

Education and child poverty

A literature review

Stephen Machin and Sandra McNally

The **Joseph Rowntree Foundation** has supported this project as part of its programme of research and innovative development projects, which it hopes will be of value to policy makers, practitioners and service users. The facts presented and views expressed in this report are, however, those of the author[s] and not necessarily those of the Foundation.

Joseph Rowntree Foundation
The Homestead
40 Water End
York YO30 6WP
Website: www.jrf.org.uk

© London School of Economics 2006

First published 2006 by the Joseph Rowntree Foundation

All rights reserved. Reproduction of this report by photocopying or electronic means for non-commercial purposes is permitted. Otherwise, no part of this report may be reproduced, adapted, stored in a retrieval system or transmitted by any means, electronic, mechanical, photocopying, or otherwise without the prior written permission of the Joseph Rowntree Foundation.

ISBN 978 1 85935 477 3

About the authors

Stephen Machin is from the Department of Economics, University College London, Centre for Economic Performance and Centre for the Economics of Education, London School of Economics.

Sandra McNally is from the Centre for Economic Performance and Centre for the Economics of Education, London School of Economics.

Introduction

In this paper, we review the economic literature on the potential role of education and skills in reducing child poverty. This is considered in relation to those who have not yet left full-time education (those who may be parents by 2020) and in relation to adults who may engage in some form of 'life-long learning'. At the outset, it is worth noting that the key cause of poverty, and the rise in poverty over time in the UK, is worklessness (see Nickell 2004). It is therefore natural to ask what education does to employment prospects. Another feature of the high level of adult and child poverty seen today is 'in work' poverty and so we also consider the large body of work analysing the wage impacts of education acquisition.

The review is divided into three parts. Firstly, we review literature on the poverty-reducing effect of education and training. Secondly, we discuss the benefits to children of improving adult outcomes. Thirdly, we discuss the costs and benefits of education and training programmes for those still in full-time education and for adults. Finally, we draw together conclusions from the review.

In summary, there is good evidence that education has a strong influence on the probability of employment and higher wages (although this is conditional on the type of education undertaken). To the extent that government policies increase the probability of attaining appropriate educational qualifications and the employment/wage gains translate into higher household income, then one can expect reductions in the measure of child poverty (i.e. children growing up in households below a given measure of household income). However, when the required scale of intervention is very high (for example, intensive education for school drop-outs), then the cost of reducing child poverty via education is also high. It is more realistic to see measures to increase educational attainment as part of a longer-term strategy to reduce child poverty, alongside other social policies that have a more immediate effect on household income.

1. Evidence on the poverty-reducing effect of education and training

1.1. Wage returns

There is much good evidence of large average wage returns to additional years of schooling (see the reviews in Card 1999, 2001). The recent focus of this literature in the UK has been on returns to qualifications (rather than years of schooling), which finds that there is heterogeneity in the returns to education conditional on the type of qualification attained. Typically it is found that there are higher wage returns to academic qualifications than vocational qualifications and there is no return to low-level vocational qualifications (i.e. defined as below 'level 2') – see for example Dearden *et al.* (2002) and Sianesi (2003).

The key methodological issue is to separate the causal influence of qualifications on earnings from the fact that individuals with particular (unobserved) characteristics may select to enrol on certain types of courses. As Blundell *et al.* (2005) put it, there is a need to 'distinguish between the higher earnings that are observed for better-educated workers being caused by their higher education and individuals with greater earning capacity choosing to acquire more education'. The way this is achieved in the literature is to adopt methods to try to ensure the direction of causality runs from education to earnings and not the other way round. Of the strategies used, there are studies looking at twins and siblings so as to eliminate common family effects and statistical methods where an 'instrument' is sought for education (i.e. a variable that predicts education without otherwise influencing wages). These are known as Instrumental Variable (IV) strategies. For example, there are several studies that exploit policy variation that raise people's education levels independent of their choices (e.g. the raising of the compulsory school leaving age). The causal impacts are usually, if anything, a little larger than the positive non-causal estimates (Card 1999).¹

¹ 'Non-causal' estimates can only be interpreted as the correlation between education and earnings. They are likely to reflect the influence of omitted variables (e.g. an individual's ability or motivation) that are correlated both with education and earnings. The 'causal' estimate of the effect of education and earnings is what is of interest and what the techniques described above seek to identify.

In the literature looking at returns to qualifications, it is not usually possible to find an appropriate instrumental variable or to find a quasi-experimental setting (e.g. as provided by policy changes described above). Authors need to rely on an assumption that the detailed information available in several data sets (e.g. the cohort surveys; the Labour Force Survey) is sufficient to control for all relevant characteristics that simultaneously affect entry into a particular course of study and future labour market outcomes. One needs to bear this in mind when interpreting the evidence on returns. The assumption is especially problematic in some contexts – for example, when considering the return to adult education, since the decision to go back to education as an adult might be motivated by a change in circumstances that is not captured in surveys.

With this caveat, the literature of primary interest in considering the poverty-reducing effect of education and training is that which considers the relationship between the acquisition of qualifications/training/basic skills on outcomes in the labour market such as employment and earnings for individuals who are economically disadvantaged. However, although there are many studies about the returns to education, there is not much evidence about whether or not the marginal returns for specific subgroups (such as the disadvantaged) are higher than the average returns for the population as a whole. In the general literature (especially for the UK), there are few studies that estimate wage returns for adults who return to education.

One of the best-known studies estimating returns to education in the UK is by Harmon and Walker (1995) who use the increase in the compulsory school-leaving age in 1947 and again in 1973 to estimate wage returns to additional year of schooling for men aged between 46- and 53-years-old. They estimate a very high wage return of 15 percentage points for an additional year of schooling. This study is relevant for considering the return to economically disadvantaged groups since they are less likely to pursue education beyond compulsory school-leaving (see, for example, Gregg and Machin 1999, 2000) and hence more likely to be influenced by the policy change than higher income groups. In fact, this interpretation is supported by Card (1999) who states that the IV estimates of the return to education based on interventions in the school system tend to be 20% or more above the corresponding OLS estimates. While there are several competing explanations for this finding, one plausible hypothesis is that the marginal returns to schooling for certain subgroups of the population – particularly those subgroups whose schooling decision is most affected by structural

innovations in the schooling system – are somewhat higher than the average marginal returns to education in the population as a whole.

If this return estimated by Harmon and Walker (1995) holds true for more recent cohorts, then one measure of the benefit to an extra year of education at the age of 16 is this 15 percentage point increase in annual expected earnings. A more recent study by Dearden *et al.* (2004a) estimates returns for a more recent cohort, where they explicitly identify various groups of 'marginal entrants' to education beyond the age of 16. They do not have the methodological advantage of the Harmon and Walker study (i.e. no quasi-experiment) but they use the very detailed information provided by the 1970 British Cohort Study and therefore attempt to identify returns to education by including a very extensive list of control variables. They measure wage returns for individuals at the age of 29/30, who were making decisions about whether or not to stay on in education in 1986. The analysis shows that both men and women from low-income families who drop out of education at the age of 16 would have enjoyed substantial returns from staying-on. The estimates are about 13 and 17 percentage points (in annual wages) for men and women respectively. It is interesting to note how close these estimates are to that of the Harmon and Walker study. When they consider returns to higher education conditional on having achieved at least entry qualifications (i.e. level 2), they find returns to higher education for men which are substantially higher for disadvantaged groups than for the general population (although returns for women are similar across socio-economic groups). Specifically, returns for low and high income males are 23-24 per cent and 9-12 per cent respectively. Women who obtain a higher-level qualification achieve a return of 22-23 per cent regardless of income group. Hence disadvantaged individuals have a return from higher education that is at least as high as those from a more advantaged background. It is of concern that educational inequality between income groups (i.e. in terms of staying-on rates) has risen over time (Blanden *et al.* 2005). Should this trend continue, then moving towards the government targets for staying-on rates in education may only exacerbate income inequality and intergenerational inequalities.

