

London School of Economics and Political Science

Intergenerational Persistence of Poverty in the UK:

**Empirical Analysis of Economic Outcomes for
People Born from the 1950s to the 1980s**

Yuka Uzuki

A thesis submitted to the Department of Social Policy at the
London School of Economics for the degree of Doctor of Philosophy

London
November 2010

Declaration of Authorship

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Abstract

Further income redistribution is an obvious way of alleviating child poverty. However, whether this effectively improves life chances of children growing up in poverty is debated, and there might be less expensive ways of doing so. Drawing on competing models explaining intergenerational persistence of poverty, this thesis investigates some of the links between childhood poverty and later economic outcomes in the UK. Aiming to identify policy areas where intervention would be helpful, it examines continuities and changes over time in these links and mechanisms that create them, analysing longitudinal data from people born in 1958, 1970 and the 1980s.

This thesis shows that a negative effect of childhood poverty on adult earnings remains for the 1970 cohort (although not for the 1958 cohort), even after controlling for educational attainment in particular, and for other individual and family characteristics. This appears to be a reason that intergenerational persistence of poverty is stronger for the younger cohort. Teenage occupational aspirations do not seem to explain this residual effect, but unemployment in early working life contributes to it. An original contribution is the investigation of different effects of childhood poverty on later onset of and exit from unemployment, and the relative strength of the effects of parental worklessness and income poverty on these outcomes. A main finding is that income poverty more strongly affects the rapid onset of unemployment following employment, although parental worklessness appears to be associated with the slow exit from unemployment.

The results suggest that policy interventions in education or (potentially cheaper) interventions affecting youth aspirations would not completely remove the disadvantage experienced by children growing up in poverty. There is therefore evidence that further income redistribution would be beneficial in improving their future life chances, while the findings suggest that the design of income redistribution also matters.

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Acknowledgements

First of all, I am deeply grateful to my supervisor, John Hills. He has shown me how to accumulate and integrate knowledge, and make the most of it in order to unravel difficult policy questions. I have learnt a lot from his ever precise, constructive and thought-provoking advice throughout my PhD, which I believe will have an enduring impact on my future work and life. I would also like to thank Abigail McKnight for advising me in a very encouraging way, with her expertise in econometrics and labour market research. The meetings at her house made my study not only productive but also a special experience. I am also grateful to the faculty of the Department of Social Policy, especially Anne West for her conscientious supervision of my MSc dissertation as well as her feedback on some parts of this thesis, and Julian Le Grand and Michael Murphy for their important suggestions during the major review.

It is incredibly fortunate that I have conducted this research at the Centre for Analysis of Social Exclusion within the Suntory and Toyota International Centres for Economics and Related Disciplines. The vibrant and supportive environment of CASE has added great impetus to my work, and I am extremely grateful to its members during the past four years. I have benefited from the invaluable comments from Francesca Bastagli, Tania Burchardt, Howard Glennerster, Carmen Huerta, Ruth Lupton and Tom Sefton. I have also received excellent and friendly support from many others, including Ben Baumberg, Jane Dickson, Ludovica Gambaro, Joe Joannes, Suyoung Kim, Sarah Mohaupt, Anna Tamas, Tiffany Tsang, Catalina Turcu, Stephen Wang and Nic Warner.

The data availability was key to the fulfilment of this thesis. I very much appreciate the elaborate work of those who collected the data and made them available for research; in particular, the Centre for Longitudinal Studies at the Institute of Education for the National Child Development Study and the British Cohort Study, the Institute for Social and Economic Research at the University of Essex for the British Household Panel Survey, and the Office for National Statistics for the Family Expenditure Survey. I obtained all of these from the UK Data Archive. I am grateful to Jo Blanden and Tania Burchardt for kindly providing me with some of their Stata programs, which helped me to extend the feasibility of my analysis. I am also grateful to Tanvi Desai for helping me to find some official data. Needless to say, any errors in the data analysis remain my own.

I am grateful to the LSE for funding my PhD, and the Methodology Institute for granting me a teaching opportunity during this period. Sue Casson proofread this thesis and helped me to correct my grammatical errors. Sheila Kasabova provided a warm, pleasant living environment, which contributed greatly to my life in London. Yoko Morishima's words of encouragement raised my spirits. Many other people have also provided various kinds of support along the way, and I am grateful to them all.

My earlier education in Tokyo was also essential in embarking on this thesis. I am especially appreciative of Hiroshi Ishida and Takehiko Kariya for their intellectual input and encouragement. I first learnt about intergenerational mobility research from their studies as a route to investigating inequality. Teruyuki Hirota and Tomoji Onozuka inspired me to pursue the study of issues of social change and social justice. My friends and colleagues from the University of Tokyo, with whom I enjoyed stimulating discussions, deserve special thanks. I also gratefully acknowledge the funding from the Japan Society for the Promotion of Science that I received while I was based in Japan.

Lastly, I would like to express my gratitude to my old friends and family. Wherever I live, they give me care and reassurance. I am profoundly grateful to my parents for their constant support of my choice, and enormously indebted to Yukimitsu Nishimura for his optimistic understanding of my challenges. This thesis would have been impossible without any of them.

Chapter 1

Introduction

1.1 Background

In today's rich countries where most of the population enjoys comfortable standards of living, some, not necessarily a very small minority, still experience poverty. Children are one of the groups at the highest risk of poverty. In the UK, the rate of child poverty¹ was 23% in 2008, with 2.9 million children living in poverty (Brewer et al., 2009). Although the previous Government substantially reduced the rate, particularly between 1998 and 2004, it still remains higher than in the early 1980s and previously (Stewart, 2009b). This is of great concern in terms of these children's current well-being. However, child poverty is also a problem in the long term, because children who grew up in poverty are more likely to experience poverty in adulthood than those who did not (Blanden and Gibbons, 2006; McKnight, 2000). This issue is conceptualised as intergenerational persistence of poverty, which this thesis will investigate. There is evidence that intergenerational persistence of poverty increased between those born in 1958 and those born in 1970 (these cohorts are often compared because of the unique birth cohort studies conducted in Great Britain). There is little evidence yet that it has decreased for subsequent generations.

The term intergenerational persistence of poverty might invoke a negative stereotype that children who are born to and raised by poor parents are doomed to live in poverty for the rest of their lives. However, academic research has suggested that there is no evidence to support this kind of stereotype. Poverty is, first of all, a dynamic phenomenon which people move in and out of (Bane and Ellwood, 1986; Jenkins et al., 2001), although some people live in poverty long term. Many people who experienced poverty in childhood seem to be rarely in poverty in adulthood (Blanden and Gibbons, 2006). To clarify this, intergenerational persistence of poverty is a problem of unequal chances. To tackle these unequal chances, public policy needs to reduce the risk of falling into poverty, rather than simply shuffling the positions between rich and poor (Hills, 1999).

In what sort of contexts, should public policy confront intergenerational persistence of poverty? In the 20th century, more people could have believed that the

¹ The rate of child poverty here refers to the percentage of children living in households with an income below 60% of the contemporary population-wide median income (before housing costs).

best form of economic growth would automatically produce a world without poverty. However, some of us already know that the history of the last two to three decades has not given us any evidence, unlike the prediction of the trickle-down theory, that the wealth achieved by those at the top of the market will gradually be shared by all including those at the bottom. We are also in a position to know that poverty alleviation is likely to be more expensive under conditions of economic growth, because what matters is not only absolute poverty but also relative poverty (see Section 1.2). Furthermore, alleviating relative poverty might become even more difficult in a 'skill-based economy' where the inequality in economic rewards between people with high and low skills may increase. This is highly relevant to even further concerns around intergenerational persistence of poverty.

Further income redistribution is an obvious way of alleviating child poverty. However, whether this effectively improves the life chances of children growing up in poverty is debated, and it is indeed politically difficult in the UK (see Chapter 2). There is widespread support for government attempts to reduce poverty, and it is remarkable that all of the main political parties, including the current Coalition, now agree that child poverty should be 'eradicated' by some form of government intervention (HM Government, 2010). However, this does not imply that everyone backs the use of any policy tools that might achieve this goal. The most popular approach seems to be assisting parents to secure work. Policy tools to raise the children's later employment chances, such as education and other public services provision to enhance human capital, may also be popular.

Among the numerous risk factors associated with childhood poverty, the issue of skills was high on the previous Government's agenda (Leitch, 2006). This may well continue to be the case under the Coalition Government as it is regarded as an investment for future economic growth. Skills are, in fact, important not only for economic growth but also for income distribution and therefore the poverty rates (Glennerster, 2002). Economic research has supported additional investment in education by showing evidence of the decrease in demand for unskilled workers (Nickell, 2004), a strong positive effect of education of earnings and employment outcomes (Machin and McNally, 2006), and intergenerational income persistence due to children's low educational attainment (Blanden et al., 2007; Gregg and Machin, 1999).

Yet, it remains debatable whether any additional investment in formal education targeted at poor children would be a complete alternative to furthering the income

redistribution needed to alleviate child poverty. The ‘skill-based economy’ has mixed implications. On the one hand, it implies that the demand for highly educated workers will increase and that it will become increasingly important to encourage younger generations to pursue more formal education. On the other hand, as not only cognitive but also non-cognitive (social and learning) skills will be highly valued in the labour market, it may be implausible that formal education is the only tool for fostering skill formation (Brown, 2001; Heckman and Lochner, 2000). Children growing up in poverty may struggle to develop non-cognitive skills.

At present, the international league table shows that the UK could do more to raise its young population’s participation rates in post-compulsory education (OECD, 2009 Table C1.1). In particular, inequality in educational attainment across socio-economic backgrounds remains a problem to be tackled. However, there may be limits to the extent to which educational attainment can be raised, for instance, in terms of the percentage of people going into higher education (Goldin and Katz, 2008). Therefore, from the long-term perspective, it is less evident whether policies attempting to equalise and raise educational attainment will always be expected to reduce the intergenerational persistence of poverty by themselves.

This thesis therefore aims to shed light on the following two overarching questions by investigating some of the links between childhood poverty and later economic outcomes in the UK.² With a view to identifying the policy areas in which intervention would be helpful, it looks at continuities and changes over time in these links and the mechanisms that create them, analysing longitudinal data from men and women born in 1958, 1970 and in the 1980s (for more details about these cohorts, see Chapter 3.)

- Has the role of education increased in the intergenerational persistence of poverty?
- From the perspective of improving the life chances of children growing up in poverty, are there more effective and/or efficient mechanisms than direct income redistribution?

² All of the empirical analysis conducted in this thesis is based on people from Great Britain, but I assume this will bring out implications for the UK. Thus, I describe the country under study as the UK.

I mainly measure poverty by a low household income or the indicators of it (see Chapter 3), and focus on the later economic outcomes of children, while acknowledging the various mechanisms of intergenerational persistence of poverty. I will set out more specific research questions at the end of Chapter 2, after surveying the relevant literature. The next section briefly explains how the specific approach to poverty employed in this thesis may contribute to the broader literature on poverty, with respect to the related concepts, measures and causes.

1.2 The Concepts, Measures and Causes of Poverty

The ultimate problem of poverty for those who experience it is not low income per se but limited freedom to shape and pursue one's own goals. Low income is only one of a variety of factors that prevent people from doing so, even though it is presumably one of the most important factors in rich countries where money allows people to achieve and realise a great number of things. Therefore, to address this kind of ultimate problem of poverty, some would more specifically use concepts such as capability poverty (Sen, 1992, 2006) or social exclusion (Burchardt et al., 2002; Hills, 2002). These concepts commonly highlight the importance of participation and choice, and regard dynamic processes that lead to multidimensional disadvantages due to the lack of freedom to participate and make choices as something to be tackled (Burchardt et al., 2002).

Even before these concepts entered in the arena of poverty research, empirical poverty research had already examined life-course dynamics (Bane and Ellwood, 1986; Jenkins et al., 2001), whose roots date back as far as Rowntree (1901), and multidimensional deprivation (Townsend, 1979) .³ We can also acknowledge that a one-dimensional way of measuring poverty in terms of low income has a strength in monitoring the time trend and cross-national patterns of poverty (Hills, 2004). However, this empirical strand may have been more focused on measurement than on conceptualisation and, for convenience of measurement, measured poverty has often been abstracted from the complexities of capability poverty and social exclusion. A main contribution of these concepts is that they remind us to bear in mind what each working measure of poverty leaves unmeasured.

Employing these concepts of poverty in scope is particularly useful in avoiding confusing means and ends in policy design (Burchardt, 2007). This is also relevant to

³ See Glennerster et al. (2004) and Chapter 2 of Hills (2004) for reviews of the development of poverty measurement in the UK over the last century.

child poverty reduction policy, because it is expected to reduce capability poverty for children and their parents as well as their income poverty, but sometimes the strategies addressed by the government are only suitable for reducing their income poverty. For instance, under the previous UK Government, some working lone parents may have succeeded in escaping from poverty by sacrificing other aspects of their and their children's well-being, because the Government strongly encouraged them to work to increase their household income.

Against these research and policy backgrounds, it is worth making it explicit that both capability and income poverty matter. Income is simply one means of enhancing capability, but a very important one, and thus reducing income poverty can be a public policy goal in the interest of reducing capability poverty. Therefore, it would be useful to clarify the relationship between income and capability poverty.

Importantly, it is not only absolute but also relative income poverty that diminishes capability poverty. Sen (2006) argues:

As Adam Smith noted, the social capabilities may depend on a person's relative income vis-à-vis those of others with whom he or she interacts. A person's ability to be clothed appropriately (or to have other items of consumption goods that have some visibility or social use), given the standards of the society in which he or she lives, may be crucial for the capability to mix with others in the society. This relates directly to relative income vis-à-vis the general level of prosperity in that community. A relative deprivation in terms of income can, thus lead to absolute deprivation in terms of capabilities, and in this sense, the problems of poverty and inequality are closely interlinked (Sen, 2006, pp. 35-36).

This argument suggests that the eradication of capability poverty almost certainly requires the eradication of the relative income poverty. Relative income poverty is income which is low relative to the standard that a typical member of the population enjoys, and is particularly worthy of attention in rich countries, where only a very small minority are absolutely poor in international terms and struggle to survive.

Given that capability poverty, relative income poverty and income inequality are all interlinked problems, the causes of these problems are also interlinked. This is an important point to understand, but it is beyond the scope of this thesis to review the causes of these problems in depth. Therefore this section summarises how the

framework of intergenerational persistence of poverty relates to the investigation of the causes of poverty.

Table 1.1 suggests that the causes of poverty can be categorised into four groups according to the distinction between the macro- and micro-levels and between short- and long-term. Research on intergenerational persistence of poverty investigates the long-term causes of poverty for adults, in other words, the causal effects of childhood poverty on adult outcomes. As I will show in Chapter 2, most studies have investigated the effects of household-level poverty (the economic, socio-demographic, and welfare-dependency models), while some have investigated the effects of neighbourhood poverty, socio-economic structure and environment (the structural/environmental model).

Previous research has also explained when and where more people are likely to experience poverty for more immediate reasons. In terms of macro-level causes, as research into income redistribution finds (Atkinson, 1997; Hills, 2004), earnings dispersion, high unemployment rates, work disincentives in the benefit system, job insecurity, and levels of tax, transfers and in-kind benefits are possible determinants of income poverty. In terms of micro-level causes, as research into poverty dynamics finds (Jenkins, 2000; Jenkins et al., 2001), the factors driving changes in household income (household labour income and employment status) and needs (household composition and size) are the major causes of poverty.

Understanding the causes of poverty is useful when designing policies that prevent people from falling into poverty rather than those that provide a cure for those already living in poverty. In this respect, research into intergenerational persistence of poverty could inform what public policy could do far in advance to prevent people from falling into poverty, without making it too late or too expensive to implement. Rescuing contemporary children who are living in poverty from the negative consequences of poverty is one way of preventing adults and the children of future generations from experiencing poverty.

1.3 Plan of This Thesis

The plan of this thesis is as follows. Chapter 2 reviews the relevant literature on intergenerational persistence of poverty, by focusing on how social science research has investigated this question, and what we know based on empirical evidence about the role of education and other mechanisms. Through the review, I devise the empirical

questions to be investigated in later chapters. Chapter 3 discusses the methods and data that I employ for the empirical analysis, but each chapter of the empirical analysis will also contain sections giving more details about the analytical methods and variables. Chapters 4 to 7 carry out a series of empirical analyses.

Chapter 4 investigates the change over time between the 1958 and 1970 cohorts in terms of the role played by formal education in the intergenerational persistence of poverty. I firstly analyse whether the economic values of formal education measured by qualification attainment have increased over time. As an economic outcome, I use hourly earnings rather than household income in adulthood. Although individuals' earnings do not necessarily reflect whether one is living in poverty and thus I do not directly analyse intergenerational persistence of poverty, they are a predominantly important determinant of poverty and expected to be explained by education. Regarding the main question of the changing role of education, I adopt a descriptive approach by presenting the average earnings gap between those who grew up in poverty and those who did not that can jointly be explained by educational inequality and the earnings premiums thus estimated.

Chapter 5 investigates the effects of childhood poverty on adult earnings which are not explained by educational attainment or by other variables which the politicians and policy-makers assume to be associated with poverty. I firstly estimate the effects of the timing of childhood poverty for both the 1958 and 1970 cohorts, and secondly examine whether the residual effect of childhood poverty can at least partly be explained by the mediating effect of teenage aspirations. The politicians and policy-makers in the UK increasingly believe that raising the aspirations of children and young people from disadvantaged backgrounds is a key to improving their life chances, particularly through raising their educational attainment (HM Government, 2009; Social Exclusion Task Force, 2008). However, although there is ample evidence of the effect of parental social class, parental education, and parental attitudes and behaviour on children's aspirations (Blau and Duncan, 1967; Erikson and Goldthorpe, 1992; Erikson and Jonsson, 1996; Raby and Walford, 1981; Schoon, 2002, 2006; Shavit and Müller, 1998), only a few empirical studies have analysed the effects of childhood poverty on youth aspirations (Chowdry et al., 2008).

Chapter 6 continues to investigate why the effect of childhood poverty on later economic outcomes persists, even after controlling for educational attainment, but this time focusing on employment outcomes. Although previous studies have found that

those who grew up in poverty are more likely to be unemployed, this was only partially explained by their low educational attainment (Gregg and Machin, 1999; McKnight, 2000). However, they have not investigated whether, and if so, how far childhood poverty independently influences the onset of and exit from unemployment. To extend our current knowledge that education is an important but not the only contributory factor, I aim to investigate the effects of childhood poverty on the onset of unemployment and on the exit from unemployment respectively, and assess whether either of these effects can be explained by education. I analyse work history data from the 1970 cohort in Chapter 6.

Chapter 7 investigates the same question as Chapter 6, but using data from the 1980s cohort to see if the findings from the 1970 cohort are still relevant to the younger cohorts who grew up in similar contexts to contemporary children and young people. Chapter 7 also conducts new analyses in order to investigate the relative strength of the effects of parental worklessness and income poverty on unemployment risks in early working life, which are made possible by the BHPS that collects annual data on both household employment status and income. This is relevant to the policy question concerning whether more parental work or more direct income redistribution via benefits would be a better way of improving children's life chances. Despite its importance, however, as far as I know, no research has attempted to investigate this question in this way.

I therefore present empirical evidence on the following key aspects of the relationship between childhood poverty and later economic outcomes for both genders:

- Childhood poverty and earnings in people's early thirties for the 1958 and 1970 cohorts
- Educational attainment and earnings in people's early thirties for the 1958 and 1970 cohorts
- Effects of teenage occupational aspirations and earnings in people's early thirties for the 1970 cohort
- Childhood poverty and the onset of and exit from unemployment for the 1970 and 1980s cohorts
- Educational attainment and the onset of and exit from unemployment for the 1970 and 1980s cohorts

- Parental worklessness/childhood income poverty and the onset of and exit from unemployment for the 1980s cohort.

Chapter 8, the concluding chapter, summarises the key findings from Chapters 4 to 7 and discusses the policy implications in the light of how the findings relate to the models proposed for understanding intergenerational persistence of poverty.

Table 1.1 Causes of poverty

	Macro-level	Micro-level
Short-term	Labour market condition Tax and transfer levels In-kind benefit levels	Change in income Change in needs
Long-term	Childhood poverty (Structural/environmental model)	Childhood poverty (Economic, socio-demographic and welfare-dependency models)

Chapter 2

Literature Review

2.1 Introduction

This thesis fundamentally investigates two main questions. Has the role of education increased in the intergenerational persistence of poverty over time? From the perspective of improving the life chances of children growing up in poverty, are there more effective and/or efficient ways, such as education policy and other policies for addressing the mechanisms of intergenerational persistence of poverty, than direct income redistribution? When considering these issues in the contemporary UK, we should bear in mind the fact that the previous Government attempted both to raise educational attainment and promote income redistribution. New knowledge is not expected simply to show that both policies are important, but to contribute towards balancing the priorities between investment in human capital and income redistribution for the next steps that can be taken, given the limited resources.

In structuring research into the effects of childhood poverty on later outcomes, it is useful to establish, as proposed by Ermisch et al. (2001) and Plewis et al. (2001), the extent of the relationship between childhood poverty and the outcomes of interest, the aspects of poverty which actually shape the effect of childhood poverty on the outcomes, and the mechanisms by which the aspects affect the intervening influences on the outcomes. If the extent of the relationship is negligible, there is little need for further research. However, the extent of the relationship, if any, does not directly indicate the strength of the effect of childhood poverty on the outcomes, as some of it might indicate the effects of other aspects, such as family characteristics for instance, that are associated with childhood poverty. Therefore, the question is extended to consider what are the family characteristics which influence the later outcomes of children. Furthermore, childhood poverty often influences individuals' abilities, attitudes and behaviour, which then influence the later outcomes. Therefore it is useful to examine these mechanisms in order to gain a better idea about what kinds of policy intervention might remedy the negative consequences of growing up in poverty.

In this chapter, I review the previous literature that is relevant to these questions, to bring to light what we know and identify any gaps. The organisation of the literature review is as follows. In Section 2.2, I review four models in social sciences that explain

the intergenerational persistence of poverty in economically advanced countries. These models highlight different aspects of poverty and the intervening mechanisms, thereby bringing out different policy implications that are highly relevant to the contemporary policy debate in the UK. In Section 2.3, I then survey the empirical evidence for each model as well as for the extent of the intergenerational mobility and the persistence of poverty in the UK, in order to identify to what extent and in which respect each model is empirically supported. Finally, in Section 2.4, I raise further empirical questions that I will investigate in the following chapters in order to fill the gaps in the previous research.

2.2 Models of Intergenerational Persistence of Poverty

2.2.1 Models and Justifications

In considering what a government can do to help children growing up in poverty to improve their life chances, there are four different broad explanations of why and how these children are more likely to be in poverty in adulthood, as Corcoran and Adams (1997) summarise those developed in the US. Based on their classification, with slightly different labels, the four sets of explanations include: 1) the economic model, 2) the socio-demographic model, 3) the welfare-dependency model, and 4) the structural/environmental model. Although none of the models supports a deterministic view and they overlap each other in some aspects of empirical evidence, there are meaningful differences in terms of their causal explanations and policy implications. Table 2.1 provides a summary of the key features of these models, and I examine these in more detail below. Before doing so, I want to justify excluding some of the factors that other people, particularly those outside the social sciences, may find important. I also need to justify the application of models developed in the US to empirical research in the UK, while the history of poverty research is rather longer in the UK and it may be the US that could learn from the UK about child poverty reduction policy (Waldfogel, 2010).

The life-course process of human development is so complex that some may argue that the four models do not capture all of the important factors transmitted or transferred from parents to children. A criticism may be directed at the insufficient detail of these models, but this might not be a serious challenge, because the purpose of a model is to simplify real-world complexities and make them more comprehensible.

Nonetheless, a potential criticism worth noting is the omission of genetic transmission of income generating abilities and traits from parents to children that might explain some of the intergenerational correlation of income. In particular, because social policy can do nothing to intervene in such genetic transmission, some would argue that social policy based on the models that disregard the role of genes are not useful guides for policy-makers who are searching for effective ways of reducing intergenerational persistence of poverty.

Empirical evidence indicates that genetic transmission explains a portion of the intergenerational correlation between socio-economic variables. For instance, Björklund, Jäntti, and Solon (2005) found that genetic variation accounts for 23% of the earnings inequality for men and 17% for women, by using Swedish sibling data. Although the evidence is less straightforward in the UK, Goodman and Gregg (2010) find that 20% of the gap in educational attainment between children from rich and poor backgrounds can be explained by the intergenerational correlation of cognitive ability, analysing data from the sample members of the British Cohort Study (BCS) and their children. However, one reading of these findings is that 80% of the inequality is unlikely to be explained by genetic transmission.

Feinstein (2003), also using the BCS but focusing on childhood of the sample members, found that the gap in cognitive ability between socio-economic groups was narrower at ages 2 and 5, but had widened by age 10. It is still possible that the different degree of steepness of the development curve per se is due to the gene function, but recent child development studies 'have conceptualized genes and other biological variables as contributors to reciprocal, dynamic processes that can only be fully understood in relation to sociocultural environmental contexts' (Schoon et al., 2002, p. 1487, and see the references therein). This demolishes the argument that social policy cannot effectively reduce intergenerational persistence of poverty. Thus, it is not a serious weakness that the following models focus on other mechanisms besides genetic transmissions.

I employ models that have been developed in the US, but this is not because the awareness to child poverty and its intergenerational persistence was previously weak in the UK before Tony Blair made his pledge in 1999 to end child poverty within the next twenty years. The reality is to the contrary. Rowntree (1901), through his house-to-house-visit research conducted in York around the turn of the 19th century, identified three main life stages when people are more likely to live in poverty: childhood, a

period of childrearing and old age. Since then, it has been a stylised fact that income from the labour market is not necessarily sufficient to meet the needs of families with children, although policy had not addressed this until Family Allowances were introduced in 1946 in response to Beveridge's proposal (Glennerster, 2000; Glennerster et al., 2004). There was a considerable interval between the 1950s and mid-1960s when the issue of child poverty was ignored, but it came to the fore again with Abel-Smith and Townsend's (1965) publication of *The Poor and Poorest*. In those days, any government, including a Conservative one, could experience political embarrassment if it did not react to income poverty (Glennerster, 2000).

In the early 1970s, a Conservative minister, Keith Joseph, initiated a research programme including a literature review, published as the *Cycles of Disadvantage* by Rutter and Madge (1976), on 'the evidence that the same families tended to be deprived generation after generation' (Rutter and Madge, 1976 Preface). While covering wide-ranging issues, including economic and occupational status, housing, education, crime, mental health and so forth, this presumably marked the first voluminous account of intergenerational persistence of poverty in the UK. However, Atkinson (1973), as cited in Rutter and Madge (1976), commented that there was insufficient evidence available in order to measure intergenerational persistence of poverty, although some indirect evidence seemed to support its existence.

Without possessing any direct evidence, in those days, two competing approaches attempted to explain intergenerational persistence of poverty; the 'culture of poverty' discourse proposed by Lewis (1966) on the one hand, and the social and economic mobility frameworks on the other. The 'culture of poverty' discourse, having originated to explain poverty in Central America and influenced the War on Poverty in the US during and after the 1960s, suggested that poor families and communities shape and perpetuate culture (values, traits, attitudes and behaviour) in ways that are distinct from the main-stream norm. Interestingly, however, Rutter and Madge (1976) concluded that 'there is little documentation of any communities in this country which might correspond with the descriptions of a culture of poverty given by Lewis. The culture of poverty concept is inadequate for an analysis of British society' (p. 30). Hence, without necessarily focusing on poverty, social and economic mobility research using data collected from social survey research has contributed more to our

understanding of whether, how and to what extent advantages and disadvantages pass on from generation to generation in the UK. ⁴

The social and economic mobility research was also influential in the US, and argued that data do not support the existence of a culture of poverty (Duncan et al., 1972; Jencks et al., 1972; Sewell and Hauser, 1975). However, academic researchers in the US overcame the competing approaches in a different way from their counterparts in the UK. ⁵ They began to incorporate ideas borrowed from the culture of poverty discourse into the mobility framework by detailing the variables and paying attention to the interactions between the structural and cultural variables, while the term ‘underclass’ gradually came to replace the phrase of ‘the culture of poverty’. The models of intergenerational persistence of poverty, except for the economic model, are evolved through this process, but there was also a significant departure from the old discourse of ‘culture of poverty’, particularly since the role of government started to be seen as a cause of poverty (Corcoran, 1995; Ellwood, 1989).

It is now useful to apply these models in the UK, despite the fact that the ‘culture of poverty’ discourse that influenced them was rejected in the 1970s. This is because the idea that the role of government is a cause of poverty became popular among conservative politicians, intellectuals and journalists in the 1990s, following Murray (1990) (see the welfare-dependency model in Subsection 2.2.4). Today, a broad spectrum of politicians and policy-makers, under pressure to cut public spending, are more or less inclined to believe that a generous government could shape benefit recipients’ dependent attitudes and behaviour. In this context, it has become important for social science research to investigate the empirical validity of this idea, rather than to ignore it and allow the policy changes to go ahead on the basis of little evidence. In what follows, I will describe each model.

2.2.2 The Economic Model

The economic model highlights the fact that affluent parents can buy for their children better food and health care, more educational materials and experience, and a better education or a house in a better neighbourhood with good schools, and better social networks and role models, whereas poor parents cannot afford to buy such resources.

⁴ One of the pioneering studies on intergenerational income mobility was conducted by Atkinson (1981). I will review the studies conducted by more recent contributors repeatedly throughout this thesis.

⁵ See Ellwood (1989) and Corcoran (1995) for detailed reviews on how they have finally formed these four models.

These investments make a difference to children's human capital, thereby determining their future chance of success in the labour market. This model emphasises the importance of money and the other resources money can buy, and predominates in the economic research on intergenerational mobility.

The economic model as such was formalised by Becker and Tomes (1979, 1986), Solon (1992, 2004) and Zimmerman (1992). They explain, in both the original and improved forms, how income status is inherited across the generations, focusing on parental investment behaviour. To start with, parents are assumed to maximise a utility function, by dividing their income between their own consumption and investment in their children's human capital. Holding public investment in children constant, high-income parents invest more in their children's human capital. Holding tax constant, higher public investment in a child's human capital partly crowds out the parents' private investment. Parents' investment in their children's human capital increases with parental altruism. Parental investment also increases if the earnings returns on human capital are higher.

Economists have incorporated these assumptions of parental investment into the human capital earnings function, and derived the intergenerational income elasticity β by the following equation:

$$\ln Y_i^c = \alpha + \beta \ln Y_i^p + \varepsilon_i$$

where $\ln Y_i^c$ is the log of income for children in adulthood. $\ln Y_i^p$ is the log of income for parents in family i , and ε_i is the error term. β will increase with the heritability of income-generating traits, the efficiency of human capital investment, and earnings returns on human capital. On the other hand, β will decrease if public investment in human capital is progressive. This is the economic interpretation of intergenerational mobility.

An advantage of the economic model over the other models is that it goes on to explain the relationship between cross-sectional inequality and intergenerational mobility (Solon, 2004). Cross-sectional income inequality, $\text{Var}(\ln Y_i^p)$, increases due to the same factors that increase β ; thus inequality is greater if the heritability is stronger, human capital investment is more productive, returns on human capital are higher and public investment in human capital is lower. This explains why intergenerational

mobility tends to be lower in countries where cross-sectional inequality is greater (Blanden et al., 2005b; OECD, 2010).⁶

Policy prescriptions based on the economic model include public investment in education and training, and income support for poor families that is conditional on children's participation in education or training. Education was one of New Labour's first priorities. Together with the Every Child Matters agenda, both targeted and universal policies were implemented to improve outcomes of the school and post-compulsory education (Lupton et al., 2009a). The Education Maintenance Allowance (EMA) was introduced in 2004 to provide income support or offer financial incentives to young people from low-income families to stay on in post-compulsory education and training.

Given that a low income constrains parents from meeting the material needs of their children, the economic model, in a broader form than the one formalised above, also addresses the raising of the income of poor families. The previous Government attempted this by reforming the tax and credit systems to promote income redistribution for both working and workless parents and to encourage workless parents to work. There is evidence that the redistributed money is likely to be made use of to meet the children's material needs.⁷ Gregg et al. (2005), based on the Family Expenditure Survey between 1996/97 and 2000/01, found that, as family income rose, the extra income was spent on children's items such as clothing, footwear, toys and games.

2.2.3 *The Socio-demographic Model*

The socio-demographic model suggests that the main driving force behind intergenerational persistence of poverty is not parental low income or material resources per se, but the non-material resources and parental characteristics which are often associated with parental low income, as Mayer (1997) argues in her famous book '*What Money Can't Buy*'. These characteristics and non-material resources affect the children's development more than income. They include the parents' low education, little time and energy to support and supervise their children, and stress arising from being a lone parent and experiencing family disruption.

⁶ To be more precise, with the economic model, the intergenerational income elasticity β can also differ across countries due to heterogeneity in the heritability of income-generating traits across different countries (Solon, 2004).

⁷ Previous research suggests that children could benefit more from an increase in their mother's income than their father's (Lundberg et al., 1997).

A root cause of some of these factors may be parental low income. For instance, as the “family stress model” (see Ryan et al. (2006) for a detailed review) suggests, low income can cause family stress, family stress can diminish the quality of parenting, and poor parenting can have negative impacts on children’s well-being and human capital development. From this perspective, the economic model and the socio-demographic model overlap each other in terms of some of the mechanisms. Contrary to the former which highlights the role of income, however, the latter may imply that policy tools that directly aim to relieve family stress or to improve parenting are more efficient, as discussed in more detail below, than promoting income transfers that could gradually eliminate these problems affected by low income.

The socio-demographic model also identifies the transmission of attitudes and behaviour as an important mechanism of intergenerational persistence of poverty. Mayer (1997) argues that low-income parents may have developed ‘dysfunctional’ (from a middle-class perspective) attitudes and behaviour in order to ease their stress, and their children would also learn to adopt similar attitudes and behaviour. She further suggests that changes in parents’ attitudes and behaviour require the changes in opportunities that they can enjoy, as well as in the family situations. Therefore, this mechanism also relates to the structural/environmental model discussed below.

Supporters of the socio-demographic model argue that the effect of parental income becomes insignificant or reduces the relative importance, once other variables for these parental characteristics and non-material resources have been controlled for. Therefore, effective policies derived from this model include the provision of parenting support for parents and the provision of positive activities and public services for children and young people that will ‘improve’ their attitudes towards work and their career, including their aspirations, and also their reduce risk-taking behaviour. A Conservative plan to offer tax incentives for marriage as a way of reducing lone parenthood is also in line with this model on the assumption that family breakdown and lone parenthood have negative impacts on children’s lives and that the encouragement of legal marriage could prevent these (Social Justice Policy Group, 2007). The Coalition Government aims to reduce what it calls the ‘couple penalty’ (the incentive for low-income couples with children not to live together) in the tax credit system (HM Government, 2010).

These ideas, based on the socio-demographic model, are increasingly quoted in terms of how to promote human capital development, as not only cognitive skills but

also social and learning skills are increasingly regarded as valued in the labour market. The economic model and formal education are not the only model and tool that relate to human capital development. Children's life stages and domains that used to be taken care of solely by the family and parents, such as pre-school and out-of-school activities, are increasingly being regarded as important in fostering the skill formation of children. Therefore, mechanisms that are predominantly explained by the socio-demographic model suggest support for policies that are designed to improve the human capital and social mobility of disadvantaged children.

For instance, the importance of investment in early childhood, such as early years' education, has increasingly been recognised by both academic researchers (Esping-Andersen, 2004; Heckman and Lochner, 2000; Waldfogel, 2006) and the previous Government (HM Government, 2009; HM Treasury et al., 2008). The family per se became a target of the proposed policies, such as Family Pathfinders, Family Intervention Projects, and the Family Nurse Partnership (HM Treasury et al., 2008). Lexmond and Reeves (2009), as cited in the speech made by David Cameron (2009), when Leader of the Opposition, recommended support for parents in order better to nurture their children's personal capabilities associated with their future life chances, by improving some of the existing programmes. In terms of out-of-school activities for disadvantaged teenagers, Youth Opportunity and Youth Capital Funds were launched in 2006 to engage such teenagers in positive activities that they themselves want funded (DCSF, 2007). Furthermore, policy interventions into children's and young people's aspirations were proposed (HM Government, 2009; Social Exclusion Task Force, 2008). Aimhigher, which is a targeted programme for teenagers in England, has the aim of helping those from disadvantaged backgrounds to raise their aspirations towards entering higher education, and potentially improving their future lives (Morris et al., 2009). These are intended to reinforce human capital development by achieving what formal education traditionally could not.

2.2.4 The Welfare-dependency Model

The welfare-dependency model focuses on the role of government which could encourage parental worklessness and lone parenthood that tends to lead to parental worklessness. The model predicts that young people living with workless and/or lone parents who claim out-of-work benefits learn to depend on benefits themselves, through acquiring negative work attitudes and weak motivations to build a stable family (Mead,

1986, 1992; Murray, 1984/1994). The advocates of the model claim that generous benefits disincentivise and demotivate the poor, allowing them to remain in poverty long term, and thus argue that cutting or time-limiting benefits would be a good solution. This view first became prevalent in the US, triggered by Murray (1984/1994), in association with the underclass debate which highlighted poverty among inner-city ethnic minorities. In the UK, Murray's view has been popularised among conservative politicians, intellectuals and journalists, not necessarily with as many ethnic or racial connotations as in the US but with an emphasis on individual responsibility (Green, 1998; Murray, 1989/1996).

Although the model strongly predicts that there are links between out-of-work benefits and parental worklessness, and between parental worklessness and children's life chances (shown by the thick, solid arrows in Figure 2.1), it is relatively quiet about the possible effect of parental income on children's future life chances (shown by the broken arrows in Figure 2.1). Parental work might have positive effects on children's future life chances and, net of the income effect, if working parents more successfully pass on some form of human capital and social capital to their children that are useful in the labour market than workless parents.⁸

Even if the model's prediction is correct in terms of those links, household income might also have independently positive effects on improving the children's human capital, for instance. The existence of such effects of household income does not necessarily form a counter argument to the welfare-dependency model, as work increases income to a greater extent than benefits can, when a government offers adequate work incentives. However, while it is possible to improve the work incentives either by raising the in-work benefits or by cutting the out-of-work benefits, advocates of the welfare-dependency model, who are usually interested in reducing the size of government, might rather be inclined to choose the latter option. This may risk making both working and workless families poorer. Advocates of the welfare-dependency model thus seem to divert criticism from this risk by failing to make explicit the possible effect of parental income on children's future life chances.

The Conservatives, influenced by the welfare-dependency model, appear strongly hostile to public expenditure on benefits, while they now also agree that child

⁸ It is also important, however, to address the fact that working-poor lone parents face constraints of both time and money (Burchardt, 2008). For them, the negative effect of time poverty on the parent-child relationship might offset the possible benefit of the labour market attachment of parents.

poverty should be eradicated by some form of government intervention. They criticise New Labour's 'big' government approach to poverty, and argue that a government's role should be limited to enhancing the responsibility of families and societies who, in their view, can remove the causes of poverty (Cameron, 2009). The current Coalition Government's welfare reforms are motivated by the view that 'a system that was originally designed to support the poorest in society is now trapping them in very condition that it was supposed to alleviate' (Duncan Smith, 2010). More specifically, it proposes to raise the relative income of those in work compared to that of those out of work by reforming the benefit system (HM Government, 2010), although it is unclear what levels of in-work and out-of-work household income relative to the median will be guaranteed by the Government.

Welfare-to-work programmes are a means of increasing work and reducing welfare dependency, but should not be confused with the welfare-dependency model which primarily aims to decrease government spending on benefits. The previous Labour Government, which was criticised by the Conservatives for its increased spending, also implemented welfare-to-work programmes in line with its belief that work is the best and most sustainable route out of poverty. This belief is based on the assumption that work 'has positive impacts that go beyond increased income: improving well-being and raising aspirations for both children and their parents' (DWP, 2008, p. 92). The idea of welfare-to-work could go hand in hand with topping up household income for both working and workless families. To summarise, the essence of the welfare-dependency model lies not in emphasising that work matters but in assuming that benefits, particularly out-of-work benefits, are only damaging both short and long term, with little attention being paid to the possibility that additional household income could have a positive impact on the future life chances of children growing up in poverty.

2.2.5 The Structural/Environmental Model

The structural/environmental model pays attention to several factors that the first three models have also highlighted, but emphasises the roles of structure and the environment, whether socio-economic or geographical, such as social class structure, the labour market condition, demographic changes, and discrimination and segregation. Based on the model, income or other support at the individual or household levels may not

necessarily be effective or sufficient unless these structural/environmental problems are removed.

Neighbourhood research advocates this model, while suggesting that area-based policy is part of an effective solution to poverty. This stream of research argues that there are neighbourhood effects which are not the same as the composition or selection effects of those who live in the neighbourhood. If poor parents have no other choice but to live in poor neighbourhoods, their children experience the extra disadvantages of being deprived of good schools, role models and employment opportunities that may enhance their aspirations (Glennerster et al., 1999).

Drawing on the structural/environmental model, the socioeconomic environment forms their attitudes/behaviour for labour market participation and stable family formation. The essence of the model is that the environment influences these attitudes/behaviour regardless of their individual or family characteristics. Another gain from looking at the impact of structure/environment on attitudes/behaviour is that it sheds light on adaptive preferences (Grusky and Kanbur, 2006). As the concepts of capability poverty and social exclusion highlight (see Chapter 1), some would argue that individual choice should be respected, and it is important to examine whether the outcomes are realised out of choice. However, what makes this very difficult is that it is hard to distinguish choice from 'true' preferences and that from adaptive preferences. In consideration of social justice, we need to assume the possibility of the adaptive preferences of those who grow up in poverty. In order to solve this problem, effective intervention targets may be the structure/environment which influences individuals to shape their preferences rather than the individuals themselves.

In terms of policy reaction, the previous Government enthusiastically committed to neighbourhood renewal, against the background when it came to power in 1997 that poverty and deprivation had been particularly concentrated in particular disadvantaged areas. See, for instance, Lupton and Power (2005) and Power (2009) for area-based programmes and their evaluations.

2.2.6 Relative Strength of these Models

Corcoran and Adams (1997) have sought the relative strength of these four models using US data, and concluded that the economic model is most powerful, although all of the models were supported to varying degrees. The limitation of their analysis is that, as they themselves admit, it remains unclear why the economic model is most powerful,

because they simply compared the coefficients for the corresponding variables derived from each model and did not compare the processes in operation. Furthermore, as I will review in more detail in Subsection 2.3.5 below, it is methodologically challenging to identify the explanatory power of the structural/environmental model by undertaking a quantitative analysis.

A more productive way of making use of these models would be to examine closely each mechanism of intergenerational persistence than to detect the strongest model on which child poverty policy on the whole could be built. There may be no magic bullet and each policy tool may have to be designed by applying combinations of the ideas that each model highlights.

2.3 Empirical Evidence in the UK

In this section, I review the empirical findings on intergenerational persistence of poverty and the above four models in the UK. Where a cross-national comparison is useful or evidence from the UK is too scarce, I also refer to evidence from other countries. With respect to the economic and socio-demographic model, I will present more details of previous research in Chapters 4 and 5, respectively.

2.3.1 Intergenerational Mobility

I begin by reviewing the evidence on intergenerational mobility in the UK, to get an idea about why intergenerational persistence of poverty is actually of concern. While it is hard to imagine a world where there is no correlation between parents and children, it is helpful to compare the strength of the correlations across time and place (see Table 2.2 for a summary of changes in the correlations over time).

Economic research shows that intergenerational income mobility decreased between the 1958 and 1970 cohorts in the UK (Blanden et al., 2004)⁹ and, more specifically, that intergenerational persistence of poverty strengthened (Blanden and Gibbons, 2006; McKnight, 2000). However, sociologists who study social (occupational) class disagree with the economists and argue that the degree of social mobility did not change between the same two cohorts (Breen and Goldthorpe, 2001). Both parental variables and children's outcome variables are different between these

⁹ The analysis of a very recent cohort looking at the connections between family income and attainment in early childhood suggests that intergenerational mobility may have neither decreased nor increased since the time when the 1970 cohort was growing up (Blanden and Machin, 2007). This indicates that the low mobility in the UK is still of concern and that the experiences of the 1970 cohort are still relevant.

studies, in that the economic research mainly analyses the relationship between parental income and children's earnings, and the sociological research analyses the relationship between the parental and children's occupations. Thus, it is unclear which differences affect these results. With respect to the link between social class and individual earnings, there is evidence that social class is a good indicator of earnings profiles, which was much more the case in the late 1990s than in the 1970s (Goldthorpe and McKnight, 2006). If earnings inequality increased between the classes,¹⁰ the findings about intergenerational mobility would have been similar, regardless of whether earnings or occupations are used. The difference in the parental variables is likely to be the reason for the contradiction between the economic and sociological studies.¹¹

Blanden et al. (2008a) investigate why the economic and sociological findings differ and find that it is not because of methodological differences, but because within-class inequality in *household income* became increasingly influential in explaining the association between household income in childhood and earnings in adulthood. In particular, they partly attribute the within-class inequality in household income to that in the mother's income. Given that poverty is a situation in which a household suffers from a relatively low standard of living, it is important to take into account all of the income components that would determine the standard of living, including the mother's income as well as the father's income. For this reason, I take the evidence from household income as a starting point for my investigation, rather than that from social class as represented by the father's occupation.

Although there is evidence for the increased intergenerational persistence of poverty, as noted earlier, some studies argue that upward mobility from poverty is more common than downward mobility from the top in the UK. Dearden et al. (1997), looking at quartile transition matrices based on data from the NCDS, find an asymmetry in mobility in that upward mobility from the bottom of the earnings distribution is more likely than downward mobility from the top. Ermisch and Francesconi (2004), using data from the BHPS, also show that the intergenerational association tends to increase with parental status, suggesting that upward mobility from the bottom is more likely

¹⁰ US evidence also suggests that the rapid growth of earnings inequality has been driven by that of between-class and between-occupation earnings inequality, although more of earnings inequality is also observed within occupations (Weeden et al., 2007).

¹¹ Drawing on the evidence that the Hope-Goldthorpe index of occupational prestige is strongly correlated with earnings and relatively stable over time (Nickell, 1982), economic research by Ermisch and Francesconi (2004) also shows increased mobility based on intergenerational correlations in occupational prestige using data from the BHPS. This reinforces the view that the findings depend on whether or not parental socio-economic status is measured by occupation or income.

than downward mobility from the top. However, the results from the quartile approach may be a methodological artefact. Income distribution is skewed to the right (top), and the top quartile includes wide-ranging levels of income, which may simply make downward mobility from the top more uncommon. Therefore, the evidence cannot necessarily reject the view that intergenerational persistence of poverty is serious.

With respect to the cross-national comparison of intergenerational mobility, the findings are consistent between income mobility and social mobility. Economic research (Blanden et al., 2005b) shows that income mobility in the UK is as low as in the US, which is much lower than in Finland, Sweden, Norway, Denmark and Canada. Sociological research (Erikson and Goldthorpe, 1992; Hout and Hauser, 1992) also shows that the UK is among the countries with the lowest social mobility along with the US and France. The degree of social mobility is higher in countries that have less cross-sectional inequality, such as Sweden, Norway and the Netherlands, than in other western European countries.

In summary, intergenerational persistence of poverty is of concern because it strengthened between the 1958 and 1970 cohorts and seems to have remained the same since then. Furthermore, intergenerational mobility in the UK, regardless of how it is measured, is low compared with that in other industrialised countries. Next, we shall look further at why intergenerational persistence of poverty occurs.

2.3.2 The Economic Model

The most straight-forward evidence required to verify the economic model is that showing a causal effect of family income on child outcomes. Experimental and quasi-experimental studies, which are mostly conducted in the US, reveal that family income, rather than or in addition to its correlates, matters to some of the outcomes for children. Morris et al. (2001), summarising the results of five programme evaluations in the US, suggest that the welfare-to-work programmes that promote parental work can have positive impacts on children's well-being only when these programmes boost parental income.¹² Dahl and Lochner (2009), exploiting non-linear changes in the Earned Income Tax Credit as an exogenous source of changes in family income, find that the

¹² Several studies in the US report that such welfare-to-work programmes have positive and significant impact only on young children such as pre-school children (Clark-Kauffman et al., 2003; Duncan and Chase-Lansdale, 2001; Grogger and Karoly, 2005). A common interpretation of this evidence is that parental income improves child outcomes, but lone parents' work can have a detrimental effect, unless there is sufficient adult care and supervision provided to children. Compared to childcare for pre-school children, public services targeting teenagers' after-school activities may be under-developed.

extra family income has a causal effect on poor children's math and reading achievement, particularly for younger children. Recent evidence suggests that unearned income also has a positive effect. Copeland and Costello (2010) find that an exogenous increase in family income, which was brought by the unconditional disbursement of a portion of the profit of a local casino business, increases the number of years of completed education and reduces criminal behaviour for young native American people in North Carolina.

This kind of evidence is scarce in the UK, but some studies have shown that family income has a causal effect on young people's educational outcomes. Blanden and Gregg (2004) find that family income at age 16 increases the probabilities of staying on in post-compulsory education and obtaining a degree, controlling for proxies of permanent family income. The evaluation of EMA reports that a weekly payment to young people from low-income families has a positive effect on their participation in post-16 education, and on greater occupational choices for those who remained in post-16 education for two years (Middleton et al., 2004). However, there is no evidence that the EMA improves their achievement or entry in higher education. Cash transfers conditional on the participation in post-compulsory education may not sufficiently improve higher education outcomes.

It is almost uncontroversial that formal education plays an important role in the intergenerational persistence of poverty, as the economic model explains. The more interesting and widely debated question is whether this model becomes *increasingly*, rather than *remaining equally*, important. As I discussed in Chapter 1, there are mixed predictions of the importance of formal education. Empirical evidence about the changes in the role of education that have taken place over the last couple of decades would be useful, when the technological change transformed industries.

Previous research suggests that the role of education in income mobility increased between the 1958 and 1970 cohorts, because the effect of parental income on educational attainment or participation increased (Blanden and Gregg, 2004; Blanden et al., 2005a; Blanden et al., 2007; Dearden et al., 2004b). More recently, there is evidence that the relationship between parental income and educational attainment has weakened for those born in the 1980s and the early 1990s (Gregg and Macmillan, 2009) (see Table 2.2 for a summary). With respect to the earnings premiums associated with educational attainment, the evidence is mixed (see Subsection 4.2.2 and Table 4.1 in Chapter 4). The clearest summary is that the earnings premium associated with a degree may have

increased in the early 1990s and plateaued sometime around the mid 1990s, presumably because higher education was expanding in tandem with the increasing demands for high skills.

However, Blanden and Gibbons (2006), analysing the effect of childhood poverty on later non-employment for the 1958 and 1970 cohorts, show that the role of education cannot explain the increased persistence of poverty. It is unclear why the evidence on the role of education differs between income mobility and persistence of poverty, and whether this is because of the difference in outcomes variables (earnings and non-employment).

Another mechanism to support the economic model is the link between childhood income poverty and the later economic outcomes generated through other routes than investment in formal education. Previous studies found that those who grew up in poverty are more likely to be unemployed in their early twenties and early thirties, but this is only partly explained by their low educational attainment (Blanden and Gibbons, 2006; Gregg and Machin, 1999; McKnight, 2000). Another study found that the indicators of childhood poverty¹³ are associated with the probability of not being in education, employment or training (NEET) between the ages of 16 and 18, even after controlling for educational attainment (Bynner and Parsons, 2002). There is also evidence for the scarring effect of unemployment on future employment and earnings in the UK (Arulampalam et al., 2000; Burgess et al., 2003; Gregg, 2001; Gregg and Tominey, 2005; Gregory and Jukes, 2001; Narendranathan and Elias, 1993; Nickell et al., 2002).¹⁴ Therefore, the relationship between childhood poverty and unemployment in the early working life seems to be a pathway to intergenerational persistence of poverty that cannot completely be explained by education. The residual effect of childhood poverty on later non-employment increased over time slightly for men and clearly for women (Blanden and Gibbons, 2006).

Other studies also indicate, using proxies for childhood income poverty, that childhood poverty negatively affects economic outcomes for reasons not explained by educational disadvantages (Ermisch et al., 2001; Schoon et al., 2004). Looking at those from a privileged background, there is evidence of the benefit of attending private school. The benefit increased for the post-1960 cohort compared with the pre-1960

¹³ The indicators are living in an inner city or on a council estate for boys and receiving free school meals in the past for girls.

¹⁴ However, there is no evidence for the scarring effect in the US (Corcoran and Hill, 1985; Heckman and Borjas, 1980).

cohort and more interestingly, the earnings of those with a private school education are significantly higher for both genders, even after controlling for family backgrounds and the qualifications obtained, unless they fail their school exams (Green et al., 2009). The study interprets that rich parents pass on useful networks to their children through sending them to private school.

Taken together, although we know that intergenerational persistence of poverty increased between the 1958 and 1970 cohorts, and that those from rich(er) backgrounds increasingly took advantage of educational opportunities, and that this resulted in lower income mobility both because of and beyond the inequality in qualification attainment. However, given the mixed evidence, it remains unclear whether the role of education increased in creating intergenerational persistence of poverty over time. The previous literature has not made explicit whether there is a possible impact of fewer young people having no qualification. Even though those who grew up in poverty in the 1970 cohort remained disadvantaged in attaining a high level education, they have better qualifications than their older counterparts.

2.3.3 The Socio-demographic Model

The parents' characteristics and non-material resources and mechanisms through which these characteristics and resources influence the child outcomes include a variety of variables. This subsection focuses on the aspects and mechanisms that seem to be particularly influential in shaping the politicians and policy-makers' assumptions about role of the government in improving the life chances for children. The outcomes examined in this model are also diverse, and it again focuses on the factors associated with the children's human capital development and later economic outcomes.

In what follows, I mainly review the literature on the effects of lone parenthood, and youth attitudes and behaviour (youth aspirations and risk-taking behaviour) on later outcomes, as these are relevant to the policy issues reviewed in Subsection 2.2.3. I do not review the literature on the relationship between parental education, parenting and children's educational outcomes, however, as the literature is huge and forms a research area by itself, independent of poverty research. See Desforges and Abouchaar (2003) and the literature therein, for instance, on the impact of parental involvement and education on children's achievement. The available evidence is unsurprising and shows that parental social class, maternal education, material deprivation and maternal mental health influence parental involvement, and that this affects the children's achievements.

The latter mechanism is reciprocal in that the children's achievements also affect the parental involvement.

Lone parents, particularly lone mothers, are one of the groups with the highest risk of falling into poverty (DWP, 2010), and the negative effects of parental disruption or living with a lone parent on education and labour market outcomes were repeatedly reported by several studies in the UK (Elliott and Richards, 1991; Fronstin et al., 2001; Kiernan, 1996). However, it is ambiguous or controversial which matters more for children's outcomes, low income or lone parenthood, in both the UK and US (Bogges, 1998; Ermisch et al., 2004; Haveman and Wolfe, 1995; McCulloch and Joshi, 2002). Most recent evidence based on children born in 2000 in the UK suggests that lone parenthood may not have a direct negative impact on child development, but that poverty and maternal mental health, both associated with lone parenthood, do (Kiernan and Huerta, 2008; Kiernan and Mensah, 2009) (see Subsection 5.2.2 in Chapter 5 for more details).

Educational and occupational aspirations have been identified as an important determinant of future outcomes. Schoon (2006) found that aspirations became more important for the 1970 cohort who faced the decline of heavy industry and a difficult youth labour market in the 1980s, than for the 1958 cohort. Therefore, if growing up in poverty lowers children's aspirations, the residual effect of childhood poverty on the earnings in question may partly be explained by the effects of aspirations. As is well known, parental social class and education, and parent's aspirations for children associated with their social class and education, are known to be strong determinants of children's aspirations (Blau and Duncan, 1967; Erikson and Goldthorpe, 1992; Erikson and Jonsson, 1996; Raby and Walford, 1981; Schoon, 2002, 2006; Shavit and Müller, 1998). However, surprisingly little research has been conducted to investigate whether the experience of childhood poverty additionally influences the aspiration formation of teenagers, with the exception of Chowdry et al. (2008) using the Longitudinal Survey of Young People in England. The study finds parental income and other family characteristics influence children's aspirations and expectations measured at ages 13 or 14 (see Subsection 5.2.3 in Chapter 5 for more details).

Problematic or vulnerable behaviour, such as criminal offences, drug and alcohol abuse, and homelessness diminish the employment prospects for young people (Kemp and Neale, 2005; Klee et al., 2002; Lakey et al., 2001). Previous studies have shown that childhood poverty is positively associated with the experience of being

arrested and homelessness among young people, but not with alcohol and drug use (McGlone, 2001a, b; Quilgars, 2001; Sigle-Rushton, 2004). However, some evidence suggests that academic test scores are a much stronger risk factor for the experience of being arrested than childhood poverty (Sigle-Rushton, 2004), and the effect of childhood poverty on youth crime appears to be indirect through parental stress and family conflict (Rutter et al., 1998).

Particularly for women, teenage parenthood is now regarded as one of risk-taking behaviour. The previous Government identified teenage parents as one of the socially excluded groups (Social Exclusion Unit, 1999). The research evidence suggests that those growing up in poverty are more likely to become teenage parents (Harden et al., 2006; Hobcraft and Kiernan, 1999; Kiernan, 1997; Manlove, 1997). Harden et al. (2006) address the investment in early childhood and young people, including the improvement of education and training services, that could indirectly prevent them from experiencing an unplanned pregnancy. Furthermore, Alexander et al. (2010) argue that it is inappropriate for the Government to assume that teenage parenthood is an outcome of ignorance or low expectations or to design policies based on this assumption, since some teenagers seem to have improved their lives after having a child. Even if teenage parenthood is a mechanism of intergenerational persistence of poverty, the authors argue that public policy may need to support teenage parents rather than view them as problematic.

In terms of lone parenthood, youth attitudes and behaviour, there is little strong evidence to suggest that policy interventions in line with the socio-demographic model can be substituted for further income redistribution, or be uncontroversial.

2.3.4 The Welfare-dependency Model

Although a view coinciding with the welfare-dependency model is very influential currently in the UK,¹⁵ it also receives much academic criticism due to the lack of sufficient evidence for dependency.¹⁶ Some studies reject the view that there exist

¹⁵ Over 50% of the respondents to the British Social Attitudes (BSA) survey agreed that the benefits for the unemployed were too high and discouraged work in 2006, while the equivalent percentage was around or below 30% between 1987 and 1997 (Sefton, 2009). The BSA survey shows that only 20% disagreed that people would learn to stand on their own two feet if welfare benefits were less generous in 2008, while the equivalent percentage was somewhere between 40 and 50% between 1987 and 1996.

¹⁶ In the US, Wilson (1987) criticises the journalists' and conservative intellectuals' stigmatising ways of disseminating the term without referring to the empirical evidence, while reviving the term 'underclass' in academic discussions to highlight the rather neglected problems of the lower end of the class system. In the UK, Frank Field, a Labour MP, also welcomes the concept of the underclass to grasp poverty in the

distinctive attitudes of dependency among the poor. Both quantitative (Gallie, 1994; Heath, 1992) and qualitative studies (Bradshaw and Holmes, 1989; Kempson, 1996) have found no evidence of the dependent attitudes among the long-term unemployed or members from workless households. A study from the US more directly suggests that the evidence about the intergenerational transmission of welfare dependency obtained so far is simply spurious or not robust, and found that most women who grew up in families receiving welfare (in the American sense) did not receive welfare in adulthood (Page, 2004).

It would be groundless and misleading to blame those who are workless and living on benefits for their distinctive culture or irresponsibility, and to assume that cutting out-of-work benefits could automatically reduce worklessness and poverty. However, in designing benefit systems, it would also be wrong to disregard some of the concerns implied by the welfare-dependency model that parental worklessness may increase the later risk of worklessness for their children. If this were the case, implementing unconditional income transfers quickly to alleviate child poverty, which is anyway unlikely to take place in the UK today, would be undesirable. Ermisch et al. (2001) found a correlation between parental worklessness and the later economic inactivity of children, although they did not separate the effect of low income from that of worklessness and thus did not discuss whether or not this supported the welfare-dependency model.

2.3.5 The Structural/Environmental Model

It is methodologically difficult to detect the effect of structure/environment on individual outcomes, as many quantitative studies on neighbourhood effects are sceptical of such effects. There have been relatively few quantitative neighbourhood studies in the UK but some of them also deny neighbourhood effects (Bolster et al., 2007; McCulloch, 2001). The results from the US, all in all, suggest that, once a comprehensive set of family background characteristics has been controlled for, it is difficult to detect any robust and strong neighbourhood effects (Solon, 1999). The general conclusion from these quantitative studies is, firstly, that the influence of the neighbourhood may not be strong at all and some estimates of neighbourhood effects stem from the effects of unmeasured characteristics of those living in the

UK and stresses its structural cause, but he seems to oppose the view that the so-called 'culture of poverty' is the root cause of it (Field, 1996).

neighbourhood (Corcoran et al., 1992; Jencks and Mayer, 1990). However, another possibility is that, although neighbourhood matters, its effects are not captured by the methods applied in the quantitative studies so far. Most methods may have defined a neighbourhood inappropriately or failed to focus on the truly important neighbourhood characteristics (Lupton, 2003; Solon, 1999; Wilson, 2006). The difficulties attached to quantitative studies in defining the boundaries of neighbourhoods shake the foundation of their conclusions. Alternatively, some variables used in quantitative studies may be the outcomes of the cumulative effects of neighbourhoods, and controlling for these variables may lead to an underestimation of such neighbourhood effects.

Nonetheless, some quantitative studies have successfully identified neighbourhood effects. Buck (2001), using data from the BHPS, finds that the chance of escaping from persistent poverty was significantly associated with neighbourhood deprivation measures, and suggests that there are problems in identifying the cross-sectional effects of the neighbourhood because current individual characteristics are potentially the products of past neighbourhood effects. Galster et al. (2005), using US data, demonstrate this cumulative effect of neighbourhood poverty on teenage child-bearing, educational attainment and earnings, applying a structural equation model incorporating an instrumental variables approach. They argue that, in so doing, they overcome the major difficulties in measuring neighbourhood effects.¹⁷ These include selection and simultaneity biases that are derived from bi-directional causal relationships between at least five variables: homeownership status, neighbourhood economic characteristics, the expectation of a move during next year, an actual move observed during the year and endogenous household economic characteristics.

As this area needs intensive methodological work in order to identify the effects of neighbourhood, structure and/or environment, I will not attempt to verify the structural/environmental model. However, I will pay attention to the factors explained by this model in choosing control variables and interpreting the findings where necessary.

2.4 Conclusions: What We Know and What are the Gaps

The previous research has shown that intergenerational persistence of poverty is of concern on empirical grounds, and it is almost certain that formal education plays an

¹⁷ However, the geographical distance between poor inner cities and rich suburbs is far greater in the US than in the UK, we need to be cautious in applying this evidence to the UK context.

important role in this persistence. Figure 2.2 summarises what we know to answer the questions raised in the opening of this chapter. The solid arrows indicate the effects found by using the variables for income or income poverty, while the dotted arrows indicate the predicted effects based on evidence found by using the variables for socioeconomic status (proxy for income or income poverty). These are also marked with their direction and change over time where known (see notes on the figure).

For the first question, about whether the role of education increased, the economic research on income mobility argues that it did so, but it remains unclear whether the role of education also increased in explaining the intergenerational persistence of poverty. It has been shown that the effect of parental income on educational attainment increased between the 1958 and 1970 cohorts, although the evidence has been mixed regarding changes in the effect of educational attainment on earnings. However, as noted earlier, compared with the fact that people from rich(er) backgrounds took advantage of the expanded educational opportunities and that this contributed to the decrease in intergenerational income mobility between the 1958 and 1970 cohorts, the possible impact of fewer young people having no qualifications on the intergenerational persistence of poverty has not been investigated. We need to revisit the question of the role of education in the intergenerational persistence of poverty, by specifically focusing on the outcomes for those who grew up in poverty rather than measuring income mobility overall.

For the second question, about whether it would be sufficient to rely on education policy or other policies to address the mechanisms of intergenerational persistence of poverty without redistributing the income more rigorously, there are three issues to be considered:

- Whether the effect of childhood income poverty does or does not remain, after controlling for educational attainment and other factors that social policy cannot really change.
- Whether the empirical evidence suggests a full (or nearly full) set of causal mechanisms for the intergenerational persistence of poverty, and whether social policy can directly address these mechanisms.
- Whether a government should avoid a (more rigorous) income redistribution in order to help children growing up in poverty to improve their life chances, as the welfare-dependency model asserts.

In terms of the first issue, income mobility research has barely addressed it, but the previous research on the effect of childhood poverty on unemployment has shown that the effect of childhood poverty remains even after controlling for educational attainment and other basic individual characteristics. However, the previous research has not investigated whether and how far childhood poverty influences the onset of and exit from unemployment respectively. Whether a person is unemployed at a particular point in time is determined both by how likely they are to become unemployed and by how long they are likely to remain unemployed. This is an area for further research to understand the nature of the effect of childhood poverty on economic outcomes which cannot completely be explained by educational disadvantage.

It is difficult to give a complete answer to the second issue, but it may at least be possible to examine whether the common assumptions of the politicians and policy-makers are really backed up by empirical evidence. I have reviewed the mediating effects of lone parenthood, youth aspirations and some youth risk-taking behaviour on intergenerational persistence of poverty in this chapter. Recent research has argued that income poverty, rather than lone parenthood, has a direct effect on child outcomes. However, compared with the volume of literature on the relationship between children's aspirations and parental social class and education, which indirectly suggests that childhood poverty may negatively affect aspirations, only a little empirical research has investigated the mediating role of youth aspirations in the intergenerational persistence of poverty. Thus, this thesis will examine whether it will be strong enough to replace the role of further income redistribution that is potentially needed.

There has been too little empirical evidence to support the welfare-dependency model in the UK, but, given that the belief based on the model is widespread and may partly act as an obstacle to more progressive income redistribution, the third issue is worthy of empirical research in some way or other.

Some of the gaps in the previous literature that are relevant to intergenerational persistence of poverty may be due to the inadequate connection between intergenerational mobility research and poverty dynamics research. Social and income mobility research is more interested in measuring the permanent income of individuals rather than their life-course dynamics. However, DiPrete and McManus (2000) raised a question about the concept of permanent income since changes in employment and household membership can produce income changes substantially. On the other hand, in

poverty dynamics research, only a few attempts (Ermisch et al., 2001) have been made to incorporate an intergenerational perspective, which will be reviewed in Chapter 5.

Taking the overall outcomes of the literature review, I will investigate the following specific research questions in the rest of this thesis in order to address the issues raised in Chapter 1:

- Q1. Has the explanatory power of education in the intergenerational persistence of poverty increased over time?
- Q2. What are the effects of the timing and duration of childhood poverty on earnings?
Do teenage aspirations explain these?
- Q3. How much does childhood poverty affect the onset of and exit from unemployment in early working life?
- Q4. What is the relative strength of the effects of parental worklessness and childhood income poverty on unemployment in early working life?

Figure 2.1 The predictions and missing links of the welfare-dependency model

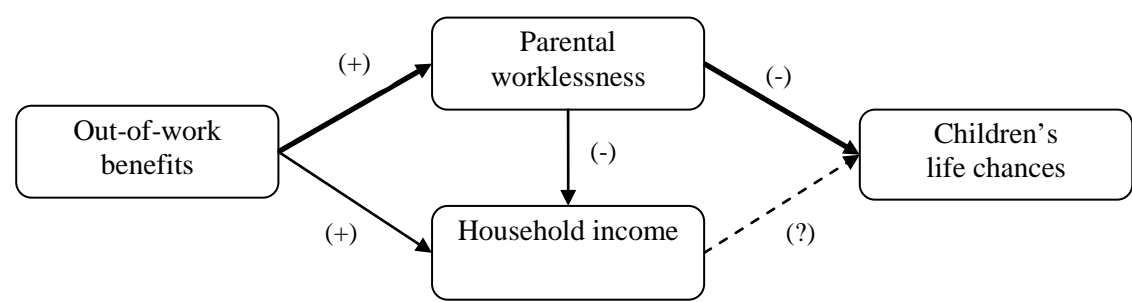
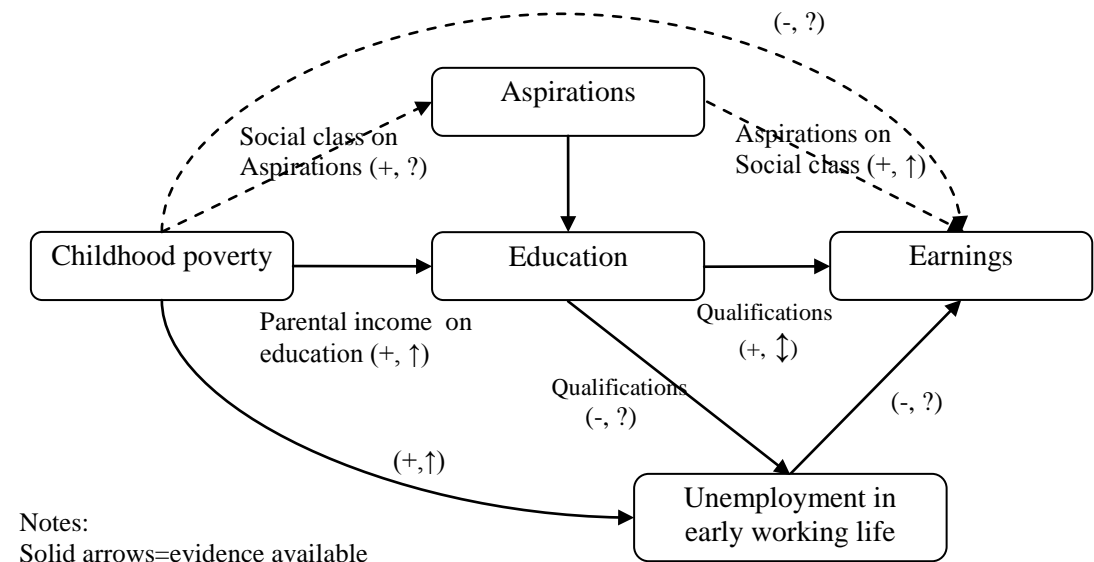


Figure 2.2 Evidence from the literature on the links between childhood poverty and later economic outcomes



Notes:
Solid arrows=evidence available
dotted arrows=prediction
the interpretation of the marks beside the arrows:
(Direction, Change over time)
+ positive ↑ increased
- negative ↓ decreased
± mixed evidence ↑ mixed evidence
0 no effect 0 unchanged
? no evidence ? no evidence

Table 2.1 Models of intergenerational persistence of poverty

	Aspects of poverty	Mechanisms	General policy implications
Economic model	<ul style="list-style-type: none"> • Parental low income 	<ul style="list-style-type: none"> • Human capital investment via formal education • Child development enhanced by material resources 	<ul style="list-style-type: none"> • Public investment in education and training • Income support conditional on participating in education or training • Income support for families with children • Encouraging parents to work to raise the household income
Socio-demographic model	<ul style="list-style-type: none"> • Non-material parental resources (parental education levels, attitudes and behaviour including parenting) • Lone parenthood 	<ul style="list-style-type: none"> • Child development enhanced by non-material resources • Youth attitudes and behaviour 	<ul style="list-style-type: none"> • Provision of parenting support for parents • Provision of cultural and athletic activities for children and young people. • ‘Improving’ youth attitudes to work and career • Reducing youth risk-taking behaviour, such as alcohol and drug use, violence and teenage parenthood • Encouraging parents to get married
Welfare-dependency model	<ul style="list-style-type: none"> • Receipt of out-of-work benefits 	<ul style="list-style-type: none"> • Future welfare dependency of children (due to their own worklessness and/or lone parenthood) 	<ul style="list-style-type: none"> • Cutting or time-limiting benefits • Encouraging parents to work • Encouraging parents to get married
Structural/ environmental model	<ul style="list-style-type: none"> • Disadvantaged neighbourhood • Macro-level inequality • Social class structure 	<ul style="list-style-type: none"> • Child development enhanced by non-material resources • Youth attitudes and behaviour • A variety of opportunities (quality of local schools and local labour markets, cultural norms) 	<ul style="list-style-type: none"> • Improving neighbourhood conditions • Equalising society • Eradicating discrimination and segregation

Notes: Corcoran and Adams (1997) first derived this classification of the models.

Table 2.2. Summary of previous findings on the effect of childhood poverty or parental income on economic and educational outcomes

Author(s)	Year	Data	Age outcomes measured	Measure of childhood poverty or parental income	The effect of childhood poverty or parental income				Change over time
Economic outcomes					Earnings		Employment		
					Males	Females	Males	Females	
Gregg and Machin	1999	NCDS	23/33	Ever in financial difficulties	Yes	Yes	Yes	Yes	–
McKnight	2000	NCDS/BCS	23/26	Parental income poverty at age 16	Yes	Yes	Yes	Yes	Increased
Ermisch et al.	2001	BHPS (1991-97)	16-29	Current and persistent income poverty	–	–	Yes	Yes	–
Blanden et al.	2004	NCDS/BCS	33/30	Parental income at age 16	Yes	Yes	–	–	Increased
Blandend and Gibbons	2006	NCDS/BCS	33/30	Parental income poverty at age 16	–	–	Yes	Yes	Increased
Educational outcomes					Attainment		Staying-on at age 16		
					Males	Females	Males	Females	
Ermisch et al.	2001	BHPS	23	Current and persistent income poverty	Yes	Yes	–	–	–
Ermisch and Francesconi	2001	BHPS		Quartile of parental income	Yes	Yes	–	–	–
Dearden et al.	2004	NCDS and BCS	16	Quartile of parental income at age 16	–	–	Yes, only for the BCS	Yes, only for the BCS	Increased
Blanden and Gregg	2004	NCDS, BCS and BHPS	16,23	Parental income at age 16	Yes	Yes	Yes	Yes	Increased
Blanden et al.	2007	NCDS/BCS	33/30	Parental income at age 16	Yes	–	–	–	Increased
Gregg and Macmillan	2009	NCDS/BCS/ BHPS/LSYP E/ALSPAC	Several ages	Parental income	Yes	Yes	–	–	Decreased

Notes: LSYPs is the Longitudinal Study of Young People in England, and ALSPAC is the Avon Longitudinal Study of Parents and Children.

Chapter 3

Methodology

3.1 Introduction

The aim of this thesis is to evaluate the philosophies and assumptions that have shaped and are likely to shape the public policy on inequality and poverty in the UK, based on empirical evidence and from the perspective of improving the future life chances of children growing up in poverty. In this chapter, I discuss and justify the methods that I will apply in Chapters 4 to 7 in order to answer the research question raised at the end of the previous chapter. I begin by justifying the use of survey data in Section 3.2. I discuss the data used in this thesis (Section 3.3) and the main variables examined; namely, childhood poverty (Section 3.4) and educational attainment (Section 3.5). Although I will detail specific issues relating to the econometric modelling applied and control variables used in each of Chapters 4 to 7, I summarise in the final section of this chapter these methodological issues that I will need to consider.

3.2 Empirical Analysis Based on Survey Data

The standards for the evidence required to answer the question of this thesis are fundamentally the same as those required to evaluate the effectiveness of specific policy interventions. In other words, it would be ideal if we could reveal the causal effects of income poverty, education, and teenage aspirations on later earnings and unemployment so that we could identify any mediating factors of intergenerational persistence of poverty on which public spending might prove effective. However, we need to compromise the requirement in some ways in this thesis, based on survey data. This is firstly because using survey data is the third-best approach for inferring causal effects, as Waldfogel (2006) discusses (see below), and secondly because it is almost impossible to adopt the best and second-best approaches, controlled experiments and natural experiments, for the variables examined in this thesis.

Waldfogel (2006) discusses how controlled experiments in which the researchers can randomly select the treated and non-treated groups are the best approach for identifying a causal effect of a treatment. A difference in outcomes between the treated and non-treated groups can be interpreted as a causal effect, given that these groups do not have any systematic differences apart from the fact that the only one of them has received the treatment. However, in the real world, it is very difficult to

conduct controlled experiments for social science research and, in particular, it may be undesirable to do so in some areas where individual choices should be valued. Waldfogel (2006) points this out with regard to childcare in the US, but it is also true of education in most countries. Nonetheless, the Education Maintenance Allowance (EMA) pilots were conducted in the UK before the scheme was officially introduced (Middleton et al., 2004), but these pilots evaluated the effectiveness of EMA for short-term outcomes, such as teenagers' staying-on and retention in post-compulsory education and training. There may usually not be good justifications for conducting experiments to look at long-term outcomes measured ten years later, for instance, considering the time frames used for the policy-making decisions.

The second-best approach would be natural or quasi experiments. Without setting up experiments on their own, researchers can use some institutional changes or differences as a treatment in their research, if such changes or differences are exogenous to individuals who are potentially affected by these changes or differences. To identify their causal effects, it is also important that there are no other changes or differences that might affect individual behaviour or that variables are available to control for them. Examples of studies that apply natural experimental design are mostly found in the US, such as that by Card and Krueger (1994) on minimum wages and by Angrist and Krueger (1991, 1992) on compulsory schooling. Chevalier (2004) and Del Bono and Galindo-Rueda (2006) are among the examples of researchers who apply natural experimental design in the UK and examine a causal effect of parental education, and that of length of compulsory schooling on later earnings, respectively. As a source of a natural experiment, they use the school leaving age legislation in England and Wales between 1963 and 1997 whereby young people could leave school at two different times of the year depending on when their birthday falls. Generally, it is difficult to find the right institutional changes or difference outside the US where there are relatively ample opportunities to apply differences in the state-level legislation and policies in the natural experimental design.

Compared with these two approaches, the use of survey data without a natural experimental design might be seen to be less effective for estimating causal effects. Researchers make their best efforts to collect data from a random sample of the population of interest, but it is inevitably the case that not all of the targeted people provide data and that those who do are often a non-random sample. What is more difficult for policy evaluation is the fact that the outcomes of a treatment of interest are

observed only for a non-random sample, because it is presumed that there may be systematic differences between those who have chosen to receive the treatment and those who have not. For instance, if we attempt to estimate a causal effect of training on employment outcomes using survey data, a naïve comparison of the employment outcomes between those who participated in the training and those who did not may not show a causal effect of the treatment. This is true even if we control for other observed characteristics, because those who participated and those who did not may also differ due to unobserved characteristics.

However, several econometric techniques can be applied in policy evaluation research to correct for the non-randomness of the observed survey data (Blundell et al., 2005; Blundell and Dias, 2009). Therefore, depending on the techniques applied to control for unobserved variables, research using survey data should not necessarily be inferior to natural experimental research.

Throughout this thesis, I will not claim that the estimated results show causal effects, since I use survey data and need to suspect the possible effects of unobserved variables that cannot be controlled. However, this does not mean that I allow easily conceivable variables to explain the estimated effects. Rather, I will make my best efforts to estimate results that is worthy of attention for policy making, applying some of the techniques of policy evaluation where possible. Therefore, I will describe the results in this thesis as ‘effects’ rather than simply as ‘associations’. Given that obtaining evidence on causal effects is ultimately difficult and might be impossible in some cases, what is important would be to isolate any effects that are more likely to indicate causal effects from those which may be explained by other variables. Alternatively, it would be informative to clarify which assumptions we need to make in order to interpret the estimated effects as causal. I aim to clarify this point where necessary in subsequent chapters.

3.3 Data Used in This Thesis

To investigate the empirical questions of this thesis, it is advisable to use datasets which contain economic, educational and sufficient control variables, and cover the life stages from childhood to at least early adulthood, which will make it feasible to compare different cohorts in order to observe possible changes over time. From these points of view, three British longitudinal datasets collected through the National Child Development Study (NCDS), British Cohort Study (BCS) and British Household Panel

Survey (BHPS)¹⁸ would be appropriate. I obtained all of these datasets from the UK Data Archive (UKDA).

The NCDS and BCS are similar in terms of their research design and data collection methods, and therefore particularly suitable for drawing comparisons. The NCDS originated from the Perinatal Mortality Survey and surveyed over 17,000 of all the babies born in Great Britain in one week in March 1958 at the outset, while the BCS first surveyed around 17,000 of all the babies born in Great Britain in one week in April 1970. For the purpose of this chapter, I use data from the NCDS in 1958 (birth), 1965 (age 7), 1969 (age 11), 1974 (age 16), and 1991 (age 33) and the BCS in 1970 (birth), 1975 (age 5), 1980 (age 10), 1986 (age 16), 1999/2000 (age 29/30) and 2004/2005 (age 34/35).

The NCDS and BCS have, in common with other longitudinal studies, suffered from attrition. For the NCDS, 71% of the targeted sample¹⁹ remains in sweep 5 (age 33) (Plewis et al., 2004), and the equivalent rate for sweep 7 (age 34) of the BCS is 75% (Simmonds et al., 2007). Weights to adjust for attrition and item non-response are not officially available for the two cohort datasets. The reason why attrition should be taken seriously is that sample members do not usually drop out at random and this increases the degree of bias in the estimates. Hawkes and Plewis (2006) show that the risk factors for non-response at each wave include being male, having lower educational attainment, having a more precarious employment history and living in more disadvantaged households, by modelling the patterns of non-response based on the information given in previous sweeps of the NCDS.

However, it is reasonable to assess that the rates of attrition are not so serious as to prevent their use. Blanden and Gibbons (2006), who also investigated the persistence of poverty, demonstrated that the attrition processes of the NCDS and BCS can hardly be explained by the observed variables therein, and noted that we must assume that the impacts of attrition associated with the unobservable characteristics of individuals are

¹⁸ There is another major longitudinal study, the Youth Cohort Study of England and Wales (YCS), which has specialised in youth transition from compulsory education to post-16 opportunities since 1985, but I omit its use for the following reason. Although this study has covered more than ten birth cohorts, the members of each cohort have participated in only two to four surveys conducted either annually or biannually between the ages of 16 and 19. Due to this design, the YCS has not collected sufficient variables on the participants' family and childhood background or long-term labour market outcomes in their twenties and thirties, despite its rich information on young people's educational attainment, experience and attitudes during their late teens.

¹⁹ The original sample members who died or permanently emigrated from Great Britain are excluded from the target sample in later sweeps. The rates of the excluded for those reasons are 12.1% of the original members for sweep 6 of the NCDS, and 10.3% for sweep 5 of the BCS (Plewis et al., 2004).

similar for both cohorts. I will make the same assumption in this thesis. With respect to the poverty variables employed in this thesis, Table A3.2 and Table A3.4, presented in the Appendix to this chapter, show that those who grew up in poverty are slightly less likely to remain in the survey in their early thirties, but the pattern is similar in both cohorts.

The original sample of the BHPS was designed to be nationally representative of the household population of Great Britain in 1991,²⁰ containing approximately 5,500 households and 10,000 individuals. The same adult respondents aged 16 or over are interviewed in each successive year and, if they leave their original household, all of the adult members of their new household are interviewed. The children of the original households are also interviewed once they reach the age of 16. In the BHPS, a household is defined as all members with the same address who share either the living accommodation or one meal a day, following the standard household definition of the Office for National Statistics.²¹ The wave on wave response rate has been nearly 95% from the third wave onwards. In 2006, 49% of the original members who completed the first wave of interviews completed the sixteenth interviews (Taylor, 2009). Weights to correct for attrition are provided.

Using the data from the BHPS, I created a sample of individuals born in the 1980s. They turned 16 and started participating in interviews in 1996 or later, but it is possible to discover in which household they lived during their childhood as far as their household members (parents) participated in the surveys. Thus, it is possible to create variables for childhood poverty status. I analyse only those individuals who can be linked with their parental household in childhood, but this is fairly reasonable, as more than 90% of the young sample members in the BHPS remained living in their parental household until they were 17 years old. I explain about the sample of the 1980s cohort in more detail in Chapter 7.

I include those who have workless and/or lone parents in the samples. Although poverty is concentrated in these groups (DWP, 2010), they have tended to be excluded from the framework of social mobility due to the complexity in defining their social status (unmarried and/or workless) in comparative ways with other groups of people

²⁰ Only private households and their members were surveyed, and people in residential institutions and homeless people were excluded from the population.

²¹ The difference between *household* and *family* is unimportant in this thesis, since most children studied live in family households. Thus, I use these terms interchangeably.

(Hout, 2004). This is one reason for conducting research on intergenerational persistence of poverty independently of conventional social mobility research.

3.4 Measurement of Poverty

As I discussed in Chapter 2, I measure poverty by low income or indicators of low income rather than multi-dimensional disadvantage. In this section, I discuss the further issues involved in the empirical approach to poverty, and describe my application using data from the NCDS, BCS and BHPS.

3.4.1 Empirical Approach to Poverty

Life-course dynamics are an important feature of poverty. Entry into and exit from poverty are mainly led by changes in labour income and household composition (Bane and Ellwood, 1986; Jenkins, 2000; Jenkins et al., 2001; Stevens, 1999). While cross-sectional observations have documented the significant extent of poverty each year and its trend, the dynamic approach reveals different characteristics of poverty according to its duration and frequency, which can provide a better insight into the quality of life since those who remain persistently poor may be far worse off than those who are temporarily poor (Ashworth et al., 1994).

Poverty is seen as a phenomenon that simultaneously affects all household members rather than only some individual members, since each member's income from the labour market and other sources are pooled in a household before being distributed for each one's consumption (Jenkins, 1991). Therefore, the poverty literature has argued that looking at income at the individual level gives an only partial view of poverty (Aassve et al., 2006; Bane and Ellwood, 1986; Jenkins, 2000). The household-level definition of poverty also, in most cases, has a weakness due to its rather unrealistic assumption that the within-household distribution of resources is equal (Jenkins, 1991; Lazear and Michael, 1988; National Equality Panel, 2010 Box 7.1). As this thesis focuses on only children's outcomes, within-household inequality between parents and children is not a big problem as long as the level of it remains similar across households. Within-household inequality between sons and daughters may be slightly more problematic, if gender and/or the gender composition of siblings affect how they compete for the within-household resources.²² However, there is no standard method to

²² It may be expected that parents tend to invest more in their sons' education than their daughters' and, if so, girls with male siblings may have to compete harder for resources than girls with only female siblings.

overcome this within-household inequality, and therefore empirical analysis of this thesis will assume equality of within-household income distribution.

As the outcomes of growing up in poverty, I only look at economic outcomes, such as earnings and employment, rather than poverty in adulthood which is determined not only by earnings and employment but also by household formation. Thus, this thesis does not directly investigate intergenerational persistence of poverty, but the findings will have important implications for intergenerational persistence of poverty, as follows. Firstly, these economic outcomes are a predominantly important determinant of poverty (Jenkins, 2000; Jenkins et al., 2001) and expected to be explained by education.²³ Secondly, a higher earning potential would allow people to take more control of their lives, by allocating time not only for work but also for leisure to do whatever they like (Burchardt, 2008). People with a higher earning potential but actually a lower income due to shorter working hours may possibly enjoy more freedom in life than those with lower earnings potential but with a higher income due to longer working hours.

Finally, for practical reasons, there seems to be a technical trade-off between analysing the dynamics of both labour market outcomes and household formation, and analysing the dynamics of only labour market outcomes in more detail. Even when one's own labour income has not changed at all, a change in the labour income of the other members of the same household, or a change in the average income of a society would alter their poverty status. However, because simultaneously modelling the dynamics of individuals and households (let alone of a society) is too complex, only a limited number of previous studies have attempted this. Aassve et al. (2006) is one of the most advanced examples of this type of research, and their analysis involves complex procedures even without dealing with differences in employment status and earnings levels. I have chosen to focus on individual labour market outcomes, applying less complex methods.

Some studies have indicated that boys may receive more parental resources even in industrialised countries, by showing that having a boy is associated with family stability and the father's strong involvement in parenting, although it is unclear whether this is because of the parents' preference for boys over girls or other reasons (Lundberg, 2005; Raley and Bianchi, 2006). However, a US study found that daughters raised only with brothers received more education than those with sister (Butcher and Case, 1994). Thus, it is unclear in which direction the existence of within-household inequality between sons and daughters affects economic outcomes.

²³ Educational outcomes are also associated with household formation behaviour as a matter of fact. In the context of intergenerational income mobility, Ermisch et al. found that assortative mating, that is a strong spouse correlation in human capital, explain 40-50% of the covariance between parents' and one's own permanent income, based on the analysis of BHPS data (Ermisch et al., 2006).

3.4.2 Variables for Childhood Poverty

I describe the procedures for creating the variables for childhood poverty by using data from the NCDS, BCS and BHPS. In principle, I define a household as poor if its income is below 60% of the contemporary median UK household income, which is the official threshold for relative poverty in the UK. Household income here refers to the annual net income equivalised for household size and composition using the modified OECD scale to measure the standard of living that the household actually enjoys. The same scale is now used in the Household Below Average Income (HBAI) series as a main equivalence scale.²⁴

To derive a variable for poverty, it is crucial to create reliable variables for household income. Also important when comparing the cohorts is to ensure that the variables from the different surveys represent income components that are similar as possible. However, it is not easy to obtain such variables for household income from the NCDS and BCS. The income variables from the parental questionnaires of the NCDS and BCS (collected in 1974 for the NCDS and in 1980 and 1986 for the BCS) are not ideal. It is fairly straightforward to obtain a variable for household income from the BHPS, because data on almost all components of household income are collected annually. In addition, variables for annual net equivalised household income before housing costs (BHC),²⁵ adjusted to January 2008 prices, are available for the first sixteen waves in the dataset publicly provided by Levy and Jenkins (2008). In Chapter 7, where I use data from the BHPS, I will explain the variables for duration types of childhood poverty that can be created by taking advantage of the income variables collected annually by the BHPS. In what follows, I explain how I create the poverty variables using the NCDS and BCS datasets, which I will analyse in Chapters 4 to 6.

To overcome the limitation of the NCDS and BCS, I firstly aim to create variables for household income as satisfactorily as possible based on the income data collected, and derive variables for relative income poverty, by making use of data from the Family Expenditure Survey (FES). I describe and justify the procedures for creating

²⁴ The scale value is 1 for the first adult, 0.5 for others aged 14 or over, and 0.3 for those aged under 14. The details are shown in the Appendix to '*Households Below Average Income (HBAI) 1994/95-2007/08*' (DWP, 2010).

²⁵ In relation to housing costs, the HBAI shows income After Housing Costs (AHC) as well as BHC. Both measures of household income have their limitations, since AHC may underestimate the standard of living and BHC may overestimate it. The problem of BHC is that housing costs do not always represent the standard of living that people enjoy, especially in London where the housing costs are disproportionately higher than the quality of the accommodation (DWP, 2010). However, in terms of availability, this study uses the BHC measure.

the variables in the Appendix to this chapter. In addition to the variables for relative income poverty thus created, I further utilise as many indicators for household low income as are available from the NCDS and BCS. An income variable measured at a single point in time tends to have measurement errors, and it is available at only one time point (age 16) for the NCDS. Thus, it is unclear whether those who are classified as having lived in poverty based only on the income variable best represent those who ever experienced poverty in childhood. Thus, I attempt to use the proxy indicators for low income, as well as the income variables, in order to capture those who are highly likely to have experienced poverty. Hobcraft (1998) and Sigle-Rushton (2004) have also used these indicators for low income as part of the investigation of the intergenerational transmission of social exclusion for the 1958 and 1970 cohorts, respectively.

