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10 Vocational Education and Training in Britain and Norway

Peter Elias, Erik Hernaes, and Meredith Baker

10.1 Introduction

While there is a general consensus concerning the need to provide young people with the opportunities to equip themselves with vocational skills, wide variation exists between countries in terms of the institutional structures which supply such training opportunities and in terms of their reliance on market mechanisms. At one extreme, the delivery of vocational skills may depend exclusively on the ability of private enterprises and public agencies to determine their own enterprise-based training programs and to recruit young people into such programs. In such circumstances, training and recruitment are usually linked. Enterprises determine, as a joint decision, both the nature of their training and the type of employee to be recruited for training. At issue in these arrangements is the question of who pays for such training and, if the employer pays for all or part of the costs of training, how to secure a return on potentially mobile investments. At the other extreme, vocational training may be organized as a part of the general education of young people, providing transferable work-related skills in the absence of a contract of employment. Clearly, an important issue in this case is the difficulty of matching the supply of skills to demand, both in aggregate and for specific skills.

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This paper presents results from an investigation of the delivery systems for vocational skills which existed in Great Britain and Norway from the mid-1970s through the late 1980s. These countries, while not polarized on the spectrum outlined above, were sufficiently different in their approaches in the mid-1970s to warrant a detailed comparison of their vocational education and training systems. Norway relied heavily on a *school-based* system of vocational education for 16–19-year-olds, a system which expanded rapidly in the early 1980s. Britain, on the other hand, had a well-established *employer-based* apprentice training system for 16–19-year-olds in the mid-1970s, particularly for young males entering craft and skilled manual jobs, a system which contracted steadily throughout the 1980s (see Blanchflower and Lynch, chap. 8 in this volume). The evolution of these systems, with increased interest in apprentice-based training in Norway and with the introduction of vocational education for 14–16-year-olds in Britain's schools, is indicative of the problems both systems have experienced.

This study attempts to quantify the impact of the method of delivery of vocational training on the subsequent earnings of young people in the two countries. As with all comparative studies, the outcome of such an exercise must be considered with due caution, given the differences in institutional settings. Nonetheless, it is revealing to look for these effects, given data which facilitate a detailed comparison.

The subsequent sections elaborate the research findings as follows. Section 10.2 contains a brief description of the evolution of the systems of vocational education and training in Britain and Norway. Section 10.3 discusses the data used for the detailed analysis of the impact of such vocational education and training on earnings. Section 10.4 describes the results of this comparative analytical work. Section 10.5 summarizes and interprets these results in light of the main issues surrounding delivery methods.

10.2 Evolution of Vocational Education and Training in Britain and Norway

Throughout the latter half of this century, England and Wales has had a highly selective educational system. Indeed, it was only in the mid-1970s that the move toward the integration of the two-tier system of schooling for students over 11 years old began to gain momentum. Before this, all 11-year-olds were subject to basic tests of verbal and mathematical skills and, on the basis of these test results, were allocated to a *grammar school* or to a *secondary modern school*. Grammar school entrants could leave school and start work at age 15 (16 after 1972), but most were expected to progress through national examinations in five to eight subjects at "Ordinary" level (O-levels) at age 15 or 16, followed by two or three examinations at "Advanced" level (A-levels) at age 17 or 18. Secondary modern school entrants were most likely to leave school at age 15 or 16, often without any qualifications. A Certificate of Secondary

Education (CSE) was available in a range of subjects, with only the top grade obtainable in a CSE deemed equivalent to an O-level pass.

Integration of the two-tier system has been a long and slow process. Some of the grammar schools broke away from the state system during the transitional phase, to become privately managed schools, retaining their own selective entrance examinations. However, most of the grammar and secondary modern schools were combined to form *comprehensive schools*. The O-level and CSE examination syllabuses were integrated in the mid-1980s, providing a broad range of subjects in which 15- and 16-year-olds can obtain qualifications, including many subjects which have a clear vocational or work-related focus. The A-level examination system remains unchanged, despite numerous studies and committee recommendations for change to its narrow yet highly specialized curricular content.

The Scottish educational system is less polarized than that which prevails in England and Wales. Scottish schools provide a two-tier examination system, as do schools in England and Wales, but the "higher"-level certificate subjects are less specialized than the A-level subjects pursued in England and Wales. The higher education system in Scotland, entered at age 17, generally provides for a further year of education at this age than is the case south of the border. For example, most universities are four-year courses, compared with three years in English and Welsh universities.