However, even though average returns are high for low-income groups, this does not mean that there need be a return to every possible qualification. McIntosh (2004) uses recent waves of the Labour Force Survey to analyse the impact of vocational qualifications on the labour market outcomes of low achieving school leavers. This study is of interest in this context since students from low-income households are more likely to be in the category of low-achieving school-leavers. He looks at cohorts that were entitled to

leave school between 1993 and 1995 and considers outcomes up to when these individuals were 25 years of age. No wage return is observable for people with NVQ level 1 or 2 qualifications (at least not one that is statistically significant). This is a very general finding in the literature on this issue and reflects the fact that these low-level vocational qualifications are associated with low-paying jobs (Dearden *et al.* 2002). However, there is a wage return for some craft-based qualifications and higher-level NVQ vocational qualifications. The magnitude varies between 2 per cent and 16 per cent depending on the specific qualification. Returns also vary by gender.

1.2. Employment

Even though low-level vocational qualifications have no wage return, McIntosh (2004) shows that they can have a dramatic effect on the probability of gaining employment for the group of people who leave school without any qualifications. For example, men who leave school without any qualifications and who do not go on to acquire post-qualifications have an employment rate of 68 per cent. Vocational qualifications at level 1 have a small effect for this group, raising the employment rate to 75 per cent. A major improvement is observed for people in this category who later achieve vocational level 2 qualifications, where the employment rate rises to 89 per cent. It rises to 94 per cent for those who manage to achieve vocational level 3. Another study by Coelli *et al.* (2004) using Canadian data shows that high school graduation has a very big (negative) impact on the probability that individuals from welfare backgrounds use welfare themselves between the age of 19 and 24. Furthermore, even the acquisition of low-level skills in numeracy and literacy can make a difference to the probability of employment (McIntosh and Vignoles, 2000). It is very clear that education enhances the probability of finding employment and thus can be very directly linked to poverty reduction.

1.3. Social outcomes

Returns to individuals in terms of higher wages and employment is only one part of the story in which education and social disadvantage interact to affect individuals' livelihood and well-being. Investment in education can clearly impact on other outcomes, and generate external effects (or 'externalities') that can cause the private and social returns to diverge from

one another.² One way of thinking about this is to consider the impact of education on other non-wage economic and social outcomes. Social science researchers have considered the wider benefits of education by studying connections between education and outcomes like health, crime, civic engagement and intergenerational effects on children's outcomes. There is evidence of important effects of education on individual outcomes beyond the labour market. For example, education significantly improves health outcomes (Grossman and Kaestner 1997, Kitagawa and Hauser 1973, Lleras-Muney 2005), is associated with lower crime levels (Lochner and Moretti 2004, Feinstein and Sabates 2005, Machin and Vujic 2005) and enhances the extent of civic engagement and participation (Brehm and Rahn 1997, Bynner and Egerton 2001, Bynner and Parsons 1997). Moreover, there are important intergenerational effects of education that are reflected in the educational outcomes of children (Black, Devereux and Salvanes 2005).

1.4. Adult outcomes

There is much less work in the UK about the effect of education on outcomes for adults who return to education at a later stage. Jenkins *et al.* (2002) uses the National Child Development Survey to consider this issue. They find only limited evidence of positive wage effects. However one group for which there is a high wage premium (of 12 per cent) are individuals who had no qualifications but who undertook lifelong learning between the age of 33 and 42 (i.e. between 1991 and 2000). The authors also show that those who were out of the labour market in 1991 were able to use lifelong learning to help them in their transition to the labour market. However, the authors are cautious about how results should be interpreted because they cannot observe changes in the lives of these individuals that may have led them back into education (which would be a problem if this were independently correlated with labour market outcomes) and also, they consider a period in which there were very few government programmes promoting lifelong learning to the disadvantaged/excluded as a means of improving their economic situation.

There are some relevant findings in the paper by Dearden *et al.* (2004b) who provide an in-depth analysis of the returns to National Vocational Qualifications observed at level 2. These are employer focused

² If an individual invests in their education and this enhances other people's outcomes in some way that is not reflected in their private return, then the social rate of return will be higher than their private return.

qualifications and indicate that a recipient has a given level of competence in a specific job area. Thus, by definition, an individual must receive such a qualification after leaving compulsory schooling. Although the authors find very little evidence of positive returns to these qualifications, it is notable that large positive returns cannot be ruled out for individuals from disadvantaged backgrounds (defined here, from the British Cohort Study, as whether family income at age 10 was below £100 per week). However, effects are too imprecisely determined to be confident about this and there is still the potential problem of failing to control for relevant factors which are correlated with earnings and the decision to pursue level 2 qualifications. In the more general literature about returns to employer-provided training (see for example Blundell *et al.* 1999), there is evidence of high earnings returns that persist over time, especially for semi-skilled training. Feinstein *et al.* (2004) consider returns to training for adults between the age of 33 and 42. They find evidence that firms tend to 'cherry pick' workers, identifying those most likely to gain from training. The high return for these workers cannot be extrapolated to workers who did not receive training. In fact, they say that such workers would not have gained higher wages if they had received training.

There is US evidence to suggest that adults gain from education and training. Programme evaluation of government training schemes for the disadvantaged is helpful in this regard and will be discussed in Section 3. Also relevant is the study by Leigh and Gill (1997) who find that adults (aged 28-35) who return to a community college earn a similar wage return to continuing high school graduates.

In summary, there is good evidence that people from economically disadvantaged backgrounds have high wage and employment returns to education. However, the type of education matters for the potential payoff, and available studies have failed to find evidence for returns to low-level vocational qualifications. Education also significantly impacts on other outcomes that are closely linked to child and adult poverty, for example reducing crime, benefiting health and children's education. There are far fewer studies about the effect of adult education on labour market outcomes, and less strong conclusions can be drawn from this work.

2. Benefits to children of improving adult outcomes

The literature discussed above suggests that education and training has a potentially important role in improving the labour market outcomes (employment and wages) of individuals from disadvantaged backgrounds who are or will be parents by 2020. In so far as improved labour market outcomes lead to higher household incomes, then by definition 'child poverty' will be reduced. However, it is appropriate to consider evidence on the potential long-term effects of increasing household incomes and/or improving educational outcomes of parents on the outcomes of children – especially on educational outcomes, as this is the way to break the intergenerational transmission of low incomes from one generation to the next.