Taken together, the indicators I use to define whether a person has grown up in poverty include: receiving free school meals at ages 11 and 16, parent(s) receiving income support or unemployment benefit at ages 11 and 16, household experiencing financial difficulties at ages 11 and 16, and relative income poverty at ages 16 for the 1958 cohort, and receiving free school meals at ages 10 and 16, parent(s) receiving income support or unemployment benefit at ages 10 and 16, household experiencing financial difficulties at age 16, and relative income poverty at ages 10 and 16 for the 1970 cohort. The NCDS additionally contains a variable for financial difficulties at age 7, but I do not use this variable, since similar information is unavailable about the early childhood of the 1970 cohort.²⁶

Someone is regarded as living in poverty in mid childhood if they are identified as experiencing poverty based on at least one of the variables or indicators collected at age 11 for the 1958 cohort and at age 10 for the 1970 cohort. Someone is regarded as living in poverty at age 16 if they are identified as experiencing poverty based on at least one of the indicators collected at age 16 for both cohorts. If one failed to give information about their poverty status at either age, the dummy variable is set as missing for them. In Chapters 5 and 6, I use these two variables for poverty at different points in time. In Chapter 4, for brevity, I use a dummy variable equal to 1 if someone were ever in poverty during childhood, regardless of how many times they experienced

²⁶ I may end up treating some respondents from the 1958 cohort who are known to have experienced poverty as not having done so. However, regardless of whether or not I take account of financial difficulties at age 7 for the 1958 cohort, I obtained consistent regression estimates in Chapter 4.

it.²⁷ If someone were not observed to be living in poverty at either age, they are then treated as having never lived in poverty during their childhood.

Table 3.1 shows the distributions of the variable for childhood poverty (created for Chapter 4) and the household income quintile groups at age 16 for the 1958 and 1970 cohorts. Household income position at age 16 is unsurprisingly associated with having ever lived in poverty in childhood, but quite a few of those who are not in the bottom income quintile group at age 16 experienced poverty in their mid childhood or are indentified as living in poverty at age 16 by other indicators. The rate of respondents who have ever lived in childhood poverty is 29% for the 1958 cohort and 37% for the 1970 cohort. The fact that the poverty rate is higher for the 1970 cohort is in line with the trend shown in the HBAI statistics, in which the rate was increased in the 1980s (Gregg et al., 1999; Hill and Jenkins, 2001). As I focus on the impact of growing up in poverty, it is meaningful to compare these differently sized groups, although it should be noted that there are slight differences in the definitions of the variables between the two cohorts.

There are two potential problems in the way the poverty variables are created. Firstly, by using the indicators for benefit receipt, people in a particular cohort might be more easily classified as poor than those in the other cohort, if the benefit level were set more generously for the former cohort. The poverty coefficient for the former cohort would be estimated to be a smaller size than for the other, even if the real effect of childhood poverty were identical across the cohorts. The data show that more of those in the 1970 cohort (13%), than those in the 1958 cohort (6%), who were not classified as living in income poverty based on the income variable, lived in a family in which the parents received Income Support or Unemployment Benefit. The same is true of the variable for financial difficulty. Thus, if the real effect of childhood poverty was identical, the coefficient may be incorrectly estimated to be smaller for the 1970 cohort. This does not weaken the main finding in Chapters 4 and 5 that the effect of childhood poverty is greater for the 1970 cohort than for the 1958 cohort.

Secondly, the variables used to measure poverty in mid childhood are different across the cohorts, in that the variable for financial difficulty is used only for the 1958 cohort, and the income variable is used only for the 1970 cohort. In particular, it could be presumed that the income variable may better capture those living in poverty than the variable for financial difficulty, and this may lead to a greater underestimation of the

²⁷ I investigate the different effects of the timing and duration of childhood poverty in Chapter 5.

poverty effect for the 1958 cohort than for the 1970 cohort. In this case, the main finding in Chapters 4 and 5 may be a methodological artefact. However, I have checked that the finding persists after running sensitivity analysis using alternative variables for childhood poverty, which are created from only the common indicators available from both cohorts. When using these alternative variables, however, the estimates and their precision became rather smaller and weaker for both cohorts, which is probably because some of those who experienced poverty were not classified as having done so. Although more thorough robustness checks in terms of the scale of the childhood poverty effect will be required in future research, it is fair to say that the findings from this thesis are qualitatively consistent across the methods of creating the variables for childhood poverty.

3.5 Measurement of Educational Attainment

Another important variable investigated in this thesis is educational attainment. As I will discuss in Chapter 4, it is better to measure educational attainment by qualification attainment in the UK than by the number of years of schooling. Here, I review how best to measure qualification attainment in the UK context. A baseline categorisation of qualifications by type and level is shown in Table 3.2,²⁸ for which I mainly refer to Dearden et al. (2002). In the literature, the highest qualification is often identified according to the level, regardless of whether it is academic or vocational (Blundell et al., 2005; Sianesi, 2003). However, this approach masks heterogeneity in earnings premiums between academic and vocational qualifications. It is reported that the earnings premiums associated with academic and vocational qualifications at a notionally equivalent level are varied, with academic qualifications being more highly valued in the labour market (Bennett et al., 1992; Conlon, 2001a; Robinson, 1997; Schmitt, 1995). It is particularly beneficial for this chapter to be able to find earnings premiums associated with vocational qualifications, because young people from disadvantaged backgrounds are more likely to pursue vocational rather than academic qualifications (Payne, 2003).

²⁸ It is presumed that the economic values of qualifications are even heterogeneous within the same level and type. Wolf (2007) particularly points out the lack of earnings generating power of National Vocational Qualifications (NVQs) that are acquired through a governmental training scheme compared with Business and Technology Education Council (BTEC) awards, for instance. Naylor et al. (2002) examines the variation in the economic value of university degrees. However, the classification shown in Table 3.2 fits the employer's demand for information on the comparability and transferability of qualifications, and therefore provides a useful baseline for the purpose of this chapter.

It is of interest to measure the highest qualification attainment as a combination of the highest academic and vocational qualifications obtained. Combination measurement is useful because identifying whether one's highest qualification is academic or vocational is insufficient. Where it is vocational, the acquisition of any academic qualification at lower levels may also be a source of heterogeneity. Yet, at the same time, we do not wish to include every combination of academic and vocational qualifications in the light of interpretability and the sample sizes of the data. I explain below, based on previous findings, how I aggregate the combinations of the highest qualifications into a reasonable number of groups.

Those with no qualification at all are best separated from others at the outset, and they will form a reference group when estimating the earnings premiums associated with qualification attainment. I attempt to pay attention to every level of difference in academic qualifications, but an incremental earnings premium associated with a Level 5 academic qualification is only negligible (Dearden et al., 2002). Therefore, I will not create a stand-alone category for these qualifications. With respect to vocational qualifications, the earnings premiums associated with Levels 1 and 2 vocational qualifications are negligible (Dearden et al., 2002; McIntosh, 2004a), but marginal students who did not obtain any academic qualifications while at school can receive positive premiums associated with such low level vocational qualifications (McIntosh, 2004a). The sector-based approach, that focuses on the varying demands for qualifications by different industrial sectors, also supports the findings based on these more aggregated approaches. For almost all sectors for both men and women, academic qualifications are preferred by employers, and the earnings premiums for vocational Level 2 qualifications are negligible or negative, despite the fact that different sectors have differing demands for skilled and unskilled labour (Dickerson and Vignoles, 2007).

Accordingly, those with Level 1 and 2 vocational qualifications can be grouped together with those without any vocational qualifications, but should be separated from those with higher levels of vocational qualifications. For those who have obtained academic qualifications of Level 3 and higher, additional vocational qualifications do not seem to affect their earnings dramatically (Conlon, 2001b; McIntosh, 2004a), and hence they are not disaggregated further, regardless of their vocational attainment.

I have therefore identified seven groups (labelled from 0 to 6), shown below based on combinations of the highest academic and vocational qualifications obtained. This is also summarised in Figure 3.1.

- Group 0. No qualification (no Academic with no Vocational qualification)
- Group 1. No or Level 1 Academic with no, Levels 1 or 2 Vocational qualification (except for no Academic with no Vocational qualification)
- Group 2. No or Level 1 Academic with Levels 3, 4 or 5 Vocational qualification
- Group 3. Level 2 Academic with no, Levels 1 or 2 Vocational qualification
- Group 4. Level 2 Academic with Levels 3, 4 or 5 Vocational qualification
- Group 5. Level 3 Academic with/out any Vocational qualification
- Group 6. Levels 4 and 5 Academic with/out any Vocational qualification

In the usual practice, Groups 2 and 4 with Level 3 or higher vocational qualifications tend not to be distinguished from the group with Level 3 academic (A-level) or Level 4 or 5 academic (degree or higher degree) qualifications. However, it is worth distinguishing them, firstly because there is no ‘parity of esteem’ between academic and vocational qualifications as noted above. Secondly, the composition of people may differ across those groups. By using this categorisation, I present how different educational attainment is for those who grew up in poverty compared with those who did not, and estimate an earnings premium associated with each qualification group. I then examine whether the explanatory power of education in the intergenerational persistence of poverty has changed over time.

3.6 Methodological Issues Discussed in the Later Chapters

Specific issues relating to the econometric modelling applied and the control variables used will be discussed in Chapters 4 to 7, but these methodological issues will be briefly summarised here.

Chapter 4 will examine the role of education in the intergenerational persistence of poverty, and estimate the earnings premiums associated with educational attainment. The main methodological challenge will be to take account of the fact that earnings data are available only for a non-random sample of those in employment (selection bias into employment) and that those who are more able tend to have a higher educational attainment (selection bias into education). I will address these issues by applying Heckman’s control function approaches, in addition to Ordinary Least Squares (OLS) models with carefully selected control variables. Chapter 5 will examine the effects of childhood poverty and the mediating effect of teenage aspirations on later earnings, so the same techniques will be applied as in Chapter 4.

Chapters 6 and 7 will examine the effects of childhood poverty and educational attainment on youth unemployment, by using work history data. To take account of the nature of work history data, I will employ event history modelling to estimate the relationships between the explanatory and outcome variables. Therefore, to avoid adding extra complexity to the estimation, I will not attempt to correct for the selection bias into education, since it is unlikely to bias the estimates, because the variables for cognitive ability measured in childhood available from the BCS will almost satisfactorily control for unobserved individual heterogeneity that would be important for economic outcomes, as Chapter 4 will show. Nonetheless, unlike earnings, it unemployment will not appear to be associated with cognitive ability. Thus, it does not seem to cause a serious problem in Chapter 7 that the variables for cognitive ability are unavailable from the BHPS. As work history data from the BCS were collected retrospectively, I will also discuss the necessary caveats when interpreting findings based on retrospective data in Chapter 6.

Chapter 7 will additionally examine the relative strength of the effects of parental worklessness and low income on unemployment using data from the BHPS, which is impossible when using data from the BCS. Unsurprisingly, parental worklessness and income poverty are strongly correlated among households in all income ranges. This will make it undesirable to include both variables for parental worklessness and income poverty when all of the observations are used for analysis. However, this will be feasible if I limit the sample to include only those from households with a below-median income, among whom there are substantial variations in parental worklessness and income poverty (see Figure 7.2 and Figure 7.3 in Chapter 7).

Table 3.1 Distributions of household income at age 16 and childhood poverty

	Household income quintile at age 16							% of
	Bottom	2	3	4	Top	Missing	Total	cases
NCDS								
No childhood poverty	308	992	1,216	1,323	1,384	2,407	7,630	71
Some childhood poverty	1,184	529	332	218	139	753	3,155	29
Missing	158	127	103	95	123	7,176	7,782	
Total	1,650	1,648	1,651	1,636	1,646	10,336	18,567	
BCS								
No childhood poverty	74	740	981	1,047	1,140	1,571	5,553	63
Some childhood poverty	1,205	615	348	223	151	673	3,215	37
Missing	160	120	126	107	143	9,677	10,333	
Total	1,439	1,475	1,455	1,377	1,434	11,921	19,101	

Figure 3.1 Aggregate categorisation of the combinations of the highest academic and vocational qualifications used in this thesis

Academic \ Vocational	No	Level 1	Level 2	Level 3	Level 4	Level 5
	No	Level 1	Level 2	Level 3	Level 4	Level 5
No	Group 0					
Level 1		Group 1			Group 2	
Level 2		Group 3			Group 4	
Level 3				Group 5		
Level 4						
Level 5						Group 6

Table 3.2 Categories of qualifications

	Academic	Vocational
Level 1	CSEs below grade 1, GCSEs below grade C. Other Scottish school qualifications	NVQ level 1, GNVQ foundation, RSA other(Stage 1,2,3), City and Guilds 'other'/ lower/part 1, BTEC first certificate, YT certificate, SCOTVEC National certificate modules, any other qualifications
Level 2	O-levels, GCSEs grades A-C, CSE level 1, Scottish standard grades 1-3, Scottish lower or ordinary grades	NVQ level 2, GNVQ intermediate, RSA diploma, City and Guilds craft/part 2, BTEC first diploma
Level 3	A-levels, A/S levels, Scottish Certificate of 6th Year Studies, SCE Higher, Other HE qualifications below degree level, Diplomas in HE	NVQ level 3, GNVQ advanced, RSA Advanced Diploma/Certificate, City and Guilds Advanced Craft/part 3, ONC/OND, BTEC/SCOTVEC National
Level 4	First Degree, PGCE	NVQ level 4, RSA Higher Diploma, HNC/HND, BTEC/SCOTVEC higher, Nursing qualification, Part of a professional qualification, Other teaching qualification
Level 5	Higher Degree (excl. PGCE)	NVQ level 5, Full professional qualification e.g. membership awarded by professional institution, Other degree level qualification

Appendix to Chapter 3

A3.1 Procedures for Creating the Variables for Income Poverty

I describe the procedures for creating reliable, comparable variables for income poverty using data from the NCDS and BCS, in terms of components, equivalisation methods and poverty thresholds. To create the variables for equivalised household income, I mostly apply the procedures used by Blanden and Gibbons (2006), but I derive poverty thresholds in a different way from theirs.

In the NCDS at age 16, household income data were collected by asking parents to choose the range in which income from each of the sources fell:²⁹ the father's net pay, the mother's net pay and other net income, including Family Allowance. The total net household income can be calculated by summing the incomes from all sources, after these categorical variables have been transformed into continuous variables. For the transformation, I assign typical values of each income component in each range calculated from observations of the Family Expenditure Survey 1974.³⁰ This practice is particularly helpful in assigning values to a bottom range after zero and an open-ended top range.

Turning back to the original coding of the responses to income questions, there are problems in terms of a jumble of 'no answer' and 'zero', and of a failure to report the other income of those families; most obviously, Family Allowance. Micklewright (1986) suggests reasonable ways of dealing with these problems and I follow his suggestions, by dropping the following cases from the sample for analysis; cases with a mother present and working but the mother's pay missing, with a father present and working but the father's pay missing, and with a younger sibling present and other income missing.³¹

²⁹ In most cases, it is the mothers who are supposed to participate in the study, which may cause larger measurement errors with regard to the father's pay and other income than the mother's pay.

³⁰ I am grateful to Jo Blanden for giving me her data program of the FES (first written by Richard Dickens). In the calculation of FES data, I take households with a child under age 16 as equivalent to those of the NCDS members at age 16, the male household heads in those households as relevant fathers and the female household heads or wives of the male household head as relevant mothers. If the men are married, they, rather than their wife, are always regarded as the household head in the FES. The amount of other income is calculated by subtracting the sum of father's and mother's net pay from the total net household income. I use median values as typical values.

³¹ Family Allowance in 1974 was payable only for the second and subsequent children under the age of 16 or under the age of 19 and in full-time education. Since the majority of NCDS members were at school at the time of the parental surveys in 1974 (most of which were completed before the summer), if they had a younger sibling, then their households were eligible to Family Allowance. Although it is possible to

In the BCS at ages 10 and 16, household income data are collected in a different way from the NCDS, by asking parents to choose a range into which the combined gross income of the mother and father falls. The questionnaire explicitly suggests that Child Benefit (which replaced Family Allowance in March 1977) should be excluded but that all other earned and unearned gross income should be included. There are at least three steps to take in order to make the variables comparable with those created as above for the NCDS. I firstly transform the categorical variable into a continuous variable. In order to obtain net household income, I secondly deduct an estimated amount of tax paid by the households, and finally add the amount of Child Benefit paid to the households.

To carry out the first and second procedures, I make use of the information available from the FES again, following Blanden and Gibbons (2006). I assign typical values of gross household income in each range to each categorical value. Next, I calculate the typical proportions of tax that households in each income range pay out of their gross household income, using data from the FES, and subtract the estimated amount of tax from the gross household income. I then need the amount of Child Benefit paid on the basis of the number of children in the household, the rates for which are published.³² Now, I have obtained reasonably comparable variables on net household income including Child Benefit (Family Allowance) from both the NCDS and BCS. Although there are two ways commonly used in the UK to measure household income, namely After Housing Costs (AHC) and Before Housing Costs (BHC), I only use the BHC measure, as no information about housing costs is available in either the NCDS or BCS.

The limitation to applying the OECD scale to NCDS data is that it is impossible to determine accurately the ages of children in the household who are younger than the study child, while the scale gives a smaller weight to children under 14 than to older ones. Hence, I place the weight that should be given to those under 14 also to children aged 15 and 16. I have validated that this does not cause any serious problems by using data from the BCS, from which it is possible to determine the exact ages of children in

compute the amount of Family Allowance paid to each household, it may have little meaning if, after all, the responses of these cases prove unreliable (Micklewright, 1986).

³² According to the website of the Institute of Fiscal Studies, the rates of Child Benefit in 1986 were £7.10 for the first child of a couple, £11.70 for the first child of a lone parent, and £7.10 for each subsequent child of any parent (<http://www.ifs.org.uk/ff/childben.xls> accessed on 13/2/2008).

the household. To ensure comparability with the NCDS, however, I perform the same procedure for the BCS as well.

With respect to poverty thresholds, I again employ the FES because the samples of the cohort studies are not representative of contemporaneous households with children and adults. I compare three alternative poverty thresholds based firstly on households with children aged between 5 and 15,³³ secondly on households with children of similar ages to those in the 1958 and 1970 cohorts when their household incomes were measured (ages 14 and 15 for age 16, and ages 9 to 11 for age 10), and lastly on all households as in the HBAI, respectively. Bradbury et al. (2001) suggest that poverty for children can be defined in terms of a comparison with the standard of living enjoyed by other children. However, it is of concern that this way of measuring a poverty threshold does not allow for the fact that households containing children face a higher risk of poverty than other households. It may be possible to argue that the hardship of childhood poverty partly stems from parents being poorer than their adult peers and being unable to offer their children, for instance, adequate emotional support. Regardless of which poverty threshold I finally decide to use, it would be reassuring to check the differences between alternative poverty thresholds and derived poverty rates.

Figure A3.1 shows the flow of procedures for deriving poverty thresholds and poverty rates. As Row 1a in Box 1 within the figure shows, the derived thresholds of 60% of the median income per week of households with children aged between 5 and 15 are £21.33 in 1974 (NCDS at age 16), £51.28 in 1980 (BCS at age 10) and £82.40 in 1986 (BCS at age 16). In another two rows, I show the alternative poverty thresholds based on different samples, to which I will return later. Row 2a in Box 2 shows that the percentages of children living in poor households derived from these thresholds are 8% in 1974, 11% in 1980, and 13% in 1986, based on the FES. These percentages are roughly the same as those reported in previous studies using a slightly different definition of the poverty threshold, which is half the mean income (Hill and Jenkins, 2001). The alternative poverty thresholds and associated poverty rates are shown in Rows 1b, 1c, 2b and 2c, where b denotes the figures based on households with children

³³ The reason for choosing the age range between 5 and 15 is technical. In the FES, the youngest household heads are aged 16, and it is impossible to determine parental household incomes of those young household heads. The average parental household income of those who start to live independently at such a young age is likely to be lower than that of those who live with their parents. Therefore, the typical parental household income of children can be safely measured for households that contain a child aged 15 and under. However, to adjust for the exclusion of households in which all of the children, if any, are aged 16 and over, I exclude households in which all of the children are aged 4 and under.

of similar ages, and c denotes the figures based on all households. Generally, the poverty thresholds and rates are higher for those based on all households.

In Box 3, I use the poverty *thresholds* derived from the FES for the NCDS and BCS data. As the FES collects income data in a more detailed way than the cohort studies do, based on the above poverty thresholds, the percentages of children living in poor households are found to be considerably higher in the NCDS and BCS than in the FES; 31% in 1974, 16% in 1980 and 31% in 1986, as shown in Row 3a. Some of those who were not actually living in income poverty may be classified as poor, particularly for the NCDS in 1974. The poverty thresholds reported in Rows 1b and 1c are higher than those in Row 1a, their use would increase this concern. It may be more appropriate to use the poverty *rates* derived from the FES, which are reported in Box 2, to derive equivalent yet different poverty thresholds from the NCDS and BCS data. The outcomes are shown in Box 4. These thresholds are also similar to those derived from the NCDS and BCS, which are reported in Row 4c in Box 4. As there are no big differences between 4a, 4b and 4c, I choose 4b, as it is the best for the relative standards of living for 16-year-olds. Therefore I use the variables for income poverty created by the thresholds in Row 4b in this thesis.

I can also demonstrate that the variables thus created (the chosen variables) more reasonably capture the cohort members living in income poverty than variables based on the thresholds in Row 1a (the alternative variables). Table A3.1 shows the frequencies of the income poverty variables thus created and other indicators of low household income for the 1958 cohort. I add asterisks (*) to the alternative variables.³⁴ Based on the other indicators, about 10% of the 1958 cohort was living in poverty at age 16, which is similar to the rate for the chosen variable and is very different from the alternative variable. Table A3.2 shows a correlation matrix for each pair of variables.³⁵ The chosen variable for childhood poverty is more highly correlated with the other indicators than the alternative variable. Table A3.3 and Table A3.4, the equivalent frequency table and correlation matrix for the 1970 cohort, show that the same is true of this cohort.

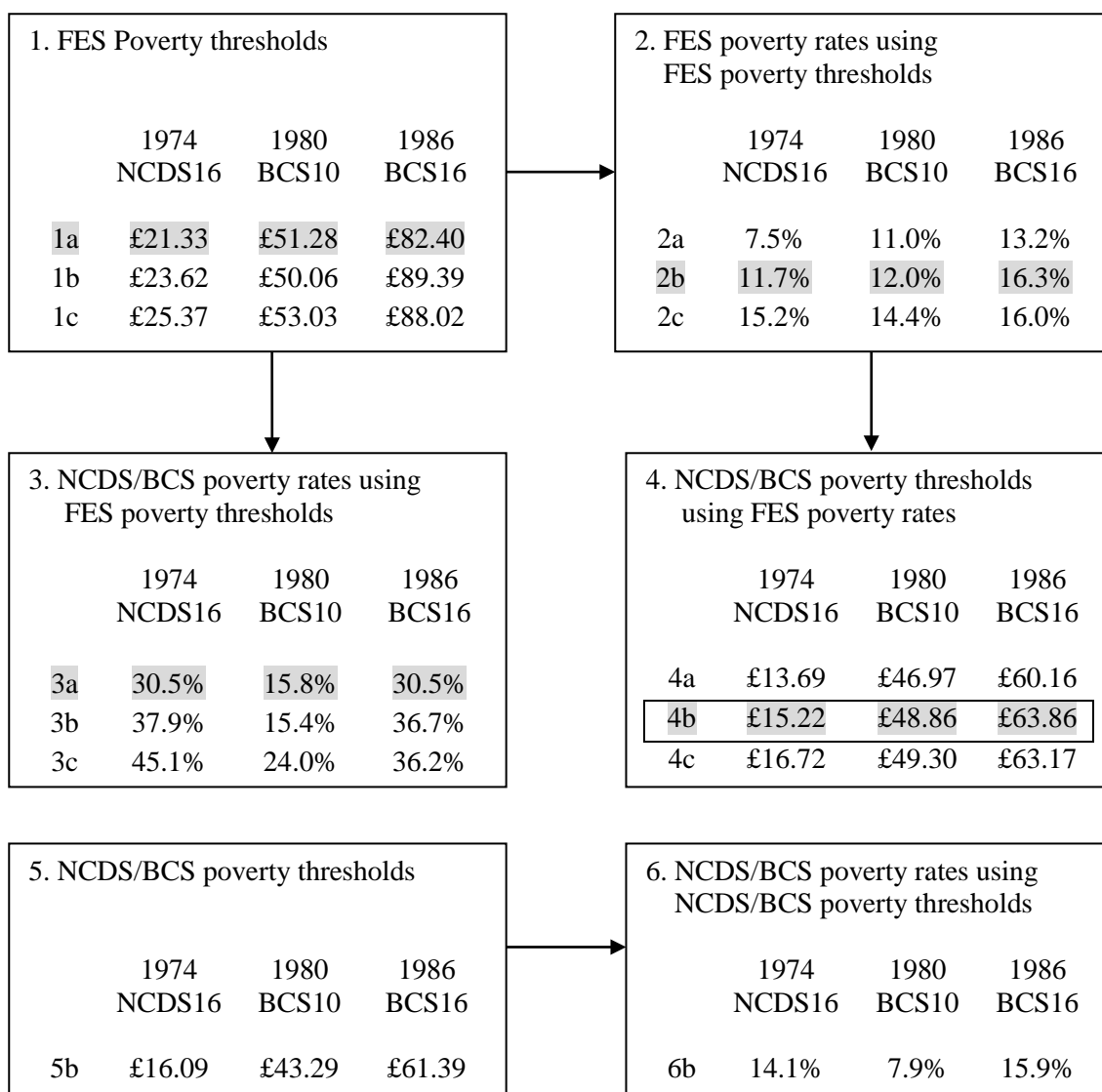
³⁴ For reassurance, using the alternative poverty variables does not change the results of this thesis.

³⁵ Although correlation coefficients are not the best indicators for understanding the associations between categorical variables, I present them for ease of summarising the correlations within each pair of a large number of variables.

The poverty rates estimated in my data are different from those derived from the statistics published by the Institute for Fiscal Studies (IFS),³⁶ but the trend in the rate is similar, with an increase by half the initial rate between 1969 and 1986 and the bulk of the increase coming between 1980 and 1986. Therefore, the findings from this thesis have implications for child poverty in the UK. In my data, the poverty rates for 1969, 1974, 1980 and 1986 are 19%, 21%, 21 % and 30%, respectively. Based on the IFS statistics, using data from the FES, the rates of children living in households with an income below 60% of the contemporary median (BHC) are 14%, 14%, 16% and 21%, respectively.

³⁶ The statistics are retrieved from the IFS website, <http://www.ifs.org.uk/fiscalFacts/povertyStats>.

Figure A3.1 Alternative ways of utilising the poverty thresholds and poverty rates based on the FES, NCDS, and BCS



Notes

a: Based on households with a child aged between 5 and 15

b: Based on households with a child of similar age

c: Based on all households

Table A3.1 Frequencies of the poverty variables: NCDS

		All (n=18,567)		Those surveyed at age 16 (n=14,654)		Those surveyed at age 33 (n=10,365)	
		n	rate	n	rate	n	rate
Childhood poverty	No	7,630	0.71	7,630	0.71	5,778	0.73
	Yes	3,155	0.29	3,155	0.29	2,183	0.27
	Missing	7,782		3,869		2,404	
Childhood poverty*	No	6,836	0.63	6,836	0.63	5,172	0.65
	Yes	3,949	0.37	3,949	0.37	2,789	0.35
	Missing	7,782		3,869		2,404	
Poverty at age 11	No	12,222	0.81	10,801	0.81	7,959	0.83
	Yes	2,846	0.19	2,516	0.19	1,632	0.17
	Missing	3,499		1,337		774	
Poverty at age 11*	No						
	Yes			N/A			
	Missing						
Income poverty at age 11	No						
	Yes			N/A			
	Missing						
Income poverty at age 11*	No						
	Yes			N/A			
	Missing						
Income support at age 11	No	11,998	0.89	10,684	0.89	7,888	0.90
	Yes	1,536	0.11	1,373	0.11	891	0.10
	Missing	5,033		2,597		1,586	
Free school meals at age 11	No	12,521	0.90	11,086	0.90	8,165	0.91
	Yes	1,434	0.10	1,265	0.10	766	0.09
	Missing	4,612		2,303		1,434	
Financial difficulty at age 11	No	11,846	0.89	10,557	0.89	7,801	0.90
	Yes	1,518	0.11	1,347	0.11	878	0.10
	Missing	5,203		2,750		1,686	
Poverty at age 16	No	9,198	0.79	9,198	0.79	6,867	0.81
	Yes	2,474	0.21	2,474	0.21	1,655	0.19
	Missing	6,895		2,982		1,843	
Poverty at age 16*	No	8,122	0.70	8,122	0.70	6,060	0.71
	Yes	3,550	0.30	3,550	0.30	2,462	0.29
	Missing	6,895		2,982		1,843	

Table A3.1 Continued

Income poverty at age 16	No	7,278	0.88	7,278	0.88	5,428	0.89
	Yes	953	0.12	953	0.12	663	0.11
	Missing	10,336		6,423		4,274	
Income poverty at age 16*	No	5,717	0.69	5,717	0.69	4,307	0.71
	Yes	2,514	0.31	2,514	0.31	1,784	0.29
	Missing	10,336		6,423		4,274	
Income support at age 16	No	10,415	0.90	10,415	0.90	7,699	0.91
	Yes	1,182	0.10	1,182	0.10	775	0.09
	Missing	6,970		3,057		1,891	
Free school meals at age 16	No	10,352	0.90	10,352	0.90	7,676	0.91
	Yes	1,157	0.10	1,157	0.10	728	0.09
	Missing	7,058		3,145		1,961	
Financial difficulty at age 16	No	10,169	0.89	10,169	0.89	7,551	0.91
	Yes	1,198	0.11	1,198	0.11	773	0.09
	Missing	7,200		3,287		2,041	

Notes: * denotes variables derived from the poverty threshold as reported in Row 1a in Figure A3.1.

Table A3.2 Correlation matrix for the poverty variables: NCDS

n=6097	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Childhood poverty	1												
(2) Childhood poverty*	0.80	1											
(3) Poverty at age 11	0.73	0.59	1										
(4) Income support at age 11	0.53	0.42	0.72	1									
(5) Free school meals at age 11	0.49	0.39	0.67	0.47	1								
(6) Financial difficulty at age 11	0.54	0.43	0.73	0.47	0.42	1							
(7) Poverty at age 16	0.80	0.64	0.39	0.32	0.39	0.33	1						
(8) Poverty at age 16*	0.63	0.88	0.34	0.26	0.33	0.27	0.72	1					
(9) Income poverty at age 16	0.52	0.41	0.30	0.28	0.32	0.25	0.65	0.47	1				
(10) Income poverty at age 16*	0.46	0.77	0.30	0.23	0.31	0.24	0.52	0.87	0.54	1			
(11) Income support at age 16	0.50	0.40	0.31	0.33	0.33	0.27	0.62	0.45	0.39	0.32	1		
(12) Free school meals at age 16	0.50	0.40	0.41	0.35	0.48	0.33	0.62	0.45	0.47	0.38	0.48	1	
(13) Financial difficulty at age 16	0.52	0.41	0.33	0.27	0.31	0.36	0.65	0.47	0.34	0.33	0.41	0.43	1

Notes: * denotes variables derived from the poverty threshold as reported in Row 1a in Figure A3.1.

Table A3.3 Frequencies of the poverty variables: BCS

		All (n=19,101)		Those surveyed at age 16 (n=11,621)		Those surveyed at age 34 (n=7,747)	
		n	rate	n	rate	n	rate
Childhood poverty	No	5,553	0.63	5,553	0.63	4,049	0.67
	Yes	3,215	0.37	3,215	0.37	2,020	0.33
	Missing	10,333		2,853		1,678	
Childhood poverty*	No	5,087	0.58	5,087	0.58	3,731	0.61
	Yes	3,681	0.42	3,681	0.42	2,338	0.39
	Missing	10,333		2,853		1,678	
Poverty at age 10	No	10,984	0.79	8,335	0.81	5,858	0.83
	Yes	2,885	0.21	1,997	0.19	1,179	0.17
	Missing	5,232		1,289		710	
Poverty at age 10*	No	10,681	0.77	8,104	0.78	5,711	0.81
	Yes	3,188	0.23	2,228	0.22	1,326	0.19
	Missing	5,232		1,289		710	
Income poverty at age 10	No	10,984	0.88	8,342	0.89	6,997	0.91
	Yes	1,486	0.12	1,006	0.11	726	0.09
	Missing	6,631		2,273		1,942	
Income poverty at age 10*	No	10,504	0.84	7,984	0.85	6,737	0.87
	Yes	1,966	0.16	1,364	0.15	986	0.13
	Missing	6,631		2,273		1,942	
Income support at age 10	No	12,170	0.88	9,155	0.89	6,370	0.91
	Yes	1,679	0.12	1,166	0.11	661	0.09
	Missing	5,252		1,300		716	
Free school meals at age 10	No	12,101	0.88	9,151	0.89	6,388	0.91
	Yes	1,578	0.12	1,082	0.11	597	0.09
	Missing	5,422		1,388		762	
Financial difficulty at age 10	No			N/A			
	Yes						
	Missing						
Poverty at age 16	No	6,807	0.70	6,807	0.70	4,849	0.73
	Yes	2,913	0.30	2,913	0.30	1,779	0.27
	Missing	9,381		1,901		1,119	
Poverty at age 16*	No	6,270	0.65	6,270	0.65	4,477	0.68
	Yes	3,450	0.35	3,450	0.35	2,151	0.32
	Missing	9,381		1,901		1,119	

Table A3.3 Continued

Income poverty at age 16	No	6,027	0.84	6,027	0.84	4,266	0.86
	Yes	1,153	0.16	1,153	0.16	672	0.14
	Missing	11,921		4,441		4,727	
Income poverty at age 16*	No	4,989	0.69	4,989	0.69	3,581	0.73
	Yes	2,191	0.31	2,191	0.31	1,357	0.27
	Missing	11,921		4,441		4,727	
Income support at age 16	No	7,705	0.80	7,705	0.80	5,439	0.83
	Yes	1,879	0.20	1,879	0.20	1,107	0.17
	Missing	9,517		2,037		1,201	
Free school meals at age 16	No	8,242	0.92	8,242	0.92	5,777	0.93
	Yes	751	0.08	751	0.08	431	0.07
	Missing	10,108		2,628		1,539	
Financial difficulty at age 16	No	7,644	0.84	7,644	0.84	5,393	0.87
	Yes	1,409	0.16	1,409	0.16	826	0.13
	Missing	10,048		2,568		1,528	

Notes * denotes variables derived from the poverty threshold as reported in Row 1a in Figure A3.1.

Table A3.4 Correlation matrix for the poverty variables: BCS

n=5479	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Childhood poverty	1														
(2) Childhood poverty*	0.87	1													
(3) Poverty at age 10	0.63	0.55	1												
(4) Poverty at age 10*	0.63	0.59	0.93	1											
(5) Income poverty at age 10	0.43	0.38	0.68	0.64	1										
(6) Income poverty at age 10*	0.46	0.45	0.65	0.76	0.83	1									
(7) Income support at age 10	0.47	0.41	0.74	0.69	0.36	0.36	1								
(8) Free school meals at age 10	0.44	0.38	0.69	0.64	0.38	0.42	0.56	1							
(9) Poverty at age 16	0.86	0.75	0.37	0.38	0.30	0.33	0.30	0.33	1						
(10) Poverty at age 16*	0.76	0.89	0.35	0.38	0.29	0.35	0.26	0.30	0.85	1					
(11) Income poverty at age 16	0.53	0.46	0.34	0.36	0.29	0.34	0.24	0.31	0.62	0.52	1				
(12) Income poverty at age 16*	0.54	0.71	0.35	0.38	0.31	0.37	0.25	0.30	0.59	0.80	0.65	1			
(13) Income support at age 16	0.63	0.55	0.34	0.34	0.27	0.29	0.33	0.35	0.73	0.62	0.47	0.47	1		
(14) Free school meals at age 16	0.39	0.34	0.31	0.31	0.24	0.26	0.28	0.35	0.46	0.38	0.36	0.36	0.46	1	
(15) Financial difficulty at age 16	0.55	0.48	0.23	0.24	0.18	0.19	0.21	0.23	0.63	0.54	0.30	0.33	0.37	0.30	1

Notes: * denotes variables derived from the poverty threshold as reported in Row 1a in Figure A3.1.

Chapter 4

Change in the Role of Education in the Intergenerational Persistence of Poverty over Time

4.1 Introduction

Education is identified as one of the most important mechanisms of intergenerational persistence of poverty as well as of intergenerational mobility in general. In the UK, the equalisation of educational attainment among socioeconomic groups has been a long standing policy issue (Glennerster, 2000, pp. 50-58 & 122-130), and education policy has been a particular priority since 1997 when New Labour came to power (McKnight et al., 2005). However, it is still debated on empirical grounds whether there is an *increasing* need for greater access to formal education rather than just a *continuing* need. Even while limiting our focus to labour market outcomes, we need to have a grasp of more than one kind of socioeconomic issue in order to estimate the change in the importance of education; the level of educational inequality, which is an association between family background and educational attainment, and the economic value of education. This makes it difficult to find any agreement among researchers on the changing role of education in determining the degree of intergenerational mobility. Therefore, in this chapter, I revisit the question of the role of education even though it may be regarded as relatively well studied in the field of intergenerational mobility (Bowles et al., 2005).

Economic research shows that intergenerational income mobility decreased between the 1958 and 1970 cohorts in the UK (Blanden et al., 2004), and more specifically that intergenerational persistence of poverty strengthened (Blanden and Gibbons, 2006; McKnight, 2000). These economic studies also argue that the decrease in income mobility partly stems from the increased inequality in educational attainment which became more important in the labour market (Blanden and Gregg, 2004; Blanden et al., 2005a; Blanden et al., 2007). However, another study suggests that the role of education did not necessarily increase the intergenerational persistence of poverty (Blanden and Gibbons, 2006). It is unclear why the evidence of the role of education differs between income mobility and persistence of poverty. This may be because income mobility and persistence of poverty are interconnected but different phenomena, or perhaps different outcome variables have produced different evidence, with the

income mobility research analysing adult earnings and the persistence of poverty research analysing adult non-employment (as a strong driver of low household income). To bridge the gap, this chapter therefore analyses earnings in order to examine change in the role of education in the intergenerational persistence of poverty over time.

Giving a special focus to childhood poverty illuminates facets of intergenerational mobility that are relevant to public policy. Political and policy interests in mobility have been heightened since the 1990s in the UK (Strategy Unit, 2008), but there has been little explicit consensus about why mobility is a policy goal and how it should be confronted. However, it can be addressed that we want to tackle low mobility because we believe that it may cause those who are disadvantaged in childhood to remain disadvantaged in adulthood (Hills, 1999). Knowledge that might help to improve the life chances of people growing up in poverty is worth prioritising.

To reduce the intergenerational persistence of poverty, it would be instructive to investigate why it has increased over time. A change over time may suggest the influences of the changing socioeconomic environments on people's life chances, which are the areas in which policy interventions can be more justifiable or practical than areas in which the diversity of family cultures or the function of genes are concerned. The 1958 and 1970 cohorts that are compared in the previous research grew up as teenagers in very different socioeconomic environments that were characterised by growing income inequality³⁷ and a decline in the youth labour market for the later cohort. Although accounting for the causal influences of these environments on the increased intergenerational persistence of poverty is beyond the scope of this thesis, it is presumed that such influences may have existed. Against this background, I question whether or not it is because of the increasing importance of education that those in the younger cohort who grew up in poverty are increasingly more disadvantaged in terms of their earnings.

In this chapter, I firstly analyse whether the economic value of formal education, as measured by qualification attainment, increased over time. The robustness of the estimated economic value of education is crucial in examining its role in the intergenerational persistence of poverty. Thus, much of the empirical work in this

³⁷ The 1970s was a period of relatively low income inequality in the UK (the Gini coefficient was around or less than 0.25 for net equivalised income), while the 1980s witnessed increasing income inequality (the Gini coefficient was between 0.25 and nearly 0.35) (Hills, 2004). As both cohorts experienced similarly large inequality as adults, the more severe difficulties faced by the 1970 cohort is likely to be rooted in their childhood experience of the great income inequality.

chapter relates to this first task in which I estimate the earnings premiums associated with qualification attainment for the 1958 and 1970 cohorts. As an outcome, I use hourly earnings rather than household income in adulthood (see Subsection 3.4.1 in Chapter 3 for the reason for analysing hourly earnings). Regarding the main question of the changing role of education, I adopt a descriptive approach by presenting the average earnings gap between those who grew up in poverty and those who did not that can jointly be explained by educational inequality and the earnings premiums thus estimated. By educational inequality, here, I simply mean distributional inequality in educational attainment across childhood poverty status.

In the next section, I begin by reviewing the relevant literature. I describe the data used in this chapter in Section 4.3, and discuss the descriptive findings in Section 4.4. In Section 4.5, I discuss the modelling approach to estimate the effects of formal education on earnings and, in Section 4.6, I present and interpret the results of the analysis. In Section 4.7, I conclude by raising further questions to be investigated in subsequent chapters.

4.2 Literature Review

4.2.1 Educational Inequality

One possible reason why intergenerational persistence of poverty increased in the UK may be that education became more important over time. Blanden and others (Blanden and Gregg, 2004; Blanden et al., 2005a; Blanden et al., 2007) argue that, despite the expansion of opportunities for post-compulsory education and higher education, the association between household income and children staying on in post-16 and post-18 education increased over time and this resulted in the strengthened intergenerational persistence of income. Others have also found that household income increasingly determined children's educational outcomes (Dearden et al., 2004b). These findings are mostly based on comparisons between the 1958 and 1970 cohorts. The previous Government also held this view, introduced the Education Maintenance Allowance and proposed extending compulsory education to equalise educational attainment among those from different socioeconomic backgrounds. Gregg and Macmillan (2009) report that the relationship between household income and educational attainment is weaker for the more recent cohorts, such as those born between 1981 and 1986 and in 1991/2, than the 1970 cohort.

Educational inequality across household income background is a source of intergenerational persistence of income, but there is another factor that would strengthen or weaken this persistence; earnings premiums associated with educational attainment (Solon, 2004). This is what the economic model explains (see Subsection 2.2.2 in Chapter 2). For a given degree of educational inequality, intergenerational persistence is higher where an earnings gap between low and high educational attainments is larger. It is in this situation that educational inequality is more disturbing, being compounded as it is by earnings premiums. Conversely, educational inequality may have less serious consequences if the earnings gap is decreasing. I next review the evidence on the earnings premiums associated with formal education in the UK.

4.2.2 Earnings Premiums Associated with Educational Attainment

In the UK, it is better to start with earnings premiums associated with qualification attainment rather than with a year of schooling. Those who have obtained qualifications receive significantly greater earnings premiums than those who spent the same years in education without obtaining formal qualifications (Dearden, 1999). Del Bono and Galindo-Rueda (2006) argue, by applying a natural experiment framework, that additional schooling periods would improve the labour market outcomes only if the period covers examination dates for academic qualifications.

The evidence about whether earnings premiums have changed over time is mixed depending on the data and timing when the earnings were measured, but two main clusters of relevant research can be identified. Table 4.1 summarises the evidence available in previous research. The upper panel shows the first cluster of research that uses the birth cohort samples which I also use in this chapter (the NCDS and BCS), while the lower panel shows the second cluster that uses the larger samples of broader age ranges (the Labour Force Survey (LFS) and General Household Survey (GHS)). Because of the richness of the control variables in the NCDS and BCS, the estimated earnings premiums based on these datasets are smaller than those based on the LFS and GHS, and it is inappropriate to compare the estimates between the panels. Note that the table shows findings for men only, since a similar quantity of information is unavailable for women. Earnings premiums may well vary by gender, and it is particularly difficult to predict based on the evidence for men how earnings premiums have changed over time for women whose employment participation rate has dramatically changed.

As Panel 1 of Table 4.1 shows, there is no evidence that the earnings premium associated with a degree increased in the 1990s and early 2000s based on the research using data from the NCDS (1958 cohort) and BCS (1970 cohort). Sianesi (2003) straightforwardly reports the estimates that are comparable across the cohorts and concludes that the earnings gap between men with a degree and those with no qualification decreased, mainly because the earnings premiums associated with a low level of qualifications decreased. The incremental premium for a degree remained almost identical. A comparison of the findings of Blundell et al. (2005) and Dearden et al. (2004a) implies that the earnings premium associated with a degree, compared with Level 2 or Level 3 qualifications decreased. Although it is less clear to what extent these findings are comparable, the two groups of authors apply the same estimation method.

There are two possible reasons why the earnings premium associated with a degree is found to be lower for the younger cohort. Firstly, earnings are compared at similar but different ages across the cohorts: at age 33 for the 1958 cohort and at age 30 for the 1970 cohort. Since an earnings growth after the age of 30 is observed only for those with highly skilled jobs (Goldthorpe and McKnight, 2006), the lower earnings premium associated with a degree for the 1970 cohort may simply reflect the fact that their earnings are measured at a younger age. This chapter can overcome this limitation by analysing earnings at age 34 for the 1970 cohort.

Another reason may be the impact of the introduction of the National Minimum Wage (NMW) in 1999.³⁸ This set a floor for earnings to be paid to low-skilled workers, and thus the earnings gap between those with a degree and those with no qualifications may well have become smaller after 1999, net of the impact of potential earnings growth for high-skilled workers. However, Dickens and Manning (2004) found that the impact of the NMW on earnings inequality was relatively small between 1999 and 2001, presumably because the minimum wage was set at a low level that affected only 6-7% of workers and was uprated in line with the increase in prices rather than average earnings. The 2001 uprating was in line with the increase in average earnings, and the 2003 and 2004 upratings brought a greater increase in the minimum wage than the increase in average earnings (Low Pay Commission, 2004). Therefore the impact of the

³⁸ In 2000, only 1.1% of jobs taken by those aged 22 and over were paid below the NMW. Some workers may be denied their legal rights, but others may legitimately be paid below the NMW because, for instance, they are provided with training or free accommodation by their employers (Low Pay Commission, 2001).

NMW may be more relevant to the analysis in this chapter, in which the earnings measured in 2004 are used for the 1970 cohort.

Panel 2 of Table 4.1 shows a summary of another cluster of research. Conlon (2001a) reports that the earnings premium associated with a degree increased between 1993 and 1998, while McIntoch (2004a) reports that it remained almost the same between 1997 and 2002. However, this may not be a contradiction but due to the different times at which the earnings were measured, because Machin (2003) supports both findings. Using the GHS and LFS, he argues that the earnings premium associated with a degree increased between 1990 and 1998, but it appears almost identical in 1995 and 2002. Therefore, the premium may have increased in the early 1990s and plateaued sometime around the mid-1990s, presumably because higher education was expanding in tandem with the increasing demands for high skills.

Even if educational attainment is equal across household income background, heterogeneity in earnings premiums across household income background could lead to intergenerational persistence of income. Dearden et al. (2004a), using data from the BCS, suggest that there are no statistically significant differences in the earnings premium associated with staying on in post-compulsory education with regard to household income, but that there are higher premiums for higher education for the low income group. However, a low income is defined as below the median income calculated based on household income at age 16 in their study. Therefore, their 'low income group' includes those who did not necessarily grow up in poverty and may exclude those who experienced poverty only in earlier childhood. Below, I use a narrower measure of childhood poverty and check for heterogeneity before concluding that the estimated earnings premiums are the same between those who grew up in poverty and those who did not.

4.3 Data and Variables

I use data from the NCDS and BCS in this chapter, as I explained in detail in Chapter 3. In this section, I describe the main variables and control variables used in this chapter.

4.3.1 Main Variables

Earnings: To ensure comparability, it is important to measure earnings at a similar age across the cohorts. I mainly use hourly earnings at age 33 for the 1958 cohort and at age 34 for the 1970 cohort, but also analyse weekly earnings for reference.

In both surveys, the respondents were asked to state their gross and net pay for their main job the last time they were paid and the period that the pay covered. I only use the gross pay. Weekly earnings are obtained by adjusting for the length of pay period. Hourly earnings are obtained by further dividing the weekly earnings by the number of hours worked per week. It is obvious that the distribution of earnings is skewed to the right. Some of the extreme outliers in the variables may be simply due to coding errors of the earnings themselves or of the pay period. I have made an effort to amend them by comparing gross earnings with net earnings, and checked the plausibility by considering the respondent's occupation in some cases. However, genuine outliers can still affect the values of the mean and the variance of the variables. Therefore, after correcting for probable miscoding, I omit those whose earnings are higher than the mean value plus three times the standard deviation. Those excluded amount to less than 1% of each sample. The values are not deflated by the current prices. Earnings data for self-employed people were collected through separate questions that do not give clear information about their weekly and hourly earnings. Thus, I exclude the self-employed from these samples, and my findings are based on employees only.

A possible question arising from the use of earnings measured in their early thirties alone would be that the role of education may be more important at later ages when the earnings premiums associated with education become larger. Gregg and Macmillan (2008) find that the relationship between household income and educational attainment has a good predictive power for future income mobility, since the decreasing intergenerational income mobility according to age is almost entirely due to the rising earnings premiums associated with educational attainment. However, they also find that the partial correlation of household income and own earnings that is explained by education is flattened from people's early thirties onwards. Thus, we can safely assume that a comparison of the earnings of people with different levels of education in their early thirties explains much of the role of education, even though not all.

Employment status: A variable of employment status was collected in such a way that the respondents were asked to choose one of the following twelve choices: full-time employed, part-time employed, full-time self-employed, part-time self-employed, unemployed, full-time education, government training scheme, temporarily sick/disabled, permanently sick/disabled, looking after home/family, wholly retired, and other. I aggregated these into three categories: full-time employed, part-time employed, and non-employed (excluding full-time students).

Highest qualification obtained: I create a categorical variable that classifies people into seven groups based on the highest qualification obtained, as presented in Section 3.5 of Chapter 3.³⁹ Both the 1958 and 1970 cohorts sat GCE O-levels or CSE at school, but some of them also obtained GCSEs if they returned to secondary education after 1986. In this chapter, O-levels and CSE Grade 1 are regarded as equivalent to high GCSEs (Grades A to C), and CSEs Grades 2 to 5 are regarded as equivalent to low GCSEs (Grades D to G). The former is classified as Level 2 academic and the latter as Level 1. Even though the respondents are more likely to have obtained O-levels or CSEs, I label them as high and low GCSEs respectively when reporting the results of this thesis.

Qualifications obtained through higher education below degree level, such as diplomas and foundation degrees, are classified as Level 3 academic along with A-levels. Thus, Level 4 academic stands for at least a degree level qualification. If a teaching qualification is obtained through higher education, regardless of whether it is at an undergraduate or postgraduate level, it is classified as Level 4 academic. If it is obtained outside higher education and the respondent labelled it as an ‘other teaching qualification’, it is classified as Level 4 vocational. The questionnaire responses about the subjects of other teaching qualifications suggest that these are designed to qualify vocational teachers or instructors.⁴⁰ Nursing and paramedical qualifications are classified as Level 4 vocational.

Childhood poverty: In Chapter 3, I have described the procedures for creating the variables for poverty in mid-childhood (at age 11 for the 1958 cohort and at age 10 for the 1970 cohort) and at age 16. I create a dummy variable equal to 1 if individuals were ever living in poverty during childhood, regardless of how many times they experienced it.⁴¹ If one were not observed to be living in poverty at either age, they are treated as having never lived in poverty during their childhood. If individuals failed to

³⁹ In principle, all qualifications obtained after age 16 were surveyed at age 30 and only additional qualifications obtained between the age of 30 and 34 were surveyed at age 34. However, I have also found a number of respondents at age 30 who did not report qualifications that they reported to have obtained in the previous sweep at age 26, possibly because people become less likely to report their school level qualifications as they grow older (McIntosh, 2004b). I have decided to exploit the information available in the age-26 sweep with the intention of reducing the measurement errors. As the questionnaire was collected by post at age 26 and the response rate was lower than the later sweep at age 30, it is impossible to amend the variable for all respondents present at age 30. Nonetheless, this procedure shrinks the size of the ‘no qualification’ group. I have checked that the results of this chapter are not sensitive to whether I use information collected at age 26.

⁴⁰ To name a few, these include nursing, computer courses, basic skills, drama and music.

⁴¹ I investigate the different effects of the timing and duration of childhood poverty in Chapter 5.

give information about their poverty status at either age, the dummy variable is set as missing for them.

4.3.2 Control Variables

The primary criterion I employ in choosing the control variables used to estimate the effect of qualifications on earnings is that they should resolve the correlation between individual's characteristics and educational choices, following the non-experimental methods reviewed and applied by Blundell et al (2005). As I will discuss in Section 4.5, I aim to compare earnings between similar but differently qualified people, in order to examine the earnings difference due to the difference in qualification attainment but not due to other characteristics such as the following variables that are known to affect educational choices.

Ethnicity: Dummy variable equal to 1 if white and 0 if ethnic minority.⁴²

Number of siblings: An ordinal variable with four values, where 0=no sibling, 1=one sibling, 2=two siblings, and 3=three or more siblings. The variable is based on information reported at age 11 for the 1958 cohort and at age 10 for the 1970 cohort.

Father's social class: Dummy variable equal to 1 if father or male head's social class is I, II and III (non-manual) during most of childhood,⁴³ and 0 otherwise (III (manual), IV and V).

Mother's education: Continuous variable of mother's age when she left full-time education.

Ability in childhood: Z scores for maths and reading tests at age 11 and for reading and copying tests at age 7 for the 1958 cohort. Z scores for maths and reading tests at age 10 and vocabulary and copying tests at age 5 for the 1970 cohort.

I also consider the following variables as determinants of earnings, based on the Mincerian function, but will finally decide to exclude the variables for workplace characteristics (see Subsection 4.5.1).

⁴² The sample size of ethnic minority is too small for further disaggregation, particularly in the NCDS.

⁴³ It is possible to determine father or male head's social class measured at four points in childhood for each cohort. If someone's father figure is classified as belonging to social class I, II or III (non-manual) at least twice, they are assigned 1 for this variable. This variable is also observed for those who have ever had a lone mother, unless information is missing at all four points in time. The number of such respondents is very small, and the findings of this thesis do not change when I include them by assigning another value to flag the missing data to them.

Work experience: Work experience is measured by the number of years in full-time employment after age 16 and its square (to adjust for the non-linearity of its effect). The variables are created using work history data in which the work periods are originally recorded in months. One year in part-time employment is counted as 0.5 years in full-time employment.

Workplace characteristics: Ordinal variable with five values to measure workplace size. Dummy variable equal to 1 if one works for a private firm or company, and 0 otherwise.

Region: Nominal variable with ten values to measure region of domicile at age 33 for the 1958 cohort and at age 34 for the 1970 cohort, where 1= North, 2= Yorkshire & Humberside, 3= East Midlands, 4= East Anglia, 5=South East (including London), 6=South West, 7=West Midlands, 8=North West, 9= Wales, and 10=Scotland. This is to control for different levels of earnings across regions and other unobserved regional characteristics.

4.4 Descriptive Statistics

4.4.1 Childhood Poverty and Educational Attainment

I begin by examining the associations between the highest qualification and the experience of childhood poverty for both the 1958 and 1970 cohorts (Table 4.2). Unsurprisingly, an association of qualification attainment and childhood poverty is observable for both cohorts and genders. Nonetheless, the overall improvement in qualification attainment over time is also observable for both genders. Although the same findings as Table 4.2⁴⁴ may be unavailable elsewhere because of the original grouping of the qualifications used in this chapter, those shown here are plausible considering that the staying-on rates have increased between the two cohorts (Clark et al., 2005).

⁴⁴ Here are a couple of notes about the size of the no qualification group, as we should be careful not to mix those who have not obtained any qualifications with those who did not respond to the question. Sigle-Rushton (2004) reported that 11.7% of men and 12.8% of women in the BCS fall into the no qualification group at age 30. The decrease in the proportion is not completely derived from the possibility that some of them obtained a qualification between the ages of 30 and 34, but partly from the difference in the measurement of qualification attainment between her study and this thesis, as detailed in footnote 39. The proportion of NCDS women who have no qualification at age 33 is similar to 13.6%, which is reported by Hobcraft and Kiernan (1999).

What is of particular interest here is any difference between the improvement in those who grew up in poverty and those who did not. The previous literature has found that the outcomes of the expansion of higher education opportunities are unequal across household income groups (Blanden and Gregg, 2004; Blanden et al., 2005a; Blanden and Machin, 2004), with those from the richest background benefiting the most. I have also found by using descriptive statistics, although not shown here, that children from the top two quintiles of household income are the major beneficiaries of the expanding higher education. However, when I focus on those who have ever experienced poverty in childhood, their attainment improvement is not necessarily worse than that of those who did not grow up in poverty, particularly men, as shown in Table 4.2.

The increase in the proportion of men with a degree or higher degree between the cohorts is similar for those who grew up in poverty and those who did not, which is around 10 percentage points. The increases in the proportions of men with A-levels and a Level 3 or higher vocational qualification are greater for those who grew up in poverty. At the other extreme, the size of the no qualification group decreased by 13 percentage points for those who grew up in poverty, while the equivalent decrease is 4 percentage points for those who did not. This is, of course, partly because there were much fewer people with no qualifications in the latter group of the 1958 cohort. With respect to women, the increase in the proportion of degree holders is smaller for those who grew up in poverty, but the other changes are similar to those found in men.

As long as educational inequality persists, the role of education in the intergenerational persistence of income is of concern, as the previous literature suggests (Blanden and Gregg, 2004; Blanden et al., 2005a). However, we also need to pay attention to the impacts of the changes taking place at the bottom of the qualification distributions, in order empirically to understand any change in the role of education in the intergenerational persistence of poverty. I will investigate this in Subsection 4.6.5.

4.4.2 Earnings by Childhood Poverty and Educational Attainment

Table 4.3 and Table 4.4 show the means of hourly and weekly earnings among the employed, computed separately for the highest qualification groups and childhood poverty status, for each cohort and gender. As I show in Table 4.5 and Table 4.6 later, most employed men work full-time, whereas only slightly over half of the employed women do so. For all of the sub-samples of both cohorts and genders, the mean hourly and weekly earnings are significantly lower if they grew up in poverty.

The average hourly earnings of men and women in the 1958 cohort who did not grow up in poverty are 19% higher than those of their counterparts who grew up in poverty. The equivalent percentages for men and women in the 1970 cohort are 26% and 21%, respectively. These figures do not directly show the effect of childhood poverty on earnings and, particularly for women, a compositional difference in those employed makes a comparison difficult. However, the observed earnings gaps are greater for the 1970 cohort for both genders.⁴⁵ For both cohorts generally, higher qualification attainment is associated with higher earnings and, as is known from the previous research, academic qualifications are more economically rewarding than vocational ones (Bennett et al., 1992; Conlon, 2001a; Robinson, 1997; Schmitt, 1995).

A question here is whether the association between childhood poverty and earnings can be completely explained by educational inequality for both cohorts. If so, within-qualification-group differences in earnings across childhood poverty status should not appear. By focusing on hourly earnings, Table 4.3 shows that few differences remain among the men in the 1958 cohort, and these differences are significant only at the 10% level. These are mostly not observed in women from the 1958 cohort, apart from those with low GCSEs. However, Table 4.4 for the 1970 cohort shows that significant differences remain between those who grew up in poverty and those who did not in terms of earnings for all qualification groups for men and some qualification groups for women. This implies that the intergenerational persistence of poverty for the 1958 cohort may have been explained by educational inequality. However, for the 1970 cohort, educational inequality does not seem completely to explain the earnings gap between those who grew up in poverty and those who did not.

4.4.3 Employment Status by Childhood Poverty and Educational Attainment

I present the distributions of employment status at age 33 for the 1958 cohort in Table 4.5 and at age 34 for the 1970 cohort in Table 4.6. The motivation to examine employment outcomes here is to grasp whether and how far employment participation differs across the cohorts and sub-groups, as measured by qualification attainment and the experience of childhood poverty. Earnings data are only available for those in

⁴⁵ For women, this seems true only of the weekly earnings for those who are in employment and not of their hourly earnings, based on the descriptive statistics. However, this may be due to the different composition of employed women between the cohorts. The regression analysis controlling for other variables will show that childhood poverty is more strongly associated with adult earnings for the 1970 cohort than for the 1958 cohort.

employment. If the employment participation is not random, the earnings premiums estimated from the employed sub-sample may be biased. If so, estimated earnings premiums may be inappropriate for cross-cohort comparison, because the differences in such estimates may be derived from the different compositions of the employed people between the cohorts. I will present the methodological solutions to this selection bias in Subsection 4.5.2.

Holding a qualification seems to increase the employment rate, but it does not necessarily mean that an additional qualification always increases the rate at all levels. For men, whose employment rate is generally high, the biggest difference can be observed between the no qualification and lowest qualification groups. However, increases in the employment rates associated with an additional qualification can be observed at wider levels for those samples with a lower average employment rate, such as women. The tables show that selection into employment needs to be corrected in order to provide unbiased estimates of earnings premiums.

In terms of the association between childhood poverty and employment rate, people who grew up in poverty are less likely to work. This still holds even after controlling for qualification attainment, with some exceptions. For the women in the 1958 cohort, those who grew up in poverty are no less likely to work full-time than those who did not. This may be because those women tend to marry low-earning men (Ermisch et al., 2006) and that pushes them into full-time employment, in order to contribute to their household income. However, taken as a whole, childhood poverty is negatively associated with employment outcomes.

Based on the literature, there are two features of the labour market changes between the two cohorts. The first is the growing non-employment rate among low-skilled men. Faggio and Nickell (2003), using the GHS and LFS, show that the inactivity rate for men aged between 25 and 54 in the late 1980s to early 1990s was around 10%, whereas the rate was 15 -19% in the early 2000s. However, Table 4.5 and Table 4.6 show that the non-employment rates among men with no qualification decreased, which may suggest that the employment rates of men who were in their early thirties improved because of the economic boom in 2004. In total, the non-employment rate decreased.⁴⁶ Another feature to be noted is the increased participation of women in

⁴⁶ Based on data from the General Household Survey sourced from the ESDS Nesstar Catalogue, the non-employment rate (the sum of the unemployment and inactivity rates) in 1991 for men (women) born between 1956 and 1960 is 13% (33%), and that in 2004 for men born between 1966 and 1970 is 9% (24%). For men, the unemployment rate was higher in 1991 than in 2004, although the inactivity rate was

the labour market. Although the proportion of women in part-time employment, which is around 30%, is almost the same for both cohorts, that of women in full-time employment increased from 37% to 44%. However, the increase in participation is less rapid for those who grew up in poverty.

4.4.4 Summary and Further Questions

The preliminary findings, based on the simple association of childhood poverty status and qualification attainment, that of childhood poverty and earnings and that of qualification attainment and earnings, are as follows:

- The percentage point increases over time in the proportion of degree holders (Group 6) are almost the same across childhood poverty status. The proportions of those with up to low GCSEs without meaningful vocational qualifications (Groups 0 and 1) decreased for those who grew up in poverty to a larger extent than those who did not (Table 4.2).
- For both genders, the observed earnings gap for the employed between those who grew up in poverty and those who did not increased over time, which suggests that intergenerational persistence of poverty increased (Table 4.3 and Table 4.4).
- The residual effect of childhood poverty on earnings is more clearly found for the 1970 cohort, after controlling for qualification attainment (Table 4.3 and Table 4.4).
- The employment rate in general is associated with qualification attainment and childhood poverty so that the more advantaged are more likely to be employed. However, a closer look suggests that the associations differ across genders and cohorts (Table 4.5 and Table 4.6).⁴⁷

The fact that childhood poverty remains associated with earnings for the 1970 cohort after controlling for qualification attainment, which is in line with McKnight (2000), raises the question of whether educational inequality is a predominant reason for the increased earnings gap between those who grew up in poverty and those who did not.

higher in 2004 than in 1991. For women, both the unemployment and inactivity rates were lower in 2004 than in 1991.

⁴⁷ Further attempts to explain employment probability will be carried out in the later chapters, using employment history data.

This at least suggests that the increased intergenerational persistence of poverty is not entirely due to educational inequality. Equalising educational attainment may be insufficient to remove the disadvantage of growing up in poverty for the more recent cohort. The question then is whether educational inequality is part of the reason why the intergenerational persistence of poverty has increased between the two cohorts.

In order to answer the question, I firstly need to obtain unbiased estimates of the earnings premiums associated with qualification attainment by controlling for other variables that are associated with both qualification attainment and earnings. The association of childhood poverty and earnings for people in their thirties, observed in Table 4.4, may be derived from other individual and family characteristics which are associated with poverty. Analyses based on the observed earnings of the employed involve a further source of omitted variable bias that must be dealt with, which is derived from the fact that employed people are not random samples of men and women in the cohorts. Below, I will present the analytical methods that may be employed to overcome this issue. I will finally investigate how the changes in the distribution of qualification attainment and in earnings premiums can jointly explain the change in the intergenerational persistence of poverty.

4.5 Methods

4.5.1 Modelling Approach

I begin by estimating the Ordinary Least Squares (OLS) models to look at the associations between people's highest qualifications obtained and their earnings in their early thirties. The observed earnings of individual i can be expressed as:

$$\ln y_i = \alpha + \beta Q_i + \delta X_i + \gamma W_i + \eta r_i + \varepsilon_i \quad (4.1)$$

where $\ln y_i$ is the log of hourly earnings, and α is a constant. Q_i is a variable for the combination of the highest academic and vocational qualifications obtained by the individual, for which I use six dummy variables (see Section 3.5 in Chapter 3). The reference group is the no qualification group; therefore β is a vector of the average percentage increases in earnings received by each group with a particular highest qualification compared with the no qualification group. This does not condition out earnings premiums that are attributable to other lower qualifications ever obtained by

the individual. X_i represents a set of observed individual and family characteristics (childhood poverty status, ethnicity, number of siblings, father's social class, and mother's education, cognitive ability measured in childhood, work experience and, implicitly, age and gender), and W_i a set of workplace characteristics (the type and size of the organisation). r is a region variable which is used to control for unobserved regional characteristics as well as regional earnings levels in 1991 for the 1958 cohort and in 2004 for the 1970 cohort. ε_i is the error term that is assumed to be distributed normally with a mean of zero.

However, for the purpose of this chapter, it is of interest to explore how the negative effect of a disadvantaged background can be mitigated by education, and workplace characteristics do not have to be controlled for in order to estimate the effects of qualifications. If it is one of the benefits of qualification attainment to find a job in higher paying firms or organisations, controlling for workplace characteristics would underestimate the effect of qualification attainment.⁴⁸ Therefore, I mainly report the following equation (4.2) as a final OLS model, although I also estimate the equation (4.1) in order to determine the size of the intervening effect of being employed in a higher paying firm or organisation.

$$\ln y_i = \alpha + \beta Q_i + \delta X_i + \eta r_i + \varepsilon_i \quad (4.2)$$

4.5.2 Inverse Mills Ratio Correction for Selection Bias

We are interested in unbiased estimates of β . However, the OLS estimates may be inconsistent when earnings data are observed only for a non-randomly selected subsample. The sample selections which would be of concern in this chapter include selections into employment and qualification attainment.

Few studies have dealt with selection into employment for men, the vast majority of whom are assumed to work in the labour market, but Conlon (2001a) has suggested that the selection bias is not negligible for men in the UK. Table 4.5 and Table 4.6 have also shown the non-randomness of labour market participation among men in both cohorts. If we did not correct for the selection bias, we would end up

⁴⁸ Some firms and organisations pay higher than others due to their productivity which may be largely unconnected with the employees' human capital. If the question were whether employers' should further invest in their employees' human capital, then such productivity associated with workplace characteristics should be netted out in predicting the potential gain from this investment. However, this is not the concern of the current research.

comparing uncorrected β which partly represents the compositional differences in the employed subsamples of the two cohorts.

The directions of the selection bias into employment involved in the OLS coefficients of qualifications are predicted as follows. The correlation between education and employment probability is expected to be positive, as is that between employment probability and earnings; thus the effect of education on earnings would be overestimated (more positive) without correcting for selection bias.

I employ the Heckman sample selection model that assumes the following underlying selection equation in which y_i^* is a latent variable governing the availability of the observations (Heckman, 1979). I begin by illustrating employment participation. For brevity of explanation, I rewrite the equation (4.2) as a reduced-form equation (4.3) below,

$$\ln y_i = \delta X_i + \varepsilon_i \quad (4.3)$$

$$y_i^* = \psi Z_i + u_i \quad (4.4)$$

where Z_i is a vector of the determinants of employment participation and u_i is the error term. Suppose that y_i is observed if $y_i^* \geq 0$, and unobserved otherwise. In order for δ to be consistent, the conditional mean of ε_i should be zero.

However, if the selection into employment is not random and hence ε_i and u_i are correlated, the conditional mean of ε_i is nonzero and the earnings equation for the employed subsample is as follows,

$$\ln y_i = \delta X_i + E(\varepsilon_i | y_i^* \geq 0) = \delta X_i + E(\varepsilon_i | u_i \geq -\psi Z_i) \quad (4.5)$$

Under the assumption that ε_i and u_i follow the bivariate normal distribution,

$$E(\varepsilon_i | u_i \geq -\psi Z_i) = \frac{\sigma_{\varepsilon u}}{\sigma_u} = \rho \sigma_\varepsilon \lambda_i \quad (4.6)$$

where $\sigma_{\varepsilon u}$ is the covariance between ε_i and u_i , σ_ε and σ_u are the standard deviations of ε_i and u_i , respectively, $\rho = \frac{\sigma_{\varepsilon u}}{\sigma_\varepsilon \sigma_u}$ is the correlation between ε_i and u_i , and λ_i^E is the inverse Mills ratio given as follows.

$$\lambda_i^E = \frac{f(-\psi Z_i)}{1 - F(-\psi Z_i)} = \frac{f(\psi Z_i)}{F(\psi Z_i)} \quad (4.7)$$

where $f(\cdot)$ is the standard normal probability density function, and $F(\cdot)$ is the standard normal cumulative distribution function.

Since $\sigma_\varepsilon > 0$, the coefficient of λ_i^E can be zero only if ρ is zero. Therefore, testing whether the coefficient for λ_i^E is zero corresponds to testing for selection bias. If the coefficient for λ_i^E is significantly different from zero, this indicates that uncorrected δ are inconsistent estimates. To obtain corrected estimates, I include λ_i^E calculated from the estimated ψZ_i as an additional explanatory variable into the earnings equation (4.2) fit on the employed subsample. ψZ_i , the predicted probabilities that $y_i^* \geq 0$, can be estimated by fitting a probit model of employment on the sample that include both the employed and non-employed.

A similar explanation can be applied to correct for selection bias into qualification attainment. If selection into qualification attainment occurs non-randomly so that more able people pursue higher qualifications, the estimated β_j (the coefficient for a dummy variable for the qualification j (q_{ji})) can be biased upwards. β_j , as estimated by OLS can be disaggregated into a treatment effect and a bias as follows.

$$\begin{aligned} & E(\ln y_{1ji} | q_{ji} = 1) - E(\ln y_{0ji} | q_{ji} = 0) \\ &= E(\ln y_{1ji} - \ln y_{0ji} | q_{ji} = 1) \\ &+ \{E(\ln y_{0ji} | q_{ji} = 1) - E(\ln y_{0ji} | q_{ji} = 0)\} \end{aligned} \quad (4.8)$$

where $\ln y_{1ji}$ is the log earnings if the individual i has obtained the qualification j and $\ln y_{0ji}$ is the log earnings if not. $\ln y_{1ji}$ is observed only when $q_{ji} = 1$, and $\ln y_{0ji}$ is observed only when $q_{ji} = 0$. While we are interested to know $E(\ln y_{1ji} - \ln y_{0ji} | q_{ji} = 1)$, the subsequent term $\{E(\ln y_{0ji} | q_{ji} = 1) -$

$E(\ln y_{0ji} | q_{ji} = 0)$ represents a bias which is equal to the average difference in earnings which could be received without the qualification between individuals who subsequently obtained the qualification and those who did not (Blundell and Dias, 2000). If it is not zero, OLS produces biased estimates.

Nonetheless, this selection is unlikely to be serious for men, when using data from the NCDS and the BCS. Blundell et al. (2005) who estimated the earnings returns to qualifications for men in the NCDS, by employing both OLS and control function and comparing the results, suggested that the NCDS variables for individuals' observed characteristics satisfactorily controlled for selection into education. This is highly likely to be true of a similar dataset such as the BCS, thus I do not attempt this procedure for men. However, previous research has not considered whether women's selection into education can also be successfully explained by the observed variables in these cohort studies. Since opportunities for high skilled jobs were limited for women in the older cohort, they may not necessarily have pursued further and higher education, even if they had sufficiently high ability. If so, the explanatory factors for these women's educational attainment may have been different from either those for men's or those for women in the younger cohort. Therefore, I attempt to correct for selection bias into education for women.

The strategy to correct for the bias is the same in the case of selection bias into employment, except that more explanation is needed about how to estimate the probability that $q_{ji} = 1$. In this chapter, qualification attainment is regarded as multiple treatments, as qualification groups can take values between 0 and 6. In order to predict the probability of receiving each treatment, a priori knowledge about how people are selected for the treatment is important (Lechner, 1999). In the case of qualification attainment, Sianesi (2002) evokes its sequential nature from the fact that people can either stop or move on to the next level. My categorisation of qualifications takes account of the types as well as levels, and therefore the qualification groups from 0 to 6 are not purely in a sequential order. For instance, in order to attain Groups 5 and 6, classified as the two highest groups with regard to academic attainment, people do not have to have attained Groups 2 and 4 with higher vocational qualifications. However, for ease of analysis, I assume that those who have attained Groups 5 and 6 have the ability to attain Groups 2 and 4, and the educational decisions are sequential. Hence, I

obtain the probability that $q_{ji} = 1$ by estimating the following ordered probit model of probability for attaining each highest qualification group.

$$q_i^* = \psi^q Z_i^q + u_i^q \quad (4.9)$$

where Z_i^q is a vector of the explanatory variables for qualification attainment and u_i^q is the error term assumed to be distributed normally with a mean of zero and a variance of one, and $q_i = j$ or $q_{ji} = 1$ if $\tau_{j-1} < \psi^q Z_i^q + u_i^q < \tau_j$. The inverse Mills ratio for each qualification attainment, λ_{ji}^Q , can be obtained as follows (Sianesi, 2002).

$$\lambda_{ji}^Q = \frac{f(\tau_j - \psi^q Z_i^q) - f(\tau_{j-1} - \psi^q Z_i^q)}{F(\tau_j - \psi^q Z_i^q) - F(\tau_{j-1} - \psi^q Z_i^q)} \quad (4.10)$$

I finally report coefficients from the equation below, although I omit the correction term for selection into education with respect to men.

$$\ln y_i = \alpha + \beta Q_i + \delta X_i + \xi \lambda_i^E + \sum_{j=0}^6 \omega_j q_{ji} \lambda_{ji}^Q + \eta r_i + \varepsilon_i \quad (4.11)$$

where Q_i , X_i and r_i are the same as in the equation (4.2), and λ_i^E , and λ_i^Q are the inverse Mills ratio terms for correcting for selection bias into employment and qualification attainment, respectively.

The following variables are used to estimate each of λ_i^E and λ_i^Q . In application, it would be better to find at least one variable to determine employment or education participation but not earnings to estimate the selection equation (4.4) and hence λ_i , although this is not theoretically required. If $Z=X$, including λ_i may introduce a multicollinearity problem. Even if we could estimate β with precision, it would be difficult to specify whether changes in β are due to the sample selection or to the misspecification of the model (4.2) (Wooldridge, 2002). The following variables underlined are included only in the selection equations for the above reason, and not in the earnings equations.

λ_i^E : In addition to the explanatory variables for earnings excluding workplace characteristics, partner's employment status (single, partner working full-time, or partner working part-time) for men, and partner's employment status and number of children aged 0-2, 3-4, 5-10, and 11 or over⁴⁹ for women.

λ_{ji}^Q : Childhood poverty, ethnicity, number of siblings, father's social class, father's education, mother's education, ability at age 10, ability at age 5, attitudes to education at age 16,⁵⁰ and country at age 16 (England, Wales, or Scotland).⁵¹

4.5.3 Interaction Effect of Childhood Poverty and Educational Attainment

The earnings of those who grew up in poverty may possibly be lower than their non-poor counterparts not only because of their lower qualification attainment, but also because of their lower rate at which they translate the qualifications into earnings. In this case, ignoring the interaction effect between qualification attainment and childhood poverty might overestimate the earnings premiums associated with qualification attainment for those who grew up in poverty. Hence, it is better to check whether there is no such interaction effect; in other words, there is no within-qualification-group heterogeneity in the earnings premiums across childhood poverty status, by estimating the following equation (4.12).

$$\ln y_i = \alpha + \beta(Q_i \otimes p_i) + \delta X_i + \xi \lambda_i^E + \omega \lambda_{ji}^Q + \eta r_i + \varepsilon_i \quad (4.12)$$

where p_i is a dummy variable equal to 1 if one grew up in poverty, which was included in X_i in the earlier equations.

If each estimate of β_j does not vary between the values of p_i , then we can be more confident that the estimated earnings premiums can be, on average, realised

⁴⁹ I attempted to employ another two models using alternative variables for children, either a continuous variable for the total number of children, or a set of four dummy variables, to indicate having a child aged 0-2, 3-4, 5-10, and 11 or over. Based on both Akaike's information criterion (AIC) and Schwarz's Bayesian information criterion (BIC), the model using the variables for the number of children aged 0-2, 3-4, 5-10, and 11 or over was the best fit for the data.

⁵⁰ In the data, people's attitude towards education, as measured at age 16, is associated with their highest qualification obtained and disassociated with earnings. The questions used to create this variable were different in the NCDS and the BCS; the former asked whether the respondents wished they could leave school at 15 (when the official school leaving age was 16) while the latter asked whether they thought that it was best to leave school as soon as possible in order to get experience. I assume that both variables measure similar negative attitudes towards education participation.

⁵¹ More detailed information on residential region at age 16 is unavailable for the BCS.

regardless of whether one grew up in poverty or not. I report the result of this procedure in Appendix Table A4.1 for the 1970 cohort for whom, as we will see later, the effect of growing up in poverty remains after controlling for qualification attainment and the other control variables. Table A4.1 shows that there is no significant interaction effect of qualification and childhood poverty on earnings for both genders, although most of the coefficients are negative. Dearden et al. (2004a), based on the BCS data have also rejected the possible hypothesis of heterogeneous earnings premiums across household income groups.

4.6 Results

4.6.1 Earnings Premiums Associated with Qualifications: Males

Table 4.7 and Table 4.8 report the regression estimates of the earnings premiums associated with qualifications at age 33 for the 1958 cohort and at age 34 for the 1970 cohort. Columns (1) to (6) are the OLS estimates without the selection correction term, and they may suffer from omitted variable bias. The purpose of reporting them is to understand which control variables will alter the effect of qualification attainment on earnings, and how the alterations in coefficients differ between the cohorts.⁵² The selection correction term is included in Column (7), whose other control variables are the same as those in Column (6).

Each column in the tables reports coefficients for the total hourly earnings premiums associated with each of the qualification groups compared with the no qualification group. Column (1) shows the unconditional percentage increases in earnings compared with the no qualification group. All of the coefficients, apart from that of the lowest qualification group in the 1970 cohort, are significantly different from zero for both cohorts. The coefficients are generally larger for the 1958 cohort than for the 1970 cohort, apart from that of a degree. The earnings differential between the A-level and degree groups increased, suggesting an increased incremental premium for a degree.

Column (2) controls for individual and family characteristics. For both cohorts, the coefficients are strikingly smaller than those reported in Column (1). These

⁵² I leave the statistically insignificant control variables in the models. Although this practice does not make the models parsimonious, it can clearly show whether I include comparable variables across models and datasets.

decreases are due mainly to the fact that non-negligible part of the earnings difference between those with and without A-levels is explained by these individual and family characteristics. The incremental earnings premium for a degree, relative to A-levels, is only slightly explained by these characteristics. The size of the decreases in the coefficients is greater for the 1958 cohort. This is because early ability influences qualification attainment more strongly for the 1958 cohort than for the 1970 cohort, which is in line with Galindo-Rueda and Vignoles (2005). The earnings premium associated with a degree increased between the two cohorts, controlling for the other variables. The earnings premiums associated with A-levels and high GCSEs with and without a vocational qualification stayed almost the same, but those associated with low GCSEs decreased to non-significant values.

Column (3) adds work experience and is comparable with Column (1). The coefficient for a degree clearly increases in both cohorts, because graduates have shorter work experience and therefore the earnings premium associated with a degree could be underestimated without controlling for work experience. Column (4) includes workplace characteristics which are statistically significant. However, controlling for workplace characteristics scarcely changes the coefficients for qualifications in both cohorts. Harmon et al. (2000), using the BHPS, also find that the effect of schooling on earnings is not sensitive to the inclusion of workplace variables, such as union membership and size of the workplace. Although I report in Column (5) the coefficients estimated from a model, fully controlling for all the variables included in Columns (2) to (4) for reference, I do not control for workplace characteristics in the final models for the reason outlined in Subsection 4.5.1.

Column (6) is one of the final models controlling for individual and family characteristics and work experience, but without correcting for selection bias. For the 1958 cohort, the earnings premium associated with a degree is 51.8%, A-levels 34.6%, High GCSEs with Level 3 or above vocational qualification 21.4%, High GCSEs with Level 1 or 2 vocational qualification 12.0%, and Low GCSEs with Level 3 or above vocational qualification 15.5% compared with no qualification. For the 1970 cohort, the earnings premium associated with a degree is 65.7%, A-levels 34.0% and High GCSEs with Level 3 or above vocational qualification 25.5%. The coefficients of the other qualification groups are not statistically significant at the 5% level.

With respect to changes over time, the penalty for demonstrating low attainment in GCSEs and not pursuing further academic studies apparently increased. Those men in

the 1970 cohort whose GCSE attainments are low do not seem to have received significant earnings premiums even from an additional vocational qualification at Level 3 or higher, which was not the case for their 1958 counterparts. While the total premium received by people with A-levels or below degree higher education as their highest qualifications remained almost the same, that received by degree holders slightly increased. The incremental benefit from pursuing a degree increased.

Column (7) includes the inverse Mills ratio λ_i^E to correct for selection bias into employment. The coefficient for this term is significantly different from zero only for the 1970 cohort, suggesting that a compositional difference between those employed and those non-employed is not negligible for men from the more recent cohort.⁵³ Thus, I report the result of Column (7) of Table 4.8 as another final model for men in the 1970 cohort. Because of the positive correlations of employment probability both with qualification attainment and earnings, the estimated earnings premium for a degree in Column (7) is smaller than that in Column (6). However, the earnings premiums for other qualifications do not seem to be affected by selection bias into employment. The earnings premium associated with a degree is 59.0%, A-levels 32.1% and High GCSEs with Level 3 or above vocational qualification 23.0%, all of which remain to be statistically significant at the 5% level.

With respect to changes over time, the findings based on Column (6) still hold qualitatively, and thus the findings are not sensitive to the analytical method. The finding of the increasing incremental premium for a degree is in line with Conlon (2001a) and Machin (2003), but is not consistent with Sianesi (2003) using the same datasets. Although I cannot check how a one-year difference in age between the two cohorts produces the higher earnings premiums for the 1970 cohort at age 34, the comparison between ages 33 and 34 may be better than that between ages 33 and 30 in terms of age proximity. By replicating the same analysis using earnings at age 30 for the 1970 cohort, I can ensure that the difference between Sianesi (2003) and this chapter is not due to the differences in analytical methods. Table 4.9 reports the results which are re-estimated by using only variables that are available in the 1970 cohort at age 30 and controlling for λ_i^E .⁵⁴ A comparison between Columns (1) and (2) derives a similar

⁵³ The coefficient for λ_i^E is unsurprisingly negative, as it is negatively correlated with the probability of being in employment, which is expected to be positively correlated with earnings.

⁵⁴ I could not find any region variables in the age-30 data. Except for the fact that the region variable is not controlled for in Table 4.9, the columns of Table 4.9 are equivalent with Column (7) of Table 4.7 and Table 4.8.

conclusion to Sianesi (2003) in that the incremental earnings premium associated with a degree did not increase. It increased between ages 30 and 34 for the 1970 cohort, which turns out to reveal the increase between the cohorts. However, it is beyond the scope of this thesis to examine whether the 20 percentage points increase within four years is plausible.

The aggregate categorisation of qualifications used so far is justifiable as discussed in Section 3.5 in Chapter 3 and is useful in comparing qualification attainment between those who grew up in poverty with those who did not. However, it does not uncover any changes in an earnings premium associated with each level and type of qualification. Thus, I carry out an alternative specification for both cohorts by including ten dummy variables measuring whether a respondent has each level of academic and vocational qualifications. Each coefficient for qualifications compares a conditional mean of earnings between those who have the qualification and those who do not.

I present both models, with and without the selection correction term in, Table 4.10, but I only refer to the selection correction models in Column (2) for the 1958 cohort and Column (4) for the 1970 cohort. It is again found that the earnings premium associated with a degree increased over time, from 18.5% to 22.7%, but this does not completely explain the increased earnings premium received by degree holders that we observed in Table 4.7 and Table 4.8.

Also noteworthy is the fact that the earnings premium associated with a Level 5 vocational qualification (such as in law, accountancy, medicine and dentistry) increased from 13.9% to 16.5%. Although not significant, the point estimate for the earnings premium associated with a higher degree also changes from negative to positive. These suggest that another reason for the increased earnings premium for degree holders is presumably the fact that some of them have further obtained a qualification at Level 5 which yields increasingly higher earnings premiums. This may be a sign of market differentiation among high qualification holders.

The earnings gap between those who achieved high GCSEs and those who only achieved low ones is indeed bigger for the 1970 cohort. This corroborates the previous evidence that the explanatory power for earnings of exam results at age 16 increased (Blanden et al., 2007). When higher skills were increasingly the norm, the determining or signalling power of GCSEs seems to have increased concurrently. The increasing portion of the total premium for A-levels can be explained by higher attainment at

GCSE level. As we have seen in Table 4.8, even with a Level 3 or higher vocational qualification, those men whose highest academic achievement is low GCSEs do not earn significantly higher than those with no qualifications. This has a strong implication for low achievers in compulsory education. For them, not only pursuing an additional post-GCSE qualification but also raising their GCSE outcomes should be further stressed.⁵⁵

In terms of vocational qualifications, the coefficients are not statistically significant at the 5% level apart from the Levels 3 and 5 qualifications. However, as I reviewed in Section 3.5 in Chapter 3, it is known from the previous research that Level 4 vocational qualifications could yield premiums (Dearden et al., 2002; McIntosh, 2004a), and a limitation of my approach may be that classifying vocational qualifications according to the NQF framework masks a within-level diversity of vocational qualifications. As this issue is beyond the scope of this thesis, useful references on the details about earnings premiums for vocational qualifications are, for instance, Dearden et al. (2002), McIntosh (2004a) and Jenkins et al. (2007).

Finally in this subsection, I additionally examine weekly earnings premiums. Labour income is determined not only by how much one can earn hourly but also by how many hours one works. The distribution of weekly earnings may better reflect income distribution than hourly earnings, and income mobility research, such as that by Blanden et al. (2004), uses weekly earnings as an outcome measure. As Table 4.11 shows, however, less educated men work longer hours per week, probably because they are trying to make up for their lower hourly earnings to boost their household income. It is not a policy goal to get people with low human capital to work more than the standard working hours in order to reduce their risk of falling into poverty. Policy needs to address expanding opportunities to develop their potential for earning more per hour, or increasing their take-home income through the tax and credit system if the market economy does not require additional human capital.

Again, I present both models with and without the selection correction term λ_i^E in Table 4.12. The influence of selection correction on the earnings premiums is slightly bigger for weekly earnings than hourly earnings, although it is again not significant for the 1958 cohort. Weekly earnings may be further affected by unobserved characteristics such as industriousness, which may also positively affect both qualification attainment

⁵⁵ These findings are replicated by using an alternative method of propensity score matching, as presented in the Appendix to this chapter.

and employment participation. I focus on the selection corrected models in Columns (2) and (4). As predicted, using weekly earnings slightly underestimates the potential earning power of qualifications, particularly at higher levels for the 1958 cohort, by comparing between Column (2) of Table 4.12 and Column (7) of Table 4.7. The no qualification group in the 1958 cohort is one of the groups who work for longest hours per week, and thus the relative earnings of the no qualification group is higher when weekly earnings are used.

However, the situation is slightly different for the 1970 cohort, by comparing between Column (4) of Table 4.12 and Column (7) of Table 4.8. The total premium for a degree is the same for weekly and hourly earnings. Although the no qualification group is still one of the groups who work the longest hours, the difference in hourly earnings may be far greater than working hours can counterbalance. Hourly earnings have a stronger implication for labour income for the more recent cohort.

4.6.2 Earnings Premiums Associated with Qualifications: Females

With respect to women, I report results of the OLS and selection correction models in Table 4.13 to Table 4.15. Table 4.13 and Table 4.14 show the main findings for the 1958 and 1970 cohorts respectively, and Table 4.15 is equivalent to Table 4.10 in which I use the alternative qualification variables. I conduct an analysis on the hourly earnings for full-time and part-time workers combined. Hourly earnings are, on average, higher for full-time workers than for part-time workers, but I do not control for employment status. Table 4.5 and Table 4.6 have shown that women with higher qualifications or those women who did not grow up in poverty are more likely to work full-time. The same logic is applied here as for not controlling for workplace characteristics, and netting out the intervening effects of qualifications and childhood poverty on the probability of working full-time may underestimate their effects on earnings.

In Table 4.13, the coefficient for the correction term for selection into employment λ_i^E is not significant for the 1958 cohort (Column (2)). As the main reason for the non-employment of women in their early thirties may be child rearing, their earning power may not have affected their selection into employment in the past. Table 4.14 shows that the coefficient for λ_i^E is significant at the 10% level, but the inclusion of this term scarcely changes the qualification coefficients. The correction terms for selection into education λ_{0i}^Q to λ_{6i}^Q are only significant for the 1958 cohort, but, contrary to prediction, the inclusion of the correction terms boosts estimated earnings premiums

(Column (3)). This implies that their educational attainment was largely determined by unobserved characteristics negatively associated with their earning power,⁵⁶ while educational attainment made a substantial difference in their actual earnings. Regardless of whether or not I leave the correction terms in the model, however, it is apparent that the total earnings premiums are generally greater for the 1958 cohort.

