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Has education become more positional? Educational expansion and labour market outcomes, 1985–2007

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Abstract

Educational expansion has had important effects on society. However, it has not yet been acknowledged that expansion might have changed the way in which education operates in labour markets. We argue that, as a result of educational expansion, a positional model of education becomes more important whereby labour market rewards do not primarily depend on absolute skill levels, but instead on workers' relative positions in the labour market. Analyzing data from the International Social Survey Programme from 1985 to 2007 for 28 countries, we find support for the claim that education has become increasingly positional with educational expansion.

Keywords

education, labour market, positional good, educational expansion, ISSP

Introduction

The role of education in society changed tremendously during the 20th century. Whereas higher education was only accessible for children born into the privileged classes until the 1950s, it became an institution for the masses during the second half of the century. Research on educational expansion can be divided in two strands: one that studies the origins (e.g. Boli et al., 1985; Trow, 1972) and the other that looks at the outcomes of the process (e.g. Hannum and Buchmann, 2005; Psacharopoulos, 1989; Schofer and Meyer, 2005). Widely different perspectives have been adopted with respect to the origins of educational expansion. At one end of the spectrum are the functionalist claims of the increasing need for qualifications in complex labour markets and the appropriate matching of occupational positions to achieved qualifications (Davis and Moore, 1945; Goldin and Katz, 2008). At the other end are the views that expansion is better explained as a 'myth', because the often presupposed positive relationship

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between education and economic growth is far from evident in developed economies (Meyer and Rowan, 1977; Ramirez et al., 2006).

A second strand of literature on educational expansion has related expansion to distributional consequences on the labour market, most clearly in connection to overschooling and the resulting credential inflation (Clogg and Shockey, 1984). Existing research on the consequences of expansion has, therefore, focused on how stratified labour markets have become as a result. The credential inflation literature has, for example, examined the wage premium attached to education in an over-schooled labour market (Freeman, 1976) and has studied how it affects the strength of the impact of education on occupational attainment (Wolbers et al., 2001).

By directing the research agenda towards the question of how expansion affects the *strength* of the relationship between educational attainment and labour market outcomes, the field has not sufficiently considered the possibility that expansion has changed the way in which education operates in labour markets. We claim that, with expansion, there has been a shift in the mechanisms that underlie the association between education and labour market outcomes. In societies with high levels of educational expansion, education has increasingly come to operate as a positional good in labor markets, in which not the absolute skill level but rather the relative position of workers, given the distribution of the educational attainment of the population, is increasingly important to earnings.

We demonstrate that, with the rise of mass higher education for cohorts graduating between 1985 and 2007 in a sample of twenty eight countries, rewards in the labour market (measured in earnings) are increasingly based on a relative measure of workers' educational level, whereas the effect of an absolute measure of education stays stable as education expands. In other words, we find that education becomes more important in the determination of earnings—as standard theories of stratification would hold—only if education were measured in relative rather than absolute terms. This finding suggests that, with educational expansion, the positional value of education has become increasingly important.

Educational expansion and educational differentials in labour markets

At the individual level it is a well-known fact that education is strongly related to earnings (for reviews see Card, 1999; Hout, 2012), although there are significant differences in the size of the returns to education between countries and time periods. A large amount of literature focuses on these country differences, which are often explained by the institutional characteristics of societies, such as the education systems and different labour market institutions (e.g. Shavit and Müller, 1998; Bol and Van de Werfhorst 2013). A common finding, for example, is that the likelihood of upper secondary educational degree holders being unemployed depends on the specificity of vocational skills that are provided in a country's education system (Shavit and Müller, 2000), or that in some countries education functions better as an occupational barrier (Bol and Weeden, 2014). Researchers have explained such variations by referring to varying degrees of (post-)industrialization and technology, assuming stronger effects of education with increasing processes of (post-)industrialization and technological development because the demand for and price of skilled work increase (Bell, 1973; Goldin and Katz, 2008).

However, this field has hardly addressed the fundamental question of whether a new model of education has emerged in labour markets in which education is seen as a positional good rather than as an absolute indicator of skills. Did the increasing number of highly educated workers change the way in which employers reward education? To shed light on this question, we focus on two dominant models of schooling in economic and sociological literature: education as human capital and education as a positional good. Although both theories are discussed independently, it is important to mention that our argument is not that one of the two models fully explains the educational payoff in the labour market. Both models can operate simultaneously; however, our main focus is whether one of the two models becomes increasingly important with educational expansion, but not necessarily at the expense of the other.

