were to include unpublished studies.
- 5 There are at least two reasons to do so. First, including studies written in other languages poses practical difficulties, which begin with being able to determine whether the study is suitable for inclusion based on the title and abstract. Moreover, in order to be able to accurately code the effect estimates and information about the studies' approach, the researchers have to be able to understand the entire text. Second, our search located very few studies that were published in another language than English. As a test, we explored for some of the exceptions whether they would have been included had it not been for the language restriction. We found that most of these studies were also not suitable for inclusion because they did not meet other (crucial) inclusion criteria. Mostly, they focused on a single country or part thereof rather than applying a comparative approach.
- 6 However, when different models were presented and the only difference between them was how many or which control variables were included, we did not code all of them but opted for the estimate of interest from the most complete model.
- 7 For the primary search, we cast our net rather wide, using a range of search terms. We did so because we knew in advance that this is a rather diverse area of research, in the sense that it covers a range of the different labour market outcomes and examines how they are affected by various features of educational systems (and labour markets). This reflects the fact that researchers in this field are often interested in *transitions from school to work* or *youth labour market integration*—both of which cover a variety of outcomes—and/or in the impact of *educational systems* or, even broader, *institutional arrangements* (also covering labour markets). Casting our net wide does mean that our initial search yielded a large number of studies, including many that upon further inspection turn out to not be relevant to our meta-analysis. Nevertheless, we preferred this option—initially identifying more

studies that were not suitable for inclusion and leaving those out once this became apparent—to the alternative option of using more narrowly defined search terms and hence running the risk of incorrectly overlooking studies that were suitable for inclusion.

- 8 Note that it was is not unexpected that a considerable proportion of the studies suitable for inclusion in our meta-analyses were not found during the primary search using electronic databases (but were using other search strategies). In order to be identified using this approach one or more of our search terms should be mentioned in the title of the study or the keywords assigned to the study by its authors. For many of the suitable studies, that was not the case, despite the fact that we cast our net rather wide, as discussed above. This is arguably at least partly due to the diversity of this area of research, regarding the different labour market outcomes that it covers, the different features of educational systems (and labour markets) that are taken into account, and also the various academic disciplines that conduct research on these issues and partly use different terminology.
- 9 The IALS data were collected in the participating countries between 1994 and 1998; the REFLEX data were collected in the participating countries in either 2005 or 2008, but in both cases information was gathered only once in each country, i.e. these are not repeated cross-sections. None of the studies included in the meta-analysis rely on individual-level panel data, but the study by McGuinness, Bergin and Whelan (2018), based on country-level information only, covers multiple time-points and uses the term ‘panel data’ to describe these data.
- 10 We would ideally treat income as a separate category of indicators of labour market integration. However, the number of effect estimates referring to income is too small to allow this.
- 11 Information on unemployment rates was obtained from the International Labour Organization (ILO, via <https://ilostat.ilo.org/data>).
- 12 See also <https://wviechtb.github.io/metafor/reference/rma.mv.html>
- 13 For example, the first rows in Table 2 present results of four different models in which we assessed the role of which indicator of labour market integration was used, and in which respectively (un)employment duration, job level, job matching, and job security were taken as the reference category.

Supplementary Data

Supplementary data are available at *ESR* online.

Acknowledgements

The authors are grateful to Amir Khodaie, Eline Verbeek, and Joey Wolsink for their assistance during the data collection. We also thank the participants of the 25th Annual Workshop of the European Research Network on Transitions in Youth (TIY) in September 2017 in Brussels, as well as Henriëtte Maassen van de Brink and Boudien Krol (Instituut Gak) for their feedback on earlier versions of this study.

Funding

This work was supported by Instituut Gak (grant number 2015–680).