Concomitant with the existence of the two-tier educational system in England and Wales, young people in the 1970s generally pursued two routes into the labor market. One route would be for the "nonacademic" students, many of whom would complete their compulsory schooling at age 16 with no formal qualifications. The other group would pursue O- and A-levels, seeking to obtain entrance to a higher education institution at age 17 or 18.

In the mid-1970s, approximately two-thirds of all young people attaining their sixteenth birthday left full-time education, a substantial proportion without any educational qualification. By 1990, this figure had fallen to one-half of the minimum-school-leaving-age cohort. This increase in the proportion of young people continuing in full-time education is primarily due to an increase in the numbers pursuing vocationally related subjects on a full-time basis in *colleges of further and higher education* (equivalent to U.S. community colleges).

The Norwegian educational system is quite different from the school systems in Britain. Compulsory education for Norwegian children commences in the year in which they attain their seventh birthday, compared with fifth birthday for British children. "Compulsory schooling" is defined in terms of the number of years of schooling completed rather than the attainment of a particular age. From 1959 onward, compulsory schooling was gradually extended from seven to nine years, a process which was complete by the end of the 1970s.

Private schools are rare in Norway. The idea of a standardized, comprehen-

sive school intended to provide equal educational opportunity, independent of parents' means, geographical residence, and the like, has been pervasive in the construction of compulsory schooling. Up to age 16, there is no official partitioning of pupils according to ability. There is also very little specialization, with choices mainly limited to a menu of additional subjects intended to fill four hours per week in the eighth year of school and nine hours per week in the ninth year.

On completion of compulsory education, usually at age 16, the transition to secondary school occurs. Since 1976, all types of education between the compulsory schooling system and the higher education system were integrated into the comprehensive system of upper secondary education, known as the "Videregående skole." The specific aim of these schools is to give all young persons three years of education and training beyond compulsory school, with the option of qualifying for higher education or of obtaining a vocational qualification.

In secondary school, there are now 11 main areas of study (*studieretninger*), one of which is general education. General education usually lasts three years and prepares a student for further studies at a university or another institution of higher education. Of the 1988 cohort from compulsory school, 35 percent entered general education. Another 55 percent of the cohort entered one of the 10 vocational branches, where education in school is offered in two alternatives: (1) full-time one-year courses and (2) day release for a young person who has an apprenticeship contract with an employer. With full-time courses, some relevant employment experience may be pursued between years at school. Only a small number of young persons have apprenticeship contracts; in 1990 these numbered 6,000 out of a cohort of approximately 50,000, and these apprenticeships were obtained only after at least a year in vocational education at school. Although rather small in number, the apprenticeship system is elaborate. A contract obligates the employer to provide training and obligates the apprentice to make full use of this facility with the aim of obtaining a formal certificate in one of (currently) 190 subjects. In terms of enrollment, the most important apprenticeships are plumbing, hairdressing, and electrical installation. The stipulated period is usually three or four years, after which one can present oneself before a board, perform a task according to rules which are set nationally, in cooperation between the trades and the authorities, and obtain a certificate. This certificate will often be the basis for authorization to engage in certain occupations, such as electrician.

Most subjects in which formal apprenticeships are offered are found in trade, craft, and industry. In other areas, the most important of which in terms of enrollment is commercial studies, there is no formalized apprenticeship system. However, across all vocational areas, certificates are awarded by schools on completion of each year, and many young persons take only one or two years of postcompulsory vocational education. In school, the majority of the lessons during the course of the school week are devoted to subjects specific

to the field in which the student is specializing. In all vocational branches, the students practice at school. Students in the commercial branch will work with computers and do practical office work, whereas students in the mechanics branch will develop their skills in practical sessions conducted in fully equipped workshops on the school premises. Students who will be car mechanics practice on old cars given to the school, or even on their own vehicles. Hence, most young people who have not gone on to higher education will receive general or vocational education in upper secondary school and will not be provided with training under a formal contract with an employer.

Given these radically different approaches to the provision of vocational skills, together with the variation in the extent to which young people in Britain and Norway participate in such education and training, it is of interest to explore whether the particular delivery system and/or the types of skills it delivers to young people is associated with variation in their earnings at some later age. To address this issue, longitudinal data which describe the education, work history, and formal training of young people is required.

