Why Does Education Matter to Employers in Different Institutional Contexts? A Vignette Study in England and the Netherlands

Valentina Di Stasio, *University of Oxford, Nuffield College*
Herman G. van de Werfhorst, *University of Amsterdam*

We study the process by which employers evaluate and interpret information related to the educational background of job applicants in simulated hiring contexts. We focus on England and the Netherlands, countries with very different education systems and labor-market institutions. Using a vignette study, a quasi-experimental technique, we asked employers to rate a series of résumés of hypothetical job applicants that randomly varied on a number of characteristics, including level of education, field of study, grades, study delays, and internships. Our findings suggest that the informational value of these characteristics varies across the two countries: English employers primarily sort applicants based on relative signals of merit such as grades, in line with queuing theory; Dutch employers instead base their ratings on fields of study and occupation-specific degrees, as predicted by human capital and closure theories. The findings from the vignette study are in line with results obtained from a survey administered to the same employers, corroborating the research validity. This study brings the employers' perspective into a field that has mainly tested theoretical arguments about employers' hiring behavior using employee data. From a theoretical point of view, our approach nuances three well-known theories on the relationship between education and job assignment (human capital, queuing, and closure theories), by specifying the scope conditions under which they are more likely to hold. We show that the reason why education matters to employers and the way employers evaluate educational credentials during the hiring process are conditional on institutions.

Introduction

The way employers evaluate and act on educational credentials during the hiring process shapes the opportunities of youth to enter the labor market. Studies in sociology and labor economics have repeatedly shown that education is crucial

for socioeconomic attainments, especially in the early stages of one's career when work experience is limited and employers can base their hiring decisions on few alternative sources of information (Weiss 1995; Bills 2003). Less clear is the reason *why* education matters to employers. Already in the 1980s, Bills (1988, 439) noted that "researchers have tended to assume rather than empirically demonstrate how employers evaluate the link between schooling and the acquisition of skills." This remark is still valid today: Studies on how employers interpret and use information from educational credentials while making hiring decisions are still few and far between.

The lack of systematic research on employers' hiring behavior has been described as the most serious limitation of the literature on school-to-work transitions even by some of its leading scholars (Gangl, Müller, and Raffe 2003, 303). Previous employer studies have been mainly conducted in the United States (Bills 1988; Gaddis 2015; Miller and Rosenbaum 1997; Rivera 2011, 2012), but whether their findings also apply to other countries is an empirical question that is typically ignored or left untested. For instance, the often-reported finding that employers do not trust the information received from schools but prefer to rely on gut feelings and referral networks (Miller and Rosenbaum 1997) may be due to specific institutions that make education a relatively noisy signal in the American context. The same can be said for the finding that employers consider education a signal of trainability rather than skills and are willing to discount the information provided by educational credentials if other indicators of productive capacity are available (Bills 1988). In systems with a tighter coupling between qualifications and occupational profiles, as in some European countries, it is plausible that employers would more readily associate education with the acquisition of job-relevant skills. Putting this hypothesis to the empirical test requires a comparative research design. Unfortunately, the employer studies carried out so far have a single-country focus (e.g., Hesketh 2000; Jackson 2009; Protsch and Solga 2015) and cannot uncover whether the way in which employers act upon educational credentials when making hiring decisions is conditional on institutions. A recent study in economics applied a comparative design and found significant cross-national differences in employers' preferences (Humburg and Van der Velden 2015). However, no attempt was made to explain this variation, and it remains unclear why employers in some countries preferred graduates with a master's degree or who had studied abroad, while others did not. In this article, we try to fill this gap.

Our contribution refines three well-established theories on the relationship between education and job assignment, namely human capital, queuing, and social closure theories (discussed in detail below). Studies in social stratification have drawn quite freely from all these three perspectives, generally referring to a mix of skills, unobserved abilities, and certificates when trying to explain the education payoff in the labor market. This body of literature primarily focuses on how different institutional arrangements affect the strength of the relationship between qualifications and labor-market outcomes in various countries (for a review, see Müller and Jacob [2008]). The micro-level mechanisms underlying employers' decisions, however, are only vaguely discussed. Studies of employers, on the other hand, are more concerned with employers' motives but, lacking a comparative

design, do not have analytical leverage to test whether employers' behavior is influenced by institutions. In this study, we bridge these two strands of literature and show that the reasons why education pays off in the labor market vary across institutional contexts. Our goal is to extend sociological research on labor-market stratification by analyzing the scope conditions under which the three theoretical models of human capital, queuing, and closure are more likely to hold.

From a methodological point of view, our research is innovative. We analyze whether and why employers rely on education to sort and screen applicants during simulated hiring processes. We compare England and the Netherlands, countries with largely different school-to-work transition systems,[1] to maximize variation at the level of national institutions. We keep the economic sector constant, zooming in on the Information Technology (IT) sector. This research design gives us analytical leverage to show that different configurations of the school-to-work transition system give rise to different hiring patterns, even when employers are recruiting for fairly similar jobs in very comparable labor-market segments.

Using a harmonized design and combining a questionnaire with a factorial survey (Rossi and Nock 1982), we gathered highly comparable data from a group of Dutch and English human resource (HR) professionals (in the following, we refer to them as employers). Factorial surveys are quasi-experimental techniques that have a long tradition within other subdisciplines of sociology such as research on deviance and crime or family sociology (Wallander 2009). More recent applications have successfully applied this method to research on education (De Wolf and Van der Velden 2001; Di Stasio 2014a). Concretely, we asked employers to rate a series of vignettes showing the résumés of hypothetical job applicants. Each of these vignettes included information about the educational background of the applicant, such as level of education, field of study, grades, and time to graduation. Because information about applicants was randomly varied across vignettes and we controlled the assignment of vignettes to employers, we obtained unbiased estimates of the effect of educational background on employers' ratings. We conceptualize educational background as *potentially* sending a series of signals to employers (e.g., high grades, occupation-specific degrees), and we expect different features to become salient in the two countries, for different reasons. In a related survey, we also directly operationalized the mechanisms assumed by human capital, queuing, and closure theories as to why employers reward education. The ability to distinguish among the three mechanisms is a key advantage of our design.

To the best of our knowledge, this is the first sociological study that compares across countries the process by which employers evaluate and act on educational credentials when making hiring decisions.[2] We contribute to an emerging, but still scattered, literature that has analyzed employers' hiring decisions but in single institutional contexts (e.g., Gaddis 2015; Protsch and Solga 2015; Rivera 2011, 2012). Our findings show that employers' screening criteria vary across countries, in line with expectations, as does employers' understanding of why education matters for labor-market success. This suggests that asking uncritically "Why does education matter to employers?" misses the mark, as the answer depends on the institutional context in which the hiring takes place.

Theoretical Framework

Three Mechanisms as to Why Education Matters to Employers

In a labor market characterized by information asymmetry, a two-sided allocation process matches job-seekers to vacant jobs (see Bills [2003] for a review). Three main theoretical perspectives have sought to explain why educational credentials are important in this process.

According to human capital theory (Becker 1993), education provides marketable skills that make employees more productive. Individuals behave rationally and invest in human capital to increase their productive capacity. Enhanced productivity, in turn, translates into higher wages. A second group of theories consider education as, respectively, a signal used by job-seekers (Spence 1974) and a screening device used by employers (Arrow 1973; Stiglitz 1975) to transfer information about unobservable attributes, such as commitment, perseverance, and learning potential, which lower the cost of schooling and increase productivity. In particular, Thurow (1976) argues that employers, while hiring, try to save on training costs and look for candidates that are easily trainable. Education is one of the main criteria that employers use, at point of hire, to infer the future trainability of applicants. Human capital and queuing theories originated in economics, and both recognize a direct or indirect relationship between education and productivity. They differ in the role they assign to education. According to human capital theory, education imparts and delivers the skills that employers find valuable. Queuing theory, on the other hand, views education as a sorting machine that helps employers identify those individuals who have the potential to develop valuable skills in the future.

A third perspective, social closure theory, developed within sociology. Social closure is an umbrella term that includes a rather heterogeneous group of theories that all emphasize the role of education in reproducing processes of inclusion and exclusion between social groups.[3] Education is viewed as a legitimized means to secure access to occupational positions. In particular, the closure by degree model (Bol and Weeden 2015; Weeden 2002) focuses on processes of educational credentialing and occupational regulation that restrict access to occupations to holders of specific qualifications. According to this perspective, education is important to employers only insofar as it provides occupation-specific degrees. Closure can also be promoted by networks: In this case, employers have little confidence in the informational value of educational credentials and would rather rely on long-term linkages between schools and employers to obtain information that they regard as trustworthy (Miller and Rosenbaum 1997). Whereas closure by degrees occurs via processes of skill standardization and certification and requires a strong degree of involvement of social partners, closure by networks occurs in the absence of such coordination.