There are a number of studies that focus on the effect of income on children's outcomes. Other studies try to isolate the effect of parental education on children's outcomes. With regard to the latter, household income may be an important mechanism through which parental education affects the outcomes of children. It is evident that there are many mechanisms through which income can directly influence the educational attainment of children such as childcare quality, the home environment, social activities, neighbourhoods and schools (Blanden and Gregg 2004). A sizable, and often contentious, debate has considered whether family income in itself matters, or whether one can attribute lower education levels and post-compulsory participation to other aspects of disadvantage (such as those acquired much earlier on in life). For example, some authors (like Mayer 1997) argue that it is not income *per se* that directly affects children's life chances; rather, what matters are the factors which cause parents to have low incomes. Thus, this literature has the same methodological issue as that discussed in the context of education and earnings in Section 1. The challenge is to separate the causal effect of education or income on children's outcomes from the effect that arises on account of unobserved factors that are correlated with parental characteristics (income/education) and outcomes of children. Genetic or environmental factors that are common to parents and their children might account for such a correlation. Whatever the reason, it is the case nonetheless that one sees lower participation in higher education and lower educational achievement for people who grew up in a poorer, or more disadvantaged, family environment.

With regard to the effect of income on children's outcomes, Blow *et al.* (2004) provide an overview of methodological issues and a summary of existing evidence. They comment that there is remarkably little evidence as to how much children's outcomes are likely to improve as a result of giving additional money to their families. Available evidence mostly comes from the US, much of which is reviewed in Haveman and Wolf (1995) and Mayer (1997). Among the main findings of the literature, summarised by Blow *et al.* (2004) are that the effect of current income on child outcomes is small whereas the effect of permanent income is much larger, but decreases as more covariates are included. However, as noted by the authors, it is not always easy to establish what variables to include or exclude when considering the effect of income on children's outcomes. In the few studies that consider potential non-linear effects of income, the effect of additional income is found to be larger for more economically disadvantaged households. Their study shows that it is difficult to establish independent effects of income, employment and education on children's outcomes when these are all inter-related and all potentially endogenous (i.e. correlated with unobserved variables that are also important in determining children's outcomes).

Recent UK studies about the effect of family income on children's educational attainment include Blanden and Gregg (2004), who also review other studies, and Chevalier *et al.* (2005). Blanden and Gregg (2004) adopt a variety of methods and use the cohort studies and the British Household Panel Survey to investigate the relationship between family income and the adolescent's decision to stay on in education beyond the age of 16, and final educational attainment. Overall the results provide evidence of a consistent impact of family income on educational attainment in the UK, which the authors interpret as having important implications for educational inequality. The results suggest that an increase in income of one-third of the mean (i.e. an increase of about £140 per week) could increase the probability of achieving GCSEs at A*-C by about 3 to 4 percentage points and increase the probability of achieving a degree by a similar magnitude. Chevalier *et al.* (2005) find that permanent income is an important determinant of educational attainment at age 16. They try to separate the impact of income from education and their results imply that the effect of education largely works through income. However, this interpretation is conditional on valid instruments for both education and income, which is a difficult requirement in practice.

There is a literature that attempts to identify the relationship between parental education and the educational outcomes of children. Approaches

include the use of data on pairs of twins to identify causal impacts (e.g. Behrman and Rosenzweig 2002) and use of data on adopted children (Plug 2002). An approach that suffers from fewer problems is to make use of a 'natural experiment' to identify the causal impact of parental education on children's educational outcomes. This approach has been used by Black *et al.* (2005), Chevalier (2004), Maurin and McNally (2005) and Oreopoulos *et al.* (2003). All of these studies except that by Maurin and McNally (2005) use an extension of the compulsory school leaving age (affecting the parents when they were at school) to identify the relationship between parental education and that of their children. Hence, these studies show the impact of parental education for parents who were induced to change their behaviour on account of this law. This is a relevant population in the present context because children from low income backgrounds are less likely to pursue education beyond the age of compulsory school-leaving (as shown by Gregg and Machin 2000). Chevalier (2004) uses this strategy for the UK and finds that an extra year of a mother's education increases her child's probability of staying on in school beyond compulsory school-leaving by 8 to 10 percentage points. The effect of a father's education is much lower and not well determined in the regressions. Oreopoulos *et al.* (2003) use a similar approach for the US and finds strong effects for both mothers' and fathers' education on the educational outcomes of children. In contrast, no strong effect is found for a similar reform in Norway, except for the relationship between a mother's education and that of her son (Black *et al.* 2005).

However, the benefit of parental education may not only be observed in terms of their children's educational attainment. For example Currie and Moretti (2003) show that maternal education can affect children through a range of health outcomes – which may in turn affect children's longer-term socio-economic outcomes.

3. Costs and benefits of education/training programmes

The literature discussed above shows the labour market benefits that arise from education and evidence on transmission to children (as reflected in their educational outcomes). In this section, we discuss evidence on the costs and benefits of education or training programmes. We separate the literature into three categories: interventions targeted at schools in disadvantaged areas; interventions targeted directly on students (often incentive payments to prevent drop-out or encourage staying on in education); interventions targeted at adults and high school dropouts to encourage participation in education or training.

3.1. School-based programmes

There is a vast literature about the effect of increasing school resources on pupil attainment. Whether or not the literature is broadly supportive of a positive effect from increasing school resources is contested (see for example Hanushek 2003 and Krueger 2003). The objective of this section is to discuss recent evidence on the effect of interventions in secondary schools, particularly when this has been targeted on economically disadvantaged groups. Typically, these interventions take the form of targeting extra resources to disadvantaged schools (or groups of students within these schools).

Lavy and Schlosser (2005) argue that although there have been a large number of interventions targeting disadvantaged students in recent years, evidence of their effectiveness is still scanty. Most studies are based on small samples and lack proper counter-factuals and cost benefit analyses. Particularly important is the lack of evidence on how effective high school interventions are given the debate over the relative merit of late versus early child interventions (see for example Carnerio and Heckman 2003). Lavy and Schlosser (2005) and Lavy (2002) are among the papers that help to address this problem. They evaluate a programme of remedial education for underperforming high school students in Israel (implemented since 1999). The objective is to increase the percentage of students who earn matriculation certificates, mainly by means of an increase in instruction time for targeted students. Classes were held for these students after school hours and taught by the classroom teachers. Lavy and Schlosser (2005) evaluate the programme using a quasi-experimental design: they compare outcomes for a 'treatment' group and an appropriate 'comparison group'

before and after the policy was implemented (i.e. a difference-in-differences analysis). They find the policy to be highly effective in improving outcomes at a cost of \$300 per 12th grade student (\$1,000 per targeted student). To conduct the cost benefit analysis, Lavy and Schlosser (2005) estimate the potential monetary return on an increase in the matriculation rate in terms of the present value of the increment in lifetime earnings. The internal rate of return is 9 per cent – which clearly exceeds any reasonable rate of interest. They compare the relative cost-effectiveness of this policy with two other policies. One of these is a more unusual intervention, where schools participated in a ‘group incentive programme’. In this case, schools participated in a competition whereby they were awarded cash incentives according to their ranking in terms of relative improvement. The awards were mainly distributed to teachers – though not in relation to individual performance – and only accounted for a small proportion of annual income. This programme produced a similar gain (in terms of an increase in the matriculation rate) to the programme focusing on remedial education. However, the cost was lower at about \$170 per student.

