The measurement of overeducation and undereducation: self-report vs. job-analyst method

The Measurement of Overeducation and Undereducation: Self-Report vs. Job-Analyst Method

ROA-RM-1997/2E

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Maastricht, December 1997

ISBN 90-5321-225-6
SEC97.164/RvdV

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Abstract

This paper investigates the criterium validity of two different methods to determine the required educational level of an occupation. The selfreport method consists of asking employees directly what the required level of education for the job is. On the other hand, in the job-analyst method the determining of the required level of education for a particular job takes place by experts.

Our analysis shows that, in essence, both methods measure the same concept (number of years of required education). However, they differ significantly with regard to the standard points, i.e. the points on the scale at which there is overeducation and undereducation. The analysis shows that the job-analyst method systematically overestimates the level of overeducation. There are no indications that the level of overeducation is underestimated in the self-report method.

1 Introduction

Since the sixties, the participation in education has shown a very strong increase in all Western countries. This has resulted in a substantial rise in the average level of education of the labour force. Although there has also been an "upgrading" of the requirements on the demand side, it looks as though the latter has not been able to keep a steady pace with the increase of the level of education.[1] This has led to a great deal of attention being paid to the effects of overeducation (and undereducation), if any, in economic and sociological research.

Most of these analyses concentrate on the returns to overeducation and undereducation (Duncan and Hoffmann, 1981; Hartog and Oosterbeek 1988; Cohn and Khan, 1995; Van Smoorenburg and Van der Velden, 1997). The general conclusion is that one additional year of education in excess of the required level (overeducation) will generate an extra return. However, this wage effect is less substantial than the effect of one year of required education. The wage effect of one year of undereducation is a negative one. Other studies focus on the relationship between overeducation and participation in on-the-job training (Sicherman, 1991; Groot, 1993; Barron, Black and Loewenstein, 1989), overeducation and job satisfaction (Tsang, Rumberger and Levin, 1991; Hersch, 1991) or overeducation and mobility (Dekker, De Grip and Heijke, 1997).

To determine the required level of education for a job and the degree of overeducation and undereducation, the literature distinguishes three methods. The first method pertains to job analysts determining the level of education required for a job. In US research, we can refer to the Dictionary of Occupational Titles (DOT). In the Netherlands, a similar method is used by Huijgen (1989). Halaby (1994) raises two important objections to this method. The first concerns the fact that a fixed job level is attached to a certain job. Any variation of job levels *within* a given occupation is not taken into account. However, variation within a given occupation with regard to educational requirements may be considerable. This particularly affects the *reliability* of the measurement instrument. The second objection is that the allocation of the levels is determined by job analysts. This is often done on the basis of descriptions of the tasks and the nature and required level of knowledge and skills. However, these are subject to change, which might result in a systematic overestimation or underestimation of the level of certain occupations. Furthermore, there is not always a consensus - even among experts - about the level of education required for a given occupation. This affects particularly the *validity* of the measurement instrument.

In the second method, workers are asked directly what they regard as the required level of education for the position they hold. In Anglo-Saxon, this is often operationalised by asking: "How much formal education is required to get a job like yours?" This method does not go uncriticised, either. The subjective character of the instrument is a point of criticism, as is the

1. Although the level of overeducation seems to have increased hardly at all over the past thirteen years (Groot en Maassen van den Brink, 1996).

fact that respondents may not always have a good insight in the level of education required for a job (Cohn and Khan, 1995; Halaby, 1994). The resulting 'noise' affects in particular the reliability of the measurement instrument. Hartog and Jonker (1997) have pointed out that individuals may be inclined to overestimate the educational requirements or to simply equate these to their own level of education. In that case, the level of overeducation will be underestimated, which affects the validity.

The third method takes the average of the actual levels of education of those employed in a certain occupation as its basis. A limit of one standard deviation above or beneath this average is taken as a criterion for overeducation or undereducation (Clogg & Shockey, 1984; Verdugo and Verdugo, 1989). Again, this method ignores the variation in educational requirements within an occupation, while the limit of one standard deviation would also seem rather arbitrary (Halaby, 1994). What is even more important, however, is that this method is very sensitive to changes in labour market conditions. In case of excess supply, employers will contract personnel with a higher level of education than is in fact required. In view of the fact that the match between education and occupational levels which is actually achieved constitutes the basis of the calculation of the required level of education, the level of overeducation is underestimated in case of excess supply and overestimated in case of excess demand. Hartog and Jonker (1997) therefore conclude that the method based on the realised matches is the least adequate one for determining overeducation and undereducation.