Human capital and industrialisation processes

The most dominant explanation of why education is rewarded, and why individuals invest in schooling, is that education provides students with productivity enhancing skills that are rewarded by employers (Kerckhoff et al., 2001). Neoclassical economic theory can be seen as the main advocate of this idea in arguing that each person will receive the full return for their marginal product (their skills) in the labour market, when labour demands and labour supplies are matched (Becker, 1964). Education is an important form of human capital accumulation: more education leads to more skills and thus higher wages.[1] There are several studies that use less strict definitions of human capital and argue, for example, that human capital accumulation is not solely an individual process (Tomaskovic-Devey et al., 2005), or that there are different types of human capital making it 'multifaceted' (Acemoglu and Autor, 2012). However, the general assumption that underlies all of the variants of human capital theory is that individuals with equal skills should, and will, be rewarded equally. When entering the labour market, education is expected to generate an absolute return: each person with the same amount of skill should receive the same wage. Absolute skill levels are rewarded, and individuals decide their personal investment in a certain number of years of schooling on the basis of the wage it will yield.

Human capital theory does not give a strong prediction of how the effect of education changes with educational expansion. Instead, it argues that educational returns depend on relative differences in supply and demand: returns will increase when there is more demand than supply, whereas returns will decrease when educational expansion is not followed by an equal expansion of the labour market. Sociological theories on modernisation make stronger predictions about the changing returns of education in the labour market. Instead of social origin educational attainment increasingly determines who advances (Breen and Jonsson, 2005), as jobs in technologically advanced industries demand productivity enhancing skills that are taught in schools. It is evident from the modernisation theorists, and more fundamentally from functionalism as a theoretical paradigm, that the reason why education is increasingly rewarded is its *function* in the production processes of modern economies (Bell, 1973; Blau and Duncan, 1967; Treiman, 1970). Hence, although rarely made explicit in the literature, there is a strong affinity between modernisation theory and the human capital model of education (Barone and van de Werfhorst, 2011). Education is rewarded, and increasingly so, because of the skills that are taught in schools and the demand for those skills.

Following this approach, it may be expected that this increasing trend particularly concerns the effect of the *absolute* level of schooling (hypothesis 1).

The positional model of education in the post-industrial society

The positional model of education, by contrast, stresses the relativity of educational attainment (Hirsch, 1977; Thurow, 1975). It is not so much the worker's absolute skill level that determines his or her labour market returns, but rather his or her relative position among the suppliers of labour. According to Thurow (1975), a hiring process is defined by two queues: the labour queue and the job queue. In the labour queue employers sort jobseekers according to their signalled characteristics (with education being the most important feature), while the job queue is a virtual line where workers sort jobs. Employers will always try to hire those jobseekers who are at the front of the labour queue, whereas jobseekers will always aim to obtain the highest-ranked job in the job queue. In this model the educational payoff in the labour market depends on the educational composition of the other jobseekers. Given that the educational distribution varies between time and place, the value of a particular level of education is strongly context-dependent.

Furthermore, Thurow (1975) questions the assumption of neoclassical economics that individuals who sell their labour are skilled to do a job, and it is thus the absolute skill level which is rewarded. He argues that skills are of relatively little importance in the selection process: educational degrees do not necessarily reflect actual skill levels, but are used by employers as signals (Arrow, 1973; Spence,

1973). According to Thurow, education is unimportant for productivity enhancing skills, as 'most cognitive job skills, general or specific, are acquired either formally or informally through on-the-job training after a worker finds an entry job and the associated promotion ladder' (Thurow, 1975: 78). The productivity of workers is not connected to the human capital of the workers themselves but to the jobs they hold. When productivity does not reside in individuals, the absolute value of education is limited. Instead, workers with the highest available level of education are chosen for more complex jobs requiring more training, as employers aim to minimise their future training costs. In that sense, the positional model of education attaches more importance to the demand side than to human capital theory, as job opportunities are solely created by employers when there is a demand for that specific type of work (Goldthorpe, 2009). It is argued, therefore, that individuals are constantly in competition to obtain the best paid jobs, with an upward pressure in the education system whereby individuals attempt to become as highly educated as possible.

The positional model seems better able than the human capital model to explain the trends in the 'mismatch' between educational attainment and demanded skill levels. A process has taken place whereby individuals invest in a level of education even if that level is unnecessary for their future work (Clogg and Shockey, 1984; Freeman, 1976; Van der Ploeg, 1994). This trend towards overschooling has led to credential inflation (Berg, 1971; Collins, 1979) and subsequently to the displacement of less qualified workers (Wolbers et al., 2001). Highly educated workers take jobs at their own level but also below that, and workers with intermediate levels of education are increasingly competing for low-skilled jobs. Whereas becoming as highly educated as possible seems a rational decision from an individual perspective, collectively societies are not better off as many people work below a job level that matches their level of education (cf. Frank, 2011). Because educational expansion has further homogenized the composition of the less-skilled workers (e.g., in terms of learning ability), employers are increasingly demanding higher levels of education even for jobs that do not require much education (Gesthuizen et al., 2010; Olneck and Kim, 1989). As Hirsch formulates it: 'when education expands faster than the number of jobs requiring educational credentials, employers intensify the screening process' (Hirsch, 1977: 49).

The positional model also assumes that education is increasingly important for labour market careers.[2] However, contrary to the modernisation thesis and its underlying human capital model, the positional model assumes that it is the *relative* position of educational qualifications in particular that has become increasingly important in societies with significant educational expansion (hypothesis 2).