10.3 The Cohort Data[1]

For Great Britain, information is taken from the same source as that described in the study by Blanchflower and Lynch (chap. 8 in this volume), the fourth sweep of the National Child Development Study. Conducted in 1981, this survey provides a detailed educational, work, and training history from the date each respondent left school until the respondent was age 23.[2] The cohort attained the minimum school-leaving age in 1974, at which time near 70 percent of males and 60 percent of females completed their full-time education. By age 19, all but a small minority (10–20 percent) had completed their full-time education. For the cohort members who had completed their full-time education by this age, all of their school-based full-time education may be regarded as nonvocational. This is not wholly accurate, in that some of the 16- and 17-year-old school-leavers may have pursued certain "vocational" subjects within their curriculum (such as metalworking and woodworking classes), but such courses did not constitute a significant part of the school-based curriculum in the early 1970s.

Information on vocational education and training obtained in the post-school-leaving period was obtained in detail from the fourth sweep of the cohort at age 23. This included details of formal apprenticeships, qualifications obtained during the course of a contract of employment (involving at least 14 days or 100 hours attendance at a training center or educational establishment),

1. For a more detailed description of the data, see Baker et al. (1994).

2. The fourth sweep of NCDS was based on a population all born in one week in 1958. For further details, see Blanchflower and Lynch, chapter 8 in this volume.

and other educational courses (including evening and correspondence courses) taken since leaving school.

Given the focus in this study on those young people who may have undertaken some form of vocationally related education and/or training since leaving school, the sample is restricted to those persons who had completed their full-time education by the time they were 19 years old. Further selection is necessitated because of the need to analyze earnings information. This restricts the sample under investigation to 3,771 males and 2,944 females (60 percent of the male and 47 percent of the female cohort members located in 1981). For this group, table 10.1 describes their training and qualifications.

At age 23, after an average of six years of employment experience, 45 percent of the males in this group were working in manufacturing, 25 percent in services, 13 percent in sales, and 10 percent in construction. Among the females, 47 percent were working in services, 17 percent in sales, and 21 percent in manufacturing. In terms of occupations, 45 percent of females in this group had a clerical or related occupation, whereas 36 percent of males had a skilled or semiskilled manual job. These distributions are similar to the national industrial and occupational structure prevailing in Britain in 1981, except that managerial and professional occupations are somewhat underrepresented because of the young age of the sample members and the exclusion of higher education entrants.

The main data source for Norway is a sample of 2,478 persons drawn from the birth cohorts of 1956–58. Cohort members were interviewed twice about education, employment status, and work experience, once in 1975 and again in 1981. In the latter sweep of interviews, they were also asked to fill in a year-

Table 10.1 **Training and Qualifications Gained by Age 23 for NCDS Respondents Who Completed Full-time Education before Age 20 (% of sample)**

Training or Qualification	Males	Females
Undertook an apprenticeship	45.3	5.3
Completed an apprenticeship	32.4	3.2
Undertook other work-related training[a]	19.5	19.5
Undertook other course with qualification[b]	7.8	7.8
Has O-level qualifications[c]	42.0	54.6
Has A-level qualifications[d]	12.5	15.2
Has no educational qualifications	43.6	27.1
N	3,771	2,944

[a]Training courses (completed or uncompleted) undertaken while employed which involved at least 14 days or 100 hours of attendance at a college, training center, or skill center.

[b]Training courses in which respondent was attempting to gain a qualification, taken since leaving school.

[c]Includes Scottish O-grades ("lowers") and CSE grade 1.

[d]Includes Scottish H-grades ("highers").

by-year diary, which for each year between 1975 and 1981 asked for the number of months spent in each of the following activities: education, employment, unemployment, participation in special schemes to combat unemployment, housework, military service, and other. These data were linked with annual data from a national educational register which tracks educational careers of all individuals after completion of compulsory school. Linking was also achieved with the population censuses of 1960, 1970, and 1980. The register and census data give extensive information about the type and period of educational activities, about work and earnings in 1980, and about social background.

By 1980, six to eight years after completion of compulsory school, 80 percent of respondents had obtained some kind of qualification beyond compulsory school. The largest group of persons (28 percent) had one year of vocational qualification, and 15 percent had two or three years. About 16 percent had participated in higher education, varying from half a year of secretarial education to a full university degree. It is also worth noting that many young persons take breaks during their educational careers, so that 7 percent were still in higher education and 12 percent in upper secondary education in 1980, when they were 22–24 years old.