The group incentive programme is evaluated in Lavy (2002), where he also evaluates a more conventional programme based on providing schools with additional resources to increase teaching time, splitting up classes into smaller study groups and providing extra coaching for weaker students. He finds that overall the estimated effect of the resources programme is greater than the ‘group incentive programme’ (though not on every measure) but that the cost is over twice as high (i.e. >\$340 per student) and is less cost effective.

The positive evidence for Israel is in marked contrast to the US, where there are many examples of anti-dropout programmes for American teenagers that have failed to have any impact on graduation rates. These studies are reviewed by Dynarski and Gleason (1998). The largest federal dropout grants went to efforts to restructure schools and in general the impact on student outcomes was negligible. A recent study by Van der Klaauw (2005) evaluates the largest federal programme for elementary and secondary education in the US: Title 1 of the Elementary and Secondary Education Act of 1965. This provides financial assistance to state and local education agencies to meet the special needs of low-achieving students from schools with high concentrations of poverty. He uses a regression discontinuity design to facilitate a comparison between ‘treatment’ and ‘control’ schools in New York City over the past decade. Although the funding (\$300-\$400 per student) is similar to the programmes introduced in Israel, the programme is found to have a negligible impact on student

performance. Reasons for the ineffectiveness of the policy include the fact that state and local authorities appear to have diverted other sources of funding away from these schools. However, other criticisms are that students were taken away from their regular classes to receive additional instruction in reading and mathematics and these classes were often taken by inexperienced teacher aides. This is in contrast to the programme in Israel where targeted students were given lessons after the normal school day and were taught by their own teachers. A further criticism is that funding was spread too thinly across a very large number of schools.

This issue of a diffuse spreading of resources across schools is also discussed by Bénabou *et al.* (2005) in relation to a similar area-based policy in France. Zones d'Éducation Prioritaire (ZEP – Priority Education Zones) was launched in 1982 to give greater resources to schools in disadvantaged areas. The programme was greatly extended thereafter. There was no clear basis for how money was allocated to schools or what it should be used for. The authors estimate that about three-quarters was used for teacher bonuses (not related to performance) and one quarter for extra hours of teaching. However, the policy had no discernible impact on any of the measures of student achievement. Problems include: the fact that ZEP status seemed to stigmatise the school (with some reaction from parents and teachers); considerable uncertainty over budgets; and a poor targeting of resources.

Similar policies have been implemented in England since the late 1990s. The establishment of Education Action Zones (EAZ) was the first such initiative. Each zone (usually two or three secondary schools plus their feeder primary schools) was to be run by a number of 'partners' including the local authority, businesses, the voluntary sector and community representatives. The EAZ initiative was effectively replaced by the (much larger) Excellence in Cities (EiC) initiative after a relatively short period. The funding of both schemes is about £120 per pupil on average – although there is considerable heterogeneity between schools and not all pupils will be directly affected by the extra funding. There are a number of components to EiC (some of which have changed over time). The main strands are the employment of learning mentors to help students overcome educational or behavioural problems; the provision of learning support units to provide short-time teaching and support programmes for difficult pupils; and a gifted and talented programme to provide extra support for 5-10 per cent of pupils in each school. There is also provision to designate more schools as 'specialist' (i.e. in particular subjects) or 'Beacon' (to disseminate good practice).

The evaluation evidence for EAZ is mainly qualitative (see Halpin *et al*, 2004; OFSTED 2003) and findings are largely negative. The report by OFSTED (2003) suggests that this was due to an over-ambitious programme of activities that did not always focus specifically or radically enough on the challenges faced by schools in their areas. In contrast, evaluation evidence for EiC shows that the policy has been effective in raising pupil attainment in examinations (at age 14) and increasing attendance at school. Machin *et al.* (2005) show that the effect of EiC policy has increased over time and has its largest impact on children of medium/high ability in disadvantaged schools. They also suggest that the policy is cost effective.

In conclusion, available evidence suggests that school-based policies can be effective in raising the performance of disadvantaged students and that this can be done cost effectively. But for programmes to be successful, it matters greatly how the extra resources are spent and that they are appropriately targeted.

3.2. Student support

Another type of measure used to increase the educational attainment of disadvantaged students is to offer financial incentives with one of more of the following aims: to improve attainment; to discourage dropout; to encourage staying-on in education beyond compulsory school-leaving. An alternative (or sometimes additional) strategy has been to provide students with mentors.

Angrist and Lavy (2002) evaluate the impact of offering students financial incentives for achieving their matriculation certificate. They argue that such an incentive may be helpful if low-achieving students have high discount rates, reduce investment in schooling by going to work or face peer pressure not to study. The evaluation was done by means of randomised experiment. The analysis leads them to conclude that although the evidence is not seamless, the school-based randomised trial suggests worthwhile gains in matriculation rates can be obtained by offering cash rewards in low-achieving schools. The award, worth about \$1,429, was paid to 27 per cent of the treatment group (which gives a cost of \$385 per treated student). They estimate that the programme should increase annual earnings in the treated group by about \$282 per year – so the cost of the bonus will be quickly recovered. This evaluation is interesting in a UK

context because in schools within the New Deal for Communities, pupils who achieve five or more A*-C grades at GCSE are being paid £150-£200.³

In the UK, there are also (means tested) payments given to students to stay on in education beyond the age of compulsory school-leaving. This is justified on the basis that many young people do not pursue further education because of financial constraints. The programme, known as the Education Maintenance Allowance, was first piloted in a number of areas in England from September 1999. It has been carefully evaluated by means of a treatment-control design, using propensity score matching to ensure that the control group has similar observable characteristics to the treatment group in the baseline period. Dearden *et al.* (2005) report on the findings and show that the impact of the subsidy is quite substantial. They estimate that the percentage of individuals from income-eligible families completing two years of post-compulsory education increased by 6.2 percentage points, from 61.1 per cent to 67.3 per cent. Furthermore, this increase has drawn young people from both employment and the inactivity group in equal parts – which shows that to a large extent the policy is not displacing individuals from work but from unproductive activities. They present a back-of-the-envelope cost benefit analysis and suggest that the net benefits are positive.

There are many studies about the effect of financial aid on the probability of attending college in the US. Dynarski (2005) argues that almost all of these are plagued by identification problems, with the analyses failing to control for the correlation between college costs and the unobserved determinants of schooling outcomes. She states that a handful of well-identified studies have established a strong causal link between schooling costs and college attendance. In an earlier paper where she reviews this literature, Dynarski (2002) concludes that best estimates suggest eligibility for \$1,000 of subsidy increases college attendance rates by about 4 per cent. However, it is not clear if the effect of such subsidies is higher or lower for low-income students.

Heckman and Lochner (2000) are more sceptical about the value of subsidising low income individuals to stay on in education because they argue that credit constraints are not an important constraint for college age youth from low income families. However, they report evidence on the effectiveness of some programmes where provision of financial incentives was part of the reform package. For example, the Sponsor-a-Scholar (SAS)

³ This initiative has not yet been evaluated.

programme was introduced in Philadelphia to help students from high school to enter college. The programme provides long-term mentoring (throughout high school and one year beyond), substantial academic support, help with college application and financial aid procedures and financial support for college-related expenses. \$6,000 was offered to all students who went to college. Johnson (1998) estimated a 22 per cent increase in college attendance for one year after graduation from high school (which fell back to 16 per cent after two years). Impacts were greater for youth who were initially less successful academically, were having more school problems and had less family support. However, not all mentoring programmes are effective (Sipe 1996). Reasons for lack of success include insufficient infrastructure to screen and monitor volunteer efforts or to match youth to appropriate mentors.