Data

Our main empirical task is to compare the absolute level of education, following the human capital model, with the positional good model of education based on workers' relative educational positions. More specifically, we are interested in whether, with increasing levels of educational expansion, the impact of either an absolute or a relative measurement of education on labour market returns increases. If the effect of an *absolute* measure on labour market returns increases as education expands, this would support the increasing importance of the human capital model of education (hypothesis 1). If, however, the effect of a *relative* measure of education on labour market returns increases with educational expansion, this would support the increasing importance of the positional model of education (hypothesis 2).

We use the International Social Survey Programme (ISSP) from 1985 to 2007 to test our hypotheses. The ISSP is an annual cross-national collaboration of surveys, and it collects nationally representative data on social-scientific issues. Although there are numerous rotating modules, a fixed set of background variables was gathered in each survey between 1985 and 2007. These variables are used in the current study, and it is therefore possible to harmonise all waves of the ISSP.[3] The ISSP is analysed using multilevel models, in which individuals are nested in the country-specific survey year. We are thereby able to estimate a trend from 1985 to 2007. A total of 28 countries[4] provided the data for our analyses. Only employees between the ages of 20 and 35 are included in the sample, since our theories are about

competition upon entry into the labour market. Moreover, all models are estimated by using year fixed effects, country fixed effects, as well as interactions effects between countries and the measures of education, giving the large literature that shows the cross-national variation in the education effect. The findings are highly similar for men and women, and separate models are available upon request. Our analytical sample is 51,211 individuals nested in 314 country-specific survey years.

Measuring absolute and relative education

Before we describe our statistical design, we first explain how we operationalised the theorised distinction between absolute and relative educational positions. For the absolute measure, the amount of years spent in formal education is used. We use years of education instead of the level of educational attainment, as it is more comparable across time: the classification of distinct educational levels changes over time within countries in the data that we use, unlike years of education. A second analysis where we analysed the returns to tertiary education, using an absolute and relative measure, provided largely comparable results. These results can be found in the Supplementary Appendix B. Since we use the number of years of education as a measure, we only used those countries and survey years, in which years of schooling was asked as a separate survey question. Our absolute measure is independent of the years of education of other school-leavers in the same cohort and thus remains unadjusted across time and context.[5]

To obtain the relative measure of education, we recode the years of schooling into a proportional score (percentile position, ranging from 0 to 100) for each country-cohort combination. Individuals are ranked according to the number of years they spent in education, relative to the years spent by the individuals in the same cohort and country. By converting the years of schooling into a ranked variable, we measure the position of one worker relative to others in the same graduation cohort, as has been done in previous studies (Olneck and Kim, 1989; Sørensen, 1977; Ultee, 1980). The relative measure depends on context and time, as an individual's rank depends on the years of education of other workers who left formal education in the same cohort. By taking the percentile score of education we obtain a non-linear measure of education, whose effect would be stronger if education indeed functions more as a positional good than as an absolute indicator of skill.

Human capital theory proposes that a higher investment in education results in more skills, and therefore higher wages, irrespective of the relative position achieved in a particular cohort. As a consequence, the effect of the absolute measure of education is a mixture of within and between cohort effects. The relative measure of education, in contrast, is based on data within a cohort. According to positional good theory, the human capital scholars are wrong in assuming that education affects earnings because of the skills that it provides individuals. It is the relative position achieved within the particular cohort that matters: a highly educated individual in 1985 can be a lowly educated individual in 2007.

This difference between the absolute and the relative measure of education can be demonstrated by showing how the relative value of education changes over time. In Figure 1 we plotted the average percentile score (i.e. the relative value of education) for those individuals with 10, 12, 15 and 20 years of education. While 14 years of education was relatively high for those who graduated in the 1980s (7th decile), the value decreased drastically over time for later graduation cohorts. Figure 1 shows how the absolute and relative measures differ.

Methods

We use two-level random effects models to investigate the specific pattern by which the effects of the relative and absolute measures change with educational expansion. As both measures are strongly correlated ($R = 0.84$) we decide not only to estimate both effects in the same model, as doing so might lead to inefficient estimates due to collinearity between the two indicators. Therefore, we run both models separately with either the absolute measure (equation 1) or the relative measure (equation 2) as our main independent variable, and a model where both measures are included simultaneously (equation 3). For

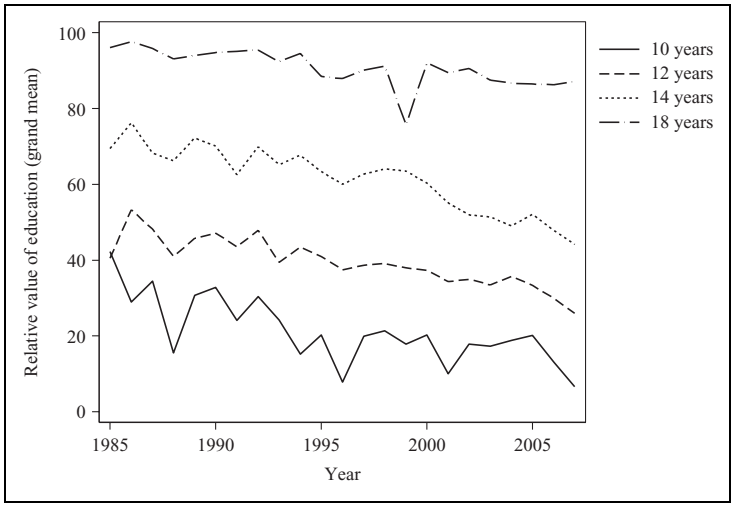

Figure 1. The relative value of education over time.