Therefore, I interpret Columns (3) of Table 4.13 and Column (1) of Table 4.14 for the final conclusion for women. For the 1958 cohort, the earnings premium associated with a degree is 136.4%, A-levels 105.7%, high GCSEs with a Level 3 or above vocational qualification 78.8%, high GCSEs with no or up to a Level 2 vocational qualification 47.5%, low GCSEs with a Level 3 or above vocational qualification 47.0%, and low GCSEs with no or up to a Level 2 vocational qualification 26.9%. For the 1970 cohort, the earnings premium associated with a degree is 68.5%, A-levels 33.8%, and high GCSEs with a Level 3 or above vocational qualification 21.4%. The other coefficients are not statistically significant at the 5% level. For the 1970 cohort, the earnings premiums for men and women are quite similar, apart from the fact that the earnings premium associated with a degree is somewhat greater for women, as Column (7) of Table 4.8 and Column (1) of Table 4.14 show.

With respect to changes over time, the change in the total earnings premiums associated with qualifications generally decreased for women, but the incremental premium for a degree remained almost the same. Table 4.15 based on the alternative qualification variables reinforces these findings, by comparing Column (2) and Column (3). Similarly to men, the incremental premium associated with a degree increased between the cohorts. The earnings gap between people with high and low GCSEs increased, but to a greater extent for women than for men. Contrary to the finding regarding men, the earnings premium for A-levels decreased for women. Level 4 vocational qualifications, which yield increasingly high earnings premiums for women in the 1970 cohort, include teaching and nursing qualifications. Despite the classification in this thesis, however, such qualifications are increasingly obtained through the academic route, and previous studies have reported that no other Level 4 vocational qualifications yield a similar level of earnings premium (Dearden et al.,

⁵⁶The positive coefficient for λ_{6i}^Q is counterintuitive, since λ_{6i}^Q is negatively associated with the probability of one obtaining a degree, which is usually expected to be negatively associated with earnings. Unsurprisingly, however, cognitive ability of the women in the 1958 cohort, as measured in early and mid childhood, was linearly associated with their qualification levels. Further validation of this finding will be a task for future research.

2002; Jenkins et al., 2007; McIntosh, 2004a). Thus it is inappropriate to argue based on this evidence that vocational qualifications at Level 4 in general are increasingly economically rewarding.

4.6.3 Preliminary Findings about the Effect of Childhood Poverty on Adult Earnings

I additionally draw attention to the residual effect of childhood poverty on adult earnings, remaining after controlling for the highest qualification obtained and other family and individual characteristics, although the task of investigating its effect will be deferred to the next chapter. For this purpose, I mainly examine the models without the selection correction into employment (λ_i^E) and the variables for work experience, that are Column (2) of Table 4.7 and Table 4.8 for men and Columns (4) of Table 4.13 and Table 4.14 for women.

As the descriptive statistics show in Table 4.3 to Table 4.6, childhood poverty is negatively correlated with both employment probability and earnings, and thus the inclusion of λ_i^E could reduce the coefficient for childhood poverty, although the models do not behave as expected for women (Table 4.13). However, considering the time order of the variables in question, controlling for employment probability may excessively net out the association between childhood poverty and adult earnings, when childhood poverty influences future earnings through influencing employment probability. As childhood poverty is measured by household income status, it is impossible for children's future employment probability to affect childhood poverty. The same logic applies to controlling for work experience, and thus I also do not control for this when highlighting the coefficient for childhood poverty.

Column (2) of Table 4.7 shows that the coefficient for childhood poverty is not statistically significant for men in the 1958 cohort. However, Column (2) of Table 4.8 shows that the negative coefficient for childhood poverty is significant for men in the 1970 cohort, controlling for qualifications and a set of individual and family characteristics. Earnings are lower for those men in the 1970 cohort who grew up in poverty than those who did not, by 7.1%. To see this in context, the size of this negative association is almost a quarter of that of the positive effect of getting a degree, which is 22.7% (Column (4) of Table 4.10).

For women, Columns (4) and (8) of Table 4.13 also show that the coefficient for childhood poverty is statistically significant only for the 1970 cohort, controlling for qualifications and a set of individual and family characteristics. Earnings are lower for

those women in the 1970 cohort who grew up in poverty than those who did not by 7.3%, which is similar to the finding regarding men. The effect of childhood poverty on adult earnings was mostly explained by the variables included in the models for the 1958 cohort, but it was not the case for the 1970 cohort for both genders.

Note that the coefficient for childhood poverty does not necessarily imply a causal effect of parental low income on children's earnings in adulthood. Even though I have controlled for several variables, it is still possible for the parent's unobserved characteristics to affect both their income and their children's earnings. However, it is striking that the residual effect of childhood poverty on adult earnings emerged only for the more recent cohort. Given that biological transmission, which social policy does not aim to affect, would be unlikely to have changed in only twelve years, this change over time may be relevant for social policy implications, which I will investigate in subsequent chapters.

4.6.4 The Changing or Unchanging Role of Education

Having estimated the earnings premiums associated with the highest qualification obtained for each cohort and gender, I finally investigate whether the role of education grew between the two cohorts in producing an earnings gap between those who grew up in poverty and those who did not. I calculate the following measure (4.13) for each cohort and gender to quantify the earnings gap across childhood poverty status that is attributable to the role of education.

$$\text{The earnings gap} = \sum_{j=0}^6 (\bar{q}_{jn} - \bar{q}_{jp}) \beta_j \quad (4.13)$$

where \bar{q}_{jn} is the expected proportion of people classified in each highest qualification group for those who did not grow up in poverty, and \bar{q}_{jp} is that for those who did. These expected values are reported in percentages in Table 4.2. β_j is the earnings regression coefficient for each highest qualification group, in which β_0 for the no qualification group is set at 0. As we did not find that the earnings premiums associated with qualification attainment are different across childhood poverty status (see Subsection 4.5.3), I use the same estimates of β_j for both those who grew up in poverty and those who did not. As β_j is estimated based on the log hourly earnings, the measure (4.13) is

interpreted as the percentage difference in hourly earnings between those who grew up in poverty and those who did not, on the condition that they have the same observed and unobserved characteristics apart from qualification attainment and that all of them are in employment.

Table 4.16 shows the results. The odd-number rows show the measures calculated using the OLS coefficients and the even-number rows show those based on the selectivity corrected coefficients for each gender and cohort.⁵⁷ Basically, the findings for men based on both measures and for women based on the OLS measures are similar. Since the estimated earnings premiums become much greater for women in the 1958 cohort when selection into education is corrected, the role of education is estimated to be stronger for them than for their younger counterpart. I focus on the selectivity-corrected measures for interpretation.

Row (2) shows the earnings gap between those who experienced poverty at least once and those who were never observed to be in poverty (the same variable as I have used in the analyses of this chapter). The percentage difference in earnings across childhood poverty status that is attributable to education is 9.2% for the men in the 1958 cohort, 7.5% for the men in the 1970 cohort, 23.6% for the women in the 1958 cohort and 10.9% for the women in the 1970 cohort. This suggests that the role of education did not increase for men and decreased for women.

For reassurance, I use an alternative variable for childhood poverty that identifies those observed to have lived in poverty twice in childhood, thus presumed to have been in more severe poverty, and examine the earnings gap between them and the others that is attributable to education in Row (4).⁵⁸ The percentage difference in earnings that is attributable to education is 11.0% for the men in the 1958 cohort, 10.3% for the men in the 1970 cohort, 30.3% for the women in the 1958 cohort and 12.8% for the women in the 1970 cohort. This again suggests that the role of education did not increase for men and decreased for women.

These findings do not fit the expectation found in previous studies regarding income mobility which use the variable for household income measured at age 16

⁵⁷ The qualification coefficients used to calculate the measures of the earnings gap are those reported in Columns (6) and (7) of Table 4.7 and Table 4.8 for men and Columns (1) and (3) of Table 4.13 and Table 4.14 for women. To correct selectivity, selection into employment is corrected for men and selection into education is corrected for women.

⁵⁸ \bar{q}_{jn} and \bar{q}_{jp} are obtained by creating a crosstab between qualification attainment by the alternative poverty variable, although these are not presented in this thesis. The same is applied to the other variables for 'poverty' that are subsequently used. When the variable for household income groups is used, the expected values for the lower-income group are used as \bar{q}_{jp} .

(Blanden and Gregg, 2004; Blanden et al., 2005a; Blanden et al., 2007). I have measured childhood poverty by using not only the household income at age 16 but also the other indicators of low income measured in mid childhood and at age 16. To see if this is simply because of the difference in the variables used in the previous studies and this chapter, I will examine the earnings gap between the groups in terms of household income at age 16.

Row (6) shows the earnings gap that is attributable to education between those who grew up in income poverty (with a household income below 60% of the median household income) at age 16 and those who did not. The percentage difference is 9.0% for the men in the 1958 cohort, 8.8% for the men in the 1970 cohort, 22.6% for the women in the 1958 cohort and 13.5% for the women in the 1970 cohort. The finding is almost the same as that reported in Row (2).

Alternatively, I look at the earnings gap between the relative positions in the household income distribution. While the variables for poverty used so far measure the low standard of living relative to one's contemporaries, the variables for the relative income positions measure the situation of being low or high in the income ranking. The standard of living for those standing at the bottom is relatively higher in a society with smaller income inequality, and relatively lower in one with greater income inequality. It follows that the standard of living of the bottom quartile group relative to that of the other quartile groups in the 1958 cohort is higher than that of the bottom quartile group relative to that of the other quartile groups in the 1970 cohort, as inequality in the household income at age 16 is greater for the 1970 cohort.

Rows (8), (10) and (12) show the earnings gap that is attributable to education between those from the bottom quartile group and those from the higher quartile groups in terms of household income at age 16, between those from the bottom half group and those from the top half group, and between those from the lower three quartile groups and top quartile group, respectively. For men, contrary to the findings based on the variables for poverty, all of these rows show that the role of education in producing the earnings gap increased, from between 0.069 and 0.085 to between 0.012 and 0.113 for men. This result is in line with the previous studies on income mobility for men. Blanden et al. (2007) conducted variance decomposition using the continuous variable for household income, but the result does not seem to be sensitive to the method. Little has been known about women in this regard, but Rows (8), (10) and (12) continue to show that the role of education decreased for women.

Taken together, changes over time in the role of education can be different for intergenerational persistence of income (or relative income positions) and that of poverty specifically. The role of education did not increase in producing an earnings gap between those who grew up in poverty and those who did not for men, and may have even decreased for women. For men, it may be counterintuitive, given that the earnings premium associated with a degree increased. The following two reasons could be suggested. Firstly, although the inequality in qualification attainment remains wide, the increases in the numbers of those who obtained A-levels, a degree, and a Level 3 or higher vocational qualification are slightly greater for those who grew up in poverty. Secondly, although the inequality at higher levels of education is often highlighted, the impact of the decrease in the proportions of people with no or only low qualifications may be more substantial for those who grew up in poverty.

For women, it may be unsurprising that the role of education decreased, as the earnings premium associated with qualification attainment decreased between the cohorts, although the increase in the number of people with a degree is greater for those who did not grow up in poverty. As discussed in Subsection 4.2.2, considering the impact of the NMW, it is possible that women's earnings premiums associated with qualification attainment are found to be smaller for the 1970 cohort. Since women are more likely to be in low-paid jobs than men, two-thirds of the beneficiaries of the NMW are women (Low Pay Commission, 2004). Nonetheless, it can be questioned whether the scale of the decrease in estimated earnings premiums are reasonable, given that the impact of correcting for selection into education was counterintuitive for women in the 1958 cohort. Future research should validate the change experienced by women. Therefore, this chapter will not stress the finding for women that the role of education decreased, but it is still fair to conclude that it does not seem to have increased.

The importance of the role played by education in the intergenerational persistence of poverty appears to be at most the same for the 1958 and 1970 cohorts, while educational inequality is still one of the important determinants. The main driving force of the increased intergenerational persistence of poverty between these cohorts seems to be something other than educational inequality. The effect of childhood poverty on adult earnings remained only for the younger cohort, after controlling for educational attainment and other variables. This residual effect of childhood poverty is likely to be such a driving force.

4.7 Conclusions

By comparing the 1958 and 1970 cohorts, I have investigated whether formal education became more economically rewarding in the UK in the recent past, and whether this increasing reward, if any, is the reason for the strengthened intergenerational persistence of poverty. In addition to the descriptive findings reported in Subsection 4.4.4, that earnings inequality increased between those who grew up in poverty and those who did not, I have found the following evidence based on the regression analyses.

- For men, regardless of whether or not we correct for selection bias into employment, the regression analyses show that the total and incremental earnings premium associated with a degree increased between the 1958 and 1970 cohorts. The incremental premium for A-levels remained almost the same, while the determining or signalling power of high GCSEs increased for both academically and vocationally oriented men (Table 4.7, Table 4.8 and Table 4.10).
- Since men with lower qualifications tend to work for longer hours per week, using weekly earnings is inclined to attenuate the earnings premium associated with a degree for men in the 1958 cohort. However, despite this fact, the hourly and weekly earnings premiums are almost the same for men in the 1970 cohort (Table 4.12).
- For women, based on the regression analyses of hourly earnings, correcting for the selection bias into qualification attainment, the total earnings premium associated with a degree decreased while the incremental premium remained almost the same. In terms of the incremental premiums for A-levels and for high GCSEs, the trend is similar to men, with the former having decreased and the latter having increased (Table 4.13 to Table 4.15).
- After controlling for qualifications, individual and family characteristics, the negative effect of childhood poverty on adult earnings remains for both genders in the 1970 cohort (Table 4.7, Table 4.8, Table 4.13 and Table 4.14).
- I finally examined whether the role of formal education increased in generating the earnings gap between those who grew up in poverty and those who did not, by considering these estimated earnings premiums and the observed qualification inequality jointly. There is no evidence that it increased for either gender (Table 4.16).

The main finding is that the role of education did not increase in explaining the earnings gap between those who grew up in poverty and those who did not. The previous research on income mobility argued the role of education increased (Blanden and Gregg, 2004; Blanden et al., 2005a; Blanden et al., 2007), while that on persistence of poverty suggested that it did not, by looking at adult non-employment. This chapter which focuses on adult earnings supports the latter, and therefore the difference in the findings seems to depend on whether we focus on intergenerational persistence of income or that of poverty. This suggests that the findings based on intergenerational income mobility are not necessarily applicable to intergenerational persistence of poverty. The residual association between childhood poverty and adult earnings, found only for the 1970 cohort, after controlling for educational attainment, may be a reason for the increased intergenerational persistence of poverty over time.

With respect to the earnings premium associated with a degree, I have replicated the findings which are consistent with some studies for men (Conlon, 2001a; Machin, 2003), although comparable evidence is scarce for women. However, what previous studies have not highlighted but what my findings stress is that the incremental earnings premium for high GCSEs increased. Obtaining A-levels is associated with attaining high GCSEs and, if one does not go on to obtain a degree, a large portion of their total earnings premium can already be explained by their GCSE attainment for the younger cohort. This seems to be true even when they obtain a Level 3 or higher vocational qualification. Ensuring greater equality in attainment through compulsory education could be further addressed in this respect. Otherwise, it may be less economically beneficial than expected simply to persuade teenagers to stay on in education longer in terms of their future potential earnings, although education participation per se may bring some positive outcomes in other aspects of their lives. In any case, more equality in attainment in compulsory education would also help improve education participation and attainment at later stages.

Although it is impossible for public policy to intervene in every transmission mechanism operating between parents and children, the differences between the cohorts suggest that some transmission mechanisms do not always have the same negative consequences and are easier to tackle. On the other hand, the similarities between the cohorts imply those that are harder to alleviate. From this point of view, public policy that would best reduce the residual effect of childhood poverty on adult earnings

remaining only for the 1970 cohort could improve the future life chances of children growing up in poverty. The later chapters will investigate this residual association.

The different pictures provided by the intergenerational persistence of poverty and income mobility may suggest that strategies for helping the most disadvantaged and the relatively disadvantaged differ. There may be several perspectives for evaluating which strategy should be given priority. However, considering that promoting social and income mobility would be most worthwhile if it could improve the future life chances of those children growing up in poverty, the evidence regarding intergenerational persistence of poverty rather than that of income mobility may suggest those areas that public policy should address more immediately.

Table 4.1 Summary of previous research on the earnings premiums for qualifications: males only

Panel 1						Dearden et			
	Sianesi (2003)		Blundell et al. (2005)			(2004a)			
Year	1991	2000	1991	1991	1991	2000			
No quals	Ref	Ref	Ref						
Low GCSEs	0.152	0.011	–						
High GCSEs	0.217	0.091	0.178	Ref		} Ref			
A-levels	0.282	0.194	0.238	–	Ref				
Degree	0.457	0.344	0.513	0.297	0.217		0.142		
Age	33	30	33	33	33	30			
Data	NCDS	BCS	NCDS	NCDS	NCDS	BCS			
Method	OLS	OLS	PSM	PSM	PSM	PSM			
Panel 2									
	Conlon (2001a)		McIntosh (2004a)		Machin (2003)				
Year	1993	1998	1997	2002	1990	1998	1995	2000	2002
No quals	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Low GCSEs	0.139	0.174	0.063	0.069	–	–	–	–	–
High GCSEs	0.237	0.309	0.318	0.246	–	–	–	–	–
A-levels	0.531	0.513	0.460 #	0.451 #	–	–	–	–	–
Degree	0.560	0.675	0.714 #	0.703 #	0.628	0.717	0.748	0.802	0.744
Age	16-59	16-59	31-35	31-35	All	All	All	All	All
Data	LFS	LFS	LFS	LFS	GHS	GHS	LFS	LFS	LFS
Method	IV	IV	OLS	OLS	OLS	OLS	OLS	OLS	OLS

Notes:

1. Ref denotes a reference category. PSM denotes propensity score matching, while IV denotes an instrumental variable approach. ‘Low GCSEs’ include those at grades D-F, and ‘High GCSEs’ include those at grades A-C. See Subsection 4.2.2 for the names of the datasets.

2. The values are the total earnings premiums associated with one’s highest qualification which are for both academic and equivalent vocational qualifications in Panel 1 and for only academic qualifications in Panel 2.

3. McIntosh (2004a) originally reported incremental premiums for each qualification, and I summed them up to obtain the values marked with #. (Degree = Degree + A-levels + High GCSEs, and A-level = A-levels + High GCSEs). Also, the values extracted from McIntosh (2004a) are on the high side, since ‘High GCSEs’ stands for 5 or more GCSEs A-C and A-level stands for 2 or more A-levels. The estimates are of hourly earnings, except for those based on the GHS in Machin (2003), which are of weekly earnings.

Table 4.2 The highest qualification obtained by childhood poverty status (%): NCDS at age 33 and BCS at age 34

	Males			Females		
	Childhood poverty			Childhood poverty		
	No	Yes	All	No	Yes	All
NCDS						
0. No qualification	6.7	20.8	10.5	7.5	26.0	12.7
1. Low GCSEs with no or low Voc	16.3	25.1	18.6	15.3	22.0	17.2
2. Low GCSEs with higher Voc	6.8	7.8	7.0	1.2	1.7	1.3
3. High GCSEs with no or low Voc	22.7	23.6	22.9	35.7	30.1	34.1
4. High GCSEs with higher Voc	16.4	11.6	15.1	10.5	7.2	9.5
5. A-levels	13.4	6.1	11.5	17.1	8.3	14.6
6. Degree	17.7	5.1	14.4	12.8	4.7	10.6
Total (n)	2,767	1,001	3,768	2,870	1,112	3,982
BCS						
0. No qualification	2.7	8.0	4.4	2.6	7.9	4.4
1. Low GCSEs with no or low Voc	7.5	14.0	9.6	8.0	15.3	10.4
2. Low GCSEs with higher Voc	10.4	13.7	11.4	4.7	6.8	5.4
3. High GCSEs with no or low Voc	13.4	16.1	14.2	18.3	21.1	19.3
4. High GCSEs with higher Voc	22.3	19.0	21.2	18.6	17.8	18.4
5. A-levels	17.0	13.8	16.0	20.8	17.1	19.6
6. Degree	26.8	15.5	23.2	26.9	14.0	22.6
Total (n)	1,797	860	2,657	2,130	1,060	3,190
Percentage points difference (BCS - NCDS)						
0. No qualification	-4.0	-12.8	-6.0	-4.9	-18.1	-8.3
1. Low GCSEs with no or low Voc	-8.8	-11.1	-9.0	-7.3	-6.8	-6.7
2. Low GCSEs with higher Voc	3.6	5.9	4.4	3.6	5.1	4.1
3. High GCSEs with no or low Voc	-9.3	-7.5	-8.7	-17.4	-9.0	-14.9
4. High GCSEs with higher Voc	5.9	7.4	6.1	8.2	10.6	8.8
5. A-levels	3.6	7.8	4.5	3.7	8.8	4.9
6. Degree	9.1	10.4	8.8	14.1	9.3	12.1

Table 4.3 Mean hourly and weekly earnings (£) by the highest qualification obtained and childhood poverty status: NCDS

	NCDS males at age 33									
	Mean				S.D.			n		
	Childhood poverty				Childhood poverty			Childhood poverty		
	No	Yes		All	No	Yes	All	No	Yes	All
Hourly earnings (excluding outliers)										
0. No qualification	5.31	5.06		5.18	2.08	1.91	1.99	99	109	208
1. Low GCSEs with no or low Voc	6.42	6.10		6.31	2.39	2.47	2.42	273	140	413
2. Low GCSEs with higher Voc	6.71	6.84		6.75	2.33	1.76	2.17	124	54	178
3. High GCSEs with no or low Voc	7.00	6.85		6.96	2.61	2.53	2.59	433	145	578
4. High GCSEs with higher Voc	8.00	7.41	+	7.87	2.75	2.68	2.74	333	88	421
5. A-levels	9.22	8.17	+	9.07	3.59	4.08	3.67	278	46	324
6. Degree	10.30	9.23	+	10.20	3.35	3.16	3.34	384	38	422
All	7.96	6.69	**	7.65	3.26	2.79	3.20	1924	620	2544
Ratio of the mean earnings	1.191									
Weekly earnings (excluding outliers)										
0. No qualification	230.8	233.1		232.1	87.5	102.1	95.3	99	111	210
1. Low GCSEs with no or low Voc	289.5	266.5	+	281.7	117.4	112.0	116.0	280	143	423
2. Low GCSEs with higher Voc	291.8	302.8		295.1	100.9	91.0	97.9	126	55	181
3. High GCSEs with no or low Voc	301.7	297.5		300.6	119.5	120.0	119.6	435	151	586
4. High GCSEs with higher Voc	347.9	314.5	*	340.9	124.0	114.7	122.7	333	89	422
5. A-levels	397.6	343.4	*	389.9	169.6	166.1	169.9	284	47	331
6. Degree	433.5	385.6	+	429.1	150.7	142.1	150.4	386	39	425
All	343.8	290.9	**	330.8	145.6	123.9	142.4	1943	635	2578
Ratio of the mean earnings	1.182									

Table 4.3 Continued

	NCDS females at age 33									
	Mean			S.D.			n			
	Childhood poverty			Childhood poverty			Childhood poverty			
	No	Yes	All	No	Yes	All	No	Yes	All	
Hourly earnings (excluding outliers)										
0. No qualification	3.55	3.47		3.51	1.14	1.26	1.21	95	116	211
1. Low GCSEs with no or low Voc	4.13	3.86	**	4.03	1.59	1.35	1.51	227	121	348
2. Low GCSEs with higher Voc	6.04	4.97		5.73	3.00	2.46	2.85	19	8	27
3. High GCSEs with no or low Voc	4.86	4.75		4.83	2.14	2.06	2.12	556	193	749
4. High GCSEs with higher Voc	6.25	5.88		6.17	2.12	2.85	2.30	185	54	239
5. A-levels	7.24	7.06		7.21	2.89	3.04	2.91	275	64	339
6. Degree	8.62	7.81		8.51	3.00	2.32	2.93	221	35	256
All	5.78	4.85	**	5.53	2.81	2.47	2.75	1596	598	2194
Ratio of the mean earnings	1.191									
Weekly earnings (excluding outliers)										
0. No qualification	87.8	92.2		90.2	63.6	65.7	64.7	96	119	215
1. Low GCSEs with no or low Voc	116.2	106.8		112.9	80.7	75.8	79.0	230	121	351
2. Low GCSEs with higher Voc	175.4	173.9		175.0	115.5	108.5	111.4	19	8	27
3. High GCSEs with no or low Voc	143.9	142.7		143.6	104.9	103.6	104.5	564	194	758
4. High GCSEs with higher Voc	190.3	156.7	*	182.8	102.1	85.6	99.4	187	54	241
5. A-levels	233.4	234.7		233.6	134.0	128.3	132.7	277	66	343
6. Degree	291.1	294.0		291.5	141.8	108.0	137.5	227	35	262
All	178.1	145.3	**	169.2	127.0	108.6	123.1	1618	604	2222
Ratio of the mean earnings	1.226									

Notes: ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (t-test for H_0 : The population difference in earnings between non-poor and poor groups is 0.)

Table 4.4 Mean hourly and weekly earnings (£) by the highest qualification obtained and childhood poverty status: BCS

	BCS males at age 34									
	Mean				S.D.			n		
	Childhood poverty				Childhood poverty			Childhood poverty		
	No	Yes		All	No	Yes	All	No	Yes	All
Hourly earnings (excluding outliers)										
0. No qualification	9.62	7.70	*	8.49	4.11	2.41	3.32	23	33	56
1. Low GCSEs with no or low Voc	10.52	8.18	**	9.40	5.11	3.20	4.45	84	77	161
2. Low GCSEs with higher Voc	10.61	9.25	*	10.12	4.73	3.23	4.29	124	71	195
3. High GCSEs with no or low Voc	11.71	9.96	*	11.14	5.94	4.88	5.67	179	86	265
4. High GCSEs with higher Voc	13.10	10.99	**	12.51	6.69	5.33	6.40	288	112	400
5. A-levels	14.68	12.38	**	14.06	6.77	6.02	6.65	238	87	325
6. Degree	18.95	17.52		18.64	8.46	8.31	8.44	376	103	479
All	14.41	11.44	**	13.51	7.58	6.33	7.35	1312	569	1881
Ratio of the mean earnings	1.260									
Weekly earnings (excluding outliers)										
0. No qualification	438.4	342.1		380.3	309.2	126.9	220.8	23	35	58
1. Low GCSEs with no or low Voc	443.8	375.8	*	411.8	198.4	171.1	188.6	88	78	166
2. Low GCSEs with higher Voc	462.3	396.8	**	437.7	174.0	124.6	160.2	128	77	205
3. High GCSEs with no or low Voc	499.1	454.7		484.4	262.0	273.4	266.1	182	90	272
4. High GCSEs with higher Voc	554.6	481.9	**	534.5	269.8	231.5	261.5	300	115	415
5. A-levels	585.8	491.2	*	560.1	256.4	227.8	252.2	241	90	331
6. Degree	753.5	676.7	*	737.2	339.3	284.2	329.6	379	102	481
All	590.8	479.4	*	556.9	298.5	246.4	288.2	1341	587	1928
Ratio of the mean earnings	1.232									

Table 4.4 Continued

	BCS females at age 34									
	Mean			S.D.			n			
	Childhood poverty			Childhood poverty			Childhood poverty			
	No	Yes	All	No	Yes	All	No	Yes	All	
Hourly earnings (excluding outliers)										
0. No qualification	6.65	6.20		6.37	2.60	2.83	2.74	24	41	65
1. Low GCSEs with no or low Voc	8.14	6.28	*	7.23	6.19	3.18	5.03	88	84	172
2. Low GCSEs with higher Voc	8.16	8.12		8.14	3.15	4.43	3.68	54	35	89
3. High GCSEs with no or low Voc	8.96	8.15		8.69	5.52	3.50	4.94	219	112	331
4. High GCSEs with higher Voc	9.82	9.59		9.75	5.32	5.43	5.35	240	115	355
5. A-levels	11.77	10.53	+	11.44	5.84	5.21	5.70	294	107	401
6. Degree	15.62	14.10	*	15.28	6.82	6.67	6.81	377	109	486
All	11.56	9.53	**	10.92	6.55	5.50	6.31	1296	603	1899
Ratio of the mean earnings	1.214									
Weekly earnings (excluding outliers)										
0. No qualification	174.6	156.6		163.4	118.2	112.6	114.2	25	41	66
1. Low GCSEs with no or low Voc	233.8	166.3	*	201.2	236.6	105.5	187.8	92	86	178
2. Low GCSEs with higher Voc	231.3	238.3		233.9	148.2	205.1	170.8	58	35	93
3. High GCSEs with no or low Voc	263.4	244.1		256.9	208.4	146.5	189.9	225	114	339
4. High GCSEs with higher Voc	311.4	294.9		306.1	214.3	219.0	215.7	250	118	368
5. A-levels	377.6	327.7	*	364.0	217.0	215.6	217.5	302	114	416
6. Degree	536.3	441.6	**	515.0	285.1	214.5	273.5	383	111	494
All	371.4	287.7	**	344.9	261.0	206.4	248.0	1335	619	1954
Ratio of the mean earnings	1.291									

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (t-test for H_0 : The population difference in earnings between non-poor and poor groups is 0).

Table 4.5 Employment status by the highest qualification obtained and childhood poverty status (%): NCDS

	NCDS males at age 33				NCDS females at age 33			
	Full-time	Part-time	Not work	Total(n)	Full-time	Part-time	Not work	Total(n)
No childhood poverty								
0. No qualification	79.5	0.0	20.5	185	21.4	35.4	43.3	215
1. Low GCSEs with no or low Voc	91.3	0.5	8.3	448	27.9	35.9	36.2	437
2. Low GCSEs with higher Voc	96.8	0.5	2.7	187	36.4	33.3	30.3	33
3. High GCSEs with no or low Voc	93.4	0.8	5.8	625	34.0	35.3	30.7	1,016
4. High GCSEs with higher Voc	93.6	1.1	5.3	451	44.9	32.7	22.5	294
5. A-levels	94.9	1.9	3.3	369	44.7	27.3	28.0	483
6. Degree	95.3	1.2	3.5	486	53.9	22.8	23.4	364
All	92.9	1.0	6.1	2,751	37.6	32.2	30.2	2,842
Childhood poverty								
0. No qualification	69.2	0.5	30.3	208	23.3	28.8	47.9	288
1. Low GCSEs with no or low Voc	82.5	2.0	15.5	251	31.0	36.7	32.2	245
2. Low GCSEs with higher Voc	91.0	0.0	9.0	78	44.4	11.1	44.4	18
3. High GCSEs with no or low Voc	85.5	1.7	12.8	235	37.1	34.1	28.7	334
4. High GCSEs with higher Voc	94.8	0.9	4.4	115	38.5	41.0	20.5	78
5. A-levels	90.2	1.6	8.2	61	57.8	21.1	21.1	90
6. Degree	94.0	4.0	2.0	50	67.3	15.4	17.3	52
All	83.6	1.4	15.0	998	35.5	31.5	33.0	1,105

Notes: Full-time students are excluded.

Table 4.6 Employment status by the highest qualification obtained and childhood poverty status (%): BCS

	BCS males at age 34				BCS females at age 34			
	Full-time	Part-time	Not work	Total(n)	Full-time	Part-time	Not work	Total(n)
No childhood poverty								
0. No qualification	72.9	10.4	16.7	48	20.4	38.9	40.7	54
1. Low GCSEs with no or low Voc	88.8	3.0	8.2	134	32.0	36.1	32.0	169
2. Low GCSEs with higher Voc	92.5	0.5	7.0	186	37.6	43.6	18.8	101
3. High GCSEs with no or low Voc	94.2	1.7	4.2	240	32.3	39.5	28.2	390
4. High GCSEs with higher Voc	96.5	1.0	2.5	400	46.6	30.0	23.4	397
5. A-levels	94.8	1.6	3.6	306	51.9	30.5	17.6	443
6. Degree	94.0	2.1	3.9	482	60.8	21.3	17.8	572
All	93.6	1.8	4.6	1,796	46.7	30.9	22.5	2,126
Childhood poverty								
0. No qualification	80.6	1.5	17.9	67	21.4	36.9	41.7	84
1. Low GCSEs with no or low Voc	85.0	1.7	13.3	120	25.5	39.1	35.4	161
2. Low GCSEs with higher Voc	82.2	1.7	16.1	118	26.4	41.7	31.9	72
3. High GCSEs with no or low Voc	86.2	2.2	11.6	138	33.0	34.8	32.1	224
4. High GCSEs with higher Voc	93.9	0.6	5.5	163	43.4	33.9	22.8	189
5. A-levels	84.9	3.4	11.8	119	40.9	35.9	23.2	181
6. Degree	89.5	1.5	9.0	133	62.8	24.3	12.8	148
All	86.8	1.8	11.4	858	37.9	34.7	27.5	1,059

Notes: Full-time students are excluded

Table 4.7 Coefficients from regressions on log hourly earnings: NCDS males at age 33

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0. No qualification	Ref	Ref	Ref	Ref	Ref	Ref	Ref
1. Low GCSEs with no or low Voc	0.175** (0.026)	0.077* (0.037)	0.150** (0.026)	0.164** (0.026)	0.032 (0.035)	0.039 (0.037)	0.025 (0.040)
2. Low GCSEs with higher Voc	0.250** (0.032)	0.194** (0.042)	0.218** (0.032)	0.235** (0.032)	0.139** (0.040)	0.155** (0.041)	0.141** (0.045)
3. High GCSEs with no or low Voc	0.273** (0.025)	0.150** (0.038)	0.248** (0.026)	0.269** (0.025)	0.123** (0.035)	0.121** (0.037)	0.115** (0.040)
4. High GCSEs with higher Voc	0.409** (0.026)	0.246** (0.040)	0.381** (0.027)	0.391** (0.026)	0.198** (0.037)	0.214** (0.039)	0.196** (0.042)
5. A-levels	0.517** (0.029)	0.320** (0.047)	0.534** (0.030)	0.507** (0.029)	0.336** (0.045)	0.346** (0.047)	0.328** (0.053)
6. Degree	0.641** (0.026)	0.428** (0.044)	0.707** (0.028)	0.630** (0.026)	0.507** (0.043)	0.518** (0.045)	0.498** (0.052)
Childhood poverty		-0.025 (0.022)			-0.030 (0.021)	-0.026 (0.021)	-0.023 (0.023)
Inverse Mills ratio λ_i^E							-0.007 (0.121)
Ethnicity	No	Yes	No	No	Yes	Yes	Yes
Number of siblings	No	Yes	No	No	Yes	Yes	Yes
Father's social class	No	Yes	No	No	Yes	Yes	Yes
Mother's education	No	Yes	No	No	Yes	Yes	Yes
Cognitive ability	No	Yes	No	No	Yes	Yes	Yes
Work experience	No	No	Yes	No	Yes	Yes	Yes
Size and type of workplace	No	No	No	Yes	Yes	No	No
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	3650	1837	3634	3610	1819	1835	1683
Adjusted R-squared	0.26	0.26	0.28	0.30	0.33	0.29	0.29

Notes: Robust standard errors in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table 4.8 Coefficients from regressions on log hourly earnings: BCS males at age 34

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0. No qualification	Ref	Ref	Ref	Ref	Ref	Ref	Ref
1. Low GCSEs with no or low Voc	0.064 (0.040)	0.060 (0.069)	0.058 (0.039)	0.080* (0.040)	0.067 (0.072)	0.053 (0.070)	0.057 (0.070)
2. Low GCSEs with higher Voc	0.134** (0.041)	0.105 (0.067)	0.121** (0.040)	0.150** (0.041)	0.099 (0.070)	0.081 (0.068)	0.104 (0.068)
3. High GCSEs with no or low Voc	0.179** (0.040)	0.143* (0.066)	0.164** (0.040)	0.198** (0.040)	0.135* (0.069)	0.124+ (0.067)	0.110 (0.067)
4. High GCSEs with higher Voc	0.305** (0.037)	0.280** (0.064)	0.290** (0.037)	0.313** (0.038)	0.258** (0.067)	0.255** (0.065)	0.230** (0.066)
5. A-levels	0.429** (0.039)	0.344** (0.066)	0.436** (0.039)	0.439** (0.040)	0.340** (0.069)	0.340** (0.067)	0.321** (0.067)
6. Degree	0.687** (0.038)	0.573** (0.066)	0.787** (0.040)	0.684** (0.038)	0.644** (0.071)	0.657** (0.069)	0.590** (0.073)
Childhood poverty		-0.071** (0.025)			-0.056* (0.025)	-0.058* (0.025)	-0.042 (0.027)
Inverse Mills ratio λ_i^E							-0.357* (0.163)
Ethnicity	No	Yes	No	No	Yes	Yes	Yes
Number of siblings	No	Yes	No	No	Yes	Yes	Yes
Father's social class	No	Yes	No	No	Yes	Yes	Yes
Mother's education	No	Yes	No	No	Yes	Yes	Yes
Cognitive ability	No	Yes	No	No	Yes	Yes	Yes
Work experience	No	No	Yes	No	Yes	Yes	Yes
Size and type of workplace	No	No	No	Yes	Yes	No	No
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	3046	1425	3046	3035	1421	1425	1361
Adjusted R-squared	0.28	0.31	0.30	0.31	0.35	0.33	0.32

Notes: Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table 4.9 Coefficients from regressions on log hourly earnings: NCDS males at age 33 and BCS males at ages 30 and 34

	(1) NCDS 33	(2) BCS 30	(3) BCS 34
0. No qualification	Ref	Ref	Ref
1. Low GCSEs with no or low Voc	0.058 (0.039)	-0.005 (0.054)	0.048 (0.067)
2. Low GCSEs with higher Voc	0.163** (0.045)	0.075 (0.058)	0.107+ (0.063)
3. High GCSEs with no or low Voc	0.134** (0.040)	0.040 (0.054)	0.118+ (0.064)
4. High GCSEs with higher Voc	0.214** (0.042)	0.139* (0.057)	0.232** (0.062)
5. A-levels	0.353** (0.053)	0.285** (0.073)	0.334** (0.064)
6. Degree	0.517** (0.054)	0.391** (0.077)	0.594** (0.070)
Childhood poverty	-0.029 (0.024)	-0.074** (0.028)	-0.054* (0.027)
Inverse Mills ratio λ_i^E	0.031 (0.117)	-0.424** (0.135)	-0.345* (0.153)
Ethnicity	Yes	Yes	Yes
Number of siblings	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes
Work experience	Yes	Yes	Yes
Size and type of workplace	No	No	No
Region	No	No	No
Sample size	1683	1690	1361
Adjusted R-squared	0.25	0.18	0.27

Notes: Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 4.10 Coefficients from regressions on log hourly earnings (alternative qualification variables): NCDS males at age 33 and BCS males at age 34

	(1) NCDS33	(2) NCDS33	(3) BCS34	(4) BCS34
Low GCSEs	0.011 (0.017)	0.008 (0.018)	-0.047* (0.024)	-0.036 (0.024)
High GCSEs	0.056** (0.020)	0.054** (0.021)	0.136** (0.030)	0.100** (0.032)
A-levels/Diploma	0.181** (0.030)	0.173** (0.033)	0.160** (0.029)	0.157** (0.030)
Degree	0.197** (0.030)	0.185** (0.032)	0.282** (0.035)	0.227** (0.040)
Higher Degree	-0.100 (0.078)	-0.092 (0.080)	0.041 (0.054)	0.041 (0.055)
Vocational Level 1	-0.016 (0.022)	-0.005 (0.023)	-0.034 (0.023)	-0.031 (0.024)
Vocational Level 2	0.025 (0.022)	0.008 (0.023)	0.007 (0.025)	0.007 (0.026)
Vocational Level 3	0.017 (0.021)	0.021 (0.022)	0.051* (0.023)	0.050* (0.023)
Vocational Level 4	0.059* (0.028)	0.056+ (0.029)	0.030 (0.029)	0.038 (0.031)
Vocational Level 5	0.152** (0.029)	0.139** (0.031)	0.162** (0.039)	0.165** (0.040)
Inverse Mills ratio λ_i^E		-0.101 (0.115)		-0.428** (0.158)
Childhood poverty	Yes	Yes	Yes	Yes
Ethnicity	Yes	Yes	Yes	Yes
Number of siblings	Yes	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes	Yes
Work experience	Yes	Yes	Yes	Yes
Size and type of workplace	No	No	No	No
Region	Yes	Yes	Yes	Yes
Sample size	1835	1683	1428	1360
Adjusted R-squared	0.29	0.29	0.35	0.34

Notes: Robust standard errors in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table 4.11 Hours worked per week: NCDS males at age 33 and BCS males at age 34

	Mean		S.D.	Min	Max	n
NCDS						
0. No qualification	45.0	Ref	11.2	9	90	432
1. Low GCSEs with no or low Voc	45.5		10.4	3	97	773
2. Low GCSEs with higher Voc	44.3		9.3	22	96	278
3. High GCSEs with no or low Voc	43.9	+	9.5	4	97	942
4. High GCSEs with higher Voc	43.7	+	9.8	5	97	639
5. A-levels	43.5	*	9.8	10	90	520
6. Degree	43.3	**	9.7	20	99	640
BCS						
0. No qualification	43.7	Ref	11.4	15	82	139
1. Low GCSEs with no or low Voc	44.9		10.2	10	94	330
2. Low GCSEs with higher Voc	44.7		9.6	12	100	360
3. High GCSEs with no or low Voc	43.4		8.8	15	85	464
4. High GCSEs with higher Voc	44.3		9.2	3	92	717
5. A-levels	41.4	*	8.8	3	80	352
6. Degree	41.2	**	8.8	8	104	984

Notes: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (t-test for H_0 : The number of hours worked per week for each qualification group is not different from that for the no qualification group.)

Table 4.12 Coefficients from regressions on log weekly earnings: NCDS males at age 33 and BCS males at age 34

	(1) NCDS33	(2) NCDS33	(3) BCS34	(4) BCS34
0. No qualification	Ref	Ref	Ref	Ref
1. Low GCSEs with no or low Voc	0.035 (0.041)	0.006 (0.045)	0.095 (0.092)	0.097 (0.092)
2. Low GCSEs with higher Voc	0.137** (0.043)	0.096+ (0.049)	0.134 (0.089)	0.146 (0.089)
3. High GCSEs with no or low Voc	0.095* (0.040)	0.070 (0.044)	0.154+ (0.089)	0.133 (0.089)
4. High GCSEs with higher Voc	0.192** (0.041)	0.159** (0.045)	0.278** (0.087)	0.234** (0.087)
5. A-levels	0.302** (0.047)	0.263** (0.053)	0.318** (0.090)	0.285** (0.089)
6. Degree	0.468** (0.048)	0.420** (0.056)	0.678** (0.091)	0.585** (0.093)
Childhood poverty	-0.024 (0.024)	-0.021 (0.024)	-0.037 (0.025)	-0.015 (0.028)
Inverse Mills ratio λ_i^E		-0.118 (0.165)		-0.472* (0.209)
Ethnicity	Yes	Yes	Yes	Yes
Number of siblings	Yes	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes	Yes
Work experience	Yes	Yes	Yes	Yes
Size and type of workplace	No	No	No	No
Region	Yes	Yes	Yes	Yes
Sample size	1856	1704	1467	1400
Adjusted R-squared	0.26	0.26	0.27	0.27

Notes: Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table 4.13 Coefficients from regressions on log hourly earnings: NCDS females at age 33

	(1)	(2)	(3)	(4)
0. No qualification	Ref	Ref	Ref	Ref
1. Low GCSEs with no or low Voc	0.036 (0.033)	0.031 (0.034)	0.269** (0.076)	0.068* (0.034)
2. Low GCSEs with higher Voc	0.229+ (0.121)	0.223+ (0.122)	0.470** (0.140)	0.337** (0.125)
3. High GCSEs with no or low Voc	0.126** (0.034)	0.126** (0.035)	0.475** (0.096)	0.186** (0.035)
4. High GCSEs with higher Voc	0.343** (0.045)	0.349** (0.047)	0.788** (0.124)	0.428** (0.045)
5. A-levels	0.491** (0.043)	0.497** (0.045)	1.057** (0.135)	0.528** (0.045)
6. Degree	0.704** (0.049)	0.719** (0.052)	1.364** (0.167)	0.657** (0.050)
Childhood poverty	-0.015 (0.022)	-0.016 (0.023)	0.020 (0.024)	-0.026 (0.023)
Inverse Mills ratio λ_i^E		0.040 (0.044)		
Inverse Mills ratio λ_{0i}^Q			-0.184** (0.057)	
Inverse Mills ratio λ_{1i}^Q			-0.092* (0.042)	
Inverse Mills ratio λ_{2i}^Q			-0.191 (0.141)	
Inverse Mills ratio λ_{3i}^Q			-0.206** (0.039)	
Inverse Mills ratio λ_{4i}^Q			-0.090+ (0.048)	
Inverse Mills ratio λ_{5i}^Q			-0.172** (0.045)	
Inverse Mills ratio λ_{6i}^Q			0.303* (0.124)	
Ethnicity	Yes	Yes	Yes	Yes
Number of siblings	Yes	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes	Yes
Work experience	Yes	Yes	Yes	No
Size and type of workplace	No	No	No	No
Region	Yes	Yes	Yes	Yes
Sample size	1607	1510	1607	1607
Adjusted R-squared	0.42	0.42	0.42	0.33

Notes: Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table 4.14 Coefficients from regressions on log hourly earnings: BCS females at age 34

	(1)	(2)	(3)	(4)
0. No qualification	Ref	Ref	Ref	Ref
1. Low GCSEs with no or low Voc	-0.024 (0.063)	-0.014 (0.066)	0.004 (0.240)	0.044 (0.067)
2. Low GCSEs with higher Voc	0.096 (0.074)	0.098 (0.076)	0.290 (0.242)	0.154* (0.078)
3. High GCSEs with no or low Voc	0.099 ⁺ (0.060)	0.104 ⁺ (0.062)	0.240 (0.239)	0.176** (0.062)
4. High GCSEs with higher Voc	0.214** (0.061)	0.217** (0.063)	0.345 (0.247)	0.307** (0.063)
5. A-levels	0.338** (0.063)	0.330** (0.064)	0.458 ⁺ (0.257)	0.428** (0.064)
6. Degree	0.685** (0.064)	0.671** (0.067)	0.792** (0.269)	0.686** (0.064)
Childhood poverty (vs. No poverty)	-0.044 ⁺ (0.025)	-0.049 ⁺ (0.026)	-0.042 (0.026)	-0.073** (0.026)
Inverse Mills ratio λ_i^E		-0.133 ⁺ (0.076)		
Inverse Mills ratio λ_{0i}^Q			-0.070 (0.123)	
Inverse Mills ratio λ_{1i}^Q			-0.096 (0.080)	
Inverse Mills ratio λ_{2i}^Q			0.088 (0.105)	
Inverse Mills ratio λ_{3i}^Q			0.018 (0.051)	
Inverse Mills ratio λ_{4i}^Q			0.001 (0.052)	
Inverse Mills ratio λ_{5i}^Q			0.024 (0.051)	
Inverse Mills ratio λ_{6i}^Q			-0.052 (0.113)	
Ethnicity	Yes	Yes	Yes	Yes
Number of siblings	Yes	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes	Yes
Work experience	Yes	Yes	Yes	No
Size and type of workplace	No	No	No	No
Region	Yes	Yes	Yes	Yes
Sample size	1465	1416	1465	1466
Adjusted R-squared	0.35	0.35	0.35	0.31

Notes: Robust standard errors in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table 4.15 Coefficients from regressions on log hourly earnings (alternative qualification variables): NCDS females at age 33 and BCS females at age 34

	(1) NCDS33	(2) NCDS33	(3) BCS34	(4) BCS34
Low GCSEs	0.019 (0.020)	0.003 (0.023)	-0.066** (0.025)	-0.071** (0.026)
High GCSEs	0.113** (0.025)	0.062+ (0.033)	0.146** (0.033)	0.132* (0.066)
A-levels / Diploma	0.269** (0.030)	0.274** (0.043)	0.145** (0.029)	0.090* (0.038)
Degree	0.242** (0.039)	0.175** (0.066)	0.308** (0.035)	0.258** (0.047)
Higher Degree	0.102 (0.076)	0.112 (0.078)	0.008 (0.056)	-0.004 (0.057)
Vocational Level 1	0.003 (0.025)	0.012 (0.025)	-0.001 (0.023)	-0.007 (0.023)
Vocational Level 2	-0.023 (0.030)	-0.031 (0.030)	-0.036 (0.024)	-0.039 (0.024)
Vocational Level 3	-0.014 (0.034)	-0.020 (0.035)	-0.000 (0.024)	-0.016 (0.026)
Vocational Level 4	0.062 (0.044)	0.028 (0.045)	0.132** (0.027)	0.122** (0.028)
Vocational Level 5	0.237** (0.041)	0.233** (0.041)	0.210** (0.037)	0.209** (0.037)
Inverse Mills ratio λ_{0i}^Q		0.053+ (0.029)		0.037 (0.042)
Inverse Mills ratio λ_{1i}^Q		0.051 (0.036)		0.013 (0.060)
Inverse Mills ratio λ_{2i}^Q		-0.081 (0.124)		-0.005 (0.089)
Inverse Mills ratio λ_{3i}^Q		-0.040 (0.031)		0.072+ (0.040)
Inverse Mills ratio λ_{4i}^Q		0.138** (0.034)		0.056 (0.047)
Inverse Mills ratio λ_{5i}^Q		0.004 (0.037)		0.072 (0.044)
Inverse Mills ratio λ_{6i}^Q		-0.146 (0.109)		-0.166+ (0.094)
Ethnicity	Yes	Yes	Yes	Yes
Number of siblings	Yes	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes	Yes
Work experience	Yes	Yes	Yes	Yes
Size and type of workplace	No	No	No	No
Region	Yes	Yes	Yes	Yes
Sample size	1607	1607	1465	1464
Adjusted R-squared	0.41	0.42	0.38	0.38

Notes: Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 4.16 The role of education in producing the earnings gap

		Males		Females	
		NCDS	BCS	NCDS	BCS
Ever in childhood poverty vs. Never					
(1)	OLS	0.095	0.084	0.115	0.100
(2)	Selectivity corrected	0.092	0.075	0.236	0.109
Twice in childhood poverty vs. Once or never					
(3)	OLS	0.114	0.116	0.144	0.114
(4)	Selectivity corrected	0.110	0.103	0.303	0.128
Household income at age 16					
Below 60% median vs. Above 60% median					
(5)	OLS	0.093	0.100	0.108	0.122
(6)	Selectivity corrected	0.090	0.088	0.226	0.135
Bottom 1/4 vs. Top 3/4					
(7)	OLS	0.071	0.115	0.086	0.124
(8)	Selectivity corrected	0.069	0.102	0.178	0.129
Bottom half vs. Top half					
(9)	OLS	0.076	0.122	0.097	0.133
(10)	Selectivity corrected	0.074	0.108	0.193	0.146
Bottom 3/4 vs. Top 1/4					
(11)	OLS	0.088	0.128	0.118	0.159
(12)	Selectivity corrected	0.085	0.113	0.219	0.166

Notes: Each number shows the earnings gap across childhood poverty status (Rows (1) to (4)) or household income groups (Rows (5) to (12)), which is explained by the role of education for each cohort and gender. See Subsection 4.6.4 in the main text for a detailed definition.

Appendix to Chapter 4

A4.1 Results of Propensity Score Matching

A limitation of regression analysis is that it fails to remove the ambiguity over whether the estimates are obtained by comparisons between similar individuals across qualification groups with respect to individual characteristics X_i . If some individuals used for estimation are dissimilar and incomparable, the estimation results may not be very reliable. To deal with this issue, I apply the technique of propensity score matching, one of the evaluation methods that uses non-experimental data. With this technique, estimation can be conducted only for the individuals who have their ‘matched’ counterparts in a comparison group. Matching is carried out only when the individuals are sufficiently similar apart from their qualification attainment in question, which is a situation that satisfies a ‘common support assumption’. Therefore, it discriminates estimators that are reliable from those that are not (Blundell et al., 2005).

By applying this method, I will also check the heterogeneity between the earnings premiums of those who have obtained a qualification of interest and those who have not. For policy implications, it is particularly important to establish whether the qualification yields a premium also for the latter individuals. Propensity score matching can differentiate the average effect of the treatment on the treated (ATT) and the average effect of the treatment on the non-treated (ATNT)⁵⁹(Blundell et al., 2005). ‘Treatment’ here refers to obtaining the qualification in question.

$$\text{ATT: } E(\ln y_{1ji} - \ln y_{0ji} | q_{ji} = 1) = E(\ln y_{1ji} | q_{ji} = 1) - E(\ln y_{0ji} | q_{ji} = 1) \quad (4.14)$$

$$\text{ATNT: } E(\ln y_{1ji} - \ln y_{0ji} | q_{ji} = 0) = E(\ln y_{1ji} | q_{ji} = 0) - E(\ln y_{0ji} | q_{ji} = 0) \quad (4.15)$$

where the symbols denote the same as in Equation (4.8). $E(\ln y_{0ji} | q_{ji} = 1)$ in Equation (4.14) and $E(\ln y_{1ji} | q_{ji} = 0)$ in Equation (4.15) are counterfactual and unobserved. Therefore, I alternatively need to find similar individuals in terms of their characteristics apart from their highest qualifications obtained, and use their observed earnings

⁵⁹ It may be inappropriate to describe qualification attainment as treatment, as if people were being passively treated with medicine. However, I use the terms ATT and ATNT in line with the literature. It is also possible to differentiate ATT and ATNT by using the selection correction model. However, I think that it is intuitively more comprehensible to do so by matching in the case of multiple treatments.

$E(\ln y_{1ji} | q_{ji} = 1)$ and $E(\ln y_{0ji} | q_{ji} = 0)$ as $E(\ln y_{1ji} | q_{ji} = 0)$ and $E(\ln y_{0ji} | q_{ji} = 1)$, respectively. I look for such individuals based on propensity scores that indicate each individual's propensity to obtain the qualification. I apply a Stata command *psmatch2* (Leuven and Sianesi, 2006) to calculate propensity scores by using the same background characteristics X as those used for the OLS model, and use two alternative algorithms to match cases, namely the nearest neighbour matching and Kernel matching.⁶⁰

In estimating the 'treatment effect' of one's highest qualification, we further need to be aware that individuals have multiple options in the sense that individuals can stop studying at one of these timings; after obtaining GCSEs, A-levels or a degree and so forth. In terms of the classification of highest qualifications in this chapter, $q_i \in \{0,1,2,3,4,5,6\}$. Therefore, we need a particular framework for multiple-treatment matching.

The analytical framework of propensity score matching for a single treatment has been generalised to a case of multiple treatments (Imbens, 2000; Lechner, 1999; Sianesi, 2002). If we are interested in pair-wise comparisons between different treatments, its extension to multiple treatments is straightforward. The ATT and ATNT of obtaining a qualification m relative to a qualification l are estimated as follows, where $m, l \in \{0,1,2,3,4,5,6\}$ and $m > l$.

$$\text{ATT: } E(\ln y_{mi} - \ln y_{li} | q_i = m) = E(\ln y_{mi} | q_i = m) - E(\ln y_{li} | q_i = m) \quad (4.16)$$

$$\text{ATNT: } E(\ln y_{mi} - \ln y_{li} | q_i = l) = E(\ln y_{mi} | q_i = l) - E(\ln y_{li} | q_i = l) \quad (4.17)$$

where $\ln y_m$ is the log earnings of the individual i if their highest qualification is m and $\ln y_l$ is their log earnings if their highest qualification is l . We can estimate a balancing

⁶⁰ Morgan and Winship (2007, pp. 107-109) explain the basic ideas of these algorithms and provides a brief guideline which works best in applications. They suggest that kernel matching proves advantageous in comparison with experimental data, and nearest-neighbour matching *with* replacement should be preferred to nearest-neighbour matching *without* replacement. Following this, I compare the results based on nearest-neighbour matching *with* replacement and those based on kernel matching. In short, nearest-neighbour matching matches a treatment case with the control case with the smallest distance in estimated propensity scores. Matching with replacement enables a control case to be matched with more than one treatment case, if needed. Kernel matching is an extension of nearest-neighbour matching, and attaches weights to each control case based on its distance from the treatment case, which is calculated using a kernel function.

propensity for obtaining m relative to l as their highest qualification as follows (Sianesi, 2002).

$$\begin{aligned} \Pr(q_i = m|X_i, q_i \in \{m, l\}) \\ = \frac{\Pr(q_i = m|X_i)}{\Pr(q_i = m|X_i) + \Pr(q_i = l|X_i)} \end{aligned} \quad (4.18)$$

I estimate the probabilities, $\Pr(q_i = m|X_i)$ and $\Pr(q_i = l|X_i)$, based on an ordered probit model regressing q_i on X_i . I assume that the educational decisions considered here are sequential, as I have also done in estimating the inverse Mills ratio in Subsection 4.5.2.

Although the matching approach imposes a strong assumption that the selection into qualification attainment takes place only according to the observed characteristics of individuals (*selection on observables*), this is not such a serious problem for men in the 1958 and 1970 cohort. As noted in Subsection 4.5.2, Blundell et al. (2005) suggested that the variables for individual characteristics available in the NCDS data successfully control for unobserved characteristics that might affect educational attainment. The BCS data contain similarly rich information.

For brevity, I carry out matching to compare earnings between the three pairs of qualification groups for each cohort; between the degree group and the no qualification group (Groups 6 and 0), between the degree group and the A-level group (Groups 6 and 5), and between the group with high GCSEs and a Level 3 or higher vocational qualification and the group with low GCSEs and the same level of vocational qualification (Groups 4 and 2).

The first comparison is conducted out of a concern over the first point, because those with a degree and those with no qualification at all are thought to be originally very different. There is no a priori explanation regarding for which cohort this concern is more important, given that the degree group is more homogeneous for the 1958 cohort than for the 1970 cohort and that the no qualification group is more homogeneous for the 1970 cohort than for the 1958 cohort. The second comparison aims to validate the findings from the regression models that the incremental earnings premium for a degree increased. The final comparison aims to re-approach the regression finding that it requires the men from the more recent cohort to have at least

good GCSEs to receive a significant earnings premium that is associated with good vocational qualifications. In particular, it is useful for a policy implication to confirm that achieving high GCSEs would be beneficial for those vocationally oriented men whose current academic achievements are up to low GCSEs.

In Table A4.2, I report the observed mean log earnings for those whose highest qualification is m , $E(\ln y_{mi} | q_i = m)$, the estimated (counterfactual) mean log earnings for them in case their actual highest qualification was l , $(\ln y_{li} | q_i = m)$, and the ATT derived from the simple subtraction of the latter from the former, as is shown in Equation (4.16). I also report the estimated (counterfactual) mean log earnings for those whose highest qualification is l in case their actual highest qualification was m , $E(\ln y_{mi} | q_i = l)$, the observed mean log earnings for them, $E(\ln y_{li} | q_i = l)$, and the ATNT derived from the subtraction of the latter from the former, as is shown in (4.17). Although I do not intend to compare the estimated figures on ATT and ATNT with any of the regression results nor assess the relative accuracy of these, the propensity scores for qualification attainment are based on the same variables as the regression models reported in Column (2) of Table 4.7 and Table 4.8. Regarding the first point above, I look at the number of observations that satisfy the common support assumption (on support) and those that do not (off support). In matching analysis, only those observations on support are matched with their similar counterparts.⁶¹

With respect to the first comparison (Groups 6 and 0), men with no qualification can be more easily matched with their similar counterparts with a degree in the 1970 cohort than in the 1958 cohort. Only 40 out of the 128 men with no qualification are matched with 98 of the 309 graduate men in the 1958 cohort. The rest of the men are not matched, since they were originally different. This may be because the opportunities for university education were far more limited for this cohort and a relatively small minority of selected people obtained a degree. However, as the opportunities became relatively more accessible for the 1970 cohort, 39 out of the 40 men with no qualification in the data can find their similar counterparts among graduate men. Nonetheless, there are 232 of the 366 graduates whose chance of obtaining a degree was

⁶¹ The matching outcomes should be regarded as the best achievable, rather than perfect, using the given survey data. The means of the following variables are still significantly different based on t-tests between the matched treated and control groups; father's social class and cognitive skills between Groups 0 and 6 in the 1958 cohort, cognitive skills between Groups 5 and 6 and between Groups 2 and 4 in the 1958 cohort, cognitive skills between Groups 0 and 6 and between Groups 2 and 4 in the 1970 cohort. The matching between Groups 5 and 6 in the 1970 cohort is fairly satisfactory in terms of the observed variables.

originally different from that of those who ended up with no qualification. In both cohorts, there are matched individuals in both the no qualification and degree groups, although there are also many individuals who are unmatched. It is not evident for which cohort the regression results are more reliable.

With regard to the ATT for a degree against no qualification, the matching generates similar earnings premiums associated with a degree for both cohorts, based on the two preferred matching algorithms (nearest neighbour matching and Kernel matching – see above in this Appendix). Comparing the size of the estimated ATT between the cohorts, contrary to the regression results, there is no evidence that the total earnings premium associated with a degree increased.⁶² The ATNT is scarcely different from the ATT for the 1958 cohort, but for the 1970 cohort, the evidence on the ATNT is mixed depending on the matching algorithms. Nonetheless it is possible to state that the ATNT is high enough to make it worthwhile to encourage those who have not obtained any qualification to pursue a degree. A challenge for them is simply that they have so many steps to take in the academic ladder before gaining a degree.

The more immediate practical comparisons are between the degree and A-level groups (Groups 6 and 5), and between the groups with a Level 3 or higher vocational qualification, both with and without high GCSEs (Groups 4 and 2). Both the ATT and ATNT estimates show that a degree incrementally yields a substantial earnings premium, to a larger extent for the 1970 cohort than for the 1958 cohort. For the 1958 cohort, the comparison between Groups 4 and 2 does not show any significant difference, suggesting that it was of little importance in the past whether their GCSE achievements were high or low (actually O-levels or CSE) if they obtained a Level 3 or higher vocational qualification. For the 1970 cohort, both the ATT and ATNT estimates show that high GCSEs make a difference in the earnings of those who pursue a vocational route.

To summarise, the matching analysis confirms the regression finding that the incremental earnings premium associated with both a degree and high GCSEs increased between the two cohorts. Although the result from the matching suggests that it is unclear whether the total earnings premium associated with a degree increased, this does not affect my conclusions discussed in the main part of this chapter. It can be

⁶² The reason for this is unclear, but I have checked that the relative size of the mean earnings for unmatched degree holders and that for matched degree holders is not necessarily greater for the 1970 cohort than for the 1958 cohort.

stressed that achieving high GCSEs became increasingly important even for those who did not pursue further academic education. Although we should bear in mind that the 1970 cohort is much older than the cohorts who are about to make their educational decisions, the findings based on the 1970 cohort being observed in the mid 2000s may not be completely irrelevant. As I have reviewed in Section 3.5 in Chapter 3, the earnings premium for degree holders seems to have increased during the early and mid 1990s and, since then, has remained roughly constant until the early 2000s, despite the further expansion of higher education in the UK.

Table A4.1 Effects of the highest qualification obtained on log hourly earnings: NCDS males at age 33 and BCS males at age 34 (Propensity Score Matching)

NCDS		Group 6 ($q=m$) vs. Group 0 ($q=l$)			
Nearest-neighbour	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	2.184	1.565	0.619	0.171	3.63
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	2.271	1.657	0.614		
Kernel	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	2.179	1.585	0.594	0.175	3.38
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	2.254	1.658	0.597		
	$Q=m$	$Q=l$			
On support (n)	98	40			
Off support (n)	211	88			
BCS		Group 6 ($q=m$) vs. Group 0 ($q=l$)			
Nearest-neighbour	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	2.762	2.135	0.627	0.093	6.72
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	2.760	2.071	0.689		
Kernel	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	2.756	2.125	0.631	0.089	7.08
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	2.654	2.071	0.584		
	$Q=m$	$Q=l$			
On support (n)	134	39			
Off support (n)	232	1			

Table A4.1 Continued

NCDS		Group 6 ($q=m$) vs. Group 5 ($q=l$)			
Nearest-neighbour	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	2.257	2.147	0.110	0.052	2.13
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	2.208	2.128	0.080		
Kernel	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	2.257	2.162	0.095	0.039	2.45
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	2.233	2.129	0.103		
	$Q=m$	$Q=l$			
On support (n)	309	239			
Off support (n)	0	6			
BCS		Group 6 ($q=m$) vs. Group 5 ($q=l$)			
Nearest-neighbour	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	2.824	2.571	0.253	0.051	4.93
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	2.784	2.545	0.240		
Kernel	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	2.824	2.578	0.246	0.040	6.13
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	2.789	2.548	0.245		
	$Q=m$	$Q=l$			
On support (n)	354	237			
Off support (n)	12	0			

Table A4.1 Continued

NCDS		Group 4 ($q=m$) vs. Group 2 ($q=l$)			
Nearest-neighbour	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	1.989	1.953	0.036	0.055	0.65
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	1.902	1.890	0.012		
Kernel	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	1.989	1.954	0.035	0.044	0.79
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	1.942	1.890	0.052		
	$Q=m$	$Q=l$			
On support (n)	320	123			
Off support (n)	5	0			
BCS		Group 4 ($q=m$) vs. Group 2 ($q=l$)			
Nearest-neighbour	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	2.449	2.274	0.175	0.056	3.15
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	2.386	2.224	0.162		
Kernel	$E(\ln y_m q=m)$	$E(\ln y_l q=m)$	ATT	S.E.	t-stat
	2.449	2.290	0.159	0.049	3.24
	$E(\ln y_m q=l)$	$E(\ln y_l q=l)$	ATNT		
	2.396	2.224	0.172		
	$Q=m$	$Q=l$			
On support (n)	302	141			
Off support (n)	16	2			

Chapter 5

The Effects of the Timing and Duration of Childhood Poverty on Adult Earnings: Do Teenage Aspirations Mediate These?

5.1 Introduction

Chapter 4 found that, for men and women born in 1970, their earnings are 7% lower in their early thirties for those who experienced childhood poverty than those who did not, after controlling for qualification attainment and other observed individual and family characteristics. In this chapter, I further investigate this residual effect, paying attention to some of the most influential policy ideas. Firstly, I estimate the extent of the effect of the timing and duration of childhood poverty on adult earnings. This aims to clarify when in childhood the experience of poverty is most detrimental in terms of its long-term impact, and whether persistent poverty is more detrimental than transient poverty. Such evidence on the timing and duration effects of childhood poverty would be useful for policy design, indicating the target that should receive policy support most intensively and urgently. Particularly in the present context in which early intervention is increasingly addressed by both academic research and the Government (See Subsection 2.2.3 in Chapter 2), it is worth scrutinising whether it is reasonable to assume that poverty in late childhood is less problematic.

I secondly examine whether the mediating role of teenage aspirations can explain the residual effect of childhood poverty. The politicians and policy-makers in the UK increasingly believe that raising the aspirations of children and young people from disadvantaged backgrounds is a key to improving their life chances, particularly through raising their educational attainment (HM Government, 2009; Social Exclusion Task Force, 2008). However, there is a critical argument that aspirations might be a problematic policy target. It may be more important to understand what prevents disadvantaged children from sustaining and achieving their aspirations and to grant them access to the resources and support to make these achievable, rather than to directly intervene into these children's aspirations (Lupton and Kintrea, 2008). In any case, although there is ample evidence of the effect of parental social class, parental education, and parental attitudes and behaviour on children's aspirations, there is little empirical evidence on the effect of poverty on aspirations. An exception is the recent

joint research by the University of Bristol and Institute of Fiscal Studies (Chowdry et al., 2008).

I will review the previous literature on the effects of childhood poverty on economic outcomes, followed by the literature on the possible effect of some of the aspects associated with childhood poverty in Section 5.2. I do not attempt in this chapter to identify any independent effect of any of these aspects, but it would be helpful to understand which aspects may or may not possibly explain the residual effect of childhood poverty when interpreting the findings. I will also discuss issues regarding teenage aspirations as a mechanism for intergenerational persistence of poverty in Section 5.2. I will describe the data and variables I use for the empirical analysis in Section 5.3, and the analytical methods in Section 5.4. I will then report findings in Section 5.4. In Section 5.5, I will present my conclusions.

5.2 Literature Review

5.2.1 Extent of the Effects: Timing and Duration of Childhood Poverty

The availability and use of household panel data such as those from the BHPS has revealed the dynamics of poverty in the UK (Jenkins et al., 2001). Children currently living in poverty comprise those who are in transient (short-term) poverty and those in persistent (long-term) poverty (Hill and Jenkins, 2001). It is also known that the timing and duration types of poverty have different impacts on the outcomes relating to life chances, although most such evidence firstly comes from the US (Duncan and Brooks-Gunn, 1997; National Institute of Child Health and Human Development Early Child Care Research Network, 2005). Ermisch et al. (2001), using the BHPS, is one of the few studies in the UK to present the varying effects of the timing and duration of childhood poverty on later outcomes, such as educational and economic outcomes, smoking, mental health, early child bearing, and leaving the parental home. These studies highlight the relative and independent importance of the effect of poverty as measured at different points in childhood on those outcomes. The extent of the effect of poverty is not a single quantity.

If the disadvantages associated with poverty begin to occur for children below schooling age, it would be reasonable to prevent inequality from arising as early as possible rather than to postpone doing so. Increasing attention has recently been paid to the strong effect of poor child rearing environments in early childhood on their

cognitive development, and policy intervention at that stage is addressed in order to correct for long term disparities in skills (Clark-Kauffman et al., 2003; Esping-Andersen, 2004; Heckman, 2006; Kiernan and Huerta, 2008; Kiernan and Mensah, 2009; Shonkoff and Phillips, 2000; Smith et al., 1997; Waldfogel, 2006).

Even though it is important to address early intervention, which was under-implemented in the past, this does not mean that the effect of childhood poverty can be explained by early disadvantages alone. Concerns with various stages of children and young people's development are indeed incorporated into the policy strategies (HM Government, 2009), and evolve into further recommendations to parents, teachers, governments, the media, and society at large (Layard and Dunn, 2009). In particular, the residual effect of childhood poverty on adult earnings, found in Chapter 4, is derived after controlling for cognitive ability measured in early to mid childhood which might reflect at least some of the possible impact of poverty in early childhood. This suggests that poverty in later childhood may also be harmful. As noted earlier, Ermisch et al. (2001) has investigated whether poverty in later childhood has an independent effect, after controlling for poverty in early childhood.

Among the wide ranging outcomes examined in Ermisch et al. (2001), here I concentrate on reviewing their findings on educational and economic outcomes. They use a sample of those respondents who were born between 1970 and 1983, and measure poverty by household income and parental worklessness. The measure of household income is available only between 1991 (the first wave) and 1999 (the last available wave for their study), and is used to examine the effects of current and persistent poverty that we will see later. However, this is too short a window to make the analysis of the timing effects feasible. Therefore, as a proxy for the variable for childhood poverty, they use a variable for parental worklessness which is available for their entire childhood (from birth to age 16) from the work history data collected retrospectively in the BHPS. The authors have validated the strong correlation between low income and worklessness.⁶³ Table 5.1 summarises their findings on the effects of the timing of childhood poverty on educational and economic outcomes. They consider economic inactivity as an economic outcome, but this is predicted to be correlated with earnings because the experience of economic inactivity can diminish productivity in the labour market.

⁶³ Their study cannot differentiate between the effects of parental worklessness and low income. I will return to this issue in Chapter 7.

They estimate each of economic and educational outcomes separately by controlling for family characteristics (family structure, parent's age and education) and individual basic characteristics (gender and age). In the analysis of economic inactivity, they do not control for educational outcomes. Thus, some of the effect of childhood poverty on economic inactivity may be mediated by the effect of childhood poverty on educational outcomes. However, the critical timings of childhood poverty do not completely overlap for education and economic inactivity and, with respect to women, childhood poverty does not seem to affect educational outcomes. This implies that the reported effect of poverty in late childhood on economic inactivity is not completely explained by educational outcomes. However, this is challenged by the sibling difference estimates showing that poverty in late childhood moderately influences both the educational and economic outcomes. Taken together, there is at least an indication that poverty in late childhood may affect later economic outcomes even after controlling for educational attainment.

Evidence from a different study also implies that poverty in late childhood does not directly affect educational outcomes for a relatively recent cohort. Schoon et al. (2002), using the NCDS and BCS, find that, while the current negative effect of socio-economic risk⁶⁴ on academic attainment is great at ages 7 and 16 for the 1958 cohort, it is great at age 5 but not at age 10 and 16 for the 1970 cohort.⁶⁵ The effect of socio-economic risk at age 16 on social class attainment was mostly indirect through its effect on academic attainment for the 1958 cohort. The direct effect of socio-economic risk at age 16 on social class attainment increased for the 1970 cohort by almost three times the effect on the 1958 cohort, despite the absence of its direct negative effect on educational outcomes. These findings also help us speculate that the damaging effect of poverty experienced in late childhood may not be removed by simply improving educational attainment.

With respect to the effects of the duration of childhood poverty on later outcomes, the child development literature argues that child outcomes are less favourable for those children who experience a persistent socio-economic disadvantage, though not necessarily poverty, than those who only experience occasional hardship (Ackerman et al., 1999; Bolger et al., 1995; Duncan et al., 1994; Pungello et al., 1996).

⁶⁴ Schoon et al. (2002) define socio-economic risk based on parental social class and material conditions, such as overcrowding, household amenities, housing tenure, and the receipt of state benefits.

⁶⁵ It is reported that the effect of short-term parental income on staying on in education after age 16 increased for the younger cohort (Dearden et al., 2004b), although a staying on decision at age 16 and academic attainment by age 16 may represent different aspects of educational outcomes.

However, only a few empirical studies in the UK have examined the possibly greater effect of long-term poverty on economic outcomes. Ermisch et al. (2001), while investigating the effects of current and persistent poverty based on the measure of household income,⁶⁶ report that the parents' persistent poverty has less effect on men's economic inactivity than current poverty. The negative impact of parents' persistent poverty on women's economic inactivity is greater than that of current poverty.

Another set of evidence is not supportive of the stronger negative effect of persistent poverty. Hobcraft (1998) and Sigle-Rushton (2004), each using the NCDS and BCS, respectively, do not find different extents of the relationship between male earnings and childhood poverty between those experiencing some poverty (shown by one poverty indicator with more or most non-poverty indicators) and those experiencing clear poverty (shown by most or all poverty indicators). However, a limitation of their studies may be that they simultaneously include the variables for poverty, family type, and housing tenure in their models. As I will discuss later, it may make it difficult to isolate each effect from the other, and therefore the impact of more persistent poverty may be underestimated. There remains room to expect that the earnings of those who experienced persistent poverty are lower than those of those who experienced only transient poverty, which needs to be examined with models controlling for further selected variables.

Even if the impact of poverty is cumulative over time, however, it may not necessarily be argued that those who live in persistent poverty suffer from the negative influence of poverty more strongly at any one time. Ashworth et al. (1994), using US data, found that the severity of persistent poverty is not necessarily greater than that of transient poverty in each period.⁶⁷ Given that the negative impacts of persistent poverty and transient poverty are similar in each period, transient poverty for children should not be treated lightly, and policy targeting transient poverty can be useful for those living in both types of poverty. However, if the negative impact of persistent poverty is

⁶⁶ The household income variable is used to derive poverty status. Poverty is defined as equivalised household income below 60% of the contemporaneous median income. Current poverty straightforwardly stands for poverty in the same wave as that for which the outcomes are measured. Persistent poverty is based on a count of the number of times a respondent was observed to be poor three or four times in the current wave and previous three waves.

⁶⁷ Ashworth et al. (1994) found for US children that the income-to-needs ratio during each poverty spell for persistent and recurrent poverty is almost the same as transient and occasional poverty, which is around 70%, while the equivalent ratio for chronic and permanent poverty is 59% and 46% respectively. In their terminology, persistent and recurrent poverty means remaining in poverty for more than two years only once or repeatedly in childhood, while chronic and permanent poverty means almost or literally never living a non-poor life.

greater than the latter, policy should be better designed to identify those who are living in persistent poverty in addition to compensating low income families each year, as Hill and Jenkins (2001) argue.

Based on the findings and explanations of the previous literature, we can hypothesise or question the effects of the timing and duration of childhood poverty on economic outcomes as follows. Firstly, poverty in late childhood has a negative impact on hourly earnings in adulthood for both genders, controlling for educational attainment. I have presented the residual effect of childhood poverty on adult earnings for both genders in the 1970 cohort in a preliminary form in Chapter 4. In this chapter, I further detail the timing of poverty by utilising the available information which can distinguish between mid childhood, when children are more normally in school, and age 16, when they make a crucial transition out of compulsory education. The second question is whether those who live in persistent poverty suffer more from poverty in each period than those who only live in transient poverty. Although the datasets used in this and the previous chapter, the NCDS and BCS, may not be ideal for testing these hypotheses, they are the only datasets that make it possible to examine the changes over time in the effects of timing and duration of childhood poverty on later earnings.

5.2.2 Aspects of Childhood Poverty

I measure poverty by indicators of low income in this thesis (see Subsection 3.4.2 in Chapter 3 for details). There are issues involved in measurement of the effects of childhood poverty in two respects, which cannot necessarily be overcome in this thesis but should be borne in mind. Firstly, any single measure of income poverty is not perfect in its ability to identify who are the poor with needs to which social policy should respond. A combination of measures and the triangulation of the results are proposed for counting people in poverty (Bradshaw and Finch, 2003; Nolan and Whelan, 1996). In response to this, the previous Government employed ‘a tiered approach’ to monitor progress against child poverty in which all three measures of poverty (absolute low income, relative low income, and a combination of material deprivation and low income) are considered (DWP, 2003). It is always worth inspecting the quality of a measure of poverty when an effect of childhood poverty is not found. The measure of income poverty in use may simply fail to capture those who are actually living in income poverty.

If the effect is found, however, there is another, different concern in terms of whether it could be inferred to the effect of income poverty. Income poverty is associated with multidimensional poverty and the analyses conducted in this chapter cannot necessarily detect a causal effect of income. The models explaining intergenerational persistence of poverty, reviewed in Chapter 2, highlight the variety of aspects of poverty, from family characteristics to socio-economic structure. In order to gain an idea of whether some of the aspects are possibly reasons for the residual effect, I further survey the previous literature on those regarded to develop major issues around poverty in the UK context, such as parental worklessness, social housing, and lone parenthood.

Parental worklessness: Little evidence has confirmed whether or not parental worklessness affects children's later outcomes, after controlling for parental income, but this is an important issue to bear in mind given the influence of the welfare-dependency model (see Subsection 2.2.4 in Chapter 2). Although parental worklessness and income poverty often overlap, their consequences could be different. For instance, the lack of role models and networks in the labour market would be more salient for the children of workless parents than those of low-income working parents. On the other hand, the lack of adult supervision and care would be more serious for low-income working parents who are suffering from time poverty. I aim to investigate the relative effects of parental worklessness and low income on young people's economic outcomes in Chapter 7 using data from the BHPS.

Social housing: Some of the effect of childhood poverty may be explained by children residing in social housing. Social housing used to be a successful sector that served diverse groups of people in society, at least until the end of 1970s. However, the social and economic factors associated with the 1980s and 1990s have left mostly disadvantaged groups in this sector.⁶⁸ Feinstein et al. (2008) and Lupton et al. (2009b) examine the changes over time in the long-term associations of growing up in social housing with adult outcomes in multiple domains, such as health and health behaviour, well-being, employment, income and education for three generations including the 1958 and 1970 cohort.

Feinstein et al. (2008), using a composite measure of multiple deprivation (experience of more than one of the following elements; workless household, workless

⁶⁸ These include the Right to Buy scheme, exercised disproportionately by those with higher incomes, the recession of the early 1980s and early 1990s that affected social housing tenants in mining and manufacturing industry, and the increasing tendency towards needs-based allocation (Hills, 2007).

household with children, financial problems, permanent illness/disability, depression, smoking, or single parenthood), firstly report that growing up in social housing had negative associations with later multiple deprivation for women in the 1958 cohort, and men and women in the 1970 cohort. Lupton et al. (2009b), looking further at the outcomes in each domain separately, additionally find that growing up in social housing is negatively associated with adult employment and income similarly for all groups including the men in the 1958 cohort.⁶⁹ These imply that the residual effect of childhood poverty on earnings which is found only for the 1970 cohort may be irrelevant to the effect of social housing, although they did not analyse earnings.

After the 1970 cohort, however, social housing is facing even more difficulties, and thus the effect of growing up in social housing on later economic outcomes may have increased for more recent cohorts. In recent decades, social housing has experienced some problems with respect to gaining tenants' satisfaction with housing quality, giving work incentives to tenants, and creating mixed-income communities which are regarded as potentially important for the future life chances of the children living there. Based on the evidence from the 2000s, Hills (2007) reports that the performance of social housing is poor, although it offers higher quality dwellings in physical terms for the poorest fifth of the population and the unemployed than the private sector. Social tenants are less likely to be in paid work, even controlling for individual characteristics such as a lack of qualifications, and less likely to move home for employment-related reasons. Also, mixed income communities are not a reality, with 34% of social tenants falling in the bottom fifth of the income distribution and nearly half of social housing located in the most deprived 20% of neighbourhoods. Therefore, it is very difficult to isolate the respective effects of social housing, parental worklessness and disadvantaged neighbourhoods. This should be borne in mind, particularly when analysing the more recent cohort in Chapter 7.

Lone parenthood: Lone parents, particularly mothers, are one of the groups with the highest risk of poverty. The negative effects of lone parenthood have been reported by previous research, although it is debated which matters more: lone parenthood or poverty (see Subsection 2.3.3 in Chapter 2). However, the most recent evidence based on children born in 2000 and 2001 in the UK shows that lone parenthood does not

⁶⁹ Their findings, in the authors' view, do not necessarily suggest causal effects, but nonetheless indicate the associations between growing up in social housing and the later outcomes which cannot be explained by the other observed characteristics of the respondents or their parents. However, the neighbourhood effect is not netted out.

appear to have a direct negative impact on child development. Kiernan and Huerta (2008), using the Millennium Cohort Study,⁷⁰ find that parenting behaviour and child outcomes (cognitive scores and behavioural problems at age 3) are overall not significantly different between children in intact families and those in lone-parent families, after controlling for family status at birth,⁷¹ mother's age at birth, and mother's educational attainment. As they also show that parenting behaviour is an important mediating factor for the negative impact of low income on child development, the parity in parenting behaviour is supportive of the argument that lone parenthood per se does not have a strong negative impact. Kiernan and Mensah (2009), using the same data, further find that, after controlling for other mother and family characteristics, poverty strongly affects children's cognitive development at age 3, maternal depression strongly affects children's behavioural problems, but lone parenthood is largely disassociated with children's cognitive or behavioural outcomes.

Taken together, the available evidence on the effects of these aspects associated with poverty, social housing and lone parenthood are unlikely to explain the residual effect of childhood poverty found only for the 1970 cohort. However, it remains unclear whether parental worklessness is a reason for the residual effect of childhood poverty on later economic outcomes.

5.2.3 A Potential Mechanism: Aspirations

As I have reviewed in Chapter 2, childhood poverty may affect other factors than education that may be influential on the future life chances of children. The socio-demographic model highlights the role of the attitudes and behaviour of young people, as these will shape their earnings-generating skills and traits as well as affect their educational attainment. This chapter is focused on teenage aspirations considering the relevance to the policy context (see Subsection 2.3.3 in Chapter 2).

Recent policy evaluations of Aimhigher, a programme implemented with the aim of raising aspirations of disadvantaged young people towards entering higher education, have demonstrated that some policy inputs can help to change their educational aspirations. Before 2004, when the full Aimhigher programme was launched, it was possible to evaluate predecessor programmes of Aimhigher with

⁷⁰ The sample of the study consists of about 18,000 children born over 12 months from 1 September 2000 in England and Wales and from 1 December in Scotland and Northern Ireland.

⁷¹ As the variable for family status at birth is controlled for by Kiernan and Huerta (2008), their findings do not necessarily suggest the lack of an effect of lone parenthood if lone parenthood at birth has a cumulative long-term effect.

experimental approaches, by comparing pupils in schools in which Aimhigher was implemented with those in non-Aimhigher schools. The evaluations suggest that visits to university during their final year in compulsory education and discussions with university students and lecturers were associated with the positive changes in young people's intentions to participate in higher education at age 18, although their causal effects are inconclusive (Morris and Golden, 2005). The longer term outcomes of Aimhigher also appear to be positive, particularly for those in receipt of Free School Meals, with those from Aimhigher schools being more likely to progress to higher education than those in the comparison group (Morris et al., 2009).

Given that well-designed programmes can have positive impacts particularly on young people's educational aspirations, a question is whether aspiration-raising activities could also be useful in reducing the intergenerational persistence of poverty that remains even after taking account of educational inequality. Chowdry et al. (2008), using the Longitudinal Survey of Young People in England,⁷² is one of the few studies that investigates the effects of childhood poverty on teenage aspirations.⁷³ The main aim of their study is to examine the effect of neighbourhood deprivation on young people's aspirations and expectations, as measured at age 13 or 14; namely, their willingness to stay on in education after age 16, their likelihood of applying to university, and their opinions about the importance of jobs and careers. The study finds only relatively small effects of neighbourhood deprivation and, instead, stronger effects of family characteristics including parental income, occupation, education and attitudes to children's education. The likelihood of applying to university is most clearly affected by parental income. This may be unsurprising, because children's expectations, rather than aspirations, to go to university can be strongly influenced by whether or not their family can afford it. However, even for the aspiration variables, school characteristics⁷⁴ and educational resources at home have significant effects, controlling for a full set of

⁷² This is a panel study of young people commissioned by the Department for Children, Schools and Families (DCSF), whose sample was aged 13 or 14 at its outset in 2004. The questionnaire collects information on young people's personal characteristics, attitudes and behaviour, educational attainment, family and parental characteristics including socio-economic status and income, and the characteristics of the schools that the sample members attend (or have attended).

⁷³ Shropshire and Middleton (1999), using the Small Fortunes Survey (a random sample of individual children over age 5 in 1995), have shown that children growing up in lone-parent or Income Support families are less likely to aspire to a professional job which requires a long period of education and training than their counterparts in two-parent or non-Income Support families. However, their study did not net out the effects of parental social class and education which have been found to affect children's aspirations (see Subsection 2.3.3), so it is better to interpret their findings as associations.

⁷⁴ The variables for school characteristics include whether the school is a grammar school, whether it has a sixth form, peer aspirations, and so on.

variables, although the residual effect of parental income is not significant. This suggests that parental income matters through influencing the ability to live in a neighbourhood with a good school and to buy educational resources. Housing tenure and lone parenthood do not have any significant effects on young people's aspirations or expectations, controlling for other variables.

A caveat concerning the data interpretation of aspirations and expectations is, as Lupton and Kintrea (2008) argue, that it is hard to measure the two separately, although the former are conceptually distinguishable from the latter. Measured aspirations may be influenced by expectations that tend to be conditional on the actual resources available as well as one's psychological capacity such as self-esteem, self-efficacy and motivation. In reference to the impact of the duration of poverty, those growing up in persistent/recurrent poverty may have lower aspirations due to their lower expectations. The concept of adaptive preference reveals that those who live in poverty long term are prone to adapt their preferences and life satisfaction (Burchardt, 2003; Halleröd, 2006; McKay, 2004). However, it is less clear whether children and young people are as influenced by their economic circumstances as their adult counterparts, because adaptation is a long term process and older people are more likely to adjust their preferences (Halleröd, 2006).

With this caveat in mind, it is inherently difficult to disentangle the complex interactions between aspirations and expectations that change over time. Therefore, even if it is found that the residual effect of childhood poverty on earnings can partly be explained by the intervening effect of aspirations, it is still unclear whether raising the aspirations of children and young people growing up in poverty could be one way to remove the residual effect of childhood poverty on adult earnings. However, if the residual effect cannot be explained by aspirations, it would be more reasonable to consider that the lower earnings of those growing up in poverty are a result, not of their lower aspirations, but of the limited resources available to achieve their aspirations and/or the weak motivational power of their aspirations, as is argued in the previous literature (Calder and Cope, 2003; Lupton and Kintrea, 2008). If so, a policy intervention should remove the constraints against keeping expectations high rather than simply attempt to raise aspirations.

5.2.4 Other Mechanisms

One of the other mechanisms that will not be empirically investigated in this chapter but should be noted is non-cognitive skills. With respect to earnings-generating skills, the human capital literature suggests that there is a growing need to expand the concept of human capital to include non-cognitive skills. In the US, Heckman et al. (2006) have found that non-cognitive skills, as measured by motivation, persistence and self-esteem, have an impact on earnings both directly and indirectly through educational decisions as much as cognitive skills. Osbone-Groves (2005) found that personality, which I take as her terminology of non-cognitive skills, explains 11 percent of the total father and son correlation of earnings controlling for the conventional human capital variables.

In the UK, Blanden et al. (2007) have found the increasing importance of non-cognitive skills measured by psychological/behavioural scales, but argue that the effect of non-cognitive skills on men's earnings in their early thirties is indirect, through educational attainment. This may be because getting a high score in a test requires non-cognitive skills such as 'the disposition to follow instructions, persistence, work ethic and other traits likely to contribute independently to one's earnings' (Bowles et al., 2005, p. 12) in addition to cognitive skills. Therefore, this chapter, using the same data as Blanden et al. (2007), speculates that the residual effect of childhood poverty and earnings after controlling for educational attainment is not likely to be attributable to non-cognitive skills, at least those measured up to mid childhood.

While it is inherently difficult empirically to distinguish between the individual and structural factors influencing earnings, changing individual characteristics may not be a desirable means of reducing the residual effect of childhood poverty. The productivity that will be transformed to earnings is not fully explained by educational attainment and observed cognitive and non-cognitive skills but also by other unobserved (or unexplored) skills and traits. There are arguably some traits which are not regarded as 'skills' but generate more of an earnings premium than other traits, while the boundary between skills and traits may be empirically vague. We do not necessarily have to consider such traits as innate and impossible to tackle through public policy. If the effects of these traits on earnings have increased over time, this suggests that there are also acquired characteristics that influence earnings, or that the role of innate traits could be weaker in different socio-economic environments/structures. Public policy, therefore, could address greater equality in earning power through either interventions in human development or structural or environmental reforms.

The following issues, however, suggest the importance of striking a balance between human development and structural or environmental reforms in searching for effective and justifiable ways to improve the future life chances of children growing up in poverty. If different levels of pay are derived from discrimination, a political and policy goal would be to remove such discrimination rather than to eliminate the diversity of individual characteristics. Furthermore, the reasons for the earnings gap between particular skills and other skills are not necessarily determined by the ‘inevitable’ market mechanism of demand and supply. These are also due to the weakening of the social norm which used to play an important role in constraining earnings for those at the top (Atkinson, 2002).

5.3 Variables and Descriptive Statistics

5.3.1 Variables

I use data from the NCDS and BCS in this chapter, as I explained in detail in Chapter 3. The variables used are as follows:

Earnings: The dependent variable of this chapter is hourly earnings, which is the same as that used in Chapter 4 (see Subsection 4.3.1 in Chapter 4).

Indicator of ever in poverty in childhood: I begin by estimating the effect of childhood poverty on hourly earnings using the indicator variable employed in Chapter 4. For more details about how I create the variable, see Subsection 3.4.2 in Chapter 3.