Among the other successful programmes discussed by Heckman and Lochner (2000) are the Quantum Opportunity Programme (QOP), which offered four (high school) years of social and emotional support as well as financial assistance for individuals interested in post secondary education or training. The QOP offered disadvantaged minority students financial incentives for every hour spent in activities aimed at improving social and market skills. The evaluation (based on randomised trials) found that two years after programme completion, about one third more QOP participants graduated from high school (or obtained their GED) than similar non-participants. There was also a substantial reduction in crime – arrest rates for participants were half that of non-participants. The average four year cost per participant was high, at \$10,500. However, the cost benefit analysis estimated positive net social returns.

Finally, Heckman and Lochner (2000) discuss two other studies that show (as they say) that creative programmes designed to keep adolescents in school can be effective. Ohio's Learning, Earning and Parenting (LEAP) programme and Teenage Parent Demonstration (TPD) provided financial incentives for teenage parents on welfare to stay in school or take GED classes. Both programmes have been evaluated by randomised trials and show success in terms of high school graduation and earnings. Heckman and Lochner (2000) conclude that the much larger and broader benefits of QOP suggest that combining incentives with the academic and social support of a caring and qualified mentor provides the greatest promise for troubled adolescents.

3.3. Programmes for adults and high-school drop-outs

There are many programmes that have been introduced to improve the earnings of the economically disadvantaged in the general working age population. There have also been many evaluations of such programmes in the US and several reviews of the evidence including Friedlander *et al.* (1997), Heckman *et al.* (1999), Heckman and Lochner (2000) and LaLonde (1995). Reviews suggest that a modest investment has yielded a modest return, but that these programmes are insufficient to have much effect on poverty rates. As Friedlander *et al.* (1997) put it 'the broadest generalisation about the current knowledge of government training programmes for the disadvantaged is that they have produced modest positive effects on employment and earnings for adult men and women that are roughly commensurate with the modest amounts of resources expended on them'. In their view, results from the Job Training Partnership Act (JTPA) evaluation are most important because the programme is national in scope and the survey design was experimental.

As described by LaLonde (1995), economically disadvantaged persons participating in the JTPA received one or more of four services: 15 per cent received job search assistance; 45 per cent received classroom training; 15 per cent received on-the-job training; and 6 per cent received work experience. Bloom *et al.* (1997) is one of several studies that report on the evaluation, wherein individuals were randomly assigned treatment status (lasting 15 months). During a follow-up period of 30 months, the estimated net benefit (i.e. taking account of earnings benefit, changes in welfare benefit etc) was estimated to be \$1,422 and \$1,822 for women and men respectively as against programme costs of \$910 and \$1,298 per female and male enrollee. However, there was no net benefit for out-of-school youths, and as the authors comment, this is a disturbingly consistent finding across several major studies.

Two of the studies discussed above to provide financial incentives to participate in education (LEAP and TPD) showed negative results for participants who had dropped out of school before entering the programme. Heckman and Lochner (2000) say that although these programmes suggest that interventions for dropouts are much less successful, they do not tell us why. We do not know whether there is some advantage to intervening before the dropout decision is already made or if those who choose to drop out have less motivation and lower ability, making programmes less effective for them.

However, Heckman and Lochner (2000) discuss the few training programmes that have demonstrated a positive impact on youth earnings. The best known is Job Corps, an intensive programme (\$20,000 per participant) that provides extremely disadvantaged youth with basic education, vocational skills and a wide range of support services in a residential environment. The evaluation (Long, Mallar and Thornton 1981) showed an increase in education, employment and earnings and estimated a net return of 8-9 per cent (though much of this is accounted for by a reduction in violent crime). A similar programme, Jobstart, was designed to be a less intensive and less expensive version of this programme (with less intensive services in a non-residential setting). Although the cost was much lower (\$6,000 per participant), so were the benefits. There was only a small overall impact on earnings, education and crime – though there were two particular subgroups for which earnings returns were very high: men arrested between the age of 16 and programme entry and youth who had dropped out of school for educational reasons. There was also one programme site (the Center for Employment Training in San Jose, California) where the benefits were sizeable in relation to costs (earnings gains of over \$3,000 per year in relation to costs of \$4,200 per enrollee for three-six months). Possible reasons for its success include close ties to the labour market; an emphasis on job skills training; a curriculum tailored to the specific needs of each participant; and its reputation in the area – the centre has been active for over 25 years and the programme staff have extensive local knowledge and contacts, which is likely to have helped the placement of new graduates. From their comparison of programmes, Heckman and Lochner (2000) make the following conclusions: you get what you pay for; the effect of treatment may vary substantially among subgroups; and these types of programme have outcomes beyond schooling and work that should be considered, such as a reduction in crime.

There are many training and education programmes for youth and adults in Europe (with a particular focus on the unemployed). Evaluation evidence is summarised by Ryan (2001a, 2001b) and Heckman *et al.* (1999). Unlike in the US, evaluation is not conducted using randomised experiment and generally there is no cost benefit analysis. However, there have been efforts to construct a valid treatment and comparison group (see, for example, Payne 2000). In the UK, there were a number of programmes implemented to train unemployed adults in the 1980s. Ryan (2001a) discusses evaluation of the Job Training Scheme (mid-80s), and the Employment Training and Training for Work programmes (1988-98). All programmes show substantial improvements in employment-related outcomes. However, they show no effect for wages, apart from the Job

Training Scheme, where some doubt is cast on the quality of the data and the matching of participants and non-participants in the evaluation. With regard to youth programmes, evaluation evidence is extensive for France, Sweden and the UK (Ryan 2001b). In contrast to the US, programmes are typically found to improve participants' employment prospects as indicated by the incidence and duration of their subsequent experiences of employment and unemployment. Evidence on pay effects is mainly limited to Britain and several evaluations of the Youth Training Scheme have found that it reduced participants' earning power. Ryan (2001b) suggests that the difference between effects on unemployment and pay may reflect two factors: the general sensitivity of econometric findings to the choice of model and data, and the tendency of European programmes to bring young people into contact with low wage employers who offer little training but who are prepared to hire many of them afterwards.

There have been recent efforts to improve adult basic skills. For example, in September 2001, the DfES launched the Pathfinder Extension programme of innovative educational courses for adults in the UK. There were two main types of innovation in provision: course intensification (with an overall length of 4-6 weeks) and the provision of financial incentives. The evaluation results are reported in Bonjour and Smeaton (2003). Learners on Pathfinders Extensions are compared to a matched sample of learners on courses of a more traditional type. Positive employment outcomes are reported 9-11 months after the start of the courses. However, there were too few participants in the incentive-based courses to assess the impact separately.