All in all, these theoretical perspectives identify three distinct mechanisms by which education pays off in the labor market: Education is either a *provider of productivity-enhancing skills* (human capital theory), or a *signal of future trainability* (queuing theory), or an *entry ticket* to occupations (closure by degree and closure by network theories). However, while these theories discuss why education matters to employers, they say little about which attributes of education are

important to employers (e.g., grades or type of degree), and under which conditions. Our goal is to refine these theories, in terms of both conceptualization and measurement and in terms of the scope conditions under which they apply, as already called for in a seminal study by Bills (1988) on employers' perceptions of educational credentials.

Mechanisms in Their Institutional Context

The institutional contexts in which hiring decisions are made structure job competition and job assignment processes, with implications on the type of information that employers can glean from someone's résumé. We build on this insight to develop our argument, which connects mechanisms with institutions and gives a central place to employers as the gatekeepers of employment opportunities. Since our argument is about education, we focus on institutions of education systems and on labor-market institutions that structure school-to-work transitions in the two countries.

In the stratification literature, typologies of education systems are commonly based on three institutional features (Allmendinger 1989; Shavit and Müller 1998): *standardization*, *stratification*, and *occupational specificity*. Standardization refers to the nationwide provision of equal educational standards and implies uniformity of school budgets, exit examinations, teacher training, and curricular content within each country. Stratification depends on the allocation of students into qualitatively different tracks that determine the options available to students for further learning. Occupational specificity measures the extent to which school curricula are attuned to labor-market needs, through vocational education or some other form of employer-sponsored training.

These three institutional arrangements structure the nexus between qualifications and occupations in the various countries as they affect the signaling capacity of educational credentials and the degree of uncertainty associated with personnel selection (for a discussion, see Müller and Jacob [2008]). In highly stratified and occupationally oriented systems, qualifications are standardized and coordinated by social partners, and the skills possessed by certificate holders can be immediately put to use in the organization and are widely recognized within occupational labor markets. In weakly stratified and generalist systems, on the other hand, skill acquisition occurs primarily on the job and career advancement occurs within firm-internal labor markets (Maurice, Sellier, and Silvestre 1986). Quite logically, one would expect skills and certificates to be more relevant in the first type of system, where employers' actions should best be described by human capital theory and the theory of closure by degrees. In weakly stratified and generalist systems, employers would be better served by indicators of trainability and learning potential or by occasions to prescreen candidates and assess firsthand whether they are fit for the job. The mechanisms of trainability and closure by networks are thus more likely to apply in these other settings.

A number of recent studies have already tested this argument with employee data. Van de Werfhorst (2011b) showed that human capital theory holds particularly well in countries with a well-developed vocational system, where the effect of education on earnings is to a large extent mediated by measured skills. Bol and

van de Werfhorst (2011a) found that, net of years of schooling, the additional benefit of obtaining a degree is stronger in more vocationally oriented education systems. This finding illustrates that vocational education systems do more than just produce skills—they also regulate and formalize access to occupations in well-developed occupational labor markets, just as the theory of closure by degrees predicts. Finally, Matković and Kogan (2012) showed that queuing theory can best explain job assignment in Croatia, where new hires are trained on the job within internal labor markets and education is considered a signal of employee trainability. In the next section, we apply a similar reasoning to the countries under study, but we shift our focus to employers. Compared to previous studies, we directly operationalize the three mechanisms, which is essential to understand whether employers behave as any of the three theories predicts.

School-to-Work Transitions in England and the Netherlands

England

The English education system is comprehensive until the age of sixteen. Thereafter, students can either attend general upper-secondary education or opt for various types of vocational qualifications in Sixth Form colleges and Further Education colleges. Assessment occurs through a wide array of single-subject qualifications, such as the widely known GCSEs and A-levels, accredited by non-governmental awarding bodies. A complex system of qualifications certifies learning in employer-led work-oriented programs which, however, are not standardized within a unified framework and are perceived as a residual option for underachievers. Higher education is distinctive for its hierarchical structure, based on institutional reputation and selectivity. A binary system was in place until 1992, when former polytechnics were granted the same formal status as universities. England is a textbook example of uncoordinated industrial relations: weak collective action, decentralized pay setting, and lack of inter-employer agreement at the sector level discourage employers from participating in the collective provision of training, as it would leave them vulnerable to poaching (Ryan 2001). As a result, skill formation is predominantly arranged through on-the-job training, but its uncertified nature limits the transferability of skills across firms.

The Netherlands

The Dutch education system is highly standardized and highly stratified. Tracking occurs when pupils are twelve, and moves between tracks usually imply the fulfillment of gap years or additional examinations (Van der Velden and Wolbers 2007). School-based, vocational upper-secondary education (*middelbaar beroepsonderwijs*, MBO) is characterized by strong linkages with the labor market and organized in close collaboration with social partners. Tertiary education has a binary structure: academically oriented research universities (*wetenschappelijk onderwijs*, WO) coexist with vocational higher education (*hoger beroepsonderwijs,* HBO), which is provided in universities of applied sciences (*hogescholen*) and

oriented toward specific occupations. A highly developed occupational labor market renders skills and qualifications portable within a given industry. Ryan (2001) emphasizes the institutional complementarities that render this type of transition system possible, namely a model of industrial relations, collective wage bargaining, and compressed wage differentials that urge firms to invest in skills in order to raise the productivity of their employees. Employers participate in tripartite bodies where curricula are co-designed and updated and specific prerequisites for occupational entry—with regard to both the level and content of educational qualifications—are set.

Figure 1 illustrates the structure of the education system in the two countries. In the next section, we develop hypotheses about how these different institutional frameworks may affect employers' views about education.

The Screening of Résumés in the Two Countries

According to human capital theory, time spent in school leads to the acquisition of skills and, ultimately, to productivity gains. Therefore, years of educational

Figure 1. Overview of the structure of the education system in the two countries
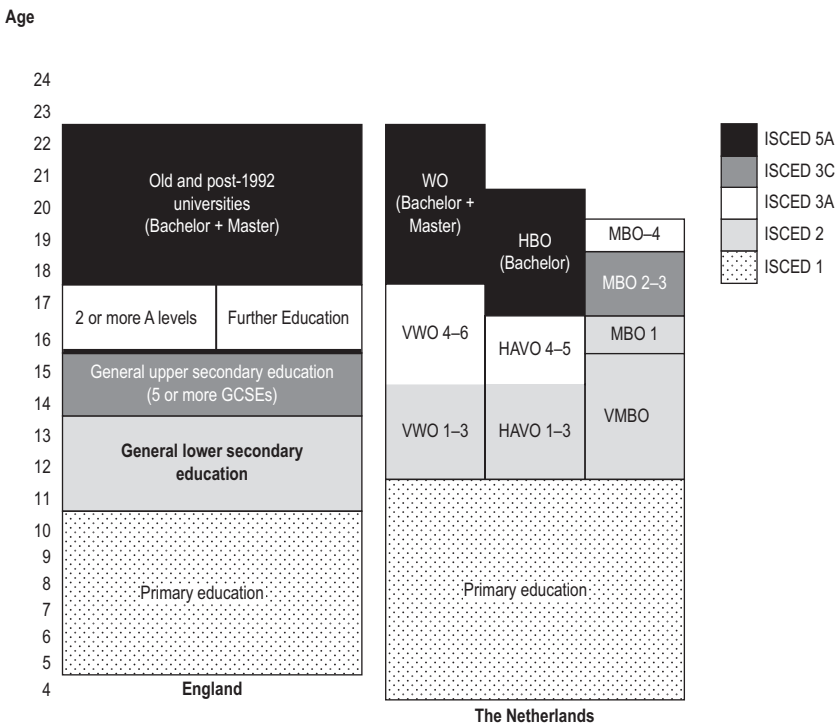
Note: Adapted from country reports on Eurydice (http://eacea.ec.europa.eu/education/eurydice/index_en.php) and country-specific reports (Schneider 2008). Levels of education correspond to the International Standard Classification of Education (ISCED) developed by the OECD in 1997. Black, thick horizontal bars indicate the moment at which the first form of tracking occurs.

attainment—which vary from one level of education to the other—should be particularly important to employers. Graduation from a relevant field of study (college major) should also matter, as students learn subject-specific knowledge and skills while enrolled in a given curriculum. Of the countries under study, only in the Netherlands are employers systematically involved in the co-design and assessment of curricula and in the provision of training leading to recognized qualifications. Therefore, we expect Dutch employers to rely on years of education (hypothesis 1a) and fields of study (hypothesis 1b) to a greater extent than English employers.