In addition, I introduce more elaborate variables to distinguish timing (middle or late childhood) and types (transient and persistent/recurrent) of poverty in this chapter.

Timing of childhood poverty: As noted earlier, information about poverty in early childhood is not available from the NCDS and BCS. I use two variables to indicate poverty in mid childhood (age 11 in the NCDS, age 10 in the BCS) and in late childhood (age 16 for both cohorts). Although I would prefer to define early childhood as ages 0-5, mid childhood as ages 6-10, and late childhood as ages 11-15, as classified in Ermisch et al. (2001), these definitions are not rigid and feasibility is given priority.

Duration of childhood poverty: I further separate those who experienced poverty at two points in their childhood from those who experienced poverty only once, by deriving a categorical variable with the following four groups. In regression analysis, including the interaction term of transient poverty in mid childhood and that at age 16 corresponds to using this variable.

- No childhood poverty (never observed to be in poverty in childhood)
- Transient poverty in mid childhood (observed to be in poverty only at age 11 in the NCDS and at age 10 in the BCS)
- Transient poverty at age 16 (observed to be in poverty only at age 16)
- Persistent/recurrent poverty (observed to be in poverty in both mid childhood and at age 16)

In this variable, respondents whose value is 1 for the aggregate variable for childhood poverty are separated into three categories. Because the surveys of the NCDS and BCS do not take place every year, it is impossible to determine household income during the intervals between the surveys. Some people who are observed to have been living in poverty only once may have actually been in poverty more than this, or some people who are observed to have never been in poverty may have been doing so. However, it would be reasonable to speculate that those who are observed to be living in poverty at two points in time have a higher chance of living in persistent/recurrent poverty. Table 5.2 below, which shows the associations between childhood poverty and other family characteristics, suggests that this way of categorisation captures important differences between the duration types of childhood poverty.

Relative income positions: Further, the variable for relative position of household income is derived from the household income variables as measured at age 16. More details about this variable are presented in the Appendix to Chapter 3.

Teenage occupational aspirations: I examine the mediating effect of teenage aspirations only for the 1970 cohort, using occupational aspirations measured at age 16. In order to explain the residual effect of childhood poverty on adult earnings that remains after controlling for educational attainment, it would be more natural to examine occupational aspirations than educational ones.⁷⁵ The variables for occupational aspirations were collected through questions asking respondents what they want rather than what they expect.⁷⁶ Nonetheless, it should be noted, when interpreting

⁷⁵ Moreover, the BCS seems to have collected the respondents' educational expectations rather than aspirations. The question wording for educational expectations in the BCS questionnaire is as follows. 'Do you plan to go on with your education or training after the age of 18?' 'If yes, where do you think you might go?'

⁷⁶ The question wording for occupational aspirations (jb27a1-a16) in the BCS questionnaire is as follows. 'Nearly everyone of your age has some sort of idea about what they will want to do in life. Here is a list of types of jobs/careers/professionals for which various amounts of training are necessary. How about your choice(s)?'

the results, that reported aspirations may partly represent expectations. The values of the variables for occupational aspirations are as follows:

- Professional
- Managerial and technical
- Skilled non-manual
- Skilled manual
- Semi-skilled

I use the recoded variable originally analysed by Burchardt (2005).⁷⁷ See the Appendix to this chapter (Section A5.1) for details. One problem with the aspiration variables is that the response rate to the self-completion questionnaire in which the variables for occupational aspirations were collected was low.⁷⁸ Those who responded to the questionnaires may be systematically different in their attitudes to those who did not, which may induce biased estimates when simply using the observed data. I mainly report findings based on the observed data, but also compare them with those based on imputed data, which will be reported in the Appendix to this chapter (Section A5.2). The impact of the low response rate seems to be minor for the association between childhood poverty and occupational aspirations.

The following variables for the aspects of poverty as measured at ages 11 and 16 in the NCDS, and at ages 10 and 16 in the BCS are used to check the associations with the variable for childhood poverty, but not as control variables in the regression analyses.

Parental worklessness: In a household with both parents, parental worklessness means that neither parent is in paid work. In a household with a lone parent, parental worklessness means that that parent is not in paid work.

Housing tenure in childhood: Housing tenure is specified under three categories: owner occupier, private renting, and social housing.

Lone parenthood: Respondents are regarded as living with a lone parent if they live with a mother, mother figure, father or father figure.

⁷⁷ I am grateful to Tania Burchardt and Laura Lane who helped her for kindly allowing me to use the recoded variable.

⁷⁸ For those respondents who were present in the survey at age 16, the rate of those whose aspiration variables are not missing is a little over 50% in the BCS.

5.3.2 Descriptive Findings

Table 5.2 shows the proportions in percentages of children in each childhood poverty status group, and that of children experiencing parental worklessness, social housing, and lone parenthood in mid childhood or at age 16. At the bottom of the table, any changes in the proportions (in percentage points) between the cohorts are also shown. 70.8% of the 1958 cohort are observed to have never lived in poverty during childhood, 19% experienced transient poverty either in mid childhood or at age 16 (or are observed to have lived in poverty once during childhood), and 10% experienced persistent/recurrent poverty (or are observed to have lived in poverty twice during childhood).

Childhood poverty is more common for the 1970 cohort, and only 63% of them are observed to have never lived in poverty during childhood. 25% experienced transient poverty, and 12% experienced persistent/recurrent poverty. Whereas the proportion of people observed to have lived in poverty once at age 16 increased by around 7 percentage points, that of people who have lived in persistent/recurrent poverty increased by only 2 percentage points. The increased proportion of children growing up in poverty in the 1970 cohort appears due mainly to the increased occurrence of transient poverty at age 16.

Parental worklessness both in mid childhood and at age 16 increased for the 1970 cohort compared with the 1958 cohort. Those who lived in persistent/recurrent poverty are more likely to have experienced parental worklessness than those living in transient poverty. Around half of those living in persistent/recurrent poverty in the 1970 cohort have experienced parental worklessness, and the largest increase in parental worklessness between the cohorts is also seen in this group. Residing in social housing was more common for the 1958 cohort (about 40%) than for the 1970 cohort (20-30%), suggesting that it has become a more marginalised experience for the younger cohort. The majority of the 1958 cohort who lived in social housing were not poor during childhood, while the majority of the counterpart in the 1970 cohort were poor. In terms of lone parenthood, this is more common for the 1970 cohort in mid childhood. At age 16, similar proportions of the 1958 and 1970 cohorts lived with a lone parent. However, this observation is inconsistent with the national trend that the number of lone-parent households increased between the 1970s and 1980s (Hughes, 2010). The reason for this is unclear.

Taken together with the (lack of) previous findings discussed in Subsection 5.2.2, the potential impact of parental worklessness remains of concern, given the increased prevalence of parental worklessness among those in the younger cohort who experienced childhood poverty, particularly persistent/recurrent poverty. It is important to keep in mind when interpreting the residual effect of childhood poverty on adult earnings that many of those who experience persistent/recurrent poverty simultaneously experience parental worklessness. However, it is also noteworthy that a smaller proportion of those living in transient poverty experience parental worklessness. If the effect of transient poverty on adult earnings is additive, rather than those living in persistent/recurrent poverty suffering more from poverty, there is room to speculate that income poverty matters.

I turn to the associations between childhood poverty and occupational aspirations for the 1970 cohort. Table 5.3 shows the distributions of the young people's occupational aspirations as measured at age 16 for both genders.⁷⁹ Men and women who did not grow up in poverty have 'higher' occupational aspirations than those who did. However, the proportion of those who aspired to a professional job does not seem to vary among those who experienced poverty in childhood depending on the timing and duration. The simple association between childhood poverty and occupational aspirations may actually be explained by other variables such as parental social class and education. Thus, I will carry out regression analysis to control for these variables below.

Table 5.4 demonstrates the association between ever growing up in poverty and occupational aspirations, by controlling for father's social class (I, II and III (non-manual) vs. III (manual), IV and V). Unsurprisingly, occupational aspirations vary systematically between the classes. Interestingly, the within-class variations are relatively small, and the association between childhood poverty and occupational aspiration is not statistically significant at the 5% level for any group.⁸⁰ This suggests

⁷⁹ Table A5.2 in the Appendix to this chapter shows the equivalent distributions using the imputed aspirations variables. The distributions are slightly different, in that the average teenage occupational aspiration is slightly lower in Table A5.2. Those who have potentially low aspirations may have been less likely to respond to the questionnaire. However, in terms of the association between aspirations and childhood poverty, the findings based on Table 5.3 are broadly similar to those based on Table A5.2.

⁸⁰ As noted earlier, the response rate of the variable is poor, and the descriptive statistics are prone to measurement errors. Therefore, Table A5.3 in the Appendix to this chapter shows the equivalent results based on the imputed variable for aspirations (see subsection 5.3.1). This shows that the association between childhood poverty and occupational aspirations is not statistically significant for men from social classes III (manual), IV and V and women from social classes I, II and III (non-manual).

that occupational aspirations may not mediate the effect of childhood poverty on earnings, but I examine this question by estimating the regression models below.

5.4 Methods

5.4.1 *The Effect of Childhood Poverty on Adult Earnings*

I estimate the extent of the association between childhood poverty and hourly earnings, that formal qualification attainment cannot explain. Equation (5.1) shows the model to be estimated:

$$\ln y_i = \alpha + \beta P_i + \gamma Q_i + \delta X_i + \eta r_i + \varepsilon_i \quad (5.1)$$

where $\ln y_i$ is the log hourly earnings for a person i , α is a constant, P_i is childhood poverty status, and Q_i is a variable for the highest qualification obtained by the individual, for which I use six dummy variables (see Section 3.5 in Chapter 3). X_i represents a set of observed individual and family characteristics. r is a region variable, included to control for unobserved regional characteristics as well as regional earnings levels in 1991 for the 1958 cohort and in 2004 for the 1970 cohort. ε_i is the error term that is assumed to be distributed normally with a mean of zero.

P_i is measured in the three ways described in Section 5.3; namely by the dummy variable equal to 1 if individual i has ever experienced poverty in childhood, by the set of two dummy variables for the timing of the childhood poverty, and by these two dummy variables plus their interaction. The interaction term attempts to measure the effect of duration of childhood poverty. If a coefficient for the interaction term is significantly different from zero and negative, while modifying the size of the main effects, those growing up in persistent/recurrent poverty are more strongly damaged by their experience of poverty than those growing up in transient poverty. If it is significantly different from zero and positive, a negative effect of poverty in each period is greater for those in transient poverty than for those in persistent/recurrent poverty. In other words, the total negative effect of persistent/recurrent poverty is smaller than a simple accumulation of the negative effects of transient poverty. However, if it is not significantly different from zero, then the negative effects of transient poverty, if any, are cumulative over time for those living in persistent/recurrent poverty, but a negative

effect of poverty in each period is not necessarily larger for them than for those in living in transient poverty. Lastly, I separately use the ordinal variable for the household income quintile at age 16.

Even after controlling for Q_i , a residual effect of childhood poverty on adult earnings may remain. However, it may be inappropriate to argue that that is the effect of the poverty because it may be upwardly biased due to other individual and family characteristics associated with both childhood poverty and future earnings. Therefore, I additionally control for such variables, denoted as X_i . For X_i , I use ethnicity, father's social class, mother's education, number of siblings, and cognitive ability (test scores) in childhood (see Subsection 4.3.2 in Chapter 4 for details of these control variables). Some of these variables are endogenous and, therefore, their inclusion should be done carefully so that it does not introduce either a downward or upward bias to the measured poverty effect.

I create variables for father's social class and mother's education in such a way that these can capture different variations. For father's social class, a division between Social Classes I, II and III (non-manual), and Social Classes III (manual), IV and V may be conventionally used to capture cultural differences between families, so I use a dummy variable equal to 1 if the father's occupation is Social Classes I, II and III (non-manual) during most of childhood.⁸¹ If social class was specified in more detail as in the Standard Occupational Group, it may be almost linearly associated with the risk of poverty and lead to a downward bias in the poverty effect. This may be misleading, particularly for those living in poverty while belonging to Social Classes III (manual), IV and V. However, this problem is expected to be minimised if I use the dummy variable, as there is a sufficient variation in poverty experience within each of the groups. For mother's education, I use a continuous variable for mother's age when she left full-time education. Although qualification attainment is usually a better measure of education than the number of years in education, the mother's qualification is more strongly associated with the father's social class. Therefore, to avoid over-fitting the model, it would be better here to control for the number of years.

Whether or not to control for number of siblings is a difficult question when estimating the effect of childhood poverty. Household size is associated with the likelihood of living in poverty, particularly persistent poverty (Jenkins et al., 2001), and

⁸¹ The variable is observed also for those growing up in a lone mother family unless the response is missing in all four surveys during childhood.

thus the problem of sibling rivalry for material resources is almost coincident with the problem of poverty. However, sibling rivalry for attention and care from parents, which influences children's development, is a different problem. This second type of sibling rivalry should be netted out when estimating the effect of childhood poverty, because the provision of additional income or material resources does not necessarily solve the problems stemming from that. Furthermore, as decreasing household size is the overall trend in the UK as well as other developed countries (Lesthaeghe and Moors, 2000), the number of siblings is larger for the 1958 cohort than for the 1970 cohort. This implies that, for the purpose of extracting a difference in the effect of childhood poverty between the cohorts, it would be reasonable to control for number of siblings.⁸²

The inclusion of cognitive ability measured in childhood might also be questionable. As the poverty or socioeconomic circumstances of their parents directly or indirectly affect the cognitive development of children (Feinstein, 2003; Kiernan and Huerta, 2008), controlling for cognitive ability may underestimate the effect of childhood poverty experienced in mid childhood. However, previous research found that the effect of cognitive ability on earnings is indirect through educational attainment (Blanden et al., 2007), and thus it is unlikely for its inclusion to underestimate the residual effect of childhood poverty on earnings after controlling for qualification attainment. Instead, controlling for children's ability would be useful for controlling for unobserved ability of the parents which may well affect the parents' low income. Given that it is a limitation of this chapter that other unobserved covariates cannot be netted out, controlling for cognitive ability will be worthwhile.

Earnings are only observed among the employed, and when employment participation is not random, regression estimates based on the non-random sub-sample may be biased. However, as was considered in Subsection 4.6.4 in Chapter 4, controlling for employment probability may excessively net out the effect of childhood poverty, when childhood poverty influences future earnings through influencing employment probability.⁸³ Therefore, I do not correct for selection bias into employment in estimating the earnings regression coefficients for childhood poverty.

⁸² This did not cause an underestimation of the coefficient of childhood poverty in the end. For the 1958 cohort, the poverty coefficient is larger when controlling for number of siblings than otherwise, which does not suggest that the underestimation is of concern. The inclusion of the control variable does not affect the poverty coefficient for the 1970 cohort. This further implies that models with the control give conservative estimates in terms of the change over time in the coefficient of childhood poverty.

⁸³ This is particularly true of men. The correction term for selection into employment was not statistically significant at the 5% level for the hourly earnings of women in their early thirties in Chapter 4.

Once I find the extent of the effect of childhood poverty on adult earnings, I next examine whether some of it can be explained by other aspects of poverty than low income. Based on the literature review carried out in Subsection 5.2.2, there is room to question whether parental worklessness and residing in social housing in childhood poverty explain the residual effect of childhood poverty, although it is unlikely that lone parenthood explains it.

5.4.2 *The Mediating Role of Teenage Aspirations*

I move on to examining whether any of the residual effect of childhood poverty on earnings can be explained by teenage aspirations. I estimate the following Equation (5.2) to investigate this:

$$\ln y_i = \alpha + \beta P_i + \delta X_i + \varphi A_i + \eta r_i + \varepsilon_i \quad (5.2)$$

where A_i is educational or occupational aspirations measured at age 16, and the other symbols are the same as in Equation (5.1). I pay attention to the coefficients for childhood poverty, β , before and after controlling for occupational aspirations to see if they mediate the effect of childhood poverty.

I also pay attention to coefficients for occupational aspirations, φ , before and after controlling for qualification attainment to see if occupational aspirations have an impact on later earnings beyond actual educational attainment. This is informative about how much teenage occupational aspirations could be a source of later earnings inequality, regardless of whether they mediate the effect of childhood poverty. For this purpose, I estimate the following equation (5.3):

$$\ln y_i = \alpha + \beta P_i + \delta X_i + \varphi A_i + \gamma Q_i + \xi \lambda_i^E + \eta r_i + \varepsilon_i \quad (5.3)$$

where Q_i is a variable for qualifications as stated above. In estimating the coefficients for occupational aspirations, I correct for selection bias into employment by using the inverse Mills ratio (λ_i^E) obtained in Chapter 4. This is because unobserved characteristics may be positively correlated with both high aspirations and employment probability and, if so, aspiration coefficients based on the only employed subsample are predicted to be biased upwards.

With respect to the mediating role of occupational aspirations on the effect of childhood poverty on later earnings, I also carry out some sensitivity analysis, 1) by excluding some control variables, and 2) by replacing the outcome variable for earnings by that for occupational class attained at age 34.

In using endogenous control variables, it might be suspected that including father's social class and mother's education may have netted out too much of what should be explained by aspirations, when these variables influence children's aspirations. This could artificially make it difficult for the aspiration variables to modify the coefficients for childhood poverty. The same would also be true of abilities in childhood. In terms of the outcome variable, I finally examine whether occupational aspirations could mediate any effect of childhood poverty on occupational attainment. After all, occupational aspirations are expected to affect occupational attainment, while there is within-occupational class inequality in earnings as well as between-occupational class (National Equality Panel, 2010, Figure 5.7). I estimate ordered probit models for the ordinal variable for occupational class with conventional six categories (see Subsection 5.5.2), including the same control variables as used in Equation (5.2).

5.5 Results

As I have already reported in Chapter 4 in a preliminary form, controlling for the other variables such as education, cognitive ability and parental background, the effect of childhood poverty on hourly earnings remains for the 1970 cohort. The same residual association was not found for the 1958 cohort, but I examine this again by using more elaborate variables for childhood poverty for both cohorts.

5.5.1 Timing and Duration of Childhood Poverty and Adult Earnings

I firstly report the male results, followed by the female ones. Table 5.5 and Table 5.6 show the earnings difference between childhood poverty status for men in the 1958 and 1970 cohorts, respectively. Column (1) shows the OLS estimates without controls except for the region fixed effects. The hourly earnings of the 1958 and 1970 cohorts growing up in poverty are lower than those of their non-poor counterparts, by 15.3% and 20.0%, respectively. For the 1970 cohort, Blanden et al. (2008b) report that the earnings of men and women growing up in poverty are lower by 28.0% by using a poverty variable derived from household income at age 16. Column (2) controls for qualification attainment, which reduces the coefficient for childhood poverty, but the

size of the decrease is not great enough to believe that the negative impact of poverty can be removed by formal education. However, the coefficient in Column (2) may be biased upward due to the influence of cognitive ability and family characteristics.

Controlling for cognitive ability and family characteristics, Column (3) shows that the hourly earnings of the 1958 and 1970 cohorts growing up in poverty are lower than their non-poor counterparts by 2.5% and 7.1%, respectively.⁸⁴ The residual effect of childhood poverty and earnings increased between the cohorts,⁸⁵ and the coefficient for childhood poverty is statistically significant only for the 1970 cohort.

Using such a simple variable for childhood poverty, however, may mask the effects of more critical timing of poverty. Columns (4) to (6) report results by using the two dummy variables, each of which identifies poverty in mid childhood and at age 16. For the 1958 cohort, the simple association between poverty and earnings is bigger for poverty in mid childhood than at age 16 (Column (4)). Controlling for qualification attainment, the effect of poverty on earnings only remains for poverty in mid childhood, suggesting that the effect of poverty at age 16 on earnings can be mediated by qualification attainment (Column (5)). Controlling for cognitive ability and family characteristics, the residual effect of poverty in mid childhood is also removed (Column (6)). This is in line with Schoon et al. (2002), reviewed in Subsection 5.2.1.

For the 1970 cohort, on the other hand, poverty in mid childhood and poverty at age 16 have similar effects on earnings, with and without the control variables (Column (6)). Compared to the 1958 cohort, the coefficient for poverty in each period increased. Each poverty period during childhood lowers future earnings by 7-8%, controlling for qualification attainment, cognitive ability and family characteristics. The effect of poverty in mid childhood may partly be an effect of poverty in early childhood which cannot be controlled for using the BCS. As discussed in Subsection 5.2.1, the previous literature found that poverty in late childhood independently affects economic outcomes, but it is less clear whether poverty in mid childhood has such an effect. Either way, the

⁸⁴ The models reported in Column (3) of Table 5.5 and Table 5.6 are equivalent of that reported in Column (2) of Table 4.7 and Table 4.8 in Chapter 4.

⁸⁵ One could be suspicious about the increased coefficient of childhood poverty and argue that earnings inequality increased between early 1991 and 2004 when earnings were measured for each cohort, and it is a driver of the earnings inequality rather than the negative impact of poverty per se that left those who grew up in poverty further behind. Thus, I have also looked at the coefficient in Column (3) in Table 5.5 and Table 5.6 by adjusting for the standard deviation of the earnings variable; namely, the standardised coefficient. The standardised coefficient of childhood poverty is -0.061 for the NCDS and -0.145 for the BCS, controlling for the other variables. Therefore, even if the level of earnings inequality were to be the same in 1991 and 2004, the coefficient of childhood poverty is estimated to have increased between the two cohorts.

effect of poverty in both earlier and late childhood remains, after taking account of disadvantaged cognitive development and qualification attainment for the 1970 cohort.

The next question is whether there is any difference in the negative effect of childhood poverty in each period between the different duration types of poverty. I examine this question by adding the interaction term of poverty in mid childhood and poverty at age 16 to the models reported in Columns (4) to (6). Columns (7) to (9) in Table 5.6 report that the coefficients for the interaction term are not statistically significant at the 5% level for the 1970 cohort. This suggests that the simpler model in Column (6) is preferred to that with the interaction term in Column (9). Although the main coefficients for poverty in mid childhood and at age 16 also turned to insignificant, this may be because of over-fitting. To verify this, I have carried out a joint test of the null hypothesis that revealed all three coefficients for the dummy variables and their interaction are zero, and have strongly rejected it. Therefore, it is reasonable to select that reported in Column (6) as the final model. Substantively speaking, the negative effects of transient poverty in mid childhood and at age 16 are additive for those growing up in persistent/recurrent poverty, but the negative effect of poverty in each period is not necessarily larger for them than for those living in transient poverty. This suggests that the residual effect of childhood poverty may be at least partly attributable to income poverty, rather than characteristics more strongly attached to those living in persistent/recurrent poverty such as parental worklessness (see Subsection 5.3.2).

It may be questioned, however, whether it would be sensible for policy to ignore the additional hardship experienced by those who grew up in persistent/recurrent poverty, given that the coefficient for the interaction term in Column (9) is on the border of statistical significance. The fact might be that the residual effect of childhood poverty on future earnings remains only for those who grew up in persistent/recurrent poverty, and that the effect of transient poverty on earnings can be explained away by the other individual and family characteristics and qualification attainment. If this is the case, relying on the evidence reported in Column (6) may result in weaker targeting. However, even if we wrongly select the model in Column (6), the cost of this error may be a relatively small underestimation of the effect of persistent/recurrent poverty, which is -0.148 instead of -0.196, as calculated from the model in Column (9). On the other hand, if we wrongly select the model in Column (9), the cost is that the negative effects of transient poverty may be disregarded. The latter may be more serious if the experience of transient poverty in childhood is, in reality, damaging long term.

Furthermore, it is unclear why the interaction term is insignificant when individual and family characteristics are not controlled for in Column (8), if the negative effect of persistent/recurrent poverty is more than additive. Taken together, it would be more cautious to select the model in Column (6).

Another concern in a society with increasing inequality is that it is not the disadvantage of the poorest which makes society relatively more immobile but the advantage of the richest. Indeed, since income distribution is positively skewed, income inequality is greater within non-poor families than within poor families. The effect of poverty may simply capture a difference between the rich and the poor, rather than that between the middle and the poor. Thus, I use the variables to group people into quintile groups according to their household income at age 16. This is affected by the transitory component as well as by the permanent component of household income, although it is argued that this variable is, in any case, best available measure of permanent income (Blanden et al., 2008a). As the income variable suffers from a high frequency of item non-response, I also create a dummy variable to identify those whose income information is missing in order to confirm that the coefficient for this dummy variable is not significantly different from zero where the middle income group is set as a reference group.⁸⁶

Column (10) of Table 5.5 and Table 5.6 shows the results from the model with the same control variables as those reported in Columns (3), (6) and (9). Compared to the middle quintile group, the earnings of the second and bottom quintile groups are not significantly lower, controlling for the other variables for the 1970 cohort. For the 1958 cohort, the earnings of those from the second quintile rather than the bottom quintile are lower controlling for the other variables.⁸⁷ The earnings gap between those who grew up in the richest and middle families increased between the two cohorts. Thus, the difference in the coefficients for childhood poverty between the cohorts is partly derived from the increased advantage for the higher income groups for the 1970 cohort. This may raise the question about whether the coefficients for childhood poverty reported in

⁸⁶ Otherwise, missing cases of income are a source of biased estimates.

⁸⁷ What happens in the models is that controlling for education and family characteristic variables decreases the coefficient, while controlling for the ability variables boosts the coefficient. Based on a T-test to compare means, the cognitive ability measured at ages 7 and 11 are not significantly different between children from the second and third parental income quintiles, although such ability is significantly lower for the children from the bottom parental income quintile compared with those from the second quintile. For this reason, I found a residual effect of childhood poverty also for the 1958 cohort when I used the alternative measure of childhood poverty (described in Appendix to Chapter 3) which captures people from a wider range of parental income levels.

the earlier columns are completely due to the exceptionally high earnings of those from the top and fourth parental income quintiles. To check this, I ran the same OLS model as shown Column (6) of Table 5.6, by excluding those people from the top and fourth income quintiles, and confirmed that this exercise scarcely changes the coefficient for childhood poverty (not shown). This implies that the residual effect of poverty on earnings is actually found, but it would have been masked were only the variable for household income at age 16 used.

I turn to female results, highlighting the differences from the male results. Table 5.7 and Table 5.8 report the poverty coefficients for women in the 1958 and 1970 cohorts respectively. There are four points to be discussed. Firstly, Column (1), without control variables, shows that the coefficients for childhood poverty are eventually the same for both cohorts. However, controlling for qualification attainment, cognitive ability and family characteristics in Column (3),⁸⁸ the coefficients for childhood poverty are again found only for the 1970 cohort, with the hourly earnings for those growing up in poverty being lower by about 7%. Secondly, Column (6) shows only weak evidence of the effect of poverty at age 16 on future earnings for both cohorts. This diverges somewhat from Ermisch et al. (2001), who report a large negative effect of poverty in late childhood on the future risk of economic inactivity, but this is unsurprising, given that economic inactivity and earnings are associated but different aspects of economic outcomes. Thirdly, for the women in the 1970 cohort, the residual effect of childhood poverty and earnings reported in Column (3) cannot be explained by the multiplicative effect of persistent/recurrent poverty. Column (9) of Table 5.8 shows that the coefficient for the interaction term between poverty in mid childhood and poverty at age 16 is not statistically significant. Finally, Column (10) shows that the variable for parental income positions at 16 is not powerful in identifying the residual effect of childhood poverty on earnings for women in the 1970 cohort.

To conclude this subsection, for men, the increase in the residual effect of childhood poverty on earnings was mainly because the experience of transient poverty is harmful both in the earlier stages of life and at age 16, beyond educational disadvantage, for the 1970 cohort. Poverty in each period is not necessarily more harmful for those living in persistent/recurrent poverty than for those living in transient

⁸⁸ Column (3) of Table 5.5 and Table 5.6 is equivalent of Columns (1) and (3) of Table 4.16 in Chapter 4 except that work experience is additionally controlled for in Chapter 4. As work experience is associated with childhood poverty, without controlling for it, the coefficient of poverty is slightly greater and statistically significant in this chapter.

poverty, but a negative effect of transient poverty in each period can be cumulative for the former group. For women, although there is no strong evidence of a timing effect of transient poverty, the residual effect of childhood poverty on earnings is found for the 1970 cohort. One reason for the effect of childhood poverty on earnings being clearer for men could be that the earnings inequality rose faster for men than for women between 1991 and 2004 (Dickens and McKnight, 2008).

The effect of childhood poverty I have found does not necessarily indicate a causal effect of income, nor is it possible to detect such causality using the NCDS and BCS data. As discussed in Subsection 5.2.2, however, this is unlikely to be explained by the possible effects of residing in social housing or being raised by a lone parent, as well as the control variables, such as social class, mother's education, and own cognitive ability as measured in early childhood. In what follows, I examine whether allowing for an effect of aspirations reduces the residual effect of childhood poverty on adult earnings for the 1970 cohort for whom the residual effect remains.

5.5.2 Teenage Occupational Aspirations and Adult Earnings

Table 5.9 shows changes in the coefficients for childhood poverty on later earnings, before and after controlling for the variables for occupational aspirations measured at age 16, and the coefficients for the aspiration variables for both genders in the 1970 cohort. Table 5.10 carries out sensitivity analysis to assess whether the choice of control variables makes it hard for the childhood poverty coefficients to change after controlling for the aspirations variables.

In Table 5.9, Column (1) shows the OLS coefficients for poverty in mid childhood and at age 10 for men, after controlling for individual and family characteristics (but not the highest qualification obtained). Column (2) additionally includes the variables for occupational aspirations. A comparison between the columns shows that the coefficient for childhood poverty scarcely changes after controlling for occupational aspirations. Columns (5) and (6) show similar results for women. This suggests that occupational aspirations are unlikely to be responsible for the residual effect of childhood poverty on later earnings for both genders.⁸⁹

Nonetheless, the coefficients for occupational aspirations are statistically significant. Column (3) for men and Column (7) for women correct for selection bias

⁸⁹ Table A5.4 in the Appendix to this chapter, which is based on the imputed variable for occupational aspirations, shows consistent evidence.

into employment, but this correction does not modify the coefficients for occupational aspirations reported in Column (2) for men. Columns (2) and (3) show that the later earnings of those men who aspired to a professional or skilled non-manual job at age 16 are significantly higher than those of those who aspire to a semi-skilled job. Column (7) shows that the earnings premium associated with aspiring to a professional or managerial/technical job is even higher for women. Columns (4) and (8) additionally control for educational attainment. Unsurprisingly, the sizes of the aspiration coefficients decrease for both genders, but some of them remain significant at the 5% level. The earnings premium for aspiring to a skilled non-manual job, compared with aspiring to a semi-skilled job, is nearly 10% for men, and the earnings premium associated with aspiring to a professional or managerial/technical job is 11% or 19%, respectively, for women.⁹⁰

I conduct sensitivity analysis in Table 5.10 as discussed in Subsection 5.4.2. Table 5.10 separately considers the choice of control variables and outcome variable. The models reported in Column (1) and Column (2) of Table 5.9 are replicated in Table 5.10, with Column (1) and Column (2) omitting the variables for father's social class and mother's education and Column (3) and Column (4) omitting the variable for cognitive ability. This exercise persistently shows that the effect of childhood poverty on later earnings scarcely changes after controlling for occupational aspirations at age 16. Column (5) and Column (6) estimate the ordered probit models for the ordinal variable for occupational class, in which a more highly skilled occupational category is assigned a higher value (1. Unskilled (V), 2. Semi-skilled (VI), 3. Skilled manual (III_m), 4. Semi non-manual (III_{nm}), 5. Managerial/technical (II), 6. Professional (I)). Poverty at age 16, but not poverty in mid childhood, has a significantly negative effect on the occupational class attained at age 34 (Column (5)), and most of this effect remains even after controlling for occupational aspirations at age 16.

To summarise, I have been unable to obtain evidence that the residual effect of childhood poverty on later earnings can be explained by teenage occupational aspirations for the 1970 cohort. Nonetheless, some occupational aspirations positively affect later earnings beyond actual educational attainment for both genders. I discuss the implications of these findings in the next concluding section.

⁹⁰ Table A5.4 in the Appendix to this chapter using the imputed variable shows that the coefficients for occupational aspirations are smaller than those reported in Table 5.9 for both genders in the 1970 cohort. If Table A5.4 were a better representation of the reality, the earnings premiums associated with teenage occupational aspirations should not be exaggerated.

5.6 Conclusions

I have investigated the extent of the link between childhood poverty and earnings in people's early thirties, by paying attention to the timing and duration of childhood poverty. I then investigated whether the residual effect of childhood poverty on earnings found after controlling for qualification attainment, cognitive ability and family characteristics, can be at least partly explained by the intervening effect of aspirations. My empirical findings are summarised as follows:

- For men in the 1970 cohort, the experience of transient poverty starts to be harmful in earlier childhood, beyond educational disadvantage. This is why the residual effect of childhood poverty on earnings in men's early thirties remains, controlling for qualification attainment, cognitive ability and family characteristics. For men in the 1958 cohort, the negative effect of poverty at age 16 was mostly mediated by educational disadvantage, and that of poverty in earlier childhood is mediated by educational disadvantage and also explained by parental characteristics. These findings are broadly in line with the previous literature (Schoon et al., 2002) (Table 5.5 and Table 5.6).
- For men in the 1970 cohort, the effect of poverty in each period is additive and, the more times or the longer they experience poverty in childhood, the lower earnings will they receive in the future. Poverty in each period is not necessarily more harmful for those children in persistent/recurrent poverty, but similarly harmful for those who experience transient poverty (Table 5.5 and Table 5.6).
- For women in the 1970 cohort, the residual effect of childhood poverty on their earnings in their early thirties is also found, but the timing effect of the childhood poverty is unclear (Table 5.8).
- Teenage occupational aspirations are unlikely to contribute to the residual effect of childhood poverty. This finding is not sensitive to the choice of control variables (Table 5.9 to Table 5.10).
- For both genders in the 1970 cohort, some occupational aspirations positively affect earnings in their early thirties, after controlling for educational attainment and other individual and family characteristics (Table 5.9).

This chapter is original in its attempt to identify and quantify the long term effects of the timing of childhood poverty on later earnings, to examine whether these

effects are additive rather than compounding, and to examine the change in those effects over time. However, it has failed to establish that teenage occupational aspirations can explain the residual effect of childhood poverty on adult earnings. As there is evidence that occupational aspirations positively affect later earnings beyond actual educational attainment for both genders, raising teenage occupational aspirations may alleviate some of the earnings inequality. However, based on this chapter, we cannot be confident that raising the teenage occupational aspirations of those growing up in poverty would necessarily reduce intergenerational persistence of poverty. If teenage aspirations are not responsible for the intergenerational persistence of poverty, what needs to be highlighted is that young people who grew up in poverty may have insufficient resources and support to translate their aspirations into concrete outcomes. This may be an important area for policy to address, although more expensive than simply encouraging individuals to raise their aspirations. In the end, children and young people will have more freedom to think about what they want to do in the future if they know that they have the resources and support available to make their plans achievable.

Given that this chapter has not found mechanisms generating the residual effect of childhood poverty on adult earnings, one further direction of research could be to focus on non-cognitive skills or personal characteristics which are increasingly recognised as the determinants of earnings. However, as I have reviewed in Subsection 5.2.4, the effect of non-cognitive skills measured in mid childhood (at age 10/11) on earnings is indirect through educational attainment, at least in the recent past (Blanden et al., 2007), so it is unlikely to explain the residual effect of childhood poverty. If non-cognitive skills developed in late childhood onwards are independently important for earnings, and poverty in late childhood affects the development of these non-cognitive skills, then these may be associated with the residual effect of childhood poverty on earnings.

One might be interested to explore further the human characteristics which determine earnings but have not yet been discovered. However, whether this kind of finding can inform policies to develop human capital depends on the desirability as well as cost of policy interventions into these human characteristics. As discussed in Subsection 5.2.4, it may be the reward system in the labour market rather than the human characteristics that needs to be changed.

The data from the NCDS and BCS may not be the most suitable for examining income poverty, and bringing out the implications for contemporary children and young

people, but they are the only data available so far to facilitate the examination of the change over time in the (residual) effect of childhood poverty on later earnings.⁹¹ The understanding of the change over time is useful in contextualising the current situation and obtaining ideas about what could be practically changed by policy. Given that the level of intergenerational income mobility does not appear to have improved since the 1970 cohort (Blanden and Machin, 2007), the above policy implications derived from the 1970 cohort would still be relevant to contemporary children and young people to some extent. However, I will examine the effects of childhood poverty on later unemployment for those born in the 1980s, by using data from the BHPS.

⁹¹ In order to bring out the implications for lifetime earnings, it would be desirable to analyse earnings measured in people's early thirties at the youngest, based on the discussion of Gregg and Macmillan (2008) (see Subsection 4.3.1 in Chapter 4). In this respect, the data need to be about those born in the 1970s, at the time when the analysis in this chapter is conducted.

Table 5.1 Summary of the findings on the effects of the timing of childhood poverty (parental worklessness) on educational and economic outcomes from Ermisch et al. (2001)

	All ages	0-5	6-10	11-15
Men				
Education	- (large)	- (moderate)	- (large)	
Economic inactivity	+ (large)	+ (large)		+ (large)
Women				
Education				
Economic inactivity	+ (large)			+ (large)
Sibling difference estimates				
Education				- (moderate)
Economic inactivity	+ (large)			+ (moderate)

Notes: Extracted from Tables 6.3, 6.4 and 6.5 in Ermisch et al. (2001).

Table 5.2 The proportions of the cohort members who experienced parental worklessness, social housing or lone parenthood at each age by childhood poverty status (%): NCDS and BCS

	No childhood poverty	Transient poverty in mid childhood	Transient poverty at age 16	Persistent/ recurrent poverty	Total
NCDS					
All	(70.8)	(8.5)	(10.8)	(9.9)	(100)
Parental worklessness at age 11	0.0	4.1	0.3	7.7	1.1
Parental worklessness at age 16	1.0	1.5	12.0	35.3	6.7
Social housing at age 11	34.3	60.3	52.4	72.9	42.4
Social housing at age 16	31.8	57.5	54.2	75.0	40.8
Lone parenthood at age 11	2.4	9.7	5.1	26.2	5.7
Lone parenthood at age 16	4.5	7.6	22.4	33.7	9.6
BCS					
All	(63.3)	(7.3)	(17.7)	(11.7)	(100)
Parental worklessness at age 10	1.1	17.6	2.6	41.6	7.3
Parental worklessness at age 16	3.6	9.4	27.5	54.0	14.0
Social housing at age 10	17.9	56.2	38.1	67.1	30.5
Social housing at age 16	8.8	25.1	34.1	60.2	21.8
Lone parenthood at age 10	2.6	21.8	4.4	30.6	7.6
Lone parenthood at age 16	3.4	7.2	11.9	25.8	7.8
BCS-NCDS					
All	(-7.5)	(-1.2)	(6.9)	(1.8)	
Parental worklessness at age 10	1.1	13.5	2.3	33.9	6.2
Parental worklessness at age 16	2.6	7.9	15.5	18.7	7.3
Social housing at age 10	-16.4	-4.1	-14.3	-5.8	-11.9
Social housing at age 16	-23.0	-32.4	-20.1	-14.8	-19.0
Lone parenthood at age 10	0.2	12.1	-0.7	4.4	1.9
Lone parenthood at age 16	-1.1	-0.4	-10.5	-7.9	-1.8

Notes: The numbers in parentheses show the percentages of the cohort members falling in each childhood poverty status.

Table 5.3 Occupational aspirations at age 16 by childhood poverty status (%): BCS

	No childhood poverty	Transient poverty in mid childhood	Transient poverty at age 16	Persistent/ recurrent poverty	Total
Males					
Semi-skilled	19.6	29.6	24.2	25.3	21.5
Skilled manual	23.1	22.4	29.9	28.4	24.6
Skilled non-manual	18.1	20.0	15.7	19.8	18.0
Managerial/technical	8.4	8.0	9.2	6.2	8.3
Professional	30.9	20.0	21.1	20.4	27.7
Total (n)	1,280	125	294	162	1,861
Females					
Semi-skilled	18.6	23.9	24.1	23.2	20.4
Skilled manual	6.5	6.7	6.1	8.9	6.7
Skilled non-manual	32.1	31.7	30.2	32.1	31.7
Managerial/technical	20.0	21.1	20.6	19.0	20.1
Professional	22.8	16.7	19.1	16.9	21.2
Total (n)	1,712	180	461	237	2,590

Table 5.4 Occupational aspirations at age 16 by childhood poverty and father's social class (%): BCS

	No childhood poverty	Childhood poverty	Total
Males from social class I, II or III (non-manual)			
Semi-skilled	18.6	26.1	20.0
Skilled manual	14.7	18.3	15.3
Skilled non-manual	16.5	17.0	16.6
Managerial /technical	9.5	9.2	9.4
Professional	40.8	29.4	38.8
Total (n)	709	153	862
Males from social class III (manual), IV or V			
Semi-skilled	20.1	25.1	22.2
Skilled manual	34.1	31.8	33.1
Skilled non-manual	20.1	18.1	19.2
Managerial /technical	7.2	7.8	7.4
Professional	18.6	17.3	18.1
Total (n)	558	399	957
Females from social class I, II or III (non-manual)			
Semi-skilled	16.6	20.9	17.4
Skilled manual	6.6	8.5	6.9
Skilled non-manual	26.4	21.4	25.4
Managerial /technical	20.1	22.4	20.6
Professional	30.3	26.9	29.7
Total (n)	884	201	1085
Females from social class III (manual), IV or V			
Semi-skilled	20.7	24.7	22.4
Skilled manual	6.5	6.6	6.5
Skilled non-manual	38.5	34.7	36.8
Managerial /technical	19.9	19.3	19.6
Professional	14.5	14.8	14.6
Total (n)	816	637	1,453

Notes: The association between occupational aspirations and childhood poverty is not statistically significant at the 5% level for all of the groups based on the chi-square test.

Table 5.5 Effects of childhood poverty on adult earnings: NCDS males at age 33

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Childhood poverty (ever)	-0.153** (0.019)	-0.046* (0.018)	-0.025 (0.022)							
Poverty in mid childhood				-0.150** (0.026)	-0.067** (0.024)	-0.019 (0.026)	-0.179** (0.035)	-0.081** (0.031)	-0.002 (0.029)	
Poverty at age 16				-0.077** (0.022)	-0.002 (0.022)	-0.030 (0.026)	-0.099** (0.025)	-0.013 (0.025)	-0.019 (0.030)	
Interaction of poverty in mid childhood and at age 16							0.076 (0.051)	0.037 (0.049)	-0.044 (0.055)	
Bottom quintile group										-0.033 (0.032)
2 nd lowest quintile group										-0.065* (0.029)
Middle quintile group										Ref
2 nd highest quintile group										0.024 (0.027)
Top quintile group										0.033 (0.029)
Missing income variable										0.021 (0.025)
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Highest qualification obtained	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Individual and family characteristics	No	No	Yes	No	No	Yes	No	No	Yes	Yes
Inverse Mills ratio λ_i^E	No	No	No	No	No	No	No	No	No	No
Sample size	2617	2560	1837	2617	2560	1837	2617	2560	1837	1837
Adjusted R-squared	0.09	0.25	0.26	0.09	0.25	0.26	0.09	0.25	0.26	0.27

Notes: Robust standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

Table 5.6 Effects of childhood poverty on adult earnings: BCS males at age 34

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Childhood poverty	-0.200** (0.023)	-0.126** (0.021)	-0.071** (0.025)							
Poverty in mid childhood				-0.168** (0.032)	-0.109** (0.029)	-0.071* (0.034)	-0.150** (0.047)	-0.098* (0.042)	-0.020 (0.045)	
Poverty at age 16				-0.163** (0.026)	-0.103** (0.023)	-0.077** (0.027)	-0.154** (0.029)	-0.097** (0.026)	-0.053+ (0.030)	
Interaction of poverty in mid childhood and at age 16							-0.039 (0.063)	-0.024 (0.056)	-0.123+ (0.064)	
Bottom quintile group										-0.011 (0.043)
2 nd lowest quintile group										-0.020 (0.038)
Middle quintile group										Ref
2 nd highest quintile group										0.082* (0.040)
Top quintile group										0.091* (0.041)
Missing income variable										0.051 (0.033)
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Highest qualification obtained	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Individual and family characteristics	No	No	Yes	No	No	Yes	No	No	Yes	Yes
Inverse Mills ratio λ_i^E	No	No	No	No	No	No	No	No	No	No
Sample size	1973	1880	1425	1973	1880	1425	1973	1880	1425	1653
Adjusted R-squared	0.10	0.30	0.31	0.11	0.30	0.31	0.11	0.30	0.31	0.31

Notes: Robust standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

Table 5.7 Effects of childhood poverty on adult earnings: NCDS females at age 33

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Childhood poverty	-0.167** (0.021)	-0.048* (0.019)	-0.026 (0.023)							
Poverty in mid childhood				-0.138** (0.026)	-0.042+ (0.023)	-0.006 (0.028)	-0.129** (0.034)	-0.028 (0.030)	0.016 (0.036)	
Poverty at age 16				-0.120** (0.027)	-0.041+ (0.023)	-0.049+ (0.029)	-0.112** (0.034)	-0.028 (0.030)	-0.028 (0.037)	
Interaction of poverty in mid childhood and at age 16							-0.024 (0.054)	-0.037 (0.047)	-0.061 (0.057)	
Bottom quintile group										-0.044 (0.035)
2 nd lowest quintile group										0.020 (0.036)
Middle quintile group										Ref
2 nd highest quintile group										0.020 (0.038)
Top quintile group										0.035 (0.037)
Missing income variable										0.010 (0.031)
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Highest qualification obtained	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Individual and family characteristics	No	No	Yes	No	No	Yes	No	No	Yes	Yes
Inverse Mills ratio λ_i^E	No	No	No	No	No	No	No	No	No	No
Sample size	2232	2188	1607	2232	2188	1607	2232	2188	1607	1607
Adjusted R-squared	0.07	0.34	0.33	0.08	0.34	0.34	0.08	0.34	0.34	0.33

Notes: Robust standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

Table 5.8 Effects of childhood poverty on adult earnings: BCS females at age 34

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Childhood poverty	-0.167** (0.024)	-0.089** (0.022)	-0.073** (0.026)							
Poverty in mid childhood				-0.095** (0.031)	-0.040 (0.029)	-0.037 (0.034)	-0.121** (0.042)	-0.059 (0.040)	-0.045 (0.044)	
Poverty at age 16				-0.140** (0.027)	-0.080** (0.024)	-0.069* (0.028)	-0.152** (0.032)	-0.089** (0.027)	-0.073* (0.031)	
Interaction of poverty in mid childhood and at age 16							0.051 (0.062)	0.039 (0.056)	0.019 (0.066)	
Bottom quintile group										-0.088 ⁺ (0.045)
2 nd lowest quintile group										0.007 (0.036)
Middle quintile group										Ref
2 nd highest quintile group										0.001 (0.038)
Top quintile group										0.052 (0.042)
Missing income variable										-0.021 (0.031)
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Individual and family characteristics	No	No	Yes	No	No	Yes	No	No	Yes	Yes
Inverse Mills ratio λ_i^E	No	No	No	No	No	No	No	No	No	No
Sample size	1932	1899	1466	1932	1899	1466	1932	1899	1466	1664
Adjusted R-squared	0.07	0.28	0.31	0.07	0.28	0.31	0.07	0.28	0.31	0.30

Notes: Robust standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

Table 5.9 Mediating effects of occupational aspirations at age 16 on adult earnings: BCS at age 34

	(1) Males	(2) Males	(3) Males	(4) Males	(5) Females	(6) Females	(7) Females	(8) Females
Poverty in mid childhood	-0.077 [*] (0.035)	-0.082 [*] (0.035)	-0.048 (0.037)	-0.047 (0.035)	-0.065 ⁺ (0.035)	-0.060 ⁺ (0.035)	-0.069 [*] (0.035)	-0.053 (0.034)
Poverty at age 16	-0.095 ^{**} (0.029)	-0.085 ^{**} (0.029)	-0.051 ⁺ (0.030)	-0.034 (0.028)	-0.086 ^{**} (0.031)	-0.104 ^{**} (0.031)	-0.081 ^{**} (0.031)	-0.060 [*] (0.029)
Semi-skilled		Ref	Ref	Ref		Ref	Ref	Ref
Skilled manual		-0.002 (0.045)	-0.036 (0.045)	-0.010 (0.044)		0.111 (0.076)	0.048 (0.077)	-0.001 (0.076)
Skilled non-manual		0.107 [*] (0.049)	0.106 [*] (0.050)	0.096 [*] (0.048)		0.044 (0.044)	0.009 (0.043)	0.049 (0.041)
Managerial/technical		0.094 (0.072)	0.103 (0.073)	0.054 (0.066)		0.173 ^{**} (0.046)	0.159 ^{**} (0.047)	0.105 [*] (0.043)
Professional		0.239 ^{**} (0.049)	0.237 ^{**} (0.050)	0.096 ⁺ (0.049)		0.383 ^{**} (0.049)	0.344 ^{**} (0.048)	0.187 ^{**} (0.049)
No response/no questionnaire		0.047 (0.039)	0.037 (0.040)	0.063 (0.039)		0.058 (0.043)	0.046 (0.042)	0.054 (0.040)
Highest qualification obtained	No	No	No	Yes	No	No	No	Yes
Father's social class	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnicity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of siblings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region at age 34	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inverse Mills ratio λ_i^E	No	No	Yes	Yes	No	No	Yes	Yes
Sample size	1498	1472	1341	1341	1488	1439	1367	1367
Adjusted R-squared	0.21	0.23	0.25	0.33	0.17	0.22	0.28	0.35

Notes: Robust standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

Table 5.10 Effects of childhood poverty on adult earnings or occupational class with and without controlling for occupational aspirations at 16: BCS males at age 34

	(1)	(2)	(3)	(4)	(5)	(6)
Poverty in mid childhood	-0.113** (0.033)	-0.108** (0.033)	-0.078* (0.035)	-0.079* (0.034)	-0.103 (0.085)	-0.148+ (0.088)
Poverty at age 16	-0.117** (0.028)	-0.103** (0.028)	-0.113** (0.028)	-0.101** (0.029)	-0.169* (0.070)	-0.144* (0.071)
Occupational aspirations	No	Yes	No	Yes	No	Yes
Father's social class	No	No	Yes	Yes	Yes	Yes
Mother's education	No	No	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	No	No	Yes	Yes
Ethnicity	Yes	Yes	Yes	Yes	Yes	Yes
Number of siblings	Yes	Yes	Yes	Yes	Yes	Yes
Region at age 34	Yes	Yes	Yes	Yes	Yes	Yes
Inverse Mills ratio λ_i^E	No	No	No	No	No	No
cut1					-1.269** (0.412)	-1.512** (0.419)
cut2					-0.385 (0.410)	-0.638 (0.417)
cut3					0.630 (0.409)	0.415 (0.415)
cut4					0.967* (0.409)	0.767+ (0.415)
cut5					2.539** (0.413)	2.399** (0.419)
Sample size	1574	1546	1594	1568	1476	1450
Adjusted R-squared	0.18	0.22	0.16	0.19		
Log pseudo likelihood					-2009.9	-1932.7

Notes: Robust standard errors in parentheses.

+ significant at 10%; * significant at 5%; ** significant at 1%

Columns (1) to (4) estimate OLS models for earnings at age 34, and Columns (5) and (6) estimate ordered probit model for occupational class attained at age 34. The values of the variable for occupational class are defined as follows. 1. Unskilled (V), 2. Semi-skilled (VI), 3. Skilled manual (III_m), 4. Skilled non-manual (III_{nm}), 5. Managerial/technical (II) and 6. Professional (I).

Appendix to Chapter 5

A5.1 The Variable for Occupational Aspirations from the BCS

I use the recoded variable used in Burchardt (2005). To recode the variable, she classified the freely-described jobs into a suitable one from the given multiple choices and two newly added categories, one of which includes literary and artistic pursuits and sport and another which includes construction. She further classified these seventeen (fifteen plus two) categories into five categories based on the standard job classification (professional, managerial/technical, skilled non-manual, skilled manual and semi-skilled). There is no category for unskilled, as only jobs that require training are included in the questionnaire. As each of the multiple choices does not necessarily correspond to an occupation but some stand for an industry, hence the recoded variable is best understood as an approximation.

Table A5.1 Occupational aspirations based on the BCS questionnaire

	BCS (jb27a1-a16)
Professional	1 Professional (needing a degree)
Managerial/Technical	2 Managerial/Nursing/Teaching
	16 Literary/Arts/Sports
Skilled non-manual	3 Trained clerical (e.g. bank clerk)
	4 Administrative (office work)
	10 Salesman/representative/shop worker
	8 Processing worker (computing, IT)
Skilled manual	6 Craftsman/designer
	7 Maintenance worker (repairs and service)
	12 Transport worker
	17 Construction worker
Semi-skilled	5 Worker on farm/agriculture
	9 Food industry/restaurant worker
	11 Health worker
	13 Worker in manufacturing, assembling products
	14 Service work (cleaning, dishwashing)
	15 HM Forces
Unskilled	N/A
Other	18 Other
Don't know	19 Can't decide

Notes: Respondents were prompted to choose occupations of interest but also allowed to give unprompted responses if no choice were appropriate. I use the recoded variable used in Burchardt (2005). She added two choices (16 Literary/Arts/Sports and 17 Construction) for unprompted responses that had not been distributed to the given choices, and also created the variable with the aggregate categories.

A 5.2 Imputation of the Missing Response for the Aspiration Variable

I attempt to impute values of the aspiration variables for those who did not respond to the self-completion questionnaire. If we took advantage of the fact that these cohort studies also collected other background information about the respondents, we could predict the missing aspirations by using other observed variables in the datasets. To do this, I employ a data imputation method suggested in Greene (2008, p. 63), which is made computationally feasible by the Stata command *uvis*, written by Royston (2004).

The imputation procedure is as follows. Firstly, I estimate the regression coefficients for the explanatory variables for aspirations using only observed data. Given that explanatory variables for aspirations are also observed for those cases whose aspiration variables are missing, I fit the estimated regression model above onto these values to predict the outcome values for the missing cases. As an essence of this imputation method, I then assign random errors to the predicted values. This overcomes the less rewarding way of replacing missing values by perfectly predicted values, which underestimates the variances in the aspiration variables. Because the aspiration variables can be treated as ordinal, I estimate the ordered logit coefficients and thus the random errors in this context are those for latent values.⁹² The probability of each case having a particular value for the aspiration variables is predicted based on these coefficients and errors and, by comparing the predicted probability and estimated cut-offs that define the probability ranges represented by each value of the aspirations variables, the missing values are imputed.

⁹² There were originally non-ordinal responses, such as 'don't know', 'can't decide' and 'others' in the aspiration variable. These responses may reveal distinctive attitudes, but I treat them as missing in order conveniently to regard the variable as ordinal. I later assign them particular aspiration values that are derived from the estimates of the ordered logit model.

Table A5.2 Occupational aspirations at age 16 by childhood poverty status (%): BCS, the imputed aspiration variable

	No childhood poverty	Transient poverty in mid childhood	Transient poverty at age 16	Persistent/ recurrent poverty	Total
Males					
Semi-skilled	30.3	42.9	38.4	45.1	34.4
Skilled manual	22.8	20.0	24.5	22.6	22.9
Skilled non-manual	16.2	17.7	13.4	12.4	15.4
Managerial /technical	7.3	3.9	7.9	5.4	7.0
Professional	23.3	15.5	15.9	14.6	20.4
Total (n)	2,726	310	763	486	4,285
Females					
Semi-skilled	27.0	37.1	32.9	42.5	30.7
Skilled manual	5.9	5.8	5.7	5.3	5.8
Skilled non-manual	29.7	28.5	26.7	27.6	28.8
Managerial /technical	17.9	14.4	17.9	13.0	17.1
Professional	19.5	14.1	17.0	11.6	17.7
Total (n)	2,778	326	773	525	4,402

Table A5.3 Occupational aspirations at age 16 by childhood poverty and father's social class(%): BCS, the imputed aspiration variable

	No childhood poverty	Childhood poverty	Total
Males from social class I, II or III (non-manual)			
Semi-skilled	25.1	36.3	27.3
Skilled manual	17.8	18.4	18.0
Skilled non-manual	15.7	13.4	15.2
Managerial/technical	8.5	8.1	8.5
Professional	32.8	23.8	31.0
Total (n)	1,301	320	1,621
Males from social class III (manual), IV or V			
Semi-skilled	34.4	39.6	36.7
Skilled manual	27.7	25.7	26.8
Skilled non-manual	16.9	14.8	15.9
Managerial/technical	6.4	6.1	6.3
Professional	14.7	13.8	14.3
Total (n)	1,400	1,142	2,542
Females from social class I, II or III (non-manual)			
Semi-skilled	22.7	27.5	23.6
Skilled manual	6.4	6.7	6.5
Skilled non-manual	25.8	22.7	25.2
Managerial/technical	19.2	20.1	19.4
Professional	25.9	23.0	25.3
Total (n)	1,310	313	1,623
Females from social class III (manual), IV or V			
Semi-skilled	30.1	35.5	32.6
Skilled manual	5.5	5.7	5.6
Skilled non-manual	33.6	30.6	32.3
Managerial/technical	17.0	15.1	16.1
Professional	13.8	13.1	13.5
Total (n)	1,436	1,193	2,629

Notes: The association between occupational aspirations and childhood poverty is not statistically significant for males from social class III (manual), IV or V, and females from social class I, II or III (non-manual).

Table A5.4 Mediating effects of occupational aspirations at age 16 on adult earnings: BCS at age 34, the imputed aspiration variable

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Males	Males	Males	Males	Females	Females	Females	Females
Poverty in mid childhood	-0.077 [*]	-0.085 [*]	-0.053	-0.054	-0.065 ⁺	-0.060 ⁺	-0.069 [*]	-0.053
	(0.035)	(0.034)	(0.037)	(0.035)	(0.035)	(0.035)	(0.035)	(0.034)
Poverty at age 16	-0.095 ^{**}	-0.098 ^{**}	-0.063 [*]	-0.044	-0.086 ^{**}	-0.104 ^{**}	-0.081 ^{**}	-0.060 [*]
	(0.029)	(0.029)	(0.030)	(0.028)	(0.031)	(0.031)	(0.031)	(0.029)
Semi-skilled		Ref	Ref	Ref		Ref	Ref	Ref
Skilled manual		0.054 ⁺	0.027	0.029		0.083	0.043	0.009
		(0.032)	(0.034)	(0.032)		(0.056)	(0.055)	(0.055)
Skilled non-manual		0.106 ^{**}	0.099 ^{**}	0.087 [*]		0.009	-0.027	-0.001
		(0.034)	(0.036)	(0.034)		(0.034)	(0.034)	(0.033)
Managerial /technical		0.115 [*]	0.121 [*]	0.074		0.126 ^{**}	0.104 ^{**}	0.069 ⁺
		(0.049)	(0.050)	(0.047)		(0.037)	(0.038)	(0.035)
Professional		0.189 ^{**}	0.184 ^{**}	0.083 [*]		0.251 ^{**}	0.212 ^{**}	0.107 ^{**}
		(0.037)	(0.038)	(0.036)		(0.041)	(0.040)	(0.039)
Highest qualification obtained	No	No	No	Yes	No	No	No	Yes
Father non-manual	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnicity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of siblings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region at age 33/34	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inverse Mills ratio λ_i^E	No	No	Yes	Yes	No	No	Yes	Yes
Sample size	1498	1472	1341	1341	1488	1439	1367	1367
Adjusted R-squared	0.21	0.23	0.25	0.33	0.17	0.22	0.28	0.35

Notes: Robust standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

Chapter 6

The Effect of Childhood Poverty on Unemployment in Early Working Life: Evidence from the 1970 Birth Cohort

6.1 Introduction

This chapter continues to investigate why the effect of childhood poverty on later economic outcomes remains, even after controlling for educational attainment. As reviewed in Subsection 2.3.2 in Chapter 2, the relationship between childhood poverty and unemployment in early working life seems to be a pathway to intergenerational persistence of poverty that cannot completely be explained by education. If so, policies to reduce youth unemployment may have long-term positive impacts on the life chances of those growing up in poverty.

However, there is no single answer about how and when such policies should be implemented, or to whom they should be directed as a priority. Whether a person is unemployed at a particular point in time is determined both by how likely they are to become unemployed and by how long they are likely to remain so. The previous studies have not investigated whether and how far childhood poverty influences the onset of and exit from unemployment. To extend our current knowledge that education is important but not alone in being important, I aim to investigate the effects of childhood poverty both at the onset of unemployment and exit from unemployment respectively, and whether each of these effects can be explained by education. The importance of childhood poverty and education may vary across these stages of unemployment.

This question is to test the validity of the welfare-dependency model that is based on the assumption that those who grew up in poverty tend to remain workless for a long time because they have little motivation to work (see Subsection 2.2.4 in Chapter 2). In order for this assumption to be valid, childhood poverty should only affect the duration of unemployment, but not the onset of unemployment, at least as a necessary condition. If those who grew up in poverty faced a higher risk of becoming unemployed even when they are working, it would be inappropriate to conclude that they have the dependency attitude that triggers long-term unemployment. Although one may even argue that a dependency attitude could lead them not to make efforts to stay in employment, it is unlikely that such an attitude, if any, is the main reason for their becoming unemployed. Previous studies have found that there are people who remain in

the cycle of no-pay/low-pay due to the poor quality of low-wage jobs, controlling for their observed and unobserved initial characteristics (Stewart, 2007; Stewart and Swaffield, 1999).

In this chapter, I analyse employment and unemployment transitions after leaving full-time education up to their early thirties for those born in 1970, using data from the BCS. The dataset which contains data on both childhood variables and long-term employment dynamics is valuable, although the cohort members are much older than contemporary children and young people. As Subsection 6.2.3 below shows, the 1970 cohort already faced the collapse of the youth labour market, and therefore the findings from the 1970 cohort could provide some relevant lessons for contemporary policy implications. With respect to the shorter-term employment outcomes for the younger birth cohorts, I will analyse data from the BHPS in the next chapter.

I review the relevant literature in the next section, and discuss the data and methods in Section 6.3. I report the descriptive findings in Section 6.4 and the findings from regression analysis in Section 6.5. In Section 6.6, I conclude by discussing the implications for the policies to improve the employment prospects of those growing up in poverty.

6.2 Literature review

I review the relevant empirical and theoretical literature to clarify why childhood poverty possibly affects the onset of and exit from unemployment in adulthood, respectively. I also discuss the economic and policy contexts under which the 1970 cohort experienced transitions from education to work.

6.2.1 The Onset of Unemployment

Entry into unemployment occurs when workers leave their jobs and have not found another job to start immediately, when they leave education and do not find a job, or when they exit from other economic inactivity states without finding a job. With respect to job loss, there is a theoretical proposition that, given that some human capital is firm specific, firms are more likely to retain employees with higher human capital and that such employees are less likely to leave (Oi, 1962; Parsons, 1972). If firm-specific human capital is highly correlated with educational attainment, employees with more education are more likely to remain in work. Empirical research has confirmed this (Ashenfelter and Ham, 1979; Kiefer, 1985; Nickell, 1979). This could indicate a higher

risk of job loss for those who grew up in poverty because of their educational disadvantage.

However, if a residual association between childhood poverty and the onset of unemployment remains after controlling for educational attainment, other explanations are needed. One possibility is that childhood poverty influences human capital accumulation independently of education, thereby increasing the risk of job loss. This is plausible where employers increasingly demand not only knowledge and technical skills but also non-cognitive skills and work attitudes (Bartik, 2001; Heckman, 2000; Heckman and Lochner, 2000; Heckman et al., 2006; Kleinman et al., 1998). While the former can be acquired through formal education and training, the latter may need to be learnt through work experience (Bartik, 2001) or from working role models. If those who grew up in poverty are more likely to be trapped in low-pay/no-pay cycles, they may hardly obtain supportive work environments to improve their non-cognitive skills. If their parents did not work, they may have had little chance of acquiring such skills from working role models. Another possibility is that they have only limited social networks and informational resources to make a good career choice, and thus their job matching quality may not have been less developed than their more affluent counterparts with the same education. These could lead them to face a higher risk of job loss.

Alternatively, childhood poverty may increase the risk of not having another job to go to upon job loss, due firstly to their low human capital and secondly to their job search behaviour. In terms of the latter, it is economically irrational to quit into unemployment because an on-the-job search is advantageous in gaining access to information, giving future employers good impressions, and consequently more productive in finding a better job (Blau and Robins, 1990; Layard et al., 2005). Exceptionally, people losing high-quality jobs may rationally choose to be unemployed rather than to take low-quality jobs temporarily with a view to improving their chances of finding high-quality jobs later (McCormick, 1990). However, this mechanism is not likely to explain the higher unemployment rate for those who grew up in poverty, because they are less likely to have high-quality jobs due to their lower educational attainment. Pissarides and Wadsworth (1994) found that those who undertake an on-the-job search make use of their personal networks and job advertisements in the newspapers more extensively than those who quit into unemployment. If those who

grew up in poverty tend to have difficulties in using these networks and newspapers, they may be more likely to quit into unemployment.

Unemployment risks in general (not necessarily the onset of unemployment) are associated with jobs/occupations, since low-paying semi-skilled and unskilled manual jobs/occupations are more fragile and lead to a greater risk of unemployment (Elias and McKnight, 2003; Layard et al., 2005). This association seems to have increased over time between those who entered the labour force in 1945 and 1985 respectively (Gershuny and Marsh, 1994). Therefore, one reason for the higher risks of unemployment for those who grew up in poverty may be that many of them are in jobs that are relatively insecure.⁹³

The trend of increasing job instability does not seem to explain the higher unemployment rate for disadvantaged young people. Gregg and Wadsworth (2002) showed that job stability, as measured by the share of long-term jobs, declined between 1985 and 2000 in the UK,⁹⁴ but that this decline was concentrated among men over the age of 50 and not among less skilled or young people.

6.2.2 The Exit from Unemployment

The above explanations based on the human capital and job search theories can partly explain why it may take longer for those who grew up in poverty to find a job while unemployed than others, although there is no direct empirical evidence for this. Previous studies found that holding degrees or other higher qualifications above A-level relative to holding A-levels or below or achieving higher scores in maths and reading significantly reduces unemployment risks (Arulampalam et al., 2000; Narendranathan and Elias, 1993).⁹⁵ Educational attainment is expected to affect both human capital and job search behaviour. Thus, low educational attainment could possibly reduce the exit

⁹³ Although I will not present this for brevity, I have checked that the sizes and significance levels of the coefficients for the childhood poverty variables in the analyses of this chapter change only slightly, after controlling for the time-changing variables for occupational class (higher managerial and professional, lower managerial and professional, intermediate, small employers and own account, lower supervisory and technical, semi-routine and routine workers). This indicates that, where there is a statistically significant association between childhood poverty and unemployment, a large portion of the association remains unexplained by occupational attainment.

⁹⁴ However, job stability probably improved in the economic boom of the 2000s until the 2008/09 recession.

⁹⁵ Although these studies estimated the probability of being unemployed at time t rather than the exit rate from being unemployed at time t , it is fair to say that the former are largely determined by the latter in the UK. Relatively high proportions of the long-term unemployed rather than inflow rates can explain the high unemployment rates in European countries, including the UK, compared with the USA and Canada (Layard et al., 2005; Machin and Manning, 1999).

rates from unemployment for those who grew up in poverty. The evidence for the scarring effect of unemployment also has an implication that those who grew up in poverty may be less likely to exit from unemployment because of their past unemployment incidence or duration, which diminishes human capital.

The welfare-dependency model, reviewed in Chapter 2, suggests that those who grew up with parents on benefits might not feel stigmatised with regard to being unemployed long term. This might also be plausible if their peers and neighbours also experience long-term unemployment or inactivity. However, there is too little empirical evidence to support these explanations of the welfare-dependency model in the UK. Alternatively, young people may be unemployed long term not necessarily because they were brought up by poor parents but because they live in an area with a weak local labour market. With respect to women married to unemployed men, the work disincentives created by the benefit system may be a reason for their long-term unemployment (Bingley and Walker, 2001).

6.2.3 Economic and Policy Contexts

As this chapter examines only one birth cohort, its findings may not be generalisable. There are both similarities and differences between the experience of the 1970 cohort and that of contemporary young people. In this section, I review these issues in terms of the economic and policy contexts of employment, education and training, and the benefit system, and specify what lessons can be learnt for contemporary policy implications.

As Figure 6.1 shows, the clearest difference is in the participation rates in both post-16 and post-18 education and training, which is due partly to the implementation of the Education Reform Act 1988 and the major reforms to the benefit system. However, the NEET rates among 16-18-year-olds are not lower in 2006 than between 1986 and 1988.

It is important to note that the cohort already faced the deterioration of the youth labour market, which has been a common trend among many economically advanced countries since the 1980s. Figure 6.2 shows the unemployment rates by age group between the 1980s and 2009.⁹⁶ Although the youth unemployment rates, based on the statistics provided by the Office for National Statistics, are unavailable until 1993, the

⁹⁶ The unemployment rate for men is slightly higher and that for women is slightly lower than the average for both genders, but the trend is similar for both genders.

unemployment rate for those under 20 years old in 1983 is reported to be 25.7% (Marsden et al., 1986). Despite the fact that the overall unemployment rate is lower in the 2000s, before the financial crisis in 2008, than in the mid 1980s and early 1990s, the unemployment rate for 16-17-year-olds has always remained high. The recent rise in the 2000s may partly be because those who did not stay on in full-time education or training in the younger cohorts are more disadvantaged than their older counterparts.⁹⁷ The unemployment rate for 18-24-year-olds is almost parallel to the overall unemployment rate, but the former is always higher, by around 5 percentage points.

Blanchflower and Freeman (2000) suggest that the high youth unemployment rate is puzzling for economic theory, given that the youth population is declining in size and is increasingly equipped with the higher skills demanded by technological change. They also propose that solving this problem would require general labour market reforms, as well as short-term active labour market programmes. In this broad perspective, evidence provided by the 1970 cohort could still be useful.

British domestic circumstances also suggest that 16-year-olds in the 1970 birth cohort were broadly placed in the same policy context as their contemporary counterparts. Deakin (1996) argues that, in post-war history, a turning point for youth policy was marked in 1983, with its focus moving from 'manpower' to training. Until the 1960s, along with the full employment in the labour market in general, education leavers did not face particular obstacles to finding a job. The only government intervention in young people then was to give them career advice and information on the available choices. In the mid 1970s, the demand for youth labour shrank, partly because of the lower demand for craft skills provided by apprenticeships, and the Government for the first time directly intervened in the youth labour market in 1975. Between 1975 and 1983, the goal of youth labour market policy was to create job opportunities and provide young people with work experience. The largest example was the Youth Opportunities Programme (YOP), 60% of whose participants obtained jobs. However, the YOP was regarded as a partial failure because it did not incorporate investment in training and consequently did not have long-term positive effects. Then came the Youth Training Scheme (YTS) in 1983 (renamed Youth Training in 1990),

⁹⁷ A report by the Centre for Economic Performance (Petrungolo and Van Reenen, 2010) discusses how current youth unemployment after the 2008-09 recession is not notably worse than in previous recessions. However, it suggests that the youth unemployment rate began to rise after 2004 (until which point the rate had been falling) and this may be due to the Employment Service putting less emphasis on the young unemployed compared with other groups, such as lone parents and the recipients of incapacity benefits.

which emphasised developing skills for education leavers regardless of whether they were employed or non-employed. The other programmes and schemes implemented since then have been in line with this principle.⁹⁸

Benefit eligibility requirements are expected to affect employment participation. In this respect, the experience of the 1970 cohort is very different from that of contemporary young people. Major changes took place in the UK benefit system from the 1980s to the present, which affected the young unemployed. These include the replacement of Supplementary Benefit by Income Support in 1988, and the replacement of Unemployment Benefit and Income Support for unemployed claimants by Jobseeker's Allowance (JSA) in 1996. The former replacement made means-tested benefits no longer available for most 16-17-year-olds,⁹⁹ and instead they began to be regarded as the dependents of parents who are entitled to Child Benefit as long as their 16-17-year-old children were in full-time education or training. This has given young people the incentive to stay on in post-16 education or training, which is partly reflected in the rapid increase in the staying on rates after 1988, shown in Figure 6.1. In addition, the Education Maintenance Allowance (EMA) was introduced in 2004 which can be directly paid to young people from low income households on the condition that they stay on in education or training. On the other hand, for those who do not stay on and become unemployed, there have been no benefits available to support them or their parents since 1988. Before then, unemployed 16-17-year-olds were eligible for Supplementary Benefit, although there was an official (and possibly ineffective) statement that they were sanctioned by a reduction in Supplementary Benefit of 40% if they refused to participate in the YTS.

However, there is now a proposal to include unemployed 16-17-year-olds in the benefit system again, but by attaching conditionality this time. Since 2006, Activity Agreements have been piloted to encourage those 16-17-year-olds who have been NEET for at least 20 continuous weeks to return to education, or to find a job with training, by giving them financial incentives (Hillage et al., 2008). It was further recommended that the Government should consider building a Single Youth Allowance for 16-17-year-olds by combining Activity Agreements and EMA (Gregg, 2008). This

⁹⁸ A chronological list of youth policies can be found in Bell and Jones (2002).

⁹⁹ The exceptions are those who can receive JSA under the hardship rules, Income Support as lone parents, or Incapacity Benefit mainly for the long-term sick or disabled.

is a part of the proposed single benefit system with personalised conditionality for all people of working age.

The introduction of JSA in 1996 affected the unemployed aged over 17, by which the receipt of benefit payment has become conditional on a job search. Job search conditionality is effective in stopping the unemployed from claiming JSA, but less successful in moving them into employment (Petrongolo, 2007). Job search conditionality seems to have increased the number of unregistered non-employed. While not affecting the 1970 cohort, the New Deal for Young People (NDYP) was additionally introduced in 1998 as a mandatory programme for 18-25-year-olds who have been claiming JSA for at least six months. They cannot continue to claim JSA if they refuse to take part in NDYP. It provides personalised job search assistance up to four months but, if they cannot find a job, they can choose from subsidised work, full-time education and training, working in the voluntary sector or working with the Environment Task Force for six months. The evidence suggests that NDYP when introduced was effective in reducing the number of the registered unemployed, but it is debated whether it successfully transferred people to employment rather than to training (Blundell et al., 2004; Wilkinson, 2003).

Although there has been a dramatic change in the participation rates in both post-16 education and training since the 1970 cohort left compulsory education, Figure 6.1 shows that the size of the NEET group has not changed much since 1986 for 16-year-olds and since 1988 for 17-18-year-olds, as noted earlier. YT has had its limitations, in that few of the most disadvantaged education leavers, for instance those with no qualifications at all, participated in it (Deakin, 1996). These imply that the situations of the hardest to reach have never been solved from the late 1980s to the present. The pilot study of Activity Agreements also suggests that financial incentives and personal advisors work fairly well for some NEET young people, but that it is very difficult to familiarise and provide those hardest to reach with these services (Hillage et al., 2008). In order to further encourage policy innovation, it is important to address the long term consequences of youth unemployment, particularly considering that youth unemployment has been a big challenge created by the 2008-09 recession.

6.2.4 Summary and Implications

Based on the previous studies, it is plausible that childhood poverty influences both the onset of and exit from unemployment, and it is worth searching for empirical evidence.

Due to data availability, it is infeasible to detect the relative mediating effects of human capital, job search behaviour and other factors, such as the local labour market conditions, by using the BCS. This makes it impossible to identify the exact policy tools that could improve employment prospects of those who grew up in poverty through this kind of analysis. However, it is feasible to examine mediating effects of human capital formation through formal education and work experience, and this could have policy implications about how much formal education or training is required for improving their employment prospects. Furthermore, if childhood poverty affected the onset of unemployment, it would question the policy implications of the welfare-dependency model which solely assumes that childhood poverty (derived by parental worklessness) affects unemployment duration for young people (see Subsection 2.2.4 in Chapter 2).

In terms of socio-economic context, the 1970 cohort already faced the deterioration of the youth labour market, similarly to contemporary young people. However, the experience of the 1970 cohort is very different from that of contemporary young people in terms of the participation rates in education and training, and the benefit system they could use. Whether the findings from the 1970 cohort can be inferred to contemporary young people depends on how much the expanded participation has improved the transition from education to employment and long-term working lives. Although this cannot be tested in this thesis, I will analyse the more recent cohort born in the 1980s by using data from the BHPS in Chapter 7. Figure 6.1 shows that the participation rates have almost plateaued since the mid-1990s, and therefore the participation rates for the cohorts born in the 1980s and more recent cohorts are similar.¹⁰⁰ However, given that JSA and NDYP have had no strong impacts on increasing the employment chances of the unemployed, the analysis of the 1970 cohort, whose working lives started earlier than the introduction of these, may still have some relevance in seeking how to raise their employment chances.

¹⁰⁰ Although the participation rates slightly increased in 2006, this may be because financial support in higher education for those from low-income families was (re)introduced in that year (Lupton et al., 2009a), and the participation rates decreased again to the plateau level in the following year, though this is not shown.

6.3 Data and Methods

6.3.1 Data

I analyse the work histories of those born in 1970 collected in the BCS (see Chapter 3 for details of the survey). The BCS collected work histories by asking the respondents retrospectively to report all employment spells from the survey dates in 2000 and 2004 back to 1986. A cleaned dataset for work histories is available from the Centre for Longitudinal Studies at the Institute of Education (Ward, 2007), via the UK Data Archive. However, the dataset does not include details about non-employment status, which makes it impossible to distinguish whether a person without a job was unemployed, economically inactive or in full-time education. Therefore, I create another dataset of work histories by using raw data collected in 2000 and 2004. The survey in 1996 separately collected information about a current spell of employment, but I do not use this information, as the same information is already available in the 2000 and 2004 surveys. For those who appear only in the 1996 survey, the information is less useful, as it leaves unclear when the first employment spell started after leaving full-time education.¹⁰¹

I use June 1986 as a possible starting month for the work histories of all of the respondents, because all of the BCS sample members were born in one week in April 1970, and were officially allowed to leave compulsory education in late May 1986.¹⁰² Some of the respondents reported that they had left full-time education and started to work earlier than that, which might have been a fact of life. However, I do not assume that employment spells before the official school leaving age were so important that omitting them could lead to serious measurement errors for human capital. For those who left full-time education later than that, the starting months of their employment spells are just as reported in the datasets. Therefore ‘left censoring’ does not occur in the data.

¹⁰¹ The starting dates of the first employment spells are also unavailable for individuals whose employment transitions are extraordinary frequent. In the 2000 and 2004 surveys, the respondents were asked to recall up to ten employment spells including non-employment ones, and hence some of the earliest spells may not be recorded for those who experienced ten or more transitions. Although they may have distinctive characteristics, the proportion of such respondents is small (about 2%) and I have checked that excluding them from analysis does not affect the results.

¹⁰² Between 1976 and 1997, a child whose sixteenth birthday fell between 1 February and 31 August was allowed to leave compulsory education on the Friday before the last Monday in May, as opposed to at the end of the spring term for a child whose sixteenth birthday fell between 1 September and 31 January.

Table 6.1 shows the availability of observations about the work history data for each childhood poverty status. More of those who grew up in poverty have not provided work history data than those who did not. If there are unobserved factors affecting the response to the survey which influences both childhood poverty and unemployment, failing to deal with the sample selection may overestimate the effect of childhood poverty on unemployment. However, it is more natural to assume that childhood poverty may have affected unobserved personal characteristics which influence both the response to the survey and unemployment, in which case an effect of childhood poverty on unemployment would not be overestimated or could well be underestimated by the sample selection.

Retrospective work history data are a useful source of information on employment dynamics, but there are some caveats regarding recall errors in such data. Recall errors are of particular concern when the respondents are asked to give information on experiences which were not very important and lasted only for a short period (Dex, 1995). However, recall errors are less serious when the respondents simply report whether they were in or out of work in the recent past (Elias, 1991; Freedman et al., 1988; Paull, 1997). Errors are more liable to occur when drawing a distinction between unemployment and inactivity; in other words, recalling whether or not they were searching for a job at a particular time (Dex and McCulloch, 2001). Comparing work histories collected in panel data (the BHPS) and in retrospective data (the Family and Working Lives Survey), Dex and McCulloch (2001) show that men's unemployment recall is not very error prone, while that of women is. Defining whether or not she was searching for a job does not seem to be straightforward for a woman. Therefore, for women, I analyse both unemployment and non-employment, including both unemployment and inactivity, where needed.

The impacts of recall errors on the estimates, if any, are less clear than the pattern of recall errors. It depends on the nature of the research question. For instance, Paull (2002) argues that it is inappropriate to conclude that employment transitions have become more frequent over time, because this could be derived from the fact that recent employment transitions are more accurately reported than those of the distant past. However, the research question of this chapter is not about the passage of time but about the effect of childhood poverty. Besides, the sample I use is from the same birth cohort and still young, and thus the recall errors for this sample are thought to be smaller and less heterogeneous than the samples which include wide-ranging cohorts of

different ages. These considerations do not prevent the use of the work history data collected retrospectively in the BCS.

Table 6.2 presents the distributions of unemployment and non-employment incidence, by childhood poverty status, including missing statuses, using the BCS work history data. In this thesis, *unemployment* is when people are searching for jobs or on Government Supported Training (GST), while *non-employment* is when people are either unemployed or economically inactive and not undertaking full-time education. The table clearly shows that those who grew up in poverty are more likely to experience unemployment, but a detailed analysis will be carried out in later sections. Here, I want to draw attention to a couple of features of the work history data. The first point to note is that the percentages reported in the rows for missing poverty status and for all are quite similar, and thus I can safely use only those observations from those whose childhood poverty status is known below.

Another point to note, though unsurprisingly, is that inactivity is more common than unemployment for women, while inactivity is much less common among men of this age. The proportions of those who have ever experienced unemployment only once just after leaving full-time education are somewhat similar for both genders, indicating that women are more likely to become inactive after some employment experience. Family care is the main reason for inactivity for women, but the reported inactivity may be due partly to the fact that women tend to interpret unemployment as inactivity, as suggested above. In the BCS, people on paid or unpaid parental leave, if still employed and intending to return, are regarded as being in employment. Therefore, not all women have to choose to become inactive for child care reasons. If, for instance, educated mothers are more likely to avoid a complete trade-off between career and child rearing, the seemingly positive choice of less educated mothers may be a result of constraints. Therefore, I also examine non-employment as well as unemployment for women.

In this chapter, I look at the following unemployment spells separately: that unemployment spell immediately after leaving full-time education, that following the first employment spell, and that following the second and subsequent employment spells. As the onset of unemployment upon leaving full-time education is not accompanied by a job loss, its determinants may be different from those of the onset of unemployment after employment spells. Also, the first and repeated unemployment spells may be different in nature. For the onset of unemployment upon first leaving full-time education, the outcome variable is binary, with no duration associated with it. Thus

I apply the logistic regression model to estimate the effects of childhood poverty and qualification attainment on unemployment. For the onset of unemployment after employment spells, and the exit from unemployment, I apply event history analysis to make use of the nature of work history data, which I discuss in the following subsections (6.3.2 to 6.3.4).

6.3.2 Concepts and Measures for Event History Data

Traditional statistical methods are problematic in dealing with event history data, such as work history data, due mainly to the existence of censoring. In other words, it is usually impossible to observe full event histories for all individuals. For people who have never experienced the event of interest by the last survey date, it is unclear whether they will ever experience it in the future or will experience it soon. Also, the last survey dates are usually varied among the respondents because of attrition and so forth. Therefore, treating censored and uncensored individuals equivalently would lead to biased estimates. Event history analysis is designed to overcome this problem and makes it feasible to investigate the relationship between the onset of an event (or the duration until the onset) and the covariates of interest. The basics of the method are discussed in Box-Steffensmeier and Jones (2004). I define the concepts and measures needed to quantify the duration of the employment and unemployment spells for the analysis of this chapter as follows.

Employment: In full-time or part-time employment including self-employment, on GST with employment, or on paid or unpaid parental leave if still employed and intending to return.

Unemployment: Without a job but searching for a job, or on GST without employment.¹⁰³

Non-employment: Unemployed or economically inactive (not searching for a job) and not undertaking full-time education. Below, I do not specifically explain the concepts associated with non-employment, such as the non-employment spell, but they are straightforward extensions of those associated with unemployment.

Employment spell: The time from when people became employed to when they voluntarily or involuntarily leave employment. An employment spell can end with

¹⁰³ In the BCS, unemployment can be the main activity for those who are engaged in part-time work or part-time education, if they consider themselves to be unemployed and searching for a job (Simmonds et al., 2007).

either an event (a transition to unemployment) or censoring (see below). Job-to-job turnover is not taken into account unless there is any unemployment spell between jobs. Therefore, the first employment spell is defined by the period worked continuously in one or more jobs before becoming unemployed for the first time (excluding any experience of unemployment immediately after leaving full-time education) or being censored. If a person starts in employment again after some spell(s) of unemployment, non-employment or repeated full-time education, this employment spell is regarded as the second or subsequent employment spell.

Unemployment spell: The time from when people became unemployed to when they leave unemployment. An unemployment spell can end with either an event (a transition to employment) or censoring (without a transition to employment – see below). If a person started to be unemployed again after some spell(s) of employment, this unemployment spell is called the second or subsequent unemployment spell.

Event: For the employment spell, a transition from employment to unemployment is regarded as an event. This is the onset of unemployment. For the unemployment spell, a transition from unemployment to employment is regarded as an event. This is the exit from unemployment.

However, as described above, the employment and unemployment spells can end without these events. In this case, the spells are treated as being censored in the following two ways.

Censoring: The first type of censoring is a general issue for event history analysis, in that a spell ends before the event is observed, with a person leaving the survey or the survey itself coming to an end. The second type of censoring is due to the fact that there are other destinations than unemployment and employment that can terminate employment and unemployment spells, respectively. Both employment and unemployment spells can end with a person becoming inactive or re-entering full-time education. If spells end with these transitions rather than the events defined above, they are treated as censored. The implications of this approach to multiple destinations for regression estimates are discussed in Subsection 6.3.4.

Survival: A person survives each spell under analysis until event occurrence or censoring.

Analysis time: One unit of analysis time t is a month, and t is set to zero when each spell under analysis begins.

To illustrate how I measure these concepts by using work history data, I have created two figures. Firstly, Figure 6.3 shows a matrix of the possible transition patterns in work history from calendar time $m-1$ to m . At each time point, a person is in one of the four possible economic states; employment, unemployment, economic inactivity or full-time education. Hence, there are 16 possible transition patterns between the two consecutive times, such as a transition from employment to employment, that from employment to unemployment, that from unemployment to employment, and so forth.

How these transitions are treated depends firstly on whether we analyse the onset of unemployment or the exit from unemployment. To analyse the former, as shown in the unshaded cells in the matrix, a transition to employment from any other status marks the beginning of the analysis time ($t=0$), while the transitions to other destinations are not under analysis. A transition from employment to unemployment is the event, while that from employment to inactivity or full-time education is treated as censored. If someone were in employment at time $m-1$ and is also in employment at time m , they are treated as surviving the employment spell.

To analyse the exit from unemployment, as shown in the shaded cells, a transition to unemployment from any other status marks the beginning of the analysis time ($t=0$), while the transitions to other destinations are not under analysis. A transition from unemployment to employment is the event, while that from unemployment to inactivity or full-time education is treated as censored. If someone were to be unemployed at time $m-1$ and is also unemployed at time m , they are treated as surviving the unemployment spell.

Figure 6.4 shows the structure of employment and unemployment spells lasting until event occurrence or censoring, as defined above. See the notes on the figure for interpretations of the arrows and spell labels. When people leave full-time education for the first time, they start one of the three spells; the first employment spell (E1), the unemployment spell immediately after leaving full-time education (U0), or an inactivity spell. The last spell is not analysed. The first employment spell (E1) can be followed by either the first unemployment spell after employment (U1) or an inactivity spell (including the time spent for second full-time education). The unemployment spell immediately after leaving full-time education (U0) can be followed by either the first employment spell (E1) or an inactivity spell. In these ways, Figure 6.4 illustrates how each employment and unemployment spell is defined in terms of its sequence. The figure does not include all of the possible spells which could follow the depicted spells,

but the sequences of the omitted spells may be logically derived based on the depicted examples. On the other hand, not all people experience all of the spells depicted. For a person who started work immediately after leaving full-time education and continued to work until the last survey date, only the first employment spell is observed. In what follows, I explain how to quantify these spells or probabilities of events for the descriptive and regression analyses.

6.3.3 Descriptive Analysis

I describe the duration of employment and unemployment by defining a survival time denoted by T . T is a positive random variable and continuous. The survival time is represented as a value of T , which is conventionally denoted as t . The possible values of T form a probability distribution that is characterised as a probability density function, $f(t)$, and a cumulative distribution function, $F(t)$.

$$F(t) = \int_0^t f(u)du = \Pr(T \leq t) \quad (6.1)$$

specifies the probability that a survival time T is less than or equal to some value t . By definition, the probability density function can be written as

$$f(t) = \frac{dF(t)}{d(t)} = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t \leq T \leq t + \Delta t)}{\Delta t} \quad (6.2)$$

which gives the instantaneous probability of an event occurrence in the infinitesimally small time interval between t and $t + \Delta t$. Either of these distribution functions can be used to specify the distribution of t .

In event history analysis, the survivor function expressed as follows is also useful.

$$S(t) = 1 - F(t) = \int_t^\infty f(u)du = \Pr(T \geq t) \quad (6.3)$$

The survivor function denotes the probability of a unit surviving beyond time t .

For the descriptive purpose of the duration of employment and unemployment, I obtain the Kaplan-Meier estimator of $S(t)$. This is a nonparametric estimate of $S(t)$. For a dataset with observed event times, t_1, \dots, t_k , where k is the number of distinct event times observed in the data, the Kaplan-Meier estimate at time t is given by

$$\hat{S}(t) = \prod_{j|t_j \leq t} \left(\frac{n_j - d_j}{n_j} \right) \quad (6.4)$$

where n_j is the number of individuals at risk at time t_j , and d_j is the number of events at time t_j . The product is over all observed event times that are less than or equal to t . This estimator can also incorporate the number of censored individuals.

For an illustration of how to calculate $\hat{S}(t)$, I have created Table 6.3 based on the actual BCS data I use in this chapter. The table shows the number of individuals at risk of unemployment, the number of individuals experiencing an event, the number of individuals censored, and the Kaplan-Meier estimator for each time t , where t is up to 12 for the first employment spell of those men in the 1970 cohort who did not grow up in poverty. The thick solid line of Figure 6.11 below is based on these estimates, where t is extended to 120. If we compare $\hat{S}(t)$ between the groups, as will be presented in graphs later, we can see that people in the group with larger $\hat{S}(t)$ are more likely to remain in the employment spell at time t . The same procedure can be applied to the unemployment spell, although, unlike the employment spell, a substantive interpretation of a larger $\hat{S}(t)$ sounds undesirable. People in the group with larger $\hat{S}(t)$ are more likely to remain unemployed.

