

**INCOMES, FUNCTIONINGS AND  
CAPABILITIES:  
The Well-Being of Disabled People in Britain**

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## ABSTRACT

The central objective of this thesis is to explore whether the capability approach can be operationalised, using the well-being of disabled people in Britain as a case study. The capability approach proposes a shift away from measuring utility and income poverty towards identifying functionings (the states of being and activities which individuals achieve), and capabilities (the different combinations of functionings which individuals have the opportunity to achieve). To date there have been few empirical applications and many concerns about the usefulness of the approach remain. Disabled people are an interesting case study for the capability approach because of the challenge to conventional measures of well-being issued by the social model of disability: that we should move away from measuring individual deficits towards focusing on the barriers individuals with impairments experience in attempting to lead the lives they want to lead. The capability approach has the potential, in theory, to meet this challenge.

In addition to providing in-depth analysis of the position of disabled people in society, the thesis makes three contributions, one theoretical and two methodological. The theoretical development is the distinction between capability as opportunity and capability as autonomy, that is, the distinction between an approach which treats preferences as exogenous and one which takes seriously the problem of conditioned expectations. The innovative methodologies are, firstly, the extension of techniques of equivalisation of income to take account of variations in needs due to disability, and, secondly, quantifying whether a particular functioning is within an individual's capability set.

The thesis concludes that relatively straightforward adjustments to conventional poverty measures improve their validity. For fuller application of the capability approach, although there is a trade-off between conceptual soundness and complexity of data requirements, informative measures of opportunity and autonomy can be derived from existing survey data.

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Beacon, harbour, and St Nikolaus: first and last, I dedicate this thesis to Arne. She understood.

## **DECLARATION**

The thesis represents the candidate's own original work throughout.

The methodology applied in Chapter 4 was developed jointly with Asghar Zaidi, who was at that time a Research Officer at the London School of Economics. However all the results in Chapter 4 were calculated by the candidate herself and the interpretation of the results is her own.

This complies with the regulations for PhD degrees as set out by the University of London.

Signature of candidate:

Date:

Signature of supervisor:

Date:



## CHAPTER ONE: OVERVIEW

### 1.1. Central purpose

The central objective of this thesis is to explore the feasibility of operationalising the capability approach, through a case study of the well-being of disabled people in Britain. The capability approach proposes a shift away from measuring utility and related concepts towards identifying functionings (the states of being and activities which individuals achieve or in which they engage), and capabilities (the different combinations of functionings which individuals have the opportunity to achieve). However, the possibility of applying the capability approach empirically has been questioned (Sugden, 1993). Many different techniques have been developed to measure functionings, although disputes remain about the precise specifications, but very few approaches have been described (let alone implemented) for measuring capabilities.

The well-being of disabled people provides an interesting case study for two reasons. Firstly, there is a degree of complementarity between the social model of disability and the capability framework. The social model of disability proposes a conceptual shift away from measuring individual deficits towards focusing on the barriers individuals with impairments face in leading the lives they want to lead. As will be explored later in this chapter, the social model corresponds to one interpretation of the idea of capability.

Secondly, significant disagreement exists with respect to both the goals and the means of disability policy, in Britain and elsewhere. Identifying an adequate measure of well-being or disadvantage for disabled people is essential if the state, and other policy actors such as the voluntary sector, are to be able to assess the position of disabled people relative to other groups, to prioritise within the disabled population and to determine the most important dimensions for policy intervention.<sup>1</sup>

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<sup>1</sup> 'Well-being' is used here in the general sense of 'a desirable state', and is intended to cover a range of potential domains - material well-being, personal well-being, social position, autonomy, and so on - which may have relevance to social policy. Its precise content is one of the matters of dispute between the capability approach and the social model on the one hand, and other theoretical frameworks on the other. 'Disadvantage' is used here as an antonym.

The definition of disadvantage, and the extent to which the state has a responsibility to remedy it, is of course contested. Responses to both questions depend on the underlying principle of social justice, and this forms part of the debate between traditional measures of well-being and the alternatives proposed by the capability approach. Perhaps the most commonly used measure of disadvantage in social policy is income poverty. This derives from welfare economics and ultimately from utilitarianism, a heritage which the capability approach argues is fundamentally problematic.

More immediately, existing commonly-used measures of disadvantage face charges of internal incoherence - they do not correspond closely to the concept of disadvantage which they purport to measure - and of distorting the relative position of different groups in society by ignoring important dimensions of disadvantage. These charges arise from both the capability approach and the social model of disability.

In order to retain a sharp focus, comparisons are made in the course of the thesis between income-based measures and measures deriving from the capability approach. There are a number of other candidates for measures of well-being; one which has received considerable attention recently is subjective well-being (see, for example, Gasper, 2004; Comim, 2005). Although analysis using the capability approach raises some interesting problems relating to subjective measures which are discussed in chapter 8 and elsewhere, subjective well-being is not the primary subject of the thesis.

The comparison between income-based measures and measures deriving from the capability approach are judged according to the following criteria:

- a. Closeness of fit between theoretical framework and operational measure;
- b. Extent of bias (compared to the true underlying distribution, as defined by the relevant concept of disadvantage) in the assessment of the relative position of disabled and non-disabled people; and in the relative position of different sub-groups of the disabled population (for example by severity of impairment);
- c. Ease of calculation, given the data which are likely to be available to researchers and policymakers.

- d. Usefulness as a guide to possible remedies for disadvantage.

These criteria reflect the nature of the challenges offered by the social model and the capability approach to conventional measures (a, b, d), and the counter-charge that alternatives are unworkable empirically (a, c).

The organisation of the rest of this chapter is as follows. To contextualise the research, the next section (1.2) describes the current shape of disability policy in Britain. This is followed by two sections outlining the theoretical frameworks within which this thesis is built: the social model of disability (1.3) and the capability approach (1.4). Section 1.5 compares the two frameworks and draws out common themes. Next, the research design is described and justified (1.6), including an introduction to the survey data which are analysed in the following chapters. A brief account is offered of the definitions of disability and well-being which will be used. Finally, an overview of the principal arguments and organisation of the thesis is given in section 1.7.

## **1.2. Policy context**

### **1.2.1. *Long-term strategy and social services***

A significant report on long-term strategy for the social inclusion of disabled people, *Improving the Life Chances of Disabled People*, was published by the Cabinet Office in 2005 (Strategy Unit, 2005). Realistically, though depressingly, it recognises that disabled people are not "respected and included as equal members of society", and it sets the objective that by 2025, disabled people should have "full opportunities to improve their quality of life" (p.4). The report is one of the first government reports to show evidence of being informed by a social model perspective. It defines disability as disadvantage resulting from barriers to life opportunities experienced by people with impairments. Identifying the need for a long-term approach and locating it within this perspective are important developments, though of course both are vulnerable to changes in government and ministerial direction.

The report recommends action in four areas: independent living, families with young disabled children, transition into adulthood, and employment. Employment is discussed in more detail below. The subject of independent living is particularly interesting in the context of the capability approach. Independent living became a demand of the disabled people's movement in the 1970s, as a reaction against the assumption that disabled people would live either in institutions or be looked after within their family of origin. In so far as there was any state support, it took the form of provision of accommodation and personal care services (washing, dressing, eating) by local authorities. Over the years, the definition of independent living has been refined to place choice and control for the disabled person him or herself at the core, with the particular setting in which he or she chooses to live being given less importance (Morris, 1999). In the 1990s, some local authorities experimented with replacing service provision with 'direct payments' of equivalent value to individual disabled people, with which they could arrange their own care. Many direct payment recipients chose to employ their own personal assistants which they found gave greater flexibility over the kind of support and the type of activities they could engage in. Often the schemes were accompanied by the establishment of training and user support groups to enable recipients to make the best use of their payments. By 2003, it was official policy that authorities must offer direct payments to disabled people of working age who wanted them. The 2005 Strategy Unit report goes one step further and recommends moving to individualised budgets for disabled people covering all the services to which they are currently entitled, including, for example, equipment, housing adaptations and help with transport to work in addition to traditional social services.

The shift from service provision to direct payments can be seen as a shift from a focus on functionings, ensuring that disabled people are supported with basic activities like washing, dressing and eating, to a focus on capabilities, promoting disabled people's ability to choose the kinds of activities with which they want support. With a direct payment, a disabled person may choose to have dinner early or skip it completely in order to get to the local pub quiz, for example, a trade-off that would have been difficult or impossible with services provided centrally by local authorities.