Queuing theory stresses the importance of aspects such as grades and a fast study trajectory, which signal perseverance and trainability potential and are indirectly related to productivity (Weiss 1995, 141). These signals should be particularly valuable in education systems with a low degree of occupational specificity, as employers cannot rely on a readily available stock of productive skills from the education system. Instead, they have to train their employees in-house. In the queuing model, employers try to save on training costs by looking for applicants who can learn job-relevant skills in little time upon joining the organization. Thus, we expect English employers to be more likely than Dutch employers to use grades (hypothesis 2a) and study duration (hypothesis 2b) to assess applicants' trainability potential.

Finally, closure by degrees points to the importance of credentials in occupational labor markets. In the Netherlands, a highly coordinated system of skill formation, which rests on the strong involvement of social partners and on a highly standardized system of skill certification, leads to a tight match between qualifications and occupational titles.[4] Hence, we expect that having a degree has a stronger effect in the Netherlands (hypothesis 3a), and that this is particularly the case for occupation-specific degrees (hypothesis 3b). We mentioned that closure can also occur via networks. Following the closure by networks mechanism, employers should favor applicants with a pre-existing relationship with the firm to compensate for poor education signaling. If the education system does not deliver occupation-specific skills, employers are likely to look for alternative indicators of performance. Internships provide such a screening device and should play a larger role in England than in the Netherlands (hypothesis 4). Hypotheses are summarized in table 1.

Research Design, Data Collection, and Analysis

Case Selection: A Comparative Study of the Information Technology Sector

We chose to focus on the Information Technology (IT) sector because of supply and demand characteristics that are distinctive of this sector and common to the two countries: an industrial landscape mainly composed of small firms, dominated by a few large players and concentrated in regional clusters; a volatile labor demand, dependent on globalization processes and service oriented; a highly educated labor supply, primarily male, younger than average and characterized by a high turnover rate; and a loosely regulated labor market, with a rather weak

Table 1. Summary of Expectations

Theoretical perspectives	Explanatory mechanisms	Why employers reward education	Relevant education features	Hypotheses
Human capital theory	Education is productivity enhancing	Employers reward mere attendance of schooling, as it directly increases on-the-job productivity	• Years of schooling • Relevant field of study	NL > EN (1a) NL > EN (1b)
Queuing theory	Education is a signal of trainability	Employers reward academic performance (grades, study duration), as it signals unobservable traits that enhance trainability	• Grades • No study delay	EN > NL (2a) EN > NL (2b)
Closure theories	Education is a legitimized means of social inclusion	*Closure by degrees*: Employers reward education if certified in a credential *Closure by networks*: Employers reward members of their own network	• Degree • Occupation-specific degree • Internship	NL > EN (3a) NL > EN (3b) EN > NL (4)

involvement of social partners in the organization of labor processes (Adams and Demaiter 2008). By choosing this sector, we turn our research design into a *crucial case-study* (Gerring 2007) as we look for cross-national variation where it is least likely to occur. If Dutch and English employers use different screening criteria for positions that have similar occupational requirements, we can more confidently attribute the source of this variation to national institutions.

Our focus on the IT sector also minimizes the possibility that four alternative explanations may account for such cross-national variation. First, employee remuneration varies widely across countries, with possible implications on firms' recruitment investments. Reassuringly, IT is one of the sectors where average personnel costs, investment per person employed, and wage-adjusted labor productivity are most similar across countries (Eurostat 2014). Second, screening criteria may vary due to fluctuations in the business cycle. Also in this case, focusing on IT is a safe bet: Employers in this sector regularly complain about chronical skill shortages and report a higher than average share of difficult-to-fill vacancies, regardless of cyclical factors (e-skills UK 2012; ICT~Office 2012). Third, screening strategies may vary due to national differences in corporate culture. Yet, we think the international orientation of the IT sector and the dynamism of a fast-paced, technology-driven environment make it unlikely that culture alone would lead to large country differences in employers' hiring behavior. The rather technical nature of IT jobs also minimizes the possibility that cultural markers such as the institutional prestige of the school attended, which are certainly important in other labor-market segments (cf. Rivera 2011, 2012) but not the object of our analysis, could play a relevant role in employers'

assessments. Finally, employment protection legislation may reduce employers' willingness to hire a given candidate for fear of incurring high dismissal costs if the match turns out to be unproductive (Gangl et al. 2003). In both countries, employers in the IT sector make large use of atypical contracts and project-based contingent work (e-skills UK 2012; ICT~Office 2012), a sign that they are not subject to a highly constraining employment legislation, or at the very least that they find ways to circumvent it.[5]

Design of the Vignette Study

To gather employers' hiring preferences, we simulated a hiring process for entry-level jobs using a vignette study. Vignette studies are based on the factorial survey method (Rossi and Nock 1982). Factorial surveys can be described as quasi-experiments that combine the principles of experimental research with those of the classical social survey (Wallander 2009). In a nutshell, a set of carefully constructed, hypothetical descriptions of persons, situations, or objects are shown to respondents for evaluation. This method is well suited to decompose intentions and beliefs into their underlying determinants: After regressing the decision outcomes on the factors that compose the vignettes, regression coefficients indicate which factors were the most influential for decision-makers (Jasso 2006).

A web-based survey provided the interface for the vignette study. Employers evaluated a series of vignettes of job applicants who were competing for the same job position but differed with respect to the characteristics reported on their résumés. These characteristics were previous work experience and internships, educational achievements (level of educational attainment, field of study, grade point average, and study duration), extracurricular activities, and gender. We used a harmonized design in the two countries and chose variables that were applicable in both contexts. This meant that some potentially interesting variables were not included in the design: For example, the selectivity of the study program or the prestige of the school or university attended would not be meaningful in the Dutch context but are probably relevant for English employers. Nevertheless, we believe that the gain in terms of cross-country comparability justifies our choice.[6] We come back to this issue in the discussion of the results. The characteristics that were varied across vignettes are shown in table 2.

After crossing all possible combinations of vignette characteristics in an orthogonal vignette universe, we randomly drew multiple sets of eighteen vignettes and assigned each set to a different respondent.[7] With this procedure, correlations between vignette characteristics were minimized to a value close to zero, a characteristic typical of experimental designs (more information can be found in the online supplementary file). This procedure was repeated in each country.

Our data refer to a simulated hiring context and, as such, reflect employers' *intentions to hire* a given candidate, with no guarantee that employers would behave similarly in real organizational settings. Nevertheless, data gathered from factorial surveys are well suited to capture the determinants of complex human judgments such as employers' hiring assessments. In a factorial survey, respondents read vignettes that contain information on a bundle of attributes and the

Table 2. Construction of the Vignettes

Vignette factors	Vignette levels
Gender	1. Male 2. Female
Previous work experience	1. Yes 2. No
Internship at the firm	1. Yes 2. No
Level of education	1. Upper secondary (EN: A-level; NL: MBO, level 4) 2. University bachelor (NL: university of applied science) 3. University master
Field of study	1. Informatics 2. Economics 3. Social sciences
Study duration	1. Completed the program on time 2. Completed the program with a delay of two years 3. Never completed the program (no degree)
Grade point average	1. Fair (NL: 6.5 out of 10; EN: C) 2. Very good (NL: 8.5 out of 10; EN: A)
Extracurricular activities	1. Board member of a student committee 2. None

Note: Only for the Dutch study, one of the possible educational levels of job applicants was vocational higher education (universities of applied science). In England, where tertiary education is not binary, vignettes referred to bachelor's programs in research universities.

simultaneous presence of multiple treatments minimizes the risk of social desirability bias relative to conventional survey questions (Wallander 2009). Indeed, previous studies based on factorial designs found evidence of discrimination toward applicants with an ethnic minority background (Blommaert, Coenders, and Tubergen 2014; Hainmueller, Hangartner, and Yamamoto 2015), a sign that the method *per se* does not lead to socially desirable answers.

Factorial surveys bring a few additional advantages over other methods. First, we can compare applicants assessed by the same employer and for the same—though hypothetical—job opening. Unlike supply-side surveys or surveys of employers that focus on the last hire, we have information on the entire applicant pool that was considered by employers. This is an ideal data structure, as it enables us to distinguish applicants who would successfully get a job offer from those who would be rejected after competing within the same applicant pool (for a discussion, see Fernandez and Weinberg [1997]). Second, we have control on the characteristics that were observed by employers. Research based on post-hire data, on the other hand, can only assume that certain characteristics were known to employers at point of hire; violations of this assumption would lead to biased estimates of the education effect. Third, a factorial survey is an optimal strategy to answer our research question, as we can assess the relative importance of various education features for employers' ratings.

Data Collection

As anticipated, we sampled organizations in the IT sector in the two countries and targeted recruiters and HR professionals.[8] To go beyond convenience samples and reach a wider audience, we relied on public records of organizations to locate employers. Dutch organizations were randomly selected from a list of "Computer programming, consultancy and related activities"[9] obtained from the Dutch Chamber of Commerce. This list was merged with the member records of the IT trade association (*NederlandICT*). For England, where such a list was not available, we randomly selected organizations from the member records of two IT trade associations: *UKITA* for small and medium-sized enterprises and *INTELLECT*, the trade association for the technology industry.