the purposes of this article we are more interested in cross-temporal than cross-national variation; therefore, we control for between-country heterogeneity by adding fixed effects for countries, and include interactions between countries and the relative or absolute measure of education. In all multilevel models, individuals (*i*) are nested in country-survey years (*j*). Since we include a cross-level interaction between education (absolute or relative) and a contextual variable of educational expansion, we allow the effect of education to vary across country-cohorts. Our model is, therefore, a multilevel model with a random effect for the intercept and the effect of education. The general models are defined by the following equations.

$$Y_{ij} = \alpha + \beta_1 X_{1_{ij}} + \beta_2 X_{3_j} + \beta_3 X_{1_{ij}}{}^{*} X_{3_j} + \beta'_x A_{ij} + u_{0_j} + u_{1_j} + \varepsilon_{ij} \quad (1)$$

$$Y_{ij} = \alpha' + \beta'_1 X_{2_{ij}} + \beta'_2 X_{3_j} + \beta'_3 X_{2_{ij}}{}^{*} X_{3_{jk}} + \beta'_x A_{ij} + u'_{0_j} + u'_{2_j} + \varepsilon'_{ij} \quad (2)$$

In each equation Y_{ij} is earnings, X_1 is a vector of years of education, X_2 is the relative level of education, X_3 is enrolment in tertiary education and A is a set of individual level control variables, including year fixed effects, country fixed effects and interaction effects between countries and effects. The random effects are u_{0j}, u_{1j} and u_{2j} which respectively depict the error in the intercept, the error in the effect of absolute education and the effect of relative education. Most important in these models are the cross-level interactions (β_3 and β'_3), as they signal how the effect of the absolute and relative measures (β_1 and β'_1) change with educational expansion. Finally, we also run a model where both interactions are included simultaneously.

$$Y_{ij} = \alpha\beta_1 X_{1_{ij}} + \beta'_1 X_{2_{ij}} + \beta_2 X_{3_j} + \beta_3 X_1{}^{*} X_{3_j} + \beta'_3 X_2{}^{*} X_{3_{jk}} + \beta_x A_{ij} + u_{0_j} + u_{1_j} + u_{2_j} + \varepsilon_{ij} \quad (3)$$

Although we run models where we allow variations between cohorts within countries, full fixed effects models, where we fix the country-cohort differences, give the same results (see Supplementary Appendix C).

Variables

Dependent variable

The ISSP income variable is measured differently across countries, but also between survey years within countries. In some countries it is measured on an interval scale, while other countries only provide

categories.[6] We therefore standardised the measure to make it comparable across countries and survey years. Following Checchi et al. (2010), we take the natural logarithm of the relative distance of each individual income observation to the country and survey year specific median.

$$\text{income}_{ij} = \ln\left(\frac{incomeISSP_{ij}}{median_{j}}\right) \quad (4)$$

On the new variable, 'income', zero is interpreted as being equal to the median income, and each negative and positive distance is mirrored. If an individual earns six times the median wage, they are equally distant from zero on the positive axes as someone who earns one sixth of the median is on the negative axes. A shortcoming of this variable is that it measures earnings in a relative way. What we are measuring in our models is whether someone is able to obtain a higher position in the earnings distribution with a specific absolute and relative educational position. Although the variable is imperfect, and it is advisable for future research to measure earnings using an absolute indicator of earnings, the relative income position theoretically fits as a dependent variable.

Independent variables

Individual level. Our main independent variables, the absolute and relative measures of education, have already been described. At the individual level we control for gender (1 = female), marital status (1 = married), employment status (part-time = 1, full-time = 0) and work experience. We add work experience to control for income differentials that arise out of differences in experience, by taking the number of years since an individual exited formal education. We also add the squared term of work experience, as it is well-known from labour economics that the effect of experience on earnings is non-linear. Next we add the interaction between both educational indicators and experience, as it is likely that the effect of education is much stronger for the inexperienced. All variables (both individual and contextual) included in the interactions are grand mean centred, which means that the main effects refer to the predicted effect of that variable for a respondent with an average score on the specific variable with which it interacts. Finally, in order to be able to compare the strength of the effects, we standardise the two main independent variables (absolute and relative education), so that they have a mean of zero and a standard deviation of one.