In the literature, the three methods discussed are often applied to different data sets, so that a direct comparison between the three methods is not possible. On the basis of the Panel Study of Income Dynamics, Cohn and Khan (1995) reach the conclusion that according to the second method, 33% of the workers is overeducated, whereas based on the third method, only 13% is overeducated. We have not seen any examples of studies in which the effect of the first method (the job-analyst method) has been systematically compared with the second method (the self-report).

In this article, the criterion validity of the job-analyst and self-report methods is further examined, while the third method will be ignored. The structure of the paper is as follows: in Section 2, the analysis model is presented. Section 3 provides a description of the data. Section 4 contains the results and Section 5 closes with the conclusion.

2 The model

In the school-leaver study which is being carried out by the Research Centre for Education and the Labour Market, information about the required level of education is available both through self-report and through the job-analyst method. The respondents were asked to state the minimum level of education which was required by the employer for the position they held. The respondents were offered a choice between the following response categories: (1) primary education (2) Preparatory Vocational Education (PVE) / Lower General Secondary Education

(LGSE) (3) Apprenticeship / Short Intermediate Vocational Education (SIVE) (4) Higher General Secondary Education (HGSE) / Pre-University Education (PUE) (5) Intermediate Vocational Education (IVE) (6) Higher Vocational Education (HVE) (7) University Education (UE) / Higher Vocation Education (HVE), second stage. In Anglo-Saxon literature, it is customary to express the level of education in years of education. To be able to compare results, we decided to convert the Dutch school levels into years of education. The following transformation was applied both to the level of education actually attained and the level required: (1) primary education, 6 years (2) PVE/LGSE, 10 years (3) Apprenticeship /SIVE, 12 years (4) IVE/HGSE/PUE, 14 years (5) HVE, 18 years and (6) UE/HVE second stage, 20 years[2.]

Subsequently, the number of years of overeducation and the number of years of undereducation is determined on the basis of the level of education attained (in years) and the respondents' self-reports about the level of education required. These two variables were constructed as follows. If E is the actual number of years of education and E^r is the number of years of education required for a job, the number of years of overeducation (E^o) is represented by:

$E^o = E - E^r$ if $E > E^r$ and (1)
$E^o = 0$ if $E \leq E^r$

Parallel, the number of years of undereducation (E^u) is determined as:

$E^u = E^r - E$ if $E^r > E$ and (2)
$E^u = 0$ if $E^r \leq E$

The required number of years of education, overeducation and undereducation, determined on the basis of the respondents' self-reports, are represented by E_s^r, E_s^o and E_s^u respectively.

In addition, the level of education required for the respondents' occupation was determined on the basis of the job-analyst method. To do so, we used Huijgen's classification (1989), which attaches a level code to all the occupations listed in the Classification of Occupations of Statistics Netherlands applied in the school-leaver study. This level corresponds to the required level of education. Seven levels are distinguished, ranging from unskilled labour (level 1) to academic labour (level 7). This division into seven levels was also converted into the required number of years of education, where level 1 (unskilled) was set at 4 years, level 2 (primary education) at 6 years, level 3 (PVE/LGSE) at 10 years, level 4 (Apprenticeship) at 12 years,

2. Both the nominal length of the studies and the level of difficulty were taken into account in the transformation. The number of years required by an individual who wishes to attain a certain level of education by means of vocational education was taken as a basis. This methodology shows considerable similarities to the construction of Van der Velden's "educational ladder" (Van der Velden, 1991).

level 5 (IVE) at 14 years, level 6 (HVE) at 18 years and level 7 (UE) at 20 years. The required level of education determined in this manner, as well as the derived criterion for overeducation and undereducation are represented by E_j^r, E_j^o, E_j^u respectively.

One of the differences between E_s^r and E_j^r is that E_s^r is determined for each function that an individual holds, whereas E_j^r is a fixed value for an occupation. In view of the fact that considerable variation may occur with regard to E^r within an occupation, the aggregation difference alone may result in a difference between E_s^r and E_j^r. In order to examine the scope of this aggregation effect, the average level of education required as indicated by the respondents has also been determined *per occupation* (on a scale comparable to Huijgen's, i.e. from 1 to 7), and per occupation this average was rounded off to the nearest integer. The required level of education determined in this manner is represented by E_m^r, while the level of overeducation and undereducation is represented by E_m^o and E_m^u.