### 1.2.2. *Anti-discrimination legislation*

The Disability Discrimination Act (DDA) was passed in Britain in 1995. It abolished the previous quota system for employment and replaced it with duties on employers not to discriminate against disabled people in recruitment or pay and conditions, and to make 'reasonable adjustments' to retain an employee who became disabled while in their employment (whether as a result of that employment or not). It also set out responsibilities for providers of goods and services not to unreasonably deny a disabled person a service or to offer it on less favourable terms, to make reasonable adjustments to provide services to disabled people, and to make alterations to their physical premises if necessary. These provisions came into force in stages between 1996 and 2004. The DDA also created duties on educational bodies and was amended by the Special Educational Needs and Disability Act 2002 to strengthen these duties.

The legislative framework to protect disabled people against discrimination is now wide-ranging, although many of the most important sections include the qualification that the adjustments need only be made if it is 'reasonable' to do so. This sets the DDA apart from equal opportunity legislation on gender and race. Despite this limitation, more cases were taken under the DDA in its first two years than were taken under the gender and race equality legislation in equivalent periods (Meager *et al.*, 1999a). The provisions on employment retention have been widely used to challenge dismissal on grounds of disability where adaptations would have enabled the individual to continue in their job. Demonstrating that there has been discrimination in recruitment has proved harder.

Anti-discrimination legislation is consistent with both the social model of disability and the capability approach. Indeed the social model *identifies* disability with intentional or unintentional discrimination: it is the disadvantage arising from society's failure to accommodate the needs of people with impairments which constitutes disability. Similarly, as explored in more detail below, the capability approach emphasises social and environmental constraints on what people are able to be or to do, as much as constraints which are internal to the individual.

### 1.2.3. Social security

In addition to general social security benefits, disabled people in Britain are eligible for a range of disability-specific social security and tax benefits. The main social insurance benefit for those unable to work due to sickness or disability is *Inc incapacity Benefit*, which is largely non-means-tested. Incapacity Benefit now also incorporates payments to those with insufficient contributions records to qualify for the social insurance benefit itself, although at a lower rate.<sup>2</sup>

The principal source of out-of-work means-tested assistance is *Income Support*. Premiums in addition to the basic allowance are payable for disabled adults and children in the family. Disabled people in work but on low earnings can get *Working Tax Credit*; they must work a minimum of 16 hours per week to qualify, while non-disabled people without children must work at least 30.

Finally, there are two sources of help with the extra costs of disability: *Disability Living Allowance*, payable at a range of rates to those with mobility difficulties or who need assistance with personal care (regardless of employment status), and *Access to Work*, a scheme which helps towards costs and adaptations associated with employment.

The purposes of these benefits and credits are many and varied. Incapacity Benefit is primarily about distribution from one stage of life to another and was designed, initially at least, to protect against shocks to a household's living standards resulting from the incapacity of a main earner. Arguably Incapacity Benefit no longer performs this function since it is not earnings-related and is paid at a rate only just above the social assistance minimum. Receipt of Incapacity Benefit is also becoming increasingly conditional on job-seeking or work preparation activity, as explained in more detail below.

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<sup>2</sup> Industrial Injuries Disablement Benefit and War Disability Pension compensate individuals who were injured or developed a disease as a result of their employment and service in the armed forces, respectively. These benefits have relatively small caseloads: there were 341 thousand IIDB recipients in September 2004, for example, compared to 2.7 million working age recipients of Incapacity Benefit in August 2004 (DWP, 2005b).

Social assistance is the safety net to protect against absolute poverty. It does not, however, protect against relative poverty, since the rates of benefit have been uprated since the early 1980s in line with price inflation rather than average living standards.

In-work benefits are intended to fulfil multiple roles: they should provide an incentive to enter or remain in employment, reduce the risk of in-work poverty, and compensate disabled people for their lower earnings relative to non-disabled people. The consistency of this approach with the anti-discrimination legislation described above is doubtful, since the temptation must be for an employer to pay those likely to be eligible for tax credits (including disabled employees) a lower wage, in the knowledge that his or her earnings will be topped up by tax credits. The National Minimum Wage, introduced in 1999, provides a floor to the wages which can be offered by employers but does not regulate wages anywhere else in the distribution. Nevertheless, tax credits can alleviate in-work poverty and, by supporting part-time as well as full-time work, ensure that a wider range of jobs are available to disabled people without financial penalty than would otherwise be the case.

The principal objective of extra costs benefits is horizontal equity between those who do and do not incur such costs. However the narrowness of the eligibility criteria and the rates of benefit are such that many disabled people who have significant extra costs do not receive sufficient compensation (Zaidi and Burchardt, 2005). Nevertheless, the existence of such benefits can be seen as consistent with the argument within the capability approach that additional resources are required for some groups to achieve the same standard of living as other groups: disabled people convert resources into well-being at a lower rate than do non-disabled people.

The combined effect of social security benefits is undoubtedly to reduce the prevalence and intensity of poverty that disabled people experience. However, as the analysis in Chapters 3 and 4 shows, it is far from sufficient to eliminate poverty among disabled people or to remove the gap between disabled and non-disabled people.

#### 1.2.4. *Employment and welfare to work*

Employment rates among disabled people in Britain hovered around 40 per cent for much of the 1980s and first half of the 1990s, around half the rate of employment among non-disabled people (Cousins et al, 1998). As general unemployment fell in the latter half of the 1990s and continued to remain low in the first years of the new century, the government increasingly turned its attention to groups such as lone parents and disabled people claiming out-of-work benefits, who were traditionally classified as 'economically inactive' rather than unemployed. Whether as a result of the ensuing policy initiatives, or, perhaps more plausibly, as a result of a period of sustained economic growth, disabled people's employment rates have risen steadily since 1996, to stand at 50 per cent in 2004.<sup>3</sup> The growth in disabled people's employment in this period has been faster than the corresponding growth for non-disabled people.

As noted above, the quota system for disabled people's employment has been replaced by anti-discrimination legislation. Similarly, sheltered employment, which offered a small number of disabled people jobs in a segregated environment, has largely been replaced by supported employment, which provides assistance and/or subsidy for employers of disabled workers in mainstream employment. Recent reforms to supported employment have emphasised the importance of progression, where possible, from supported to 'open' employment (i.e. employment without specialist support).

Disabled people in supported employment tend to have more complex support needs or more severe impairments. Overall they account for less than 1 per cent of the disabled workforce, so the majority of the reforms aimed to increase employment among disabled people have focused on open employment.<sup>4</sup>

The New Deal for Disabled People (NDDP) was piloted in 1998/9, and, despite an ambivalent evaluation, was rolled out nationally (Loumidis et al, 2001). NDDP has a

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<sup>3</sup> Author's calculations using Labour Force Survey.

<sup>4</sup> Author's estimate based on figures from Association for Supported Employment and Labour Force Survey.

range of incarnations but key components include a personal adviser with access to a discretionary fund to pay for interview costs, a small amount of training or other interventions which in the adviser's opinion will assist in moving towards work. Participation in NDDP remains voluntary.

In parallel with NDDP, a scheme known as 'Pathways to work' has been piloted, also based on personal advisers, but with the innovation of a Job Preparation Premium conditional on undertaking an agreed programme of activity to assist the return to work, and a 'back to work' credit paid for the first year that an ex-claimant is in a job.<sup>5</sup> Early evidence on 'Pathways' is encouraging and the scheme is to be extended to 30 local authority districts and a broader selection of existing Incapacity Benefit claimants (Johnson, 2005).

Most recently, the government announced its intention to overhaul Incapacity Benefit (DWP, 2005a). Currently the line between claimants who are required to seek work as a condition of their benefit and those who are not is drawn between Jobseeker's Allowance claimants and Incapacity Benefit (IB) claimants. The proposal is to shift that line to part way through the IB caseload. Those who are newly classified as being required to seek work will be paid a lower rate of benefit, with premiums paid conditional on their work-seeking activities. Those who are classified as not being required to seek work will be paid a higher rate of benefit than the current long-term IB rate. The impact of these reforms will depend crucially on the details of how the division between the two groups of claimants is made and the nature of the work-seeking requirements and support; details which have yet to be announced. However an increased degree of conditionality on benefit receipt for some claimants is inevitable.

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<sup>5</sup> The return to work credit is paid regardless of the level of earnings. By contrast, the disability component of Working Tax Credit is paid as a supplement to low earnings. Both serve to ensure that a larger proportion of disabled people will have higher incomes in work than out of work.