In each country, we contacted 172 organizations by phone and invited a member of the HR department to participate in the study; if a HR department did not exist, we spoke with the main person responsible for hiring decisions. We targeted small and medium-sized enterprises and large organizations alike, in order to guarantee a good coverage of the labor market. A total of 38 employers in the Netherlands and 34 employers in England completed the survey. Response rates range between 20 and 23 percent and fall within the range of published studies based on samples of organizations (Baruch and Holtom 2008). It is worth mentioning that in vignette studies, respondents' ratings are pooled together: Thus, the vignette represents the unit of analysis and statistical power is affected by the number of vignettes that are evaluated by each respondent. Since respondents commonly judge multiple vignettes (in this case eighteen), "the authors … do not need to sample as many respondents as is the case in general social survey research" (Wallander 2009, 513). More detailed information on the sampling procedure and on the representativeness of our sample can be found in the supplementary material. In total, we gathered information on more than a thousand hypothetical hiring matches from 72 employers. Dutch data were collected between July and November 2011, and English data between May and November 2012.

Table 3 compares characteristics of employers and of their firms in the two countries. The rather homogeneous composition of the two samples in terms of gender, age, and educational attainment is reassuring. We stress that respondents closely match our target population. At the time of the survey, they were employed as HR professionals (e.g., campus recruiters, heads of the recruitment department, hiring managers) and had, on average, between eight and ten years of experience in personnel selection. This makes us confident that respondents were reasonably familiar with the hiring practices under study.[10] This is essential to generate externally valid conclusions, and it is an important advantage over other types of factorial survey applications that recruit respondents from opt-in Internet panels or samples of undergraduate students.

At the start of the survey, respondents could choose the job for which to perform the hiring simulation: software engineer or IT business consultant. After reading a job description, they could start rating the vignettes (the instructions given to respondents and the job descriptions can be found in the online supplementary file). Ratings refer to the likelihood that the employer would hire the job applicant, on a

Table 3. Characteristics of Employers and of Their Firms (%)

	England	The Netherlands
Characteristics of employers:		
Gender		
Male	58.8	50.0
Female	41.2	50.0
Educational background		
Upper secondary	2.9	5.3
Tertiary	97.0	94.8
Age		
less than 25	0.0	2.6
25–34	58.8	50.0
35–44	29.4	28.9
45–54	8.8	15.8
More than 55	2.9	2.6
Experience in personnel selection		
< 2 years	5.8	13.2
3–5 years	17.6	26.3
6–10 years	41.2	31.6
> 10 years	35.3	26.3
Function		
Owner	0	7.9
HR manager	5.9	18.4
Other HR function (e.g., recruiter)	67.6	52.6
Technical manager	5.9	5.3
Other	20.6	15.8
Characteristics of firms:		
Sector		
Public	8.8	10.5
Private	41.2	34.2
Both	50.0	55.3
Firm size		
10–49 employees	20.6	10.5
50–249 employees	11.8	36.8
>250 employees	67.6	52.6
Presence of HR department		
Yes	88.2	79.0
No	11.8	21.0
Multinational company		
Yes	67.6	60.0
No	32.3	40.0

Table 4. Characteristics of the Jobs for Which the Hiring Was Made (%)

	England	The Netherlands
Job position		
Software engineer	35.3	55.3
IT business consultant	64.7	44.7
Similarity of job description		
Highly similar	11.8	5.3
Similar	35.3	57.9
Somewhat similar	47.1	31.6
Somewhat dissimilar	2.9	2.6
Dissimilar	0	0
Highly dissimilar	2.9	2.6
Last hire for the same job		
Last year	91.2	81.6
Never hired for this job	2.9	10.5

Note: The variable "last hire for the same job" is not a characteristic of the job itself, but we report it to show that nearly all employers were familiar with the jobs under study.

scale from 0 to 100. The simulation was followed by a series of questions about respondents' experience in personnel selection and the hiring policy of their organizations. Employers also indicated the extent to which the description for the chosen job was similar to the one used in their organization. In each country, more than 90 percent of respondents reported that it was highly similar, similar, or somewhat similar, confirming that our design was realistic (table 4).

Estimation Method

To model employers' hiring preferences, we regressed employers' ratings on the vignette factors. All vignette factors were controlled for in the analysis, together with controls for job type, the order of the vignettes, and its quadratic term (to control for order, fatigue, and learning effects). We also took into account organizational size and whether the organization was part of a multinational, as these variables are known to affect recruitment and selection policies. As multiple vignettes were rated by the same employer, we have to take the nested structure of the data into account. We ran both fixed-effects and random-intercept linear regression models and relied on the Hausman test to compare coefficients across models. The test rejects, for both countries, the null hypothesis of systematic differences between coefficients (for England: chi^2 = 1.31, Prob > chi^2 = 1.0000; for the Netherlands: chi^2 = 2.87; Prob > chi^2 = 0.9984). Thus, we opted for random-effects models, as these are more efficient and give consistent results. In the appendix, we report both models for comparison: As shown in table A1, coefficients are virtually identical. This is important, as fixed-effects models compare the ratings given by an employer to one résumé to the ratings given by the *same* employer to other résumés. This procedure implicitly controls for all those

factors—observable or unobservable—that do not vary "within employers," such as the demographic characteristics of the employers or the characteristics of their organizations. The similarity in coefficients across fixed-effects and random-effects models reassures us that country differences in ratings are not due to unobserved organizational or employer characteristics that may otherwise bias the analysis.

Following the suggestion of one anonymous reviewer, we also transformed the dependent variable. We calculated the odds ratio of the hiring probability (i.e., the ratings expressed on a 0–100 scale) and took its log. This specification of the model better accounts for possible nonlinearities in the education effects. We obtained similar results. We report only models with the logit-transformed dependent variable, as a lower BIC indicates that they better fit the data. Higher coefficients indicate that candidates with a given characteristic receive, on average, higher ratings from employers.

Our results are robust to alternative model specifications. We reran the same models using another transformed dependent variable. For each employer, we created a ranking of applicants: We assigned the best-rated applicant to the top rank, and so on, until the applicant with the lowest rating was assigned to the lowest rank. We created a dummy variable to capture the applicants' likelihood to be shortlisted: The variable has a value of 1 if the applicant was ranked in the top half of the pool, and 0 otherwise. We ran random-intercept logistic regression models and obtained very similar results (not shown here but available upon request). Finally, to test whether employers' screening criteria vary significantly between countries, we also ran a pooled model, in which we added interaction terms between all the education features and a dummy variable for countries (table A2 in the appendix).

Results

Different Signals in Different Contexts

Table 5 shows the results of the multivariate regression models, by country. In both countries, upper-secondary-school leavers are at a disadvantage relative to applicants with at least some tertiary education. However, returns to years of education show much less variation in England than in the Netherlands. The fact that Dutch employers were more responsive to differences in years of schooling is consistent with our expectation that in highly stratified and vocationally oriented education systems, longer time in school is equated with more job-relevant skills. In the Netherlands, applicants from upper-secondary vocational education, despite their strong occupational focus, are competing with applicants from higher vocational education, who are presumably perceived as more skilled. Hypothesis 1a is supported.

The effects of fields of study, which inform employers of the specific skills acquired in school, also strongly vary across countries. In England, the advantage of having a background in informatics—that is, the closest match to IT jobs—over other fields of study is more limited than in the Netherlands. For Dutch employers, fields of study are clearer filters of subject-specific knowledge and skills. Results are in line with hypothesis 1b.