References

- Allmendinger, J. (1989). Educational systems and labour market outcomes. *European Sociological Review*, 5, 231–250.
- Amemiya, T. (1981). Qualitative response models: a survey. *Journal of Economic Literature*, 19, 1483–1536.
- Andersen, R. and van de Werfhorst, H. G. (2010). Education and occupational status in 14 countries: the role of educational institutions and labour market coordination. *British Journal of Sociology*, 61, 336–355.
- Arrow, K. J. (1973). Higher education as a filter. *Journal of Public Economics*, 2, 193–216.
- Arum, R. and Shavit, Y. (1995). Secondary vocational education and the transition from school to work. *Sociology of Education*, 68, 187–204.
- Barbieri, P., Cutuli, G. and Passaretta, G. (2018). Institutions and the school-to-work transition: disentangling the role of the macro-institutional context. *Socio-Economic Review*, 16, 161–183.
- Becker, G. S. (1964). *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*. New York: Columbia University Press.
- Bills, D. B. (2003). Credentials, signals, and screens: explaining the relationship and job assignment. *Review of Educational Research*, 73, 441–449.
- Bol, T. (2014). Economic returns to occupational closure in the German skilled trades. *Social Science Research*, 46, 9–22.
- Bol, T. and Van de Werfhorst, H. G. (2011). Signals and closure by degrees: the education effect across 15 European countries. *Research in Social Stratification and Mobility*, 29, 119–132.
- Bol, T. and Van de Werfhorst, H. G. (2013). Educational systems and the trade-off between labor market allocation and equality of educational opportunity. *Comparative Education Review*, 57, 285–308.
- Bol, T. and Van de Werfhorst, H. G. (2016). Measuring educational institutional diversity: tracking, vocational orientation