Contextual level. Our main interest is in how educational expansion influences the strength of the effects of the absolute and relative measures of education on earnings. We therefore add an indicator of educational expansion at the country-cohort level, measured by the number of students enrolled in tertiary education as a proportion of the total enrolment. Following Schofer and Meyer (2005), we use data on enrolment in higher education from the Cross-National Time-series Data Archive (CNTDA) by Banks (2008). The enrolment indicator in the CNTDA is based on UNESCO statistical yearbooks. Descriptive statistics for all variables can be found in Table 1.

Results

As argued earlier, due to collinearity between the relative and absolute measures of education, we decided to estimate separate models using either absolute (see Table 2) or relative education (see Table 3) as the independent variable. However, if we ignore the issue of collinearity and use both the relative and absolute measures of education, our findings are corroborated. These results are shown in Table 4.

As expected, in the first model in Table 2 we find that years of education has a strong, significant effect on income. For a one standard deviation increase in years of education the relative income of someone with an average amount of experience increases by 23% (exp[0.208] = 1.231). Furthermore we see that the predicted effects for the other covariates are in the direction that we would expect. Being female or in part-time work are negatively associated with income, whereas experience and working

Table 1. Summary of data.

Variables	Mean	SD	Range
Individual level			
Income	–0.039	0.611	–6.854–3.689
Gender (female = 1)	0.501	-	0–1
Marital status (married = 1)	0.502	-	0–1
Experience	12.028	5.087	0–25
Experience squared	170.560	127.920	0–625
Normal working hours per week	38.707	12.826	0–89
Part-time employment	0.128	-	0–1
Years of education	13.152	3.096	0–30
Relative educational position	50.000	28.219	0.071–99.894
Cohort level			
% tertiary enrolment	17.871	4.547	5.540–34.464

Source: ISSP data, own calculations. *N* [cohort level] = 314; *N* [individual level] = 51,211.
Note: The variables experience and % tertiary enrolment are included in the model as grand mean centred variables. Years of education and relative educational position are standardised.

Table 2. Models for *absolute* educational position with income as dependent variable.

	Model 1		Model 2		Model 3	
Fixed effects						
Constant	–0.228*	(0.113)	–0.167	(0.094)	–0.184	(0.094)
Individual level						
Country dummies	*no*		*yes*		*yes*	
Country × years of education interactions	*no*		*yes*		*yes*	
Female	–0.226**	(0.005)	–0.227**	(0.005)	–0.227**	(0.005)
Married	0.020**	(0.005)	0.019**	(0.005)	0.019**	(0.005)
Experience	0.084**	(0.003)	0.083**	(0.003)	0.083**	(0.003)
Experience squared (×100)	–0.244**	(0.011)	–0.241**	(0.011)	–0.241**	(0.011)
Experience × years of education	-0.006**	(0.001)	–0.006**	(0.001)	–0.006**	(0.001)
Working hours (×100)	1.109**	(0.026)	1.113**	(0.026)	1.114**	(0.026)
Part-time	–0.349**	(0.008)	–0.347**	(0.008)	–0.347**	(0.008)
Years of education	0.208**	(0.005)	0.225**	(0.013)	0.226**	(0.013)
Cohort level						
% Tertiary enrolment (×100)					–0.445	(0.351)
Cross-level interactions						
% Tertiary enrolment × Years of education					0.140	(0.114)
Random effects						
σ^2u (intercept)	0.023**	(0.001)	0.012**	(0.001)	0.012**	(0.001)
σ^2u (years of education)	0.004**	(0.000)	0.001**	(0.000)	0.001**	(0.000)
σ^2e	0.252**	(0.001)	0.252**	(0.001)	0.252**	(0.001)
-2 Log likelihood	75,845		75,436		75,433	

Source: ISSP data, own calculations. N [cohorts] = 314; N [individuals] = 51,211.
Note: Standard errors are listed in parentheses. The estimated effects and standard errors of the variables experience squared, working hours and tertiary enrolment are multiplied by 100 so that the standard errors are interpretable. The variables experience and tertiary enrolment are included as grand mean centred variables. The variable years of education is standardised.
*$p < 0.05$; **$p < 0.01$, two-tailed tests.

Table 3. Models for *relative* educational position with income as dependent variable.

	Model 1		Model 2		Model 3	
Fixed effects						
Constant	–0.301**	(0.105)	–0.220*	(0.095)	–0.231*	(0.095)
Individual level						
Country dummies	*no*		*yes*		*yes*	
Country × relative education interactions	*no*		*yes*		*yes*	
Female	–0.232**	(0.005)	–0.231**	(0.005)	–0.232**	(0.005)
Married	0.027**	(0.005)	0.027**	(0.005)	0.027**	(0.005)
Experience	0.078**	(0.002)	0.077**	(0.002)	0.077**	(0.002)
Experience squared (×100)	–0.226**	(0.010)	–0.223**	(0.010)	–0.223**	(0.010)
Experience × years of education	–0.005**	(0.001)	–0.005**	(0.001)	-0.005**	(0.001)
Working hours (×100)	1.114**	(0.026)	1.126**	(0.026)	1.127**	(0.026)
Part-time	–0.347**	(0.008)	–0.347**	(0.008)	–0.346**	(0.008)
Relative education	0.181**	(0.004)	0.197**	(0.011)	0.200**	(0.011)
Cohort level						
% Tertiary enrolment (×100)					–0.307	(0.358)
Cross-level interactions						
% Tertiary enrolment × Relative education					0.387**	(0.092)
Random effects						
σ^2u (intercept)	0.020**	(0.001)	0.013**	(0.001)	0.013**	(0.001)
σ^2u (years of education)	0.003**	(0.000)	0.001**	(0.000)	0.000**	(0.000)
σ^2e	0.253**	(0.001)	0.253**	(0.001)	0.253**	(0.001)
-2 Log likelihood	76,053		75,677		75,659	