6.3.4 Regression Analysis

Having defined the survivor function and the density of event times, the next step is to define the rate of event occurrence. For this purpose, the concept of the hazard rate is important and can be expressed as

$$h(t) = \frac{f(t)}{\hat{S}(t)} = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t \leq T \leq t + \Delta t | T > t)}{\Delta t} \quad (6.5)$$

This denotes the rate of event occurrence per time in the unit interval $[t, t + \Delta t]$, given that the spell has survived up to and beyond time t . The hazard rate can also be expressed as follows by taking account of its relationship with the covariates.

$$h(t|X) = \frac{f(t)}{S(t)} = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t \leq T \leq t + \Delta t | T > t, X)}{\Delta t} \quad (6.6)$$

There are several methods of estimating the hazard rate and its relationship with the covariates, broadly characterised by parametric and non-parametric (or semi-parametric) modelling. The limitation of the parametric modelling is that it depends on the accuracy of an estimated baseline hazard. The baseline hazard is a function of time; that is, the hazard rate which is explained simply by when (how long after entering a risk period) the event occurs. Although it is useful to obtain the baseline hazard if we are interested in the effect of time on status, in other words, how the status at time $t-1$ affects that at time t , strong theoretical assumptions are required to determine the baseline hazard. However, as this thesis does not aim to estimate such an effect of time, it would be more convenient if the hazard rate could be estimated without assumptions about the baseline hazard. In this respect, the Cox proportional hazards model is the most favoured one, as this does not make such assumptions.

In the Cox model, the hazard rate for the subject i is defined as

$$h_i(t) = h_0(t) \exp(\beta' X_i) \quad (6.7)$$

where $h_0(t)$ is the unspecified baseline hazard function and $\beta' X$ are the covariates and regression coefficients. The hazard rate for this model is proportional and the hazard ratio of the subject i with a set of covariates X_i and the subject l with a set of covariates X_l can be written as

$$\frac{h_i(t)}{h_l(t)} = \frac{h_0(t) \exp(\beta' X_i)}{h_0(t) \exp(\beta' X_l)} = \exp[\beta' (X_i - X_l)] \quad (6.8)$$

If one element x_j of X is increased by one unit and the other elements are held constant, the hazard is multiplied by $\exp(\beta_j)$ (the exponentiated coefficient). I explain the

variables used to measure the elements of X in the following Subsection 6.3.5. In the rest of this subsection, I explain two methodological issues relating to the multiple destinations and multiple spells in event history analysis.

As is discussed in Subsection 6.3.2, there are multiple destinations that can terminate an employment or unemployment spell, and the spell that ends with a transition to destinations other than unemployment or employment is treated as randomly censored. This posits that those who had moved to inactivity or full-time education could have moved to unemployment or employment, if they remained in the employment or unemployment spell, although only the earliest transition is observed for each person. For this method of modelling employment and unemployment spells to be valid, we need to assume that the probabilities of the onset of (exit from) unemployment relative to remaining in employment (unemployed) are the same for both those who remain in the employment (unemployment) spell and those who have left the spell to become inactive or to re-enter full-time education, after controlling for the observed covariates. This may be a strong assumption which is unrealistic in practice.

What is important to consider here is the possible impact of the violation of this assumption on the estimated coefficients for childhood poverty and qualification variables. It would violate the assumption if those who became inactive were more similar in terms of their unobserved characteristics to those who became unemployed or remained unemployed than to those who remained in employment or moved into employment from unemployment. However, for men, the impact of this violation is likely to be minor, because most non-working men describe themselves as unemployed rather than inactive in the data I use.¹⁰⁴ For women, this violation may have a substantial impact, but as addressed above, women's reporting of unemployment status is ultimately error prone, since the boundary between unemployment and inactivity is vague. Thus, the solution for women is to look at both unemployment and non-employment.

On the other hand, there is a non-negligible number of people who re-enter full-time education, although it is difficult to predict whether they are systematically different in terms of their unobserved characteristics from those who remain in the employment or unemployment spells. If they are, treating those who left the spell to re-

¹⁰⁴ If unemployment is defined by unemployment benefit receipt, for instance, introducing or strengthening benefit conditionality may cause some of the non-working, who would otherwise have received unemployment benefit, to give up receiving it and become inactive. In this case, the assumption of the independence of the competing risks may be more clearly problematic.

enter full-time education as randomly censored may bias the estimates. Nonetheless, it may be more natural to believe that childhood poverty affects such unobserved characteristics rather than vice versa and, if this is the case, we do not have to be concerned about bias in the childhood poverty coefficients. The same is true of qualification coefficients if educational attainment affects the unobserved characteristics. However, it may be possible that the unobserved characteristics affect both educational attainment and re-entering full-time education, and in this case, the qualification coefficients may be biased. Furthermore, it is extremely difficult to hypothesise the directions of bias which depend on the directions of the effects of the unobserved characteristics on qualification attainment and re-entry into full-time education and on the directions of the effects of qualification attainment on the onset of and exit from unemployment.

There are few applications in the social sciences that have addressed the non-randomness of multiple destinations and few analytical solutions are available, particularly when there are more than two alternative destinations (Box-Steffensmeier and Jones, 2004). Therefore, the event history analysis in this chapter (and next) also makes the assumption discussed above. It is a task of future research to test whether the qualification coefficients will be changed by taking account of the non-randomness of multiple destinations.

Another methodological issue relates to the use of multiple spells per individual, when, for instance, I estimate the second and subsequent employment and unemployment spells together. In this estimation, the within-individual correlations between the lengths of the spells may bias the estimates. To allow for these correlations, there are broadly two solutions; namely, the variance-corrected models and the shared frailty models.¹⁰⁵ The variance-corrected models correct standard errors by clustering them by individual. Thus, the coefficients are the same as the so-called pooled estimates. The shared frailty models are analogous to the random effects models used in other kinds of multilevel or longitudinal analyses. I only report the variance-corrected models,

¹⁰⁵ There are also stratified models which are analogous to the fixed effects models. However, in stratified models, as in fixed effects models, coefficients can only be estimated for explanatory variables whose values can change between spells. This is not suitable for analyses of this chapter which focus on the coefficients for childhood poverty, as childhood poverty status cannot change during adulthood by definition. Therefore I would not apply the stratified models.

but have checked that the shared frailty models produce basically consistent results.¹⁰⁶ In applying the variance corrected models, I take account of the spell correlations not only within individuals but also within sequences of employment spells. This is because the more frequently unemployment is repeated; in other words, the higher the sequence number of the employment spell, the shorter its duration tends to be.¹⁰⁷

6.3.5 Variables

Childhood poverty: The variables for childhood poverty are the same as those used in the previous chapters (see Subsection 3.4.2 in Chapter 3 for details of the poverty variables).

Highest qualification obtained: A categorical variable for the highest qualification groups is used (see Section 3.5 in Chapter 3), with Group 0 and Group 1 being aggregated into the single group of no or only low qualifications, and being set as a reference group in the regression analysis because the size of no qualification group is small in the 1970 cohort. I use only the 1970 cohort in this chapter and there is no need to ensure comparability with the 1958 cohort as in the previous chapters. Based on the analysis in Chapter 4, an academic qualification at level 1 (low GCSEs) and vocational qualifications up to level 2 are not economically rewarding for the younger cohort.

Since some people obtained qualifications after they first left full time education, I treat the qualification variables as time varying covariates. However, the purpose of this is to reduce the measurement errors in qualification attainment and it is beyond the scope of this chapter to discuss impact of adult education on employment outcomes. Only the year of qualification acquisition is known from the data, and I interpret this as showing that people obtained the qualification in January of the year in which they report they obtained the qualification. Of course, the actual date of qualification acquisition is thought to be later than January in most cases. However, if their employers allowed them to start working before they have actually obtained the qualification, on the assumption that they would do so in due course, using the actual date of qualification acquisition, even if known, may overestimate the effect of the qualification on employment probability. Nonetheless it may be too early to assume that

¹⁰⁶ Unfortunately, as the shared frailty models did not converge when estimating the Cox model, which is not unusual, I switched to the parametric model (assuming the log normal distribution for the baseline hazard) for this purpose.

¹⁰⁷ Since the number of individuals decreases with increasing sequence number, I only distinguish the second employment spell from subsequent spells.

someone will obtain a degree or higher degree in January so, for these qualifications, I assume that people obtain them in June.

Pathways (apart from education): For pathways of the relationship between childhood poverty and the onset of and exit from unemployment after employment spells, I examine the intermittent work experience which could undermine or slow down human capital accumulation. I use the variables for currently being in part-time employment¹⁰⁸ and past unemployment duration for the onset of unemployment, and the latter only for the exit from unemployment. For women, I additionally examine the mediating effect of childbearing on un/non-employment because those women who grew up in poverty are more likely to have a child early and this is likely to interrupt their career (Hobcraft and Kiernan, 1999).

Drawing on the previous literature reviewed in Section 6.2, the significant coefficients for past unemployment durations may indicate the scarring effects on later unemployment, although it should be noted that they may also indicate the impacts of unobserved characteristics of the long-term unemployed and/or no-pay/low-pay cycles that they experience. I measure past unemployment duration in two ways; firstly by including periods both in and out of training and secondly by including only periods out of training. The differences between the coefficients for the two variables could indicate benefits from undertaking training while unemployed compared with being unemployed without training, although they could also indicate differences in unobserved characteristics between those unemployed who participated in training and those who did not.

Control variables: I use the same variables as used in the previous chapters; namely, ethnicity, number of siblings, father's social class, mother's education, cognitive ability as measured at ages 5 and 10. The national and local unemployment rates are obviously thought to influence employment participation. As information is not available on the places of residence of the respondents over the period covered by the work history data, I include only the variables for the annual national unemployment rates as time varying covariates, to control for differences in the economic conditions across times. People with only compulsory education and those with higher education enter into work under different labour market conditions. The unemployment rate for all of those aged 16 and over was 11.3% in 1986 and was 8.9 % in 1991, for instance.

¹⁰⁸ The higher unemployment risks among part-time workers may be simply a direct consequence of the precarious employment contract rather than for human capital reasons.

Without controlling for the unemployment rate, it is speculated that the high employment rates among degree holders may partly be because of the improved economy rather than the effect of possessing a degree.

6.3.6 Correlations or Causal Effects

I have so far discussed the approaches I take in this chapter when choosing the estimation methods and variables, but need to clarify further how I could interpret derived estimation results; whether they are causal effects or not. In principle, it is impossible to interpret any estimate from survey data as causal, even when carefully selected methods and variables are used, because we cannot perfectly condition out the unobserved heterogeneity of individuals (see Chapter 3). However, it would also be important to distinguish the results from which we can relatively more safely infer causal effects from those which should be interpreted as correlations. Alternatively, it would be useful to clarify the assumptions we need to make in order to interpret the results as causal. I discuss three points.

Firstly, I interpret the coefficients for the childhood poverty variables as correlations, but attempt to argue that those for the qualification variables may imply causal effects. For the poverty variables, I cannot control for the conditions of the local labour market and it is impossible to isolate the effect of growing up in a poor household from that of living in a poor neighbourhood with a weak local labour market. Arulampalam et al. (2000) found that unemployment among young people aged under 25 was barely affected by the local labour market conditions, which may give some justification for not controlling for them, but I would rather be cautious. For the qualification variables, based on the validations conducted in Chapter 4, it may be safe to say that the variables for ability available in the BCS play an effective role in controlling for the heterogeneity between people with different levels of education.

Secondly, I need to comment on the analysis of non-employment including both unemployment and inactivity for women. Flinn and Heckman (1983), using data from young men in the US, showed that probabilities of entering employment after a non-employment spell are different between the unemployed and economically inactive. This is mainly because of different duration dependence governing employment probabilities for each group. While it is unclear whether this evidence can be inferred to young women in the UK, some may question whether it is meaningful to analyse the unemployed and economically inactive together. However, the aim of this chapter is not

to examine duration dependency, and the explanatory variables of interest are those for childhood poverty and qualifications. Furthermore, although childhood poverty and educational attainment could influence non-employment duration, the contrary is not possible. Therefore, ignoring the potentially different effects of time on unemployment and on inactivity is not thought to bias the estimated coefficients for childhood poverty and educational attainment.

The last point relates to the sample selection of the unemployed. I analyse the onset of unemployment after the second and subsequent employment spells and the exit from unemployment in general using subsamples of those respondents in the 1970 cohort who experienced unemployment at least once. The estimates may be dependent on the composition of the unemployed subsamples. If the population of the unemployed in the more recent cohorts are very different in terms of their unobserved characteristics from those in the 1970 cohort, then the findings of this chapter cannot be inferred to young people in the more recent cohorts. In order to make an inference, we need to assume that they do not differ in terms of their unobserved characteristics. This is not completely unrealistic, as the 1970 cohort already faced the collapse of youth labour market, and most of them left education in a recession as contemporary education leavers are doing. However, we need to be cautious that unemployed education leavers in the 1970 cohort were relatively less disadvantaged than their counterparts in more recent cohorts. This is because, as discussed in Subsection 6.2.3, it was more common for the 1970 cohort to leave education earlier, and the unemployed attending training may have a high work motivation as they did so without benefit conditionality. These could underestimate the effects of past unemployment and overestimate the effects of training participation on later employment outcomes.

6.4 Results of the Descriptive Analysis

In this section, I report results of the descriptive analysis for the following unemployment outcomes; the onset of unemployment upon leaving full-time education (Subsection 6.4.1), the exit from unemployment immediately after leaving full-time education (Subsection 6.4.2), the onset of unemployment following unemployment (Subsection 6.4.3) and the exit from unemployment after employment (Subsection 6.4.4), followed by a summary (Subsection of 6.4.5).

6.4.1 The Onset of Unemployment upon Leaving Full-time Education

Table 6.4 presents economic status upon leaving full-time education by childhood poverty status and the highest qualification obtained by that time for both genders. Although some people re-enter education after having accumulated some work experience, the data presented are about the first time of leaving full-time education. In Table 6.4 (also Table 6.5 and Table 6.6 below), those on GST are excluded from the unemployed, although they are classified as unemployed elsewhere in this chapter.

Table 6.4 shows that those men who grew up in poverty, persistent/recurrent poverty in particular, are more likely to be unemployed or on GST upon leaving full-time education. A similar association is also observed for women, but to a lesser extent than for men.¹⁰⁹ This association between childhood poverty and unemployment is unsurprising, but may be partly explained by the fact that those who grew up in poverty are more likely to leave education at a younger age or with lower qualifications. Drawing on the association between economic status and the highest qualification obtained, a reason for the higher participation in GST among those who grew up in poverty is that they are less likely to pursue academic qualifications after compulsory education, and GST is undertaken by the unemployed whose academic attainment is below A-level. However, educational attainment does not linearly reduce unemployment risk upon leaving full-time education. Although the proportion of the unemployed, including those on GST, is obviously higher for those with no or only low qualifications than others, the equivalent proportion for those with A-levels or a degree is quite similar to that for those with high GCSEs. However, the time taken to find a job may be different across these qualification groups, as I will examine next.

What is noteworthy is that the relative disadvantage for those who grew up in poverty is greater than that for those with no or only low qualifications. The proportion of the unemployed including those on GST is 34.4% for those who grew up in persistent/recurrent poverty while it is 26.7% for those with no or only low qualifications. For women, both proportions are similar. At least for men, the impact of childhood poverty on unemployment upon leaving full-time education does not seem to be completely explained by educational disadvantage. This is reinforced by focusing on the economic status of those who have just left compulsory education at age 16, as

¹⁰⁹ Focusing on the transition out of education, the aggregate employment rate is almost the same for both genders, or women fare slightly better among those who grew up in poverty. This indicates that labour market attachment is not originally weaker for women. Social norms regarding family care, or employers' expectations towards female workers, may gradually narrow employment opportunities for women.

shown in Table 6.5. Those who grew up in poverty are not only less likely to stay on in post compulsory education, but also more likely to be unemployed or on GST than in employment if they did not stay on. Table 6.6 shows duration spent in each economic status from June 1986 to April 1988 (the 18th birthday of the sample members), and it is again clear that those who grew up in poverty were more likely to spend many months of those years unemployed or on GST.

6.4.2 The Exit from Unemployment Immediately after Leaving Full-time Education

I now turn to the exit from unemployment immediately after leaving full-time education, by presenting the Kaplan-Meier survival estimates. The survival estimates are only estimated for those who fell into unemployment, including GST, immediately following the end of full-time education. This is about 20% of men and 17% of women based on Table 6.4.

Figure 6.5 shows the survival estimates by childhood poverty status for men. It seems to take longer for those who grew up in poverty to secure employment. The median duration for those who grew up in persistent/recurrent poverty is 24 months,¹¹⁰ and 13 months for those who did not. 50% of those who grew up in persistent/recurrent poverty remain unemployed long term, say, over two years.

Figure 6.6 shows the equivalent survival estimates for men by the highest qualification obtained by the time of leaving full-time education. Those with no or only low qualifications are not only more likely to become unemployed upon leaving full-time education, as seen above, but also remain unemployed for longer. The median duration for those with no or only low qualifications is 21 months, which is similar to that for those who grew up in persistent/recurrent poverty. Although the probability of the onset of unemployment is not very different between those with high GCSEs and those with A-levels or higher, unemployment durations are shorter for the latter. The median duration for those with high GCSEs is 16 months, while that for those with A-levels and those with a degree is 8 months. I only present the lines for the four groups for ease of presentation, but the effects of the other qualifications on unemployment will be estimated in the regression analyses below.

¹¹⁰ To put it more precisely, the median duration is between 23 and 24 months. 50% of the unemployed have found jobs within 24 months but not within 23 months. This method of description is also used for other groups.

Figure 6.7 and Figure 6.8 show the survival estimates for women, by childhood poverty status and the highest qualification obtained, respectively. The associations of unemployment duration with childhood poverty and qualifications are similar between men and women.¹¹¹ The median duration for those who grew up in persistent/recurrent poverty is 24 months, while that for those who did not grow up in poverty is 12 months. The median duration for those with no or only low qualifications is 20 months and that for those with high GCSEs is 14 months, while that for those with A-levels is 12 months and that for those with a degree is 6 months.

6.4.3 The Onset of Unemployment Following Employment

The associations of the onset of unemployment after employment spells with childhood poverty and with the highest qualification obtained can be presented by the different survival estimates of the employment spells across the subgroups. A longer survival in an employment spell corresponds to a lower risk of the onset of unemployment. I present Kaplan-Meier survival estimates for the first employment spell and the second and subsequent employment spells separately. The first employment spell is observed for most people, apart from those who never worked after leaving full-time education,¹¹² while the second and subsequent employment spells are observed only for those who experienced unemployment or non-employment after the first or subsequent employment spells and found a new job afterwards.

Figure 6.9 shows that those men who did not grow up in poverty are more likely to survive in the first employment spell than those who grew up in poverty. Table 6.10 shows that the end of the first employment spell is also associated with the highest qualification obtained. However, childhood poverty seems to be more strongly associated with the end of the first employment spell than qualifications, particularly within the first two years. A short-term termination of the first employment spell could occur for some men regardless of their educational backgrounds, presumably because their first job matching was simply poor or they were tempted to switch career after

¹¹¹ This again reinforces the view that women are no more disadvantaged than men in terms of the transition from education to initial employment. This justifies my examination of unemployment at age 16 and unemployment immediately after leaving full-time education for both genders together in the next chapter to maximise the sample size of those born in the 1980s.

¹¹² The respondents who are regarded as having never worked since they left full-time education are those who remained in the survey either up to 2000 or 2004 but have no work history. 60 men and 106 women fall into this category, with 34 of those men and 22 of those women having described themselves as long term sick at age 30 or 34. 62 of those women were engaged in family care, although it is unclear whether they had always been in family care since they left education.

having gained some work experience. Nonetheless, childhood poverty seems to be a risk indicator for the onset of unemployment.

Figure 6.11 and Figure 6.12 show the equivalent graph for the second and subsequent employment spells. The steeper curves at the beginning than those shown in Figure 6.9 and Figure 6.10 suggest that those who have already experienced unemployment after employment are more likely to become unemployed again after a short period of time. This is particularly true of those who grew up in persistent/recurrent poverty (e.g. 25% leave employment within a year). In this way, the association between the onset of unemployment and childhood poverty seems to be clearer for the second and subsequent employment spells. The same is true of the association between the onset of unemployment and qualifications, as shown in Figure 6.12. Note that these differences are observed among the selected subsample of the ever unemployed, who may be more disadvantaged than the rest of the population.

Figure 6.13 to Figure 6.16 show the equivalent survival estimates for women. The associations between the onset of unemployment and childhood poverty and between that and qualifications are much less clear for women than for men. The reason why the survival estimates are generally higher for women than for men is not that they are more likely to remain in employment but that they are less likely to become unemployed. If an employment spell terminates with a transition to inactivity, it is regarded as censored. Given that some women interpret their unemployment as economic inactivity, it would be more appropriate to look at a transition to non-employment to measure employment insecurity for women. Thus, I also create Figure 6.17 to Figure 6.20 to show survival estimates of employment spells until the onset of non-employment, where both transitions to unemployment and to inactivity are regarded as the events of interest.

Figure 6.17 shows that those women who grew up in poverty, persistent/recurrent poverty in particular, are more likely to terminate their first employment spell with a transition to non-employment. Figure 6.18 shows that higher vocational qualifications with high GCSEs seem to be as useful for the survival in the first employment spell as degrees, while earnings are higher for degree holders, as we know from Chapter 4 and the previous literature.¹¹³ Figure 6.19 shows that the

¹¹³ Typical occupations of women with higher vocational qualifications and high GCSEs are predominantly secretaries, followed by hair dressers, sales assistants, managers and so on in the data. Although teaching and nursing qualifications are classified as higher vocational qualifications in this thesis, most of those with these qualifications have also obtained at least A-levels. Therefore, teachers and

association between childhood poverty and the onset of non-employment becomes smaller for the second and subsequent employment spells, although growing up in poverty at age 16, regardless of whether in transient or in persistent/recurrent poverty, is still negatively associated with the rapid onset of non-employment. The higher survival estimates for women from more advantaged backgrounds can be derived from two reasons: they are in employment with more security which allows them to take maternity leave, or they are delaying child bearing. Figure 6.20 shows that the association of the highest qualification obtained and the onset of non-employment is still observed for the second and subsequent employment spells. Contrary to the first employment spell, however, those with a higher vocational qualification and high GCSEs do not fare equally to those with a degree. A-levels prove to be as useful as degrees long term in terms of employment retention for women.

6.4.4 The Exit from Unemployment Following Employment

Figure 6.21 to Figure 6.26 show the survival estimates for unemployment spells (also non-employment spells for women) by childhood poverty status and the highest qualification obtained. The survival estimates are based on both first and subsequent unemployment (non-employment) spells together, as they are not visually distinguishable. Figure 6.21 shows that men who did not grow up in poverty are more likely to exit from unemployment early. The median duration for this group is 6 months, while that for those who grew up in persistent/recurrent poverty is 12 months. The differences in unemployment duration across qualification groups almost coincide with the differences across childhood poverty statuses, as shown in Figure 6.22. The median duration for those with a degree is 5 months, while that for those with no or only low qualifications is 12 months. Compared with the unemployment duration after leaving full-time education, the gaps between the advantaged and disadvantaged are smaller, although the advantage of degree holders remains evident.

The survival estimates of unemployment spells for women, as shown in Figure 6.23 and Figure 6.24, are quite similar to the ones for men. However, the more prevalent non-employment status among women is inactivity rather than unemployment. Figure 6.25 and Figure 6.26 show the survival estimates of non-employment spells,

nurses are more often found in the A-levels or degree groups than in the higher vocational group. The relative employment stability of women with a higher vocational qualification and high GCSEs in the first employment spell may be because general office skills are useful for employment retention for women.

including both unemployment and inactivity spells, by childhood poverty status and the highest qualification obtained. Unsurprisingly, it generally takes non-employed women longer to go back to work, because they do not necessarily intend to do so. Nonetheless, a rapid exit from non-employment is negatively associated with childhood poverty and positively associated with qualification attainment. The median duration for those who did not grow up in poverty is 25 months, while that for those who grew up in persistent/recurrent poverty is 44 months. The gap between those with a degree and those with no or only low qualifications is even greater. The median duration for the former group is 12 months, while that for the latter group is 48 months.

6.4.5 Summary

To summarise, childhood poverty and qualification attainment are both associated with the onset of and exit from unemployment for men and women, and non-employment for women. A multiple regression analysis is required to examine whether the association between childhood poverty and un/non-employment is mediated by qualification attainment. However, it is noteworthy, with respect to the onset of unemployment upon leaving full-time education for both genders and in the first employment spell for men, that those who grew up in persistent/recurrent poverty seem to be more disadvantaged than those with no or only low qualifications. On the other hand, the exit from un/non-employment seems to be more strongly associated with qualification attainment than with childhood poverty particularly.

6.5 Results of the Regression Analysis

In this section, I present the results of the regression analyses investigating effects of childhood poverty and qualification attainment on the following unemployment outcomes: the onset of unemployment upon leaving full-time education for both genders (Subsection 6.5.1); the exit from unemployment immediately after leaving full-time education for both genders (Subsection 6.5.2); the onset of unemployment following employment for both genders and that of non-employment for women (Subsection 6.5.3); and the exit from unemployment after employment for both genders and that from non-employment for women (Subsection 6.5.4). Subsection 6.5.5 below summarises the key results. Table 6.7 to Table 6.21 report the regression coefficients that show the magnitude and directions of effects, but they are unsuitable for

substantive interpretation. Table 6.22 discussed in Subsection 6.5.5 reports exponentiated coefficients that can be interpreted in substantive terms.

6.5.1 The Onset of Unemployment upon Leaving Full-time Education

Table 6.7 and Table 6.8 show estimates from the logit models of unemployment versus employment upon leaving full-time education for men and women, respectively. The models are estimated by excluding those who became inactive upon leaving full-time education. The assumption here is that labour force participation decisions at this stage are exogenous to the actual employment outcomes, so the impact of the assumption on the estimates should be negligible, given that those who become inactive upon leaving full-time education are few in number.

Table 6.7 shows, in Column (3), that those men who experienced poverty at age 10 or 16 are 1.6 or 1.7 times¹¹⁴ more likely to be unemployed upon leaving full-time education, after controlling for qualification attainment and other individual and family characteristics. With respect to the effects of qualifications, possessing A-levels reduces the risk of the onset of unemployment upon leaving full-time education compared with having no or only low GCSEs. Although the coefficient for those with low GCSEs and higher vocational qualifications is also significant, Table 6.4 has shown that fewer people left full-time education with this combination of qualifications. Holding a degree does not reduce the risk of the onset of unemployment upon leaving full-time education for men. This might be counter-intuitive, but is in line with previous research finding by Smith et al. (2000) that nearly 20% of male graduates in 1993 were unemployed or inactive six months after graduation. Their finding implies that male graduates were more likely than female graduates to be unemployed (or in further study) if they could

¹¹⁴ The exponentiated coefficient, $\exp(\beta)$, shows an odds ratio. In terms of the coefficients reported in Column (3) of Table 6.7, $\exp(0.451)=1.57$ and $\exp(0.543)=1.72$. However, these coefficients show average associations between poverty in each point of time for both those in transient poverty and those in persistent/recurrent poverty. As in Chapter 5, I have fitted another model (not shown) to include an interaction term of poverty at age 10 and poverty at age 16, and found that the coefficient for the interaction term was both negative and significant. This indicates that the effect of each experience of childhood poverty is not additive on the onset of unemployment upon leaving full-time education, and that part of the estimated effect of childhood poverty may be caused by the unobserved variables associated with poverty, such as the local labour market conditions. The odds ratio for those who experienced transient poverty at age 10 is $\exp(0.741)=2.10$, that for those who experienced transient poverty at age 16 is $\exp(0.694)=2.00$, and that for those who experienced persistent/recurrent poverty is $\exp(0.741)*\exp(0.694)*\exp(-0.615)=2.27$.

not find graduate jobs.¹¹⁵ However, as this may have stemmed from the high unemployment rates in the early 1990s (Figure 6.2),¹¹⁶ the situation may be different for contemporary graduates.

A possible explanation for the effect of childhood poverty on unemployment upon leaving full-time education is that those who grew up in poverty tend to leave full-time education at younger ages, and that simply being young may make it difficult for them to gain employment. In Column (4), I attempt to estimate the same model only for those who left full-time education before the age of 18. The poverty coefficients are still significant. For those who left education at age 18 or over (although not shown), the poverty coefficients are not significant at the 5% level, but significant at the 10% level. The precision may be weaker due to the smaller sample size. Nonetheless, for the majority of people, the effect of childhood poverty on the onset of unemployment upon leaving full-time education cannot be attributed to leaving education early.

By contrast, for women, Table 6.8, in Column (3), shows that only poverty at age 16 affects the onset of unemployment upon leaving full-time education, after controlling for qualification attainment and other individual and family characteristics. Women who grew up in poverty are 1.3 ($=\exp(0.293)$) times more likely to become unemployed upon leaving full-time education. Column (4) suggests that the effect of poverty at age 16 is still significant among the subsample of women who left full-time education before the age of 18. With respect to the effects of qualification attainment, Column (3) shows that having A-levels or high GCSEs with higher vocational qualifications reduces the onset of unemployment. Weak evidence indicates that holding a degree can reduce the unemployment risk (significant only at the 10% level). Unlike male graduates, as suggested above, female graduates would rather take non-graduate jobs than become unemployed.

6.5.2 The Exit from Unemployment Immediately after Leaving Full-time Education

For the exit from unemployment immediately after leaving full-time education, I estimate the Cox proportional hazard model. Table 6.9 and Table 6.10 present the results for men and women, respectively. For men, those who grew up in poverty at age

¹¹⁵ 64% of male graduates in 1993 were in employment six months after graduating, of whom 83% had graduate jobs. 74% of their female counterparts were in employment, of whom 76% had graduate jobs (Smith et al., 2000).

¹¹⁶ As we have seen change over time in the earnings premiums associated with a degree in Table 4.1 in Chapter 4, the demand for graduates relative to supply was increasing in the early or mid 1990s.

16 are less likely to exit from unemployment, controlling for qualification attainment and other individual and family characteristics (Column (3)). Their hazard rate of transition from unemployment to employment is about 74% of the equivalent hazard rate for those who did not grow up in poverty at age 16.¹¹⁷ For women, poverty at age 10 negatively affects the exit from unemployment, controlling for the other variables (Column (3)). The equivalent hazard rate is also 67%.¹¹⁸ Qualifications also significantly affect the exit from unemployment, controlling for the other variables. For instance, the hazard rate for graduates is nearly double the hazard rate for those with no or only low qualifications for both genders. Although Table 6.7 has shown that male graduates are no less likely to be unemployed than those with no or only low qualifications upon leaving education, they tend to move out of unemployment more rapidly than others. Note, however, that A-levels are not useful in shortening the unemployment duration. There is some evidence that higher vocational qualifications seem to be rather more useful for both genders.

For women, it may be speculated that the effect of childhood poverty on exit from unemployment is due partly to the tendency of disadvantaged women to have a child at relatively younger ages than advantaged women. To examine this, I control for a time-varying dummy variable equal to one if a woman has a child and zero if not in Column (4) of Table 6.10. The hazard ratio for this variable is unsurprisingly negative and statistically significant, but this scarcely alters the poverty coefficient. Therefore, the effect of childhood poverty on the exit from unemployment immediately after leaving full-time education cannot be explained by early child bearing.

6.5.3 The Onset of Unemployment Following Employment

For the onset of unemployment after employment spells, I estimate the Cox proportional hazard models separately for the first employment spell and for the second and subsequent employment spells. Table 6.11 and Table 6.12 show results for men, and Table 6.13 and Table 6.14 for women. As shown in the survival estimates in Figure 6.13 to Figure 6.16, non-employment, including inactivity, is more prevalent than unemployment for women with some employment experience. Thus, Table 6.15 and

¹¹⁷ The exponentiated coefficient, $\exp(\beta)$, shows a hazard ratio, as presented in Equation (6.7). $\exp(-0.297)=0.74$.

¹¹⁸ $\exp(-0.403)=0.67$.

Table 6.16 additionally report the female results based on analyses, in which a transition from employment to non-employment is defined as the event.

Based on the descriptive analyses shown in Figure 6.9 and Figure 6.10, we can predict that childhood poverty, rather than qualifications, is more strongly associated with the onset of unemployment after the first employment spell for men. In Column (3) of Table 6.11, controlling for qualification attainment and other individual and family characteristics, the coefficients for childhood poverty remain significant for both ages 10 and 16.¹¹⁹ However, with respect to qualifications, only the coefficient for A-levels and that for low GCSEs with higher vocational qualifications remain significant. Male graduates are again no less likely to become unemployed in the first employment spell.

Columns (4) to (6) of Table 6.11 examine the pathways of the effect of childhood poverty on the onset of unemployment. Firstly, Column (4) assesses whether being in part-time employment mediates the effect. Although there is some evidence (at the 10% significance level) that people in part-time employment are more likely to become unemployed earlier, this does not explain the effect of childhood poverty on unemployment. Secondly, Column (5) looks at whether unemployment duration after leaving full-time education has a scarring effect on later unemployment risks, and whether this explains the effect of childhood poverty on unemployment. It shows that those who were unemployed for more than 12 months immediately after leaving full-time education are nearly twice as likely as those who did not experience unemployment then to become unemployed during the first employment spell, which may suggest either that the unemployment spell has a scarring effect or that they are in precarious jobs. The scale of this effect seems to be at least as great as the extent to which higher vocational qualifications reduce the unemployment risk for those who have no or only low GCSEs. When I use an alternative variable, which excludes those on GST from the unemployed, Column (6) shows that the equivalent coefficient increases. This suggests that participating in GST could reduce the effect of long-term unemployment for education leavers, although it is unclear whether it successfully removed it or not. Column (5) shows that the poverty coefficients somewhat decrease by controlling for the unemployment duration, indicating that long-term unemployment

¹¹⁹ Contrary to the finding about the onset of unemployment immediately after leaving full-time education, an interaction term of poverty at age 10 and poverty at age 16 was not statistically significant (results not shown). Therefore, the effects of each experience of childhood poverty may be additive on the onset of unemployment after the first employment spell for men. This is in line with the findings about earnings in Chapter 5.

immediately after leaving full-time education may partly explain the effect of childhood poverty on the onset of unemployment.

Table 6.12 shows the results for the onset of unemployment following the second and subsequent employment spells; in other words, repeated unemployment. The sample analysed only includes those who have experienced unemployment at least once after past employment and those whose past employment spells ended with a transition to inactivity. For those who have experienced termination of employment spells more than twice, multiple employment spells are included in the sample (see Subsection 6.3.4 for the methodological issue involved in the use of multiple spells). Column (3) shows that the positive and significant effect of poverty at age 16 is slightly greater for the onset of repeated unemployment than for the first spell of unemployment after employment. Poverty at age 10 no longer has a statistically significant effect and that, presumably partly because those who experience repeated spells of unemployment, on average, are relatively more disadvantaged than others. Holding a degree has a greater significant effect.

In terms of the pathways of the effect of poverty at age 16 on the onset of repeated unemployment, part-time employment is not responsible for this (Column (4)), while past unemployment seems to be so (Column (5) to Column (7)). Column (5) shows that a spell of unemployment which lasted for more than 6 months after leaving full-time education persistently influences later unemployment. Column (6) additionally includes the variables for the duration of the unemployment spell experienced after the first employment spell. A reference category is those who have experienced unemployment for 1-6 months. The duration of unemployment following employment does not seem to affect the later risk of the onset of unemployment. Nonetheless, compared with those who never experienced unemployment,¹²⁰ those who experienced unemployment are more likely to become unemployed again. Column (7) shows the results using the alternative variable, in which those on GST are excluded from the unemployed. Similarly to the finding reported in Table 6.11, participating in GST immediately after leaving full-time education reduces the effect of past unemployment. However, there is little evidence that participating in GST during unemployment experienced after employment reduces this effect, by comparing the coefficients in Columns (6) and (7).

¹²⁰ These people experience the second and subsequent employment spells because their previous employment spells ended with a transition to full-time education or to other inactive states.

Table 6.13 to Table 6.16 present the results for women. With respect to the onset of unemployment after the first employment spell, no variables for childhood poverty predict the onset after both the first and subsequent employment spells for women. Nonetheless, similarly to men, Column (5) of Table 6.13 shows that past unemployment immediately after leaving full-time education for between 1 and 6 months (with or without training) and for more than two years without training has positive effects on the later onset of unemployment.¹²¹ The scale of the effect of past unemployment seems to be at least as great as that of having high GCSEs and higher vocational qualifications. Column (8) shows that women with a child are less likely to become unemployed because they are more likely to become inactive (which is also true of subsequent employment spells, as Column (8) of Table 6.14 below shows). With respect to the onset of repeated unemployment, men and women are more similar.

Table 6.14 in Column (3) shows that for women the coefficient for poverty at age 16 is also significant, controlling for qualification attainment and other individual and family characteristics, although no coefficients for qualifications are significant at the 5% level. Unemployment immediately after leaving full-time education for over 12 months (Column (5)) and any experience of unemployment after employment spells have a positive effect on the repeated onset of unemployment (Column (6)), and these may explain part of the effect of poverty at age 16 (Column (6) and Column (7)). Similarly to men, it seems to matter little whether women attend training or not while unemployed after employment spells (Column (6) and Column (7)).

Table 6.15 shows the results of the onset of non-employment for women after the first employment spell and, in Column(3), all of the coefficients for the variables for childhood poverty¹²² and the highest qualification are statistically significant, implying that economic inactivity is not necessarily an outcome of choice for women. The effects of qualifications do not necessarily increase as the level increases, but their negative effects on the onset of non-employment are generally greater than the positive effects of childhood poverty, unlike their effects on male unemployment. Table 6.16 in Column (3) shows that fewer variables are statistically significant for non-employment after the

¹²¹ Those women who were for unemployed longer than 6 months are less likely to become unemployed than those who were unemployed for between 1 and 6 months. This is presumably because women may become inactive after some unsuccessful attempts to find a job, and thus, in one sense, those women who are unemployed long term may have stronger a labour market attachment than those women who are unemployed short term but inactive long term.

¹²² I have checked by including an interaction term of poverty at age 10 and poverty at age 16 (results not shown), that the effects of each experience of poverty may be additive on the onset of non-employment for women.

second and subsequent spells, but it is noteworthy that poverty at age 16 persistently has a significant effect. Neither part-time employment nor past un/non-employment can explain the effect of childhood poverty on the onset of non-employment for women (Column (4) and Column (5) onwards in both Table 6.15 and Table 6.16). Child bearing cannot also explain the effect of childhood poverty (Column (9) of Table 6.15 and Column (8) of Table 6.16).

Despite the lack of explanatory power for the effect of childhood poverty, however, unemployment without training for more than 12 months (Column (6) of Table 6.15) and non-employment for more than 12 months immediately after leaving full-time education (Column (7) and Column (8) Table 6.15), increase the onset of non-employment after the first employment spell. The latter has a persistent effect on the onset of repeated non-employment (Column (5) and Column (6) of Table 6.16), but non-employment after employment spells does not (Column (6) and Column (7) of Table 6.16).¹²³

6.5.4 The Exit from Unemployment Following Employment

Based on the descriptive analyses reported in the last section, the highest qualification obtained rather than childhood poverty per se seem to have effects on the exit from un/non-employment. In this subsection, I investigate the effects of childhood poverty and qualification attainment, controlling for each other and other variables, on the exit from unemployment for the first and subsequent unemployment spells separately.

Table 6.17 shows the results for the exit from unemployment after the first employment spell for men. The coefficients for poverty at age 16 (but not at age 10), higher vocational qualifications,¹²⁴ A-levels, degrees are statistically significant, controlling for other individual and family characteristics (Column (3)). The scale of the effects of these qualifications is generally greater than that for poverty at age 16. The effect of unemployment immediately after leaving full-time education on the rapid exit from unemployment is surprisingly positive (if the duration is 7-12 months), after controlling for other variables (Column (4)). A possible interpretation of this could be that GST lasting up to 12 months may have been beneficial long term for the

¹²³ The coefficients for non-employment after employment spells are not significant, even if the variables for non-employment after leaving full-time education are not controlled for.

¹²⁴ A possible reason why the coefficient for low GCSEs with a higher vocational qualification is nearly as large as that for holding a degree may be that the cognitive ability of those with the former qualifications are similar to those with no or only low qualifications.

unemployed education leavers in the 1970 cohort, given that the work experience gained by their counterparts who directly moved to employment was not necessarily advantageous in terms of human capital accumulation. However, if unemployment is defined exclusively as being without training, it no longer has a positive effect. Unemployment immediately after leaving full-time education without training for over 12 months has a negative effect on the exit from unemployment later (Column (5)), with the scale of this negative effect being nearly as great as the positive qualification effects.

Table 6.18 shows the results for the exit from repeated unemployment for men. After controlling for other variables, only the coefficient for holding a degree is statistically significant, presumably because those who have high risk factors have been placed in the subsample of the repeated unemployed (Column (3)). However, the effect of a degree is partly mediated by unemployment experienced immediately after leaving full-time education (Column (4)). Indeed, unemployment immediately after leaving full-time education is the strongest risk factor for the exit from repeated unemployment for men. Compared with those who were unemployed for a maximum of 6 months in total, those who were unemployed for 6-12 months are significantly slow in exiting from repeated unemployment, with longer duration of the unemployment having a greater negative effect. We cannot be confident about the negative effect of unemployment after employment spells, as the model does not fit well in Column (5).

Table 6.19 to Table 6.21 present the results for women. I briefly look at unemployment for women in Table 6.19, but mainly discuss non-employment in Table 6.20 and Table 6.21. This is not only because inactivity is more common among women but also because it may even be more difficult for women to report how long they were unemployed instead of inactive than to report simply whether they became unemployed. Table 6.19 shows that childhood poverty is not associated with the exit from unemployment, although some qualifications seem to promote this, controlling for other individual and family characteristics. It takes longer for women with a child to find a job (Column (8)).

Table 6.20 shows the results for the exit from non-employment after the first employment spell. Column (2) shows that childhood poverty does not affect the exit from non-employment, after controlling for qualification attainment. Column (3) shows that having high GCSEs, A-levels or a degree promote the exit from unemployment even after controlling for individual and family characteristics. With respect to the mediating effect of past unemployment, similarly to the exit from unemployment after

the first employment spell for men, those women who were unemployed for 7-12 months immediately after leaving full-time education are more likely to exit non-employment rapidly, relative to those who did not experience unemployment at that time (Column (4)). The equivalent coefficient becomes insignificant when only the unemployed without training are defined as unemployed (Column (5)). As has been suggested for men, participating in GST for up to 12 months may have had a long-term positive effect for the 1970 cohort, with the scale of the positive effect being almost the same as that of having high GCSEs with a higher vocational qualification (relative to no or only low qualifications). Having a child unsurprisingly delays the exit from non-employment, and the effect of holding a degree seems to be partly explained by the fact that women with higher education delay child-bearing (Column (6)).

Table 6.21 shows the results for the exit from non-employment after the second and subsequent employment spells for women. The effect of childhood poverty on the exit from non-employment is not significant, and the coefficients for high GCSEs with higher vocational qualifications and for holding a degree are statistically significant, controlling for individual and family characteristics (Column (3)). Women with a child are again less likely to exit non-employment, but women who have been non-employed for over 12 months are more likely to exit non-employment rapidly (Column (5)). This may indicate that women tend to go back to work following a period of inactivity. Taken together, the only thing that is clear about the exit from non-employment for women is that high-level qualifications (a degree or higher vocational qualification with high GCSEs) promote it.

6.5.5 Summary

I have investigated the effects of childhood poverty on the onset of and exit from unemployment, and the mediating effects of qualification attainment. These effects vary in size between the onset and exit, and depending on when unemployment occurs, after leaving full-time education, the first employment spell or the second and subsequent employment spells. Based on the regression analyses reported in Table 6.7 to Table 6.21, Table 6.22 summarises the odds/hazard ratios for the onset of and exit from un/non-employment, independently affected by childhood poverty status and the highest qualification, after controlling for each other and other individual and family characteristics. The following summary is also based on the findings after controlling for these observed variables.

As Table 6.22 shows:

- For men, poverty at both ages 10 and 16 affects the onset of unemployment upon leaving full-time education and after the first employment spell. In particular, poverty at age 16 persistently affects the onset of repeated unemployment, and the exit from unemployment immediately after leaving full-time education and after the first and subsequent employment spells.
- For women, poverty at both ages 10 and 16 affects the onset of non-employment after the first employment spell. Poverty at age 16 affects the onset of unemployment immediately after leaving full-time education, and the onset of repeated unemployment after employment spells. Childhood poverty at age 10 affects the exit from unemployment immediately after leaving full-time education, and the exit from non-employment after the first employment spell.
- Holding a degree reduces the onset of un/non-employment for women, and promotes the exit from unemployment for men and un/non-employment for women, but does not necessarily reduce the onset of unemployment in the early working life of men. Compared with having no or only low qualifications (low GCSEs with/out a vocational qualification of up to level 2), having at least either a vocational qualification at level 3 or high GCSEs may generally (although not always) be beneficial in reducing the onset of and promoting the exit from unemployment for men and from un/non-employment for women.

As the last section additionally has shown, although Table 6.22 does not summarise:

- Long term unemployment immediately after leaving full-time education has a persistent effect on both the onset of and exit from later unemployment for men, but only on the onset of later un/non-employment spells for women. The incidence of unemployment, regardless of its duration, after employment spells have an effect on the greater onset of repeated unemployment for both genders. Training participation during unemployment immediately after leaving full-time education seems to be beneficial in reducing the long-term unemployment risk for both genders, but the same is not true of that during unemployment following employment.

- These effects of past unemployment on later unemployment partly explain the effect of childhood poverty on the onset of unemployment after employment spells for men. These do not explain the effect of childhood poverty on the exit from unemployment for men, and that on the onset of and exit from un/non-employment for women.
- Part-time employment for both genders and childbearing for women do not explain the effect of childhood poverty on the onset of unemployment following employment.

In the final section that follows, I discuss these findings and policy implications.

6.6 Conclusions

The previous literature found that childhood poverty affects employment outcomes, partly because of low educational attainment, but the effect remains even after controlling for educational attainment. This chapter has newly found the different effects of childhood poverty on the onset of and exit from unemployment, and the different mediating effects of the highest qualification and past unemployment.

Childhood poverty persistently affects the onset of and exit from unemployment throughout people's early working lives, even after controlling for the highest qualification and the other individual and family characteristics, this being more strongly the case for men than for women. Poverty at age 16 more persistently affects these unemployment risks than poverty at age 10. It remains unclear whether the evidence suggests the timing effects of childhood poverty, as a variable for poverty in early childhood was unavailable. However, as the previous studies have also found the independent effect of poverty in late childhood on later socioeconomic outcomes (Ermisch et al., 2001; Schoon et al., 2002), it may be reasonable to assume that the finding here suggests an independent effect of poverty in late childhood on youth unemployment. This is noteworthy against the background that the importance of investment in early childhood, such as early years' education, has increasingly been recognised by both academic researchers (Esping-Andersen, 2004; Heckman and Lochner, 2000; Waldfogel, 2006) and the previous Government (HM Government, 2009; HM Treasury et al., 2008).

The fact that childhood poverty affects the onset of unemployment while working is overlooked in the welfare-dependency model, which usually assumes that

young people who grew up in poverty (and in households with workless parents particularly) are more likely to remain unemployed. It remains unclear why those who grew up in poverty are more likely to become unemployed, although some hypotheses are reviewed in Subsection 6.2.1. On the other hand, the main mechanism for long-term unemployment is that a lack of meaningful qualifications affects unemployment duration immediately after leaving full-time education, and that long-term unemployment at such an early stage continues to influence the incidence and duration of later unemployment.

Even when the residual effect of childhood poverty on the onset of unemployment remains, after controlling for the other relevant variables, this does not reveal whether income transfers to those growing up in poverty could be useful in reducing their future unemployment risk. As discussed above, the effects of childhood poverty on youth unemployment found in this chapter may not be causal, particularly due to the possible area or neighbourhood effects and job-search effects, as well as effects of unobserved individual heterogeneity which have not been netted out in the above analyses. However, I will investigate whether net household income affects children's later unemployment risks even after controlling for gross household labour income by using data from the BHPS in the next chapter. This chapter's findings about the effects of childhood poverty on the unemployment risk can be used to identify who faces the higher risk and when. In short, those men who grew up in poverty at age 16 or in persistent/recurrent poverty face a higher risk of the onset of unemployment than others, including their female counterparts, particularly when they leave full-time education or during their first employment spell.

This chapter has more substantive implications for education and youth employment policies. Formal education and training leading to qualification attainment is important, as is widely acknowledged. Although degrees are advantageous even for the repeatedly unemployed, it is unrealistic to expect those with no or only low qualifications to obtain a degree in a short time. The relative usefulness of other intermediate qualifications, such as A-levels and vocational qualifications at least at level 3, is less clear for improving employment prospects, although these qualifications generate significant earnings premiums, as shown in Chapter 4. At any rate, it is important and practical for children in compulsory education to aim to obtain at least high GCSEs not only in terms of their employment prospects but also for their earnings, as seen in Chapter 4. All low-skilled adults in England are currently entitled to free

training to help them to obtain GCSEs, but it would be far less costly to do so while in compulsory education.

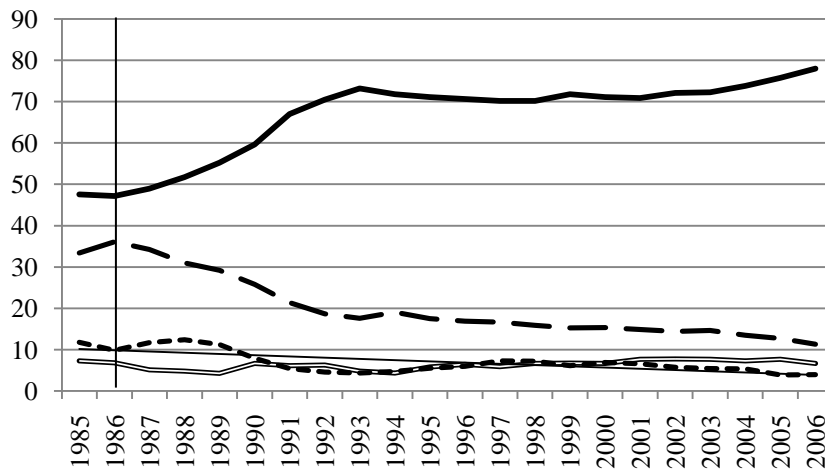
It is also important, however, to address the fact that being unemployed, particularly without training, for a long time immediately after leaving full-time education seems to have a negative effect whose scale is almost as great as that of a lack of economically meaningful qualifications. Training participation may have reduced this undesirable effect of unemployment. Therefore, the post-16 education and training system needs to be designed to encourage everyone to participate first of all, rather than to focus excessively on qualification attainment that will deter those who are less interested in studying.

It would additionally be important to provide public services which help those who do not stay on in higher education to make a smooth transition from education or training into employment. This is important for those growing up in long-term poverty in terms not only of their future economic prospects, but also of giving them incentives to participate and make efforts to engage with education and training. Given their high risks of becoming unemployed upon leaving full-time education, it may be unreasonable to expect them to become motivated about education and training.

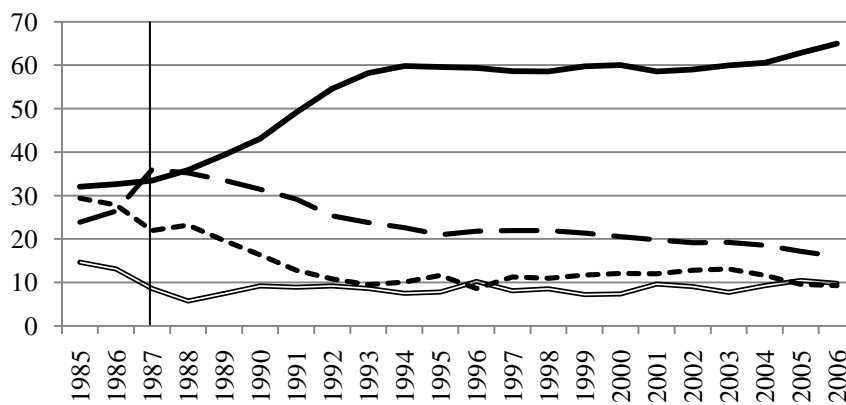
In the next chapter, I will analyse the younger cohort, who were born in the 1980s, using data from the BHPS. Although it is impossible to observe the long-term outcomes for them, the analyses of the 1970 cohort suggest that the quality of these early transitions could have a significant impact on the later employment outcomes, and that improving this quality is beneficial from the perspective of improving the future life chances of those growing up in poverty. The findings from analysis of the 1980s cohort could have more direct implications for contemporary children and young people, given that they grew up in similar contexts. In addition that, differences and similarities between the 1970 and 1980s cohorts could reveal the changing and/or unchanging mechanisms of the intergenerational persistence of poverty in the UK.

Figure 6.1 The participation rates in education, employment and training among 16-18-year-olds: England, 1985-2006

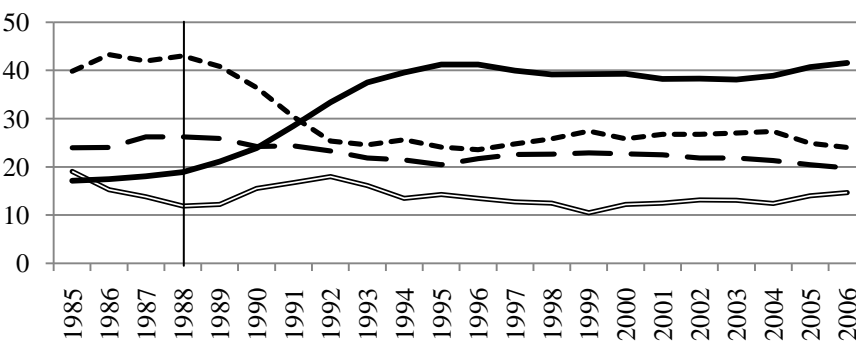
Age 16



Age 17



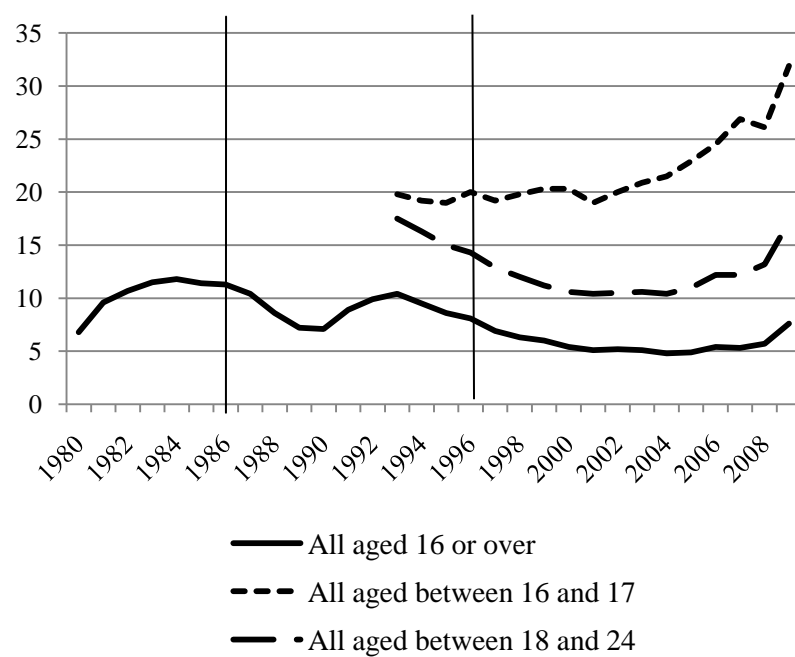
Age 18



- Full time education
- - Training (including part-time education)
- ... Employment but not in education or training
- . Not in education, employment or training

Source: Department for Children, Schools and Families

Figure 6.2 The unemployment rates by age group (%): Great Britain, 1980-2009



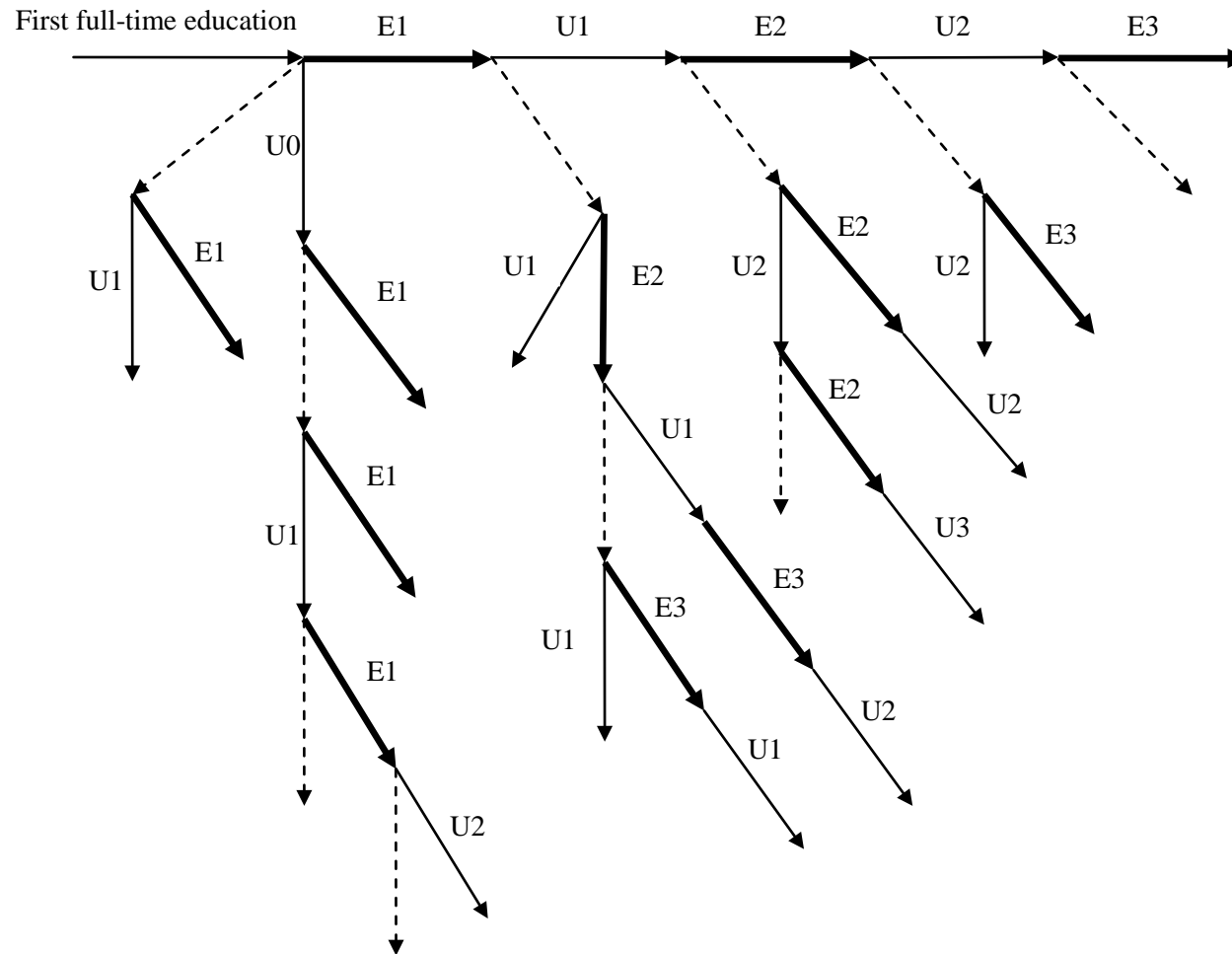
Source: Office for National Statistics using the Labour Force Survey

Figure 6.3 Possible transition patterns in work history

		Status in calendar time (m)			
		Employment	Unemployment	Inactivity	Education
Employment	Survival		Event	Censoring	Censoring
	n/a		$t=0$	n/a	n/a
Unemployment	$t=0$		n/a	n/a	n/a
	Event		Survival	Censoring	Censoring
Inactivity	$t=0$		n/a	n/a	n/a
	n/a		$t=0$	n/a	n/a
Education	$t=0$		Event*	n/a	n/a
	n/a		$t=0$	n/a	n/a
Status in calendar time ($m-1$)					

Notes: The unshaded cells in the above matrix indicate possible transitions for the analysis of the onset of unemployment in employment spells. Event* indicates the onset of unemployment upon first leaving full-time education that is not analysed with event history analysis. The shaded cells indicate the possible transitions for the analysis of the exit from unemployment. $t_0=0$ indicates the beginning of the analysis time. n/a denotes the transitions not under analysis.

Figure 6.4 Structure of employment and unemployment spells



Notes:

- Employment spells
(E1=the first employment spell, E2=the second employment spell and so forth)
- Unemployment spells
(U0=unemployment immediately after leaving full-time education, U1=the first unemployment spell following employment, U2=the second unemployment spell following employment and so forth)
- Inactivity spells not under analysis
(including the second or subsequent full-time education)

Figure 6.5 Survival estimates for the unemployment spell immediately after leaving full-time education by childhood poverty status: BCS males

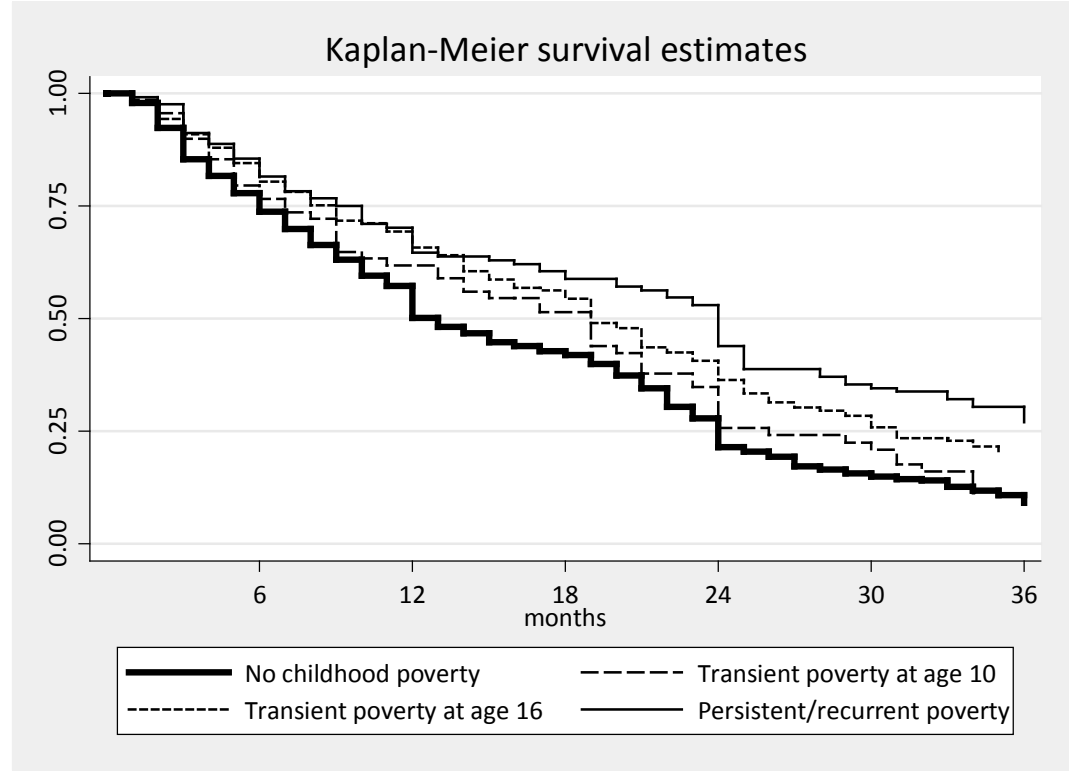


Figure 6.6 Survival estimates for the unemployment spell immediately after leaving full-time education by the highest qualification obtained: BCS males

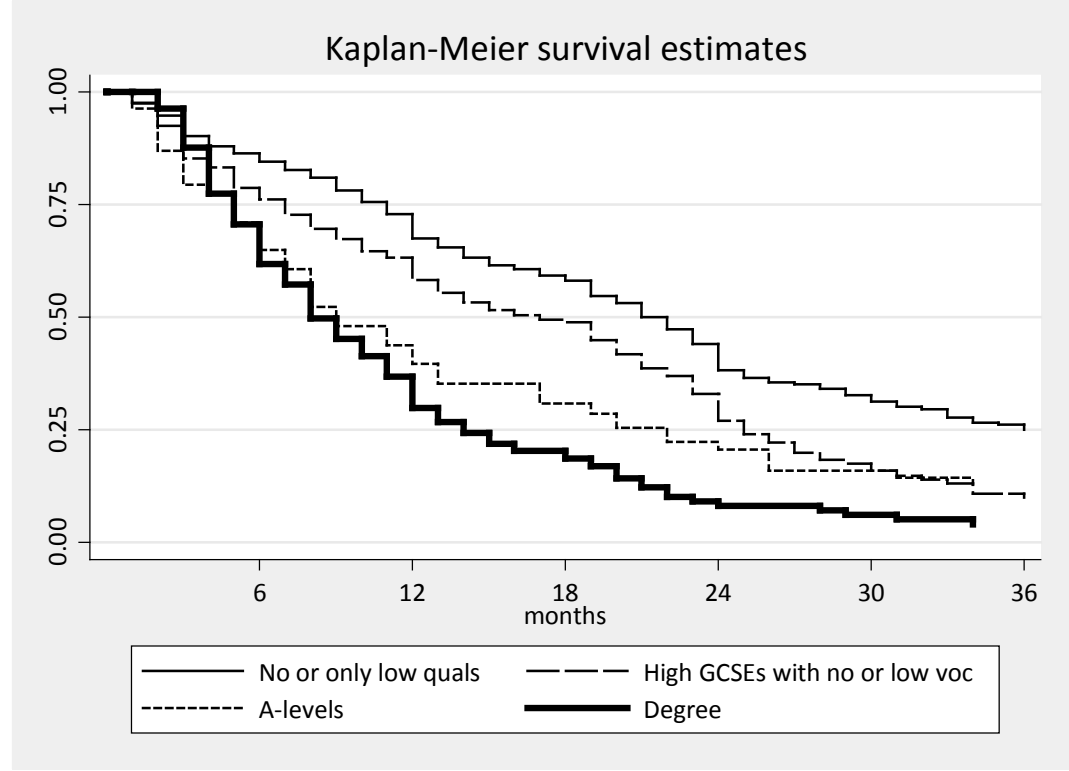


Figure 6.7 Survival estimates for the unemployment spell immediately after leaving full-time education by childhood poverty status: BCS females

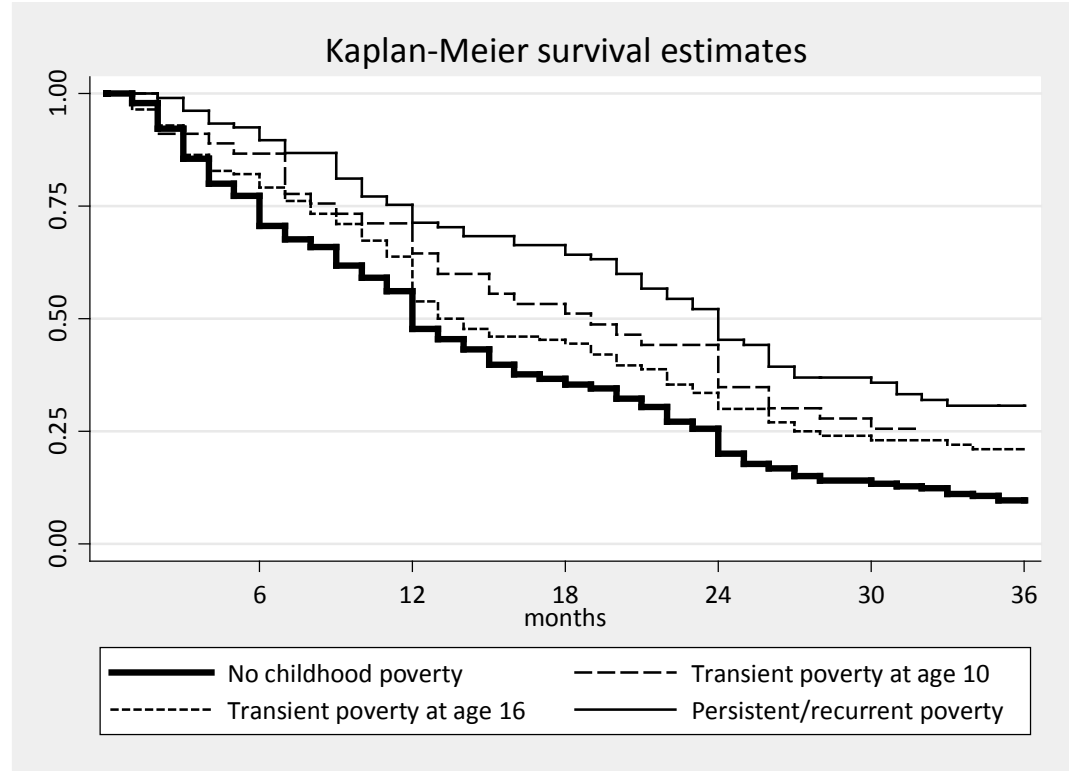


Figure 6.8 Survival estimates for the unemployment spell after leaving full-time education by the highest qualification obtained: BCS females

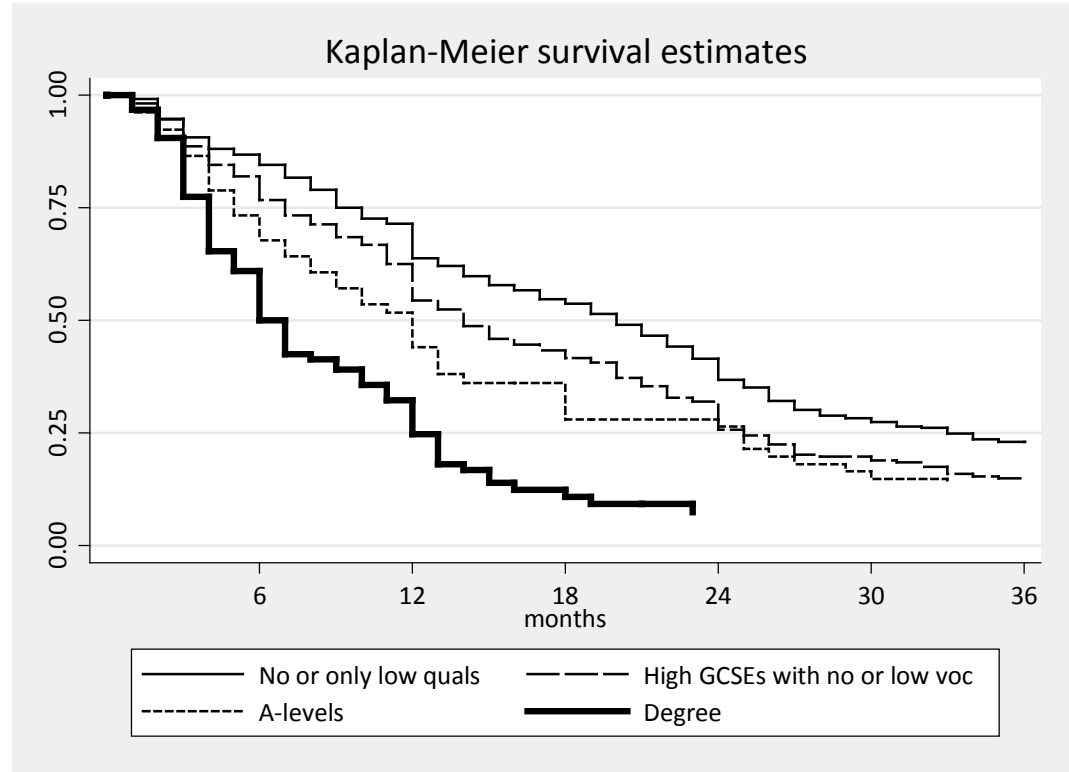


Figure 6.9 Survival estimates for the first employment spell by childhood poverty status: BCS males

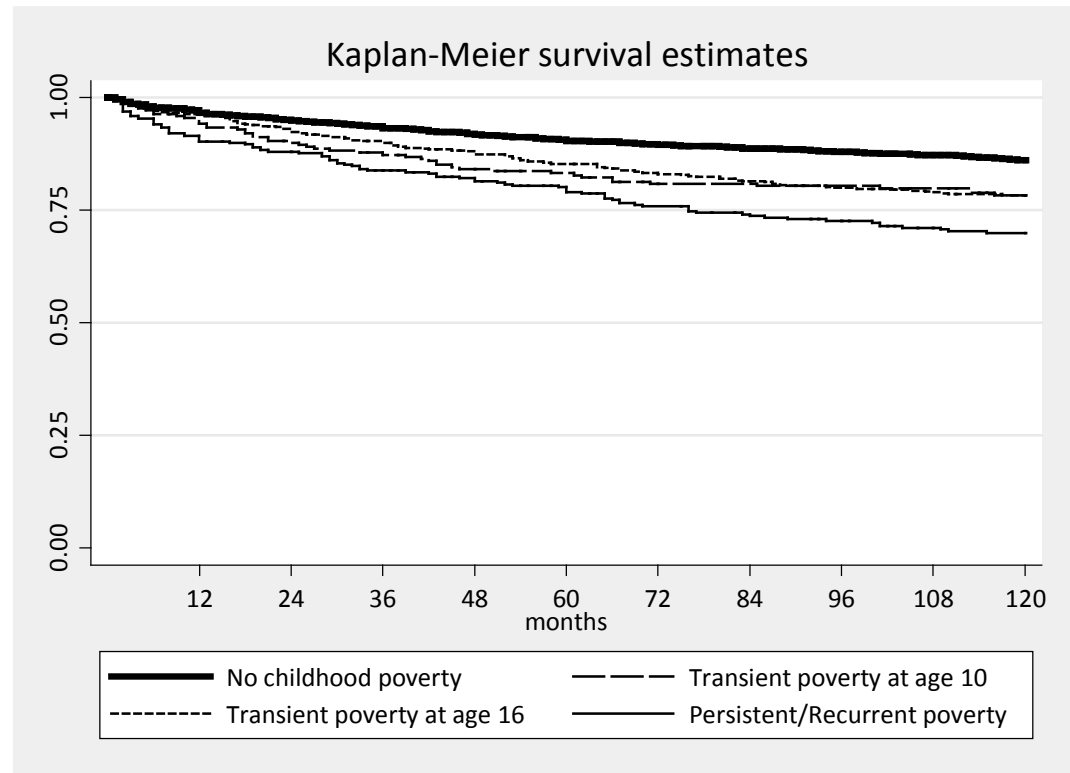


Figure 6.10 Survival estimates for the first employment spell by the highest qualification obtained: BCS males

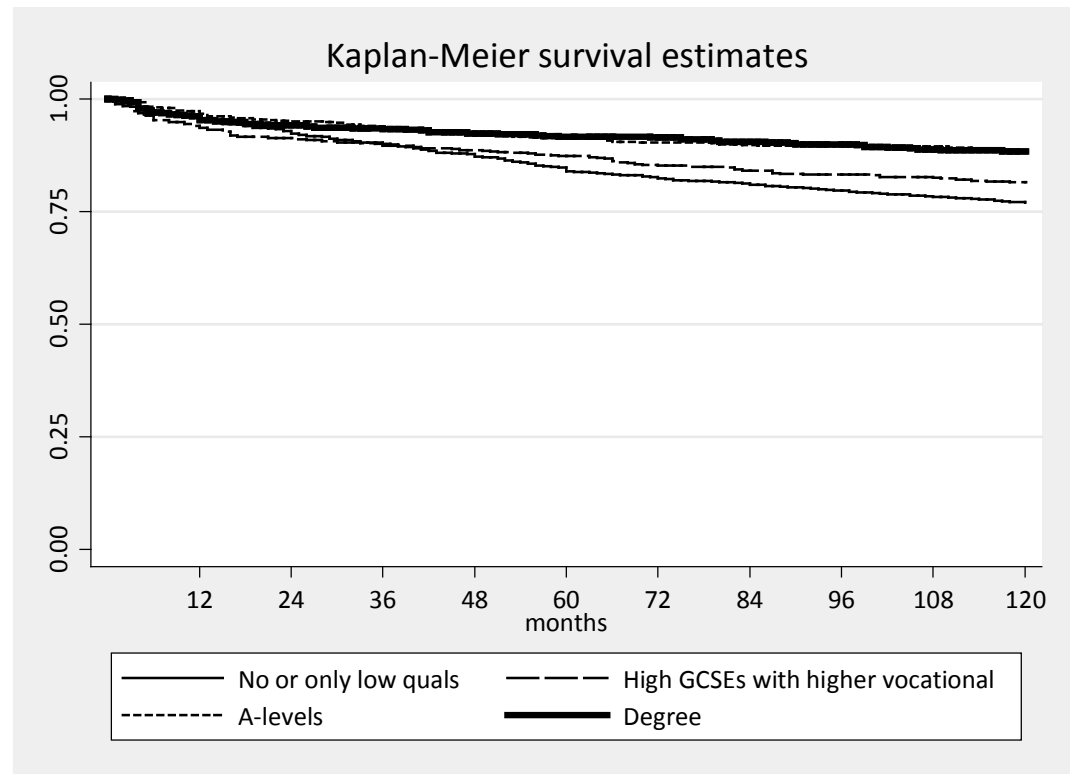


Figure 6.11 Survival estimates for the second and subsequent employment spells by childhood poverty status: BCS males

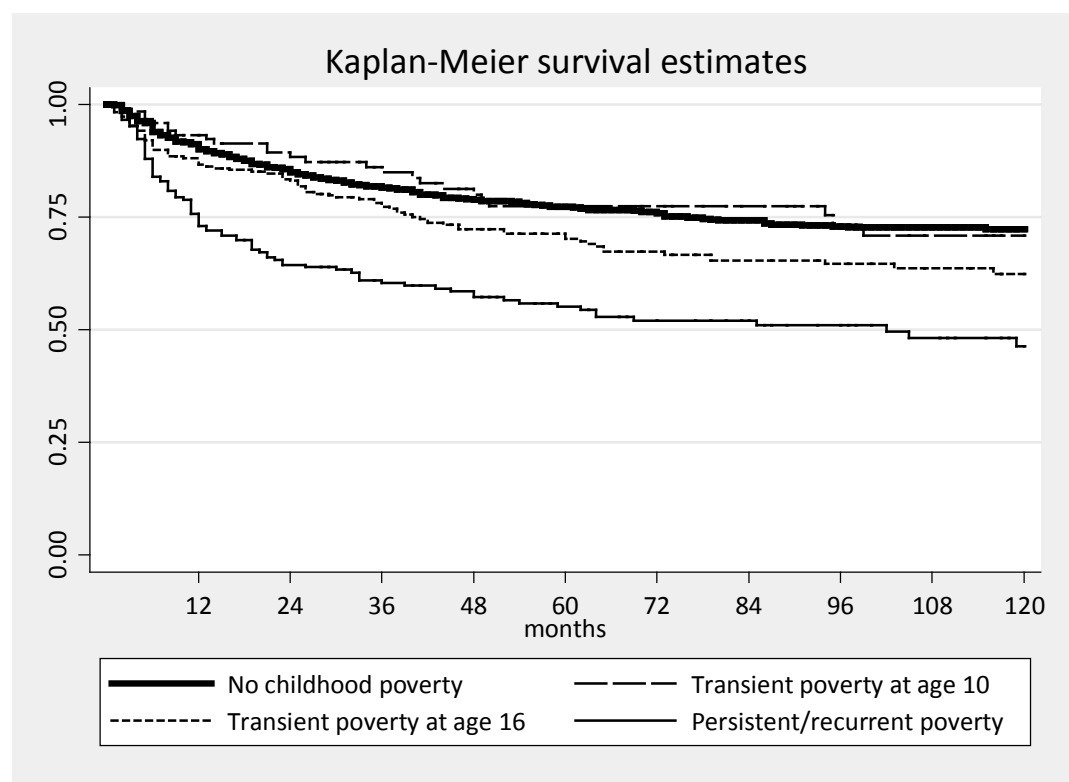


Figure 6.12 Survival estimates for the second and subsequent employment spells by the highest qualification obtained: BCS males

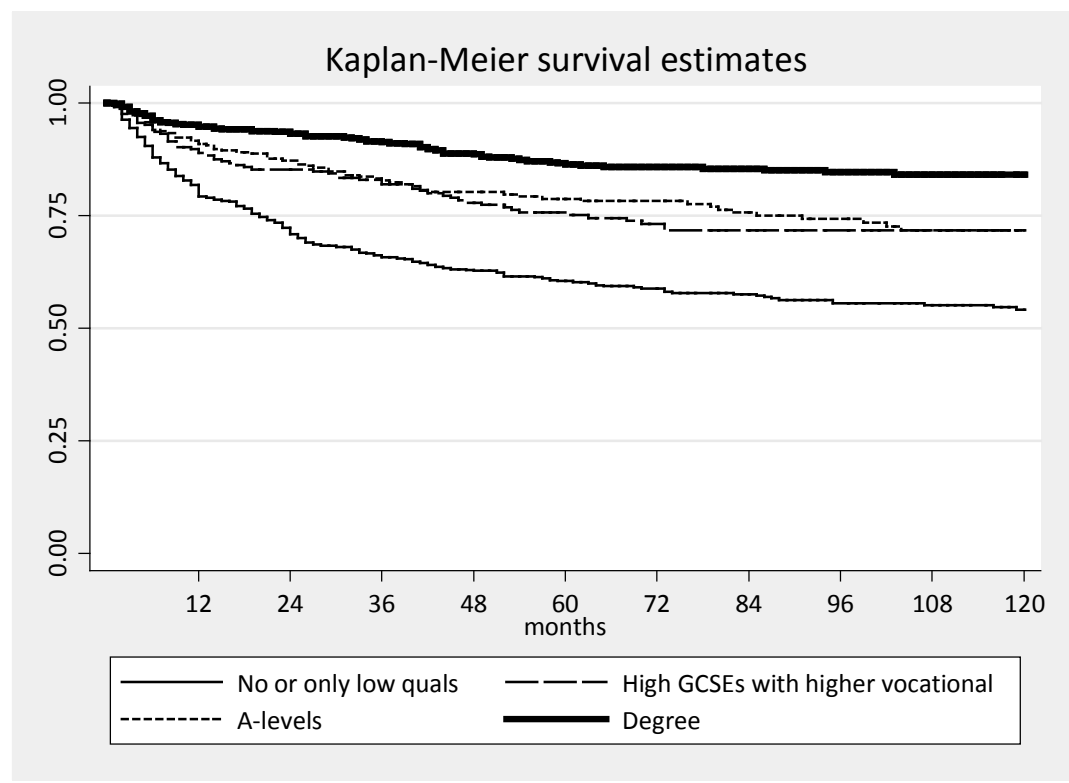


Figure 6.13 Survival estimates for the first employment spell until the onset of unemployment by childhood poverty status: BCS females

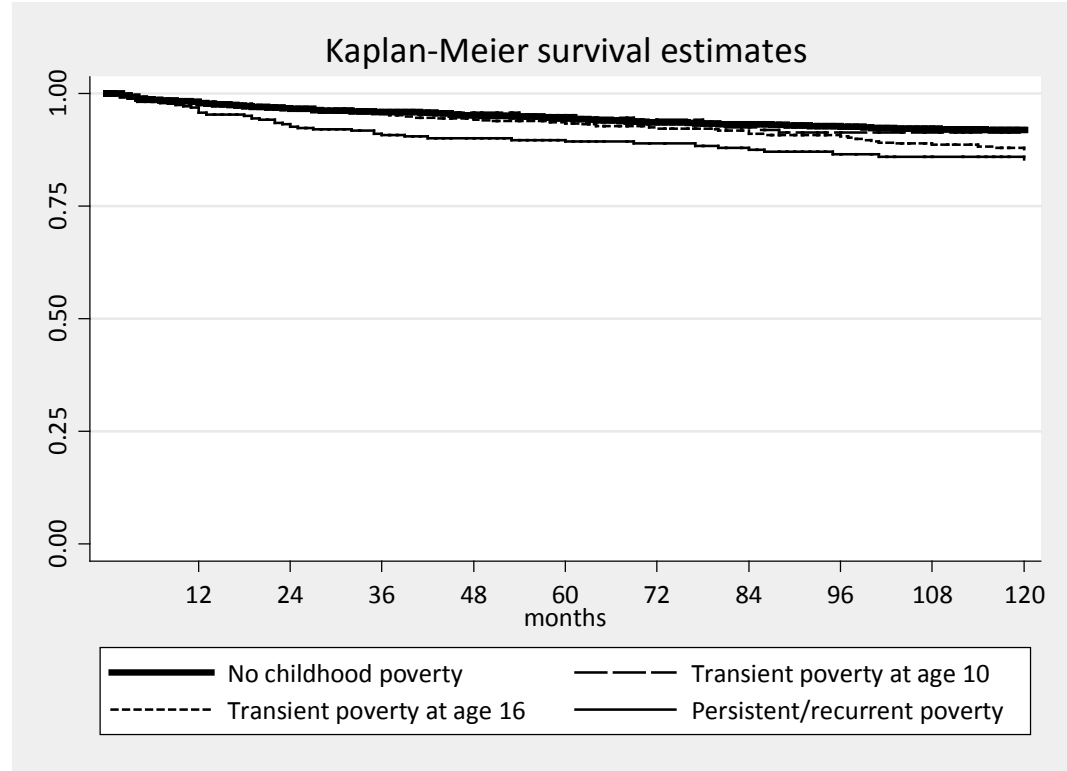


Figure 6.14 Survival estimates for the first employment spell until the onset of unemployment by the highest qualification obtained: BCS females

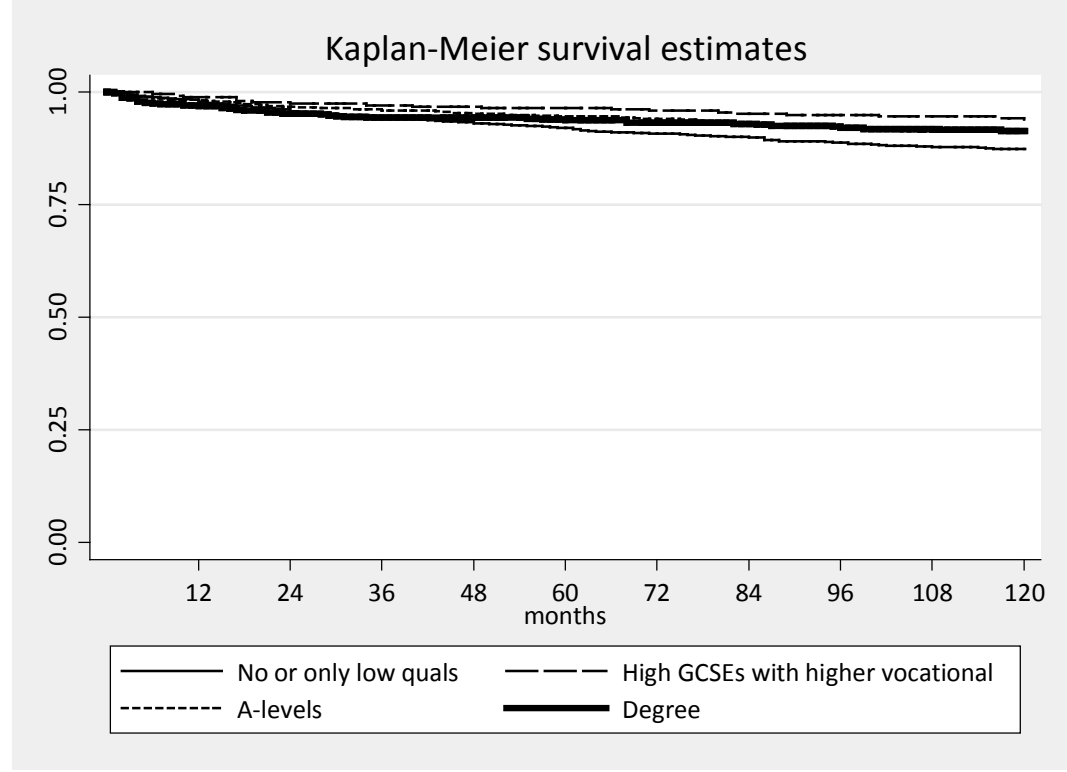


Figure 6.15 Survival estimates for the second and subsequent employment spells until the onset of unemployment by childhood poverty status: BCS females

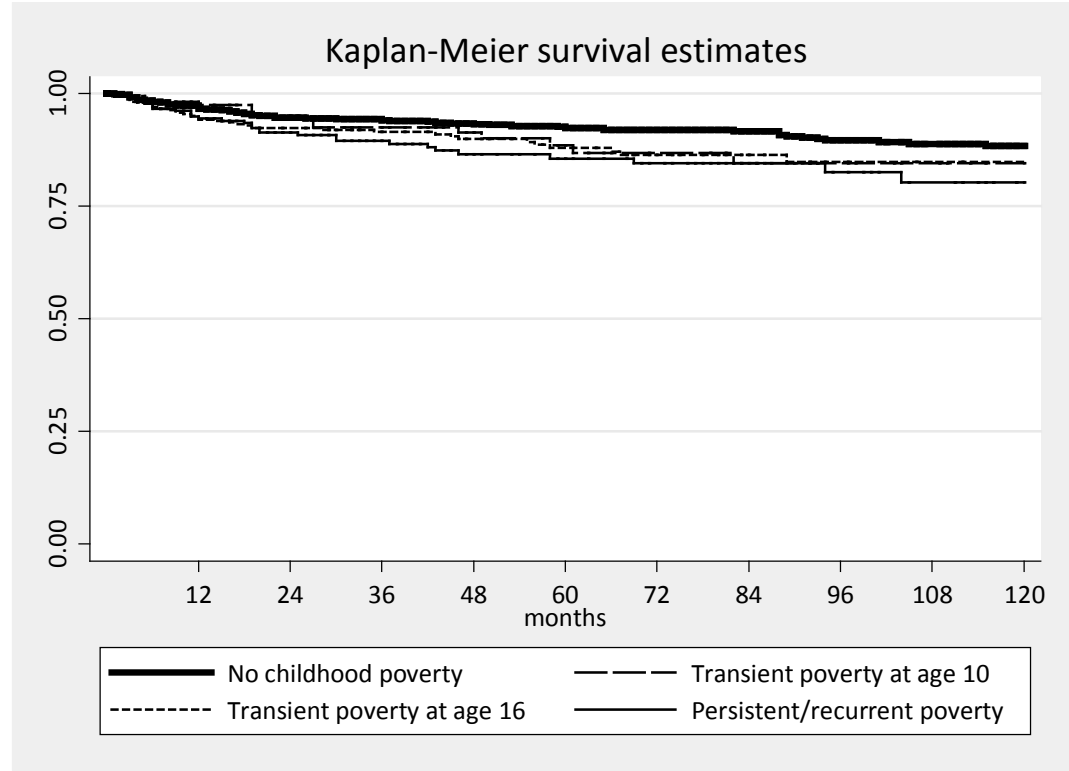


Figure 6.16 Survival estimates for the second and subsequent employment spells until the onset of unemployment by the highest qualification obtained: BCS females