Table 5. Propensity to Hire: Random-Intercept Models, by Country

	England	The Netherlands
Gender (ref. male)	0.039	0.081
	(0.095)	(0.144)
Work experience	0.428***	0.424**
	(0.095)	(0.143)
Internship at the firm	0.364***	0.080
	(0.095)	(0.143)
Level of education (ref. non-tertiary):		
Bachelor	0.462***	1.593***
	(0.116)	(0.175)
Master	0.873***	2.040***
	(0.117)	(0.173)
Field of study (ref. informatics):		
Economics	−0.405***	−1.609***
	(0.116)	(0.173)
Social sciences	−0.812***	−2.143***
	(0.114)	(0.173)
Study duration (ref. on time):		
Delay of two years	−0.537***	−0.500**
	(0.116)	(0.175)
Unfinished degree	−0.929***	−1.413***
	(0.115)	(0.175)
High GPA	0.563***	0.134
	(0.096)	(0.144)
Extracurricular activities	0.131	−0.109
	(0.096)	(0.143)
Constant	−2.179***	−0.693
	(0.613)	(0.965)
Var (cons)	1.178	2.320
	(0.303)	(0.575)
Var (residual)	1.286	3.281
	(0.076)	(0.182)
Log likelihood	−994.110	−1426.722
N vignettes	612	684
N employers	34	38
N vignettes × employer	18	18

Note: Dependent variable: logit transformation of the likelihood to hire the applicant. Vignette order, order squared, type of job, firm size, and presence of multinationals are controlled for in all models. Standard errors in parentheses. **$p < .01$ ***$p < .001$

The role of grades differs across countries too. Applicants with a high grade point average are better off than school leavers with a fair track record in England (in line with Tholen [2013]), but not in the Netherlands, confirming hypothesis 2a. Given the low vocational orientation of the English education system, employers looked for easily trainable employees who could gain specific skills on the job. Country differences in the effect of level of education, fields of study, and grades are also statistically significant in the pooled model (cf. table A2 in the appendix). Another characteristic that signals academic performance is the duration of the studies. A two-year delay in obtaining a degree was penalized in both countries, although in the Netherlands the coefficient for study delays is not robust across various model specifications. A study delay may be viewed by employers as an indication of lower motivation or willingness to learn, characteristics that would otherwise remain unobservable. However, country differences are not significant in the pooled model. Hypothesis 2b is not supported.

With regard to closure by degrees, in both countries we found a relatively large penalty for dropouts who left education without obtaining a degree, but particularly so in the Netherlands. In additional analyses, reported in table 6, we collapsed the variable of study duration in a dummy variable labeled "credentials" that differentiates between applicants who obtained a degree and dropouts. We then tested interaction terms between credentials and fields of study. Table 6 shows that occupation-specific credentials (i.e., degrees in informatics) are important in both countries, but especially so in the Netherlands, consistent with the argument that qualifications that match the occupation of destination are more widely recognized in occupational labor markets. A pooled model that tests an interaction effect between having a degree in informatics and a country dummy also confirms that occupation-specific degrees play a larger role in the Netherlands than in England. Hypothesis 3b is supported. Turning to closure by networks, internships count in England but not in the Netherlands, according to expectations. However, this difference is not statistically significant in the model including all interactions (cf. table A2).

As for the control variables, our respondents had gender-neutral hiring preferences. This is in itself an interesting result, as IT occupations are known to be male dominated. However, the lack of a gender bias should be interpreted with caution. We signaled gender by simply mentioning "male" or "female" in the vignettes, which may have been perceived as less realistic than if we had used real names to make gender salient. Still, results are consistent with evidence from case studies of high-tech sector organizations (e.g., Petersen et al. 2000), which suggests that in some contexts women have gained access to male-dominated occupations. Alternatively, it is also possible—and it would not be at odds with our findings—that gendered screening mechanisms take place at a different stage of the hiring process (e.g., during the job interview), or that gendered hiring outcomes are the result of supply-side factors (e.g., occupational preferences). Future research on hiring may try to disentangle these mechanisms in similar male-dominated occupations.

The impact of previous work experience on employers' ratings is similar in the two countries, a sign that knowledge acquired outside the firm is considered a positive asset, regardless of whether employers value skills acquired in the

Table 6. Propensity to Hire: Interaction Effect between Credentials and Fields of Study; Random-Intercept Models

	England		The Netherlands		Pooled model		
					Occupation-specific degree:		
Degree	0.667***	0.907***	1.163***	1.628***	Degree in informatics	2.118***	2.789***
	(0.102)	(0.179)	(0.152)	(0.261)		(0.137)	(0.177)
Field of study (ref. informatics):					*Non occupation-specific degrees:*		
Economics	−0.382**	−0.023	−1.603***	−1.283***	Degree in economics	0.927***	0.976***
	(0.118)	(0.208)	(0.174)	(0.301)		(0.137)	(0.179)
Social sciences	−0.823***	−0.683***	−2.177***	−1.561***	Degree in social sciences	0.437**	0.316
	(0.116)	(0.200)	(0.174)	(0.302)		(0.140)	(0.180)
Degree × Field of study:					*Type of degree × country:*		
Degree × Economics		−0.528*		−0.483	Degree in informatics × EN		−1.420***
		(0.253)		(0.370)			(0.245)
Degree × Social sciences		−0.206		−0.922*	Degree in economics × EN		−0.116
		(0.248)		(0.372)			(0.249)
					Degree in soc. sciences × EN		0.250
Var (cons)	1.177	1.192	2.298	2.306	Var (cons)	1.944	1.944
	(0.304)	(0.307)	(0.570)	(0.571)		(0.348)	(0.347)
Var (residual)	1.334	1.323	3.325	3.292	Var (residual)	2.612	2.513
	(0.078)	(0.078)	(0.185)	(0.183)		(0.105)	(0.101)

					Log likelihood	
Log likelihood	−1004.558	−1002.362	−1430.797	−1427.734	−2557.058	−2533.43
N vignettes	612	612	684	684		1296
N employers	34	34	38	38		72
N vignettes per employer	18	18	18	18		18

Note: Dependent variable: logit transformation of the likelihood to hire the applicant. Gender of the applicant, work experience, internships, study delays, level of education, grades, extracurricular activities, vignette order, order squared, type of job, firm size, and presence of multinationals are controlled for in all models. In the pooled model, a set of dummies differentiates between occupation-specific and non-occupation-specific degrees. Standard errors in parentheses. ** $p < .01$ *** $p < .001$

education system (the Netherlands) or expect employees to be trained in-house (England). Although the vignettes did not specify the type of job in which applicants gained their work experience, employers' answers to the survey reveal that Dutch employers only value work experience in a similar occupation, consistent with the theory of occupational labor markets. Finally, extracurricular activities went unnoticed in both countries, probably because of the technical nature of the occupations under study, for which the type of skills gained while taking on a leadership role in a student association may be rather irrelevant. While extracurricular activities and leisure pursuits may be very important markers of social distinction and merit in other economic sectors, as shown by Rivera (2011, 2012) for elite professional services, they probably do not matter much in sectors of the economy that, to recall a metaphor she herself used (Rivera 2012, 1002), are closer to Main Street than to Wall Street.

To summarize, the overall pattern of results that emerges from our analysis confirms our expectations. As we hypothesized, Dutch and English employers based their screening decisions on different education features, even while having in mind similar jobs in very comparable labor-market segments. In the generalist English system, competition for jobs is positional and employers relied on grades as legitimate markers of future trainability. In the Dutch occupational labor market, employers strongly preferred applicants with occupation-specific qualifications, that is, a degree in informatics. In additional analyses (not reported but available upon request), we also ran separate models by job type. Jobs in software engineering and business consultancy differ in technical orientation, skill requirements, and qualification demands. Still, for both job types, the information used by employers to rate applicants varies across institutional contexts in ways that are consistent with our hypotheses. That is, English employers still sorted primarily on grades and internships even for jobs that require more technical skills, like software engineering; Dutch employers, instead, were more likely to select on a matched field of study even for jobs, like business consultancy, that are less tightly related to a specific qualification. This comparison provides a stricter test of our

argument. It should also be noted that in additional models with interactions run separately for each job type, the interaction term between internships and the country dummy is statistically significant and indicates that internships are more important in England than in the Netherlands, but only when employers are hiring business consultants. Hypothesis 4 is thus only partly supported.

A Test of Measurement Validity

So far, we have assumed that certain education features are intrinsically related to the three mechanisms of productivity enhancement, improved trainability, and reproduction of social closure. We here provide further evidence for the validity of our measurements. After the hiring simulation, we asked employers about their views on education and skills using survey items with a direct operationalization of the mechanisms. As shown in figure 2, over 70 percent of Dutch employers agreed that education is a provider of job-relevant skills, in line with human capital theory. This was the case for barely half of English employers. Interestingly, more than two-thirds of English employers associated education with future trainability and learning potential, compared to roughly half of Dutch employers. Having related, respectively, the productivity-enhancement mechanism to both years of schooling and fields of study (which were more important in the Netherlands), and the trainability mechanism to grades (which were more relevant in England), we are confident that our interpretation of the findings from the vignette study is accurate. Country differences are statistically significant,

Figure 2. Employers' opinions about the role of education in the two countries

Why does education matter?
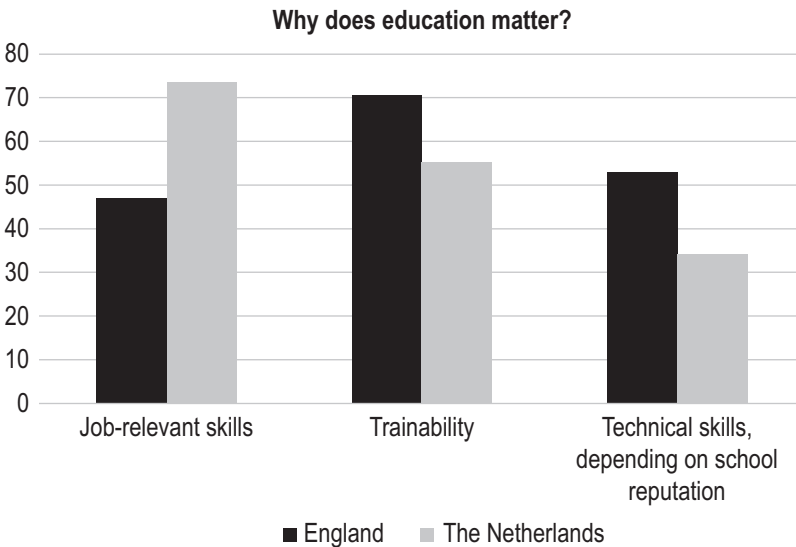
Note: Employers' agreement with the following statements: (a) Education signals possession of job-relevant skills; (b) Education signals trainability or learning potential; (c) The reputation of the school attended signals technical ability.

even after controlling for characteristics such as firm size and the type of job for which the selection was made (as shown in Di Stasio [2014b]).