Source: ISSP data, own calculations. *N* [cohorts] = 314; *N* [individuals] = 51,211.
Note: Standard errors are listed in parentheses. The estimated effects and standard errors of the variables experience squared, working hours and tertiary enrolment are multiplied by 100 so that the standard errors are interpretable. The variables experience and tertiary enrolment are included as grand mean centred variables. The variable relative education is standardised.
*$p < 0.05$; **$p < 0.01$, two-tailed tests.

hours increase income. In this model we did not add country fixed effects or interactions between country dummies and years of education. We did, however, include an interaction between experience and education, since it is likely that the effect of education on earnings decreases with labour market experience.

In model 2 we add country dummies and interaction effects between the countries and years of education, in order to account for between-country heterogeneity in the education effect (cf. Shavit and Müller, 1998). We see that including the country fixed effects and the interactions improves the model fit, as the -2 Log likelihood decreases. The coefficients that we estimated in model 1, however, remain stable when we include country dummies and their interactions with years of education. Please note that the predicted effect of years of education now refers to the effect of years of education in the omitted country, due to the inclusion of country fixed effects.

In model 3 we add the proportion of individuals that are in tertiary education and the interaction between that variable and years of education. First, we see that the main effect of tertiary enrolment is negative, but not significantly different from zero. More important for this study is the interaction between tertiary enrolment and years of education. Please note that this interaction models changes within countries over time. We find a small positive interaction effect, but the effect is not significantly different from zero indicating that over the period from 1985 to 2007 the effect of years of education on earnings did not change systematically with the increase in tertiary enrolment. Even if we forget about the significance of the effect; the point estimate itself is very small, as the difference in the standardised effect of years of education between the case with the lowest level of tertiary enrolment (0.06) and the

Table 4. Model for both measures of education, using income as dependent variable.

	Model 1	
Fixed effects		
Constant	–0.191*	(0.095)
Individual level		
Country dummies	*yes*	
Country × years of education interactions	*yes*	
Country × relative education interactions	*yes*	
Individual controls	*yes*	
Years of education	0.127**	(0.029)
Relative education	0.097**	(0.026)
Cohort level		
% Tertiary enrolment (×100)	–0.350	(0.357)
Cross-level interactions		
% Tertiary enrolment × years of education	–0.376	(0.260)
% Tertiary enrolment × relative education	0.551*	(0.220)
Random effects		
σ^2u (intercept)	0.012**	(0.001)
σ^2u (years of education)	0.000**	(0.000)
σ^2u (relative education)	0.000**	(0.000)
σ^2e	0.251**	(0.001)
-2 Log likelihood	75,248	

Source: ISSP data, own calculations. *N* [cohorts] = 314; *N* [individuals] = 51,211.
Note: Standard errors are listed in parentheses. This model fits the same individual level covariates as the covariates shown in Tables 2 and 3. The variables experience and tertiary enrolment are included as grand mean centred variables. The variables years of education and relative education are standardised.
*$p < 0.05$; **$p < 0.01$, two-tailed tests.

highest level of tertiary enrolment (0.34) is only 0.04 (0.28 × 0.14). This shows that the predicted effect of years of education is 0.04 standard deviation higher in the most 'expanded' cohort than it is in the least expanded cohort. Table 2 thus shows that the absolute level of education neither lost nor gained importance; its effect on income stayed more or less equal in the countries that we analysed.

The results of the multilevel regressions with the relative educational measure as the main independent variable are shown in Table 3. For the control variables in model 1 the predicted effects are highly similar to those we predicted in Table 2, with years of education as the main independent variable. As with years of education, relative education also has a positive effect on income although it is slightly smaller. A one standard deviation increase on the relative education indicator increases relative income by 20% (exp[0.181] = 1.198). The second model adds country fixed effects, and interactions between countries and the relative measure of education. Again we find that the point estimates of our covariates are highly stable when we account for between-country heterogeneity, while the model fit improves.