Earnings information comes from tax data for the calendar year 1980, in the form of pretax earnings, including fees, etc., and income for the self-employed, if they participate in business. Hours worked are taken from the census questionnaire, which covers a slightly different annual period (November 1979–October 1980), and are grouped into five bands: less than 100 hours, 100–499 hours, 500–999 hours, 1,000–1,299 hours, and 1,300 hours or more.

As with the British cohort, the earnings analysis focuses on young persons who are not pursuing higher education. For Norway, this group can be identified by excluding both those who have attained more than three years of education beyond compulsory school and those who are enrolled in higher education. This procedure leaves 76 percent of the males and 78 percent of the females of the initial sample. Ideally, for comparative purposes, earnings should be expressed as an hourly rate. Given the broad banding of the annual hours information, this was not possible. For this reason the earnings analysis was restricted to those persons who worked 1,300 hours or more and who also reported work as their main activity in all months of 1980, in their diaries. In addition, excluding from the sample those in continuing education or whose main activity was given to be housework left 41 percent of the males and 25 percent of the females with full-time work for the earnings analysis.

Among males in this group, 31 percent work in manufacturing, 11 percent in services, 17 percent in sales, and 15 percent in construction. This is quite similar to occupational distribution of the whole male working population; the largest difference is that 18 percent work in services. Among females, 31 percent work in services and 15 percent in finance, compared to 46 and 6 percent, respectively, in the whole female working population; 18 percent in manufac-

turing and 23 percent in sales is similar to the corresponding total shares. Also the occupational distribution differs more with gender than with age: for example, 50 percent of young males and 7 percent of young females work in manufacturing and construction, compared to 39 percent of the males and 7 percent of the females so occupied in the whole working population. Females are concentrated in clerical work (42 percent of the young and 19 percent overall) and technical and nursing occupations (23 percent of the young and 24 percent overall).

10.4 The Effect of Vocational Education and Training on Earnings

The British and Norwegian samples are used to investigate the relationship between earnings at age 22–24 (as recorded in 1980/81) and earlier educational, training, and work histories. From each data source, we estimated a series of linear models describing the variation in earnings, using a set of dichotomous variables to indicate particular educational, training, and work-related experiences, together with continuous variables describing the duration of such events. Also included were variables describing relevant characteristics of the individuals and current (1980/81) labor market conditions. For each country, earnings equations were estimated for males and females separately, including a correction term for sample selection biases arising from the nonobservation of earnings for respondents who were not working at the time of the survey. The (individual) selection terms are a function of the predicted probability of working full-time and having valid earnings information, given that the person is not pursuing higher education. The predictors used are social background, age, marital status, presence of children, and compulsory school curriculum (see Baker et al. 1994 for details).

For Britain, the results of this analysis are shown in table 10.2. As Blanchflower and Lynch have indicated, apprenticeship training (if completed) is positively correlated with later earnings for males (and negatively correlated for females; but the number of females with a completed apprenticeship is only one-thirteenth the corresponding number of males, and investigation revealed that the significant negative coefficient was associated with hairdressing apprenticeships). No other form of work-related training has any influence. A variety of specifications of the effect of vocational education and training on the earnings function were tested, allowing for both incidence and duration effects, but none was found to be significant. In particular, through the use of information describing the type of educational course a young person may have attended on leaving school, it was possible to divide courses into "vocational" and "nonvocational" types (for details, see Baker 1991). Young women appear to benefit from nonvocational educational courses undertaken after leaving school, the majority of which led to O- or A-level qualifications. This explains the slightly lower return to such qualifications for women compared with men.

Similar analyses for the Norwegian birth cohort are reported in table 10.3. For males, a two-year commercial education is associated with a significantly

Table 10.2 **Regression of Log of Hourly Earnings for Employed Males and Females Who Completed Full-time Education before Age 20 and Reported Employment Earnings at Age 23: Great Britain, 1981**

	Females			Males		
Variable	Parameter Estimate	Standard Error	Average Value of Variable	Parameter Estimate	Standard Error	Average Value of Variable
Constant	5.416	0.065	2.08[a]	5.231	0.077	2.53[a]
Qualification						
O-level or equivalent	0.039*	0.016	0.546	0.056*	0.014	0.420
A-level or equivalent	0.083*	0.026	0.152	0.113*	0.029	0.125
Other	−0.039	0.035	0.031	0.046	0.043	0.019
Vocational education and training						
Completed apprenticeship	−0.138*	0.033	0.032	0.108*	0.014	0.324
Uncompleted apprenticeship	0.004	0.040	0.021	0.020	0.017	0.129
Work-related training course	0.018	0.019	0.130	0.016	0.021	0.086
Other vocational course	0.022	0.017	0.164	0.016	0.022	0.078
Nonvocational education						
Months of full-time education, post-16	0.001	0.0007	12.020	0.001	0.0007	11.251
Nonvocational course	0.051*	0.020	0.088	0.025	0.019	0.109
Employment history						
Experience (years)	–	–	6.115	0.022*	0.010	6.497
Unemployment (months)	−0.005*	0.001	2.593	−0.001	0.001	3.112
Complex work history[b]	−0.051*	0.016	0.163	−0.027	0.016	0.175