For the social closure mechanism (and specifically the mechanism of closure by networks), we have only a rather rough indicator. We asked employers whether they interpret the reputation of the education provider as a signal of technical ability. Employers more often agreed with this statement in England, where the education system is clearly stratified by institutional prestige, than in the Netherlands, where the hierarchy of universities is rather flat. We cannot easily relate this finding to the vignette study, where we did not specify the name of the secondary school or university attended, as we could include only a limited number of treatments to avoid respondents' fatigue. Had we varied the alma mater of the applicant in our design, our guess is that this treatment would have had a stronger effect on employers' ratings in the English context. This would have further corroborated our finding that closure by networks is more important in England than in the Netherlands. Previous studies provide evidence in support of this interpretation (Hesketh 2000; Tholen 2013).

Also consistent with our vignette findings, nearly all Dutch employers (89 percent) indicated that their organizations had set minimum qualification requirements for the two jobs, whereas this was the case for only half of the British sample (53 percent), confirming that closure by degrees is stronger in the Netherlands. All in all, convergence of results obtained after comparing alternative indicators—that is, direct questions from the employer survey and the coefficients of the education variables in the vignette study—validates our operationalization of the three mechanisms and further strengthens our argument.

Discussion and Conclusions

In this study, we analyzed how employers react to educational credentials in two very different institutional contexts: England and the Netherlands. We simulated a hiring process with 72 employers across the two countries and analyzed the importance they attached to aspects of education that are usually not captured in supply-side surveys (e.g., grades, internships, study duration). We also asked employers to indicate whether they consider education a provider of skills, as assumed by human capital theory, a signal of trainability, as suggested by queuing theory, or a requirement to enter specific occupations, as implied by closure theory. Thus, we operationalized three theoretical models that have been widely discussed in sociology and economics, but that are very hard to disentangle empirically (Weiss 1995; Bills 2003; van de Werfhorst 2011a).

As expected, employers in England and the Netherlands relied on different education screens when making hiring decisions. To summarize, we found that Dutch employers see a clear link between educational credentials and skills, and strongly favor fields of study that closely match the target occupation. English employers, on the other hand, view education as a signal of trainability and rely on grades to make relative comparisons between similarly qualified applicants. In England, occupation-specific fields of study are not as crucial as they are in the Netherlands and employers give less importance to certified, field-specific

skills when selecting new employees. These two fundamentally different views correspond, respectively, to the human capital and closure by degree models (the Netherlands) and to the queuing model (England). Our results indicate that the reasons employers reward educational attainments during the hiring process vary across countries: Although several education features are *potentially* available to employers, institutions of the education system and labor-market institutions make certain features stand out more than others in an applicant's résumé.

Our results very closely match previous findings from a qualitative study of British and Dutch students. Results from that study show that, just as the employers in our study, British students perceive the competition for jobs as a contest between candidates in which opportunities to succeed depend on relative comparisons of academic performance (Tholen 2013). On the contrary, Dutch students see the competition for jobs as driven by the correspondence between one's credentials and the skill demands of a specific labor-market segment. The similarity between these findings and ours can be seen as comforting, as students seem to hold realistic views of the functioning of the labor market in their respective countries. At the same time, though, it is important to note that a strongly credentialed labor market may be a source of discontent for low-performing students, who in the Dutch context face educational decisions early on. These students may adjust their aspirations downward and opt for less demanding curricula, especially if coming from a disadvantaged background (Buchmann and Park 2009).

Any generalization of our results to other countries or economic sectors would surely be premature. Our research design was ideal to single out the role of institutions, as we compared fairly similar labor-market segments in contexts characterized by largely different education systems. Training of employees, flexibility, and the need to constantly update knowledge and skills are key concerns in the IT sector in both countries. The fact that, nevertheless, Dutch and English employers turned to different criteria for screening applicants supports our claim that institutions do matter. Conclusions derived from case studies of the IT sector in the UK, the United States, and Canada, which found that for employers "education is important, but less for the skills it brings, than for the adaptability it implies" (Adams and Demaiter 2008, 353), should thus be further qualified. Whereas employers in Anglo-Saxon countries may indeed associate education with trainability and learning potential rather than with the acquisition of skills (a result that is confirmed in our study), in countries with a well-developed occupational labor market—like the Netherlands—education is to a larger extent recognized for the skills it provides. Since our argument holds well in a loosely regulated and outwardly oriented sector such as IT, it stands to reason that national institutions would exert an even stronger influence in other, less internationalized economic sectors.

Although our study was limited to two countries, the English and Dutch systems approximate two ideal-typical modes of school-to-work transitions identified in earlier research (Gangl 2001; Müller and Jacob 2008). Hence, our findings are relevant to understand school-to-work transitions in similar institutional settings. England is comparable to the United States for the low vocational orientation of its education system and the deregulated labor market, whereas both the

Netherlands and Germany have well-developed occupational labor markets, highly coordinated systems of industrial relations, and strongly stratified and standardized education systems. We would expect employers in these country pairs to have a similar understanding of why education leads to labor-market success.

Two limitations of our study should be mentioned. First, our data refer to hypothetical hiring decisions, and skeptics may question the external validity of our findings. Reassuringly, validation studies found a rather close correspondence between decisions made after reading vignette descriptions and those made in real life (Hainmueller, Hangartner, and Yamamoto 2015). Second, we randomly assigned vignettes to employers even though we know from previous research that supply-side factors—such as class advantages, economic resources, or the exposure to social networks—determine job seekers' decisions to apply for a job in the first place. Future studies should strive to capture both the demand-side and supply-side processes that influence the labor-market allocation of school leavers.

To conclude, we have made a first step toward a better understanding of the interplay between employers' agency and institutions. Our study is complementary to recent research showing that the behavior of labor-market actors on the supply side is conditional on institutions (Bol and van de Werfhorst 2011a; van de Werfhorst 2011b; Matković and Kogan 2012; Sharone 2013; Tholen 2013). We added a comparative, employer-centered perspective to this literature. This is important because employers are crucial gatekeeping actors in the labor market and returns to education arise from employers' use and interpretation of educational credentials during the hiring process (Bills 2003; Jackson 2009). Our findings are important for policymakers too, as they refine policy debates that tend to propose a one-size-fits-all model of employability. We showed, instead, that the characteristics that employers look for in new employees are very different across institutional contexts. The factorial survey proved to be a very flexible method to study employers' preferences. This method can be easily implemented in audit and correspondence studies too, to analyze hiring decisions in real employment contexts (Jackson 2009; Lahey and Beasley 2009), as well as in large-scale survey experiments (Mutz 2011; Humburg and Van der Velden 2015). Alternatively, in-depth interviews (Rivera 2011, 2012) or content analysis of job advertisements (Mýtna Kureková et al. 2015) can provide useful insight into employers' preferences. We can only welcome future studies that target employers in other countries or economic sectors, as the theories on the relationship between education and labor-market outcomes are in need of further refinement.

Notes

1. We refer only to England, instead of the United Kingdom as a whole. This is because the education systems of England, Scotland, Wales, and Northern Ireland differ to such an extent that they are typically studied separately in comparative education research.
2. We agree with previous studies (e.g., Blommaert, Coenders, and Tubergen et al. 2014b8; Fernandez and Weinberg 1997; Petersen et al. 2000; Protsch and Solga

2015) that hiring is a multistage process. Here, we focus only on résumé screening, a phase with possibly huge implications for the stratification process: employers form their first impressions on applicants based on the information reported on a résumé, and a large number of applicants do not make it past this first screening.