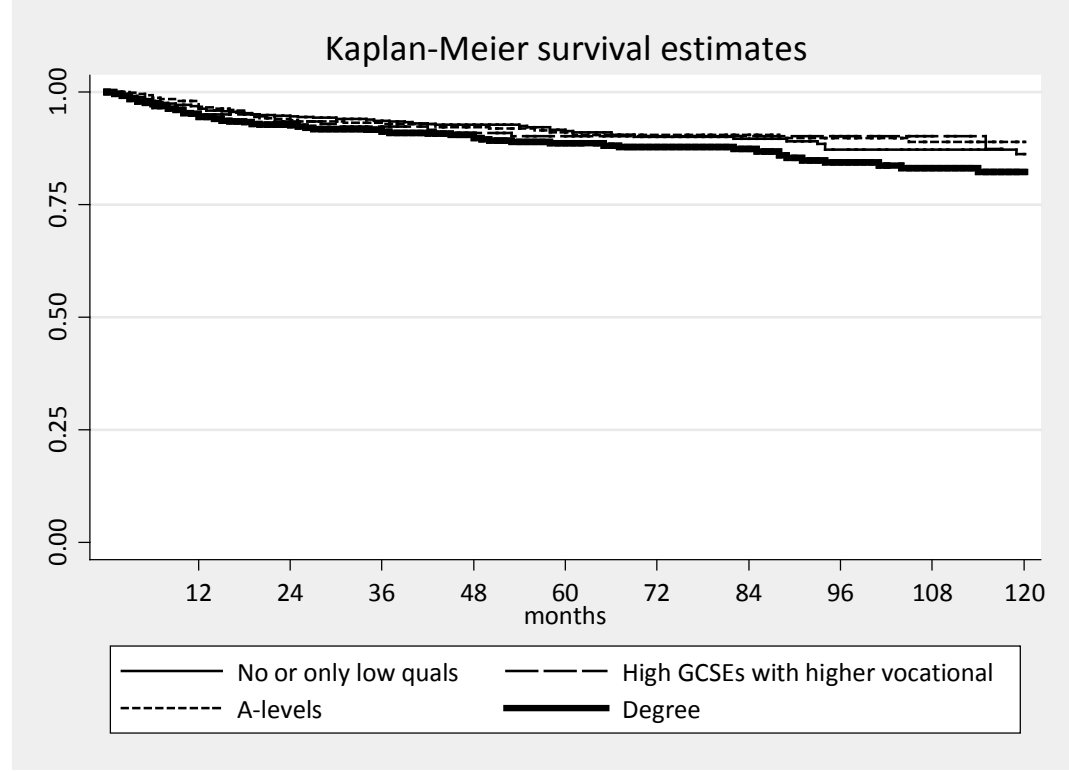


Figure 6.17 Survival estimates for the first employment spell until the onset of non-employment by childhood poverty status: BCS females

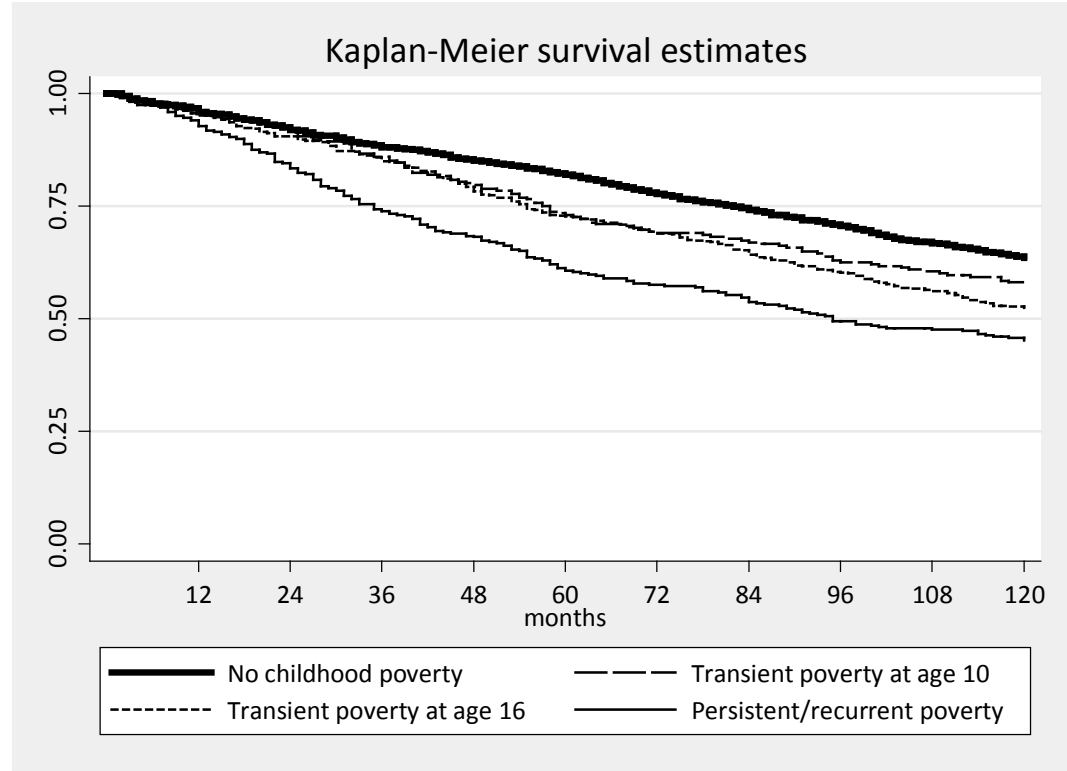


Figure 6.18 Survival estimates for the first employment spell until the onset of non-employment by the highest qualification obtained: BCS females

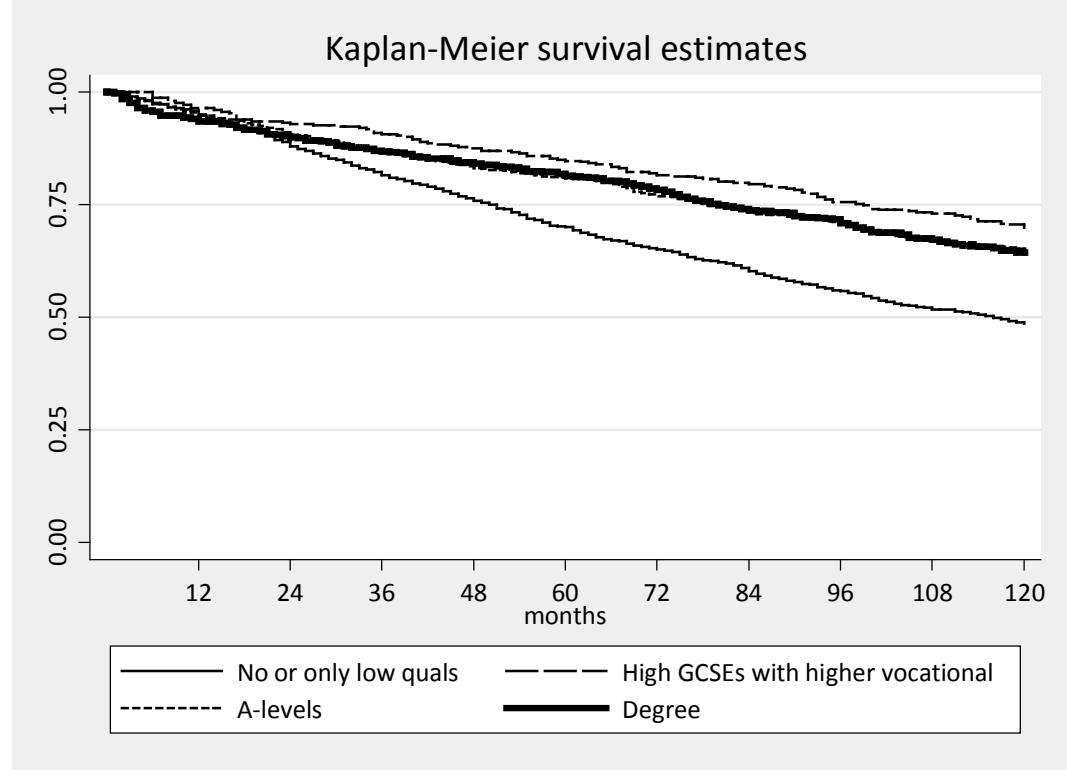


Figure 6.19 Survival estimates for the second and subsequent employment spells until the onset of non-employment by childhood poverty status: BCS females

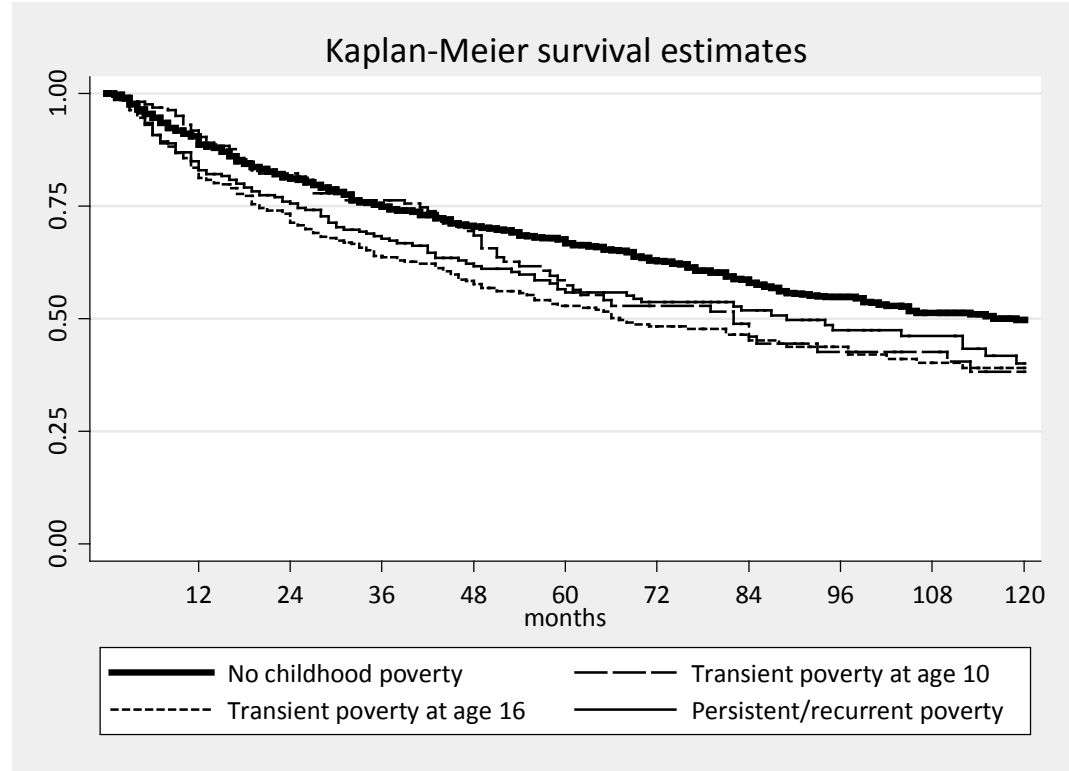


Figure 6.20 Survival estimates for the second and subsequent employment spells until the onset of non-employment by the highest qualification obtained: BCS females

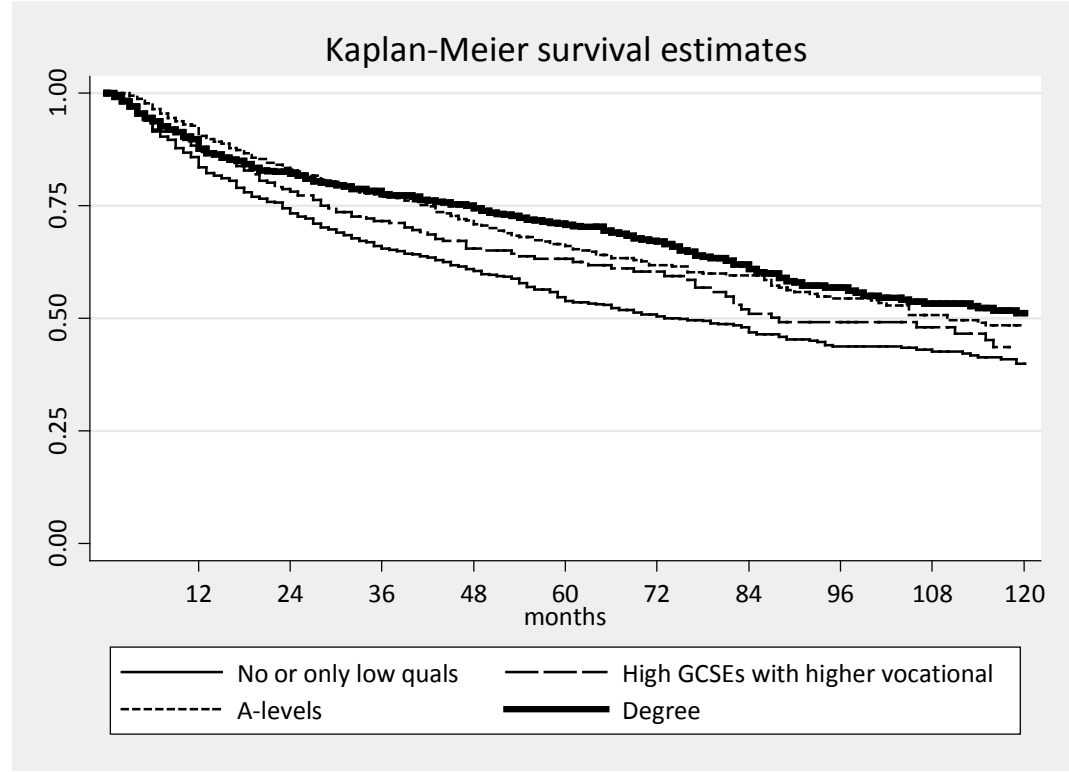


Figure 6.21 Survival estimates for all unemployment spells following employment by childhood poverty status: BCS males

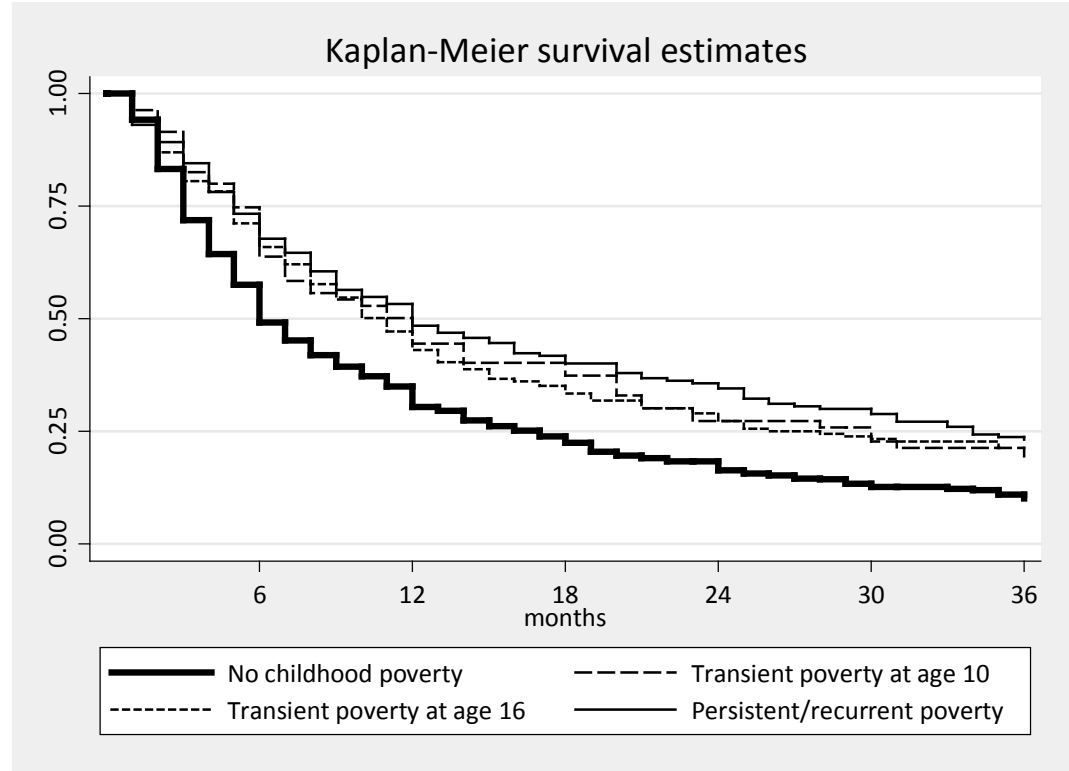


Figure 6.22 Survival estimates for all unemployment spells following employment by the highest qualification obtained: BCS males

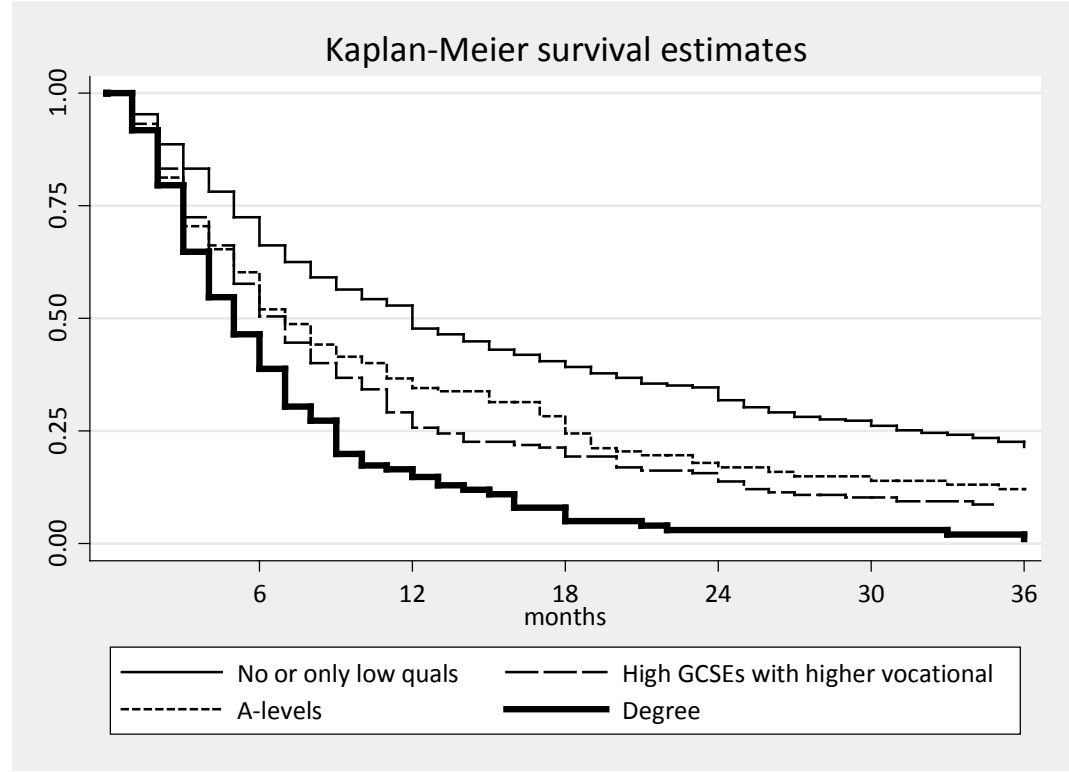


Figure 6.23 Survival estimates for all unemployment spells following employment by childhood poverty status: BCS females

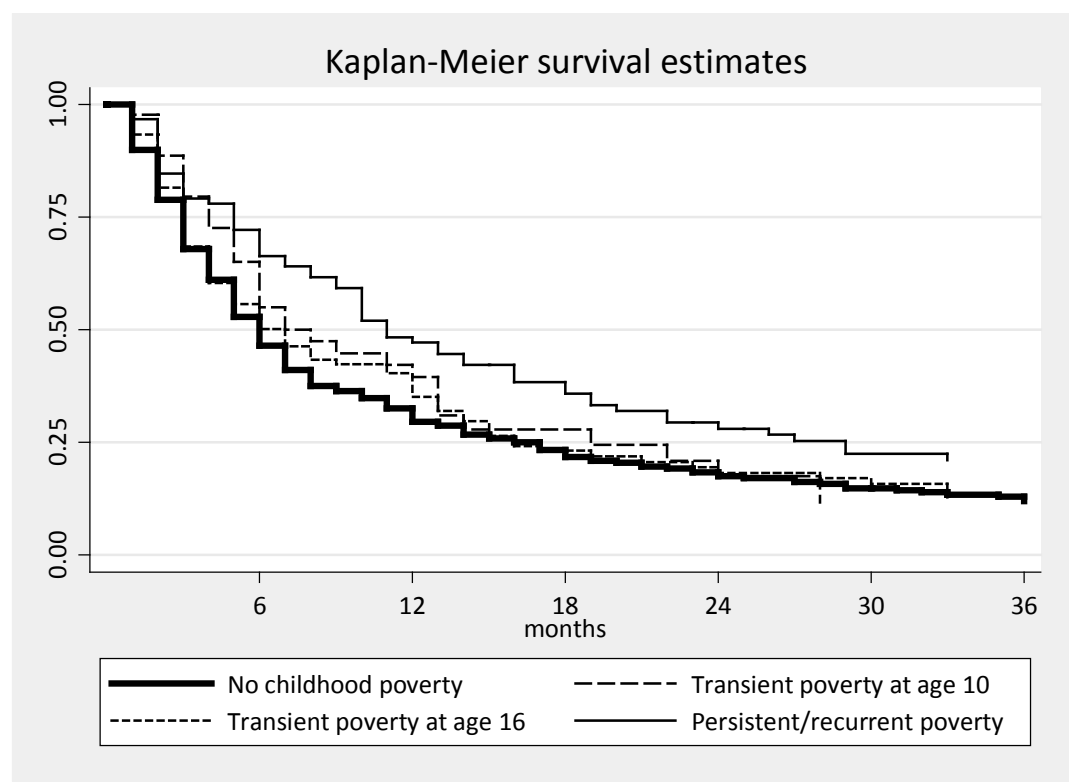


Figure 6.24 Survival estimates for all unemployment spells following employment by the highest qualification obtained: BCS females

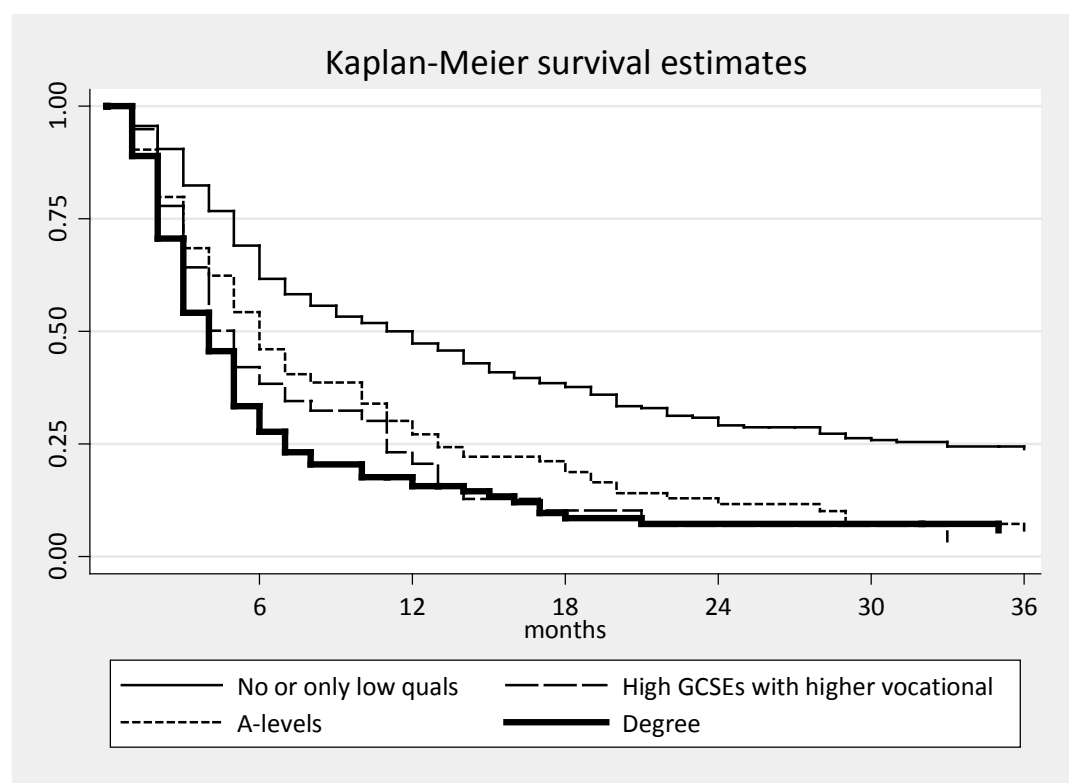


Figure 6.25 Survival estimates for all non-employment spells following employment by childhood poverty status: BCS females

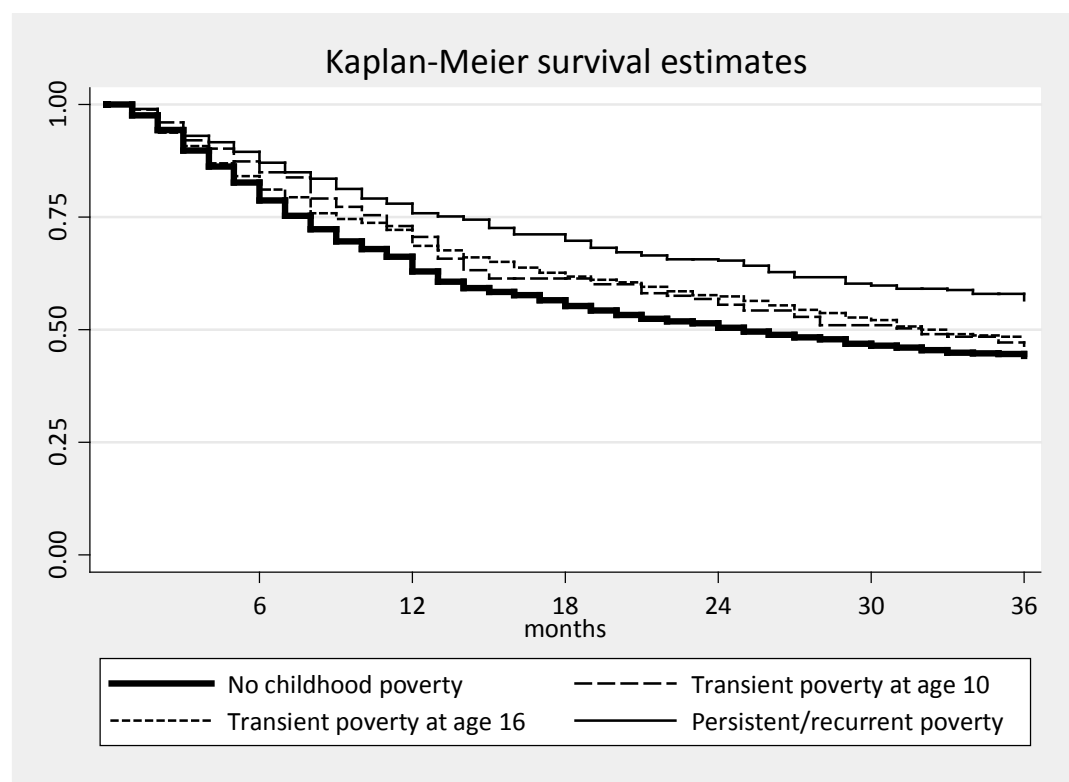


Figure 6.26 Survival estimates for all non-employment spells following employment by the highest qualification obtained: BCS females

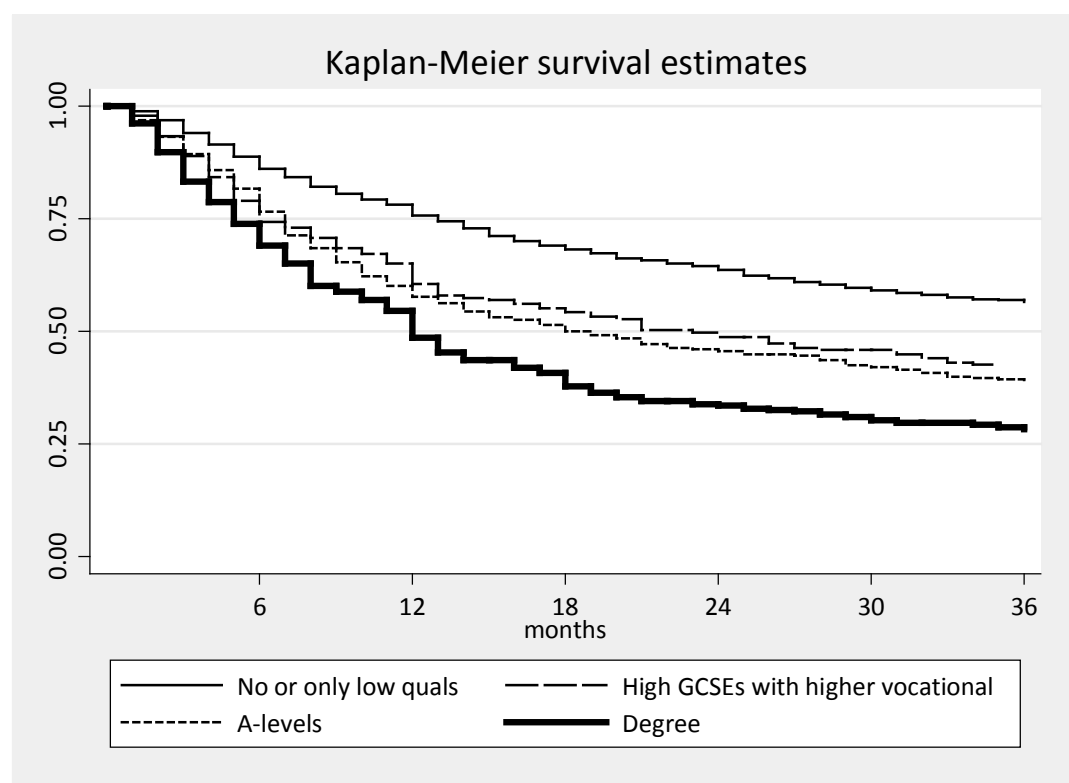


Table 6.1 Observations of employment histories by childhood poverty status

	n				%			
	No childhood poverty	Childhood poverty	Missing poverty status	Total	No childhood poverty	Childhood poverty	Missing poverty status	Total
No observation	638	580	5,275	6,493	11.5	18.0	51.1	34.0
Observations for current job in 1996	197	116	371	684	3.6	3.6	3.6	3.6
Observations from 1986 to 2000	669	499	1,091	2,259	12.1	15.5	10.6	11.8
Observations from 1986 to 2004	4,049	2,020	3,596	9,665	72.9	62.8	34.8	50.6
Total	5,553	3,215	10,333	19,101	100	100	100	100

Table 6.2 Distributions of unemployment and non-employment incidence by childhood poverty status: BCS

	Never	Once	Multiple After education & once after employment	Twice or more after employment	Total (n)	
		After education	After employ- ment			
Males						
Unemployment						
No childhood poverty	71.3	11.2	10.1	2.1	5.3	2,255
Childhood poverty	54.3	17.0	12.1	6.2	10.5	1,170
Missing poverty status	66.1	12.9	10.7	3.7	6.7	2,390
All	65.7	13.1	10.7	3.6	6.9	5,815
Non-employment						
No childhood poverty	60.9	13.1	14.6	3.6	7.9	2,255
Childhood poverty	46.5	17.0	13.8	9.2	13.6	1,170
Missing poverty status	56.4	13.4	14.5	5.8	9.8	2,390
All	56.2	14.0	14.4	5.6	9.8	5,815
Females						
Unemployment						
No childhood poverty	79.1	10.8	7.0	1.4	1.7	2,446
Childhood poverty	72.7	13.6	8.9	1.6	3.2	1,339
Missing poverty status	77.4	10.9	7.6	2.0	2.2	2,252
All	77.0	11.5	7.6	1.7	2.2	6,037
Non-employment						
No childhood poverty	41.1	8.0	31.1	7.0	12.8	2,446
Childhood poverty	32.1	9.4	29.6	8.8	20.1	1,339
Missing poverty status	36.0	8.7	30.4	8.2	16.7	2,252
All	37.2	8.6	30.5	7.9	15.9	6,037

Notes: Unemployment is when people are searching for jobs or on Government Supported Training. Non-employment is when people are either unemployed or economically inactive and not undertaking full-time education.

Table 6.3 The extract of the Kaplan-Meier estimators: the duration of first employment spell for BCS males who did not grow up in poverty

Months (t)	No. of survivors	No. of events (d _j)	No. censored	No. at risk(n _j)	Kaplan- Meier estimator (\hat{S})	95% Confidence Interval	
1	2241	10	1	2240	0.996	0.992	0.998
2	2230	13	10	2220	0.990	0.985	0.993
3	2207	8	11	2196	0.986	0.980	0.990
4	2188	4	6	2182	0.984	0.978	0.989
5	2178	10	8	2170	0.980	0.973	0.985
6	2160	6	6	2154	0.977	0.970	0.983
7	2148	0	6	2142	0.977	0.970	0.983
8	2142	2	5	2137	0.976	0.969	0.982
9	2135	2	5	2130	0.975	0.968	0.981
10	2128	4	2	2126	0.973	0.966	0.979
11	2122	5	5	2117	0.971	0.963	0.977
12	2112	12	22	2090	0.966	0.957	0.973

Notes: Kaplan-Meier estimators can be obtained by the following equation, $\hat{S}(t) = \prod_{j|t_j \leq t} \left(\frac{n_j - d_j}{n_j} \right)$.

For instance, $\hat{S}(1) = 1 - 10/(2240)$, $\hat{S}(2) = (1 - 13/2220) * 0.996$, $\hat{S}(3) = (1 - 8/2196) * 0.990$ and so forth.

Table 6.4 Economic status upon first leaving full-time education by childhood poverty status and the highest qualification obtained (%): BCS

	In employ- ment	On GST	Unemp- loyed	Inactive	Total (n)
Males					
No childhood poverty	79.9	8.7	6.9	4.6	2,009
Transient poverty at age 10	67.6	19.4	9.3	3.7	216
Transient poverty at age 16	69.1	17.5	10.0	3.4	498
Persistent/recurrent poverty	61.0	23.4	11.0	4.7	274
All	75.5	12.3	7.9	4.3	2,997
0/1. No or only low qualifications	68.7	19.7	8.0	3.7	1,780
2. Low GCSEs with higher Voc	89.4	3.5	5.9	1.2	85
3. High GCSEs with no or low Voc	76.1	14.5	5.6	3.9	1,542
4. High GCSEs with higher Voc	78.4	6.0	11.9	3.7	134
5. A-levels	86.3	0.3	5.9	7.4	673
6. Degree	75.9	0.7	16.9	6.5	586
All	75.0	12.3	8.1	4.6	4,800
Females					
No childhood poverty	80.0	9.4	5.2	5.4	2,218
Transient poverty at age 10	78.8	13.1	2.5	5.7	245
Transient poverty at age 16	73.9	14.7	6.0	5.4	571
Persistent/recurrent poverty	68.1	17.2	7.5	7.2	348
All	77.7	11.4	5.4	5.6	3,382
0/1. No or only low qualifications	71.2	16.3	6.6	5.9	1,750
2. Low GCSEs with higher Voc	88.9	5.6	3.3	2.2	90
3. High GCSEs with no or low Voc	75.1	14.7	4.5	5.8	1,752
4. High GCSEs with higher Voc	88.0	2.4	5.8	3.9	208
5. A-levels	87.5	0.8	3.6	8.2	782
6. Degree	81.7	0.2	11.4	6.8	589
All	77.1	10.8	5.9	6.2	5,171

Notes: GST stands for Government Supported Training.

Table 6.5 Economic status upon leaving compulsory education at age 16 by childhood poverty status (%): BCS

	Employed	GST	Unemployed	Inactive	Full-time education	Total (n)
Males						
No childhood poverty	37.2	8.3	1.6	1.2	51.8	2,199
Transient poverty at age 10	40.5	17.7	3.4	1.3	37.1	237
Transient poverty at age 16	43.1	17.5	2.8	2.1	34.5	566
Persistent/recurrent poverty	38.9	21.0	8.0	2.2	29.9	324
All	38.6	11.8	2.6	1.5	45.6	3,326
Females						
No childhood poverty	28.8	7.6	1.2	1.8	60.6	2,383
Transient poverty at age 10	38.2	11.5	1.1	3.3	45.9	270
Transient poverty at age 16	34.4	12.3	1.6	3.5	48.2	625
Persistent/recurrent poverty	37.9	13.8	5.2	4.9	38.2	406
All	31.5	9.4	1.7	2.5	55.0	3,684

Notes: GST stands for Government Supported Training.

Table 6.6 Duration spent in each economic status between ages 16 and 18 (June 1986 and April 1988) (%):BCS

	Males					Females				
	Never	1-6 months	7-12 months	Over 12 months	Total (n)	Never	1-6 months	7-12 months	Over 12 months	Total (n)
In employment										
No childhood poverty	44.3	5.2	10.2	40.3	2,213	51.2	5.2	11.9	31.8	2,406
Transient poverty at age 10	38.5	5.4	13.4	42.7	239	39.8	5.1	15.0	40.2	274
Transient poverty at age 16	42.2	5.1	6.9	45.9	569	44.5	6.3	12.2	37.0	632
Persistent/recurrent poverty	44.6	4.3	9.5	41.5	325	41.7	5.6	11.5	41.2	408
All	43.5	5.1	9.8	41.5	3,346	48.2	5.4	12.1	34.3	3,720
On Government Supported Training										
No childhood poverty	90.0	1.7	2.9	5.5	2,213	90.2	1.9	3.1	4.8	2,406
Transient poverty at age 10	79.5	2.5	3.4	14.6	239	86.1	1.8	4.4	7.7	274
Transient poverty at age 16	79.3	2.6	3.7	14.4	569	83.5	3.0	5.1	8.4	632
Persistent/recurrent poverty	72.6	5.2	5.9	16.3	325	82.8	1.5	6.9	8.8	408
All	85.7	2.2	3.3	8.7	3,346	87.9	2.0	4.0	6.1	3,720
Unemployed										
No childhood poverty	96.1	2.3	0.6	1.0	2,213	97.0	1.8	0.5	0.8	2,406
Transient poverty at age 10	92.5	5.0	0.8	1.7	239	97.8	1.1	0.0	1.1	274
Transient poverty at age 16	91.6	3.7	2.8	1.9	569	95.4	2.5	1.3	0.8	632
Persistent/recurrent poverty	87.1	3.7	3.4	5.9	325	90.7	2.0	3.7	3.7	408
All	94.2	2.8	1.3	1.7	3,346	96.1	1.9	0.9	1.1	3,720

Table 6.6 (Continued)

	Males					Females				
	Never	1-6 months	7-12 months	Over 12 months	Total (n)	Never	1-6 months	7-12 months	Over 12 months	Total (n)
Inactive										
No childhood poverty	96.8	1.8	0.4	1.0	2,213	95.2	2.0	0.9	2.0	2,406
Transient poverty at age 10	95.4	2.5	0.8	1.3	239	93.1	1.5	2.2	3.3	274
Transient poverty at age 16	94.9	2.8	0.4	1.9	569	92.9	1.7	1.9	3.5	632
Persistent/recurrent poverty	94.2	2.8	0.9	2.2	325	87.5	4.4	1.7	6.4	408
All	96.1	2.1	0.5	1.3	3,346	93.8	2.2	1.2	2.8	3,720
In full time education										
No childhood poverty	23.0	25.6	4.7	46.7	2,213	19.4	20.1	6.6	53.9	2,406
Transient poverty at age 10	28.9	33.9	5.4	31.8	239	25.9	27.7	6.2	40.2	274
Transient poverty at age 16	33.2	32.3	4.2	30.2	569	26.3	25.6	7.1	41.0	632
Persistent/recurrent poverty	40.3	29.5	4.6	25.5	325	33.6	29.4	7.1	29.9	408
All	26.8	27.7	4.7	40.8	3,346	22.6	22.6	6.7	48.1	3,720

Table 6.7 Logit models for the onset of unemployment upon leaving full-time education: BCS males

	(1) All	(2) All	(3) All	(4) Those who left full-time education at age 17 or under
Poverty at age 10	0.560** (0.120)	0.547** (0.124)	0.451** (0.151)	0.545** (0.168)
Poverty at age 16	0.606** (0.105)	0.529** (0.110)	0.543** (0.131)	0.489** (0.150)
0/1. No or only low quals		Ref	Ref	Ref
2. Low GCSEs with higher Voc		-1.525** (0.513)	-1.091* (0.507)	-0.598 (0.727)
3. High GCSEs with no or low Voc		-0.271* (0.110)	-0.174 (0.132)	-0.093 (0.140)
4. High GCSEs with higher Voc		-0.485 (0.314)	-0.430 (0.375)	-0.108 (0.705)
5. A-levels with/out Voc		-1.627** (0.225)	-1.324** (0.266)	
6. Degree		-0.332* (0.155)	0.157 (0.194)	
Ethnicity	No	No	Yes	Yes
Father's social class	No	No	Yes	Yes
Mother's education	No	No	Yes	Yes
Cognitive ability	No	No	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	2867	2712	2053	1290
Log likelihood	-1437.7	-1324.7	-974.1	-685.1

Notes: Robust standard errors in parentheses. ⁺ $p < 0.10$, ^{*} $p < 0.05$, ^{**} $p < 0.01$

Table 6.8 Logit models for the onset of unemployment upon leaving full-time education: BCS females

	(1) All	(2) All	(3) All	(4) Those who left full-time education at age 17 or under
Poverty at age 10	0.180 (0.121)	0.042 (0.126)	0.023 (0.156)	-0.082 (0.172)
Poverty at age 16	0.475** (0.104)	0.346** (0.106)	0.293* (0.127)	0.299* (0.142)
0/1. No or only low quals		Ref	Ref	Ref
2. Low GCSEs with higher Voc		-1.291* (0.526)	-1.347* (0.609)	-0.229 (0.829)
3. High GCSEs with no or low Voc		-0.136 (0.107)	-0.073 (0.125)	0.003 (0.130)
4. High GCSEs with higher Voc		-1.448** (0.356)	-1.098** (0.365)	-0.721 (0.495)
5. A-levels with/out Voc		-1.791** (0.225)	-1.886** (0.293)	
6. Degree		-0.639** (0.168)	-0.383+ (0.205)	
Ethnicity	No	No	Yes	Yes
Father's social class	No	No	Yes	Yes
Mother's education	No	No	Yes	Yes
Cognitive ability	No	No	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	3192	3078	2335	1346
Log likelihood	-1474.0	-1368.3	-1023.7	-751.2

Notes: Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.9 Cox proportional hazard models for the exit from unemployment immediately after leaving full-time education: BCS males

	(1)	(2)	(3)
Poverty at age 10	-0.175* (0.089)	-0.131 (0.091)	-0.140 (0.107)
Poverty at age 16	-0.345** (0.080)	-0.278** (0.084)	-0.297** (0.099)
0/1. No or only low quals		Ref	Ref
2. Low GCSEs with higher Voc		0.624** (0.190)	0.582** (0.208)
3. High GCSEs with no or low Voc		0.356** (0.094)	0.323** (0.111)
4. High GCSEs with higher Voc		0.472** (0.153)	0.270 (0.175)
5. A-levels with/out Voc		0.302 (0.217)	-0.019 (0.235)
6. Degree		0.928** (0.137)	0.641** (0.179)
Ethnicity	No	No	Yes
Father's social class	No	No	Yes
Mother's education	No	No	Yes
Cognitive ability	No	No	Yes
Unemployment rate	Yes	Yes	Yes
Number of subjects	722	691	524
Number of events	658	630	477
Log likelihood	-3710.5	-3501.2	-2524.8

Notes: Robust standard errors in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.10 Cox proportional hazard models for the exit from unemployment immediately after leaving full-time education: BCS females

	(1)	(2)	(3)	(4)
Poverty at age 10	-0.412** (0.114)	-0.370** (0.119)	-0.403** (0.144)	-0.412** (0.144)
Poverty at age 16	-0.293** (0.098)	-0.153 (0.099)	0.041 (0.114)	0.002 (0.116)
0/1. No or only low quals		Ref	Ref	Ref
2. Low GCSEs with higher Voc		0.491* (0.193)	0.383+ (0.223)	0.351 (0.218)
3. High GCSEs with no or low Voc		0.281** (0.096)	0.150 (0.117)	0.119 (0.117)
4. High GCSEs with higher Voc		0.725** (0.221)	0.599* (0.245)	0.540* (0.249)
5. A-levels		0.267 (0.188)	-0.164 (0.255)	-0.232 (0.255)
6. Degree		1.092** (0.163)	0.750** (0.227)	0.701** (0.226)
Having a child				-1.088* (0.474)
Ethnicity	No	No	Yes	Yes
Father's social class	No	No	Yes	Yes
Mother's education	No	No	Yes	Yes
Cognitive ability	No	No	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	661	642	483	483
Number of events	544	533	400	400
Log likelihood	-3065.6	-2960.6	-2107.4	-2103.6

Notes: Robust standard errors in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.11 Cox proportional hazard models for the onset of unemployment following the first employment spell: BCS males

	(1)	(2)	(3)	(4)	(5)	(6)
Poverty at age 10	0.480** (0.097)	0.447** (0.100)	0.429** (0.120)	0.428** (0.120)	0.409** (0.120)	0.416** (0.121)
Poverty at age 16	0.431** (0.088)	0.384** (0.089)	0.335** (0.106)	0.334** (0.106)	0.263* (0.107)	0.292** (0.107)
0/1. No or low quals		Ref	Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc		-0.549** (0.168)	-0.572** (0.202)	-0.570** (0.202)	-0.603** (0.204)	-0.521* (0.203)
3. High GCSEs with no or low Voc		-0.258* (0.106)	-0.196 (0.126)	-0.192 (0.126)	-0.183 (0.126)	-0.144 (0.127)
4. High GCSEs with higher Voc		-0.199 (0.149)	-0.060 (0.169)	-0.057 (0.169)	-0.062 (0.170)	-0.019 (0.170)
5. A-levels with/out Voc		-0.518** (0.154)	-0.384* (0.182)	-0.387* (0.182)	-0.302+ (0.183)	-0.334+ (0.182)
6. Degree		-0.312* (0.155)	0.007 (0.185)	0.005 (0.185)	0.062 (0.184)	-0.010 (0.187)
Part-time				0.492+ (0.283)	0.432 (0.287)	0.352 (0.299)
Unemployment after edu 0					Ref	Ref
Unemployment after edu 1-6					0.096 (0.205)	0.191 (0.234)
Unemployment after edu 7-12					0.269 (0.217)	0.381 (0.328)
Unemployment after edu 13+					0.656** (0.134)	0.955** (0.210)
Ethnicity	No	No	Yes	Yes	Yes	Yes
Father's social class	No	No	Yes	Yes	Yes	Yes
Mother's education	No	No	Yes	Yes	Yes	Yes
Cognitive ability	No	No	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	3304	3144	2372	2372	2372	2372
Number of events	614	594	443	443	443	443
Log likelihood	-4768.4	-4571.2	-3277.5	-3276.0	-3264.7	-3266.0

Notes: Robust standard errors in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

The unemployment duration is measured in months. In Column (6), the unemployment duration excludes the length of time spent on GST.

Table 6.12 Cox proportional hazard models for the onset of unemployment following the second and subsequent employment spells: BCS males

	(1)	(2)	(3)	(4)
Poverty at age 10	0.196 (0.123)	0.044 (0.126)	-0.030 (0.154)	-0.032 (0.155)
Poverty at age 16	0.550** (0.113)	0.406** (0.119)	0.413** (0.145)	0.412** (0.146)
0/1. No or low quals		Ref	Ref	Ref
2. Low GCSEs with higher Voc		-0.200 (0.194)	-0.293 (0.213)	-0.291 (0.214)
3. High GCSEs with/out lower Voc		-0.502** (0.184)	-0.431* (0.216)	-0.431* (0.216)
4. High GCSEs with higher Voc		-0.411* (0.198)	-0.337 (0.239)	-0.340 (0.239)
5. A-levels with/out Voc		-0.457* (0.184)	-0.333 (0.221)	-0.335 (0.221)
6. Degree		-1.205** (0.194)	-1.195** (0.262)	-1.196** (0.262)
Part-time				-0.100 (0.363)
Ethnicity	No	No	Yes	Yes
Father's social class	No	No	Yes	Yes
Mother's education	No	No	Yes	Yes
Cognitive ability	No	No	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	1473	1424	1039	1039
Number of events	360	352	237	237
Log likelihood	-2226.4	-2139.0	-1363.4	-1363.3

Notes: Robust standard errors (clustered by individual and sequence) in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.12 Continued

	(5)	(6)	(7)
Poverty at age 10	-0.077 (0.156)	-0.149 (0.157)	-0.086 (0.161)
Poverty at age 16	0.351* (0.146)	0.300* (0.142)	0.286* (0.140)
0/1. No or low quals	Ref	Ref	Ref
2. Low GCSEs with higher Voc	-0.188 (0.222)	-0.043 (0.220)	-0.018 (0.215)
3. High GCSEs with/out lower Voc	-0.383+ (0.218)	-0.292 (0.218)	-0.281 (0.210)
4. High GCSEs with higher Voc	-0.270 (0.238)	-0.182 (0.232)	-0.149 (0.232)
5. A-levels with/out Voc	-0.221 (0.219)	0.011 (0.208)	0.007 (0.212)
6. Degree	-1.073** (0.264)	-0.647* (0.279)	-0.723* (0.283)
Part-time	-0.103 (0.364)	-0.193 (0.372)	-0.252 (0.370)
Unemployment after edu 0	Ref	Ref	Ref
Unemployment after edu 1-6	0.250 (0.299)	0.190 (0.297)	0.352 (0.287)
Unemployment after edu 7-12	0.498* (0.216)	0.477* (0.211)	-0.071 (0.343)
Unemployment after edu 13+	0.480** (0.170)	0.416* (0.168)	1.003** (0.226)
Unemployment after emp 0		-0.984** (0.233)	-0.840** (0.210)
Unemployment after emp 1-6		Ref	Ref
Unemployment after emp 7-12		0.114 (0.194)	0.128 (0.199)
Unemployment after emp 13+		0.264 (0.185)	0.260 (0.186)
Ethnicity	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes
Number of subjects	1039	1039	1039
Number of events	237	237	237
Log likelihood	-1358.5	-1340.1	-1336.8

Notes: Robust standard errors (clustered by individual and sequence) in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

The unemployment duration is measured in months. In Column (7), the unemployment duration excludes the length of time spent on GST.

Table 6.13 Cox proportional hazard models for the onset of unemployment following the first employment spell: BCS females

	(1)	(2)	(3)	(4)
Poverty at age 10	0.292* (0.137)	0.240+ (0.142)	0.183 (0.183)	0.185 (0.183)
Poverty at age 16	0.373** (0.122)	0.353** (0.126)	0.121 (0.154)	0.122 (0.155)
0/1. No or low quals		Ref	Ref	Ref
2. Low GCSEs with higher Voc		0.031 (0.271)	0.055 (0.311)	0.052 (0.312)
3. High GCSEs with/out lower Voc		-0.312* (0.144)	-0.353* (0.174)	-0.354* (0.174)
4. High GCSEs with higher Voc		-0.560* (0.258)	-0.870* (0.351)	-0.873* (0.351)
5. A-levels with/out Voc		-0.218 (0.170)	-0.361+ (0.219)	-0.362+ (0.219)
6. Degree		-0.402+ (0.219)	-0.131 (0.275)	-0.134 (0.276)
Part-time				-0.055 (0.214)
Ethnicity	No	No	Yes	Yes
Father's social class	No	No	Yes	Yes
Mother's education	No	No	Yes	Yes
Cognitive ability	No	No	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	3642	3522	2658	2658
Number of events	326	315	215	215
Log likelihood	-2539.1	-2438.1	-1597.0	-1596.9

Notes: Robust standard errors in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.13 Continued

	(5)	(6)	(7)
Poverty at age 10	0.206 (0.186)	0.161 (0.185)	0.163 (0.185)
Poverty at age 16	0.093 (0.157)	0.098 (0.156)	0.097 (0.157)
0/1. No or low quals	Ref	Ref	Ref
2. Low GCSEs with higher Voc	0.029 (0.320)	0.096 (0.314)	0.111 (0.314)
3. High GCSEs with/out lower Voc	-0.350* (0.175)	-0.319+ (0.176)	-0.325+ (0.176)
4. High GCSEs with higher Voc	-0.842* (0.352)	-0.840* (0.353)	-0.860* (0.354)
5. A-levels with/out Voc	-0.275 (0.223)	-0.339 (0.222)	-0.360 (0.223)
6. Degree	-0.114 (0.280)	-0.184 (0.276)	-0.197 (0.275)
Part-time	-0.064 (0.219)	-0.096 (0.220)	0.104 (0.251)
Unemployment after edu 0	Ref	Ref	Ref
Unemployment after edu 1-6	0.859** (0.250)	0.743* (0.301)	0.724* (0.302)
Unemployment after edu 7-12	0.494+ (0.282)	0.646 (0.525)	0.658 (0.531)
Unemployment after edu 13+	0.464+ (0.244)	1.106** (0.381)	1.145** (0.382)
Having a child			-0.509+ (0.289)
Ethnicity	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes
Number of subjects	2658	2658	2658
Number of events	215	215	215
Log likelihood	-1589.5	-1590.6	-1588.6

Notes: Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

The unemployment duration is measured in months. In Columns (6) and (7), the unemployment duration excludes the length of time spent on GST.

Table 6.14 Cox proportional hazard models for the onset of unemployment following the second and subsequent employment spells: BCS females

	(1)	(2)	(3)	(4)
Poverty at age 10	0.005 (0.221)	0.083 (0.228)	0.133 (0.276)	0.145 (0.274)
Poverty at age 16	0.315 (0.195)	0.323 (0.202)	0.504* (0.250)	0.523* (0.246)
0/1. No or low quals		Ref	Ref	Ref
2. Low GCSEs with higher Voc		-0.254 (0.538)	-1.706+ (1.012)	-1.776+ (1.011)
3. High GCSEs with/out lower Voc		-0.171 (0.262)	-0.440 (0.314)	-0.459 (0.310)
4. High GCSEs with higher Voc		0.121 (0.360)	0.152 (0.379)	0.060 (0.376)
5. A-levels with/out Voc		-0.074 (0.287)	-0.257 (0.377)	-0.392 (0.379)
6. Degree		0.257 (0.258)	0.038 (0.350)	-0.146 (0.378)
Part-time				-0.564* (0.259)
Ethnicity	No	No	Yes	Yes
Father's social class	No	No	Yes	Yes
Mother's education	No	No	Yes	Yes
Cognitive ability	No	No	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	2190	2144	1592	1592
Number of events	155	151	101	101
Log likelihood	-1022.7	-992.8	-625.3	-622.1

Notes: Robust standard errors (clustered by individual and sequence) in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.14 Continued

	(5)	(6)	(7)	(8)
Poverty at age 10	0.141 (0.282)	0.146 (0.275)	0.077 (0.282)	0.091 (0.286)
Poverty at age 16	0.510* (0.248)	0.482+ (0.251)	0.479+ (0.250)	0.517* (0.253)
0/1. No or low quals	Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc	-1.790+ (1.013)	-1.634 (1.006)	-1.684+ (1.016)	-1.739+ (1.007)
3. High GCSEs with/out lower Voc	-0.439 (0.305)	-0.365 (0.296)	-0.386 (0.301)	-0.410 (0.300)
4. High GCSEs with higher Voc	0.131 (0.373)	0.357 (0.369)	0.281 (0.367)	0.213 (0.384)
5. A-levels with/out Voc	-0.329 (0.362)	-0.262 (0.353)	-0.371 (0.354)	-0.503 (0.353)
6. Degree	-0.044 (0.366)	0.092 (0.350)	-0.038 (0.355)	-0.238 (0.354)
Part-time	-0.544* (0.255)	-0.229 (0.258)	-0.251 (0.260)	0.014 (0.312)
Unemployment after edu 0	Ref	Ref	Ref	Ref
Unemployment after edu 1-6	0.111 (0.437)	-0.159 (0.443)	-0.004 (0.478)	-0.087 (0.484)
Unemployment after edu 7-12	0.353 (0.393)	0.293 (0.368)	0.516 (0.504)	0.596 (0.510)
Unemployment after edu 13+	0.834* (0.342)	0.681* (0.331)	0.856* (0.436)	0.683 (0.443)
Unemployment after edu 0		-1.142** (0.282)	-1.079** (0.278)	-0.952** (0.282)
Unemployment after emp 1-6		Ref	Ref	Ref
Unemployment after emp 7-12		0.435 (0.365)	0.485 (0.366)	0.454 (0.371)
Unemployment after emp 13+		0.093 (0.362)	0.115 (0.425)	0.095 (0.430)
Having a child				-0.685* (0.321)
Ethnicity	Yes	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	1592	1592	1592	1592
Number of events	101	101	101	101
Log likelihood	-619.0	-602.0	-603.2	-600.2

Notes: Robust standard errors (clustered by individual and sequence) in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

The unemployment duration is measured in months. In Column (7), the unemployment duration excludes the length of time spent on GST.

Table 6.15 Cox proportional hazard models for the onset of non-employment following the first employment spell: BCS females

	(1)	(2)	(3)	(4)
Poverty at age 10	0.211** (0.063)	0.171** (0.065)	0.231** (0.080)	0.232** (0.080)
Poverty at age 16	0.307** (0.053)	0.255** (0.055)	0.203** (0.064)	0.199** (0.064)
0/1. No or low quals		Ref	Ref	Ref
2. Low GCSEs with higher Voc		-0.375** (0.124)	-0.333* (0.142)	-0.328* (0.142)
3. High GCSEs with/out lower Voc		-0.297** (0.059)	-0.244** (0.069)	-0.242** (0.069)
4. High GCSEs with higher Voc		-0.542** (0.095)	-0.578** (0.113)	-0.567** (0.113)
5. A-levels with/out Voc		-0.491** (0.075)	-0.478** (0.089)	-0.471** (0.089)
6. Degree		-0.590** (0.095)	-0.439** (0.116)	-0.426** (0.116)
Part-time				0.119 (0.077)
Ethnicity	No	No	Yes	Yes
Father's social class	No	No	Yes	Yes
Mother's education	No	No	Yes	Yes
Cognitive ability	No	No	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	3642	3522	2658	2658
Number of events	1837	1733	1339	1339
Log likelihood	-14088.1	-13497.2	-9812.2	-9810.4

Notes: Robust standard errors in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.15 Continued

	(5)	(6)	(7)	(8)	(9)
Poverty at age 10	0.227** (0.080)	0.220** (0.080)	0.223** (0.081)	0.217** (0.080)	0.217** (0.080)
Poverty at age 16	0.197** (0.065)	0.191** (0.065)	0.203** (0.065)	0.199** (0.065)	0.200** (0.065)
0/1. No or low quals	Ref	Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc	-0.337* (0.143)	-0.308* (0.142)	-0.350* (0.144)	-0.298* (0.142)	-0.300* (0.142)
3. High GCSEs with/out lower Voc	-0.238** (0.069)	-0.231** (0.069)	-0.234** (0.070)	-0.228** (0.070)	-0.225** (0.070)
4. High GCSEs with higher Voc	-0.566** (0.113)	-0.559** (0.113)	-0.563** (0.113)	-0.549** (0.113)	-0.542** (0.113)
5. A-levels with/out Voc	-0.461** (0.089)	-0.467** (0.089)	-0.449** (0.089)	-0.463** (0.089)	-0.455** (0.090)
6. Degree	-0.409** (0.117)	-0.414** (0.116)	-0.392** (0.116)	-0.421** (0.118)	-0.415** (0.118)
Part-time	0.112 (0.078)	0.106 (0.078)	0.082 (0.079)	0.053 (0.079)	-0.023 (0.095)
Unemployment after edu 0	Ref	Ref			
Unemployment after edu 1-6	-0.009 (0.139)	-0.133 (0.183)			
Unemployment after edu 7-12	0.054 (0.135)	0.348 (0.264)			
Unemployment after edu 13+	0.140 (0.110)	0.560** (0.214)			
Non-employment after edu 0			Ref	Ref	Ref
Non-employment after edu 1-12			0.025 (0.096)	0.082 (0.128)	0.085 (0.128)
Non-employment after edu 13-24			0.329** (0.118)	0.706** (0.179)	0.698** (0.180)
Non-employment after edu 25+			0.343* (0.135)	0.656** (0.165)	0.615** (0.166)
Having a child					0.160+ (0.094)
Ethnicity	Yes	Yes	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes
Number of subjects	2658	2658	2658	2658	2658
Number of events	1339	1339	1339	1339	1339
Log likelihood	-9809.4	-9805.4	-9803.3	-9795.3	-9793.5

Notes: Robust standard errors in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

The unemployment duration is measured in months. In Column s (6), (8) and (9), the unemployment duration excludes the length of time spent on GST.

Table 6.16 Cox proportional hazard models for the onset of non-employment following the second and subsequent employment spells: BCS females

	(1)	(2)	(3)	(4)
Poverty at age 10	0.021 (0.092)	-0.025 (0.093)	-0.002 (0.117)	-0.012 (0.118)
Poverty at age 16	0.313** (0.081)	0.267** (0.082)	0.261** (0.099)	0.241* (0.101)
0/1. No or low quals		Ref	Ref	Ref
2. Low GCSEs with higher Voc		-0.372 (0.229)	-0.532* (0.249)	-0.485+ (0.249)
3. High GCSEs with/out lower Voc		0.068 (0.097)	0.083 (0.112)	0.097 (0.113)
4. High GCSEs with higher Voc		-0.195 (0.137)	-0.141 (0.154)	-0.079 (0.158)
5. A-levels with/out Voc		-0.346** (0.117)	-0.478** (0.155)	-0.389* (0.158)
6. Degree		-0.340** (0.109)	-0.342* (0.143)	-0.203 (0.151)
Part-time				0.386** (0.098)
Ethnicity	No	No	Yes	Yes
Father's social class	No	No	Yes	Yes
Mother's education	No	No	Yes	Yes
Cognitive ability	No	No	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	2190	2144	1592	1592
Number of events	800	788	570	570
Log likelihood	-5206.6	-5102.0	-3513.8	-3505.0

Notes: Robust standard errors (clustered by individual and sequence) in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.16 Continued

	(5)	(6)	(7)	(8)
Poverty at age 10	-0.010 (0.119)	0.001 (0.120)	-0.004 (0.118)	-0.001 (0.118)
Poverty at age 16	0.239* (0.101)	0.256* (0.102)	0.252* (0.101)	0.258* (0.101)
0/1. No or low quals	Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc	-0.471+ (0.250)	-0.506* (0.251)	-0.499* (0.251)	-0.503* (0.249)
3. High GCSEs with/out lower Voc	0.104 (0.113)	0.094 (0.114)	0.087 (0.115)	0.086 (0.115)
4. High GCSEs with higher Voc	-0.055 (0.157)	-0.094 (0.160)	-0.111 (0.160)	-0.113 (0.160)
5. A-levels with/out Voc	-0.350* (0.158)	-0.402* (0.158)	-0.426** (0.157)	-0.447** (0.157)
6. Degree	-0.163 (0.151)	-0.259 (0.167)	-0.265 (0.162)	-0.293+ (0.161)
Part-time	0.400** (0.098)	0.429** (0.100)	0.417** (0.100)	0.476** (0.116)
Non-employment after edu 0	Ref	Ref	Ref	Ref
Non-employment after edu 1-12	0.075 (0.132)	0.079 (0.134)	-0.056 (0.183)	-0.062 (0.184)
Non-employment after edu 13-24	0.354* (0.159)	0.367* (0.161)	0.150 (0.262)	0.142 (0.259)
Non-employment after edu 24+	0.271 (0.238)	0.248 (0.242)	0.232 (0.284)	0.239 (0.283)
Non-employment after emp 0		0.086 (0.142)	0.018 (0.136)	0.006 (0.136)
Non-employment after emp 1-12		Ref	Ref	Ref
Non-employment after emp 13-24		0.015 (0.141)	-0.028 (0.141)	-0.013 (0.142)
Non-employment after emp 25+		-0.175 (0.114)	-0.173 (0.114)	-0.136 (0.119)
Having a child				-0.142 (0.125)
Ethnicity	Yes	Yes	Yes	Yes
Father's social class	Yes	Yes	Yes	Yes
Mother's education	Yes	Yes	Yes	Yes
Cognitive ability	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	1592	1592	1592	1592
Number of events	570	570	570	570
Log likelihood	-3502.1	-3500.3	-3503.0	-3502.3

Notes: Robust standard errors (clustered by individual and sequence) in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

The unemployment duration is measured in months. In Columns (7) and (8), the unemployment duration excludes the length of time spent on GST.

Table 6.17 Cox proportional hazard models for the exit from unemployment following the first employment spell: BCS males

	(1)	(2)	(3)	(4)	(5)
Poverty at age 10	-0.147 (0.099)	-0.131 (0.104)	-0.177 (0.126)	-0.165 (0.127)	-0.169 (0.124)
Poverty at age 16	-0.438** (0.094)	-0.418** (0.097)	-0.330** (0.119)	-0.309* (0.122)	-0.313** (0.121)
0/1. No or low quals		Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc		0.507** (0.140)	0.590** (0.170)	0.617** (0.171)	0.556** (0.171)
3. High GCSEs with/out lower Voc		0.104 (0.110)	0.148 (0.135)	0.148 (0.135)	0.124 (0.135)
4. High GCSEs with higher Voc		0.436** (0.149)	0.463** (0.173)	0.492** (0.172)	0.436* (0.174)
5. A-levels with/out Voc		0.380** (0.131)	0.493** (0.162)	0.484** (0.165)	0.439** (0.161)
6. Degree		0.646** (0.136)	0.627** (0.192)	0.638** (0.193)	0.622** (0.192)
Unemployment after edu 0				Ref	Ref
Unemployment after edu 1-6				0.196 (0.250)	-0.087 (0.295)
Unemployment after edu 7-12				0.539* (0.224)	0.337 (0.229)
Unemployment after edu 13+				-0.075 (0.119)	-0.463* (0.199)
Ethnicity	No	No	Yes	Yes	Yes
Father's social class	No	No	Yes	Yes	Yes
Mother's education	No	No	Yes	Yes	Yes
Cognitive ability	No	No	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes
Number of subjects	699	678	498	498	498
Number of events	592	574	418	418	418
Log likelihood	-3310.9	-3174.4	-2180.8	-2177.7	-2177.5

Notes: Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

The unemployment duration is measured in months. In Column (5), the unemployment duration excludes the length of time spent on GST.

Table 6.18 Cox proportional hazards models for the exit from unemployment following the second and subsequent employment spells: BCS males

	(1)	(2)	(3)	(4)	(5)
Poverty at age 10	-0.294+	-0.303+	-0.265	-0.227	-0.295
	(0.176)	(0.179)	(0.206)	(0.206)	(0.225)
Poverty at age 16	-0.080	0.075	0.078	0.100	0.105
	(0.153)	(0.162)	(0.179)	(0.180)	(0.180)
0/1. No or low quals		Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc		-0.031	-0.267	-0.467	-0.492
		(0.228)	(0.324)	(0.328)	(0.342)
3. High GCSEs with/out lower Voc		0.020	-0.340	-0.388	-0.398
		(0.209)	(0.248)	(0.247)	(0.252)
4. High GCSEs with higher Voc		0.590**	0.288	0.336	0.358
		(0.218)	(0.245)	(0.224)	(0.220)
5. A-levels with/out Voc		0.347	0.106	-0.077	-0.109
		(0.263)	(0.333)	(0.338)	(0.344)
6. Degree		0.969**	0.637*	0.450+	0.406
		(0.194)	(0.257)	(0.249)	(0.257)
Unemployment after edu 0				Ref	
Unemployment after edu 7-12				-0.608**	
				(0.230)	
Unemployment after edu 13+				-0.844**	
				(0.202)	
Unemployment after emp 0					0.392
					(0.360)
Unemployment after emp 1-6					Ref
Unemployment after emp 7-12					-0.340
					(0.409)
Unemployment after emp 13+					-0.542
					(0.373)
Ethnicity	No	No	Yes	Yes	Yes
Father's social class	No	No	Yes	Yes	Yes
Mother's education	No	No	Yes	Yes	Yes
Cognitive ability	No	No	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes
Number of subjects	319	311	215	215	215
Number of events	245	239	172	172	172
Log likelihood	-1047.4	-1005.7	-656.9	-648.9	-647.5

Notes: Robust standard errors (clustered by individual and sequence) in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.19 Cox proportional hazards models for the exit from unemployment following any employment spells: BCS females

	(1)	(2)	(3)	(4)
Poverty at age 10	-0.246*	-0.153	-0.215	-0.141
	(0.117)	(0.121)	(0.175)	(0.173)
Poverty at age 16	-0.154	-0.129	-0.135	-0.126
	(0.106)	(0.108)	(0.148)	(0.146)
0/1. No or low quals		Ref	Ref	Ref
2. Low GCSEs with higher Voc		0.046	-0.535*	-0.532*
		(0.219)	(0.247)	(0.249)
3. High GCSEs with/out lower Voc		0.335*	0.308+	0.312+
		(0.132)	(0.166)	(0.163)
4. High GCSEs with higher Voc		0.350+	0.502*	0.674**
		(0.211)	(0.236)	(0.221)
5. A-levels with/out Voc		0.428**	0.340+	0.276
		(0.141)	(0.193)	(0.194)
6. Degree		0.723**	0.610**	0.471*
		(0.170)	(0.222)	(0.238)
Having a child				-0.603**
				(0.176)
Ethnicity	No	No	Yes	Yes
Father's social class	No	No	Yes	Yes
Mother's education	No	No	Yes	Yes
Cognitive ability	No	No	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	513	497	337	337
Number of events	420	409	277	277
Log likelihood	-2011.0	-1934.5	-1204.1	-1197.6

Notes: Robust standard errors (clustered by individual and sequence) in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.20 Cox proportional hazard models for the exit from non-employment following the first employment spell: BCS females

	(1)	(2)	(3)	(4)	(5)	(6)
Poverty at age 10	-0.192** (0.073)	-0.118 (0.074)	-0.173+ (0.090)	-0.156+ (0.090)	-0.173+ (0.090)	-0.141 (0.093)
Poverty at age 16	-0.145* (0.062)	-0.101 (0.064)	-0.045 (0.075)	-0.046 (0.075)	-0.044 (0.075)	-0.036 (0.077)
0/1. No or low quals		Ref	Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc		0.250+ (0.142)	0.211 (0.163)	0.221 (0.163)	0.201 (0.163)	0.111 (0.175)
3. High GCSEs with/out lower Voc		0.246** (0.070)	0.167* (0.083)	0.160+ (0.083)	0.162+ (0.083)	0.167* (0.084)
4. High GCSEs with higher Voc		0.239+ (0.124)	0.339* (0.135)	0.345* (0.136)	0.334* (0.136)	0.342* (0.139)
5. A-levels with/out Voc		0.428** (0.092)	0.258* (0.112)	0.275* (0.113)	0.251* (0.112)	0.196+ (0.112)
6. Degree		0.657** (0.108)	0.590** (0.135)	0.585** (0.136)	0.595** (0.135)	0.415** (0.137)
Unemployment after edu 0				Ref	Ref	Ref
Unemployment after edu 1-6				0.217 (0.177)	-0.105 (0.208)	0.188 (0.182)
Unemployment after edu 7-12				0.379** (0.138)	-0.145 (0.210)	0.480** (0.141)
Unemployment after edu 13+				-0.098 (0.116)	-0.193 (0.250)	-0.117 (0.116)
Having a child						-0.778** (0.074)
Ethnicity	No	No	Yes	Yes	Yes	Yes
Father's social class	No	No	Yes	Yes	Yes	Yes
Mother's education	No	No	Yes	Yes	Yes	Yes
Cognitive ability	No	No	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	1948	1883	1426	1426	1426	1426
Number of events	1307	1271	964	964	964	964
Log likelihood	-8910.2	-8603.4	-6244.7	-6239.9	-6244.1	-6187.3

Notes: Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

The unemployment duration is measured in months. In Column (5), the unemployment duration excludes the length of time spent on GST.

Table 6.21 Cox proportional hazard models for the exit from non-employment following the second and subsequent employment spells: BCS females

	(1)	(2)	(3)	(4)	(5)
Poverty at age 10	-0.075 (0.139)	-0.012 (0.142)	-0.098 (0.184)	-0.081 (0.180)	0.007 (0.179)
Poverty at age 16	-0.037 (0.113)	0.023 (0.114)	0.173 (0.133)	0.148 (0.134)	0.125 (0.136)
0/1. No or low quals		Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc		0.615* (0.287)	0.033 (0.456)	0.001 (0.461)	-0.227 (0.461)
3. High GCSEs with/out lower Voc		0.314* (0.140)	0.252 (0.162)	0.251 (0.159)	0.229 (0.160)
4. High GCSEs with higher Voc		0.535** (0.203)	0.581** (0.212)	0.608** (0.208)	0.610** (0.202)
5. A-levels with/out Voc		0.448* (0.192)	0.302 (0.280)	0.356 (0.278)	0.061 (0.293)
6. Degree		0.986** (0.179)	0.781** (0.246)	0.806** (0.250)	0.503+ (0.259)
Non-employment ever 0-6				Ref	Ref
Non-employment ever 7-12				0.005 (0.178)	0.034 (0.176)
Non-employment ever 13+				0.257+ (0.148)	0.305* (0.154)
Having a child					-0.872** (0.170)
Ethnicity	No	No	Yes	Yes	Yes
Father's social class	No	No	Yes	Yes	Yes
Mother's education	No	No	Yes	Yes	Yes
Cognitive ability	No	No	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes
Number of subjects	620	610	428	428	428
Number of events	416	411	293	293	293
Log likelihood	-1787.7	-1745.7	-1146.3	-1144.7	-1130.8

Notes: Robust standard errors (clustered by individual and sequence) in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6.22 Summary of the effects of childhood poverty and the highest qualification obtained on un/non-employment in early working life (odds/hazard ratios): BCS

	Male unemployment					
	After leaving full-time education		Following the first employment		Following the subsequent employment	
	Onset	Exit	Onset	Exit	Onset	Exit
Poverty at age 10	1.6	0.9	1.5	0.8	1.0	0.8
Poverty at age 16	1.7	0.7	1.4	0.7	1.5	1.1
0/1. No or only low quals	Ref	Ref	Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc	0.3	1.8	0.6	1.9	0.7	0.8
3. High GCSEs with/out lower Voc	0.8	1.4	0.8	1.2	0.7	0.7
4. High GCSEs with higher Voc	0.7	1.3	0.9	1.6	0.7	1.3
5. A-levels	0.3	1.0	0.7	1.6	0.7	1.1
6. Degrees	1.2	1.9	1.0	1.9	0.3	1.9
	Female unemployment					
	After leaving full-time education		Following the first employment		Follow- ing 2 nd + emp	Follow- ing any emp
	Onset	Exit	Onset	Exit	Onset	Exit
Poverty at age 10	1.0	0.7	1.2		1.1	0.8
Poverty at age 16	1.3	1.0	1.1		1.7	0.9
0/1. No or only low quals	Ref	Ref	Ref		Ref	Ref
2. Low GCSEs with higher Voc	0.3	1.5	1.1	N/A	0.2	0.6
3. High GCSEs with/out lower Voc	0.9	1.2	0.7		0.6	1.4
4. High GCSEs with higher Voc	0.3	1.8	0.4		1.2	1.7
5. A-levels	0.2	0.8	0.7		0.8	1.4
6. Degrees	0.7	2.1	0.9		1.0	1.8
	Female non-employment					
	After leaving full-time education		Following the first employment		Following subsequent employment	
	Onset	Exit	Onset	Exit	Onset	Exit
Poverty at age 10			1.3	0.8	1.0	0.9
Poverty at age 16			1.2	0.9	1.3	1.2
0/1. No or only low quals			Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc			0.7	1.2	0.6	1.0
3. High GCSEs with/out lower Voc	N/A		0.8	1.2	1.1	1.3
4. High GCSEs with higher Voc			0.6	1.4	0.9	1.8
5. A-levels			0.6	1.3	0.6	1.4
6. Degrees			0.6	1.8	0.7	2.2

Notes: The numbers in the cells are exponentiated coefficients estimated from the regression analyses reported in Table 6.7 to Table 6.21. The bold numbers in the shaded cells are statistically significant at the 5% level, and the bold numbers in the unshaded cells are statistically significant at the 10% level. The plain numbers in the unshaded cells are not statistically significant. The event is more likely to happen if the number is greater than 1, while it is less likely to happen if it is smaller than 1. Therefore, smaller numbers are desirable for the onset of un/non-employment, while greater numbers are desirable for the exit from un/non-employment.

Chapter 7

The Effect of Childhood Poverty on Unemployment in Early Working Life: Evidence from the 1980s Birth Cohort

7.1 Introduction

I revisit the question of the effect of childhood poverty on the onset of and exit from unemployment in early working life, by focusing on those born in the 1980s ('the 1980s cohort') using data from the BHPS in this chapter. I replicate the analyses conducted in Chapter 6, particularly with a view to investigating whether the findings from the cohort born in 1970 are also true for the younger cohort who grew up in a more similar context to contemporary children and young people. The main findings in Chapter 6 for the 1970 cohort include that the effect of poverty in late childhood was more persistent on both the onset of and exit from unemployment than that of poverty in mid childhood, that the effect of long-term poverty was stronger on the onset of unemployment than on the exit from it, and that past unemployment had a negative effect on the later unemployment risk.

I also conduct a new analysis to investigate the relative effects of parental worklessness and income poverty to each other on unemployment risks in early working life, which are made possible by the BHPS, that collects annual data on both household work status and income. This is relevant to the policy question about which would be a better way to improve children's future life chances: more parental work or more income transfers via benefits? In particular, it is worth questioning whether the latter is seriously damaging to the life chances of those growing up in poverty, as the welfare-dependency model assumes (Subsection 2.4.4 in Chapter 2).

Despite the importance of the empirical question of the relative effects of parental worklessness and childhood poverty on children's outcomes, as far as I know, no research has attempted to investigate this question in the way that this chapter attempts. This is mainly because it is usually difficult to obtain variables which capture parental worklessness and income poverty separately, and even if such variables are available, parental worklessness is a major cause of poverty and the strong correlation between them tends to make the analysis infeasible. However, as I show in Subsection 7.2.2 below, we can investigate the question by focusing exclusively on lower-income households and paying attention to the fact that half of poor households contain a member who is working.

Taking advantage of the fact that the 1980s cohort grew up in a more similar context to contemporary children and young people in terms of post-16 education participation rates, I begin by analysing unemployment at age 16 upon leaving compulsory education. I then analyse the onset of and the exit from unemployment, from immediately after leaving full-time education to their mid 20s. This analysis can mostly be compared with those conducted in Chapter 6 using data from the 1970 cohort in the BCS, although some variables are defined differently in this chapter. The main contextual difference between the cohorts is that the 1980s one tends to leave full-time education at an older age than the 1970 cohort (Figure 6.1 in Chapter 6). The youth unemployment rate is fairly similar for both cohorts, but the overall unemployment rate is much lower for education leavers after 1996 in the 1980s cohort (Figure 6.2 in Chapter 6). With respect to the economic cycle, the findings for the 1970 cohort who left education during a period following an economic recession might be more relevant to contemporary young people, who also do so.

The next section explains the data and methods employed in this chapter. Section 7.3 shows the results of the descriptive analysis, while Section 7.4 shows results of the regression analysis. Section 7.5 concludes with the policy implications of the findings.

7.2 Data and Methods

7.2.1 Data

I use data from those born in the 1980s in the BHPS. The survey started in 1991 and I use sixteen waves, up to 2006. There is a trade-off between the length of adult life and that of childhood that can be observed in the data, as illustrated in Table 7.1. I carry out most of the analyses below using data from those born between 1980 and 1988, whose outcomes are observed at least until age 18, but when I consider poverty in earlier childhood, I exclude those born in 1980 and 1981. On the other hand, when I examine the outcomes measured at age 16, I also include those born in 1989. Regardless of which subsamples of those born in the 1980s I use for the analyses, I attempt broadly to interpret the findings below as those based on the 1980s cohort. As noted earlier, the education participation rates for 16-18-year-olds have been virtually stable since 1993 or 1994, except for a slight increase since 2004 (Figure 6.1 in Chapter 6), and therefore the differences within the 1980s cohort might be of little concern.

With respect to work history data, I use the data program written by Maré (2006) to construct a consistent work history dataset using the BHPS variables for the respondents' current and past employment in the last year.¹²⁵ The program was provided by the Institute for Social and Economic Research at the University of Essex. I have made some amendments to it where needed, particularly to ensure that all of the work histories began when the respondents first left full-time education.¹²⁶ Generally, due to the research design, in which the work histories over the last year are surveyed annually, the measurement errors involved in the work history data are expected to be smaller for the BHPS than for the BCS.¹²⁷

7.2.2 Variables

Unemployment at age 16: I classify economic status at age 16 into three categories: being unemployed with or without Government Supported Training (GST), being in full-time education, and being in employment, so that unemployment can be compared with each of the other outcomes. I exclude those who are economically inactive at age 16 from the analysis but, as these are few in number, this exclusion does not affect the overall results.

The onset of and exit from unemployment: I apply event history analysis to quantify the duration of employment spells until the onset of unemployment and that of unemployment spells until the exit from it. See 6.3.2 in Chapter 6 for more details. Exceptionally, the onset of unemployment upon leaving full-time education is measured as a single outcome, with no duration associated with it.

Childhood poverty: I define a household as poor if its annual income is below 60% of the median household income. To create a variable for household poverty, I use the variable for annual net household income before housing costs, which is equivalised for household size and composition using the modified OECD scale¹²⁸ and adjusted to January 2008 prices. This variable is available in the dataset publicly provided by Levy and Jenkins (2008). Although the minimum participation age in the BHPS is 16, it is

¹²⁵ In addition to these variables collected in the panel design, the BHPS, in wave 2, also collected the respondents' work histories prior to the start of the BHPS retrospectively, and Maré's dataset includes this information. However, as the sample members analysed in this chapter turned 16 at or after the start of the BHPS, their work histories can be captured in the panel design.

¹²⁶ Some spells of part-time work while in full-time education seem to have been included in the original version of Maré's dataset.

¹²⁷ See Subsection 6.3.1 in Chapter 6 for a discussion of the advantages and disadvantages of retrospective work history data.

¹²⁸ The scale value is 1 for the first adult, 0.5 for others aged 14 or over, and 0.3 for those aged under 14.

possible to determine in which household they lived before the age of 16 as long as their older household members (parents) responded to the surveys. Therefore, it is possible to link individuals with the variable for household poverty measured at ages up to 16 that are shown in Table 7.1.

Following the previous chapters, this chapter also considers the effect of the timing and duration of childhood poverty. In terms of the timing, given the data availability for the 1980s cohort, I create three dummy variables for poverty at age 6-10, that at age 11-13 and that at age 14-16. In terms of the duration, I begin by defining six types of childhood poverty following Ashworth et al. (1994), which is also illustrated in Figure 7.1. The classification pays attention to the spell patterns (single or multiple), and the durations of both the poverty and out-of-poverty spells. The duration of an out-of-poverty spell needs attention because the degree of hardship experienced in poverty can vary depending on whether and to what extent a household can build up its savings when out of poverty, and one that experiences a short out-of-poverty spell is more likely to cope with financial hardship.

Single-spell patterns

- Transient poverty: one short poverty spell (lasting a year)
- Persistent poverty: one non-short poverty spell (lasting over a year) and at least one out-of-poverty spell (lasting over a year)
- Permanent poverty: one unceasing poverty spell (lasting continuously throughout childhood)

Multiple-spell patterns

- Occasional poverty: repeated short poverty spells (all lasting a year)
- Recurrent poverty: multiple poverty spells (some lasting over a year) interspersed by non-short out-of-poverty spells (some lasting over a year)
- Chronic poverty: multiple poverty spells (some lasting over a year) interspersed with a short out-of-poverty spell

Classifying those who never experienced poverty into another stand-alone group, there are seven groups. Out of consideration to sample size, I further aggregate these seven

groups into the following four groups: Never, Transient/Occasional, Persistent/Recurrent, and Permanent/Chronic.¹²⁹

Parental worklessness: Someone is defined as living in a workless household when no adult member of the household is in paid work. Generally, if neither parent in a two-parent household is working, or if the parent in a lone-parent household is not working, then that household is workless.¹³⁰ Lone parent households are more likely to be workless because having only one non-employed parent would suffice to meet the definition. The official statistics show that the workless household rate is highest for lone parent households, at 40%, while the rate for all households is 17% of working age households in 2009 (ONS, 2009).

This raises the question of whether any association between parental worklessness and children's economic outcomes is a spurious reflection of an effect of lone parenthood. For reassurance, I have also run the same regression models as those presented below by including a dummy variable for growing up in a lone-parent household but, in every model, the coefficient for the dummy variable was not significant after controlling for the variables for childhood poverty. Therefore, it is reasonable to interpret that parental worklessness rather than lone parenthood is associated with children's employment outcomes where the coefficient for parental worklessness is statistically significant after controlling for other variables.

Household income: The alternative way of investigating the relative effects of parental worklessness and childhood income poverty is to analyse the relative effects of gross household labour income and net household income on later unemployment outcomes. Gross household labour income is measured by a sum of each household member's gross labour income (before deductions of national insurance contributions, occupational pension contributions and income tax before credits), which is also available in the dataset provided by Levy and Jenkins (2008). Net household income is measured by annual net household income before housing costs, which is the same

¹²⁹ Table A7.1 in the Appendix to this chapter shows the level of household income in each group (older or younger) of the 1980s cohort by duration types of childhood poverty. The older cohort who are observed fewer times are more likely to be classified as 'Never' than 'Transient', or 'Transient' than 'Occasional', and so forth. However, the pattern is common across the cohorts that the mean income is obviously the highest for those who have never experienced childhood poverty, followed by those growing up in transient poverty, occasional poverty, persistent poverty, recurrent poverty, chronic poverty and permanent poverty.

¹³⁰ If the household contains working adults other than the parents, the household is defined as working even if both parents are not working. With respect to the variable for parental worklessness at age 16, I have ensured that working households should contain at least one working adult other than the 16-year-old themselves.

variable as that used to derive poverty status. These income variables are all equivalised by household size, using the modified OECD scale, and adjusted to January 2008 prices.¹³¹

Highest qualification obtained: I use different variables for the highest qualification obtained, depending on the outcomes examined, as follows.

- Economic/education status at age 16:
A categorical variable for three GCSE attainment groups, including No GCSEs, Low GCSEs and High GCSEs.
- Unemployment immediately after leaving full-time education:
A categorical variable for three qualification groups, including No or low GCSEs (reference), High GCSEs¹³² and A-levels/Degrees.
- Unemployment after employment:
A categorical variable for the highest qualification groups (see Section 3.5 in Chapter 3), with Group 0 and Group 1 being combined into a group with ‘no or only low qualification’ (as in Chapter 6).

Control variables: I control for mother’s education where I need to control for the household characteristics associated with poverty. As the sample size of the 1980s cohort from the BHPS is rather small, I try to use selected control variables in order to avoid over fitting the models, and I do not control for the father’s social class which is highly correlated with the mother’s education.

Unlike the birth cohort studies used in the earlier chapters, the BHPS did not collect variables for cognitive ability measured in childhood. However, using data from the BCS, I could not find any significant effect of cognitive ability as measured in childhood on later unemployment after controlling for qualifications in Chapter 6, although cognitive ability directly affected earnings in Chapter 4. Therefore, failing to

¹³¹ Table A7.2 in the Appendix to this chapter shows the frequencies of poverty and worklessness, net household income, household labour income, household benefit income, and the proportions of each of household labour and benefit incomes within the net household income. I separate the sample into two groups, the older (1980-84) and the younger (1985-89) cohorts, as it may be of concern that the patterns of observations differ across these groups. However, the observations are quite similar. I additionally present the same variables by income quartile groups, in order to clarify, for instance, whether or not an average child growing up in permanent/chronic poverty is more disadvantaged than that from the bottom income quartile. In terms of income quartile groups, more robust statistics are reported in Barnard (2008), from which it would be safe to say that my data behave sensibly.

¹³² For the 1980s cohort, those with at least five A* to C GCSEs are classified as ‘High GCSEs’, and those with other GCSE passes are classified as ‘Low GCSEs’.

control for cognitive ability might be less problematic for the unemployment outcomes in this chapter, as long as we assume that the effect of cognitive ability on economic outcomes are similar for both the 1970 and the 1980s cohorts.

The other control variables used are the contemporaneous national unemployment rate (a time varying covariate in event history analysis), birth year and the gender of the respondents. The gender variable is obviously omitted when I analyse each gender separately. Although the variables for the regions of residence are available from the BHPS, I do not control for region, as their coefficients were not statistically significant when I included them.

7.2.3 Methods

With respect to unemployment at age 16, I estimate multinomial logit models for the three outcomes of being unemployed, being in full-time education and being in employment.¹³³ For the onset of unemployment upon leaving full-time education, I estimate logit models for the binary outcomes of being unemployed or not. For the onset of unemployment following employment and the exit from unemployment, I apply event history analysis, as in Chapter 6 (see Subsections 6.3.3 and 6.3.4 for more details). In what follows, I highlight the additional points to note in terms of the new attempt in this chapter to investigate the relative effects of parental worklessness and income poverty, and in terms of the person-group clustering of the BHPS.

Worklessness and income poverty are closely related incidents, and being workless can sometimes be an indicator of living in income poverty. The majority of workless households are indeed living in income poverty, with about 60% of workless households with children living in income poverty in 2008. However, if poor households are considered, there is no perfect correlation between worklessness and income poverty. Although 43% of poor households with children have no one in work,

¹³³ We could hypothesise that the economic outcomes at age 16 are derived from a two-step decision making process, since young people firstly consider whether to stay on in education or not, and if they do not stay on, they then consider whether to work or not. If this is the underlying process, there may be potential correlations between the alternative outcomes, in other words, the assumption of the independence of irrelevant alternatives (IIA) is violated, and we need to take account of them in estimating the relationships between the covariates and the outcomes. In this case, it is inappropriate to apply multinomial logit models that require the IIA assumption. To check if the IIA assumption is violated, I have conducted a Hausman test by comparing the coefficients estimated from the multinomial logit model fitted for all the outcomes and those estimated by excluding one of them. If the IIA assumption is violated, the coefficients may be systematically different. Based on the Hausman test, the IIA assumption was not violated in the data I use; therefore, I apply a multinomial logit model for economic outcomes at age 16.

57% have at least one working adult (DWP, 2009). This fact makes it possible empirically to investigate the relative effects of parental worklessness and income poverty on later unemployment, if appropriate data with reasonably accurate measures for both work status and household income are available. The BHPS offers such data.