(*continued*)

Table 10.2 (continued)

Variable	Females			Males		
	Parameter Estimate	Standard Error	Average Value of Variable	Parameter Estimate	Standard Error	Average Value of Variable
Other personal characteristics						
Lower than average math ability	−0.070*	0.014	0.524	−0.017	0.017	0.570
Lower than average reading ability	−0.011	0.014	0.441	−0.043*	0.014	0.492
Married	0.013	0.012	0.579	0.072*	0.013	0.461
Children in 1981	−0.025	0.024	0.111	0.036*	0.016	0.191
Father left school at minimum school-leaving age	−0.027*	0.014	0.769	0.010	0.014	0.788
Sample selection term	−0.102	0.114		−0.117	0.118	
N		2,944			3,771	
Adjusted R^2		0.225			0.141	

Note: Other variables included in regression but not listed are full set of occupation and industry dummies and variables describing current job (location and whether part-time or full-time). All "right-hand-side" variables are dummy variables, unless otherwise indicated.

[a]Average earnings in pounds per hour (at approximately £0.60 = $1 U.S.).

[b]Defined as more than four jobs after completion of full-time education (or more than three periods of nonemployment).

*Significantly different from zero at the 5 percent level.

Table 10.3 **Regression of Log of Yearly Earnings for Males and Females Working 1,300 Hours or More and Reporting 12 Months of Employment as Most Important Activity in 1980: Norway, 1980.**

	Females			Males		
Variable	Parameter Estimate	Standard Error	Average Value of Variable	Parameter Estimate	Standard Error	Average Value of Variable
Constant	6.313	0.123	63,240[a]	6.455	0.130	79,371[a]
Qualification						
Short general	0.053	0.051	0.068	0.017	0.048	0.086
Upper secondary general	0.133*	0.048	0.126	−0.083	0.058	0.072
Upper secondary vocational						
One year						
Commercial	−0.007	0.041	0.228	−0.054	0.062	0.045
Trade and industry	−0.007	0.068	0.031	−0.052	0.038	0.214
Other fields	0.109*	0.040	0.255	−0.025	0.066	0.041
Two years						
Commercial	0.054	0.062	0.054	−0.244*	0.090	0.021
Trade and industry	0.134	0.133	0.007	−0.001	0.058	0.070
Other fields	0.054	0.090	0.020	0.077	0.067	0.043
Three years						
Commercial	0.107	0.086	0.020	0.048	0.108	0.014
Trade and industry	−0.535*	0.193	0.010	0.045	0.080	0.086
Other fields	−0.010	0.087	0.020	−0.087	0.166	0.006
Unspecified	0.386	0.203	0.003	0.348*	0.145	0.008

(*continued*)

Table 10.3 (continued)

Variable	Females			Males		
	Parameter Estimate	Standard Error	Average Value of Variable	Parameter Estimate	Standard Error	Average Value of Variable
Other vocational characteristics						
Formal certificate	0.829*	0.230	0.007	0.015	0.083	0.062
Matching occupation	0.035	0.029	0.337	0.013	0.037	0.222
Employment history						
Experience (years)	0.050*	0.011	3.527	0.012	0.012	3.363
Unemployment (years)	0.008	0.044	0.077	−0.061	0.041	0.081
Other personal characteristics						
Age 23	−0.043	0.032	0.337	0.047	0.039	0.349
Age 24	0.011	0.036	0.391	0.106*	0.047	0.412
Married	−0.055	0.028	0.337	0.036	0.042	0.285
Children in 1981	−0.010	0.138	0.167	0.053	0.037	0.294
Sample selection term	−0.030	0.122	0.968	−0.172	0.113	0.777
N		293			512	
Adjusted R^2		0.215			0.066	

Note: Other variables included in the regression but not listed are a full set of industry dummies. All "right-hand-side" variables are dummy variables, unless otherwise indicated.