Subsequently, the comparison between self-report and the job-analyst method takes place in four stages. In stage 1, the two methods are subjected to a direct comparison. The level of overeducation and undereducation according to the respective methods will be examined. This can be used to determine whether the standard points of the respective methods, namely those points at which there is overeducation and undereducation, differ from one method to the other.

In the second stage, we will calculate the correlation between the two scales of the required level of education in order to determine the common variance between the two measurement instruments. This is done to see whether the two instruments measure one and the same underlying concept. It is quite possible, for instance, for the self-report method to systematically overestimate the required level of education by one year. In that case, the level of overeducation in step 1 will be lower than that according to the job-analyst method. However, the correlation between the two measurement instruments may be high indeed.

In stage 3, the criterion validity of the two instruments is examined. This stage investigates the predictive value of the two measurement instruments for a relevant criterion. Wages, being the most relevant indicator of productivity, were chosen as the criterion variable. These depend on both the number of years of education and the number of years of overeducation and undereducation (Cohn and Khan, 1995). The following wage equations were estimated, where Ln W is the natural logarithm of the gross hourly wages, X is a vector with control variables, and e is the error term.

$$LnW = a_0 + a_1E_s^r + a_2E_s^o + a_3E_s^u + a_4X + e \quad (3)$$

$$LnW = b_0 + b_1E_j^r + b_2E_j^o + b_3E_j^u + b_4X + e \quad (4)$$

$$LnW = c_0 + c_1E_m^r + c_2E_m^o + c_3E_m^u + c_4X + e \quad (5)$$

It is assumed that the parameter estimates for required education and for overeducation are positive (in which those for required education are greater than those for overeducation), and that the parameter estimates for undereducation are negative.

The difference between self-report and the job-analyst method may then pertain to three separate aspects. There may be a difference in constants (a_0 and b_0 respectively), there may be a difference in the slope (the parameters a_1, a_2 and a_3 versus b_1, b_2 and b_3 respectively), and there may be a difference in explanatory power (which is reflected in the explained variance). Should one of the methods systematically over- or underestimate the required level of education by one year, then this will be reflected in differences with regard to the constant and the parameter estimates of overeducation and undereducation. However, there will be no difference in the explained variance. If the measurement instruments show a substantially different degree of reliability, this will result in a difference with regard to the explained variance.

If the two instruments differ especially with regard to the standard points in which there is overeducation or undereducation, this may be caused either by the one instrument overestimating the level of overeducation or by the other instrument underestimating the level of overeducation (or both). Therefore, a number of wage equations are estimated again in stage 4, but this time with dummy values for overeducation (OE) and undereducation (UE). The attained level of education (in years) is now taken as a basis and to serve as a predictor instead of the required level of education (cf. Cohn and Khan, 1995).

In formula:

$$LnW = a_0 + a_1E + a_2OE_s + a_3UE_s + a_4X + e \quad (6)$$

$$LnW = b_0 + b_1E + b_2OE_j + b_3UE_j + b_4X + e \quad (7)$$

$$LnW = c_0 + c_1E + c_2OE_m + c_3UE_m + c_4X + e \quad (8)$$

$$LnW = d_0 + d_1E + d_2OE_s + d_3OE_j + d_4UE_s + d_5UE_j + e \quad (9)$$

$$LnW = f_0 + f_1E + f_2OE_m + f_3OE_j + f_4UE_m + f_5UE_j + e \quad (10)$$

It is now assumed that when E_s^r and E_j^r measure the same concept and OE_j overestimates the level of overeducation, b_2 will be smaller than a_2 (after all, OE_j will measure a great deal of noise in this case). In addition, in an equation in which the two dummy variables have been incorporated (equation 9), OE_j will have no additional effect in comparison with OE_s. However, if OE_s underestimates the level of overeducation, there will be an additional effect in equation 9 with regard to OE_j.

3 Data

Two different data sets were used for the analysis: RUBS (Registration of the Outflow and Destination of School-leavers) and HBO-Monitor (Higher Vocational Education Monitor). The RUBS study is a representative survey among school-leavers from secondary education, i.e. General Secondary Education (GSE), Preparatory Vocational Education (PVE) and (Short) Intermediate Vocational Education (SIVE and IVE). The survey takes place within a year after graduation by means of a written questionnaire. The second study is the HBO Monitor, a study comparable to RUBS among graduates of Higher Vocational Education. The latter survey takes place just over a year after graduation[4]. For the current analysis, the surveys among graduates of the academic year 1991 - 1992 were used, which took place in 1993. The two sets were linked and weighted on the basis of national data. See Van Smoorenburg et al. (1994) and Van de Loo and Van der Velden (1994) for a more detailed description of the data sets.