### 1.3. Theoretical frameworks: the social model of disability

#### 1.3.1. *Historical development*

The historical roots of the social model of disability can be traced to the civil rights movement in America in the 1960s and 1970s (Barnes, Mercer and Shakespeare, 1999). While the focus of the movement was race, it was accompanied by broader changes in the way society viewed minority groups. The traditional role of disabled people in society - institutionalised, dependent and marginalised - was challenged by the influx of large numbers of Vietnam war veterans. This was not a group society could so easily ignore. A combination of factors led to the independent living movement, advocating self-help, de-institutionalisation and de-medicalisation.

At the same time in the UK there was a proliferation of organisations of disabled people (Barnes, 1991). One which remained prominent in the disability movement over several decades is the Disablement Income Group (DIG, established 1965). DIG campaigned for a universal disability benefit, along the lines of a citizen's income, and set at such a level as to maintain a reasonable standard of living even after meeting any extra costs which may be incurred as the result of impairment.

It was as part of a critique of DIG from within the disability movement that the first formalisation of the social model as a distinct theoretical and political position came. In 1976, the Union of the Physically Impaired Against Segregation (UPIAS) argued that a national disability income ran the risk of entrenching dependence; rather campaigns should be targeted at promoting integration in employment and education. The focus should be on changing society, not merely ameliorating conditions for individuals. More broadly, UPIAS defined "impairment" as an individual attribute, while "disability" was the restriction of activity caused by society's failure to take into account the needs of impaired people.

Similar definitions, expanded to incorporate mental and sensory impairments, were adopted by the British Council of Disabled People, an umbrella organisation for organisations run by disabled people, when it was formed in 1981, and by Disabled People's International in the following year. The social model remains contentious,

even within the disability movement (Oliver, 1996), but it has gained ground and recognition in research on disability (DRU, 2000; JRF, 2000), as well as in campaigning organisations.

### 1.3.2. *Central tenets*

The fundamental distinction made by the social model is between impairment and disability. Impairment is defined as lacking all or part of a limb, or having a defective limb, organ or mechanism of the body or mind. It is an attribute of an individual. Disability is the loss or limitation of opportunities to take part in normal life of the community on an equal level with others due to physical, social and economic barriers. It arises from an interaction between people and the environment. Finkelstein (1980) argues that, "Disability is the outcome of an oppressive relationship between people with impairments and the rest of society" (p.47).

The social model is often described in contrast to the individual or medical model, in which limitations in functioning are seen as the direct result of a medical condition. The emphasis in the individual model tends to be on curative or rehabilitative strategies which implicitly regard the environment as neutral.

To re-enforce the distinction between impairment and disability, social model theorists point out that disability is not an inevitable consequence of impairment. Groce (1985) describes a community in which an unusually high proportion of inhabitants were born with congenital deafness. The majority of the hearing population became bilingual in English and sign language, and the barriers usually observed between deaf and hearing people were non-existent. Deaf people held positions of political and business authority, marriages between deaf and hearing individuals were common and social intercourse was uninhibited. Finkelstein (1980) invites readers to carry out a thought experiment of living in a society designed by and for wheel-chair users: those who walked would find themselves banging their heads against doorways and in danger of being run over on down-hill slopes. The point both these examples seek to make is that disability, according to the social model, is not a 'natural occurrence', rather it is created by social organisation.

The emphasis on society as the cause of disability leads to a rejection of the idea of disability as a personal tragedy and equally to the rejection of the promotion of some disabled individuals to hero or heroine status. The social model argues that disabled people are not passive victims but nor should they necessarily be expected to be 'brave', to make super-human efforts to 'over-come their difficulties', or be grateful for 'normalising' medical interventions (Barnes, Mercer and Shakespeare, 1999). Rather they are individuals who have a similar range of aspirations, a similar desire for autonomy, and, no doubt, a similar spectrum of personality traits as the non-disabled population.

Finally, social model theorists emphasise the need for disabled people's organisations, that is, organisations *of* disabled people rather than the more traditional charities *for* disabled people (Oliver and Barnes, 1998). This extends to a critique of the professionalisation of disability – the non-disabled doctors, therapists, social workers, care assistants and researchers who become 'experts' and, some would argue, have a vested interest in maintaining disabled people in a dependent position (Albrecht, 1992). For the social model, the relevant authority is the disabled person him or herself: securing choice and control for disabled people over decisions affecting their own lives is central to the transformation which the social model seeks to bring about.

#### **1.4. Theoretical frameworks: the capability approach**

The capability approach arose out of dissatisfaction with income-based measures of disadvantage and a broader critique of welfare economics and utilitarianism. It has been developed over three decades by Amartya Sen and Martha Nussbaum, and refined by a small but growing band of followers.<sup>6</sup> Although broadly similar, there are differences of emphasis between Sen and Nussbaum's version of the approach (Gasper, 1997); where there are differences, this section follows Sen's interpretation. This section first outlines the critique offered by the capability approach and then explicates the alternatives it proposes.

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<sup>6</sup> See for example Sen (1980), Nussbaum (2000), and the Human Development and Capability Association, <http://www.hd-ca.org/about.php>

#### 1.4.1. *Critique of income poverty and utilitarianism*

Income poverty is probably the most commonly used indicator of disadvantage in social policy. Why should we be concerned about income poverty? Clearly, in a market economy, those who lack financial resources - of which income is a principal component - are less able to purchase goods and services, to meet their needs and desires.<sup>7</sup> They are less able to satisfy their preferences. Why should we be concerned with preference satisfaction? It seems almost absurd to press the question: clearly, people are better off if they can satisfy more of their preferences, but in fact this identification of preference satisfaction as the 'object of value' rests on a particular interpretation of a particular political philosophy, namely, preference utilitarianism.

According to utilitarianism, utility - a subjective state of well-being - is the sole 'object of value' and hence should be used to evaluate social states and individual advantage and disadvantage. Utility was initially conceived as a balance of pleasures and pains (Bentham, 1789), but worries about the incommensurability of different kinds of pleasures led to interpreting utility rather as preference satisfaction. The individual weighs up pleasures and pains in whatever way he or she chooses, to arrive at an overall preference. This interpretation was adopted by the founders of welfare economics (see Sugden, 1993), and, consequently, underlies much contemporary analysis of disadvantage.

Reconstructing this compressed version of intellectual history yields the following chain:

utility (mental state) → preference satisfaction (welfare) → economic welfare → command over resources → income

Each link in this chain is open to challenge. We can leave the first link to the philosophers (see, for example, Sinnott-Armstrong, 2003, for an exploration of

<sup>7</sup> Atkinson (1989) proposes an alternative motivation for being interested in income poverty: a concern with the right of members of society to a minimum level of resources. Such a motivation derives from a resourcist conception of political philosophy (see Rawls, 1971 or Dworkin, 2000) and hence is not vulnerable to the charges the capability approach lays at the door of poverty measures derived from utilitarianism. However it is subject to other criticisms made by the capability approach of income-based measures of disadvantage, such as the argument from differential rates of conversion of resources into well-being: see below.

variants of utilitarianism). The second link, from preference satisfaction to economic welfare, makes the assumption that economic welfare is separable from welfare more generally and that it is a sub-set which it is valuable to attempt to equalise or promote. It is not clear why this should be the case. Some of my preferences may have little to do with what I can buy in the market place (friendship, countryside to roam in), in which case economic welfare is simply incomplete, but in other cases promoting my economic welfare conflicts with other aspects of my welfare (for example occupational health, or family relationships), in which case economic welfare gives a misleading picture of overall welfare.

The third link, between economic welfare and command over resources fails to take into account that individuals are able to convert resources into welfare at different rates, depending on their characteristics and circumstances. Sen (1992) has listed five sources of variation in rates of conversion: personal heterogeneities (including disability), environmental diversities (for example, weather and epidemiology), economic setting (including availability of public goods), social norms (determining what must be purchased in order to 'appear in public without shame', for example), and distribution within the household.

Finally, by using income as a proxy for command over resources, wealth, access to public goods, time and other forms of indirect resources are omitted (see Sen's notion of entitlement; for example Sen, 1981a).

Economists and others have attempted to respond to many of these criticisms by modifying income-based measures, for example by incorporating both leisure and income in an estimate of 'total income' (Becker, 1965), by varying assumptions about the distribution of resources within the household (Sutherland, 1997), or by adding a value for 'benefits in kind' from public goods (Sefton, 2002). However, in practice, the majority of income poverty measures remain based on private household income equivalised for household size and composition on an assumption of equal sharing between individuals in the household.