[a]Average earnings in kroner per year (at approximately 5.7 NOK = $1 U.S.).

*Significantly different from zero at the 5 percent level.

lower level of earnings than is no qualification beyond compulsory school. Apart from this, the lack of significant variation with qualifications is striking. Quite a substantial number of young men and women are recorded as having an upper secondary *general* education, this may include a number of persons who had aimed at higher education but failed to enter or dropped out. For females, experience gives a significant yield, as do three years of upper secondary education. A dummy variable taking the value of one if the qualification and occupation match, used to test ideas suggested by Bishop (1989), was not significant. In view of research by, among others, Neuman and Ziderman (1991), this is somewhat surprising, but these results do depend on specification, and we might have found a relationship had we used other specifications of matching.

A dummy variable taking the value of one if the qualification carries a formal certificate is significant for females. This result must be interpreted with care, because certain of the course- and duration-specific dummy variables carry a negative coefficient. For example, the results indicate that a three-year vocational course in trade and industry will have a negative effect on earnings unless a formal certificate was obtained on its completion. The numbers are, however, very small. For males, where the numbers are larger, the coefficient is not significant, and the "credential issue" is not resolved in the present context. These results coincide with research of Westergård-Nielsen et al. (1992) for the Nordic countries, indicating that returns to education are significant and substantial only at higher levels, that is, at least three years beyond compulsory school.

For Norway, the young persons in our group have, on average, only three years of work experience, compared to six years for the British group. To look for a relationship between earnings and qualification after a longer period in employment, we have used a different survey conducted in 1989 and covering the same birth cohorts. This survey contains similar information, although the educational classifications only give duration. These data show that at age 31–33, one or two years of training does not give significant variation; three years gives 19 percent higher earnings for males, but no significant variation occurs for females. Higher education gives an earnings gain of up to 63 percent for females and of somewhat less for males. Linked census data for the period 1970–80 were also investigated, to explore the relationship between earnings growth and qualifications. This analysis indicated that individual growth in earnings does not depend much on qualifications at the upper secondary level. However, there was some indication that earnings variation across qualification groups diminished between 1970 and 1980 and that the educational level rose. An interesting topic for further investigation is whether there has been a depression of returns to upper secondary education caused by the lag between decisions on educational choices and market adjustment.

In these earnings regressions, sample selection terms have been included to correct for bias due to the fact that we have sufficient earnings information for

only half of those not pursuing higher education. The selection term is not significant, and the other coefficient estimates are not changed beyond the second decimal by its inclusion. We conclude therefore that there does not seem to be correlation in unobservables affecting the level of earnings and the decision to work full-time. This procedure does not take account of correlation with education-specific earnings unobservables, which might be a topic for further research. Nor do we take into account the decision not to pursue higher education, since we want to compare the British and Norwegian parts of the cohorts.

10.5 Summary

Economic arguments would predict that a school-based system for the provision of vocational skills, delinked from the demand for labor, would show a lower rate of return per unit of time spent acquiring such skills than an employer-based system, because the latter system could incorporate firm-specific training and may obviate the difficulties of matching the supply of skilled labor to demand, in the absence of market mechanisms. For Britain, this study confirms the findings of Blanchflower and Lynch (chap. 8 in this volume) and Baker (1991), obtained using the same data but different sample selection rules. The craft-apprentice training system, an employer-based private-sector-led training delivery mechanism linking a lengthy training with vocational qualifications, appears to have benefited those young males who completed such schemes. Other forms of training have no significant effect on later earnings.

For Norway, we fail to identify effects from vocational education, which is given mostly in schools, at least when it is of only one or two years' duration. This holds true at age 22–24, as well as nine years later. The apprenticeship system is small in numbers participating, and earnings effects here may have escaped us because of the size of and specifications in the samples.

Summing up, we have so far failed to identify effects on individual earnings of the substantial investments made by young people, by employers, and by the governments of Britain and Norway in short, upper secondary vocational education or in short training courses. Whether this is because the content of vocational education and training is poorly tailored to employers' needs or because, in Norway, too many persons have vocational qualifications, remains unresolved. The British craft-apprentice system does appear to raise earnings, but only for those who *complete* an apprenticeship. The recessions of 1974/75, 1980/81, and 1991/92 have decimated the sectors in which such a delivery mechanism was used. We are drawn to the conclusion that long-term, highly structured employer-based training is an effective delivery method, if it can be safeguarded from recessionary shock.

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