For the analysis, a selection was made from this linked set. We selected graduates from full-time courses in 1991 - 1992 (part-time education has not been considered). Furthermore, school-leavers from General Secondary Education (GSE) have been left out, because only 5% of the graduates in this category enter the labour market and hence GSE does not serve as final education. In addition, only those who had paid work at the moment of the survey have been selected. Respondents over the age of 27 or under the age of 16 have also been left out of the analysis.

4 Results

In Table 1, the percentages of over- and undereducation according to the self-report method have been indicated per level of education.

Table 1
Overeducation, adequate education and undereducation among school-leavers by level of education, according to the self-report method

	Undereducation %	Adequate education %	Overeducation %	weighed N (=100%)
PVE	16	75	9	10,600
SIVE	25	8	67	5,900
IVE	1	79	20	24,800
HVE	3	78	31	15,000
Total	7	70	23	56,300

4. As from 1995, both studies are executed according to an integrated model.

Across the board, 70% of the respondents indicate that they hold a position for which their own level of education was required (adequately educated). Nearly a quarter holds a position for which a lower level of education is required (overeducated) and 7% hold a position for which a higher level of education is required (undereducated). For IVE and HVE, the patterns are almost similar: one in five graduates is overeducated and hardly anyone is undereducated. In PVE, the percentage of undereducated people is considerably higher, which can be explained by the fact that of these school-leavers many move on to an apprenticeship. The required level of education as indicated by these respondents reflects the situation at the end of the apprenticeship rather than the requirements upon moving on to the apprenticeship. SIVE clearly takes up a unique position. Only 8% of the respondents indicate that they are adequately trained and 67% hold a position for which a maximum level of PVE suffices. These figures clearly reflect the fact that SIVE is not yet appreciated as a recognisable level by employers.

Table 2
Overeducation, adequate education and undereducation among school-leavers by level of education, according to the job-analyst method.

	Undereducation %	Adequate education %	Overeducation %	weighed N(=100%)
PVE	38	24	38	11,000
SIVE	1	31	68	6,300
IVE	2	17	81	25,300
HVE	6	37	57	15,300
Total	10	25	65	57,900

Table 2 shows the percentages of overeducation and undereducation according to the job-analyst method per level of education. The most important difference between the two methods pertains to the substantial increase of the number of overeducated people. This percentage rises from 23% to 65%. This increase occurs on all levels of education, albeit not to the same extent in all cases. Especially in the case of IVE, the increase in the number of overeducated people is very substantial: the percentage has risen from 20% to 81%. The increase in the number of undereducated people at PVE-level is remarkable as well. This is related with the aforementioned continuation into apprenticeships and the fact that no distinction is made between the status of apprentice and that of skilled worker in the classification of occupations.

The difference between the two methods is also clear when the required number of years of education is considered. In the self-report method, the average number is 13.2 years, whereas the average number of years required according to the job-analyst method is 11.4 years. In

other words, according to the job-analyst method, the required number of years of education for school-leavers from vocational education is nearly 2 years lower than that of the self-report method.

Of course, the question is whether this is simply a systematic difference between the two methods when it comes to the number of years of required education or whether they measure different concepts. In order to determine this, we have calculated the correlation between the two (E_s^r and E_j^r) in stage 2. This correlation is 0.66, which is not very high, considering that both instruments intend to measure the same concept. After all, the common variance is only 43%. This can partly be explained by the variance in educational requirements which exist within one and the same occupation. These differences are picked up by the self-report method, but not, by definition, by the job-analyst method. In order to estimate the scope of this aggregation effect, the correlation with the average self-report determined per occupation (E_m^r) has also been calculated. In this case, the correlation with the job-analyst method (E_j^r) is 0.78, which indicates that some of the differences between the two methods are in fact related with the level of aggregation. The common variance is now 61%.