A utilitarian conception of disadvantage is open to the more fundamental challenge of being a flawed basis for considerations of equality or social justice. The capability approach bases this challenge on three contentions:

- (i) utility is a subjective state which may be influenced by previous experiences. For example, someone who has suffered long-term deprivation may become accustomed to their condition. Less extreme experiences are also likely to influence expectations and hence the subjective well-being derived from a given set of circumstances. Therefore if utility is used to assess disadvantage, the evaluation of the current distribution will not be independent of the previous distribution; the inequality of the previous distribution may lead to apparent equality in the current distribution. This is sometimes referred to as the argument from conditioned expectations.
- (ii) individuals value ends other than their own subjective welfare. For example, one person might value being a concert pianist, even if the pursuit of that goal involves hours of painful and frustrating practice, while another person might be determined to secure the liberation of the Myanmar from military dictatorship, at great risk to her personal safety, comfort and liberty. Moreover, in many cases we value the *pursuit* as well as the *outcome*; it is important that the outcome has been brought about in part by my own action. Sen terms these broader objectives an individual's 'agency goals', which he contrasts with an individual's 'well-being' (Sen, 1993).<sup>8</sup>
- (iii) we should be concerned not just with what individuals achieve, but also with the degree of freedom available to each person. Someone who works in a factory making footballs because that is the only job on offer should not be considered equally well-off as someone who chooses from a range of occupations to work in a football factory, even if both individuals are happy in their work.

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<sup>8</sup> Except where an explicit contrast is made with agency goals, the term 'well-being' is used in this thesis in the more general sense of whatever state of being it is which we are concerned to promote, equalise or measure. The term 'welfare' is reserved for utility-based conceptions of well-being.

The critique of income as a measure of economic welfare, and the more fundamental critique of economic welfare or utility as a basis for judgements of social justice, translate into a number of concerns specific to disability and social policy for disabled people:

- (i) Economic welfare and overall welfare: focusing on economic welfare can downplay other aspects of welfare which may be equally important for disabled people, such as dignity. For example, some disabled people's organisations argued *against* the campaign for a basic income for disabled people, on the grounds that a benefit income re-enforced notions of dependency while leaving discrimination in the labour market untouched (UPIAS, 1976).
- (ii) Rates of conversion of resources into well-being: as noted above, disabled people incur extra costs of living, such as having to pay for aids and adaptations, extra heating and laundry, and personal assistance. This means that the same level of resources goes less far in securing economic welfare for a disabled person than for a non-disabled person.
- (iii) Narrow definition of resources: public goods such as accessible transport are of critical importance to facilitating the participation of disabled people in employment and society more generally.
- (iv) Conditioned expectations: disabled people who have experienced a lifetime of discrimination, especially if they have not come into contact with the disability rights movement, may be particularly liable to have modest expectations of what life has to offer. Measures which ultimately refer to a subjective measure of well-being risk under-estimating the degree of disadvantage they experience.
- (v) Agency goals: as exemplified in the social model of disability, one of the key demands is that disabled people should be able to decide their own priorities and pursue them in the same way as non-disabled people. This may involve sacrificing personal welfare (going without dinner) to achieve an agency goal (raising money for charity through the pub quiz).

(vi) Freedom: although in some cases it may be hard to see why freedom has value over and above the ability to achieve your own objectives, it is perhaps clearer in the case of disabled person living in a discriminatory society. It may happen that I do not want to visit the local leisure centre, vote at the polling booth, or receive information about council services, but the fact that I am prevented from doing those things due to a flight of stairs, a narrow door and leaflets in small print, represent significant constraints on my freedom. I am disadvantaged relative to others, even if I do not regret those specific limitations.

Existing income-based measures of disadvantage therefore fail to provide an adequate evidence base for developing or evaluating policies which aim to assess or address the disadvantage experienced by disabled people.

#### *1.4.2. Functionings and capabilities*

The capability approach proposes to replace utility with functionings as the space in which well-being is to be evaluated. Functionings are 'beings and doings', that is, states of being an individual is in or activities in which he or she engages. They may be basic, such as being well-nourished or reading, or complex, such as being a concert pianist or participating in an election.

The space of functionings has a number of advantages, according to the capability approach, over utility. It is objective, in the sense that whether or not someone achieves a functioning is generally independent of their own valuation of that functioning.<sup>9</sup> This means that assessments in functioning space are not vulnerable to the argument from conditioned expectations which Sen makes against welfarist conceptions. Functionings-space is also non-reductionist, in that many different functionings may be valued in themselves, not just those relating to individual welfare. There is room for 'agency goals' as well.

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<sup>9</sup> Most functionings are of the form 'being well-nourished', which can be evaluated independently of the feelings and attitudes of the individual concerned. Some, however, are inherently subjective, such as 'being happy' and in these cases it is proper that conditioned expectations, and so on, do affect the assessment of whether the functioning has been achieved.

Similarly, measuring functionings has advantages over measuring income. The fact that individuals convert income into welfare at different rates is a problem for measures of income poverty because the end-value - welfare - is proxied by income, which is a means to an end, rather than an end in itself. By contrast, functionings can be selected such that they are ends in themselves.

Specifying a space for evaluation is not sufficient to define a measure of disadvantage, however. The advantages of multi-dimensionality and intrinsic value can rapidly translate into disadvantages when further specification is required: which functionings are to be evaluated? how are different functionings to be aggregated?

On the first question, Sen (1992, 1993, 1996) argues that which functionings should be assessed depends on the purpose of the evaluative exercise. One distinction mentioned above is between well-being and agency goals: the former refers in Sen's terminology to basic functionings like being well-nourished, being sheltered and being able to 'appear in public without shame' which are self-regarding and which everyone has reason to value;<sup>10</sup> agency goals refer to person-specific objectives, like being a concert pianist or campaigning to free Myanmar, which may or may not include, or be compatible with, individual well-being. Agency goals may incorporate commitments to other individuals or to causes and on occasion their pursuit may result in actions deleterious to the individual's own well-being.<sup>11</sup> There is no shortage of empirical evidence that both in experimental settings and in real-life situations, people take account of cultural values and personal commitments as well as their own well-being more narrowly defined (Taylor-Gooby, 1998, 2000). Nevertheless, in the

<sup>10</sup> The expression 'has reason to value' appears frequently in Sen's later work (e.g. 1998a). He has to avoid claiming that everyone values these basic functionings, firstly, because his own argument about conditioned expectations indicates that some people do not in practice value even basic functionings, and secondly, because his argument about agency goals also indicates that some people value the non-achievement of basic functionings (for example, someone undertaking a religious fast or on hunger strike values *not* being well-nourished). The individuals in both examples can, however, be said to have reason to value basic functionings. The expression seems to commit Sen to a theory of true interests, which he has been at pains to resist (Sen, 1990b; 1993). This is one the key points of difference between Sen and Nussbaum.

<sup>11</sup> Robeyns (2005) interprets the distinction between well-being and agency goals in Sen's work slightly differently. She reserves the term 'standard of living' for what I have termed 'well-being'. Her version of well-being adds to standard of living "outcomes resulting from sympathies (i.e. from helping another person and thereby feeling oneself better off" (p.102). Her interpretation of agency is similar to mine, in that it incorporates "commitments (i.e. an action that is not beneficial to the agent herself)" (p.102).

context of social policy, Sen argues it is likely to be the well-being aspect of functioning which is most relevant (Sen, 1985b). It does not matter whether any given individual attaches over-riding importance to his or her own well-being – the claim on society holds independently of the individual's objectives. However he notes that although well-being functionings may be universal, the commodities and policies necessary to achieve them will be society-specific (Sen, 1983, 1984): what it takes to 'appear in public without shame' was different in eighteenth century Scotland, when Adam Smith coined the phrase, than it was in each of the countries in which Sen lived and wrote in the twentieth century (India, Britain and the USA).

That still leaves a wide range from which to select well-being functionings, and also offers no guidance on how different functionings are to be aggregated. Does being able to appear in public without shame count for the same as being well-nourished? Sen offers two responses to these problems. The first is that a partial ordering (of social states or of individuals) may be possible without specifying the full set of well-being functionings, and without specifying precise weights for different functionings.<sup>12</sup> In other words, if consensus can be reached that a small number of functionings are important, or if a range within which weights fall can be agreed, it may be possible to rank one individual or state as at least as well-off as another individual or state (Sen, e.g. 1985a, 1992). This proposal has been taken forward empirically in a number of ways, for example by using fuzzy set methodology, as discussed in the next chapter.