These can be schematically understood by demonstrating the relationship between parental worklessness and income poverty (Figure 7.2), and the relationship between gross household labour income and net household income (Figure 7.3). I focus only on those aged between 11 and 16, which is mainly because of the data availability for the oldest of the 1980s cohort. However, an analysis based on these ages would be relatively more straightforward in bringing out policy implications, because not many lone parents of teenagers are presumed to be workless due to childcare needs, which would affect the behaviour of their counterparts with a younger child.¹³⁴

Figure 7.2 shows a set of 3D frequency charts for parental worklessness and income poverty, in which the height of each bar (z) shows the frequency of respondents who experienced parental worklessness for x years and income poverty for y years. The x and y values can take integer numbers between 0 and 6 because of the age range lying between 11 and 16 years old.¹³⁵ Considering the 1980 cohort from all households together in Figure 7.2 (a), the large majority experience neither parental worklessness nor poverty, which makes the correlation between these two factors too strong. Figure 7.2 (b), on the other hand, shows that there are variations in the frequency of both worklessness and income poverty for those from households with a below-median income.

Figure 7.3 alternatively presents the scatter plots for the household income (£000s) variables which are averaged over the six years between ages 11 and 16. As the income variables are equivalised for household size, the values do not represent the actual amount of income that each household earns or receives. Figure 7.3 (a) includes the observations from households in all income ranges, and clearly shows that there is almost a linear relationship between the gross household labour income and the net

¹³⁴ However, note that it would be difficult to encourage some parents to work due to their child care needs even if the findings suggest that parental work rather than direct income redistribution could improve children's future economic prospects. 24% of the 11-year-olds and 16% of the 16-year-olds living in workless lone-parent households live with children under the age of 5, while 16% of the 11-year-olds and 7% of the 16-year-olds in all types of household do so. Although it is impossible to determine children's health status in earlier waves of the BHPS, some workless parents without young children may be taking care of disabled children.

¹³⁵ For some cases with partly missing information, I estimate the frequency by multiplying by six the proportions of years spent workless or in poverty out of the (at least three) years responded to, and then rounding these estimates off to form integers.

household income. The correlation coefficient is 0.9402, which makes it impossible to investigate the relative effects of gross household labour income and net household income when all the observations are used for the analysis. However, Figure 7.3 (b), focusing on the observations from only households with a below-median income, shows that the relationship between the two income variables is not very linear. The composition of household income is more varied among lower income households. Taken as a whole, I limit the samples to include only those from households with a below-median income to facilitate the analysis of the relative effects of parental worklessness (gross household labour income) and income poverty (net household income).

The coefficients for these variables can be interpreted as follows. For the onset of (exit from) unemployment, the positive (negative) coefficient for the variable of parental worklessness or the variable of childhood income poverty, respectively, indicates that an additional year of parental worklessness or childhood income poverty increases the unemployment risk in early working life. The negative (positive) coefficient for the variable for gross household labour income or the variable for net household income, respectively, indicates that an additional £000s per year in gross household labour or in net household income decreases the unemployment risk. The analysis using the income variables can also examine whether additional benefit income is damaging, in line with the welfare-dependency model. As the sample only includes those from low-income households, for a given level of gross household labour income, the net household income is higher when the household receives more benefits. Therefore, the positive (negative) coefficient for the variable of net household income, after controlling for the variable of gross household income, indicates that an additional £000s per year in benefit income might increase the unemployment risk.

Another methodological issue relates to the person-group clustering of the BHPS. The BHPS is a household panel survey that began as a stratified random sample of households from all of those in Great Britain in 1991, although the individuals within them are not a random sample of all individuals in every household. Individuals from selected households in selected regions make up the BHPS sample, and therefore any shared characteristics among individuals (person-group clustering) may be of concern where the unit of analysis is individuals. In this chapter, which investigates the effects of household characteristics on individuals' outcomes, the existence of siblings in the sample analysed violates one of the assumptions for statistical inference, that

observations are independent and identically distributed. In the sample of those born between 1980 and 88, there are 968 individuals, 441 of whom are from one-child households, 398 from two-child households, 105 from three-child households, and 24 from four-child households.¹³⁶ To correct for unobserved sibling correlations, which could bias the standard errors downwards and exaggerate the significance of the coefficients, I estimate clustered standard errors at the household level.

7.3 Results of the Descriptive Analysis

In this section, I report the results from the descriptive analysis for the following unemployment outcomes; unemployment at age 16 (Subsection 7.3.1), the onset of unemployment upon leaving full-time education (Subsection 7.3.2), the exit from unemployment immediately after leaving full-time education (Subsection 7.3.3), the onset of unemployment following employment (Subsection 7.3.4) and the exit from unemployment following employment (Subsection 7.3.5), followed by a summary (Subsection of 7.3.6).

7.3.1 Unemployment at Age 16

It may (or may not under the Coalition Government) become compulsory for young people to participate in education or training until their 18th birthday, but not everyone may participate equally enthusiastically. Those who are most likely to drop out from or are least likely to be productive in education or training may be those who become unemployed upon leaving compulsory education under the present legislation. Therefore, I firstly examine the effects of poverty and educational attainment in compulsory education (GCSE attainment) on unemployment at age 16 in order to establish the risk factors for post-16 participation in the future.

Table 7.2 shows economic status at age 16 by childhood poverty status and attainment through compulsory education. I present both unweighted and weighted distributions,¹³⁷ but there are no crucial differences in the relationships between these two variables. I mainly interpret the weighted distributions. 7% of men and women are

¹³⁶ The description here does not mean that someone from a one-child household is the only child of their parents. I only take account of those siblings born between 1980 and 1988, and they may have extra siblings who are older or younger than this birth cohort range.

¹³⁷ There are pros and cons for both unweighted and weighted distributions. Obviously, the unweighted distribution may be biased due to the sample attrition but are based on as many observations as those survived until the time of leaving full-time education. On the other hand, the weighted distributions are based only on those who remained in Wave 16 (the latest wave used in this chapter), and the longitudinal weight (PLEWGHT) is used.

unemployed (on and off GST) at age 16. Childhood poverty is firstly associated with the probability of staying on in education at age 16. 82% of men and 90% of women who never experienced poverty in childhood stay on, while 62% of boys and 64% of girls who grew up in permanent/chronic poverty do so. Among those who do not stay on, those men and women who grew up in permanent/chronic poverty are more likely to be unemployed than those who grew up in transient/occasional or persistent/recurrent poverty, as well as those who never experienced poverty. Compared with the 1970 cohort (Table 6.5), the unemployed 16-year-olds in the 1980s cohort are less likely to participate in GST.

Attainment through compulsory education is also associated with the unemployment risk at 16. Those with high GCSEs rarely become unemployed at age 16, as about 90% of such men and women stay on in education, and most of the rest of them are in employment. However, 10% of men and 22% of women with no GCSEs, and 15% of men and 16% of women with low GCSEs are unemployed at age 16. The outcome gaps between those with high and low GCSEs are greater than those between those with low and no GCSEs. The unweighted distribution also suggests that low GCSEs add little value to improving the post-16 outcomes.

7.3.2 The Onset of Unemployment upon Leaving Full-time Education

Table 7.3 shows the economic status upon leaving full-time education by duration type of childhood poverty and the highest qualification obtained by that time. This outcome is the same as that for unemployment at age 16 for those who left full-time education at that point. Again, I mainly interpret the weighted results. 24% of men and 20% of women including those on GST are unemployed upon leaving full-time education. For both genders, those who grew up in poverty, particularly in permanent/chronic poverty, are more likely to be unemployed than those who did not. While 21% of men and 16% of women who never experienced poverty in childhood are unemployed upon leaving full-time education, the equivalent percentages are 44% for men and 47% for women who grew up in permanent/chronic poverty. However, the association between the duration of childhood poverty and the unemployment risk is not necessarily linear, with the risk being lower for those who grew up in persistent/recurrent poverty than for those who grew up in transient/occasional poverty, for both genders.

With respect to qualification attainment, since not many have obtained a degree or vocational qualifications on first leaving full-time education, I look at the differences

between the three qualification groups: No or only low GCSEs, High GCSEs, and A-levels/Degree. Regardless of their gender, those who have no or only low GCSEs are the most likely to be unemployed upon leaving full-time education, with 37% of those men and 32% of those women being unemployed both on and off GST. However, the association is not linear for men, although it is for women, with those men with high GCSEs as their highest qualification being less likely to be unemployed than those with A-levels or a degree as well as those with no or only low GCSEs. Furthermore, those most educated are most likely to be inactive, which may be because some of them take a gap year immediately after leaving full-time education.¹³⁸ Given that childhood poverty is associated with educational attainment, those who grew up in poverty are more likely to have no or only low GCSEs. However, it is noteworthy that those who grew up in permanent/chronic poverty are more likely to be unemployed upon leaving full-time education than those who are the least educated.

These findings from the 1980s cohort can be compared with those from the 1970 cohort, as reported in Table 6.4 of Chapter 6. Given that the unemployment rates are generally lower for education leavers in the 1980s cohort, it is surprising that the overall employment, unemployment and inactivity rates upon leaving full-time education are quite similar across the cohorts for both genders. If anything, there is a small decrease in the employment rate, with an equivalent increase in the unemployment rate, for men in the 1980s cohort. Like those who are unemployed at age 16, as shown in Table 7.2, only a few of them in the 1980s cohort participate in GST, although the majority of this group in the 1970 cohort did so. Recalling that participation in GST may have alleviated the possible scarring effect of unemployment on later employment outcomes for the 1970 cohort, the consequences of unemployment immediately after leaving full-time education for the 1980s cohort becomes of greater concern.

7.3.3 The Exit from Unemployment Immediately after Leaving Full-time Education

The next question is for how long those who became unemployed upon leaving full-time education remain unemployed. Figure 7.4 and Figure 7.5 present the Kaplan-Meier survival estimates for the unemployment durations for both men and women by types of childhood poverty experienced and by the highest qualification obtained, respectively. To maximise the sample size, I aggregate the data for both genders. Data investigation

¹³⁸ It is not possible to confirm that they are taking gap years, but the survey responses show that reasons for their inactivity are other than family care and illness/disability.

suggests that this aggregation is reasonable when focusing on the associations of unemployment duration with childhood poverty and qualification attainment, although women are more likely to exit from unemployment at this life stage, as was also found to be the case for the 1970 cohort.

Figure 7.4 shows the survival estimates by childhood poverty status. Those who grew up in permanent/chronic poverty are clearly more likely to stay unemployed longer than others (the median duration is 8 months),¹³⁹ while there is little variation in the unemployment durations at the median between those who never grew up in poverty and those who grew up in transient/occasional and persistent/recurrent poverty (the median durations for these are 3 or 4 months). Comparing these durations with those reported in Chapter 6 based on the 1970 cohort, people from all backgrounds in the 1980s cohort on average remain unemployed for a much shorter time. This may be partly because the economy was generally better when the 1980s cohort left education at any level than when the 1970 cohort did, but also due to methodological reasons. The BHPS is better than the BCS at recording short employment spells and frequent employment transitions, because it monitors respondents annually.

Figure 7.5 shows the equivalent survival estimates for men by the highest qualification obtained by the time of leaving full-time education. The median duration is similar across the qualification levels (3 or 4 months). The association between unemployment duration and qualification attainment is weaker than that between unemployment duration and childhood poverty. Those who grew up in permanent/chronic poverty are more likely to remain unemployed than those who are least educated as well as to become unemployed upon leaving full-time education.

7.3.4 The Onset of Unemployment Following Employment

The associations of the onset of unemployment following employment with childhood poverty and with the highest qualification obtained can be presented by different survival estimates for employment spells across the subgroups. A longer survival in employment corresponds to a lower risk of the onset of unemployment. I present the Kaplan-Meier survival estimates for all employment spells together to maximise the sample size, but separately for each gender. Multiple employment spells are observed

¹³⁹ To put it more precisely, the median duration is between 7 and 8 months. 50% of those unemployed have found jobs within 8 months but not within 7 months. This method of description is also used for the other groups.

only for those who experienced unemployment or non-employment after the first or subsequent employment spells and found a new job afterwards.

Figure 7.6 shows the survival estimates for all employment spells for men by childhood poverty status. Those who did not experience poverty in childhood are more likely to survive in employment before experiencing unemployment than those who did. Those who grew up in permanent/recurrent poverty are far less likely to remain in employment, with half of them experiencing unemployment within a year, while nearly three-quarters or more of those in the other groups remain in employment after 3 years.

Figure 7.7 also shows that the onset of unemployment is also associated with the highest qualification obtained, but the important gap is between those with no or only low qualifications and the others. However, growing up in permanent/chronic poverty seems to be more strongly associated with the onset of unemployment than having no or only low qualifications, which is consistent with the finding from the 1970 cohort in Chapter 6.

Figure 7.8 and Figure 7.9 show the survival estimates for all employment spells until the onset of unemployment for women, and Figure 7.10 and Figure 7.11 additionally show the equivalent survival estimates until the onset of non-employment. Figure 7.8 and Figure 7.9 show that the onset of unemployment is clearly associated with childhood poverty and qualification attainment for women in the 1980s cohort, unlike for women in the 1970 cohort. This may be partly because women from the younger generations and at younger ages have a stronger labour market attachment, and partly because the survey design of the BHPS allows women to recall whether they were searching for jobs while out of work. Thus, it is difficult to argue that there has been a change over time in the association of unemployment with childhood poverty and qualification attainment for women between the two cohorts, but the important findings are as follows. Those women who grew up in permanent/chronic poverty are more likely to become unemployed or non-employed than others, and even more likely than those with no or only low qualifications. However, the relative disadvantage of those women who grew up in permanent/chronic poverty seems to be slightly smaller than that of the equivalent men. In other words, those men who grew up in permanent/chronic poverty tend to become unemployed more rapidly than the equivalent women tend to become non-employed.

7.3.5 The Exit from Unemployment Following Employment

Figure 7.12 and Figure 7.13 show the survival estimates for unemployment spells after employment by childhood poverty status and the highest qualification obtained. As I did for the unemployment durations immediately after leaving full-time education, I aggregate the data for both genders and all unemployment spells to maximise the sample size. In contrast to the unemployment durations immediately after leaving full-time education, however, men are more likely than women to exit unemployment following employment.

Figure 7.12 shows that those who never experienced poverty in childhood are more likely to exit unemployment early. The median duration for this group is 4 months, while that for those who grew up in persistent/recurrent poverty is 6 months and that for those who grew up in transient/occasional or permanent/chronic poverty is 7 months. Figure 7.13 shows that those with good qualifications are more likely to exit from unemployment, with the median duration being 3 months for those with a degree or higher vocational qualifications, 4 months for those with A-levels, and 6 months for those with no or only low qualifications.

Although I examined unemployment and non-employment duration separately for the women in the 1970 cohort in Chapter 6, I do not do the same for the women in the 1980s cohort. Because Figure 7.8 and Figure 7.9 have not necessarily shown that these women in the younger cohort tend to report their non-employment as inactivity rather than unemployment, it is reasonable to analyse employment insecurity by focusing on unemployment. I have further checked that the associations of unemployment duration with childhood poverty and qualification attainment are similar to those of non-employment duration. Therefore, I investigate only unemployment durations, not non-employment durations, in the regression analysis below.

7.3.6 Summary

Childhood poverty and low qualification attainment are both associated with the onset of and exit from unemployment for men and women. In particular, those who grew up in permanent/chronic poverty are more disadvantaged than those with no or only low qualifications for both genders in terms of the risk of becoming and remaining unemployed immediately after leaving full-time education, and the risk of becoming unemployed after employment. With respect to the exit from unemployment, however, qualifications seem to be a more decisive factor than childhood poverty. These

descriptive findings for the 1980s cohort so far are broadly similar to those for the 1970 cohort, as found in Chapter 6. However, the more elaborate variable for childhood poverty based on the BHPS data reveals that permanent/chronic poverty appears to have a substantial impact also on the exit from unemployment immediately after leaving full-time education. Multiple regression analysis is required further to examine whether the association between childhood poverty and unemployment is mostly mediated by qualification attainment.

7.4 Results of the Regression Analysis

In this section, I report the results from the regression analysis for the following unemployment outcomes; unemployment at age 16 (Subsection 7.4.1), the onset of unemployment upon leaving full-time education (Subsection 7.4.2), the exit from unemployment immediately after leaving full-time education (Subsection 7.4.3), the onset of unemployment after employment spells (Subsection 7.4.4), and the exit from unemployment after employment spells (Subsection 7.4.5). In each subsection, I present a set of three tables for each unemployment outcome, depending on the measures of childhood poverty used; [1] timing of childhood poverty, [2] duration types of childhood poverty, and [3] parental worklessness and income poverty. The regression coefficients indicate the relative scale and direction of each effect but are unsuitable for substantive interpretation. In the final subsection (7.4.6), I summarise the results by reporting the odds (hazards) ratios rather than the coefficients, since these are more suitable for substantive interpretation.

As we see below, for all of the unemployment outcomes, the analysis of the timing effects of childhood poverty does not successfully identify the residual effect of poverty in late childhood, which was persistently found for men in the 1970 cohort, after controlling for educational attainment. This may be associated with the fact that the coefficients for transient/occasional poverty and for persistent/recurrent poverty are rarely statistically significant, given the sample size. For those in permanent/chronic poverty who are significantly more likely to face the unemployment risk, it is infeasible to estimate the timing effects because almost all of them are assigned the same value of 1 for all of the timing variables. Therefore, the lack of strong evidence for the timing effect may not necessarily reject the hypothesis that poverty in late childhood affects later unemployment for the more recent birth cohort.

7.4.1 Unemployment at Age 16

Table 7.4 to Table 7.6 show the results for the probability of being unemployed relative to being in full-time education in the upper panels, and for that of being unemployed relative to being in employment in the lower panels. The upper panels show that childhood poverty affects the probability of being unemployed relative to being in full-time education. However, the lower panels largely show that childhood poverty, whichever way it is measured, is not independently associated with the probability of being unemployed relative to being in employment, after controlling for GCSE attainment and mother's education. This implies that childhood poverty mostly affects 16-year-olds when they are making a decision about whether to stay on in full-time education. Most of the sample members left compulsory education prior to the introduction of the Educational Maintenance Allowance in 2004 (only those born in and after 1988 left education during and after its introduction).

As noted earlier, Table 7.4 does not show strong evidence that poverty in late childhood affects unemployment at age 16 after controlling for GCSE attainment and mother's educational attainment. It shows, however, that living in poverty at ages 6-10 is more strongly associated with unemployment at age 16 than poverty at ages 14-16, at least indirectly through educational attainment (Column (6)). Table 7.5 shows that permanent/chronic poverty affects unemployment at age 16, even after controlling for GCSE attainment and mother's education. Table 7.6 shows the relative effects of parental worklessness and income poverty. There is strong evidence that income poverty rather than parental worklessness increases the probability of being unemployed relative to being in full-time education, even after controlling for GCSE attainment (Columns (3)), although the evidence is weaker based on the analysis using income variables (Column (7)). Based on either variable, the evidence does not suggest that parental worklessness increases the probability of unemployment at age 16. With respect to the effect of GCSE attainment, high GCSEs are necessary in order to improve post-16 outcomes.

7.4.2 The Onset of Unemployment upon Leaving Full-time Education

Table 7.7 to Table 7.9 show the estimates from the logit models of unemployment upon leaving full-time education for both genders together. The models are estimated by excluding those who became inactive upon leaving full-time education. The assumption here is that the labour force participation decisions at this stage are exogenous to the

actual employment outcomes, and that the impact of the assumption on the estimates is negligible, given that those who are inactive upon leaving full-time education are few in number. In particular, Table 7.3 has shown that inactivity immediately after leaving full-time education is not necessarily associated with childhood poverty and low educational attainment, and thus the coefficients for these variables are to be mostly unaffected by the exclusion of the inactive subsamples. Table 7.7 examines the timing effect of childhood poverty, but does not successfully identify it.

Table 7.8 investigates the effects of different types of childhood poverty. The coefficient for permanent/chronic poverty remains significant after controlling for individuals' mother's education or own educational attainment (Columns (2) and (3)),¹⁴⁰ but controlling for own educational attainment reduces the size of the coefficient. This suggests that the effect of growing up in permanent/chronic poverty on unemployment is not completely explained by educational disadvantage, although it partly mediates the effect. A replication of the analysis using the sample that includes only those born between 1982 and 1988 shows similar patterns for the effects of the duration type of childhood poverty on the unemployment risk, although the coefficient for permanent/chronic poverty is slightly reduced (Columns (4) to (6)). As noted earlier, the likelihood of being classified into each poverty type can differ depending on for how long the respondents are observed. Older cohorts are more likely to be classified as growing up in permanent/chronic poverty by measurement errors, and this may have resulted in the underestimation of the impact of growing up in permanent/chronic poverty.

Table 7.9 shows the results of the analysis of the relative effects of parental worklessness and poverty on the onset of unemployment upon leaving full-time education. Columns (1) to (3), based on those from households with a below-median income, show that the number of years for which the parents of children aged between 11 and 16 are workless significantly affects the unemployment risk, even after controlling for the number of years spent living in income poverty between the ages of 11 and 16, mother's education and own qualification attainment separately. On the other hand, the coefficient for the number of years spent living in income poverty is not statistically significant. The result suggests that parental worklessness increases the

¹⁴⁰ The model does not control for mother's education, because the coefficients for this variable were not significant in the reduced model in Column (2) in Table 7.8, so it is preferable to avoid over-fitting the model which additionally includes the variables for children's education. This same approach is followed in the equivalent models below.

onset of unemployment upon leaving full-time education.¹⁴¹ Column (4) further limits the sample to include only those from the bottom-quartile income households, and the result is consistent with that of Column (3).

Columns (5) to (8) of Table 7.9 repeat the same analyses as presented in Columns (1) to (4), respectively, but the variables for parental worklessness and income poverty are replaced by those for gross household labour income and net household income, both averaged out between the ages of 11 and 16. The results are broadly consistent with those of Columns (1) to (4), since higher labour income reduces the risk of becoming unemployed upon leaving full-time education. Although Column (7) shows that the coefficient for labour income is statistically significant only at the 10% level, based on the sample of those from households with a below-median income, Column (8) shows that this is significant at the 5% level, based on the sample of those from the bottom-quartile income households.

To summarise, there is strong evidence that those who grew up in permanent/chronic poverty are far more likely to become unemployed, even after controlling for qualification attainment and the other variables. Because of the slightly different measurement of childhood poverty, a direct comparison of the findings between Chapters 6 and 7 is impossible. Broadly, however, the effect of childhood poverty on the onset of unemployment upon leaving full-time education has not changed in its direction and magnitude between the 1970 and 1980s cohorts. There is, at least, no evidence to suggest that the effect of childhood poverty has dramatically decreased. With respect to qualification attainment, obtaining high GCSEs and A-levels or a degree considerably reduces the risk of becoming unemployed. A new finding using the BHPS is that parental worklessness rather than income poverty affects the onset of unemployment upon leaving full-time education.

7.4.3 The Exit from Unemployment Immediately after Leaving Full-time Education

Table 7.10 to Table 7.12 present the results for the exit from unemployment immediately after leaving full-time education for both genders. Columns (1) to (3) of

¹⁴¹ Although not shown in Table 7.9, I have attempted to control for mother's and own education simultaneously, and then the coefficient for worklessness was no longer statistically significant, but the coefficients for mother's education were also not significant. I suspect that controlling for both variables together may cause over-fitting. Even in a model without the variables for worklessness and income poverty, the coefficients for mother's education were not significant at the 5% level after controlling for the children's own qualification attainment. This implies that the effect of mother's education on employment outcomes is mainly mediated by the children's educational attainment.

Table 7.10 show that those who grew up in poverty at ages 14-16 are less likely to exit from unemployment, but the coefficient is statistically significant only at the 10% level after controlling for qualification attainment. The coefficient for poverty at ages 11-13 is not statistically significant, similarly to the finding for the onset of unemployment. Columns (4) to (6) additionally consider the effect of poverty in earlier childhood. Column (4) still shows that poverty at ages 14-16 most strongly affects the exit from unemployment. However, the evidence is not precise after controlling for qualification attainment and the other variables.

Table 7.11 shows that permanent/chronic poverty strongly affects the exit from unemployment immediately after leaving full-time education, that this effect is partly mediated by qualification attainment, and that the coefficient for permanent/chronic poverty is no longer significant after controlling for it. The results are almost the same as in Columns (4) to (6) using the 1982-88 cohort as in Columns (1) to (3). Although Table 7.10 has not presented precise evidence about the effects of the highest qualification obtained, Table 7.11 shows that having A-levels or a degree seems to increase the chance of exit from unemployment. Table 7.12 is equivalent to Table 7.9, as it examines the relative effects of parental worklessness and income poverty. However, because of the small sample size, the analyses conducted were unsuccessful.

To summarise, firstly, those who grew up in permanent/chronic poverty may be less likely to exit from unemployment, but this effect is mediated by qualification attainment. Secondly, A-levels or a degree have a significant effect on the exit from unemployment. Having high GCSEs as the highest qualification was beneficial to the 1970 cohort, but not the 1980s one. This implies that higher qualifications are required to promote the exit from unemployment immediately after leaving full-time education for the younger cohort. The finding for the 1970 cohort holds true for the 1980s cohort that childhood poverty, long-term poverty in particular, affects the onset of rather than the exit from unemployment.

7.4.4 The Onset of Unemployment Following Employment

For the onset of unemployment after employment spells, I estimate the Cox proportional hazard models for all employment spells, but separately for men and women. When using multiple spells, the within-individual correlations between the lengths of the spells may bias estimates. To allow for these correlations, I apply the variance-corrected models in which standard errors are clustered at the individual level

and additionally at the level of the sequence of employment spells.¹⁴² More details about this strategy are explained in Chapter 6 (Subsection 6.3.4). The same strategy is also applied for multiple unemployment spells below.

For men, Table 7.13 shows that poverty at ages 14-16 more strongly affects the onset of unemployment following employment spells (Columns (1)), but that the coefficient for poverty at ages 14-16 is no longer significant after controlling for qualification attainment (Column (3)). Table 7.14, on the other hand, reveals a strong effect of permanent/chronic poverty with the onset of unemployment, even after controlling for qualification attainment (Column (3)). With respect to the effects of the highest qualification obtained, obtaining high GCSEs relative to having only no or low qualification is effective in reducing the risk of becoming unemployed. The coefficient for A-levels is significant only at the 10% level, and that for a degree is not significant. The tendency that degree holders are no less likely to become unemployed in their early career is consistent with the finding for the 1970 cohort.

Columns (4) and (5) of Table 7.14 examine whether the unemployment duration immediately after leaving full-time education and the total duration of unemployment ever experienced, respectively, have scarring effects on the later unemployment risk, and whether these explain the effect of childhood poverty on later unemployment. Column (5) shows that unemployment immediately after leaving full-time education has an effect, even if it is as short as 3 months, but a greater effect if it is longer than 4 months. However, the explanatory power of this effect for the effect of permanent/chronic poverty on the onset of unemployment is small.

Compared with the findings from the 1970 cohort, the effect of unemployment immediately after leaving full-time education is greater for the 1980s cohort. For the men in the 1970 cohort, an unemployment spell which lasted no more than 6 months (no more than 12 months if they were engaged in GST) did not have a statistically significant effect on the rapid onset of later unemployment. The total duration of the past unemployment also seems to have a greater effect for the 1980s cohort. This may be because of the composition of the unemployed in the 1980s cohort, since those who are relatively more disadvantaged tend to be unemployed when the labour market conditions are better.

¹⁴² As explained in Subsection 7.2.3, we also need to correct the standard errors for person-group clustering when using BHPS data. As individuals are nested in households, I cluster standard errors at the household level only, in addition to the sequence level. The estimated standard errors in the analyses of this chapter are quite similar regardless of whether I cluster them at the individual or household level.

Table 7.15 examines the relative effects of parental worklessness and income poverty on the onset of unemployment while in employment. Columns (1) to (3), based on individuals from households with a below-median income, show that income poverty rather than parental worklessness significantly affects the rapid onset of unemployment, even after controlling for qualification attainment. Column (7) also shows evidence, although weak, that net household income has a stronger effect than gross household labour income on reducing the onset of unemployment.

I turn to the results for women. Table 7.16 shows no evidence that poverty at ages 14-16 affects the onset of unemployment. Columns (4) and (5) suggest that poverty at ages 6-10 may have a greater effect, but this is mediated by qualification attainment. Table 7.17 clearly shows that growing up in permanent/chronic poverty affects the rapid onset of unemployment while in employment, even after controlling for qualification attainment. Column (3) shows that high GCSEs and higher academic qualifications reduce the unemployment risk.

Columns (4) to (6) of Table 7.17 investigate pathways for the effect permanent/chronic poverty on the onset of unemployment, examining the effect of the unemployment duration immediately after leaving full-time education and the total duration of unemployment ever experienced, and the effect of child-bearing. Being unemployed immediately after leaving full-time education (Column (4)) and past unemployment ever experienced (Column (5)) both increase the onset of unemployment. Having a child does not increase the onset of unemployment, which may be unsurprising because women with a child are more likely to be economically inactive (Column (6)).

Table 7.18 investigates the relative effects of parental worklessness and income poverty on the onset of unemployment for women. Columns (1) to (3) show that income poverty rather than parental worklessness strongly affects the onset of unemployment, even after controlling for qualification attainment, which is consistent with the findings for men. Columns (5) to (7) do not also show any precise evidence about the relative effects of gross household labour income and net household income.

For women, inactivity is a common and important outcome of employment insecurity. However, as Figure 7.8 and Figure 7.11 show, the effects of childhood poverty and qualification attainment are not very different for the unemployment and non-employment outcomes, which is in contrast to the findings for women in the 1970 cohort (possibly because of the combination of the data collection method and the wider

age coverage to the early thirties of the BCS). Therefore, for the 1980s cohort, analyses reported in Table 7.19 to Table 7.21 for the onset of non-employment following employment are mainly for reassurance of the above findings about the onset of unemployment. Table 7.19 shows no precise evidence for the effect of poverty at ages 14-16, and adds nothing new to Table 7.16.

Table 7.20 shows similar results to the equivalent Table 7.17 with respect to the effect of types of poverty. However, there are some points worthy of note regarding the effects of holding a degree, past employment, and child bearing on the onset of non-employment that are different from the effects on the onset of unemployment. Holding a degree does not significantly reduce the onset of non-employment while in employment (Column (4)). The effect of past unemployment ever experienced is somewhat smaller on the onset of non-employment than on the onset of unemployment (Column (5)). This pattern is similar to that found for the 1970 cohort. Child bearing increases the onset of non-employment, but this does not seem to explain the residual effects of permanent/chronic poverty on the onset of non-employment (Column (6)), which is again consistent with the finding for the 1970 cohort.

With respect to the relative effects of parental worklessness and income poverty, Table 7.21 reports similar findings to those reported in Table 7.18. To repeat, income poverty rather than parental worklessness seems to affect the onset of non-employment for those women from households with a below-median income (Columns (1) to (4)). The analysis using the income variables suggests that, although net household income also affects the onset of non-employment, after controlling for gross household labour income and mother's education (Column (6)), this is mediated by own educational attainment (Column (7)). At any rate, there is no evidence that parental worklessness affects the onset of non-employment for women.

These findings can be summarised as follows. There is no statistically significant evidence for the timing effects of poverty on the onset of unemployment following employment for both men and women in the 1980s cohort, but the estimates indicate that poverty at ages 14-16 more strongly affects the onset of unemployment for both genders than poverty at ages 11-13. Future research should investigate this question by using larger datasets. Secondly, however, there is strong evidence that growing up in permanent/chronic poverty increases the risk of becoming unemployed for both men and women, even after controlling for qualification attainment. Thirdly, the effect of past employment exists for both men and women, and is greater for the

1980s cohort than for the 1970 one, although this may be due to the composition of the unemployed. Last but not least, in terms of the relative effects of parental worklessness and income poverty, income poverty rather than worklessness affects the onset of unemployment for both men and women and the onset of non-employment for women.

7.4.5 The Exit from Unemployment Following Employment

I next examine the exit from unemployment after employment for both genders together in order to maximise the sample size. As child bearing, a gender specific factor, did not explain the onset of unemployment, it is feasible to analyse both genders together.¹⁴³

As is the case for the other outcomes, the analysis of the timing effects is unsuccessful in Table 7.22. In addition, Table 7.23 shows that the coefficient for permanent/chronic poverty is not statistically significant, after controlling for the highest qualification obtained (Column (3)). Recalling that those who grew up in permanent/chronic poverty are more likely to be unemployed (Table 7.14 to Table 7.17), the sample of the unemployed disproportionally includes those people. Therefore, among the unemployed, whether or not they grew up in poverty may not be a decisive factor in their rapid exit from unemployment. Qualifications have greater impacts on the exit from unemployment, although the precision of the coefficients for high GCSEs is weak.¹⁴⁴ There is no strong evidence to suggest the negative effects of past experience and duration of unemployment on the exit from unemployment (Column (4)), but past long-term unemployment may have a negative effect, which remains to be confirmed through the use of a larger dataset (Column (5)). The negative effect of past long-term unemployment on the exit from unemployment was found for both men and women in the 1970 cohort.

Table 7.24 investigates the relative impacts of parental worklessness and income poverty on the exit from unemployment after employment spells. Parental worklessness has a negative effect on the exit from unemployment, controlling for the variable for income poverty (Column (1)), but this effect is not statistically significant, additionally controlling for mother's education (Column (2)). Not controlling for mother's education,

¹⁴³ Although not shown in the tables, the coefficient for the dummy variable for gender is not statistically significant at the 5% level in the models reported in Table 7.22 to Table 7.24.

¹⁴⁴ A possible reason for the coefficients for high GCSEs being insignificant may be a selection bias in the sample of the unemployed. As Table 7.14 shows, those men with high GCSEs are less likely to become unemployed, and thus those who did so may share some individual characteristics which make it difficult to exit from unemployment. Therefore, it would be inappropriate to conclude that high GCSEs cannot shorten unemployment duration.

but controlling for income poverty and qualification attainment, parental worklessness is again shown negatively to affect the exit from unemployment for those from households with a below-median income and those with a bottom-quartile income (Columns (3) and (4)). This finding can be interpreted in two ways. Firstly, the effect of parental worklessness on the exit from unemployment can be explained by the effect of mother's education, but the small sample size fails to provide strong evidence for this. Secondly, if the effect of mother's education is mostly mediated by own educational attainment, the effect of parental worklessness, remaining after controlling for own educational attainment, may actually suggest that parental worklessness has a negative impact on unemployment duration for young people.

The alternative analysis using the income variables shows similar results, in that gross household labour income in childhood promotes the exit from unemployment for young people, after controlling for net household income and own educational attainment (Column (7)). In addition, it is shown that net household income in childhood delays the exit from unemployment, after controlling for gross household labour income and own educational attainment. As noted earlier, among the sample of those from low-income households, the net household income is higher when the household receives more benefits for a given level of gross household labour income. Thus, the evidence here implies that additional benefit income for parents might be counter-effective for reducing long-term unemployment among young people, as advocates of the welfare-dependency model may well argue. However, this evidence is not robust, allowing two alternative interpretations, as discussed above, and the sample size is very small. Therefore, although it is possible neither to support nor to reject the welfare-dependency model based on the finding reported in Column (7), this is worth remembering when bringing out the policy implications about income transfers.

With respect to the exit from unemployment, there is no robust evidence for the effects of the timing and types of childhood poverty on the exit from unemployment. Qualification attainment more strongly and positively affects the exit from unemployment. Furthermore, as discussed above, the possible negative effect of parental worklessness on the exit from unemployment may be noteworthy.

7.4.6 Summary

Table 7.25 summarises the findings from the regression analyses for the 1980s cohort. Here I focus on the similarities and differences of these to the findings from the 1970 cohort, and the new findings for the 1980s cohort.

Similarities to the 1970 cohort:

- Poverty in late childhood (at ages 14-16) negatively affects the exit from unemployment immediately after leaving full-time education for men, controlling for poverty in mid childhood (at ages 11-13) and the other variables.
- Long-term childhood poverty affects the greater onset of unemployment, but not significantly the slow exit from unemployment, after controlling for qualification attainment, mother's education and the other variables.
- Qualification attainment affects both the greater onset of and rapid exit from unemployment, after controlling for childhood poverty status, mother's education and the other variables.
- Men who hold a degree are not necessarily less likely to become unemployed early in their careers, but more likely to exit from unemployment, after controlling for the other variables.
- The experience and duration of past unemployment increases the risks of later unemployment for both genders.

Differences from the 1970 cohort:

- Although possibly due to the better data collection method of the BHPS, the recorded spells of both unemployment and employment are shorter for the 1980s cohort. They might have reported even a short period of employment interruption in the BHPS, which could explain their shorter employment spells. However, the better economy for the 1980s cohort may also explain their shorter unemployment spells.
- Although low GCSEs with a higher vocational qualification generally reduced the onset of unemployment and promoted the exit from unemployment for the 1970 cohort, it seems desirable for the 1980s cohort to obtain at least high GCSEs in order to see positive employment outcomes.
- The sizes of the effects of past unemployment have increased for the 1980s cohort, even when compared with the effect of past experience of NEET for the

1970 cohort. This may partly be because the characteristics of the unemployed may be more disadvantaged when the overall labour market condition is better. Nonetheless, the evidence is useful in targeting those who are at the highest risk of repeated unemployment.

New findings from the 1980s cohort:

- For those from households with a below-median income, parental worklessness affects the greater onset of unemployment upon leaving full-time education, after controlling for the other variables, more strongly than income poverty. Parental worklessness might also negatively affect the exit from unemployment after employment spells, but this effect may mostly reflect the effect of mother's education and is not robust.
- On the other hand, childhood income poverty affects the greater onset of unemployment at age 16 relative to staying on in full-time education, and the greater onset of unemployment following employment, more strongly than parental worklessness.
- There is inconclusive evidence that additional household income not by way of labour income (which is presumed to be additional benefit income) might prolong the unemployment duration experienced after employment spells. For all of the other unemployment outcomes, however, there is no evidence to suggest that additional household income via benefits is damaging to the later employment prospects of those growing up in poverty.

7.5 Conclusions

This chapter has investigated the effects of childhood poverty on the onset of and exit from unemployment for those born in the 1980s, and the relative effects of parental worklessness and low income on these unemployment risks. In line with the findings of Chapter 6, this chapter has found varied effects of childhood poverty on the onset of and the exit from unemployment, after controlling for educational attainment and the other variables, as well as the mediating effects of qualification attainment and past unemployment. It remained unclear in Chapter 6 whether income transfer could be useful in reducing the residual effect of childhood poverty on the unemployment risk. This chapter has taken a step further to reveal whether the residual effect is explained by parental worklessness or income poverty, although the analysis has not shown any

causal effects of either of these. I discuss these findings and the relevant policy implications in this concluding section.

Those who grew up in permanent/chronic poverty are more likely to become unemployed rather than stay unemployed for both genders. Compared with the fact that obtaining either high GCSEs or a higher vocational qualification was generally useful in reducing the unemployment risk for the 1970 cohort, obtaining at least high GCSEs, regardless of the level of vocational qualifications obtained, has become more important for the 1980s cohort. The increasing importance of attainment in compulsory education is nonetheless consistent with the finding of Chapter 4, that the earnings premium associated with high GCSEs increased between the 1958 and the 1970 cohorts for both academic and vocational oriented men. Therefore, policy needs to commit strongly to improving attainment in compulsory education for low achievers.

The finding that the effect of past unemployment is greater for the 1980s cohort than for the 1970 one may be because the relatively more disadvantaged are likely to be unemployed under better labour market conditions, rather than the effect per se being greater for the younger cohort. Either way, this suggests that youth unemployment is always of concern for individual outcomes, although it may be of more concern for the macro-level outcomes when the unemployment rates are high. The scale of the long-term negative impact of unemployment immediately after leaving full-time education is as great as obtaining an economically meaningful qualification (high GCSEs).

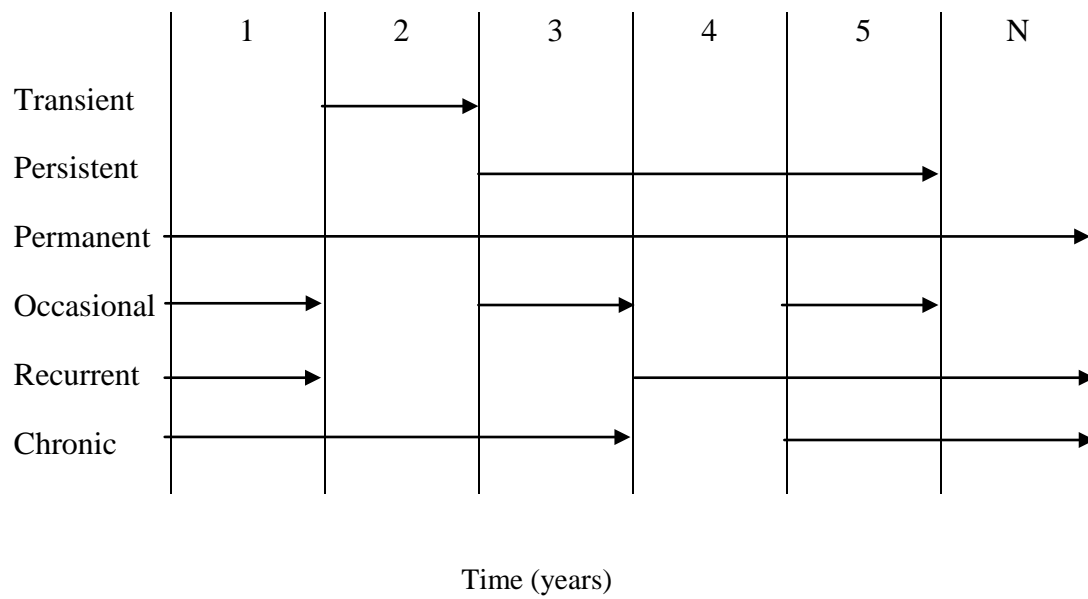
This chapter has further investigated which factor, parental worklessness or childhood income poverty, (more strongly) affects unemployment in early working life, by limiting the sample to include only those from households with a below-median income. It neither supports nor rejects the welfare-dependency model, but finds that income poverty affects the onset of unemployment even while working, which is usually overlooked in the model. This suggests that increasing parental income could improve the future employment prospects of those growing up in poverty. Regardless of whether parents are working or not, it is important to guarantee sufficient income to escape poverty, which is particularly the case when work alone does not do so. However, parental work reduces the onset of unemployment upon leaving full-time education¹⁴⁵

¹⁴⁵ The estimated effect of parental worklessness on the onset of unemployment upon leaving full-time education may suggest the effects of the local labour market conditions and/or other unobserved variables. As noted in the footnote 114, based on the analysis of the 1970 cohort, this is the only unemployment outcome on which the effects of poverty at age 10 and poverty at age 16 on the onset of unemployment

and possibly the duration of unemployment experienced after employment. This suggests that promoting parental work is also beneficial, and the design of income redistribution matters, given the trade-off between its progressivity and possible work disincentives. Alternatively, the finding suggests that employment services targeting young people whose parents are workless most of the time may be worthwhile, as we assume that some parents cannot work immediately, and there is a trade-off between work and time spent with children, particularly for parents whose hourly earnings are very low.

upon leaving full-time education were confounding, implying the impact of unobserved variables associated with childhood poverty.

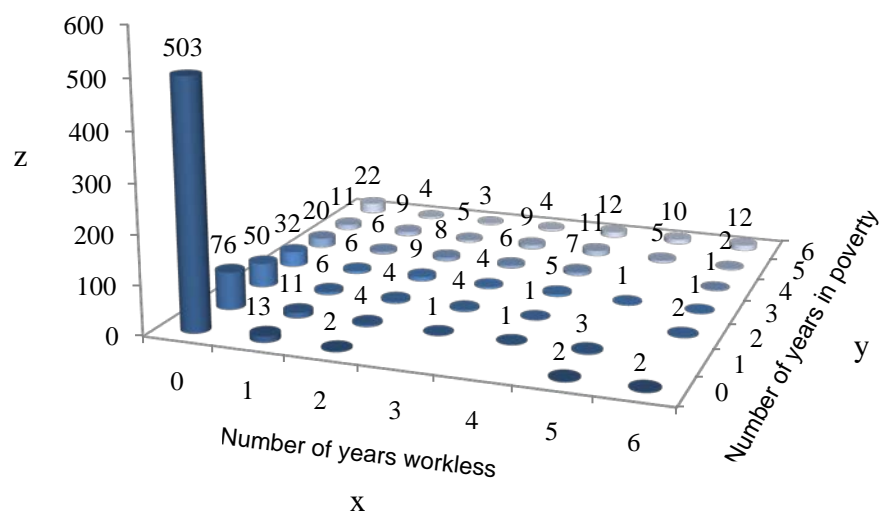
Figure 7.1 Duration types of poverty



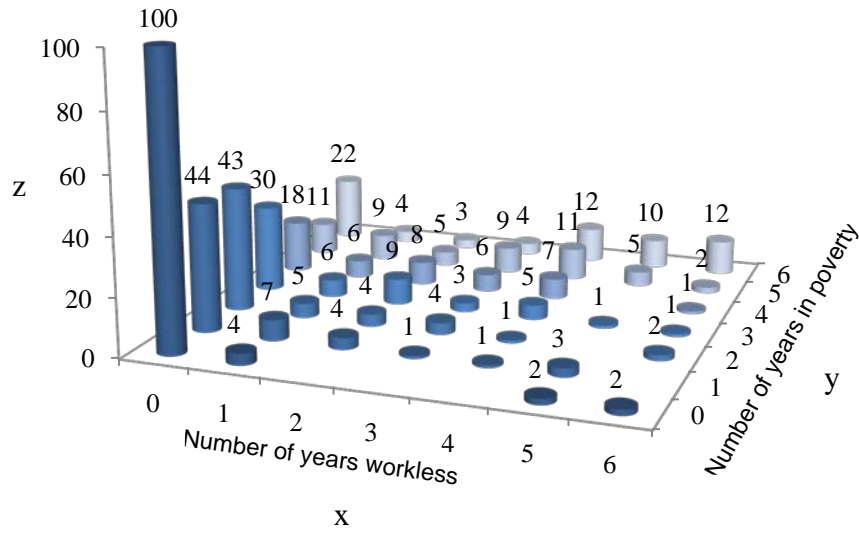
Source: Ashworth et al. (1994)

Figure 7.2 Parental worklessness and income poverty between the ages of 11 and 16 for those born in 1980-88: BHPS

(a) 11-16-year-olds from all households



(b) 11-16-year-olds from households with a below-median income



Notes: See Section 7.2 for the definitions of the variables.

Figure 7.3 Scatter plot for average gross household labour income and average net household income between the ages of 11 and 16 for those born in 1980-88: BHPS

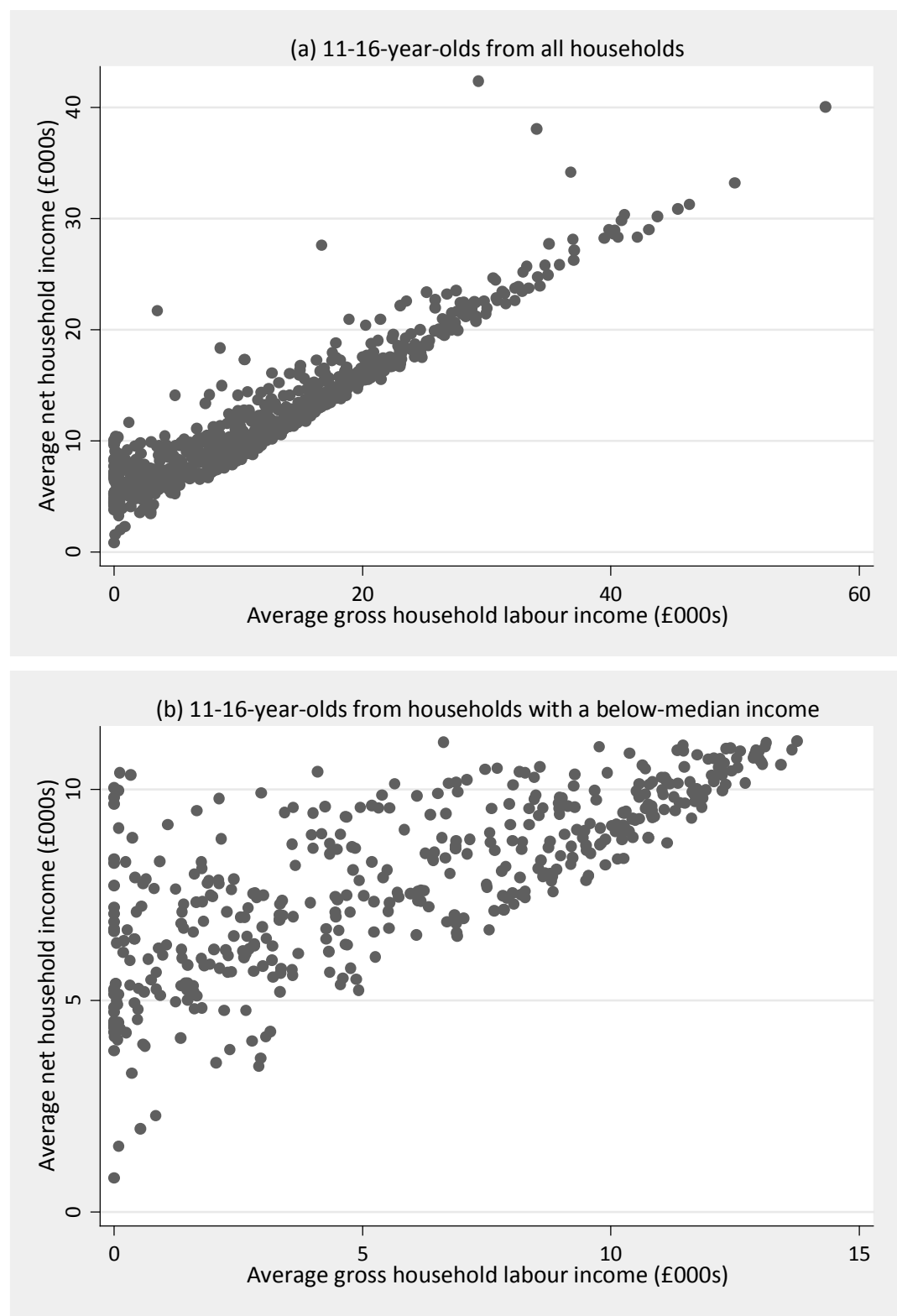


Figure 7.4 Survival estimates for the unemployment spell immediately after leaving full-time education by childhood poverty status: males and females born in 1980-88

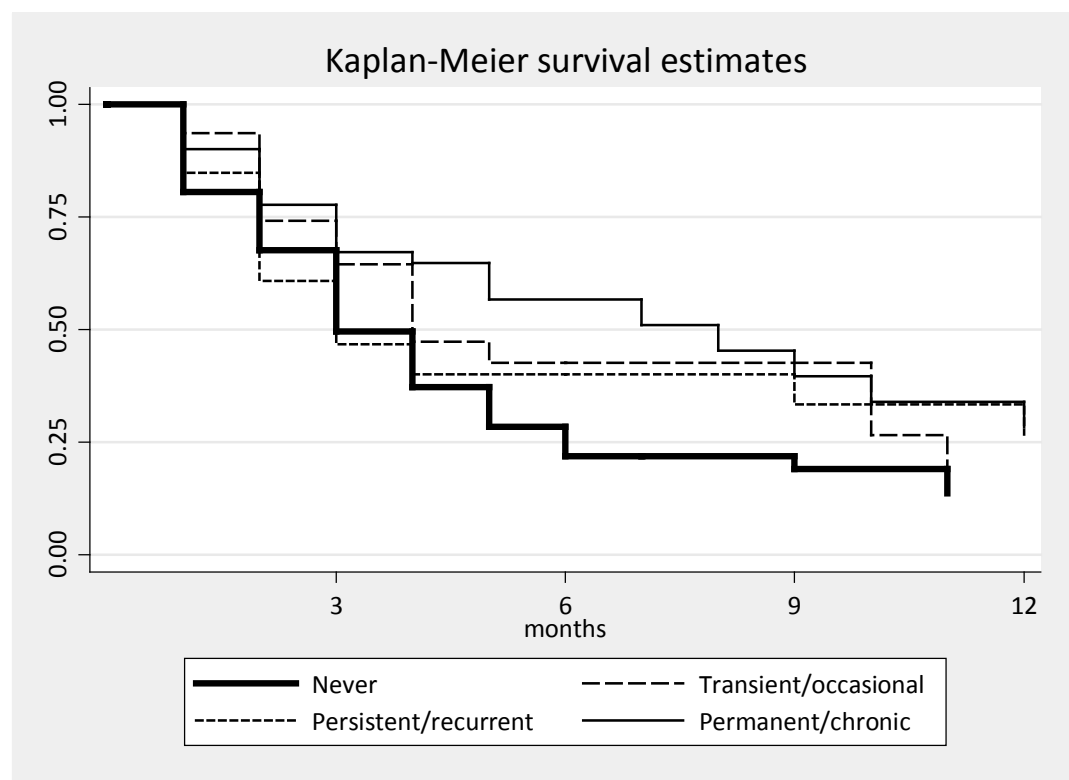


Figure 7.5 Survival estimates for the unemployment spell immediately after leaving full-time education by the highest qualification obtained: males and females born in 1980-88

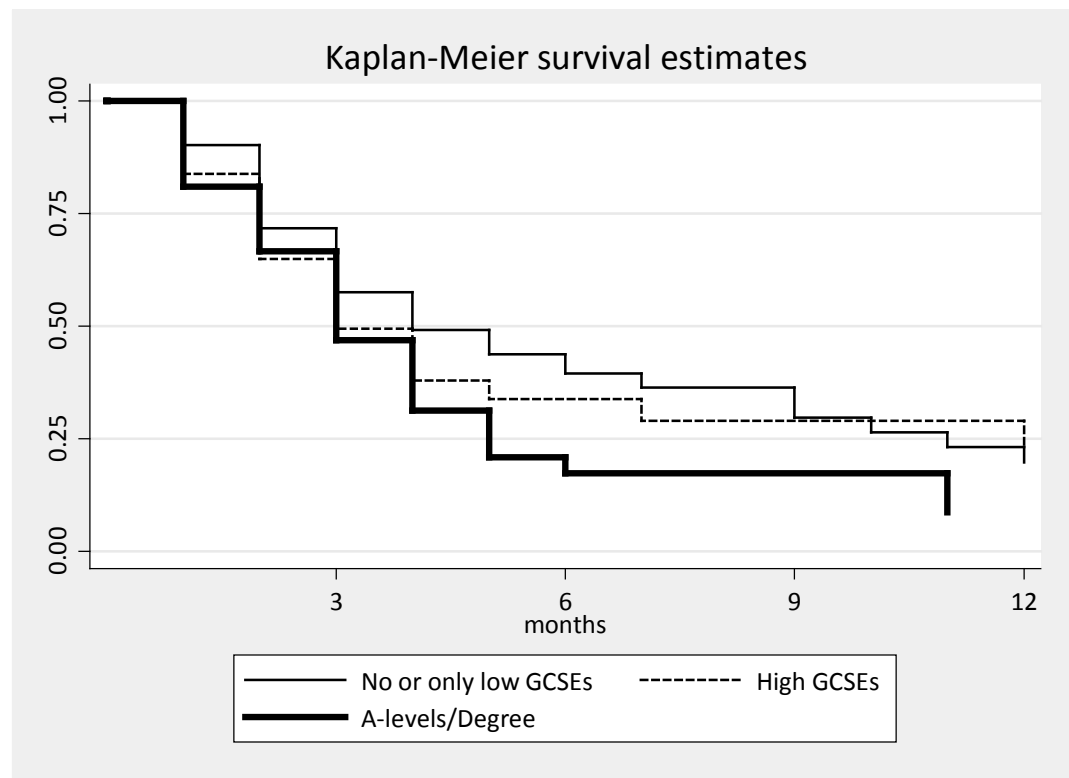


Figure 7.6 Survival estimates for all employment spells by childhood poverty status: males born in 1980-88

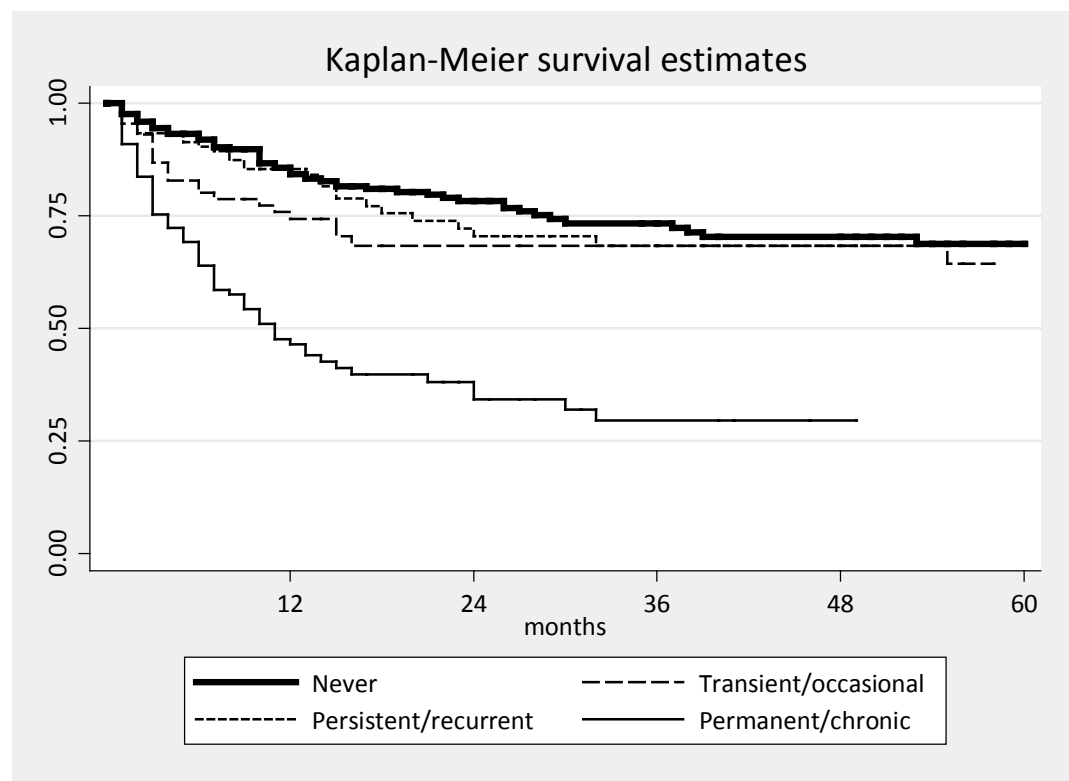


Figure 7.7 Survival estimates for all employment spells by the highest qualification obtained: males born in 1980-88

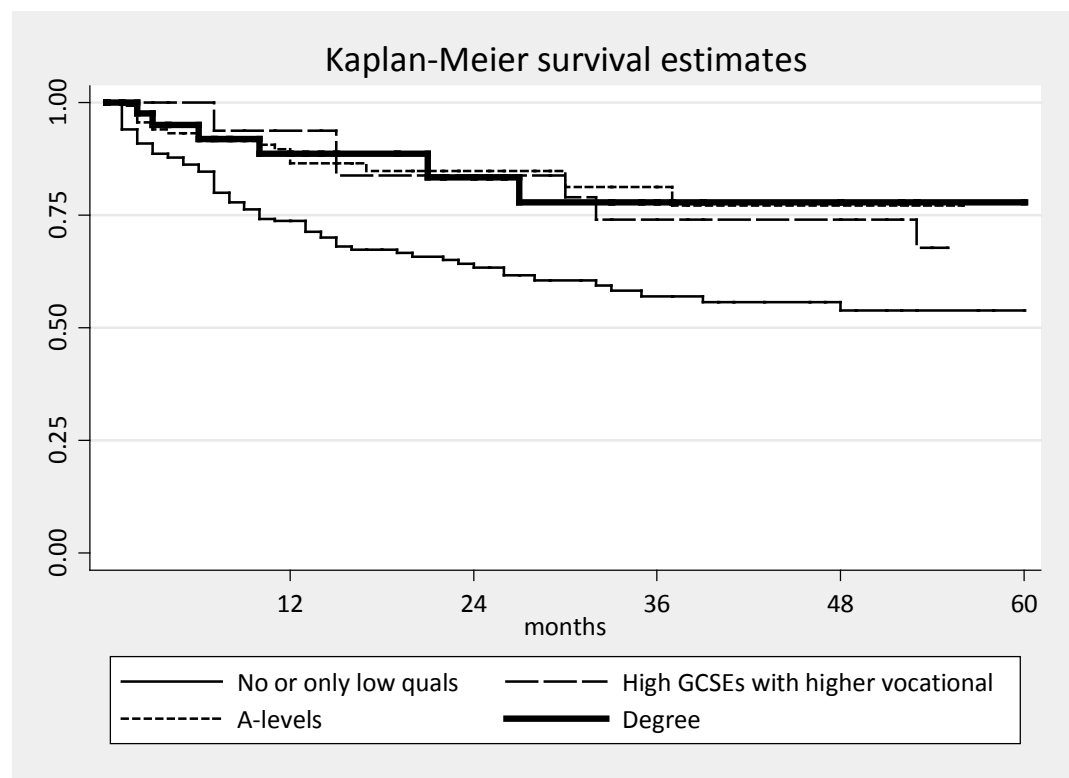


Figure 7.8 Survival estimates for all employment spells until the onset of unemployment by childhood poverty status: females born in 1980-88

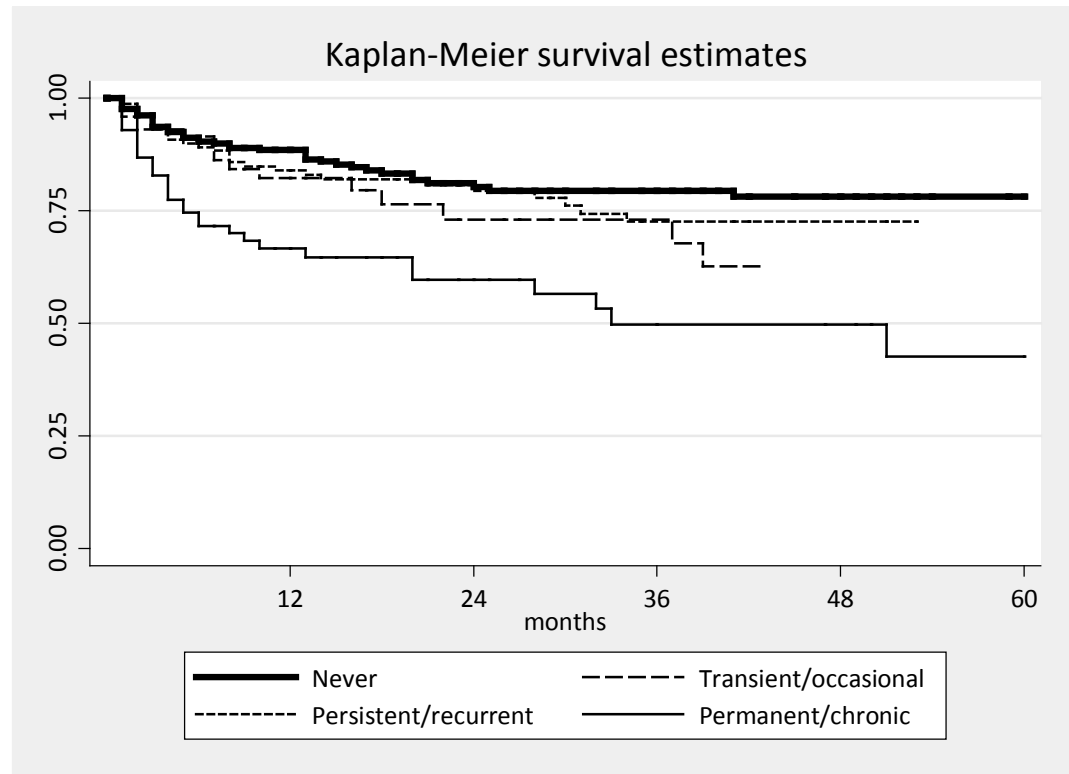


Figure 7.9 Survival estimates for all employment spells until the onset of unemployment by the highest qualification obtained: females born in 1980-88

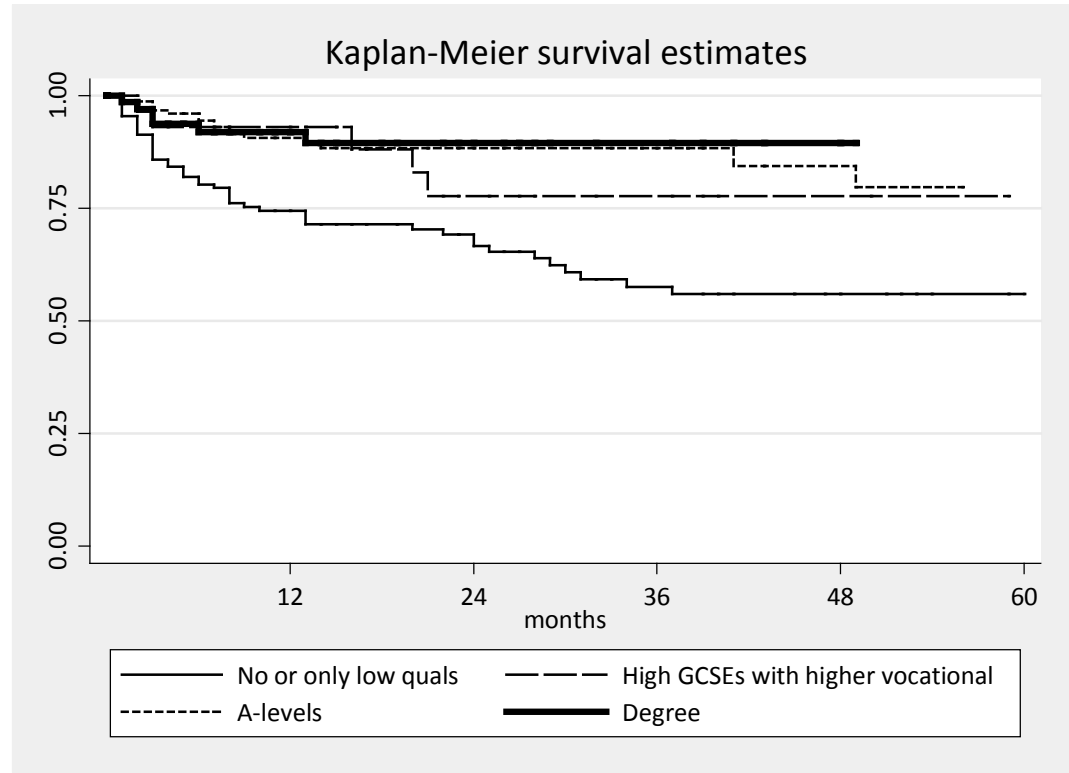


Figure 7.10 Survival estimates for all employment spells until the onset of non-employment by childhood poverty status: females born in 1980-88

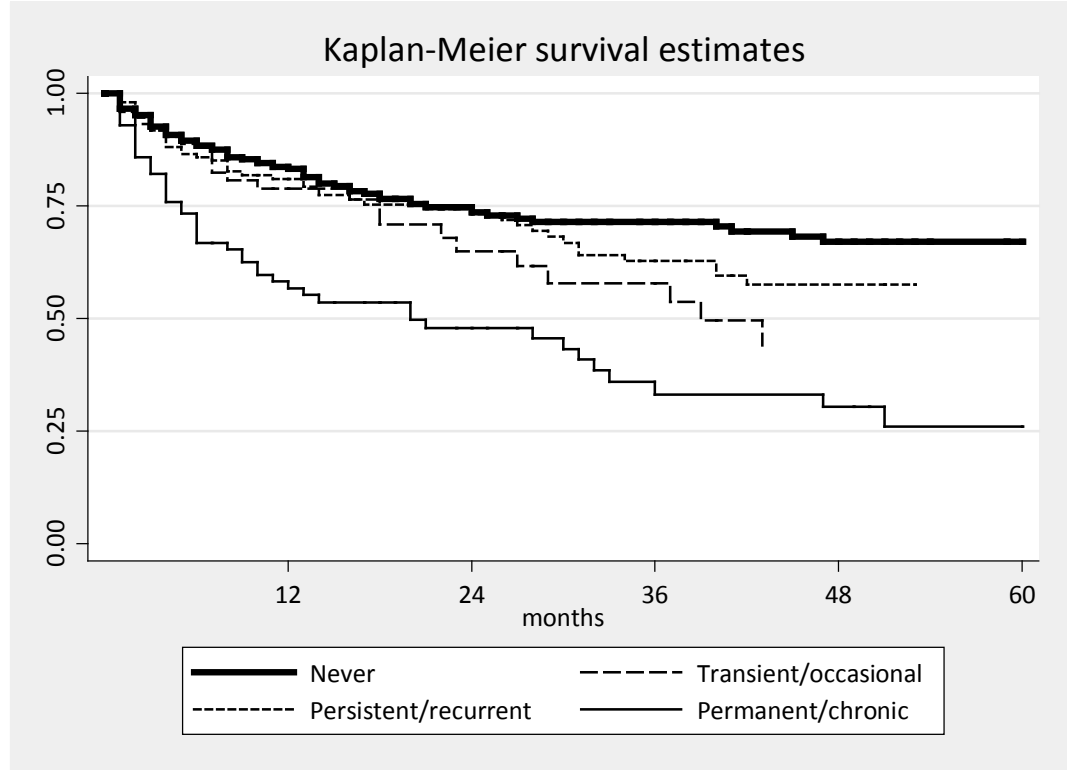


Figure 7.11 Survival estimates for all employment spells until the onset of non-employment by the highest qualification obtained: females born in 1980-88

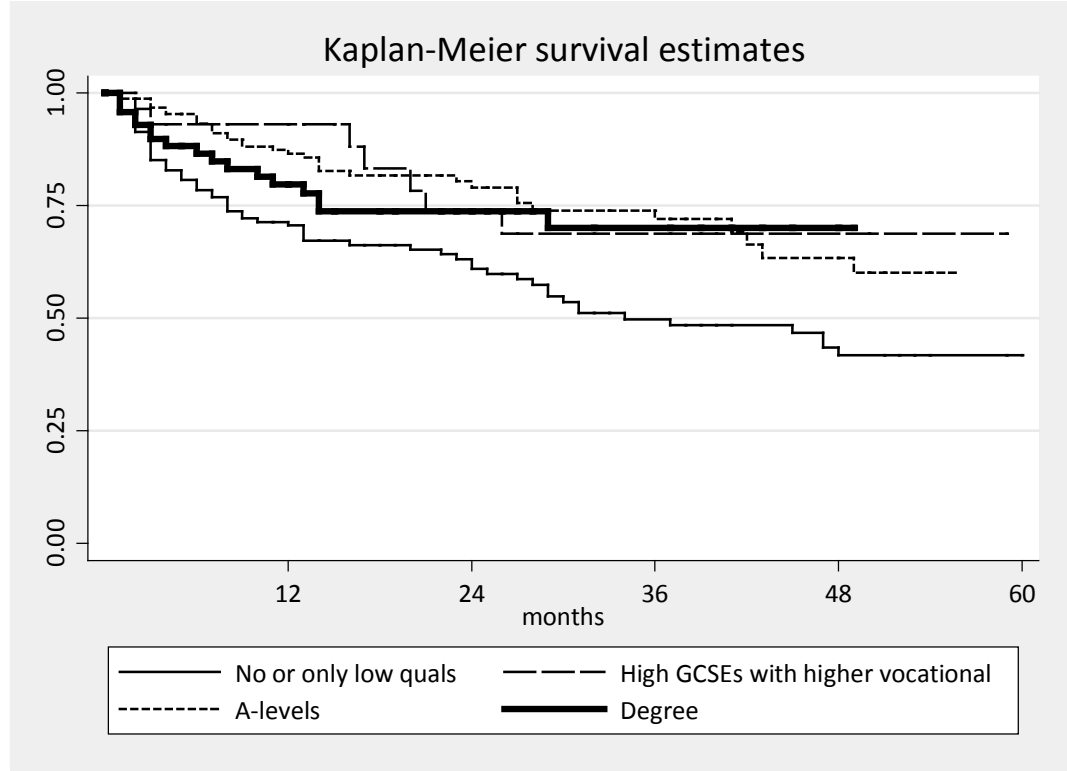


Figure 7.12 Survival estimates for all unemployment spells following employment by childhood poverty status: males and females born in 1980-88

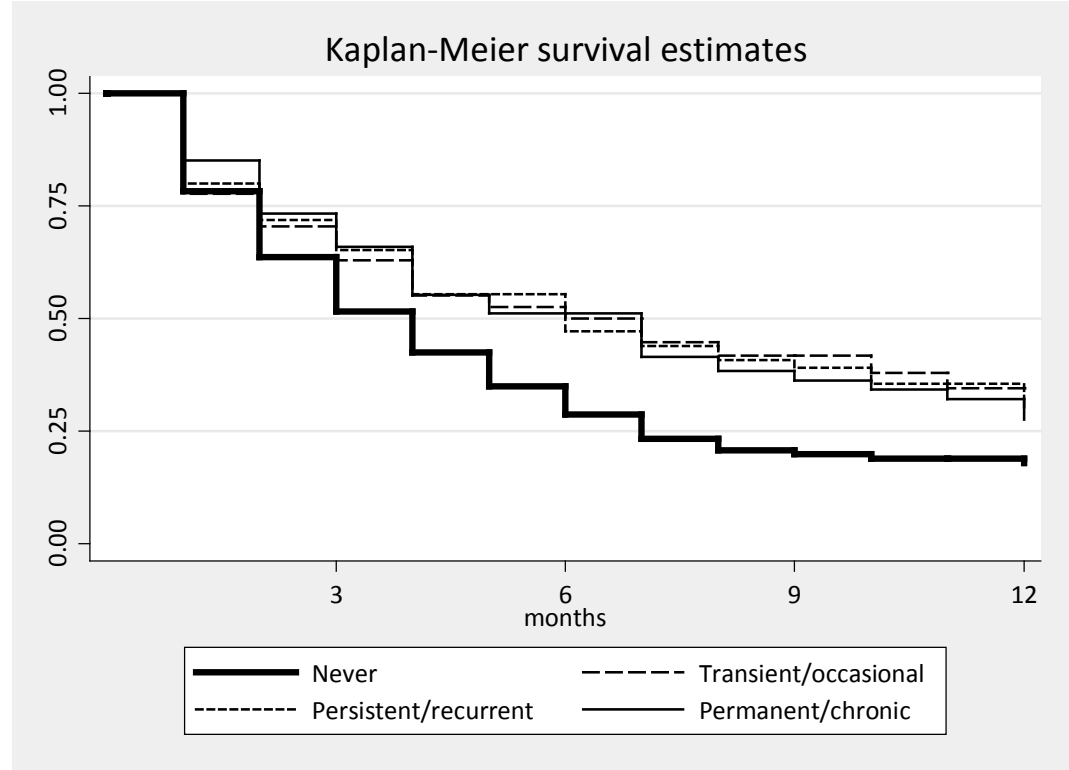


Figure 7.13 Survival estimates for all unemployment spells following employment by the highest qualification obtained: males and females born in 1980-88

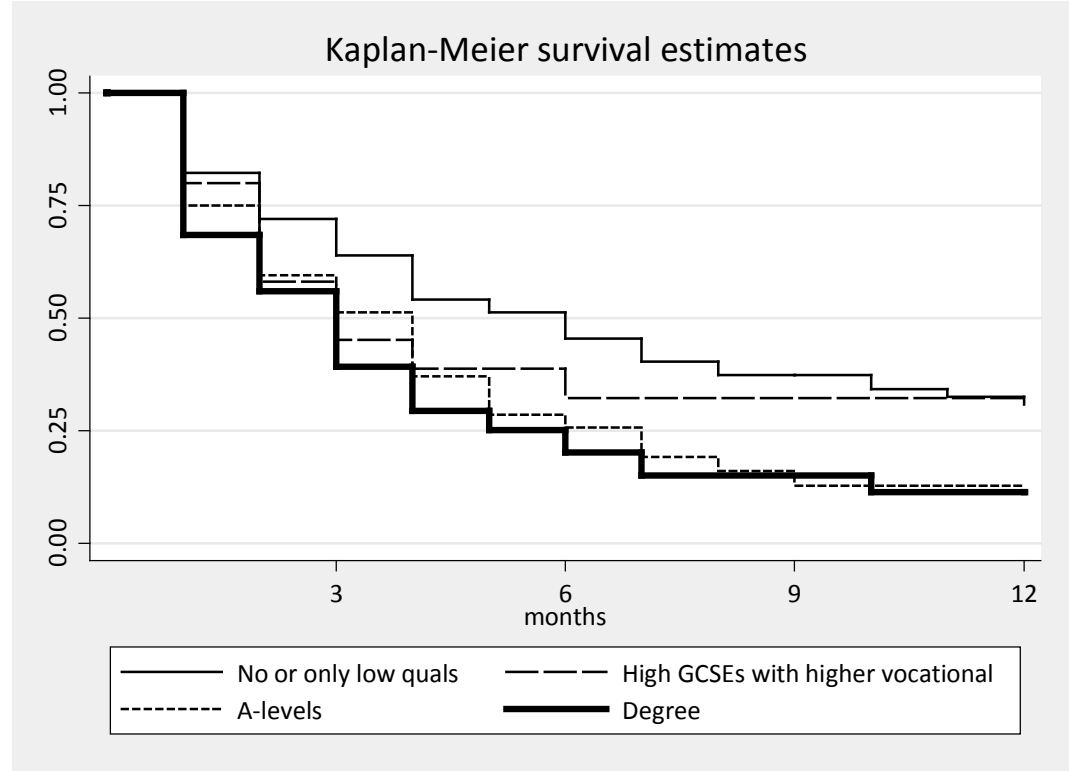


Table 7.1 Ages at which observations are available by birth cohort and survey year in the BHPS dataset

Birth cohort	Wave	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Survey year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	Birthday																
1980	Sep 1979-Aug1980	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1981	Sep 1980-Aug1981	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1982	Sep 1981-Aug1982	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1983	Sep 1982-Aug1983	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1984	Sep 1983-Aug1984	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1985	Sep 1984-Aug1985	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1986	Sep 1985-Aug1986	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1987	Sep 1986-Aug1987	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1988	Sep 1987-Aug1988	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1989	Sep 1988-Aug1989	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Table 7.2 Economic status at age 16 (%): those born in 1980-89 (BHPS)

	Males						Females					
	Emp- loyed	GST	Unemp- loyed	Inactive	Full-time edu	Total (n)	Emp- loyed	GST	Unemp- loyed	Inactive	Full-time edu	Total (n)
Unweighted												
Never	17.6	1.8	4.9	0.4	75.3	227	6.7	2.7	2.2	0.5	87.9	223
Transient/Occasional	20.9	3.0	6.0	0	70.2	67	15.2	3.0	1.5	1.5	78.8	66
Persistent/Recurrent	30.3	0.8	7.6	1.7	59.7	119	19.9	3.7	5.2	1.5	69.9	136
Permanent/Chronic	21.9	6.3	23.4	0	48.4	64	16.3	0	16.3	0	67.4	49
All	21.8	2.3	8.2	0.6	67.1	477	12.7	2.7	4.4	0.8	79.3	474
Weighted												
Never	12.9	0.9	4.1	0	81.7	155	5.4	2.1	2.2	0.4	90.1	161
Transient/Occasional	17.7	0.0	1.5	0.0	80.8	46	11.2	3	1.4	1.4	83.1	47
Persistent/Recurrent	27.4	0.0	5.0	1.9	65.7	84	20.2	4.2	3.7	1.9	70.0	126
Permanent/Chronic	14.6	3.7	19.5	0.0	62.3	47	18.4	0	17.3	0.0	64.2	34
All	17.4	1.0	6.2	0.7	74.8	332	12.4	2.7	4.0	1.0	80.0	369
Unweighted												
No GCSEs	28.3	5.0	23.3	0	43.3	60	23.9	6.5	15.2	2.2	52.2	46
Low GCSEs	35.8	4.2	12.6	0.9	46.5	215	21.2	3.9	9.0	2.6	63.5	156
High GCSEs	9.3	0.8	1.2	0.8	87.9	257	8.2	1.3	0.3	0.3	89.9	318
All	22.2	2.6	8.3	0.8	66.2	532	13.5	2.5	4.2	1.2	78.7	520
Weighted												
No GCSEs	26.8	0.0	10.1	0	63.1	35	24.4	8.5	13.0	4.9	49.2	31
Low GCSEs	29.4	2.6	12.2	1.2	54.6	130	19.3	5	10.2	2.6	63.1	121
High GCSEs	8.1	0.4	0.8	0.7	90.2	194	7.7	0.6	0.3	0.2	91.2	247
All	17.6	1.1	5.8	0.8	74.7	359	12.6	2	4.3	1.3	79.4	399

Notes: GST stands for Government Supported Training. The weighted distributions are based on those who remain in Wave 16 (the latest wave used in this chapter), and the longitudinal weight (PLEWGHT) is used.

Table 7.3 Economic status upon leaving full-time education (%): those born in 1980-88 (BHPS)

	Males					Females				
	Employed	GST	Unemployed	Inactive	Total (n)	Employed	GST	Unemployed	Inactive	Total (n)
Unweighted										
Never	75.4	1.9	17.4	5.3	207	79.1	0.5	12.6	7.8	206
Transient/Occasional	68.3	1.6	25.4	4.8	63	71.7	0.0	22.6	5.7	53
Persistent/Recurrent	75.7	1.0	19.4	3.9	103	77.7	0.9	15.2	6.3	112
Permanent/Chronic	46.8	6.5	40.3	6.5	62	61.7	0.0	36.2	2.1	47
All	70.3	2.3	22.3	5.1	435	75.8	0.5	17.2	6.5	418
Weighted										
Never	75.1	2.8	18.7	3.4	137	73.6	0.6	15.6	10.3	147
Transient/Occasional	76.4	0	19.4	4.2	41	66.7	0	25.4	7.9	38
Persistent/Recurrent	76.5	0	20.1	3.4	68	76.3	2.0	12.9	8.8	101
Permanent/Chronic	46.0	5.6	38.8	9.7	45	50.0	0	46.7	3.3	32
All	71.1	2.2	22.2	4.5	292	71.2	0.9	19.1	8.8	319
Unweighted										
No or low GCSEs	58.2	3.8	33.2	4.9	184	67.2	0.8	27.1	4.9	122
High GCSEs	83.8	1.0	11.4	3.8	105	78.5	0	16.2	5.4	130
A-levels/Degree	74.6	0	17.9	7.5	134	80.5	0	9.4	10.1	149
All	69.7	1.9	22.9	5.4	423	75.8	0.3	17.0	7.0	401
Weighted										
No or low GCSEs	60.0	5.4	31.6	2.9	98	61.8	2.2	30.0	6.0	93
High GCSEs	83.5	0	12.8	3.7	75	72.3	0	17.9	9.8	94
A-levels/Degree	75.0	0	19.2	5.8	104	77.9	0	11.8	10.4	118
All	72.0	1.9	21.9	4.2	278	71.3	0.7	19.2	8.9	305

Notes: GST stands for Government Supported Training. The weighted distributions are based on those who remain in Wave 16 (the latest wave used in this chapter), and the longitudinal weight (PLEWGHT) is used.