Do the established differences between the two methods also lead to a difference in explanatory power? Table 3 presents the results of the wage equations carried out in stage 3. The first column concerns the wage equation based on the self-report method (equation 3), the second column is based on the job-analyst method (equation 4) and the third column on the average self-report per occupation (equation 5). Four control variables on sex, ethnicity (dummy), age (in years) and the region in which the person is employed and two dummy variables indicating whether the own field of education or, conversely, a completely different field of education was required for the job concerned (reference category: no specific field of education required) were included.

The return of one additional year of required education is about 7%, which corresponds well with similar estimates elsewhere in the literature (see e.g. Hartog and Jonker, 1997). As expected, the return of one year of overeducation is slightly lower, namely 5%. As was also expected, the return of undereducation is negative and is 7 to 9%, depending on the measurement instrument.

With regard to this analysis, it is important to note that the estimates for the constant and the parameter estimates for the E^r variables do not differ significantly for the three different methods. For all three equations, the parameter estimate for the number of years of required education is virtually identical, namely 0.067. The estimates of the effects of overeducation and undereducation do differ, however. The 95%-confidence interval for E_s^o is between 0.042 and 0.051. For E_j^o this confidence interval is between 0.050 and 0.058. Therefore, the parameters found for the job-analyst method do not fall within the confidence interval of the self-report method and vice versa. The same goes for the estimates with regard to the effect of undereducation. In this case, the 95%-confidence interval of E_s^u is between -0.082 and -0.058, whereas for E_j^u it is between -0.101 and -0.081.

The three methods do not differ significantly when it comes to explanatory power. The adjusted R^2 is 59% for the self-report method and 58% for the job-analyst method. In equation 5, the adjusted R^2 is also 58%.

We may therefore conclude that the effect of one year of required education according to the self-report method does not differ significantly from the effect of one year of required education according to the job-analyst method. The effects of one year of overeducation and one year of undereducation respectively, however, do differ significantly from one method to the other.

Table 3
Wage equations based on three different measurements of the required level of education and the level of overeducation and undereducation (equations 3, 4 and 5).

	Self-report per function (equation 3)		Job-analyst method (equation 4)		Average self-report per occupation (equation 5)	
	coefficient	standard error	coefficient	standard error	coefficient	standard error
Required level of education E^r	0.067**	0.002	0.067**	0.002	0.066**	0.002
Overeducation E^o	0.047**	0.002	0.054**	0.002	0.047**	0.002
Undereducation E^u	-0.070**	0.006	-0.091**	0.005	-0.084**	0.005
Control variables						
Female	-0.014**	0.006	-0.019**	0.006	-0.019**	0.006
Non-Dutch	-0.039	0.021	-0.050*	0.021	-0.050*	0.021
Age	0.052**	0.002	0.051**	0.002	0.052**	0.002
North	-0.064**	0.011	-0.068**	0.011	0.065**	0.011
East	-0.027**	0.007	-0.026**	0.007	-0.025**	0.007
West	ref.		ref.		ref.	
South	-0.026**	0.006	-0.027**	0.006	-0.024**	0.006
Foreign countries	0.111**	0.018	0.109**	0.018	0.113**	0.018
Required educational field						
Own discipline	0.044**	0.006	0.064**	0.006	0.062**	0.006
Other discipline	-0.008	0.013	0.007	0.014	0.006	0.014
No discipline	ref.		ref.		ref.	
Constant	0.449**	0.026	0.486**	0.027	0.444**	0.026
Number of cases		10,072		10,218		10,213
Adjusted R^2		0.592		0.581		0.582

**Significant to 1% *Significant to 5%

This outcome may be interpreted as follows. Both the job-analyst method and the self-report

method essentially measure the same concept, namely the number of years of education required. However, they differ considerable in determining the standard points, the points on the scale at which there is overeducation, adequate education and undereducation. According to the job-analyst method, 65% of the population is "overeducated", whereas the rate of overeducation is no higher than 23% according to the self-report method. Which method is closest to the "true" score for the level of overeducation?

In order to establish this, five new wage equations have been estimated in stage 4, this time with the level of education actually *attained* (in years), and with dummy variables for overeducation (OE) and undereducation (UE). These analyses reflect the equations (6) - (10), respectively. The control variables from the equations in Table 3 have also been incorporated to serve as predictors.

If the level of overeducation is systematically overestimated in the job-analyst method, this will be reflected by a less negative parameter estimate for OE_j, in equation 7. In addition, in equation 9, where both measurement instruments have been incorporated, OE_j will no longer have an additional effect in comparison with OE_s. However, if the self-report method underestimates the level of overeducation, there will be an additional effect with regard to OE_j in equation 9 which includes both dummy variables.