The second response is that one should not expect a technical fix to what is essentially a normative question. Which functionings are selected for evaluation (or, which comes to the same thing, the weights attached to different functionings), should rather be the result of a deliberative process:

"It is not so much a question of holding a referendum on the values to be used, but the need to make sure that the weights – or range of weights – used remain open to criticism and chastisement, and nevertheless enjoy reasonable public acceptance. Openness to critical scrutiny, combined with – explicit or tacit –

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<sup>12</sup> For example, it may be possible to reach consensus on the importance of literacy and life expectancy, without being committed to a position on access to roof-gardens and the availability of singing lessons.

public consent is a central requirement of non-arbitrariness of valuation in a democratic society" (Sen, 1997a, p.206).

This line of argument has been pursued in Neuburger and Fraser (1993). Their Democratic Decision Analysis produces an index combining key outcomes of a project and the value of resources used in it, but the relative weight of different outcomes are to be varied and determined by political judgement, rather than being subsumed under a technical valuation. This proposal meets many of the criticisms which Sen has levelled at traditional cost-benefit analysis (Sen, 2000).

Conventional welfare judgements obscure the normative content of evaluation, but do not escape it, by making use of market valuations (prices). Market prices do not reflect externalities and, perhaps more importantly, the metric of exchange value cannot produce interpersonal comparisons of welfare or advantage (Sen, 1979). The consumption of the same value of commodities by two people does not entail the same utility for each: if one person got exactly half the utility from the same commodity bundle as the other person, that would also be consistent with all observations of market behaviour.

Evaluation of functionings provides information about what individuals achieve - what they are actually being and doing. The same functioning space can also be the basis for a different kind of evaluation, namely that of capabilities. An individual's capability set is the set of alternative functioning vectors feasible for that individual. A functioning vector is a combination of functionings (being well-nourished and in love and a concert pianist) which an individual can achieve simultaneously. An alternative feasible functioning vector is a combination which the individual could have chosen but did not (being well-nourished and in love and a piano teacher). If my capability set contains all the functioning vectors contained in yours, and mine also contains some additional valuable functioning vectors, I can be said to have greater substantive freedom than you.

This idea needs some unpacking. Firstly, why should we want to evaluate capabilities rather than functionings? Secondly, what is the concept of freedom implied by

capability? A third question, concerning how capability sets are to be measured and compared, is held over to the next chapter.

Why should capability be the subject of an evaluative exercise? Sen offers at least three reasons. Firstly, freedom may be instrumentally important for achieving certain kinds of well-being: someone who is denied freedom of movement, for example, by being incarcerated, is likely to suffer psychological distress. Secondly, the act of choosing may be valued for its own sake. The process of selecting where to live, for example, may be valued by an individual over and above the location actually selected. Finally, the existence of a range of options may be valuable, regardless of whether any particular individual values the process of choosing. Freedom may just have intrinsic value ("'over and above' the value of the things I get", Sen, 1996, p.110).

The last reason is perhaps the most difficult to grasp, but is the only one which absolutely requires us to evaluate capabilities rather than merely expanding the range or subtlety of functionings under consideration. If freedom is instrumentally important (reason 1), then its absence can in principle be detected through observing lower levels of achieved functioning. If the process of choosing is valued for its own sake by some individuals (reason 2), then 'agency' – the power of choosing – should be included in the list of relevant functionings, and achieved levels of well-being on this dimension assessed along with the others. Only if we think freedom has a value which is independent of individuals' own valuation of it, and which is independent of the level of well-being actually achieved, (reason 3), does the theory absolutely require us to consider capabilities.

An additional reason may come into play if we move from the assessment of an individual's well-being to the assessment of a social state. It is sometimes argued the state has a responsibility to ensure all citizens have the opportunity achieve a certain level of well-being. Individuals may choose to prioritise agency goals other than their own well-being, but provided the state has ensured everyone is able to achieve the given level of well-being, it will be deemed to have done its duty. In this case it is clear that the focus of an evaluation would have to be the capabilities of citizens for well-being rather than their actual functionings.

Note that this involves a rather peculiar attitude on the part of the state to individuals' preferences: on the one hand it defines a sub-set of functionings as important (those which define well-being), regardless of individuals' preferences; on the other hand it treats individual preferences as sovereign when it comes to evaluating outcomes. If the reason for focussing on well-being rather than agency goals is paternalistic, then it is odd to treat a case where someone has chosen something other than their own well-being as equivalent to a case in which well-being has actually been achieved. A more consistent approach to individual preferences would involve evaluating either well-being achievement (ignoring individual preferences entirely), or agency-goal achievement (allowing individual preferences to define both objectives and outcomes).

In terms of the concept of freedom implied by capability, Sen stresses that the notion of freedom he is employing is a positive one: the absence of interference is not sufficient to ensure an opportunity to do something (Sen, 1985b, 1991). This gives content to the expression 'substantive freedom'. However, it leaves open a wide field of interpretation as to what an individual does or does not have real opportunity to achieve, a question which recurs in Chapters 6, 8 and 9 below.

### **1.5. Common themes in the social model and the capability approach**

The social model warns against focusing exclusively on an individual's physical and mental resources, preferring rather to look at what he or she is able to do, given the physical and social environment. In a exactly parallel way, the capabilities framework warns against focusing exclusively on an individual's financial resources, preferring rather to look at what he or she is able to do. In other words both approaches are concerned with measuring outcomes or opportunities (participation in society), rather than inputs (impairments or money).

This basic agreement between the social model and the capabilities framework also manifests itself in other ways. Both emphasise the role of social, economic and

physical environments: for the social model in facilitating or preventing the participation of people with impairments, and for Sen's framework in determining participation more broadly. Both approaches conceive of disadvantage in relative terms. Both draw attention to the fact that different people need different resources in order to achieve the same level of well-being. Indeed disability is one of the examples Sen often uses to illustrate this point (for example, Sen, 1994a, 1997a, 2003).

Disability, as understood by the social model, is just one particular form of capability poverty, as described by Sen's framework. Impairment means a lower conversion rate of income into functionings; disability is a restricted capability set. This insight could have potentially far-reaching consequences for the way we think about disability. Rather than being a minority issue with specialist solutions, it becomes just one piece in the poverty jigsaw. Institutional and structural causes of income-poverty and unemployment have long been recognised; seeing disability as part of this picture might help to direct attention to the institutional causes of disability and away from issues of individual rehabilitation. For example, lack of accessible transport for people with impairments might come to be seen in the same way as lack of affordable child-care for lone parents: a barrier to participation in key activities of society.

Despite direct parallels between the social model and the capabilities framework, the connection between them has not been widely recognised in either literature (Burchardt, 2004). In bringing the two together, both can benefit: the social model of disability by being provided with a more robust theoretical framework, and capability theory through acquiring a concrete application.

## **1.6. Research design**

### *1.6.1. Secondary analysis of large-scale surveys*

The central purpose of the thesis is to compare conventional measures of income poverty with alternative measures of disadvantage. Conventional measures of income poverty are constructed using household survey data; accordingly, the appropriate research design is secondary analysis of large-scale survey data. This facilitates the reconstruction of conventional measures and the development of alternatives using the

same sources. It also enables the robustness of results to be tested statistically and the findings generalised to the population as a whole.

More radical alternatives, such as action research or participatory approaches, would of course have yielded entirely different results, but the results could not have been compared directly to conventional measures. Moreover, an important role for conventional measures is to provide overall estimates of the prevalence, intensity and distribution of disadvantage within and between different groups, a role which measures based on action research or participatory approaches could not fulfil.

The research was not, however, conducted in a vacuum. Throughout the process of writing the thesis, the author has been engaged in dialogue with disabled individuals, organisations of and for disabled people, and policymakers involved in this area of policy (see list at Appendix 1.1).

#### *1.6.2. Data sources*

The two main sources of data for Part I of the thesis are the Family Resources Survey (FRS) Disability Follow-Up 1996/7, and the British Household Panel Survey (BHPS). Part II uses the 1970 British Cohort Study (BCS70). An outline of each data source follows; more detail is given in Appendix 1.2, including information on response rates and weighting.

The FRS is an annual, nationally representative survey of 25,000 households in Great Britain, run by the Department for Work and Pensions. In 1996/7 it achieved a response rate of 69%. In addition to the main survey in that year, a follow-up survey was administered to those who indicated in the main survey that they were disabled. Although this is now several years ago, it remains the most recent specialist disability survey of the general population. It was selected for analysis for this reason.