Table 7.4 Multinomial logit models for economic status at ages 16 [1]: males and females (BHPS)

	(1) 1980-89 cohort	(2) 1980-89 cohort	(3) 1980-89 cohort	(4) 1982-89 cohort	(5) 1982-89 cohort	(6) 1982-89 cohort
Unemployed vs. In full-time education						
Poverty 6-10				1.010** (0.373)	1.048* (0.466)	0.916+ (0.499)
Poverty 11-13	0.292 (0.299)	0.161 (0.342)	0.120 (0.347)	-0.040 (0.344)	-0.138 (0.408)	-0.235 (0.434)
Poverty 14-16	0.861** (0.287)	0.489 (0.339)	0.212 (0.345)	0.458 (0.376)	-0.073 (0.450)	-0.229 (0.448)
No GCSEs			Ref			Ref
Low GCSEs			-0.239 (0.378)			-0.067 (0.528)
High GCSEs			-2.546** (0.497)			-2.423** (0.641)
Mother below O-levels		Ref	Ref		Ref	Ref
Mother O-levels		-1.217** (0.356)	-0.900* (0.401)		-1.034* (0.461)	-0.590 (0.536)
Mother A-levels/Degree		-2.473** (0.749)	-2.025** (0.758)		-2.057* (0.800)	-1.414+ (0.820)
Unemployed vs. In employment						
Poverty 6-10				0.335 (0.434)	0.337 (0.529)	0.331 (0.540)
Poverty 11-13	-0.481 (0.332)	-0.585 (0.375)	-0.565 (0.369)	-0.553 (0.416)	-0.631 (0.466)	-0.670 (0.474)
Poverty 14-16	0.847** (0.326)	0.776* (0.381)	0.652+ (0.376)	0.789+ (0.412)	0.517 (0.483)	0.417 (0.470)
No GCSEs			Ref			Ref
Low GCSEs			-0.361 (0.416)			-0.120 (0.550)
High GCSEs			-1.037+ (0.548)			-0.906 (0.677)
Mother below O-levels		Ref	Ref		Ref	Ref
Mother O-levels		-0.483 (0.417)	-0.382 (0.427)		-0.248 (0.507)	-0.091 (0.539)
Mother A-levels/Degree		-0.875 (0.780)	-0.687 (0.776)		-0.500 (0.824)	-0.279 (0.838)
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	918	726	721	695	575	570
Log likelihood	-651.7	-481.2	-430.0	-486.2	-373.1	-333.9

Notes: Robust standard errors clustered at the household level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.5 Multinomial logit models for economic status at ages 16 [2]: males and females (BHPS)

	(1) 1980-89 cohort	(2) 1980-89 cohort	(3) 1980-89 cohort	(4) 1985-89 cohort	(5) 1985-89 cohort	(6) 1985-89 cohort
Unemployed vs. In full-time education						
Never	Ref	Ref	Ref	Ref	Ref	Ref
Transient/Occasional	0.275 (0.431)	-0.038 (0.494)	-0.218 (0.536)	0.070 (0.610)	0.064 (0.696)	-0.314 (0.804)
Persistent/Recurrent	0.711* (0.313)	0.315 (0.388)	0.119 (0.409)	0.559 (0.430)	0.259 (0.496)	-0.085 (0.574)
Permanent/Chronic	1.836** (0.335)	1.415** (0.414)	0.943* (0.442)	1.477** (0.553)	1.322* (0.667)	0.698 (0.684)
No GCSEs			Ref			Ref
Low GCSEs			-0.367 (0.380)			-0.811 (0.532)
High GCSEs			-2.647** (0.497)			-3.471** (0.733)
Mother below O-levels			Ref			Ref
Mother O-levels		-0.864* (0.376)	-0.539 (0.415)		-0.653 (0.574)	0.044 (0.600)
Mother A-levels/Degree		-2.164** (0.775)	-1.653* (0.777)		-2.266* (1.128)	-1.537 (1.098)
Unemployed vs. In employment						
Never	Ref	Ref	Ref	Ref	Ref	Ref
Transient/Occasional	-0.218 (0.487)	-0.269 (0.556)	-0.300 (0.577)	-0.338 (0.716)	-0.263 (0.816)	-0.494 (0.911)
Persistent/Recurrent	-0.302 (0.341)	-0.497 (0.430)	-0.569 (0.439)	-0.750 (0.487)	-0.890 (0.553)	-1.097+ (0.607)
Permanent/Chronic	1.003* (0.396)	0.793+ (0.466)	0.672 (0.482)	0.945 (0.679)	0.960 (0.782)	0.673 (0.799)
No GCSEs			Ref			Ref
Low GCSEs			-0.444 (0.418)			-0.394 (0.595)
High GCSEs			-1.143* (0.549)			-1.851* (0.757)
Mother below O-levels			Ref			Ref
Mother O-levels		-0.436 (0.427)	-0.295 (0.434)		-0.232 (0.623)	0.105 (0.623)
Mother A-levels/Degree		-1.143 (0.803)	-0.931 (0.809)		-1.058 (1.245)	-0.755 (1.223)
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	944	752	748	462	410	408
Log likelihood	-658.1	-500.1	-450.9	-308.9	-255.8	-229.7

Notes: Robust standard errors clustered at the household level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.6 Multinomial logit models for economic status at ages 16 [3]: males and females (BHPS)

	(1) 1980-89 cohort Below median	(2) 1980-89 cohort Below median	(3) 1980-89 cohort Below median	(4) 1980-89 cohort Bottom quartile
Unemployed vs. In full-time education				
Workless at 11-16 (1 year)	-0.023 (0.087)	-0.012 (0.108)	-0.080 (0.093)	-0.051 (0.127)
Poverty at 11-16 (1 year)	0.226** (0.083)	0.238* (0.096)	0.227** (0.086)	0.111 (0.189)
No GCSEs			Ref	Ref
Low GCSEs			-1.114** (0.398)	-1.652** (0.622)
High GCSEs			-3.188** (0.556)	-3.978** (0.811)
Mother below O-levels		Ref		
Mother O-levels		-0.468 (0.415)		
Mother A-levels/Degree		-32.436** (0.476)		
Unemployed vs. In employment				
Workless at 11-16 (1 year)	0.003 (0.097)	0.016 (0.117)	-0.032 (0.104)	-0.079 (0.135)
Poverty at 11-16 (1 year)	0.109 (0.089)	0.157 (0.110)	0.112 (0.093)	0.060 (0.209)
No GCSEs			Ref	Ref
Low GCSEs			-0.565 (0.416)	-0.877 (0.570)
High GCSEs			-1.303* (0.589)	-1.792* (0.772)
Mother below O-levels		Ref		
Mother O-levels		0.274 (0.492)		
Mother A-levels/Degree		-32.909** (0.602)		
Gender	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes
Number of subjects	446	343	443	219
Log likelihood	-378.8	-270.1	-341.8	-171.3

Notes: Robust standard errors clustered at the household level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.6 Continued

	(5)	(6)	(7)	(8)
	1980-89 cohort Below median	1980-89 cohort Below median	1980-89 cohort Below median	1980-89 cohort Bottom quartile
Unemployed vs. In full-time education				
HH labour income 11-16 (£1000)	-0.026 (0.050)	0.005 (0.062)	0.028 (0.054)	-0.059 (0.107)
HH income 11-16 (£1000)	-0.108 (0.101)	-0.184 (0.123)	-0.169 ⁺ (0.101)	0.196 (0.205)
No GCSEs			Ref	Ref
Low GCSEs			-1.105** (0.394)	-1.720** (0.633)
High GCSEs			-3.182** (0.543)	-4.100** (0.840)
Mother below O-levels		Ref		
Mother O-levels		-0.549 (0.431)		
Mother A-levels/Degree		-34.516** (0.458)		
Unemployed vs. In employment				
HH labour income 11-16 (£1000)	-0.029 (0.056)	-0.003 (0.071)	0.004 (0.060)	-0.059 (0.109)
HH income 11-16 (£1000)	0.014 (0.106)	-0.077 (0.132)	-0.023 (0.112)	0.176 (0.215)
No GCSEs			Ref	Ref
Low GCSEs			-0.566 (0.412)	-0.888 (0.576)
High GCSEs			-1.296* (0.577)	-1.822* (0.794)
Mother below O-levels		Ref		
Mother O-levels		0.181 (0.504)		
Mother A-levels/Degree		-32.993** (0.582)		
Gender	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes
Number of subjects	446	343	443	219
Log likelihood	-381.3	-271.4	-343.7	-171.5

Notes: Robust standard errors clustered at the household level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.7 Logit models for unemployment upon leaving full-time education [1]: males and females (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1982-88 cohort	(5) 1982-88 cohort	(6) 1982-88 cohort
Poverty 6-10				0.500 ⁺ (0.280)	0.438 (0.314)	0.418 (0.292)
Poverty 11-13	0.239 (0.216)	0.057 (0.253)	0.077 (0.240)	0.006 (0.284)	-0.211 (0.321)	-0.194 (0.312)
Poverty 14-16	0.506* (0.224)	0.528* (0.260)	0.321 (0.245)	0.546* (0.276)	0.621 ⁺ (0.323)	0.402 (0.284)
No or low GCSEs			Ref			Ref
High GCSEs			-1.132** (0.254)			-1.110** (0.290)
A-levels/Degree			-1.191** (0.262)			-1.208** (0.315)
Mother's education	No	Yes	No	No	Yes	No
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	784	608	676	576	467	492
Log likelihood	-405.8	-304.6	-332.0	-284.2	-223.0	-232.2

Notes: Robust standard errors clustered at the household level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.8 Logit models for unemployment upon leaving full-time education [2]: males and females (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1982-88 cohort	(5) 1982-88 cohort	(6) 1982-88 cohort
Never	Ref	Ref	Ref	Ref	Ref	Ref
Transient/Occasional	0.548* (0.278)	0.363 (0.320)	0.354 (0.311)	0.628 ⁺ (0.354)	0.495 (0.398)	0.373 (0.393)
Persistent/Recurrent	0.261 (0.235)	0.039 (0.275)	-0.144 (0.264)	0.456 ⁺ (0.264)	0.219 (0.305)	-0.077 (0.287)
Permanent/Chronic	1.397** (0.269)	1.401** (0.308)	1.141** (0.314)	1.562** (0.310)	1.525** (0.354)	1.267** (0.358)
No or low GCSEs			Ref			Ref
High GCSEs			-1.071** (0.252)			-1.055** (0.286)
A-levels/Degree			-1.132** (0.259)			-1.171** (0.304)
Mother's education	No	Yes	No	No	Yes	No
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	804	628	690	609	496	517
Log likelihood	-402.9	-303.1	-329.8	-291.8	-228.4	-238.2

Notes: Robust standard errors clustered at the household level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.9 Logit models for unemployment upon leaving full-time education [3]: males and females (BHPS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile
Workless at 11-16 (1 year)	0.153 [*] (0.069)	0.148 ⁺ (0.082)	0.169 [*] (0.084)	0.224 [*] (0.113)				
Poverty at 11-16 (1 year)	0.110 ⁺ (0.064)	0.084 (0.077)	0.078 (0.077)	0.135 (0.179)				
HH labour income at 11-16 (£1000)					-0.102 [*] (0.044)	-0.064 (0.053)	-0.092 ⁺ (0.051)	-0.249 ^{**} (0.094)
HH income at 11-16 (£1000)					0.031 (0.082)	-0.001 (0.095)	0.038 (0.101)	0.020 (0.180)
No or low GCSEs			Ref	Ref			Ref	Ref
High GCSEs			-1.407 ^{**} (0.365)	-1.624 ^{**} (0.559)			-1.352 ^{**} (0.358)	-1.649 ^{**} (0.545)
A-levels/Degree			-1.409 ^{**} (0.417)	-2.072 ^{**} (0.654)			-1.335 ^{**} (0.415)	-2.076 ^{**} (0.644)
Mother below O-levels		Ref				Ref		
Mother O-levels		-0.402 (0.330)				-0.472 (0.330)		
Mother A-levels/Degree		-1.228 ⁺ (0.686)				-1.314 ⁺ (0.677)		
Gender	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	420	323	349	165	420	323	349	165
Log likelihood	-228.5	-170.4	-166.9	-81.1	-231.0	-172.6	-168.6	-80.4

Notes: Robust standard errors clustered at the household level in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.10 Cox proportional hazard models for the exit from unemployment immediately after leaving full-time education [1]: males and females (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1982-88 cohort	(5) 1982-88 cohort	(6) 1982-88 cohort
Poverty 6-10				-0.174 (0.284)	0.029 (0.329)	-0.335 (0.290)
Poverty 11-13	0.055 (0.192)	0.096 (0.240)	0.028 (0.226)	0.271 (0.293)	0.173 (0.378)	0.149 (0.322)
Poverty 14-16	-0.528** (0.194)	-0.524* (0.237)	-0.355+ (0.209)	-0.569* (0.257)	-0.615+ (0.335)	-0.242 (0.289)
No or low GCSEs			Ref			Ref
High GCSEs			0.057 (0.233)			-0.083 (0.284)
A-levels/Degree			0.481+ (0.266)			0.306 (0.282)
Mother's education	No	Yes	No	No	Yes	No
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	200	146	170	139	108	118
Number of events	147	106	131	97	76	88
Log likelihood	-650.4	-437.3	-561.6	-397.0	-293.9	-347.4

Notes: Robust standard errors clustered at the household level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.11 Cox proportional hazard models for the exit from unemployment immediately after leaving full-time education [2]: males and females (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1982-88 cohort	(5) 1982-88 cohort	(6) 1982-88 cohort
Never	Ref	Ref	Ref	Ref	Ref	Ref
Transient/Occasional	-0.422+ (0.242)	-0.466 (0.346)	-0.272 (0.256)	-0.396 (0.342)	-0.296 (0.406)	-0.155 (0.374)
Persistent/Recurrent	-0.094 (0.258)	-0.039 (0.301)	0.345 (0.281)	-0.181 (0.276)	-0.049 (0.311)	0.312 (0.316)
Permanent/Chronic	-0.580** (0.207)	-0.575* (0.229)	-0.420 (0.264)	-0.508* (0.244)	-0.576* (0.285)	-0.345 (0.318)
No or low GCSEs			Ref			Ref
High GCSEs			-0.020 (0.240)			-0.005 (0.289)
A-levels/Degree			0.580* (0.275)			0.600+ (0.308)
Mother's education	No	Yes	No	No	Yes	No
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	201	148	172	143	111	123
Number of events	147	107	131	99	77	90
Log likelihood	-650.2	-441.7	-559.8	-407.6	-299.4	-356.2

Notes: Robust standard errors clustered at the household level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.12 Cox proportional hazard models for the exit from unemployment immediately after leaving full-time education [3]: males and females (BHPS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile
Workless at 11-16 (1 year)	0.041 (0.073)	0.032 (0.083)	0.049 (0.081)	-0.016 (0.127)				
Poverty at 11-16 (1 year)	-0.114 (0.070)	-0.092 (0.082)	-0.102 (0.075)	-0.044 (0.155)				
HH labour income at 11-16 (£1000)					-0.009 (0.045)	-0.046 (0.062)	-0.012 (0.056)	0.107 (0.077)
HH income at 11-16 (£1000)					0.085 (0.092)	0.111 (0.120)	0.087 (0.121)	-0.008 (0.166)
No or low GCSEs			Ref	Ref			Ref	
High GCSEs			0.152 (0.288)	0.435 (0.404)			0.160 (0.298)	
A-levels/Degree			1.115* (0.497)	0.728 (0.961)			1.150* (0.498)	
Mother below O-levels		Ref				Ref		
Mother O-levels		0.290 (0.385)				0.445 (0.391)		
Mother A-levels/Degree		-0.929 (0.761)				-0.920 (0.818)		
Gender	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	124	90	97	52	124	90	97	69
Number of events	87	64	72	38	87	64	72	49
Log likelihood	-346.1	-235.0	-267.5	-114.6	-346.9	-235.3	-267.9	-162.5

Notes: Robust standard errors clustered at the household level in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.13 Cox proportional hazard models for the onset of unemployment following employment spells [1]: males (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1982-88 cohort
Poverty 6-10				0.296 (0.317)
Poverty 11-13	0.183 (0.203)	0.184 (0.235)	0.089 (0.211)	0.037 (0.323)
Poverty 14-16	0.532** (0.200)	0.469* (0.227)	0.353 (0.228)	0.205 (0.284)
0/1. No or low quals			Ref	
2. Low GCSEs with higher Voc			0.211 (0.252)	
3. High GCSEs with no or low Voc			-1.255** (0.353)	
4. High GCSEs with higher Voc			-0.459 (0.387)	
5. A-levels			-0.565* (0.274)	
6. Degree			-0.356 (0.507)	
Mother's education	No	Yes	No	No
Birth year	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	600	482	514	414
Number of events	174	126	124	99
Log likelihood	-833.2	-580.6	-570.8	-444.4

Notes: Robust standard errors clustered at the household and sequence level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.14 Cox proportional hazard models for the onset of unemployment following employment spells [2]: males (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1980-88 cohort	(5) 1980-88 cohort
Never	Ref	Ref	Ref	Ref	Ref
Transient/Occasional	0.316 (0.290)	0.094 (0.336)	0.116 (0.310)	0.124 (0.287)	0.128 (0.280)
Persistent/Recurrent	0.142 (0.234)	0.183 (0.261)	-0.135 (0.298)	0.017 (0.304)	-0.028 (0.292)
Permanent/Chronic	1.162** (0.198)	1.172** (0.232)	0.933** (0.249)	0.910** (0.248)	0.830** (0.210)
0/1. No or low quals			Ref	Ref	Ref
2. Low GCSEs with higher Voc			0.099 (0.257)	0.193 (0.283)	0.114 (0.241)
3. High GCSEs with no or low Voc			-1.170** (0.357)	-1.114** (0.336)	-1.103** (0.324)
4. High GCSEs with higher Voc			-0.458 (0.359)	-0.525 (0.381)	-0.463 (0.367)
5. A-levels			-0.486+ (0.263)	-0.292 (0.272)	-0.244 (0.272)
6. Degree			-0.266 (0.502)	-0.018 (0.518)	0.001 (0.514)
Unemployment after edu 0				Ref	
Unemployment after edu 1-3				1.066** (0.227)	
Unemployment after edu 4+				1.317** (0.314)	
Unemployment ever 0					Ref
Unemployment ever 1-6					1.269** (0.223)
Unemployment ever 7+					1.491** (0.382)
Mother's education	No	Yes	No	No	No
Birth year	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes
Number of subjects	607	491	520	520	520
Number of events	176	130	124	124	124
Log likelihood	-835.2	-594.3	-565.4	-557.0	-555.4

Notes: Robust standard errors clustered at the household and sequence level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.15 Cox proportional hazard models for the onset of unemployment following employment spells [3]: males (BHPS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile
Workless at 11-16 (1 year)	0.047 (0.064)	-0.002 (0.081)	0.060 (0.069)	0.088 (0.091)				
Poverty at 11-16 (1 year)	0.205** (0.075)	0.260** (0.089)	0.248** (0.080)	0.140 (0.130)				
HH labour income at 11-16 (£1000)					-0.120** (0.044)	-0.056 (0.058)	-0.040 (0.053)	-0.051 (0.086)
HH income at 11-16 (£1000)					-0.027 (0.082)	-0.150 (0.110)	-0.203+ (0.110)	-0.038 (0.178)
No or low GCSEs			Ref	Ref			Ref	Ref
High GCSEs			-1.117* (0.461)	-1.303* (0.616)			-1.056* (0.462)	-1.309* (0.581)
A-levels/Degree			-0.676* (0.339)	-0.496 (0.340)			-0.656* (0.332)	-0.398 (0.370)
Mother below O-levels		Ref				Ref		
Mother O-levels		-0.221 (0.250)				-0.218 (0.241)		
Mother A-levels/Degree		0.057 (0.463)				-0.008 (0.397)		
Birth year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	314	257	248	131	314	257	248	131
Number of events	107	78	69	54	107	78	69	54
Log likelihood	-437.4	-303.7	-262.5	-166.6	-437.3	-305.3	-264.9	-168.2

Notes: Robust standard errors clustered at the household and sequence level in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.16 Cox proportional hazard models for the onset of unemployment following employment spells [1]: females (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1982-88 cohort	(5) 1982-88 cohort	(6) 1982-88 cohort
Poverty 6-10				0.595 ⁺ (0.309)	0.854 ^{**} (0.321)	0.455 (0.326)
Poverty 11-13	0.456 [*] (0.229)	0.052 (0.255)	0.025 (0.284)	0.209 (0.279)	-0.115 (0.278)	-0.074 (0.345)
Poverty 14-16	0.282 (0.232)	0.248 (0.259)	0.366 (0.278)	0.047 (0.271)	-0.084 (0.291)	0.115 (0.329)
0/1. No or low quals			Ref			Ref
2. Low GCSEs with higher Voc			-0.060 (0.355)			-0.316 (0.528)
3. High GCSEs with no or low Voc			-0.610 [*] (0.259)			-0.685 [*] (0.300)
4. High GCSEs with higher Voc			-1.133 [*] (0.483)			-1.378 [*] (0.678)
5. A-levels			-1.305 ^{**} (0.332)			-1.208 ^{**} (0.417)
6. Degree			-1.390 ^{**} (0.489)			-0.792 (0.584)
Mother's education	No	Yes	No	No	Yes	No
Birth year	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	574	409	530	401	312	368
Number of events	121	83	102	85	64	71
Log likelihood	-603.2	-375.4	-482.7	-393.5	-273.0	-315.0

Notes: Robust standard errors clustered at the household and sequence level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.17 Cox proportional hazard models for the onset of unemployment following employment spells [2]: females (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1980-88 cohort	(5) 1980-88 cohort	(6) 1980-88 cohort
Never	Ref	Ref	Ref	Ref	Ref	Ref
Transient/Occasional	0.562 ⁺ (0.305)	0.435 (0.367)	0.310 (0.310)	0.267 (0.323)	0.316 (0.317)	0.336 (0.320)
Persistent/Recurrent	0.294 (0.290)	-0.140 (0.319)	0.226 (0.291)	0.236 (0.294)	0.203 (0.271)	0.224 (0.270)
Permanent/Chronic	1.028** (0.251)	0.721** (0.264)	0.710* (0.290)	0.651* (0.290)	0.572 ⁺ (0.293)	0.668* (0.291)
0/1. No or low quals			Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc			-0.089 (0.347)	-0.325 (0.329)	-0.382 (0.344)	-0.360 (0.345)
3. High GCSEs with no or low Voc			-0.730** (0.257)	-0.731** (0.255)	-0.696** (0.257)	-0.658* (0.258)
4. High GCSEs with higher Voc			-1.343** (0.465)	-1.367** (0.470)	-1.369** (0.465)	-1.443** (0.473)
5. A-levels			-1.332** (0.321)	-1.301** (0.323)	-1.164** (0.311)	-1.182** (0.311)
6. Degree			-1.409** (0.498)	-1.452** (0.502)	-1.349** (0.494)	-1.367** (0.491)
Unemployment after edu 0				Ref		
Unemployment after edu 1-3				0.939* (0.448)		
Unemployment after edu 4+				1.149 ⁺ (0.592)		
Unemployment ever 0					Ref	Ref
Unemployment ever 1-6					1.162** (0.358)	1.174** (0.366)
Unemployment ever 7+					1.547* (0.607)	1.550* (0.637)
Having a child						-0.570 (0.355)
Mother's education	No	Yes	Yes	No	No	No
Birth year	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	586	421	542	542	542	542
Number of events	120	83	101	101	101	101
Log likelihood	-597.4	-374.0	-477.4	-475.2	-471.2	-470.2

Notes: Robust standard errors clustered at the household and sequence level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.18 Cox proportional hazard models for the onset of unemployment following employment spells [3]: females (BHPS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile
Workless at 11-16 (1 year)	-0.012 (0.074)	-0.013 (0.085)	-0.079 (0.097)	-0.085 (0.110)				
Poverty at 11-16 (1 year)	0.187** (0.062)	0.155* (0.075)	0.150* (0.071)	0.316* (0.131)				
HH labour income at 11-16 (£1000)					-0.052 (0.045)	0.027 (0.052)	-0.048 (0.050)	-0.111 (0.098)
HH income at 11-16 (£1000)					-0.079 (0.082)	-0.170 ⁺ (0.096)	-0.011 (0.099)	-0.182 (0.168)
No or low GCSEs			Ref	Ref			Ref	Ref
High GCSEs			-0.717* (0.307)	-0.856* (0.396)			-0.743* (0.317)	-0.859* (0.392)
A-levels/Degree			-1.368** (0.427)	-2.059** (0.596)			-1.306** (0.414)	-1.700** (0.613)
Mother below O-levels		Ref				Ref		
Mother O-levels		0.179 (0.394)				0.071 (0.394)		
Mother A-levels/Degree		-1.194 (1.144)				-1.265 (1.169)		
Birth year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	302	197	266	129	302	197	266	129
Number of events	67	40	53	29	67	40	53	29
Log likelihood	-290.4	-152.9	-213.6	-88.1	-291.7	-153.4	-214.4	-88.4

Notes: Robust standard errors clustered at the household and sequence level in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.19 Cox proportional hazard models for the onset of non-employment following employment spells [1]: females (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1982-88 cohort
Poverty 6-10				0.366 (0.281)
Poverty 11-13	0.268 (0.209)	0.041 (0.257)	-0.032 (0.247)	0.262 (0.278)
Poverty 14-16	0.401 ⁺ (0.210)	0.278 (0.269)	0.437 ⁺ (0.255)	0.084 (0.253)
0/1. No or low quals			Ref	
2. Low GCSEs with higher Voc			-0.289 (0.335)	
3. High GCSEs with no or low Voc			-0.502 [*] (0.236)	
4. High GCSEs with higher Voc			-1.018 [*] (0.417)	
5. A-levels			-0.771 ^{**} (0.262)	
6. Degree			-0.605 (0.370)	
Mother's education	No	Yes	Yes	No
Birth year	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	574	409	530	401
Number of events	177	108	148	114
Log likelihood	-861.7	-478.7	-701.6	-519.0

Notes: Robust standard errors clustered at the household and sequence level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.20 Cox proportional hazard models for the onset of non-employment following employment spells [2]: females (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1980-88 cohort	(5) 1980-88 cohort	(6) 1980-88 cohort
Never	Ref	Ref	Ref	Ref	Ref	Ref
Transient/Occasional	0.591 [*] (0.230)	0.450 (0.362)	0.380 (0.265)	0.362 (0.273)	0.401 (0.275)	0.364 (0.270)
Persistent/Recurrent	0.326 (0.226)	0.001 (0.269)	0.276 (0.239)	0.292 (0.242)	0.267 (0.227)	0.210 (0.216)
Permanent/Chronic	0.941 ^{**} (0.205)	0.649 ^{**} (0.232)	0.692 ^{**} (0.236)	0.684 ^{**} (0.232)	0.584 [*] (0.239)	0.384 (0.279)
0/1. No or low quals			Ref	Ref	Ref	Ref
2. Low GCSEs with higher Voc			-0.208 (0.299)	-0.369 (0.287)	-0.458 (0.302)	-0.580 ⁺ (0.319)
3. High GCSEs with no or low Voc			-0.557 [*] (0.230)	-0.560 [*] (0.230)	-0.532 [*] (0.233)	-0.594 ^{**} (0.230)
4. High GCSEs with higher Voc			-1.183 ^{**} (0.398)	-1.208 ^{**} (0.403)	-1.198 ^{**} (0.394)	-1.021 [*] (0.409)
5. A-levels			-0.793 ^{**} (0.260)	-0.768 ^{**} (0.260)	-0.668 ^{**} (0.249)	-0.621 [*] (0.249)
6. Degree			-0.570 (0.366)	-0.579 (0.370)	-0.513 (0.363)	-0.407 (0.375)
Unemployment after edu 0				Ref		
Unemployment after edu 1-3				0.867 ^{**} (0.319)		
Unemployment after edu 4+				0.740 (0.638)		
Unemployment ever 0					Ref	Ref
Unemployment ever 1-6					0.902 ^{**} (0.314)	0.892 ^{**} (0.304)
Unemployment ever 7+					1.499 ^{**} (0.511)	1.481 ^{**} (0.482)
Having a child						1.009 [*] (0.235)
Mother's education	No	Yes	No	No	No	No
Birth year	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	586	421	542	542	542	542
Number of events	178	110	151	151	151	151
Log likelihood	-866.6	-490.5	-715.1	-713.3	-708.6	-700.3

Notes: Robust standard errors clustered at the household and sequence level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.21 Cox proportional hazard models for the onset of non-employment following employment spells [3]: females (BHPS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile
Workless at 11-16 (1 year)	-0.050 (0.060)	-0.040 (0.081)	-0.083 (0.075)	-0.107 (0.088)				
Poverty at 11-16 (1 year)	0.150** (0.048)	0.120+ (0.065)	0.119* (0.057)	0.197* (0.096)				
HH labour income at 11-16 (£1000)					0.008 (0.037)	0.058 (0.046)	0.008 (0.042)	-0.045 (0.079)
HH income at 11-16 (£1000)					-0.138+ (0.072)	-0.190* (0.088)	-0.086 (0.081)	-0.084 (0.145)
No or low GCSEs			Ref	Ref			Ref	Ref
High GCSEs			-0.547* (0.236)	-0.490 (0.301)			-0.575* (0.243)	-0.499 (0.314)
A-levels/Degree			-0.521 (0.338)	-1.003* (0.510)			-0.511 (0.333)	-0.802 (0.511)
Mother below O-levels		Ref				Ref		
Mother O-levels		-0.171 (0.361)				-0.241 (0.367)		
Mother A-levels/Degree		-0.447 (0.637)				-0.502 (0.652)		
Birth year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	302	197	266	129	302	197	266	129
Number of events	115	60	88	46	115	60	88	46
Log likelihood	-474.9	-222.2	-352.4	-148.4	-476.4	-222.0	-353.7	-149.3

Notes: Robust standard errors clustered at the household and sequence level in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.22 Cox proportional hazard models for the exit from unemployment following employment spells [1]: males and females (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1982-88 cohort
Poverty 6-10				0.130 (0.202)
Poverty 11-13	-0.152 (0.155)	0.408* (0.168)	-0.068 (0.186)	-0.104 (0.234)
Poverty 14-16	-0.156 (0.158)	-0.313+ (0.166)	-0.144 (0.186)	-0.398+ (0.215)
0/1. No or low quals			Ref	
2. Low GCSEs with higher Voc			0.540* (0.224)	
3. High GCSEs with no or low Voc			0.193 (0.192)	
4. High GCSEs with higher Voc			0.319 (0.410)	
5. A-levels			0.604** (0.167)	
6. Degree			0.728** (0.263)	
Mother's education	No	Yes	No	No
Gender	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Number of subjects	320	223	241	196
Number of events	249	182	190	152
Log likelihood	-1043.8	-700.3	-756.0	-576.5

Notes: Robust standard errors clustered at the household and sequence level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.23 Cox proportional hazard models for the exit from unemployment following employment spells [2]: males and females (BHPS)

	(1) 1980-88 cohort	(2) 1980-88 cohort	(3) 1980-88 cohort	(4) 1980-88 cohort	(5) 1980-88 cohort
Never	Ref	Ref	Ref	Ref	Ref
Transient/Occasional	-0.338 ⁺ (0.202)	0.072 (0.214)	-0.219 (0.252)	-0.234 (0.258)	-0.190 (0.259)
Persistent/Recurrent	-0.387* (0.167)	-0.001 (0.177)	-0.276 ⁺ (0.167)	-0.298 ⁺ (0.170)	-0.258 (0.166)
Permanent/Chronic	-0.291* (0.136)	0.020 (0.161)	-0.037 (0.185)	-0.038 (0.189)	-0.004 (0.189)
0/1. No or low quals			Ref	Ref	Ref
2. Low GCSEs with higher Voc			0.559** (0.215)	0.559* (0.220)	0.632** (0.237)
3. High GCSEs with no or low Voc			0.160 (0.206)	0.152 (0.210)	0.136 (0.209)
4. High GCSEs with higher Voc			0.337 (0.391)	0.310 (0.398)	0.311 (0.392)
5. A-levels			0.602** (0.159)	0.577** (0.164)	0.569** (0.161)
6. Degree			0.729** (0.259)	0.712** (0.258)	0.741** (0.252)
Unemployment after edu 0				Ref	
Unemployment after edu 1-3				-0.170 (0.288)	
Unemployment after edu 4+				-0.113 (0.246)	
Unemployment ever 0					Ref
Unemployment ever 1-6					-0.037 (0.170)
Unemployment ever 7+					-0.504 ⁺ (0.261)
Mother's education	No	Yes	No	No	No
Gender	Yes	Yes	Yes	Yes	Yes
Birth year	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes
Number of subjects	319	225	239	239	239
Number of events	247	182	188	188	188
Log Likelihood	-1257.2	-865.7	-745.2	-745.1	-743.5

Notes: Robust standard errors clustered at the household and sequence level in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.24 Cox proportional hazard models for the exit from unemployment following employment spells [3]: males and females (BHPS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Below median	1980-88 cohort Bottom quartile
Workless at 11-16 (1 year)	-0.095*	-0.040	-0.151**	-0.165**				
	(0.046)	(0.063)	(0.046)	(0.058)				
Poverty at 11-16 (1 year)	0.069	0.055	0.128**	0.263 ⁺				
	(0.042)	(0.055)	(0.049)	(0.135)				
HH labour income at 11-16 (£1000)					0.060 ⁺	0.034	0.108*	0.066
					(0.035)	(0.046)	(0.045)	(0.081)
HH income at 11-16 (£1000)					-0.112	-0.079	-0.242**	-0.215
					(0.069)	(0.093)	(0.086)	(0.154)
No or low GCSEs			Ref	Ref			Ref	Ref
High GCSEs			0.271	0.010			0.123	-0.060
			(0.290)	(0.399)			(0.307)	(0.441)
A-levels/Degree			0.853**	0.626			0.605*	0.442
			(0.251)	(0.398)			(0.260)	(0.427)
Mother below O-levels		Ref				Ref		
Mother O-levels		0.324				0.274		
		(0.218)				(0.232)		
Mother A-levels/Degree		0.683				0.725		
		(0.482)				(0.468)		
Birth year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of subjects	196	133	133	86	196	133	133	86
Number of events	147	106	99	68	147	106	99	68
Log Likelihood	-539.0	-352.3	-335.8	-191.0	-539.5	-352.5	-336.7	-193.6

Notes: Robust standard errors clustered at the household and sequence level in parentheses. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7.25 Summary of the effects of childhood poverty and the highest qualification obtained on unemployment in early working life (odds/hazard ratios): BHPS

	Unemployment at age 16		Unemployment after leaving full-time education		Unemployment following employment		
	VS. Full-time edu	VS. Emp-loyment	Onset	Exit	Onset	Exit	
	All	All	All	All	Males	Females	All
Poverty at ages 11-13	1.0	0.6	1.1	1.0	1.1	1.0	0.9
Poverty at ages 14-16	1.3	1.9	1.4	0.7	1.4	1.4	0.9
Never	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Transient/Occasional	0.8	0.7	1.4	0.8	1.1	1.4	0.8
Persistent/Recurrent	1.1	0.6	0.9	1.4	0.9	1.3	0.8
Permanent/Chronic	2.3	2.0	3.1	0.7	2.5	2.0	1.0
Parental Worklessness at 11-16 (1 year)	0.9	1.0	1.2	1.1	1.1	0.9	0.9#
Income Poverty at 11-16 (1 year)	1.2	1.1	1.1	0.9	1.3	1.2	1.1#
HH labour income at 11-16 (£1000)	1.0	1.0	0.9	1.0	1.0	1.0	1.1#
HH income at 11-16 (£1000)	0.9	1.0	1.0	1.1	0.8	1.0	0.8#
No GCSEs	Ref	Ref	Ref	Ref			
Low GCSEs	0.7	0.6	Ref	Ref		N/A	
High GCSEs	0.1	0.3	0.3	1.0			
A-levels/Degrees	N/A		0.3	1.8			
0/1. No or only low quals					Ref	Ref	Ref
2. Low GCSEs with higher Voc					1.1	0.8	1.8
3. High GCSEs with/out lower Voc					0.3	0.5	1.2
4. High GCSEs with higher Voc		N/A			0.6	0.2	1.4
5. A-levels					0.6	0.3	1.8
6. Degree					0.8	0.2	2.1

Notes: The numbers in the cells are exponentiated coefficients estimated from the regression analyses reported in Table 7.4 to Table 7.24. The bold numbers in the shaded cells are statistically significant at the 5% level, and the bold numbers in the unshaded cells are statistically significant at the 10% level. The plain numbers in the unshaded cells are not statistically significant. The event is more likely to happen if the number is greater than 1, while it is less likely if it is smaller than 1. Therefore, smaller numbers are desirable for the onset of unemployment, while greater numbers are desirable for the exit from unemployment. The numbers with a hash symbol (#) are not robust.

Appendix to Chapter 7

Table A7.1. Net annual equivalised household income during childhood by duration types of poverty

	n	Mean	S.D.	Min	Max
Those born in 1980-84					
Never	258	14969	5242	7502	42411
Transient	55	11107	2700	8007	19683
Persistent	49	8392	4550	3961	28994
Permanent	20	4768	648	3630	6172
Occasional	12	10124	2034	7495	15025
Recurrent	45	8724	3506	5498	28942
Chronic	46	6387	2087	3531	16564
Those born in 1985-89					
Never	192	15564	4763	8039	40062
Transient	39	12909	3180	9009	23181
Persistent	52	9505	2480	4861	16236
Permanent	14	4413	1374	1439	5797
Occasional	28	11011	2049	8185	17241
Recurrent	109	8552	2216	5214	20335
Chronic	34	6154	766	4448	8043

Table A7.2 Descriptive statistics on poverty, worklessness and income: BHPS

	n	Poverty frequency (%)		Worklessness frequency (%)		Net HH income (£)		Gross HH labour income (£)		Gross Labour / Net HH (%)		HH benefit income (£)		HH benefit / Net HH (%)	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Those born in 1980-84															
Types of poverty															
Permanent/chronic	66	84	16	47	35	5896	1924	2479	3249	32	28	3641	1389	69	26
Persistent/recurrent	94	48	23	16	23	8551	4065	7330	7290	71	36	2255	1636	34	26
Transient/occasional	67	14	10	5	16	10931	2607	10936	5243	94	30	1681	1741	19	19
Never	258	0	0	2	10	14969	5242	18013	8030	118	21	889	1016	7	10
Income quartile															
1	130	74	23	35	33	6002	1102	3027	2372	43	33	3150	1439	58	28
2	132	16	19	8	21	9221	818	8502	3216	90	33	1819	1942	21	22
3	135	4	11	1	6	12385	1027	14364	2404	115	16	882	747	8	6
Top	135	2	8	0	3	19228	5000	24116	8071	123	18	770	716	5	4
Those born in 1985-89															
Types of poverty															
Permanent/chronic	48	89	11	46	33	5646	1254	1711	1735	26	25	4005	1522	73	22
Persistent/recurrent	161	44	21	19	25	8860	2340	7137	4444	70	34	2688	1875	38	26
Transient/occasional	67	11	7	4	10	12116	2904	12462	4769	99	24	1703	1590	16	15
Never	192	0	0	1	5	15564	4763	18770	7143	119	16	895	644	7	6
Income quartile															
1	115	73	21	34	31	6361	1291	3159	2644	43	34	3473	1756	59	27
2	120	26	18	12	21	9286	766	8084	3069	82	32	2361	1842	29	22
3	122	5	10	2	6	12456	917	13932	2522	110	17	1224	1087	11	9
Top	122	2	6	1	3	18343	4324	22537	6554	122	13	771	392	5	3

Notes: Poverty (worklessness) frequency is shown in percentage of the number of years for which the respondent's household is observed to be poor (workless) out of the number of years for which their household income is observed. Net household (HH) income, gross HH labour income, and HH benefit income are all adjusted by household size, using the OECD scale, in which a couple household is set to one. Thus, actual net HH income for a lone-parent household with a child tends to be smaller and that for a two-parent household with a child tends to be larger than the incomes shown.

Chapter 8

Conclusions: Key Findings and Policy Implications

8.1 Introduction

Child poverty alleviation is a public policy goal, and further income redistribution might be the quickest way to achieve this. However, whether this effectively improves the future life chances of children growing up in poverty is debated, and there might be less expensive ways of doing so. Drawing on the competing models explaining intergenerational persistence of poverty, this thesis has investigated some of the links between childhood poverty and later economic outcomes in the UK. With a view to identifying the policy areas where intervention would be most helpful, it has examined the continuities and changes over time in these links and some of the mechanisms that create them, analysing longitudinal data from three cohorts born in 1958, 1970 and the 1980s. This chapter brings together the contemporary policy debates over how to confront child poverty, and discusses the policy implications of the findings.

I firstly summarise the models of intergenerational persistence of poverty, which was also reviewed in Chapter 2. Secondly, I summarise the empirical findings from Chapters 4 to 7 of this thesis and, based on the findings, examine the appropriateness of the models as a basis for the development of child poverty policies. Thirdly, I examine the implications of the findings for a range of implemented and proposed policies that are intended to reduce child poverty and to improve the future life chances of children growing up in poverty. I then discuss an agenda for future research, followed by the final conclusion.

8.2 The Models of Intergenerational Persistence of Poverty and the Relevant Policy Implications

I reviewed the four models that explain intergenerational persistence of poverty in Chapter 2: the economic model, the socio-demographic model, the welfare-dependency model and the structural/environmental model (see Section 2.2 for details and Table 2.1 for a summary). I then conducted empirical analyses in Chapters 4 to 7 with a view to testing the empirical validity of some of the assumptions on which the models' predictions and policy implications are based, although the structural/environmental model remains beyond the scope of this thesis. The models are not necessarily mutually

exclusive with regard to their explanations, but each one highlights different aspects of poverty and mechanisms generating its persistence and has different policy implications. In this section, I summarise the first three models, the assumptions embedded in each model and its relevant policy implications again.

The *economic model* suggests that intergenerational persistence of poverty occurs because of low household income leading to low investment in human capital via formal education and other routes. The intergenerational persistence associated with human capital would be stronger, if a government investment in human capital were lower, thereby making inequality in human capital development greater across household income levels, or if the earnings premiums associated with human capital were higher. Based on this model, additional public investment in education and training, and income support that is conditional on the children's participation in education or training are important policy tools. Household income could affect children's human capital development also via other routes than investment in formal education, such as the choice of residence and the consumption of healthy food, books and computers. Thus, unconditional income transfers to poor households can also be regarded as being relevant to this model.

The *socio-demographic* model, on the other hand, focuses on other aspects of poverty than low income. It argues that non-monetary parental resources, such as parental education levels, attitudes and behaviour including parenting styles, and family structure, are more responsible than household income for children's outcomes, such as early child development and teenage attitudes and behaviour. These outcomes will increase their risk of falling into poverty again as adults. This model, therefore, addresses the provision of parenting and informational support to poor parents, and the measures for reducing teenage child bearing and risky behaviour such as drug use and criminal involvement.

These two models both reinforce the case for human capital development, against the background of the 'skill-based economy' in which not only cognitive skills but also social and learning skills are valued in the labour market. Children's life stages and the domains that used to be taken care of solely by the family and parents, such as pre-school and out-of-school activities, are increasingly being regarded as important in fostering the skills formation of children and young people (Brown, 2001; Heckman and Lochner, 2000). Therefore, mechanisms that are predominantly explained by the socio-

demographic model suggest support for policies that are designed to improve the human capital of disadvantaged children.

While the socio-demographic model stresses the importance of the provision of in-kind support, it does not directly oppose income redistribution. However, the *welfare-dependency* model does. Advocates of the model claim that out-of-work benefits disincentivise the poor from working, allowing them to remain in poverty long term. They also argue that the parents' benefit receipt has a negative impact on developing the work attitudes of their children. Therefore, based on this model, income redistribution via public expenditure on out-of-work benefits should be limited.

The Coalition Government has declared that it will maintain the goal of ending child poverty by 2020 which was first pledged by the previous Labour Government, but the two sides disagree over certain aspects of the government's role in achieving this goal. The Conservatives criticise Labour's 'big' government approach to poverty, and argue that the government's role should be limited to enhancing the responsibility of the family and society who, in their view, can remove the causes of poverty (Cameron, 2009). The Conservatives, influenced by the welfare-dependency model, appear strongly hostile to public expenditure on benefits, even apart from the priority given to cutting the budget deficit.

As a matter of fact, however, half of poor households with children have already someone in paid-work (DWP, 2010), and many lone parents experience multiple hardship from juggling work and child care. It is doubtful that work alone brings every family sufficient income to escape from poverty or that work always improves their well-being. Although the previous Government attempted to redistribute income to both working-poor families and families who cannot work, the amount redistributed was insufficient to hit the target of halving child poverty by 2010 (DWP, 2010). Drawing on a range of evidence, Hirsch (2006) argues that most of those for whom the work-first approach is effective have already been raised out of poverty and, therefore, in order to help those who remain in poverty, higher taxes and further income redistribution will be required. Stewart (2009a) argues that, although the previous Government successfully reduced child poverty between 1998 and 2004 by mainly redistributing income from families without children to those with them, it seems difficult to further reduce poverty without affecting income at the top end in terms of financial resources.¹⁴⁶ If these

¹⁴⁶ Defining relative poverty as a household income below 60% of the median household income, changes in the income level at the top are not linked to changes in the relative poverty rate. Nonetheless, it may

arguments are plausible and, if the assumptions of the welfare-dependency model are incorrect, it may be problematic that the belief in the model acts as an obstacle to implementing the further income redistribution required to end child poverty.

Important to evaluate here is the validity of the assumptions that politicians and policy-makers tend to make when designing strategies to improve the future life chances of children growing up in poverty. The question is whether it would be sufficient for such strategies to rely predominantly on education policy and the public services provision directed by the socio-demographic model, by avoiding more rigorous income redistribution out of a fear of ‘welfare dependency’. Ensuring that every child is brought out of poverty through income redistribution could be regarded as a policy goal in its own right, and may not necessarily have to be justified as a means of improving children’s life chances. However, it would be useful to clarify whether this might possibly be an important means, given that income after all is only a means to human ends, however important a means it may be.

Table 8.1 summarises the predictions from the three models of intergenerational persistence of poverty, and each model’s general policy implications discussed so far. In addition, it points out each model’s relevant policy areas, followed by relevant research findings from this thesis which I summarise in more detail below. The relevant policy areas for the economic model include higher and further education and school education,¹⁴⁷ on the one hand, and income transfers and employment policy for parents on the other. The former addresses breaking the mechanism by which children in poverty face a higher risk of remaining disadvantaged throughout their life course, and the latter aims at reducing child poverty.

The relevant policy areas to the socio demographic model include public services for early childhood, families and young people which address breaking the mechanism, as well as tax incentives to encourage marriage which, in a conservative view, may reduce poverty (Social Justice Policy Group, 2007). This kind of marriage incentive may also be relevant to the welfare-dependency model, as lone parents are more likely to receive benefits long term. However, the main policy area relevant to the

hardly be politically sustained to promote income redistribution between the middle and the bottom without taxing the top. In order to generate the resources needed to reduce poverty without those in the middle feeling that they are bearing an unfair burden, those at the top may need to pay more tax.

¹⁴⁷ It is arbitrary whether to regard school education as being based on the economic model in rich countries where very few children are unable to receive school education due to parental low income. School education may often be expected to equalise educational outcomes between children whose parental educational backgrounds are diverse, in which sense it is also relevant to the socio-demographic model.

welfare dependency model, with regards to the direction of the Coalition Government, is to ensure that in-work income is clearly high enough compared with out-of work benefits in order to improve work incentives (HM Government, 2010). This could be done either by raising tax credits for those in work or by cutting out-of-work benefits, but the latter might be a realistic option, given that the advocates of the welfare-dependency models also seek to create a smaller government.

8.3 Recap of the Empirical Research Questions and Findings

In this section, I review the empirical research questions investigated in response to the issues outlined above (Subsection 8.3.1). I then provide a short answer to each of the four questions that were raised at the end of Chapter 2, followed by a more extensive summary of the findings (Subsection 8.3.2). Based on the findings, I evaluate which explanations of the models of intergenerational persistence of poverty are supported (Subsection 8.3.3).

8.3.1 Empirical Research Questions

I firstly investigated whether the role of formal education increased in the intergenerational persistence of poverty over time. It is almost certain that formal education is one of the most important mechanisms for creating advantages and disadvantages in the modern economy. However, the evidence of the change in the role of education differs between previous studies on income mobility and the persistence of poverty, while leaving it ambiguous whether this is due simply to the choice of the variables. Therefore, in Chapter 4, I investigated the effect of childhood poverty on adult earnings for both the 1958 and 1970 cohorts, in order to bridge the gap in the literature.

Further to analyse the effect of childhood poverty on adult earnings, as part of this remained unexplained by education and other individual and family characteristics for the younger cohort, I focused on the effect of the timing and duration of childhood poverty and a mediating factor drawing on the socio-demographic model in Chapter 5. Since it is impossible to assess the whole range of factors relevant to this model within this thesis, I selectively examined whether there is a mediating effect of teenage occupational aspirations on adult earnings.

Another attempt I made in order to investigate the residual effect of childhood poverty on later economic outcomes is the analysis of unemployment, which was

conducted in Chapters 6 and 7. As I discussed at the beginning of Chapter 6, a combination of the previous findings leads us to speculate that elaborating the effect of childhood poverty on later unemployment may reveal a mechanism of the intergenerational persistence of poverty that cannot completely be explained by education. In order to extend our current knowledge, I examined the different effects of childhood poverty on the onset of and the exit from unemployment, respectively, and whether each one can be explained by education by using work history data from the 1970 and 1980s cohorts respectively.

Lastly, I analysed the relative effects of parental worklessness and income poverty on children's later unemployment risks in Chapter 7. This is one way of testing the validity of the assumptions of the welfare-dependency model. Despite the importance of the empirical question, as far as I know, no research has analysed this in this way. This is presumably because it is usually difficult to obtain variables which capture parental worklessness and income poverty separately and, even if such variables are available, parental worklessness is a major cause of poverty and the strong correlation between them tends to make the analysis infeasible. However, as I demonstrated in Chapter 7, we can examine this question by focusing exclusively on lower-income households and paying attention to the fact that half of poor households contains a member who is working.

8.3.2 Empirical Findings

Q1. Has the explanatory power of education in the intergenerational persistence of poverty increased over time?

A1. The role of formal education did not increase in explaining the earnings gap in people's early thirties between the 1958 and 1970 cohorts.

As expected from the previous findings that intergenerational income mobility decreased, or intergenerational persistence of poverty increased, Chapter 4 showed that childhood poverty is more strongly negatively associated with people's earnings in their early thirties for the 1970 cohort than for the 1958 cohort (Table 4.3 and Table 4.4).¹⁴⁸

¹⁴⁸ Some sociologists (Breen and Goldthorpe, 2001; Erikson and Goldthorpe, 2007; Goldthorpe and Mills, 2008) have challenged the economic findings of the decrease in income mobility (e.g. Blanden et al., 2004), by arguing that the occupational variable may better represent permanent socio-economic status

With respect to a change over time in the role of education, the earlier economic studies have found contradicting evidence between income mobility and persistence of poverty. The role of education increased in explaining the lower income mobility (Blanden and Gregg, 2004; Blanden et al., 2005a; Blanden et al., 2007), but it remained almost the same in explaining the persistence of poverty (Blanden and Gibbons, 2006). However, the outcome variables in these two types of studies are different, with the former analysing earnings and the latter analysing non-employment. Therefore it is unclear whether the contradiction in the role of education is derived from childhood variables (income or poverty), or later outcome variables (earnings or non-employment). To clarify the role of education in the intergenerational persistence of poverty, I analysed hourly earnings as a later economic outcome.

Chapter 4 found no evidence that the role of education increased in producing the earnings gap between those who grew up in poverty and those who did not (Table 4.16). Whether or not it increased seems to depend on whether we focus on intergenerational income mobility or persistence of poverty. This suggests that the strategies for helping the most disadvantaged and the relatively disadvantaged differ. From the perspective of improving the future economic prospects of children growing up in poverty, there is a *continuing*, but not *increasing*, need to reduce educational inequality.

With respect to the earnings premium associated with a degree, I have replicated the findings which are consistent with some studies for men (Conlon, 2001a; Machin, 2003), although comparable evidence has been scarce for women (Table 4.7, Table 4.8, Table 4.13 and Table 4.14). However, what previous studies have not highlighted but my findings stress is that the incremental earnings premium for high GCSEs increased for both academically and vocationally oriented people. Ensuring greater equality in attainment in compulsory education needs to be further addressed in this respect.

One reason why the intergenerational persistence of poverty has increased over time may be that childhood poverty significantly lowers adult earnings for both genders within the 1970 cohort by about 7%, even after controlling for education, family and individual characteristics, including cognitive ability measured in early to mid childhood (ages 5 and 10) (Table 4.8 and Table 4.14). After controlling for these

than income measured over a year. Thus, it is noteworthy that this thesis, using a variable for childhood poverty created from the multiple indicators of low household income as measured at two points in time, reinforces the economic findings. Intergenerational persistence of poverty and income mobility are different phenomena from social or occupational mobility.

variables, the coefficient for childhood poverty was not significant for the 1958 cohort (Table 4.7 and Table 4.13). Although it is impossible for public policy to intervene in every transmission mechanism operating between parents and children, the differences between the cohorts suggest that some transmission mechanisms do not always have the same negative consequences and are easier to tackle. On the other hand, the similarities between the cohorts suggest which factors are harder to alleviate. From this point of view, public policy that would reduce the residual effect of childhood poverty on adult earnings, which remains only for the 1970 cohort, may be promising with regard to improving the future life chances of children growing up in poverty. The later chapters aimed to investigate this residual effect.

Q2. What are the effects of the timing and duration of childhood poverty on later earnings? Do teenage aspirations explain these effects?

A2. Poverty at ages 10 and 16 have independent and additive effects on later earnings for the 1970 cohort, after controlling for educational attainment and other individual and family characteristics, but teenage occupational aspirations cannot explain the residual effect of childhood poverty.

Chapter 5 showed that the experience of transient poverty in both mid and late childhood (at ages 10 and 16) independently decreases earnings each by 7-8% for men in the 1970 cohort, beyond educational disadvantage (Table 5.6). As the variable for poverty in early childhood was unavailable, it is unclear how far the coefficients for poverty in mid and late childhood were overestimated due to the possible effect of poverty in early childhood. However, since the previous studies have also found an independent effect of poverty in late childhood on later socioeconomic outcomes by controlling for poverty or socio-economic disadvantage in early childhood (Ermisch et al., 2001; Schoon et al., 2002), it may be reasonable to conclude that this finding suggests the independent effect of poverty in late childhood on economic outcomes. For the women in the 1970 cohort, a residual effect of childhood poverty on earnings in their early thirties was also found, but the timing effect was unclear (Table 5.8).

Chapter 5 additionally showed that the effect of poverty in each period is additive and that the more times or the longer for which they experience poverty in childhood, the lower earnings will they receive in the future. Poverty in each period is

not necessarily more harmful for those children living in persistent/recurrent poverty, but similarly harmful for those who experience transient poverty (Table 5.6).

However, the analysis failed to find that teenage occupational aspirations explain the residual effect of childhood poverty on later earnings. As there is evidence that occupational aspirations positively affect later earnings beyond actual educational attainment for both genders, raising aspirations may alleviate the intergenerational persistence of some aspects of it, such as those associated with parental social class and education. Nonetheless, based on the findings in Chapter 5, we cannot be confident that raising the teenage occupational aspirations of those growing up in poverty would surely reduce the intergenerational persistence of poverty. This finding is negative but important, given that politicians and policy makers increasingly assume that aspirations can be a policy target in order to improve the future life chances of disadvantaged children and young people (Social Exclusion Task Force, 2008). Although failing to explain why the residual effect of childhood poverty on earnings remains, Chapter 5 highlighted the issue that those who grew up in poverty may face difficulties in translating their aspirations into outcomes, rather than that poverty lowers their aspirations.

Q3. How much does childhood poverty affect the onset of and exit from unemployment in early working life?

A3. There is evidence of the varying effects of childhood poverty and educational attainment on the onset of and exit from unemployment. To highlight what is not usually made explicit by the welfare-dependency model, childhood poverty affects the onset of unemployment, even while working.

Chapters 6 and 7 investigated this question for the 1970 and the 1980s cohorts, by using work history data from the BCS and BHPS, respectively. The 1980s cohort is more relevant to contemporary children in terms of their education participation rates, but the experience of the 1970 cohort who left education during a period following an economic recession also has some implications for those who leave education after the 2008-09 recession. I focus on the similarities and differences between the two cohorts.

The similarities are as follows (Table 6.22 and Table 7.25). Childhood poverty positively and qualification attainment negatively affect the rapid onset of unemployment upon leaving full-time education and during employment for both

genders, controlling for each other and other individual and family characteristics. The striking descriptive finding was that 25% of those men who grew up in persistent/recurrent poverty left the first employment spell to become unemployed within a year, but that 75% of those who did not experience poverty in childhood remain employed after 6 years. The positive effect of childhood poverty on the onset of unemployment is stronger in magnitude than the negative effect of qualification attainment for men, and those men who grew up in long-term poverty are, on average, more disadvantaged than those with no or only low qualifications, while the opposite seems to be true for women. For the rapid exit from unemployment, the positive effect of qualification attainment generally surpasses the negative effect of childhood poverty, although childhood poverty also negatively affects the exit to a large extent for men in the 1970 cohort, and to a lesser extent for both genders in the 1980s cohort.

Poverty in late childhood generally more persistently affects the onset of and exit from unemployment than poverty in mid-childhood for both genders, although the evidence on the timing effect is weak for the 1980s cohort. For both genders, those who grew up in long-term poverty are more likely to become unemployed than others. The past experience and duration of unemployment have an effect (possibly a scarring one) on both the rapid onset of and the slow exit from later unemployment. The scale of the effect, remaining after controlling for qualification attainment, seems to be at least as great as that of the negative effect of a lack of economically meaningful qualifications (high GCSEs) for both cohorts and genders. The negative effect partly explains the effect of childhood poverty on the onset of unemployment after employment spells for men. It does not explain the effect of childhood poverty on the exit from unemployment for men, or the onset of or exit from un/non-employment for women.

The similarities across the cohorts may suggest stable patterns in the relationship between childhood poverty and unemployment in early working life in the UK, regardless of the levels of unemployment and education participation rates. The empirical investigation of the reasons why those who grew up in poverty are more likely to become unemployed while working, remaining after controlling for educational attainment, must be left for future research, but the literature reviewed in Chapter 6 suggests several possible reasons for this. Those who grew up in poverty are more likely to become unemployed, possibly because precarious employment provides them with little work experience through which to develop their non-cognitive skills, which could increase their risk of job loss. Their difficulties in making use of social

networks, newspapers and other resources for job searches could increase their risk of quitting into unemployment.

The main difference between the cohorts is that the sizes of the negative effects of past unemployment are greater for the 1980s cohort (Table 6.11 and Table 7.14, for instance). This may partly be because the characteristics of the unemployed are relatively more disadvantaged when the overall labour market conditions are better. This suggests that the long-term consequence of youth unemployment would be of concern with respect to the number of the unemployed in an economic recession, but with respect to the impact on the lives of the most disadvantaged individuals, even in an economic boom.

Q4. What is the relative strength of the effects of parental worklessness and childhood income poverty on unemployment in early working life?

A4. Parental worklessness appears to more strongly affect the greater onset of unemployment upon leaving full-time education, and the slow exit from unemployment after employment spells. However, childhood income poverty more strongly affects the rapid onset of unemployment while working.

Chapter 7, based on the analysis of the 1980s cohort, investigated which factor, parental worklessness or childhood income poverty, (more strongly) affects unemployment in early working life, by limiting the sample to include only those from households with a below-median income. The answer depends on the events measured. Parental worklessness experienced between the ages of 11 and 16, rather than income poverty, appears to more strongly affect the greater onset of unemployment upon leaving full-time education, and the slow exit from unemployment after employment spells, controlling for educational attainment and other variables. However, the evidence on the effect of parental worklessness on the slow exit from unemployment is not robust in Chapter 7, because it may mainly reflect the effect of mother's education, and the sample size on which the evidence is based is small (Table 7.24). On the other hand, income poverty experienced between ages 11 and 16, rather than parental worklessness, more strongly affects the rapid onset of unemployment even while working, controlling for educational attainment and other variables. It also affects unemployment at age 16 relative to staying on in full-time education.

One limitation of the analysis conducted to answer this question is that I could not control for the local labour market conditions, due to the unavailability of a time-changing variable for area of residence. If the local labour market effect cannot be ignored, the estimated relationship between parental worklessness and the children's later unemployment may be due to the fact that both the parents and children, when grown up, live in an area with few employment opportunities. Thus, the effect of parental worklessness remains to be confirmed, in addition to the point noted above. On the other hand, however, provided that the variable for parental worklessness partly represents the local labour market effect, the effect of childhood income poverty on the onset of unemployment, remaining after controlling for parental worklessness may not completely be attributed to the local labour market effect. It may be fair to say that the evidence more clearly shows that additional parental income, regardless of parental work status, could improve the economic outcomes for the children to some extent.

If the local labour market effect can be ignored, the negative effect of parental worklessness is important. However, this effect can still reflect a number of mechanisms, and does not yet bring out specific policy implications. For instance, it is unclear whether factors such as health status or characteristics (other than those controlled for in the regression models) related to their parents that stop them from working, rather than parental worklessness per se, negatively affect the later unemployment of their children.

8.3.3 Summary and Implications of the Findings for the Models of Intergenerational Persistence of Poverty

To summarise these findings from the investigation of the four questions, the negative effect of childhood poverty on later economic outcomes, such as earnings and unemployment, remains even after controlling for education, teenage occupational aspirations, and other family and individual characteristics that are often seen as the important determinants of economic outcomes. Figure 8.1 illustrates the directions of the residual effects of childhood poverty and the effects of education on earnings at age 34, and on the onset of and exit from unemployment in early working life, based on the findings from the 1970 and 1980s cohorts. The residual effect of childhood poverty was not observed for the 1958 cohort.

Overall, the size of the residual effect of childhood poverty on adult earnings is nearly as great as that of the benefit of obtaining high GCSEs, although it is much

smaller than the benefit of obtaining A-levels or a degree. Figure 8.2 and Figure 8.3 show the sizes of the residual effects of childhood poverty that can be compared with the effects of educational attainment, after controlling for each other and other variables, for earnings and unemployment outcomes, respectively. The bars shown by dotted lines indicate that these estimates are not statistically significant or robust. In terms of the effect of educational attainment on unemployment outcomes, Figure 8.3 only shows the effects of basic and intermediate academic qualifications (high GCSEs and A-levels) relative to having no or only low qualifications,¹⁴⁹ in order selectively to highlight the findings that have practical implications for the most disadvantaged. It only represents male results, as the (residual) effect of childhood poverty is greater for men than for women. Note, however, that women's earnings and employment chances are, on average, lower than those of their male counterparts, regardless of whether they grew up in poverty or not. The issue here is that it would be more cautious for child poverty policy to pay attention to the male results, to gain an idea of the scale of the problem that needs to be addressed. Also, note that the benefit of 'eradicating' poverty may well be greater than the size of the residual effect, given that it may also improve the mediating outcomes, including educational attainment.

The implications of these findings for the models of intergenerational persistence of poverty are as follows. As I indicate in the last column of Table 8.1, the findings have implications for only a limited number of explanations given within the three models.¹⁵⁰ This thesis has confirmed that the economic model offers valid explanations for the intergenerational persistence of poverty for all of the cohorts that I investigated. However, the important difference between the 1958 cohort and the 1970 and 1980s cohorts is that educational disadvantage cannot completely explain the negative impact of childhood poverty for the latter, while it mostly did for the former. Within the explanations offered by the economic model, it has become important to pay attention to the link between childhood poverty and economic outcomes through routes

¹⁴⁹ Graduates are more advantaged than those with A-levels in terms of their exit rate from unemployment, but not necessarily in terms of the onset of unemployment (Table 7.25 in Chapter 7).

¹⁵⁰ I discussed some of the reasons why the policy interventions in youth risk-taking behaviour may not necessarily be worth prioritising in reducing intergenerational persistence of poverty in Subsection 2.3.3 of Chapter 2. I also do not discuss whether a marriage incentive is a useful tool. If it works to reduce the risk of family disruption and lone parenthood, some children may be rescued from the risk of falling into poverty. However, it may be undesirable or unjustifiable for those who want to protect the freedom of partnership. In order to reduce the risk of poverty for lone-parent families, there may be alternative approaches, such as child maintenance schemes operated by the Child Support Agency, through which the non-resident parent is made responsible for paying a fair amount of the child's living costs to the parent who takes daily care of the child.

other than formal education for children and young people in the more recent cohorts. It remains unclear whether this link is generated by a causal effect of low income. However, the residual negative effect of childhood poverty is likely to reflect something beyond the factors on which the socio-economic model focuses, such as parental education, social class and lone parenthood. This thesis has failed to find evidence that raising teenage occupational aspirations in line with the socio-demographic model can offset the majority of the rest of the intergenerational persistence of poverty.

Whether the welfare-dependency model offers explanations for the link between childhood poverty and later economic outcomes is another question. In line with part of the prediction of the welfare-dependency model, parental worklessness might be associated with the risk of becoming unemployed upon leaving full-time education and unemployment duration after employment spells, although evidence on the latter is weak. As discussed at the end of the last subsection, however, it is far from clear whether this shows that young people raised by workless parents are more likely to be unmotivated to work and used to depending on benefits,¹⁵¹ as the welfare-dependency model assumes. On the other hand, what is missing from the model proves important. Childhood income poverty affects the onset of unemployment even while working after controlling for parental worklessness and other variables. This implies that not only improving work incentives but also ensuring that both in-work and out-of-work household incomes are sufficiently higher than a relative poverty threshold is crucial.

8.4 Policy Implications

Based on the findings of this thesis, I next examine the appropriateness of the assumptions underlying the policies – both implemented and proposed – to reduce child poverty and to improve the future life chances of children growing up in poverty. Most people and the current Coalition Government agree that it is a public policy goal to alleviate child poverty. The quickest solution might be to implement unconditional income transfers to poor households with children, regardless of whether the parents are working or not. However, this is expensive and politically unpopular and, furthermore, it is questioned whether it would necessarily be effective for alleviating child poverty long term. In dealing with these concerns, there are two main questions to be discussed.

¹⁵¹ No out-of-work benefits were available anyway for those in the 1980s cohort who were non-employed between the ages of 16 and 18, unless they were a lone parent, a disabled person or had other reasons why they cannot work.

The first question is whether direct income transfers can effectively improve the future life chances of children growing up in poverty, and whether they damage them or not. The second is whether there are less expensive or more effective and popular ways of improving their future life chances, thereby alleviating child poverty long term.

As presented above, this thesis has found a residual effect of childhood poverty on later earnings and the onset of unemployment in early working life, which cannot be explained by the other observed variables. This suggests that income transfers may improve the economic prospects of children growing up in poverty. However, this thesis has also found that parental worklessness might affect some employment outcomes, although it is suggested that this finding should be treated cautiously. On balance, there is clearer evidence that additional household income can improve economic prospects of children growing up in poverty, but the design of income transfers matters. Therefore, I firstly discuss policies to reduce child poverty by way of increasing both parental work and out-of-work benefits (Subsection 8.4.1).

On the other hand, there are some potential mechanisms, in response to which direct policy interventions could be less expensive, more effective or favoured by the public. If such policy interventions alleviated some of the negative outcomes of growing up in poverty, then they could substitute for some of the need for income transfers, while relieving spending pressures as well as minimising the potential negative consequences, if any, associated with direct income transfers. From this perspective, I secondly discuss the policies that aim to improve the future life chances of children and young people, apart from income transfers. As it is found that educational attainment and unemployment in early working life explain some of the intergenerational persistence of poverty, education and training policy and youth employment policy are important tools for improving the future life chances of those growing up in poverty (Subsection 8.4.2). The findings from this thesis also imply that some less expensive or more favoured policy options would not necessarily replace the need for additional household income, even though such options themselves may be effective to some extent. I consider this issue, focusing on aspiration raising and early intervention (Subsection 8.4.3).

8.4.1 Policies for Reducing Child Poverty

The previous Labour Government's policies for reducing child poverty were designed to follow two broad strategies; firstly to increase parental employment, and secondly to

increase both universal and targeted financial support for households with children in and out of employment. The Labour Government addressed childcare needs and a lack of skills as the major barriers to employment. Thus, policies to meet childcare needs, such as the Childcare Act, Children's Centres and Extended Schools, and to improve adult basic skills, such as Skills for Life, were implemented. For lone parents in particular, the New Deal for Lone Parents offered advisory and financial support to help them to move into work. To raise labour income, the National Minimum Wage was introduced to guarantee a minimum rate of pay. The Working Tax Credit also topped up income from low-paid work, with an additional childcare element that covered up to 80% of childcare costs. Regardless of the parents' employment status, Child Tax Credit provided most households, excluding high income households, with a stable source of income. Regardless of the parents' employment status and income, Child Benefit was available to cover the partial costs of raising children (HM Treasury et al., 2008).

Between 1999 and 2004, the increase in spending on means-tested support for working families was the largest, in line with the Labour Government's belief that work is the most sustainable route out of poverty. That for working families increased by almost three times, while that for workless families increased by 80%, and spending on universal Child Benefit increased by 14% (Stewart, 2009b). Although this increased spending successfully reduced child poverty by 2004, since then, little progress has been made (Stewart, 2009b). As reviewed in Section 8.2, the current Coalition Government criticises the scale of public money spent on benefits by the Labour Government. It argues that this would undermine the individual and social responsibility to avoid the causes of poverty, such as worklessness and family breakdown.

Against these policy backgrounds, the findings from this thesis have the following implications. As discussed in Subsection 8.3.3, the analysis in this thesis has found no strong evidence to support the assumptions and predictions of the welfare-dependency model, although parental worklessness may increase children's later unemployment risks in some way. Nonetheless, the clearest evidence available is that additional household income seems to improve the later economic outcomes for children. Thus, parental work and household income are important in different ways. This has an implication for which types of income redistribution would be relatively desirable, considering the trade-off in the tax and benefit system between progressivity and possible work disincentives.

Neither a system with complete (great) progressivity and no (few) work incentives, nor that with no (small) progressivity and strong work incentives may be appropriate. The strength of the trade-off depends on how many resources a government is prepared to redistribute. The more resources available, the weaker the trade-off. From this viewpoint, a revenue-raising reform would be more desirable than a revenue-cutting one. Adam et al. (2006a, b) show that the effect of a 0.5% point increase in national insurance contributions on income redistribution is progressive, while that on work incentives is negative but small. Note, however, as their simulations assume no behavioural response to any change in work incentives, it is unclear whether the effects of work incentives on actual employment participation remain positive as benefit levels increase. This is worth envisaging in future research.

This thesis has investigated the outcomes of growing up in different durations of poverty. The evidence from the 1970s cohort suggests that transient poverty as well as persistent poverty may negatively affect later economic outcomes for children,¹⁵² and the negative effect of poverty seems to be additive rather than multiplicative. In other words, the negative effect at each point in time seems to be almost the same for those living in both transient and persistent poverty. Thus, in terms of measuring and targeting poverty, it is reasonable to focus on the current income each year. However, a caveat to monitoring poverty based on current income is that it is possible to see poverty rates decreasing through the reduction in the number of those living in transient poverty, not those living in persistent poverty. Some poverty reduction strategies, such as the work-first approach, may be better at lifting out those living in transient poverty than those living in persistent poverty, given that the latter may face higher barriers to entering the labour market. It would be useful to evaluate the relative strength of such strategies by monitoring their effects on reducing the number of those living in persistent poverty.

Future research is needed to explain the mechanisms whereby the residual effect of childhood poverty on economic outcomes is generated, or to confirm a causal effect of low income on these outcomes. It may be very difficult empirically to detect the precise mechanisms involved in the residual effect of poverty, if the mediating factors and events are diverse and sometimes affect non-poor households but have effects that are consequential only for poor households (see Section 8.5 for future research possibilities). However, drawing on the body of qualitative research that documents the

¹⁵² There was no strong evidence that transient poverty is associated with negative outcomes for the 1980s cohort based on the BHPS, but this may be due to the small sample size.

diverse difficulties experienced by poor children, there are already reasons to imagine that income poverty has causal impacts on children's lives which may have a long-term influence.

Some qualitative research shows that children (even as young as five years old) notice, worry and are strongly affected by household circumstances of poverty and the precarious work patterns of their parent(s) (Hooper et al., 2007; Ridge, 2007). The problems that poor children experience are diverse, from feelings of anxiety and insecurity, difficult relationships with (non-resident) parents, bullying within their peer groups, to neighbourhood violence. Some of these problems would be relieved if poor households were to receive additional income. For some households, additional income would allow them to have greater choice between working and engaging in childcare, which would reduce the parental stress and improve the child-parent relationship. For others, additional income would enable them to meet their material needs more easily and constantly, which would make the children feel more secure. There is evidence for the period between 1996/97 and 2000/01 that when low-income parents who had prioritised spending on housing and food received additional income, they were more likely to spend that money on meeting their children's material needs, such as for clothing, footwear and toys and games (Gregg et al., 2005).

If the residual effect of childhood poverty on later economic outcomes is indeed causal, the cost of failing to eradicate child poverty may be greater than the potential cost of eradicating poverty. Chapters 6 and 7 showed that those who grew up in persistent poverty ('persistent/recurrent poverty' or 'permanent/chronic poverty') are, on average, more disadvantaged than those with no or only low qualifications. However, although it may be technically possible to target policies at those with no or only low qualifications, it is difficult and expensive in terms of administrative costs, if not impossible, to do so specifically at those who grew up in persistent poverty once they have grown up. This suggests, in terms of targeting issues, that it may be crucial to reduce child poverty, before it produces its negative consequences. Taken as a whole, unless evidence to explain the residual effect is available that shows a mechanism that can be more cheaply corrected, income redistribution remains a reasonable approach to adopt in order to improve the future life chances of children growing up in poverty.

8.4.2 Policies to Improve the Life Chances of Children Growing Up in Poverty

Income redistribution may be a way to improve the life chances of children growing up in poverty, rather than simply a necessary way to further reduce current child poverty, but there are mechanisms for the intergenerational persistence of poverty that could better be alleviated by education policy and other public services provision. The previous Government also addressed such mechanisms. Investment in formal education, on the basis of the economic model, continues to serve as the main framework proposed to improve individuals' human capital and life chances in the modern economy (HM Government, 2009; Leitch, 2006; Strategy Unit, 2008). In addition, the mechanisms explained by the socio-demographic model are increasingly recognised as relevant to human capital development, and thus the policies implemented are wide ranging (HM Treasury et al., 2008). This subsection highlights education and youth employment policies, and the next highlights aspiration raising and early intervention.

Education policy: Regarding education policy, there is almost a consensus in the UK that it is of urgent importance to create fairer access to educational opportunities and to raise the educational attainment of children from disadvantaged backgrounds (HM Government, 2010). Therefore, the main debates over education policy may centre on the effectiveness and efficiency of specific policy tools for achieving these goals, rather than the goals per se. The empirical findings of this thesis cannot directly discuss these specific questions. However, they can suggest some ideas about what should be the evaluation bases for such policy tools from the perspective of improving the future life chances of children growing up in poverty.

I focus on some aspect of school and further education policy. I do not specifically look at higher education policy, because much of the socioeconomic gap in higher education participation seems to be derived from inequality in prior attainment (Galindo-Rueda et al., 2004), and therefore addressing more equality in pre-18 education is also important for creating more equal opportunities for higher education.¹⁵³

¹⁵³ Other issues relevant to the fairer access to higher education include the expansion of opportunities and levels of tuition fees. In terms of expansion, as there is no evidence so far for a declining earnings premium being associated with a degree, apart from that in arts and humanities (O'Leary and Sloane, 2005), it is currently reasonable to expand higher education opportunities (Machin and Vignoles, 2006). The findings in Chapter 4 do not contradict this. In terms of tuition fees, it seems to be almost impossible to conduct a robust examination in the UK into whether the introduction of tuition fees has increased educational inequality (Machin and Vignoles, 2006).

Chapter 4 showed that those with no or only low GCSEs increasingly fall behind those with higher qualifications in terms of their later earning power, and Chapters 6 and 7 showed that they are also disadvantaged in terms of their employment outcomes immediately after leaving full-time education onwards. It is less clear whether these negative economic consequences of having no or low GCSEs are due to the low basic human capital or to negative signalling, but reforms in school and further education should ideally address either or both of these problems.

As a way to promote the progressive redistribution of resources to children from disadvantaged backgrounds, the Coalition Government proposes to introduce a ‘pupil premium’ by which this group brings more money to the schools to which they are admitted. The idea itself appears desirable, but also carries a caveat, if introducing a ‘pupil premium’ coincides with the reduction in benefits for households with children. Chowdry et al. (2010) suggest that an increase in school funding is inevitable in order to ensure that no school will face budget losses due to the introduction of the pupil premium. However, Kramarz et al. (2009) find that what matters most with regard to pupil attainment is the pupil’s ability and background (including the impact of their innate ability and pre-school education as well as parental background), followed by school effects and peer effects. Even if it is agreed that additional school funding should disproportionately benefit those from disadvantaged backgrounds, the question of whether additional spending that aims to improve their educational attainment is best directed at school education requires careful investigation. This investigation is particularly useful, since the current Government might believe that spending on school education could be a way of reducing the scale of income redistribution needed to improve the future life chances of children growing up in poverty.

Chapters 6 and 7 suggested that leaving education early and becoming unemployed had long term negative effects on later economic outcomes. Therefore, the post-16 education and training system need to be designed in ways that can truly engage everyone, rather than only officially to require them to be registered as students or trainees. The recommendation to the previous Government, namely a Single Youth Allowance that combines the Education Maintenance Allowance and Activity Agreements (Gregg, 2008), would be worthwhile in providing a wider group of young people with the financial incentives and income support to stay on in education or training at and beyond age 16.

Youth employment policy: Chapters 6 and 7 more specifically showed that the long-term impact of youth unemployment on later economic outcomes may be as serious as the lack of economically meaningful qualifications (at least high GCSEs). Childhood poverty increases the risk of becoming unemployed both immediately after leaving full-time education and after some work experience. Therefore, youth employment policy is a tool for potentially improving the future life chances of those who grew up in poverty.

Even when more young people stay on in education or training for longer, it would additionally be important to provide public services which help those who do not stay on in higher education to make a smooth transition from education or training to employment. This is important for those growing up in persistent poverty in terms not only of their future economic prospects, but also of giving them the incentives to participate and make efforts towards education and training. Considering their high risk of unemployment upon leaving full-time education, it may be difficult to expect them to become motivated to engage in education and training in the current situation.

The Coalition Government aims to place more emphasis on the young unemployed who are aged under 25 than New Labour did, by creating a single welfare to work programme in which they can receive personalised support after a maximum of six months of unemployment, compared with after a year of unemployment, that was the case under New Labour (HM Government, 2010). This is to be welcomed, given the seriousness of youth unemployment and its possible long-term scarring effect. However, in the planned programme, the young unemployed still receive support less immediately than other groups of unemployed people. It should be further investigated whether or not the Government needs to add relative importance to the young unemployed.

A youth employment policy is also required to pay attention to those young people who are in precarious employment as well as the unemployed. Those who grew up in poverty are more likely to become unemployed while working, even after controlling for their educational attainment. This is presumably because childhood poverty negatively affects some kinds of human capital that employers value, they do not have the social networks to access secure jobs, particularly if their parents are also in precarious employment, and/or there are few good employment opportunities in their place of residence. In terms of the first reason, the reform of further education or the public services for young people may be useful. For the second and third reasons, as it is unlikely that the Government could do anything to make precarious employment less

precarious, setting up public services to improve their job matching and to help them to find another job to go to before they lose their current one might prove useful. Although it remains unclear from this thesis which specific policy would work best for youth employment, the advancement of information technology, for instance, could be more exploited to make job searching easier for young people who are both in precarious employment and unemployment. This may play a positive role in reducing the intergenerational persistence of poverty.

8.4.3 Is There a More Efficient or Less Expensive Option?

Aspiration raising: With respect to teenage occupational aspirations, Chapter 5 found that the role of aspirations did not seem to explain the residual effect of childhood poverty. The quality of the data variable for teenage aspirations may not be sufficiently high to draw strong conclusions. Nonetheless, the finding at least suggests that public services that could work to raise the aspirations of children and young people from disadvantaged backgrounds may not necessarily reduce the link between childhood poverty and economic outcomes, although these may be useful in improving some of their well-being (Goodman and Gregg, 2010). Therefore, it may be misguided to assume that such public services (less expensive ones) could replace income redistribution or other services and resources which help those growing up in poverty to translate their aspirations into outcomes (more expensive ones).

Early intervention: Due to the unavailability of data, I have been unable to investigate the relative importance of poverty in early childhood compared to other childhood stages. As reviewed earlier, both academic research and the previous Labour Government addressed this issue, as does the current Coalition Government (HM Government, 2010). Therefore, the importance of early childhood is little contested these days. The findings of this thesis do not challenge this, but rather highlight the independent importance of poverty in late childhood (Table 5.6 in Chapter 5 and Table 6.22 in Chapter 6) which has received less attention from politicians and policy-makers. Furthermore, the provision of public services for early childhood and families, instead of income transfers, is expected to fill a gap in the quality of parenting between more and less educated parents. From this viewpoint, the residual effect of childhood poverty on economic outcomes, remaining after controlling for parental education and social class as well as children's cognitive ability, as measured in early and mid childhood, may need to be confronted with policies targeting poverty in later childhood.

8.5 The Agenda for Future Research

This thesis obviously leaves many questions unanswered. I finally want to discuss at least three questions that are worthy of further research. The first question is the residual effect of childhood poverty on later economic outcomes, which has been explored here but remained unexplained. The second question concerns the direct effect of childhood poverty on educational outcomes, which has not specifically been explored in this thesis but may be useful for future policy implications. Lastly, it would be useful to conduct further analyses to explain the effect of childhood poverty on youth unemployment.

As I have stressed, the residual effect of poverty on earnings and youth unemployment in this thesis does not necessarily indicate a causal effect of parental low income, and future research needs to explore why this effect remains. However, as I have discussed in Subsection 8.4.1, it may be ultimately difficult to detect the precise mechanisms generating the residual effect of poverty, if the mediating factors and events are diverse and sometimes affect non-poor households but have impacts that are consequential only for poor households. To say the least, we need a dataset with a large sample size to uncover these mechanisms. From this viewpoint, it is fortunate that the new British household longitudinal survey, Understanding Society, began in 2009 with a target sample of 100,000 individuals in 40,000 households. The use of data from this large-scale longitudinal study will possibly offer a route to exploring more mechanisms for intergenerational persistence of poverty.

I have raised a question in Subsection 8.4.2 about whether additional spending to improve children's educational attainment is best directed at school education, even if it is agreed that additional spending on school education should disproportionately go to those from disadvantaged backgrounds. It would be an interesting area for further research to see if childhood income poverty has a causal effect on children's attainment, so that an increased household income could improve family relationships, which could make it easier for children to put their energy into learning in and outside school. If a causal effect of childhood poverty on educational attainment is found, it would be informative for the Government's decision making about how to allocate the limited resources to improve the educational attainment of children from disadvantaged backgrounds.

This thesis found that tackling youth unemployment could give those who grew up in poverty better future life chances, and stressed the importance of youth employment policies that reduce the onset of unemployment as well as shorten the

unemployment duration. However, although Chapters 6 and 7 indicated the existence of varying effects of childhood poverty on the onset of and the exit from unemployment, they may not necessarily show the exact scale of the effects that could be inferred to young people in more recent cohorts. We needed to assume that the unobserved characteristics of the unemployed subsamples in the 1970 and 1980s cohorts analysed in this thesis were the same as those of their contemporary counterparts (see Subsection 6.3.6 in Chapter 6). To overcome this issue, further research may need to conduct a more advanced analysis by correcting for the effect of the unobserved characteristics of the unemployed on employment outcomes. Furthermore, questions remain about what kind of help and support might work best to reduce youth unemployment. Further research could also investigate the detailed mechanisms whereby children growing up in poverty are more likely to become unemployed later.

Another question relating to the effect of childhood poverty on unemployment in early working life is why parental worklessness and low income have different impacts on it, after controlling for each other and for educational attainment. To narrow down the estimate of the residual association between parental worklessness and unemployment duration for young people, future research needs to isolate this at least from the effect of the local labour market conditions, which can affect both young people and their parents.

8.6 Conclusions

This thesis has investigated some of the links between childhood poverty and later economic outcomes, which shed light on how to confront child poverty. Alleviating child poverty is important for improving not only children's current well-being but also their future life chances. Public services provision which more directly targets mechanisms which generate the intergenerational persistence of poverty would be useful, based on the economic and socio-demographic models. However, relying only on such public services provision, without attempting a more rigorous income redistribution, may prove insufficient. Although this thesis has not confirmed the causal effects of income poverty, unless or until we can explain the residual effect of childhood poverty on economic outcomes, further income redistribution might provide one solution. The welfare-dependency model that criticises income redistribution via benefits has been less well grounded on empirical evidence than is widely believed. Therefore, to say the least, the belief based on this model does not have to stop the

Government from promoting income redistribution, while some of the concerns that it raises should be carefully taken into account in the design of income redistribution.

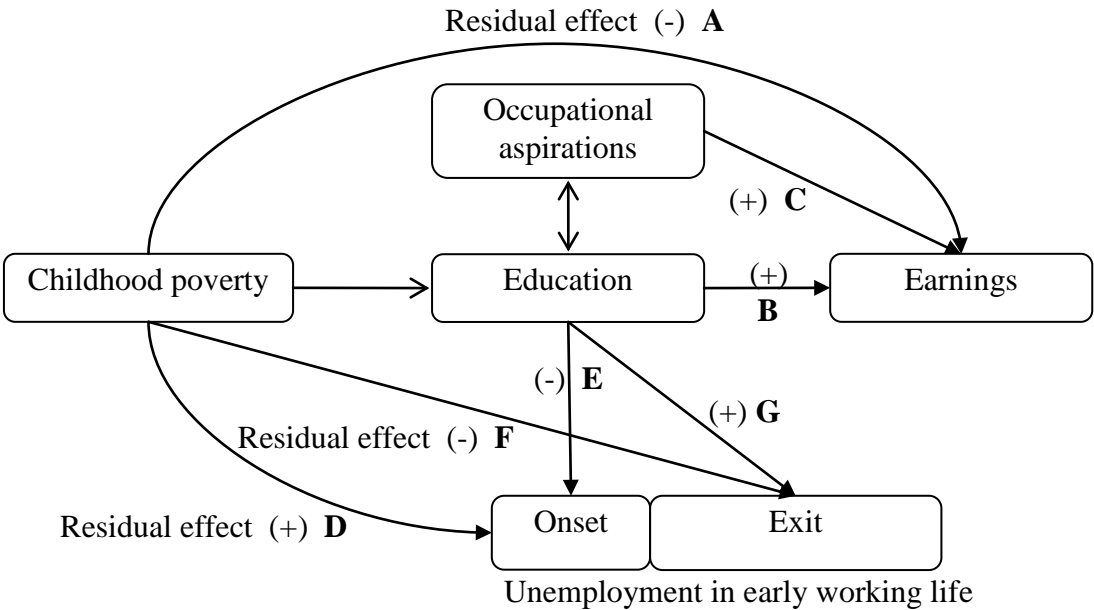
However, keeping the different models and criticism in view, when searching for the best solutions to child poverty and its consequences, is more important than relying exclusively on one of the models and applying a package of policies designed according to that alone. Not all of the explanations for each model may be plausible, and it is important to evaluate the effectiveness of each policy tool before applying it. It is also worth combining policy tools based on more than one model. Furthermore, whether it would be better to increase parental work or household income is not a binary question. Both are independently important for children's future life chances. Therefore, while it is important to take account of the possible work disincentives caused by income redistribution by the Government, or the crowding out of public services to increase parental employment, it may also be counterproductive for the Government to withdraw from income redistribution by expecting that boosting parental employment to be the sole means of income redistribution.

If there is a concern that income redistribution by the state would undermine personal responsibility, it is important to note that contemporary parents living in poverty do not seem to be completely responsible for their situation. The findings based on the 1970 cohort suggest that contemporary parents who live in poverty themselves are likely to have grown up in poverty and experienced unemployment after leaving full-time education due to the collapse of the youth labour market, and these are some of the reasons why they are living in poverty now. Therefore, income redistribution can be seen as one way to help them to recover from the disadvantage lying beyond personal responsibility rather than to undermine it. Furthermore, as the report of the National Equality Panel reveals, ensuring 'equality of opportunity' seems very difficult where the initial differences in terms of the resources inherited and accumulated over the generations are as large as they are at present in the UK (National Equality Panel, 2010).

There may have been a time when formal education and other public services provision could have played a central role in removing the remaining intergenerational persistence of poverty. However, when the children in the 1970 and 1980s cohort were growing up, it seemed very difficult for those policy tools to remove the intergenerational persistence of poverty completely, presumably because of the rising inequality produced in the market. There is little expectation that the inequality produced in the market will diminish. Education continues to be a way to promote fairer

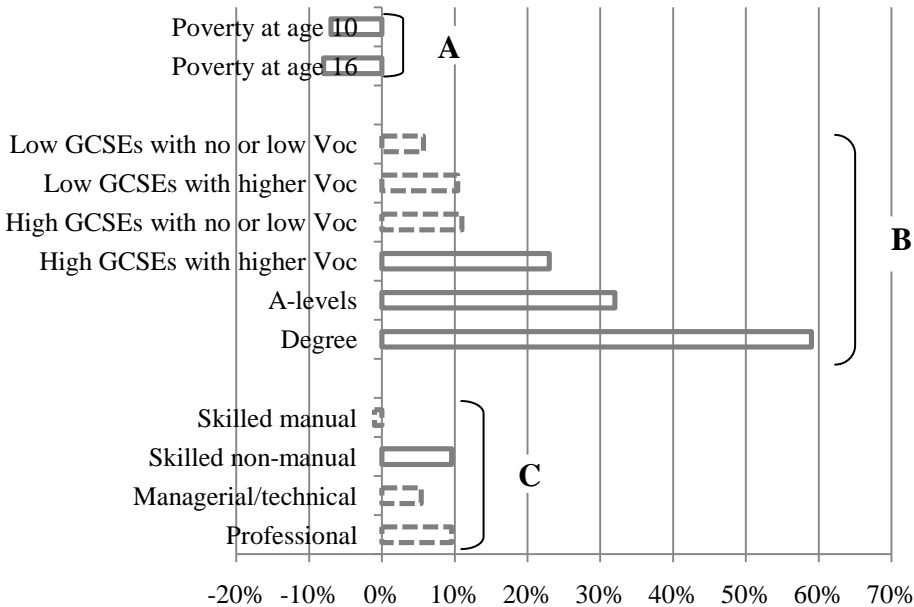
life chances but, to ensure the best allocation of resources, it needs careful investigation into whether this is increasingly the case. On the basis of the available evidence, tackling youth unemployment may be as beneficial as improving educational attainment for those who leave education with only basic qualifications. There is little evidence that promoting greater income redistribution is harmful, although the design of this process matters. The question of whether societies and individuals can confront the inequality produced in the market better with a small government than with a bigger one should continue to be asked.

Figure 8.1 Evidence on earnings from the 1970 cohort, and unemployment in early working life from the 1970 and 1980s cohorts



Notes: The effect of childhood poverty on educational attainment is obvious, based on the previous literature, although I presented this only descriptively in Chapter 4. With respect to the relationship between occupational aspirations and educational attainment, it is reasonable to assume that these may simultaneously interact with each other, although occupational aspirations were measured at age 16 and educational attainment at age 34 in Chapter 5.

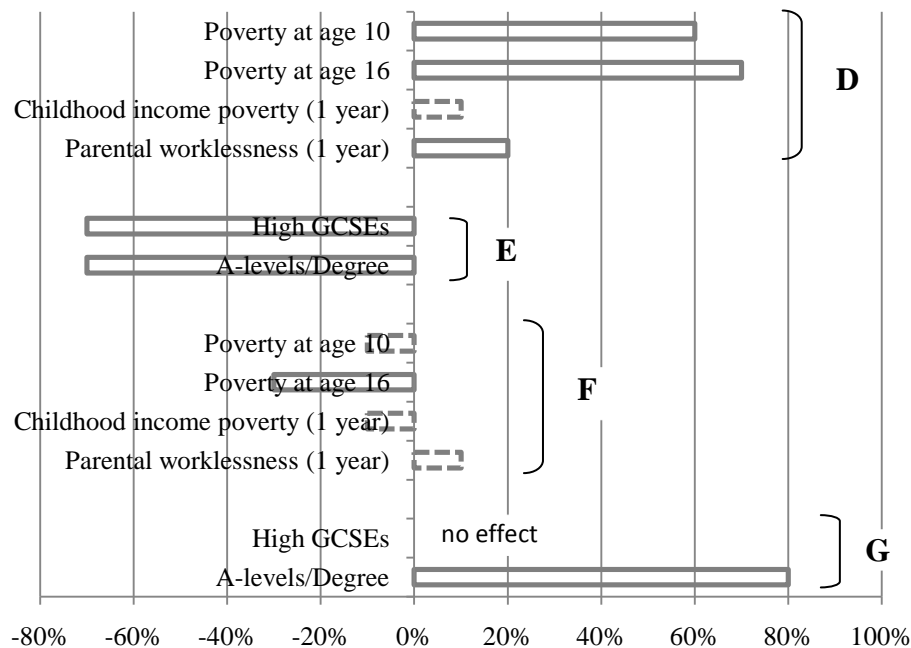
Figure 8.2 Sizes of the effects indicated by the arrows A to C in Figure 8.1: the percentage differences in earnings at age 34



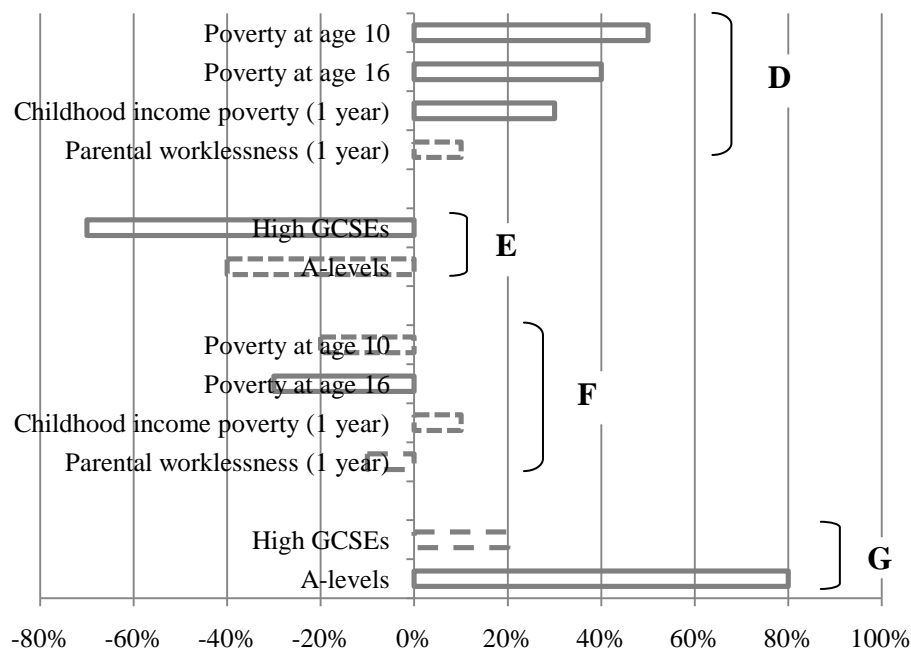
Notes: The estimates are based on the 1970 cohort. The residual effect of childhood poverty is extracted from Column (6) of Table 5.6 in Chapter 5. The estimates for the earnings premiums associated with the highest qualification obtained are extracted from column (7) of Table 4.8 in Chapter 4. The estimates for the effect of teenage occupational aspirations are extracted from Column (4) of Table 5.9. The reference category is the no-qualification group. The reference category for the qualification variable is those with no qualification, and that for the aspiration variable is those who aspired to semi-skilled jobs.

Figure 8.3 Sizes of the effects indicated by the arrows D to G in Figure 8.1: the percentage differences in the hazard rates for the onset of and the exit from unemployment

Unemployment immediately after leaving full-time education



Unemployment after employment spells



Notes: The estimates for the residual effects of poverty at ages 10 and 16 are based on the 1970 cohort (Table 6.22 in Chapter 6), as it was impossible to obtain robust evidence on the timing effects of poverty for the 1980s one. The estimates for the residual effects of childhood income poverty and parental worklessness per year can be obtained only for the 1980 cohort (Table 7.25 in Chapter 7). I summarise the estimated effects of the highest qualification obtained on the unemployment outcomes for the 1980s cohort only, as they are more relevant to contemporary young people. The reference category for the qualification variable is those with no or only low GCSEs.

Table 8.1 The models of intergenerational persistence of poverty and relevant findings from this thesis

	Predictions	General policy implications	Policy areas	Findings from this thesis
Economic model	Household income affects children's human capital investment and development (via formal education and material resources). Human capital affects later economic outcomes.	Public investment in education and training.	Higher and further education	Yes, equally but not increasingly.
			School education	Yes, probably increasingly.
		Income support conditional on participating in education or training.	Higher and further education	Yes, equally but not increasingly. Youth employment policy for those outside education is as important as education policy.
		Income support for families with children.	Income redistribution	Yes, increasingly.
		Encouraging parents to work to raise the household income.	Employment policy for parents	Yes.
Socio-demographic model	Non-material parental resources (parental education levels, attitudes and behaviour including parenting) and family structure affect children's cognitive and non-cognitive skills and shape children's attitudes and behaviour.	Provision of parenting support to parents.	Public services for early childhood	Not investigated.
			Public services for families	Not investigated.
		Provision of cultural and athletic activities to children and young people.	Public services for young people	Not investigated
		'Improving' youth attitudes to work and career.	Public services for young people	Unlikely to offset the negative effect of childhood poverty.
		Reducing youth risk-taking behaviour such as alcohol and drug use, violence and teenage parenthood.	Public services for early childhood	Not investigated.
			Public services for young people	Not investigated.
		Encouraging parents to be married.	Income redistribution = tax incentives to encourage marriage	Not investigated.

Table 8.1Continued

Welfare- dependency model	Parental worklessness and receipt of out-of-work benefits encourage the future welfare dependency of children (due to their own worklessness and/or lone parenthood).	Cutting or time-limiting benefits.	Income redistribution (-)	No.
		Encouraging parents to work.	Employment policy for parents	Yes. Alternatively, targeting employment services at young people with workless parents is important.
		Encouraging parents to be married.	Income redistribution = tax incentives to encourage marriage	Not investigated.

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