3. Cultural capital theory (Bourdieu and Passeron 1977) and the theory of incentive-enhancing preferences (Bowles and Gintis 1976) may also be categorized in this group (see Bills [2003] for a more extensive discussion). Here, we refer only to occupational closure by degrees (Weeden 2002; Bol and Weeden 2015) and closure by networks (Miller and Rosenbaum 1997), given that non-cognitive skills and cultural capital markers, which are central to these other theories, are probably not very relevant for entering jobs in the IT sector. In other sectors, these characteristics may play a more important role, as shown by Rivera (2011, 2012) in her ethnography of employers in elite professional services.

4. Again, the IT sector offers a least-likely case, as the role of social partners is less strong than in other sectors of the economy (e.g., metalworking).

5. We find confirmation of this in our study, as one-fifth of English employers and one-fourth of Dutch employers considered the employment protection legislation in force in their own country as not at all constraining. Only 8 percent of Dutch employers and 15 percent of English employers found it constraining or very constraining.

6. Reassuringly, in the questionnaire administered after the simulation, none of the English employers indicated that school reputation was an important criterion for their last hiring decision. Probably, even in England, employers are less responsive to institutional prestige when hiring for highly technical positions.

7. Alternative sampling strategies are possible. D-efficient designs are particularly appropriate to generate orthogonal and balanced vignette samples. Simulations reported in Dülmer (2007) demonstrate that with a very large number of vignettes per respondent, like in our design, results obtained from random sampling and from D-efficient designs are nearly identical. We preferred random sampling, as it poses fewer restrictions on vignette composition.

8. Originally, we also targeted a group of employers in Italy. Compared to the Dutch and English samples, the Italian sample was very unevenly distributed across jobs, had a very different response rate, and included a larger number of small and domestic firms. For this reason, the Italian data are analyzed elsewhere (Di Stasio 2014a). We stress that results from Italian employers differ from both the skill-oriented Dutch model and the trainability-oriented British model. This is in line with findings from Gangl (2001), who singled out Southern European countries as a third cluster of school-to-work transitions, next to occupational and internal labor markets, and gives further strength to our institutional argument.

9. These activities correspond to the NACE code 62. NACE is the standard classification system of economic activities in the European Community (in French: *Nomenclature statistique des activités économiques dans la Communauté européenne*).

10. We did not ask respondents to indicate their country of origin, or the country in which they attended formal education. This may raise concerns that, in case respondents were not trained in the country where they were employed, they would not be responsive to the education signals reported in the vignettes. Reassuringly, in one open question, employers could write about any additional entry requirement for the position under study, and those who did answer the question always referred to aspects that were context specific (e.g., a 2:1 degree in England), suggesting that they were familiar with the education system of the focal country.

Appendix

Table A1. Propensity to Hire: Comparison of Estimates Obtained with Random-Intercept Models and Fixed-Effects Models

	England		The Netherlands	
	RE model	FE model	RE model	FE model
Gender (ref. male)	0.041	0.048	0.086	0.097
	(0.096)	(0.097)	(0.145)	(0.146)
Work experience	0.428***	0.428***	0.423**	0.417**
	(0.096)	(0.096)	(0.144)	(0.144)
Internship at the firm	0.361***	0.361***	0.079	0.079
	(0.096)	(0.096)	(0.144)	(0.145)
Level of education (ref. non-tertiary):				
Bachelor	0.457***	0.461***	1.592***	1.591***
	(0.117)	(0.118)	(0.177)	(0.177)
Master	0.874***	0.876***	2.038***	2.041***
	(0.118)	(0.119)	(0.174)	(0.175)
Field of study (ref. informatics):				
Economics	−0.404***	−0.399***	−1.610***	−1.603***
	(0.116)	(0.117)	(0.174)	(0.175)
Social sciences	−0.813***	−0.817***	−2.142***	−2.148***
	(0.114)	(0.115)	(0.174)	(0.175)
Study duration (ref. on time):				
Delay of two years	−0.537***	−0.538***	−0.502**	−0.510**
	(0.117)	(0.118)	(0.176)	(0.177)
Unfinished degree	−0.931***	−0.933***	−1.417***	−1.418***
	(0.116)	(0.117)	(0.176)	(0.177)
High GPA	0.568***	0.571***	0.133	0.124
	(0.097)	(0.098)	(0.145)	(0.146)
Extracurricular activities	0.125	0.127	−0.111	−0.116
	(0.097)	(0.097)	(0.144)	(0.145)
N vignettes	612	612	684	684
N employers	34	34	38	38
Hausman test	chi² = 1.31 Prob > chi² = 1.0000		chi² = 2.87 Prob > chi² = 0.9984	

Note: Dependent variable: logit transformation of the likelihood to hire the applicant. The Hausman tests reported at the bottom of the table reject the null hypothesis of systematic differences in coefficients across random-effects and fixed-effects models, indicating that random-effects models are more efficient and give consistent results.
Standard errors in parentheses. *$p < .05$ **$p < .01$ ***$p < .001$

Table A2. Propensity to Hire: Random-Intercept Models on Pooled Data, with Country Dummies and Interaction Effects

	M1 (no interactions)	M2 (with interactions)
Internship	0.215*	0.081
	(0.091)	(0.121)
Country × internship at the firm:		
Internship x EN		0.288
		(0.176)
Educational level (ref. non-tertiary):		
Bachelor	1.052***	1.593***
	(0.112)	(0.148)
Master	1.496***	2.038***
	(0.112)	(0.146)
Country × level of education:		
Bachelor × EN		−1.144***
		(0.215)
Master × EN		−1.165***
		(0.215)
Field of study (ref. Informatics):		
Economics	−1.037***	−1.610***
	(0.111)	(0.145)
Social sciences	−1.484***	−2.142***
	(0.110)	(0.146)
Country × field of study:		
Economics × EN		1.221***
		(0.212)
Soc. science × EN		1.349***
		(0.211)
Study duration (ref. on time):		
Two-year delay	−0.521***	−0.507***
	(0.112)	(0.147)
Early dropout	−1.160***	−1.410***
	(0.111)	(0.147)
Country × study duration:		
Delay × EN		−0.036
		(0.216)
Dropout × EN		0.464*
		(0.213)

(*Continued*)

Table A2. *continued*

	M1 (no interactions)	M2 (with interactions)
High GPA	0.378***	0.137
	(0.0924)	(0.122)
Country × grades:		
High GPA × EN		0.431*
Constant	−2.248***	−1.784**
	(0.627)	(0.629)
Var (cons)	1.938	1.931
	(0 .345)	(0.346)
Var (residual)	2.345	2.549
	(0.095)	(0.103)
Log likelihood	−2541.894	−2490.732
Significant LR test against model 1		Yes
N vignettes	1,296	1,296
N employers	72	72
N vignettes × employer	18	18

Note: Dependent variable: logit transformation of the likelihood to hire the applicant. Country, job type, vignette order, order squared, firm size, presence of multinationals, gender of the applicant, previous work experience, and extracurricular activities are controlled for in all models. Standard errors in parentheses. * $p < .05$ ** $p < .01$ *** $p < .001$

About the Authors

Valentina Di Stasio is a postdoctoral researcher at Nuffield College (University of Oxford). In 2014, she obtained her PhD degree from the University of Amsterdam, with a dissertation titled "Why Education Matters to Employers: A Vignette Study in Italy, England, and the Netherlands," which was awarded a prize for "Best Dissertation of the Year" by the European Consortium for Sociological Research (ECSR). Selected findings from the dissertation are presented in this article.

Herman G. van de Werfhorst is professor of sociology at the Department of Sociology of the University of Amsterdam, and director of the Amsterdam Centre for Inequality Studies (AMCIS). His research concentrates on the comparison of educational systems in relation to inequality of educational opportunity and school-to-work linkages, with the aim to bridge social mechanisms and institutional environments.

Supplementary Material

Supplementary material is available at *Social Forces* online, http://sf.oxfordjournals.org/.

References

Adams, Tracey, and Erin L. Demaiter. 2008. "Skill, Education and Credentials in the New Economy: The Case of Information Technology Workers." *Work, Employment, and Society* 22:351–62.

Allmendinger, Jutta. 1989. "Education Systems and Labor Market Outcomes." *European Sociological Review* 5:231–50.

Arrow, Kenneth J. 1973. "Higher Education as a Filter." *Journal of Public Economics* 2:193–216.

Baruch, Yehuda, and Brooks C. Holtom. 2008. "Survey Response Rate Levels and Trends in Organizational Research." *Human Relations* 61:1139–60.

Becker, Gary S. 1993. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. Chicago: Chicago University Press.

Bills, David B. 1988. "Credentials and Capacities. Employers' Perceptions of the Acquisition of Skills." *Sociological Quarterly* 29:439–49.

_____. 2003. "Credentials, Signals and Screens: Explaining the Relationship Between Schooling and Job Assignment." *Review of Educational Research* 73:441–69.