There are many more recent education and training programmes in the UK. For example, the Adult Learning Grant is a means tested grant of up to £30 per week to adults studying for a first full level 2 qualification and to young adults studying full time for a first full level 3 qualification. The evaluation is still at an early stage. A report of the first year has been produced by Pound *et al.* (2005). This describes characteristics of applicants and non-applicants and reports findings from a survey of recipients of the grant. However, take-up of the grant was very low in its first year (2003-04) and most people taking up the grant had already applied for their course before applying for the grant. Another example is an evaluation being conducted of the Employer Training Pilots. These are aimed at stimulating employer-provided training to level 2 or basic skills qualifications for employees who were not already qualified to level 2. Again, this evaluation is still ongoing.

First year findings are reported in Abramovsky *et al.* (2004).⁴ An overview of schemes to support young people can be found in a report by the Treasury/DWP/DfES (2004).

In conclusion, in their review of US and European evidence, Heckman *et al.* (1999) state that overall employment and training programmes have, at best, a modest positive impact on adult earnings. They suggest that gains, when they occur, are more likely the result of an increased probability of employment than of increased wages (even in the US). Apart from a few notable exceptions, programmes in the US have had no impact on high school dropouts whereas in Europe they have had an impact on employment but not on wages. General concerns in this literature are the appropriateness of the evaluation methodology; the short-term nature of many interventions and evaluations; wider effects that are not considered by evaluators, such as crime, and also indirect effects (for example, consideration of whether employment programmes displace workers who would otherwise be employed).

⁴ This report is unpublished. The final report will be published by DfES at the end of 2006. Findings are unavailable until that time.

4. Conclusion

Education is a vital policy area to try to combat poverty in the longer run. The literature suggests that education and training can provide a way out of poverty for economically disadvantaged groups. That education raises employment probabilities of individuals is uncontroversial. The wage returns to additional education are high. In the UK, the evidence is more compelling for those who have not yet left full time education. However, evidence from the US – especially from programme evaluations – shows that disadvantaged adults also have a wage return from education and training. It is more difficult to help high school dropouts. The US literature suggests that intensive programmes may be necessary.

More generally, the US literature suggests that benefits of programmes are often proportional to the amount invested. If education is a route to achieve ambitious targets, then substantial investment may be required. Hence, in many cases, it is more realistic to see education as part of a long-term strategy to reduce child poverty rather than a short-term solution. It is also important to see education and social policies as complementary to one another.

If policy makers want to find out what really works, then a good evaluation design is important. Heckman *et al.* (1999) discuss the relative merits of experimental and non-experimental methods. The most appropriate method depends on the context and the specific questions to be answered by the evaluation. They find that non-experimental evaluations (in the US) come up with results that are consistent with experimental evaluations provided that the matching of participants in the treatment and comparison groups has been done in the correct way. Inconsistent evidence from evaluations that fall short of the required standard show the importance of getting the evaluation design right.

All in all, the discussion in this paper makes it evident that education is critical to current and future aims to lower child poverty. Education enhances people's labour market outcomes and significantly impacts on their life chances. Better integration of education policies and policies designed to alleviate child poverty would seem to be an important part of the future agenda on eliminating child poverty.

References

- Abramovsky, L., Battistin, E., Goodman, A. and Simpson, H. (2004) *The impact of ETP on the take-up of training among employers: Year 1 report*, London: Department for Education and Skills.
- Angrist, J., and Lavy, V. (2002) *The effects of high school matriculation awards: evidence from randomized trials*, National Bureau of Economic Research (US) Working Paper, No. 9389.
- Behrman, J.R. and Rosenzweig, M.R. (2002) Does increasing women's schooling raise the schooling of the next generation? *American Economic Review*, Vol. 91, No. 1, pp. 323-334.
- Bénabou, R., Kramatz, F., Prost, C. (2005) *The French Zones d'Education Prioritaire: much ado about nothing?* Paris: CREST-INSEE, mimeo.
- Black, S.E., Devereux, P.J. and Salvanes K.G. (2005) Why the apple doesn't fall far: understanding the intergenerational transmission of human capital, *American Economic Review*, Vol. 95, No. 1, pp. 437-449.
- Blanden, J. and Gregg P. (2004) *Family income and educational attainment: a review of approaches and evidence for Britain*, London: Centre for the Economics of Education, Discussion Paper, No. 41.
- Blanden, J., Gregg, P. and Machin, S. (2005) Educational inequality and intergenerational mobility, in S. Machin and A. Vignoles (eds.) *What's the good of education?* Princeton, US: Princeton University Press.
- Bloom, H.S., Orr, L.L., Bell, S.H., Cave, G., Doolittle, F., Lin, W., Bos, J.M. (1997) The benefits and costs of JTPA. Title II-A programs. Key findings from the National Partnerships Act Study, *Journal of Human Resources*, Vol. 32, No. 3, pp. 549-576.
- Blow, L., Goodman, A., Kaplan, G., Walker I. and Windmeijer, F. (2004) *How important is income in determining children's outcomes? A methodology review of econometric approaches, a report for Her Majesty's Treasury Based Policy Fund*, London, Institute for Fiscal Studies Discussion Paper.

Blundell, R., Dearden, L., Sianesi, A., Sianesi, B. (2005) Measuring the returns to education, in S. Machin and A. Vignoles (eds.) *What's the good of education?* Princeton, US: Princeton University Press.

Blundell, R., Dearden, L., Meghir, C. and Sianesi, B. (1999) Human capital investment: the returns from education and training to the individual, the firm and the economy, *Fiscal Studies*, Vol. 20, No. 1, pp.1-23.

Bonjour, D., and Smeaton, D. (2003) *The impact of adult basic skills Pathfinder Extension activities: Stage 2 of the evaluation*, London: Policy Studies Institute, Report No. 438.

Brehm, J. and Rahn, W. (1997) Individual-level evidence for the causes and consequences of social capital, *American Journal of Political Science*, 41, 999-1023.

Bynner, J. and Egerton, M. (2001) *The wider benefits of higher education*, London: Higher Education Funding Council For England.

Bynner, J. and Parsons, S. (1997) *It doesn't get any better: the impact of poor basic skills on the lives of 37 year olds*, London: Basic Skills Agency.

Card, D. (1999) The causal effect of education on earnings, in O.Ashenfelter and D. Card (eds.) *Handbook of labor economics*, Volume 3, Amsterdam: Elsevier.

Card, D. (2001) Estimating the return to schooling: progress on some persistent econometric problems, *Econometrica*, Vol. 69, No. 5, pp. 1127-1160.

Carnerio, P. and Heckman, J. (2003) Human capital policy, in J. Heckman and A. Krueger (eds.) *Inequality in America: what role for human capital policy?* Cambridge, US: MIT Press.

Chevalier, A. (2004) *Parental education and child's education: a natural experiment*, University College Dublin, mimeo.

Chevalier, A., Harmon, C., O'Sullivan, V., Walker, I. (2005) *The impact of parental income and education on the schooling of their children*, London: Institute for Fiscal Studies, WP05/05.

Coelli, M.B., Green, D.A. and Warburton, W.P. (2004) *Breaking the cycle? The effect of education on welfare receipt among children of welfare recipients*, London: Institute for Fiscal Studies, Working Paper 04/14.

Currie, J., and Moretti, E. (2003) Mother's education and the intergenerational transmission of human capital: evidence from college openings, *Quarterly Journal of Economics*, Vol. 118, pp. 1495-1532.