The BHPS began in 1991 as a nationally representative sample of 5,000 households in Great Britain, the adult members of which were to be re-interviewed each year. It was selected to complement the FRS Disability Follow-Up Survey, by providing richer information on labour market history, unpaid work, leisure participation, social

networks, and political engagement, and for ease of comparison between disabled and non-disabled people. Data analysed in this thesis are drawn primarily from waves 6 and 7 which were conducted in 1996 and 1997, which facilitates direct comparison with the FRS Disability Follow Up conducted in 1996/7. The longitudinal structure is used to provide information about background characteristics and previous experience.

Part II of the thesis requires longitudinal data over a considerable span of time, to allow for the process of the formation of life plans and their translation (or non-translation) into reality to be studied. This suggests a cohort study and BCS70 was selected as the most recent birth cohort about whom information is available in both teenage and early adult years.<sup>13</sup>

BCS70 is a cohort study of all children born in Britain in a particular week in 1970. It is funded by a range of government departments and charitable trusts and is presently run by the Centre for Longitudinal Studies at the Institute of Education in London. Surveys have been conducted at birth, and at ages 5, 10, 16, 26 and 30. This thesis makes use of data from the age 16 and 26 surveys, carried out in 1986 and 1996 respectively. At age 16, information was collected from the young person him/herself, the parents, the school, and a medical examination. At age 26, information was collected from the respondent only.

### 1.6.3. *Definitions of disability*

The focus throughout this thesis is on disabled people of working age (16-59 for women, 16-64 for men; the difference is due to the difference in state pension age in Britain). Several of the measures which this thesis compares depend on examining participation in key activities, and, because the nature of the activities which it is considered important for people to engage in, or have the opportunity to engage in, varies with life-stage (for example, access to employment is considered very important for people of working age, less important for people over retirement age,

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<sup>13</sup> The next birth cohort is being followed in the Millennium Cohort Study, but they have only reached the age of 4. The Youth Cohort Studies run by the Department for Education and Skills follow cohorts of young people from school leaving age, but they do not contain sufficiently detailed information, and the follow up does not usually extend beyond age 19.

and not important or even desirable for children), it was necessary to select an age group on which to focus. People of working age were chosen because of the considerable policy interest in improving the circumstances of disabled people in this age group (see section 1.2 above).

In the FRS Disability Follow-Up, the definition of disability and scale of severity is closely based on that developed by the Office of Population Censuses and Surveys in their 1985 survey of disabled people (Martin, Meltzer and Elliot, 1988). Up to 108 questions are asked to establish the daily activities which the respondent is or is not able to undertake and the degree of difficulty they encounter. These are grouped into 13 types of impairment (locomotion, reaching, dexterity, seeing, hearing, continence, fits/consciousness, communication, behaviour, cognition, digestive, disfigurement, and self-care), and divided into ten categories of severity from 1 (least severe) to 10 (most severe). It is widely regarded as the most comprehensive and reliable survey instrument for the identification of disabled people, although it was criticised by some disabled people's organisations for blurring the line between impairment and disability and focussing on individual limitations rather than environmental and institutional barriers (DA, 1988). Just over 5,600 adults who produced full interviews are identified as disabled, of whom 2,595 are of working age, equivalent to nine per cent of the working-age population.<sup>14</sup>

As a general household survey, the BHPS was not designed primarily to measure disability, with the result that the questions on that subject are somewhat unfocussed. There are several questions which could be used to define disability (see Appendix 1.2 for a discussion). The main one selected corresponds to the idea of limitation in activities of daily living ('ADL'), and reads as follows:

*Does your health in any way limit your daily activities compared to most people of your age?*

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<sup>14</sup> Neither FRS nor BHPS covers the institutional population. However, in 1991, only two per cent of the working age population were in communal establishments. Of these, 15 per cent were non-staff resident in hospitals and care homes, many of whom would count as disabled (OPCS, 1993). This approximates to 100,000 disabled people out of a total working age disabled population of some 5.6 million.

This is supplemented by information on possible mental health problems from a standard survey instrument known as the General Health Questionnaire ('GHQ'). Cross-sectional prevalence rates of disability among the working age population in the middle of the panel are 11 per cent as measured by 'ADL'. A cut-point between 2 and 3 on 'GHQ' is usually taken to indicate probable psychiatric disorder (McDowell and Newell, 1987); just over one quarter of working age respondents in BHPS score more than 2 on 'GHQ'.

These rates may seem high but they are in line with results from other surveys. The Spring-Winter 1997 Labour Force Surveys found 14 per cent of working age people were limited in the type or amount of work they could do (Cousins, Jenkins and Laux, 1998). The 1991/2 Health and Lifestyle Survey used an extended GHQ scale and found 25 per cent of men and 30 per cent of women were above the cut-point (Huppert and Whittington, 1993), while the Health Survey for England 1993-1995 found 13 per cent of men and 19 per cent of women scored 4 or above on GHQ12 (a higher cut-point than is usual) (Pardon, 1997).

The richness of data in BCS70 is a significant advantage but also complicates the classification of disability, since information is sometimes inconsistent or missing. At the age 16 sweep, parents were asked:

*Does your teenager have an impairment, a disability or a handicap?*

In addition, health professionals (often the school nurse) administering the medical examination were asked:

*Is there any evidence that this teenager has now, or has had in the past, any significant illness, developmental problem, defect or handicap?*

and

*Is there any evidence of any impairment, disability or handicap?*

For each condition or impairment identified by the health professional, she or he is also asked to report whether this results in no disability, slight disability or marked disability.

The overlap between parents' and health professionals' assessments of the teenager's disability status is far from perfect, as explored in Appendix 1.2. In order to include as much information as possible, in Chapter 8, a teenager is classified as disabled:

- if he or she is identified as impaired, disabled or handicapped by the parent *and* as having a slight or marked disability by the nurse.
- if he or she is identified as impaired, disabled or handicapped by the parent but information from the nurse is missing
- if he or she is identified as having a slight or marked disability by the nurse but information from the parent is missing.

If information is supplied by both parent and nurse but the information is inconsistent, the disability status of the teenage is classified as 'uncertain'. It is likely that the young people in this category have a less severe impairment, although there could be cases where the parent or nurse is aware of an impairment which is hidden to the other.

In all other cases where information is supplied by one or both of the parent and nurse, the disability status is 'not disabled'. Where information is missing from both parent and nurse, the disability status is missing - a higher proportion than one might wish for. The breakdown is shown in Table 1.1.

**Table 1.1: Disability status at age 16 in BCS70**

	Number	Percent	Percent of non-missing
Not disabled	8,885	76.5	91.7
Uncertain	486	4.2	5.0
Disabled	313	2.7	3.2
Missing	1,931	16.7	
Total	11,615	100.0	100.0

Source: BCS70 age 16 survey

At age 26 in BCS70, the disability indicator is based on information from the cohort member him/herself, referring to long-term health problems, illness, infirmity or disability. This is compared to the individual's status at 16 to create a longitudinal

measure (Table 1.2), drawing where necessary on additional information about the type of conditions reported - which is available at both ages - to make a judgement about the likely disability status of the individual. Some reassurance about the validity of the 'became disabled' categories is given by the fact that over half of these groups report at age 26 that they have had an accident or injury which required hospital treatment since the age of 16, and this is well above the average rate of accidents for the sample.

**Table 1.2: Longitudinal disability status in BCS70**

Disability status	Full		Summary	
	N	col.%	N	col.%
Disabled at neither age	4489	62.8	4489	78.4
Disabled at 16, not at 26	68	1.0	279	4.9
Disabled at 16, not at 26 (probably)	211	3.0		
Became disabled between 16 & 26	789	11.0	829	14.5
Became disabled betw. 16 & 26 (probably)	40	0.6		
Disabled at both ages	81	1.1	129	2.3
Disabled at both ages (probably)	48	0.7		
Missing / don't know	1418	19.9	-	-
All	7144	100.0	5726	100.0

Source: BCS70 age 26 survey

The 'Summary' column offers a shorter classification, allocating the 'probably' categories to their definite counterparts, and showing the percentage each category makes up of the total valid responses (i.e. omitting 'Missing/don't know').

### 1.7. Overview and organisation

The thesis has an Introduction and a Conclusion, with two substantive Parts in-between. Part I compares four measures of well-being, based on income, equivalised income, functionings and opportunity respectively. The first two are based on economic welfare; the latter two are derived from the capability approach but remain focused on the idea of well-being rather than the broader concept of agency goals. Part II extends the application of the capability approach by investigating the formation and pursuit of agency goals.