In model 3 we include the proportion in tertiary education and the interaction of that variable with the relative educational position. The main effect of tertiary enrolment is negative and not significant, indicating that educational expansion does not affect earnings for those who score average on the relative education measure. Most interesting for us is, of course, the interaction effect. In contrast to the interaction effect with years of education, we find a positive and significant interaction term. This shows that the effect of relative education on income increases as education expands. The relative educational position of an individual becomes increasingly important with higher levels of enrolment in tertiary education, indicating that, with expansion, education becomes increasingly positional. Here the difference between the most and least expanded cohort is sizeable, as the predicted standardised effect is 0.11

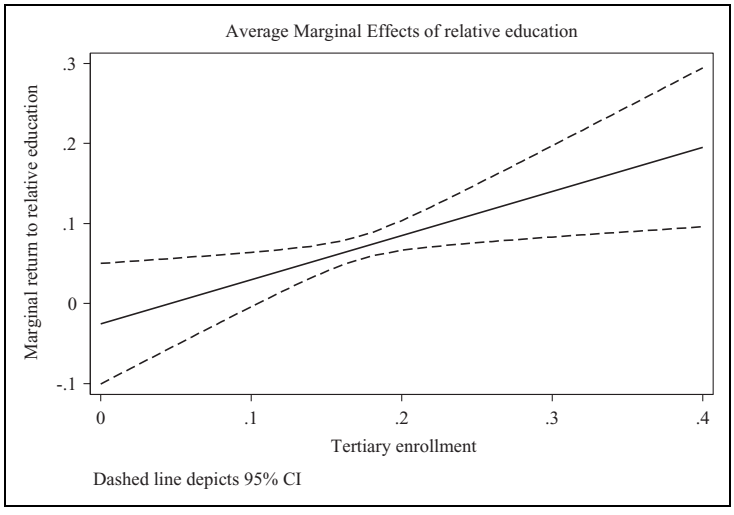

Figure 2. Marginal effects of years of education on income as education expands.

(0.28 × 0.387) higher in the cohort where more than 34% are in tertiary education than in the cohort with fewer than 6% in tertiary education.

Finally, Table 4 shows the results of both indicators in one model. Here we include country dummies, as well as interactions between countries and both relative and absolute levels of education. Both educational indicators are interacted with experience to account for the fact that education effect varies with experience. The individual level control variables are not shown in the table, but they are included.

In Table 4 we see that both relative and absolute education independently affect earnings of individuals. The effect of years of education is even slightly higher than the effect of relative education, although this of course refers to the effect of years of education for cohorts with an average score on the tertiary enrolment. This shows that education is not solely positional, neither is it solely absolute. Both components are important in the wage-setting process.

The interaction effects between the two indicators of education and enrolment in tertiary education tell a different story. Although both relative and absolute education are important, the importance of years of education remains more or less stable with varying levels of educational expansion. This is not the case for relative education, where we again find that the payoff to relative education increased with the expansion of tertiary education. Our results thus indicate that education has become increasingly positional, which means that the relative educational position of individuals is now more important than in times with a less expanded education system. The effect sizes of the interaction effects in Table 4 are larger than the effect sizes found in the separate analyses, and the effects presented in Tables 2 and 3 can therefore be seen as conservative estimates.

In all three tables we investigate whether the effect of an absolute and a relative measure of education changed with educational expansion. We show that the returns to the absolute level of education remained equal, while the returns to the relative level of education increased with educational expansion. Our results thus point to the growing importance of relative positional educational levels when education expands. This trend is most clearly observed by plotting the marginal effects of years of education on income (Figure 2) and the marginal effects of relative educational position on income (Figure 3). The marginal effects of these models are based on the estimates in Table 4 without centring the tertiary enrolment variable (see Supplementary Appendix D).

The two graphs summarise the main conclusion of our research: as education expands, the effect of the relative educational position becomes stronger. There seems to be a decline in the effect of years of education; however, the analysis in Table 4 shows that this decline is not significant.

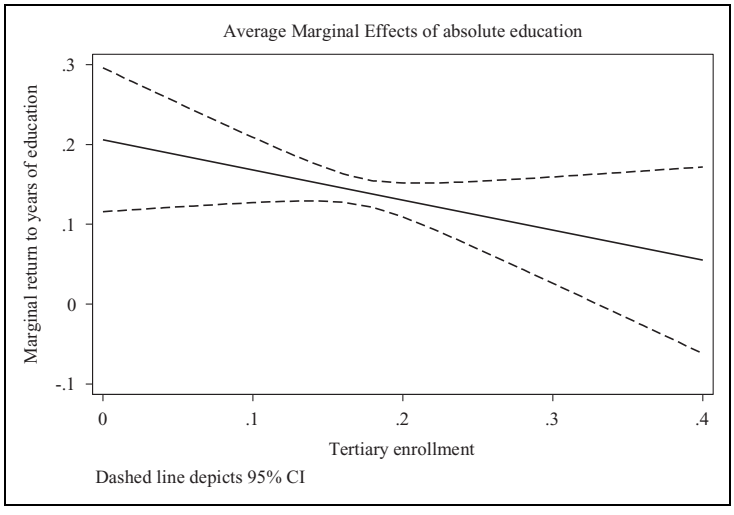

Figure 3. Marginal effects of relative education on income as education expands.