Dearden, L., Emmerson, C., Frayne, C. and Meghir, C. (2005) *Education subsidies and school drop-out rates*, London: Institute for Fiscal Studies, Working Paper 05/11.

Dearden, L., McIntosh, S., Myck, M. and Vignoles, A. (2002) The returns to academic and vocational qualifications in Britain, *Bulletin of Economic Research*, Vol. 54, pp. 249-274.

Dearden, L., McGranahan, L. and Sianesi, B. (2004a) *Returns to education for the 'marginal learner: evidence from the BCS70*, London: Centre for the Economics of Education, Discussion Paper, No. 45.

Dearden, L., McGranahan, L. and Sianesi, B. (2004b) *An in-depth analysis of the returns to National Vocational Qualifications obtained at Level 2*, London: Centre for the Economics of Education, Discussion Paper, No. 46.

Dynarski, M. and Gleason, P. (1998) *How can we help? What have we learned from evaluations of federal dropout-prevention programs*, Princeton NJ: Mathematica Policy Research Report 8014-140.

Dynarski, S. (2002) The behavioural and distributional implications of aid for college, *American Economic Review*, Vol. 92, No. 2, pp. 279-285.

Dynarski, S. (2005) *Finishing college: the role of state policy in degree attainment*, Cambridge, US: Harvard University, Kennedy School of Government, mimeo.

Feinstein, L., Galindo-Rueda, F., Vignoles, A. (2004) *The labour market impact of adult education and training: a cohort analysis*, London: Centre for the Economics of Education, Discussion Paper, No. 36.

Feinstein L. and Sabates, R. (2005) *Education and youth crime: effects of introducing the education maintenance allowance programme*, London:

Centre for Research on the Wider Benefits of Learning, Research Report Number 14.

Friedlander, D., Greenberg, D.H., Robins, P.K. (1997) Evaluating government training programs for the economically disadvantaged, *Journal of Economic Literature*, Vol. 35, No. 4, pp.1809-1855.

Gregg, P. and Machin, S. (1999) Childhood disadvantage and success or failure in the labour market, in D. Blanchflower and R. Freeman (eds.) *Youth employment and joblessness in advanced countries*, Cambridge, US: National Bureau of Economic Research.

Gregg, P. and Machin, S. (2000) The relationship between childhood experiences, subsequent educational attainment and adult labour market performance, in Koen Vleminckx and Timothy Smeeding (eds.) *Child well being in modern nations: what do we know?* Bristol: The Policy Press.

Grossman, M. and Kaestner, R. (1997) Effects of education on health, in J. Behrman and N. Stacey (eds.) *The social benefits of education*, Ann Arbor, US: University of Michigan Press.

Hanushek, E. (2003) The failure of input-based schooling policies, *Economic Journal*, Vol. 113, pp. 64-98.

Halpin, D., Power, S., Whitty, G. and Gerwirtz, Z. (2004) Area-based approaches to educational regeneration: the case of the English Education Action Zones Experiment, *Policy Studies*, Vol. 25, pp. 75-85.

Harmon, C. and Walker, I. (1995) Estimates of the economic return to schooling for the United Kingdom, *American Economic Review* Vol. 85, pp.1278-1286.

Haveman, R. and Wolf, B. (1995) The determinants of children's attainments: a review of methods and findings, *Journal of Economic Literature*, Vol. 23, pp. 1829-1878.

Heckman, J.J. and Lochner, L. (2000) Rethinking education and training policy: understanding the sources of skill formation in a modern economy, in S. Danziger and J. Walfogel (eds.) *Securing the future: investing in children from birth to college*, New York: Russell Sage Foundation.

Heckman, J.J., LaLonde, R. J. and Smith, J.A. (1999) The economics and econometrics of active labor market programs, in O. Ashenfelter and D. Card (eds.) *Handbook of labor economics, Volume 3*. Amsterdam: Elsevier.

Jenkins, A., Vignoles, A., Wolf, A. and Galindo-Rueda, F. (2002) *The determinants and effects of lifelong learning*, London: Centre for the Economics of Education Discussion Paper, No. 19.

Johnson, A. (1998) *An evaluation of the long-term impacts of the sponsor-a-scholar program on student performance*, Princeton, NJ: Mathematica Policy Research.

Kitigawa, E. and Hauser, P. (1973) *Differential mortality in the United States: a study in socioeconomic epidemiology*, Cambridge, US: Harvard University Press.

Krueger, A. (2003) Economic considerations and class size, *Economic Journal*, Vol. 113, pp. 34-63.

LaLonde, R. J. (1995) The promise of public sector-sponsored training programs, *Journal of Economic Perspectives*, Vol. 9, No. 2, pp. 149-168.

Lavy, V. and Schlosser, A. (2005) Targeted remedial education for under-performing teenagers: costs and benefits, *Journal of Labour Economics*, forthcoming.

Lavy, V. (2002) Evaluating the effect of teachers' performance incentives on pupils' achievements, *Journal of Political Economy*, Vol. 110, No. 6, pp. 1286-1317.

Leigh, D. and Gill, A. (1997) Labor market returns to community colleges, *Journal of Human Resources*, Vol. 32, No. 2, pp. 334-353.

Lleras-Muney, A. (2005) The relationship between education and adult mortality in the United States, *Review of Economic Studies*, 72, 189-221.

Lochner, L. and Moretti, E. (2004) The effect of education on criminal activity: evidence from prison inmates, arrests and self-reports, *American Economic Review*, 94, 155-89.

Long, D.A., Mallar, C.D., Thornton, C.V.D. (1981) Evaluating the benefits and costs of the jobs corps. *Journal of Policy Analysis and Management*, Vol. 81, No. 1, pp. 55-76.

Machin, S., McNally, S. and Meghir, C. (2005) *Excellence in cities: evaluation of an education policy in disadvantaged areas*, report to the Department for Education and Skills.

Machin, S. and Vujic, S. (2005) *Crime and education in the United Kingdom*, unfinished draft paper, London: Centre for Economic Performance.

Maurin, E. and McNally, S. (2005) *Vive la révolution! Long term returns of 1968 to the angry students*, London: CEPR, DP 4940.

Mayer, S. (1997) *What money can't buy: family income and children's life chances*, Cambridge MA: Harvard University Press.

McIntosh, S. (2004) *The impact of vocational qualifications on the labour market outcomes of low-achieving school-leavers*, London: Centre for Economic Performance, Discussion Paper No. 621.

McIntosh, S. and Vignoles, A. (2000) Measuring and assessing the impact of basic skills on labour market outcomes, London: Centre for the Economics of Education, Discussion Paper No. 3.

Nickell, S. (2004) Poverty and worklessness in Britain, *Economic Journal*, 114, C1-C25.

Office for Standards in Education (OFSTED) (2003) *Excellence and cities and Education Action Zones: management and impact*, London: HMSO.

Oreopoulos, P., Page, M.E. and Huff Stevens, A. (2003) *Does human capital transfer from parent to child? The intergenerational effects of compulsory schooling*, Working Paper 10164, National Bureau of Economic Research (US).

Payne, J. (2000) *Evaluating training programmes for the long-term unemployed: an illustration of the matched comparison group methodology*, London: Policy Studies Institute, Research Discussion Paper 1, Report No. 871.