## INTRODUCTION

**Chapter 1** (this chapter) outlines the central purpose of the thesis; offers an overview of the current policy context; provides an exposition of the foundations of the capability approach and its relationship to the social model of disability; explains the research design and provides definitions of some key terms.

**Chapter 2** reviews the literature on the theory of operationalising the capability approach, describes existing empirical applications which measure functionings, and the very few attempts to measure capabilities. Remaining issues and problems are identified. Related literatures on equivalisation, equality of opportunity, and adaptive preferences are reviewed in the chapters to which they are specifically relevant: chapters 4, 6 and 8 respectively.

## PART I: WELL-BEING

**Chapter 3** analyses income poverty among disabled and non-disabled people in Britain in the 1990s, and thereby provides a baseline against which results in subsequent chapters can be compared.

**Chapter 4** reviews the literature on equivalisation for variations in needs; constructs and implements a new equivalisation scale for severity of disability, and explores its implications for poverty rates among disabled people and the population as a whole.

**Chapter 5** creates a measure of functioning-poverty and analyses it for disabled and non-disabled people.

**Chapter 6** reviews the literature on measuring opportunity; develops an innovative approach to measuring capability, by assessing the extent to which individuals have the opportunity to achieve specific functionings; and implements this measure for disabled and non-disabled people.

**Chapter 7** concludes Part I of the thesis. It compares the poverty identified by measures based on income, equivalised income, functionings and opportunity and offers some initial reflections on the relative merits of the alternative measures of well-being considered in Part I.

## PART II: AUTONOMY

In one important respect, the measure of capability explored in Chapter 6 is incomplete. It takes preferences (for example, preferences for employment versus non-employment) as given, and regards those who do not wish to participate as being no better or worse off than those who do wish to participate, provided both have the opportunity to do so. This ignores the process of the formation of an individual's objectives, which may itself have been subject to constraints. Part II of the thesis examines the process of the formation of agency goals in more detail and reflects on the challenges this presents for a fuller measure of capability.

**Chapter 8** reviews the literature on conditioned expectations and the formation of aspirations among young people; and analyses the influences on aspirations for education, employment and becoming independent among disabled and non-disabled young people.

**Chapter 9** shows the extent to which the young people's aspirations were realised by their mid-twenties, and analyses the influences on their achievement. The chapter develops a typology of the degree of autonomy enjoyed by individuals, drawing on the analysis of the formation and pursuit of agency goals.

## CONCLUSIONS

**Chapter 10** argues that income can and should be equivalised for a wider range of differences in need, including disability, than is usually the case, as illustrated in chapter 4. Where data are available and a single index is not required, a measure of capability as opportunity as outlined in chapter 6 is conceptually preferable and provides better guidance for policymakers about priorities within the disabled population and between disabled and non-disabled people. Finally, although a longitudinal measure of autonomy (capability for formulating and achieving agency goals) such as presented in chapter 9 is insufficiently precise and overly demanding in terms of data to be practicable in most policy contexts, it reflects a deeper conception of the capability approach.

To summarise, in addition to providing in-depth analysis of the position of disabled people in society, this thesis makes three significant contributions, one theoretical and two methodological. The theoretical development is the distinction between capability as opportunity and capability as autonomy, that is, the distinction between an approach which treats preferences as exogenous and one which takes seriously the problem of conditioned expectations (Chapters 8 and 9). The innovative methodologies are, firstly, the extension of techniques of equivalisation of income to take account of variations in needs due to disability (Chapter 4), and, secondly, an approach to quantify whether a particular functioning is within an individual's capability set (Chapter 6). It is hoped that these developments contribute towards meeting one of the most common criticisms of the capability approach, namely, that it is difficult or impossible to operationalise.

### **Appendix 1.1: Contact with organisations**

During the course of research for this thesis, organisational contacts included: Advice Services Alliance, British Council of Disabled People, Child Poverty Action Group, Disabllement Income Group, Disability Alliance, Disability Benefits Consortium, Disability Rights Commission, Employers Forum on Disability, Leonard Cheshire, MIND (for people with mental health problems), National Association of Citizens Advice Bureaux, National Centre for Independent Living, National Council of Voluntary Organisations; RNIB (for people with sight impairment), RNID (for people with hearing impairment), SCOPE (for people with cerebral palsy), Skill (for disabled students), and the Trades Union Congress.

Contact with government departments and related bodies included: Benefits Agency, Cabinet Office (including Social Exclusion Unit, Strategy Unit, and Performance and Innovation Unit), Department for Education and Skills (formerly Department for Education and Employment), Department for Trade and Industry, Department for Work and Pensions (formerly Department for Social Security), Department of Health, Disability Employment Advisory Committee, HM Treasury, Inland Revenue, Jobcentre Plus, Office for National Statistics, Office of the Deputy Prime Minister, and the Social Security Advisory Committee.

## Appendix 1.2: Further detail on data sources and definitions of disability

### *Family Resources Survey*

A number of screening questions are used in the main 1996/7 FRS to select the sub-sample for the disability follow-up. These include receipt of disability benefits, being registered as disabled with the local authority, having a limiting long-standing illness or disability, or being aged 75 or over. The response rate to the follow-up survey was 83%. The follow-up survey begins with a detailed set of questions to confirm that the respondent is disabled and identify the nature of impairment; the definition of disability used is discussed below.

In addition to details of nature and severity of impairment, the FRS Disability Follow-Up survey contains information on use of services and informal care, and on participation in leisure activities. Unfortunately the questions on participation in leisure are not asked in the main survey, so that information is lacking for non-disabled respondents. The main survey contains detailed information on income including earnings and benefits, and on employment and living conditions. Since the main survey is administered to all households, comparisons between disabled people and the rest of the population in these respects are relatively straightforward. Weights are supplied with the main survey and with the follow-up survey to counteract non-response bias and these are used in the analysis where appropriate.

**Table A1.1: Distribution of disability among people of working age in FRS**

Severity category	Number	Percent
Not disabled	22,119	89.5
1	540	2.2
2	333	1.3
3	266	1.1
4	330	1.3
5	278	1.1
6	271	1.1
7	254	1.0
8	201	0.8
9	104	0.4
10	18	0.1
Total	24,714	100.0

Source: FRS and Disability Follow Up 1996/7 (unweighted)

### *British Household Panel Survey*

BHPS is run by the UK Longitudinal Studies Centre at the University of Essex. At the time of writing the survey is in its fifteenth year. Since its inception, various samples have been added to the original sample, for example, a youth survey, booster samples for Wales and Scotland, and a new Northern Ireland component, but these are not included in the analysis here. The 'following rules' are that an interview is sought each year with every original sample member, or child of an original sample member who turns 16, whether they remain in the household of origin or not. Other adults

living with original sample members (or children of original sample members) are also interviewed but are not followed if they leave the household.

At the first wave, at least one interview was obtained in 74 per cent of eligible households, a response rate comparable to that of other large-scale British surveys. To correct for bias that may arise from initial non-response, the obtained sample is weighted to reflect population characteristics such as age, sex, type of dwelling, household size, and number of cars (as a proxy for wealth), as closely as possible. A further problem of non-response specific to panel surveys arises because some respondents at the first wave fail to give an interview at subsequent waves, so that the remaining sample is no longer representative - a process known as attrition. A second set of weights, using the much more detailed information about individuals' characteristics available from their most recent interview, are used to counter possible attrition bias.<sup>15</sup> Just under 5,000 adults of working age have given full interviews at each of Waves 1-7.

A range of questions are available as possible indicators of disability in BHPS, as shown in Table A1.2. Benefit receipt and use of services depend on characteristics other than disability (for example, income and availability of informal care). Similarly, those who are registered disabled are only a small subset of disabled people. On the other hand, the remaining questions, 'ADL', 'Work', 'GHQ' and 'Conditions', may be thought too subjective. There are two reasons to believe this is not as serious as it might seem: firstly, there is some evidence that self-assessed disability is closely related to 'harder' measures of disability (Verbrugge, Reoma and Gruber-Baldini, 1994; Ferraro, Farmer and Wybraniec, 1997; Benitez-Silva *et al.*, 2000), and secondly, if it is disability as opposed to impairment that is of interest, self-assessment may be a *better* way of picking up the complex barriers to participation faced by disabled people than assessment by a third party based on fixed criteria. There are however other problems with the remaining questions. Responses to 'Work' may be endogenous to employment status: those out of work are probably more likely to regard themselves as unable to work. 'ADL' and 'Work' refer to health, though they seem designed to identify disability, which is an undesirable confusion. Fortunately they are asked immediately after 'Conditions', which does explicitly refer to disability, so it can be hoped that those with limiting impairments include themselves in response to 'ADL' and 'Work'. 'Conditions' relates most closely to a concept of impairment. None of the questions is fully consistent with the social model - all place the individual's impairments rather than the social environment at centre stage - but 'ADL' and 'Work' do at least address the extent to which the individual can participate in 'normal' activities. Accordingly the analysis uses 'ADL' as the principal indicator of disability, supplemented with 'GHQ' where mental health is of particular interest, and 'Conditions' to identify the nature of impairment.