Blommaert, Lieselotte, Marcel Coenders, and Frank van Tubergen. 2014. "Discrimination of Arabic-Named Applicants in the Netherlands: An Internet-Based Field Experiment Examining Different Phases in Online Recruitment Procedures." *Social Forces* 92:957–82.

Bol, Thijs, and Herman G. van de Werfhorst. 2011. "Signals and Closure by Degrees: The Education Effect across 15 European Countries." *Research in Social Stratification and Mobility* 29:119–32.

Bol, Thijs, and Kim A. Weeden. 2015. "Occupational Closure and Wage Inequality in Germany and the United Kingdom." *European Sociological Review* 31:354–69.

Bourdieu, Pierre, and Jeanne-Claude Passeron. 1977. *Reproduction in Education, Society, and Culture*. London: Sage Publications.

Bowles, Samuel, and Herbert Gintis. 1976. *Schooling in Capitalist America*. New York: Basic Books.

Buchmann, Claudia, and Hyunjoon Park. 2009. "Stratification and the Formation of Expectations in Highly Differentiated Educational Systems." *Research in Social Stratification and Mobility* 27:245–67.

De Wolf, Inge, and Rolf Van der Velden. 2001. "Selection Processes for Three Types of Academic Jobs: An Experiment among Dutch Employers of Social Sciences Graduates." *European Sociological Review* 17:317–30.

Di Stasio, Valentina. 2014a. "Education as a Signal of Trainability: Results from a Vignette Study with Italian Employers." *European Sociological Review* 30:796–809.

_____. 2014b. *Why Education Matters to Employers: A Vignette Study in Italy, England, and the Netherlands*. PhD diss., Department of Sociology, University of Amsterdam.

Dülmer, Hermann. 2007. "Experimental Plans in Factorial Surveys: Random or Quota Design?" *Sociological Methods & Research* 35:382–409.

e-skills UK. 2012. *Technology Insights 2012*. http://www.e-skills.com/technologyinsights2012.

Eurostat. 2014. Structural Business Statistics Database. http://ec.europa.eu/eurostat/statistics-explained/index.php/Structural_business_statistics_overview.

Fernandez, Roberto, and Nancy Weinberg. 1997. "Sifting and Sorting: Personal Contacts and Hiring in a Retail Bank." *American Sociological Review* 62:883–902.

Gaddis, Michael S. 2015. "Discrimination in the Credential Society: An Audit Study of Race and College Selectivity in the Labor Market." *Social Forces* 93:1451–79.

Gangl, Markus. 2001. "European Patterns of Labour Market Entry: A Dichotomy of Occupationalized vs. Non-Occupationalized Systems." *European Societies* 3:471–94.

Gangl, Markus, Walter Müller, and David Raffe. 2003. "Conclusions: Explaining Cross-National Differences in School-to-Work Transitions." In *Transitions from Education to Work in Europe: The Integration of Youth into EU Labor Markets*, edited by Müller, W., and M. Gangl, 277–305. Oxford: Oxford University Press.

Gerring, John. 2007. "Is There a (Viable) Crucial-Case Method?" *Comparative Political Studies* 40:231–53.

Hainmueller, Jens, Domonik Hangartner, and Teppei Yamamoto. 2015. "Validating Vignette and Conjoint Survey Experiments against Real-World Behavior." *Proceedings of the National Academy of Science of the United States of America* 112:2395–2400.

Hesketh, Anthony J. 2000. "Recruiting an Elite? Employers' Perceptions of Graduate Education and Training." *Journal of Education and Work* 13:245–71.

Humburg, Martin, and Rolf Van der Velden. 2015. "Skills and the Graduate Recruitment Process: Evidence from Two Discrete Choice Experiments." *Economics of Education Review* 49:24–41.

ICT~Office. 2012. *ICT~Marktmonitor 2012*. Woerden: ICT~Office.

Jackson, Michelle. 2009. "Disadvantaged through Discrimination? The Role of Employers in Social Stratification." *British Journal of Sociology* 60:669–92.

Jasso, Guillermina. 2006. "Factorial Survey Methods for Studying Beliefs and Judgments." *Sociological Methods & Research* 34:334–423.

Lahey, Joanna N., and Ryan A. Beasley. 2009. "Computerizing Audit Studies." *Journal of Economic Behavior & Organization* 70:508–14.

Matković, Teo, and Irena Kogan. 2012. "All or Nothing? The Consequences of Tertiary Education Non-Completion in Croatia and Serbia." *European Sociological Review* 28:755–70.

Maurice, Marc, François Sellier, and Jean-Jacques Silvestre. 1986. *The Social Foundations of Industrial Power: A Comparison of France and Germany*. Cambridge, MA: MIT Press.

Miller, Shazia R., and James E. Rosenbaum. 1997. "Hiring in a Hobbesian World: Social Infrastructure and Employers' Use of Information." *Work and Occupations* 24:498–523.

Müller, Walter, and Marita Jacob. 2008. "Qualifications and the Returns to Training across the Life Course." In *Skill Formation: Interdisciplinary and Cross-National Perspectives*, edited by Mayer, K. U., and H. Solga, 126–72. Cambridge: Cambridge University Press.

Mutz, Diana. 2011. *Population-Based Survey Experiments*. Princeton, NJ: Princeton University Press.

Mýtna Kureková, Lucia, Miroslav Beblavy, Corina Haita, and Anna-Elisabeth Thum. 2015. "Employers' Skill Preferences across Europe: Between Cognitive and Non-Cognitive Skills." *Journal of Education and Work*. doi:10.1080/13639080.2015.1024641

Petersen, Trond, Ishak Saporta, and Marc-David L. Seidel. 2000. "Offering a Job: Meritocracy and Social Networks." *American Journal of Sociology* 106:763–816.

Protsch, Paula, and Heike Solga. 2015. "How Employers Use Signals of Cognitive and Noncognitive Skills at Labour Market Entry. Insights from Field Experiments." *European Sociological Review*. 31:521–32.

Rivera, Lauren A. 2011. "Lvies, Extracurriculars, and Exclusion: Elite Employers' Use of Educational Credentials." *Research in Social Stratification and Mobility* 29:71–90.

Rivera, Lauren A. 2012. "Hiring as Cultural Matching: The Case of Elite Professional Service Firms." *American Sociological Review* 77:999–1022.

Rossi, Peter H., and Steven L. Nock. 1982. *Measuring Social Judgements: The Factorial Survey Approach*. Beverly Hills, CA: Sage.

Ryan, Paul. 2001. "The School-to-Work Transition: A Cross-National Perspective." *Journal of Economic Literature* 39:34–92.

Schneider, Silke L., ed. 2008. *The International Standard Classification of Education (ISCED-97): An Evaluation of Content and Criterion Validity for 15 European Countries*. Mannheim: Mannheimer Zentrum für Europäische Sozialforschung.

Sharone, Ofer. 2013. "Why Do Unemployed Americans Blame Themselves While Israelis Blame the System?" *Social Forces* 91:1429–50.

Shavit, Yossi, and Walter Müller, eds. 1998. *From School to Work. A Comparative Study of Educational Qualifications and Occupational Destinations*. Oxford: Clarendon Press.

Spence, Michael. 1974. *Market Signaling: Informational Transfer in Hiring and Related Processes*. Cambridge, MA: Harvard University Press.

Stiglitz, Joseph. 1975. "The Theory of Screening, Education, and the Distribution of Income." *American Economic Review* 65:283–300.

Tholen, Gerbrand. 2013. "The Social Construction of Competition for Graduate Jobs: A Comparison between Great Britain and the Netherlands." *Sociology* 47:267–83.

Thurow, Lester. 1976. *Generating Inequality*. New York: Basic Books.

Van der Velden, Rolf, and Maarten H. J. Wolbers. 2007. "How Much Does Education Matter and Why? The Effects of Education on Socio-Economic Outcomes among School-Leavers in the Netherlands." *European Sociological Review* 23:65–80.

Van de Werfhorst, Herman G. 2011a. "Skills, Positional Good, or Social Closure? The Role of Education across Structural-Institutional Labour Market Settings." *Journal of Education and Work* 24:521–48.

Van de Werfhorst, Herman G. 2011b. "Skill and education effects on earnings in 18 countries: The role of national educational institutions." *Social Science Research* 40:1078–90.

Wallander, Lisa. 2009. "25 Years of Factorial Surveys in Sociology: A Review." *Social Science Research* 38:505–20.

Weeden, Kim A. 2002. "Why Do Some Occupations Pay More Than Others? Social Closure and Earnings Inequality in the United States." *American Journal of Sociology* 108:55–101.

Weiss, Andrew. 1995. "Human Capital vs. Signaling Explanations of Wages." *Journal of Economic Perspectives* 9:133–54.