Table 4
Wage equations with dummy variables for overeducation and undereducation (standard errors between brackets).

	Equation 6	Equation 7	Equation 8	Equation 9	Equation 10
Level of education attained E	0.066**	0.064**	0.053**	0.066**	0.063**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
UE_s	-0.022			-0.021	
	(0.014)			(0.014)	
OE_s	-0.095**			-0.096**	
	(0.006)			(0.006)	
UE_j		-0.059**		-0.059**	-0.057**
		(0.012)		(0.012)	(0.012)
OE_j		-0.022**		-0.009	-0.003
		(0.006)		(0.005)	(0.007)
UE_m			-0.092**		-0.081**
			(0.015)		(0.016)
OE_m			-0.070**		-0.073**
			(0.006)		(0.006)
Control variables[5])					
Number of cases	10.072	10.218	10.213	10.072	10.213

5. For easy reference, the parameter estimates for the control variables were left out here. The estimates in question are virtually identical to the results in Table 3. Detailed results are available from the authors upon request.

Adjusted R^2	0.591	0.575	0.581	0.592	0.582
Model improvement:	Eq. 9 - Eq. 6: F = 12.96 df = 2 p < .01 Eq. 9 - Eq. 7: F = 434.06 df = 2 p < .01 Eq. 10 - Eq. 7: F = 89.27 df = 2 p < .01 Eq. 10 - Eq. 8: F = 23.13 df = 2 p < .01				
Difference between parameters:	Eq. 9: UE_s - UE_j: t = 2.13** Eq. 9: OE_s - OE_j: t = -10.43** Eq. 10: UE_m - UE_h: t = -1.30 Eq. 10: OE_m - OE_h: t = -9.31**				

**significant to 1%

Table 4 lists the most important results of this analysis. Equation 6 displays the equation with dummy variables for overeducation and undereducation according to the self-report method. The effect of undereducation does not deviate significantly from zero. The effect of overeducation leads to a negative income effect of nearly 10% in comparison with school-leavers who are in fact employed in a job which matches with their level of education. Equation 7 provides the results for the job-analyst method. Contrary to the expectations, the effect of undereducation is a negative one. Van Smoorenburg and Van der Velden (1996) have shown that this has to do primarily with the loss of income which results from taking a course within the apprenticeship system[6]. What is important here is that the negative effect of overeducation is only -0.022. If we combine these in one equation (equation 9), it appears that the parameter estimates for OE_s and OE_j differ significantly. This leads to the conclusion that the level of overeducation, when determined by means of the job-analyst method, is severely overestimated, whereas the level of overeducation according to the self-report method is not underestimated.

The differences between the two methods cannot be attributed to a difference in the level of aggregation. After all, even when the level of overeducation is determined on the basis of the average self-report per occupation (equation 8), there is still a significant difference in the magnitude of the parameter estimates, although the difference becomes somewhat smaller. In equation 8, the estimate for OE_m is -0.070, which is nearly three times the estimate for OE_j. Here, too, the effect of OE_j is no longer significant when both dummy variables are incorporated in the same equation (equation 10).

5 Conclusion

In this article, we have examined the criterion validity of two different methods for determining the level of required education for a particular job, namely: the self-report method, in which the

6. Graduates from VBO, who take a course in the apprenticeship system often regard themselves as undereducated. Because these types of training can be regarded as generic with benefits for the employee rather than for the employers, following this type of training is accompanied by a loss of income.

workers themselves indicate the level of education minimally required for the job they hold, and the job-analyst method, in which experts express their opinion about the minimum level of education required for a given job.

When applied to the position of school-leavers on the Dutch labour market, the two methods appear to differ significantly, both with regard to the average level of required education and with regard to the level of overeducation and undereducation. According to the self-report method, the average level of education required is 13.2 years and 23% of school-leavers have a job below their own level of education. According to the job-analyst method, the average level of education required is 11.4 years and as much as 65% of the school-leavers is "overeducated".

The main conclusion is that the two methods measure essentially the same concept (number of years of required education). However they differ significantly with regard to the standard points, i.e. the points on the scale at which there is overeducation and undereducation. The analysis shows that the job-analyst method systematically overestimates the level of overeducation. There are no indications that the level of overeducation is underestimated in the self-report method. Therefore, the conclusion must be that the self-report method yields a considerably more accurate estimate of the level of education required than the job-analyst method.

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