Plug, E. (2002) *How do parents raise the educational attainment of future generations?* IZA (German Institute for the Study of Labor) Discussion Paper, No. 652.

Pound, E., Magadi, M., Michaelson, J., Finch, S. and Stafford, B. (2005) *Quantitative evaluation of the adult learning grant 2003/4*, report to the Department for Education and Skills, London.

Ryan, P. (2001a) Publicly funded training for unemployed adults: Germany, the UK and Korea, in F. Park, Y.B. Park, G. Bechterman, and A. Dar (eds.) *Labour market reforms in Korea: policy options for the future*, Seoul: Korean Labour Institute/World Bank, pp. 265-292.

Ryan, P. (2001b) The school-to-work transition: a cross-national perspective, *Journal of Economic Literature*, Vol. 39, No. 1, pp. 34-92.

Sipe, C. (1996), *Mentoring adolescents: what have we learned?* Philadelphia: Public/Private Ventures.

Sianesi, B. (2003) *Returns to education: a non-technical summary of CEE work and policy discussion*, London: Institute for Fiscal Studies, mimeo.

Treasury/DWP/DfES, (2004) *Supporting young people to achieve: towards a new deal for skills*, London: HM Treasury.

Van der Klaauw, W. (2005) *Breaking the link between poverty and low student achievement: does Title 1 work?* Chapel Hill: University of North Carolina at Chapel Hill, mimeo.

Appendices

Appendix 1: Summary of evidence on the poverty-reducing effect of education and training (Section 1)

Wage returns	General	Higher returns for academic than vocational qualifications. No return for low-level vocational qualifications in the UK. Lack of evidence on returns for specific subgroups (e.g. disadvantaged) and for adults returning to education.
	Specific studies	Harmon and Walker (1995): estimate wage return of 15% to extra year of schooling for cohorts affected by change in compulsory school-leaving laws.
		Dearden et al. (2004a): estimate wage return of staying on (beyond 16) of 13-17% for men and women of low income backgrounds. Returns to HE (for population with entry-level qualifications) are 23-24% and 9-12% for low and high income males respectively; 22-23% for women across all income groups.
		McIntosh (2004): No wage return for people with NVQ level 1 or 2 qualifications. But wage return for some craft-based and higher level NVQ qualifications. Varies between 2 and 16%.
Employment	General	Education can have big effect on probability of gaining employment. Important since worklessness has been identified as the key cause of poverty in the UK (Nickell, 2004)
	Specific studies	McIntosh (2004): men who leave school with no qualifications and do not go on to further education have an employment rate of 68%; rises as follows if vocational qualifications acquired: 75% for level 1; 89% for level 2; 94% for level 3.
		Coelli et al. (2004): Canadian data: high school graduation has a big negative impact on the probability that individuals from welfare background use welfare themselves.
		McIntosh and Vignoles (2000): low-level skills in literacy and numeracy can make a big difference to the probability of employment.
Social outcomes	General	Many studies to show that education significantly improves health outcomes; is associated with lower crime levels; enhances the extent of civic engagement and participation; important intergenerational effects of education.
Adult outcomes	General	Lack of evidence in the UK. But programme evaluation evidence in US suggests that adults can gain from education and training.
	Specific studies	Jenkins et al. (2002): limited evidence of positive wage effects.
		Dearden et al. (2004b): find little evidence of positive returns to level 2 National Vocational Qualifications.
		Blundell et al. (1999): evidence of high returns to employer-provided training. Feinstein et al. (2004) suggest returns cannot be extrapolated to those who do not receive the training.

Appendix 2: Summary of costs and benefits of education/training programmes (Section 3)

School-based programmes			
	Country	Type of intervention	Costs and benefits
Lavy and Schlosser (2005)	Israel	Remedial classes for teenagers taught after school hours by classroom teachers	Increases probability of matriculation certificate by 12 percentage points. Internal rate of return of 9%. Cost of \$300 per 12 th grade student (\$1,000 per targeted student).
Lavy and Schlosser (2005) Lavy (2002)	Israel	Group incentive programme: schools receive cash depending where they rank in relative improvement	Similar gain to remedial classes (in terms of matriculation rate). Cost was lower: \$170 per student.
Lavy (2002)	Israel	Increased teaching time; split up classes into smaller groups; extra teaching for weak students	Similar gain to above programmes in terms of higher matriculation rate Cost is higher: > \$340 per pupil.
Dynarski and Gleason (1998)	US	Review of anti-dropout programmes for teenagers. Largest grants for re-structuring schools	In general, negligible impact on student outcomes.
Van der Klaauw (2005)	US	Extra funding to local authorities for schools with high concentration of poverty	Negligible impact on outcomes. Cost of \$300-\$400 per student.
Bénabou et al. (2005)	France	Extra funding for schools in disadvantaged areas	Negligible impact on outcomes.
Machin et al. (2005)	UK	Extra funding for schools in disadvantaged areas: Excellence in Cities	Improves performance at age 14 in maths (not in English); school attendance highest effect for medium-high ability pupils in disadvantaged schools. Cost of £120 per student on average. Programme likely to be cost-effective.
Student support			
Angrist and Lavy (2002)	Israel	Financial support to students for achieving matriculation certificate	Increases probability of obtaining certificate by 6-8 percentage points. Returns to certificate suggest earnings in treated group will increase by \$282 p.a. Cost of programme (\$385 per treated student) will be quickly recovered.
Dearden et al. (2005)	UK	Education Maintenance Allowance	Increase in the percentage of individuals from income-eligible families completing 2 years of post-compulsory education by 6.2 percentage points. Estimated wage returns for these 2 extra years: 6-8%. Costs: foregone earnings; extra education (about £3000 p.a.). Programme likely to break even.
Dynarski (2002)	US	Reviews literature: effect of subsidies on college attendance	Eligibility for \$1,000 of subsidy increases college attendance rates by about 4%.
Heckman and Lochner (2000)	US	Reviews programmes that combine mentoring with financial incentives to continue education	Successful programmes include Sponsor-a-Scholar. Costs include \$6,000 subsidy for college attendance. Substantial rise in attendance (22% in 1 st year; 16% in 2 nd year); Quantum Opportunity Programme: average cost: \$10,500; positive net social returns predicted (graduation; crime reduction).
Programmes for adults and high school dropouts			
Bloom et al. (1997)	US	One of several studies on the JTPA: includes various types	After 30 months, estimated net benefit is \$1,422 and \$1,822 for women and men respectively (earnings etc);

Education and child poverty

		of training; job search assistance	costs of \$910 and \$1,298; no benefit for out-of-school youths.
Heckman and Lochner (2000)	US	Reviews studies evaluating financial incentives to participate in education for high school drop outs; training programmes for high school dropouts.	Most show negative effects; exception is Job Corps – very intensive training programme, costing \$20,000 per participant. Predicts positive outcomes. Net return of 8-9%, but predominated by reduction in violent crime Jobstart is less expensive version (\$6,000) but lower benefits predicted.
Ryan (2001a, b)	Europe	Reviews evidence of training schemes for adults and youths	Evidence of positive effects on employment but not for wages. e.g. in UK >12% increase in employment rates after 3 years.