- and standardisation. In Hadjar, A. and Gross, C. (Eds.), *Education Systems and Inequalities: International Comparisons*. Bristol and Chicago: Policy Press, pp. 73–94.
- Bol, T. and Weeden, K. A. (2015). Occupational closure and wage inequality in Germany and the United Kingdom. *European Sociological Review*, 31, 354–369.
- Borenstein, M. et al. (2009). *Introduction to Meta-Analysis*. Chichester: Wiley.
- Breen, R. (2005). Explaining cross-national variation in youth unemployment. Market and institutional factors. *European Sociological Review*, 21, 125–134.
- Brzinsky-Fay, C. (2007). Lost in transition? Labour market entry sequences of school leavers in Europe. *European Sociological Review*, 23, 409–422.
- Brzinsky-Fay, C. (2017). The interplay of educational and labour market institutions and links to relative youth unemployment. *Journal of European Social Policy*, 27, 346–359.
- De Grip, A. and Wolbers, M. H. J. (2006). Cross-national differences in job quality among low-skilled young workers in Europe. *International Journal of Manpower*, 27, 420–433.
- De Lange, M., Gesthuizen, M. and Wolbers, M. H. J. (2014). Youth labour market integration across Europe: the impact of cyclical, structural and institutional characteristics. *European Societies*, 16, 194–212.
- Di Stasio, V. (2017). ‘Diversion or safety net?’ Institutions and public opinion on vocational education and training. *Journal of European Social Policy*, 27, 360–372.
- Di Stasio, V., Bol, T. and Van de Werfhorst, H. G. (2016). What makes education positional? Institutions, overeducation and the competition for jobs. *Research in Social Stratification and Mobility*, 43, 53–63.
- DiPrete, T.A., Eller, C. C., Bol, T., & Van de Werfhorst, H. G. et al (2017). School-to-work linkages in the United States, Germany, and France. *American Journal of Sociology*, 122, 1869–1938.
- Forster, A. G. and Bol, T. (2018). Vocational education and employment over the life course using a new measure of occupational specificity. *Social Science Research*, 70, 176–197.
- Forster, A. G., Bol, T. and Van de Werfhorst, H. G. (2016). Vocational education and employment over the life cycle. *Sociological Science*, 3, 473–494.
- Gallupe, O., McLevey, J. and Brown, S. J. (2019). Selection and influence: a meta-analysis of the association between peer and personal offending. *Journal of Quantitative Criminology*, 35, 313–335.
- Gesthuizen, M., Solga, H. and Künster, R. (2011). Context matters: economic marginalization of low-educated workers in cross-national perspective. *European Sociological Review*, 27, 264–280.
- Golsch, K. (2008). Youth unemployment in Western Europe: the effects of individual market, and institutional factors. In Blossfeld, H. P. et al. *Young Workers, Globalization and the Labor Market*. Cheltenham/Northampton: Edward Elgar, pp. 29–40.
- Hanushek, E. A. et al. (2017). General education, vocational education, and labor-market outcomes over the lifecycle. *Journal of Human Resources*, 52, 48–87.
- Heisig, J. P., Gesthuizen, M. and Solga, H. (2019). Lack of skills or formal qualifications? New evidence on cross-country differences in the labor market disadvantage of less-educated adults. *Social Science Research*, 83, 102314. 10.1016/j.ssresearch.2019.06.005.
- Heisig, J. P. and Solga, H. (2015). Secondary education systems and the general skills of less- and intermediate-educated adults: a comparison of 18 Countries. *Sociology of Education*, 88, 202–225.
- Iannelli, C. and Raffe, D. (2007). Vocational upper-secondary education and the transition from school. *European Sociological Review*, 23, 49–63.
- Ilieva-Trichkova, P. and Boyadjieva, P. (2018). Educational systems matter: differences across European countries in how young people with secondary education experience job insecurity. *Journal of Education and Work*, 31, 595–610.
- ILOSTAT (2017). *Unemployment and Labour Underutilization: Unemployment Rate by Sex and Age*, available from: <<https://ilostat.ilo.org/data/>> [accessed 13 July 2017].
- Kogan, I. and Unt, M. (2008). The role of vocational specificity of educational credentials for labour market entry in Estonia and Slovenia. *International Sociology*, 23, 389–416.
- Korpi, T. et al. (2003). Vocational training and career employment precariousness in Great Britain, the Netherlands and Sweden. *Acta Sociologica*, 46, 17–30.
- Lancee, B. (2016). The negative side effects of vocational education: a cross-national analysis of the relative unemployment risk of young non-Western immigrants in Europe. *American Behavioral Scientist*, 60, 659–679.
- Levels, M., Van der Velden, R. and Di Stasio, V. (2014). From school to fitting work: how education-to-job matching of European school leavers is related to educational system characteristics. *Acta Sociologica*, 57, 1–21.
- McGuinness, S., Bergin, A. and Whelan, A. (2018). Overeducation in Europe: trends, convergence, and drivers. *Oxford Economic Papers*, 70, 994–1015.
- Müller, W. (2005). Education and youth integration into European labour markets. *International Journal of Comparative Sociology*, 46, 461–485.
- Müller, W. and Gangl, M. (2003). Transitions from education to work in Europe. *The Integration of Youth into the EU Labour Markets*. Oxford: Oxford University Press.
- Muja, A., Gesthuizen, M. and Wolbers, M. H. J. (forthcoming). Vocational education and youth labour market integration: the role of vocational specificity at the level of school-leavers, study programmes and education systems. In Marshall, E. A. and Symonds, J. E. (Eds.), *Young Adult Development at the School-to-Work Transition: International Pathways and Processes*. Oxford: Oxford University Press.
- Muja, A. et al. (2019). The vocational impact of educational programs on youth labor market integration. *Research in Social Stratification and Mobility*, 64, 100437. Oxford University Press, Oxford UK.
- Raffe, D. (2008). The concept of transition system. *Journal of Education and Work*, 21, 277–296.