Conclusion

During the 20th century, education became a mass institution. The explanations for why education expanded differ: some argue that educational expansion is a function of a growing complexity in society, while others argue that it is merely a myth kept alive by social actors. Studies that focus on the individual level outcomes of educational expansion primarily look at changes in the strength of the relationship between education and rewards. An important gap remains: how does educational expansion alter the mechanism by which education pays off? In this article we studied how educational expansion has influenced the way in which employers reward education for either its absolute or relative value. Two contradicting hypotheses were formulated. While one predicted an increase in returns to the absolute level of education with educational expansion, the other anticipated a positive influence of educational expansion on the returns to the relative educational position.

Our first hypothesis was based on functionalism and modernisation theory in suggesting that educational expansion is functional and follows demand. Modernisation theory argues that this increase in the demand for better educated individuals leads to a stronger effect of absolute educational level on labour market rewards. According to these theories, we would expect that, with educational expansion, a worker's returns on the *absolute* educational level would increase. The second hypothesis argues differently: educational expansion leads to an increase in returns to a worker's *relative* educational position. Several theories argue that educational expansion does not follow demand. If this is the case, a process of displacement will take place. With an oversupply of educated individuals, especially better educated individuals, employers will find it increasingly difficult to reward employees for their absolute level of education and will rely more on an individual's relative educational position.

We tested both hypotheses by analysing respondents aged 20–35 from the ISSP over the period from 1985 to 2007 for 28 countries. We find that as the percentage of students enrolled in higher education increases, the effect of relative educational position on income becomes stronger, while the effect of the absolute level of education on income remains stable with changing patterns of tertiary enrolment. These results support the idea that the effect of relative educational position on labour market returns increases as education expands. This article thereby provides a first indication that there is a movement towards education becoming increasingly positional: we do not argue that absolute levels of education are unimportant, something which also becomes clear from our own analyses, but that the positional value of education becomes increasingly important.

But why did the relative educational position gain importance for employers? Displacement explains these findings by arguing that educational expansion leads to an intensified competition for fewer jobs among the skilled workforce. An oversupply of better educated workers leads to mismatching, where the link between the education and the job diminishes. Employers, according to the positional model of schooling, increasingly recruit on the basis of the relative position of workers' education. Obviously, this does not mean that the human capital perspective is unimportant, or that skills do not matter with high levels of expansion. We merely argue that the way education functions in the labour market has changed. Not so much the absolute, but rather the relative level of education increasingly determines the labour market payoff in western societies.

We need to interpret the results of this study with some caution. First, we focused on a trend over time and largely ignored country differences, although we did control for between-country heterogeneity in the education effect. While we acknowledge potential cross-national differences, they fall outside the scope of this article. Future research must examine potential country differences in the strength of either the positional or the absolute model of education and connect them to structural-institutional indicators, as it is likely that education does not function as strongly as a positional good in all societies. Second, the income data for the ISSP is far from perfect, and it is necessary to retest our findings using better (absolute) income data. This article does, however, shed some initial light on how the function of education in the labour market might have changed with the rise of mass education, as we find strikingly different results for a relative and absolute measure of education. Our results suggest that with educational expansion, education has increasingly become a positional good.

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Supplemental material

The online data supplements are available at http://asj.sagepub.com/supplemental.

Notes

1. Work experience is also key in the process of human capital accumulation (Mincer, 1974; Schultz, 1961). Although we recognise the importance of work experience, we are predominantly interested in the educational payoff at labour market entry. By controlling for work experience in our statistical models, we estimate the returns to education net of the skills that are gained through experience. Furthermore, we include the interaction between experience and education to control for the fact that human capital gained from both might compensate for each other.
2. The positional model of education, in which employers increasingly reward the relative position of educational attainment, is compatible with the neo-institutional perspective that views the quest for educational expansion as a myth unsubstantiated by empirical evidence (Ramirez et al., 2006; Schofer and Meyer, 2005). According to this model, employers increasingly believe in the beneficial outcomes of education. They are active agents in a society in which the demand for education is seen as pivotal for economic growth, even if the empirical evidence of a relationship between education

and growth is unclear. This assumption will lead them to increasingly select workers on the basis of their educational qualifications, especially in their relative rather than absolute form.

3. In terms of harmonisation we had to recode several variables because they differed across survey years. Respondents' employment relationships for example are described in more detail in the later years. The main recoding took place concerning income. For each country and survey combination, all categorical income data is recoded into group means. The final step was to delete duplicate observations. As some countries use the same sample of respondents for two consecutive ISSP waves, the respondents with the same respondent number, country of residence and gender are eliminated from our final dataset.
4. All countries analysed in this study, as well as their sample sizes, can be found in Supplementary Appendix A.
5. This assertion does not imply that years of education gives the same returns across countries and years: education systems differ across countries, which could lead to different predictive powers of years of education. However, this fact is not a problem for our design because we only compare the absolute measure with the relative measure. If there is a measurement error, there is no reason to expect it to be larger for the absolute and relative measures.
6. For all countries and survey years where income was coded according to categories, each category is recoded to its class middle.

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