- Raffe, D. (2014). Explaining national differences in education-work transitions: twenty years of research on transition systems. *European Societies*, 16, 175–193.
- Ryan, P. (2001). The school-to-work transition: a cross-national perspective. *Journal of Economic Literature*, 39, 34–92.
- Saar, E., Unt, M. and Kogan, I. (2008). Transition from educational system to labour market in the European Union a comparison between new and old members. *International Journal of Comparative Sociology*, 49, 31–59.
- Scherer, S. (2005). Patterns of labour market entry—long wait or career instability? An empirical comparison of Italy, Great Britain and West Germany. *European Sociological Review*, 21, 427–440.
- Shavit, Y. and Müller, W. (1998). *From School to Work: A Comparative Study of Educational Qualifications and Occupational Destinations*. Oxford: Clarendon Press.
- Shavit, Y. and Müller, W. (2000). Vocational secondary education: where diversion and where safety net? *European Societies*, 2, 29–50.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87, 355–374.
- Spörlein, C. (2018). How educational systems structure ethnic inequality among young labour market participants in Europe: occupational placement and variation in the occupational status distribution. *Research in Social Stratification and Mobility*, 55, 109–119.
- Thurow, L. (1975). *Generating Inequalities*. New York: Basic Books.
- Van der Velden, R. K. and Wolbers, M. H. J. (2003). The integration of young people into the labour market: the role of training systems and labour market regulation. In Müller, W. and Gangl, M. (Eds.), *Transitions from Education to Work in Europe: The Integration of Youth into EU Labour Markets*. Oxford: Oxford University Press, pp. 186–211.
- Van de Werfhorst, H. G. (2011a). Skill and education effects on earnings in 18 countries: the role of national educational institutions. *Social Science Research*, 40, 1078–1090.
- Van de Werfhorst, H. G. (2011b). Skills, positional good or social closure? The role of education across structural-institutional labor market settings. *Journal of Education and Work*, 24, 521–548.
- Van de Werfhorst, H. G. and Mijs, J. J. B. (2010). Achievement inequality and the institutional structure of educational systems: a comparative perspective. *Annual Review of Sociology*, 36, 407–428.
- Verhaest, D., Sellami, S. and Van der Velden, R. (2017). Differences in horizontal and vertical mismatches across countries and fields of study. *International Labour Review*, 156, 1–23.
- Verhaest, D. and Van der Velden, R. (2013). Cross-country differences in graduate overeducation. *European Sociological Review*, 29, 642–653.
- Viechtbauer, W. (2010). Conducting Meta-Analyses in R with the metafor Package. *Journal of Statistical Software*, 36, 1–48.
- Vogtenhuber, S. (2014). The impact of within country heterogeneity in vocational specificity on initial job matches and job status. *Journal of Vocational Behavior*, 85, 374–384.
- Vogtenhuber, S. (2018). The institutional conditions of inequality in credential and skill attainment and their impact on occupational placement. *Research in Social Stratification and Mobility*, 55, 13–24.
- Weeden, K. A. (2002). Why do some occupations pay more than others? Social closure and earnings in the United States. *American Journal of Sociology*, 108, 55–101.
- Wolbers, M. H. J. (2003). Job mismatches and their labour market effects among school-leavers in Europe. *European Sociological Review*, 19, 249–266.
- Wolbers, M. H. J. (2007). Patterns of labour market entry: a comparative perspective on school-to work transitions in eleven European countries. *Acta Sociologica*, 50, 189–210.
- Lieselotte Blommaert** is an Assistant Professor at the Department of Sociology at the Radboud University in Nijmegen, the Netherlands. Her research interests include inequalities and processes of inclusion and exclusion in the labour market. She has published on these topics in journals such as *Research in Social Stratification and Mobility*, *Social Science Research*, and *Social Forces*.
- Ardita Muja** is a PhD candidate at the Department of Sociology at the Radboud University, Nijmegen, the Netherlands. Her PhD project focuses on the influence of various characteristics of educational institutions on youth labour market integration. Her research interests include the sociology of education, educational, and labour market inequality, school-to-work transitions, and labour market outcomes. Her work has been published for example in *Research in Social Stratification and Mobility* and *Empirical Research in Vocational Education and Training*.
- Maurice Gesthuizen** is an Assistant Professor at the Department of Sociology at the Radboud University in Nijmegen, the Netherlands. He is interested in educational inequality, economic vulnerability, social capital, and their interrelationships. He studies these topics in longitudinal and comparative perspective and has published on these subjects journals such as *Research in Social Stratification and Mobility* and the *European Sociological Review*.
- Maarten H. J. Wolbers** is a Professor of Sociology at the Radboud University, Nijmegen, the Netherlands. His current research interests comprise social stratification and mobility, educational inequality, and school-to-work transitions. His work has been published in journals like *Acta Sociologica*, *Research in Social Stratification and Mobility*, and the *European Sociological Review*.