<sup>15</sup> For discussion of weights in the BHPS, see Taylor (1998). It is possible that disabled people have characteristics not controlled for in the weighting procedures which make them more likely to drop out of the Panel.

**Table A1.2: Variable names and text of questions on disability in BHPS**

<i>Variable name</i>	<i>Short name</i>	<i>Description</i>
hlt	ADL	Does your health in any way limit your daily activities compared to most people of your age?
hltw	Work	Does your health limit the type or amount of work you can do?
hlghq2	GHQ	[Score from 0 to 12 on basis of responses to standard set of 12 questions, usually taken as indicator of mental health. E.g., 'Have you recently been able to concentrate on whatever you're doing? Better than usual/ same/ less/ much less than usual'.]
hlprb	Conditions	Do you have any of the health problems or disabilities listed on this card? [List of 12 conditions/impairments, and an 'other' category]
hlsv	Services	Here is a list of some health and welfare services. Have you yourself made use of any of these services since September 1 <sup>st</sup> last year? [List includes home help and meals on wheels]
hdsbl	Registered	Can I check, are you registered as a disabled person, either with Social Services or with a green card?
f116 – f125	Benefits	Have you yourself or jointly with others since 1 <sup>st</sup> September last year received... [list of benefits including all the main disability benefits]

Source: BHPS

*British Cohort Study 1970*

At birth, information was collected about 16,135 babies, which constituted an impressive 98 per cent response rate. At age 16, difficulties of tracing and data collection were compounded by industrial action being taken by teachers. At least one part of the survey was completed by (or about) 11,628 members of the original sample, a 72 per cent response rate. At age 26, 9,003 individuals completed a postal questionnaire, which was 56 per cent of the original sample.

Attrition bias has been examined by the data collectors and other researchers (Despotidou and Shepherd, 2002; Plewis et al, 2004). Even at age 26, the achieved sample is fairly similar in composition to previous sweeps. However, those who have previously reported a health problem or impairment are slightly under-represented; as are young people from a minority ethnic background, who were born to a single mother, unemployed father or a parent from a lower social class background; those with low school achievement; those who grew up in families with financial problems; and those who have experienced poor housing conditions. Where possible, these characteristics are controlled for in multivariate analysis.

In BCS70, at the age 16 sweep, parents were asked:

*Does your teenager have an impairment, a disability or a handicap? (By 'impairment' we mean a physical or mental abnormality or illness. By 'disability' we mean difficulty in doing one or more mental or physical activities that average 16 year olds can do. By 'handicap' we mean a disability which interferes with the opportunities that others take for granted, e.g. problems with accessing facilities in a public buildings, not being considered for jobs he or she could manage if given a chance; other people are put off without even knowing what he or she is like.)*

Despite the efforts of the survey designers, it appears that some parents did not fully understand the definitions being proposed, since some teenagers are reported as having a disability but not an impairment, or a handicap but not an impairment. In addition, health professionals (often the school nurse) administering the medical examination were asked:

*Is there any evidence that this teenager has now, or has had in the past, any significant illness, developmental problem, defect or handicap?*

and

*Is there any evidence of any impairment, disability or handicap?*

For each condition or impairment identified by the health professional, she or he is also asked to report whether this results in no disability, slight disability or marked disability.

The overlap between parents' and health professionals' assessments of the teenager's disability status is far from perfect. Table A1.3 shows just at those cases where information is given by both parents and nurses.

**Table A1.3: Overlap between nurse and parental assessment of disability at age 16 in BCS70**

Parent	Nurse				Total
	None	Impairment not disabling	Slight disability	Marked disability	
No impairment, disability or handicap	80	11	4	0.3	95
Some impairment, disability or handicap	2	1	1	1	5
Total	82	12	5	1	100%

Source: BCS70 age 16 survey

In Chapter 8, in order to include as much information as possible, a teenager is classified as disabled:

- o if he or she is identified as impaired, disabled or handicapped by the parent *and* as having a slight or marked disability by the nurse.
- o if he or she is identified as impaired, disabled or handicapped by the parent but information from the nurse is missing

- o if he or she is identified as having a slight or marked disability by the nurse but information from the parent is missing.

If information is supplied by both parent and nurse but the information is inconsistent, the disability status of the teenage is classified as 'uncertain'. It is likely that the young people in this category have a less severe impairment, although there could be cases where the parent or nurse is aware of an impairment which is hidden to the other.

In all other cases where information is supplied by one or both of the parent and nurse, the disability status is 'not disabled'. Where information is missing from both parent and nurse, the disability status is missing - a higher proportion than one might wish for. The breakdown is shown in Table 1.1 in the main text.

## CHAPTER TWO: MEASURING FUNCTIONINGS AND CAPABILITIES

### 2.1. Overview

The purpose of this chapter is to review the literature on measuring functionings and capabilities, in order to identify the range of approaches which have been used and any remaining issues to be resolved. Interest in the capability approach has been expanding rapidly since the mid-1990s, with four international conferences culminating in the establishment in 2004 of the Human Development and Capability Association (HDCA). This has been accompanied by a burgeoning literature. However, much writing on the subject is philosophical or theoretical; rather less concerns itself with how the capability approach can be operationalised, and even fewer articles attempt an empirical application. It is on the last two categories that this chapter concentrates.

The literature examined in this chapter is therefore directly concerned with the capability approach. Related approaches are pertinent to the topics addressed in subsequent chapters (for example, equivalence for chapter 4 and adaptive preferences for chapter 8). Literature on these related approaches are covered in the relevant chapters.

Although a full systematic review, as described by EPPI (2005), was outside the scope of this thesis, the principles of systematic reviewing were applied. This means setting out the objectives of the review at the outset, establishing a search protocol (including defining inclusion and exclusion criteria), devising a search strategy to implement the protocol, and analysing the results thematically, by use of keywords. Details of the search protocol and strategy are given in the Appendix to this chapter.

## 2.2. Functionings: general topics

### 2.2.1. *Selection of functionings*

Within the capability approach and related literatures, methods of selecting functionings (or other multi-dimensional indicators of well-being) can be grouped under three headings: (i) a quasi-democratic process or attempting to identify a consensus; (ii) deriving a list from theory or a priori reasoning; and (iii) assertion of a list, or a data-driven selection such as including all potentially relevant variables, possibly combined with data-reduction techniques like factor analysis. Unfortunately, the third of these, which has no theoretical justification, is the most common in empirical work, as will become apparent from the overviews in sections 2.3 and 2.4 below.<sup>1</sup>

In the previous chapter, it was noted that Sen favours the first of these approaches. He argues, firstly, that one should not expect a technical solution to the selection of functionings, since it is an essentially normative problem, and, secondly, that agreement may be reached on a small number of important functionings (a partial ordering) without being committed to a complete ordering of all functionings (Sen, 1985a; 1992). These suggestions lead Hossain (1990) to suggest that the functionings selected should be those which will command consensus, rather like Rawls' idea of an overlapping consensus of values across divergent conceptions of the good life (Rawls, 1993). Alkire (2002a) takes this one step further and argues that such a consensus can be revealed, or created, through the application of participatory methods of research. The process of participation, provided it is carried out with skill and sensitivity, has other beneficial effects: it ensures that the functionings prioritised mesh well with local conditions, it is empowering for the participants, and it can encourage critical reflection on values and culture.

Others (Brandolini and d'Alessio, 2001; Saith, 2001) have drawn on related multi-dimensional approaches to measuring disadvantage, such as the multiple deprivation tradition (Townsend, 1979; Mack and Lansley, 1985) and the Scandinavian level of

<sup>1</sup> For example, Desai (1995) proposes five capabilities and claims that this is an exhaustive account, without further justification.

living surveys (Erikson and Aberg, 1987) in order to identify common ground in the aspects of life which are considered important. Indeed, reviews of such lists tend to find that there is a considerable degree of overlap (Alkire, 2002b), although whether the overlap is sufficient to be considered a consensus or merely convergence is a matter of judgement. Qizilbash (2002a) observes that, "each account seems to be parasitic on the insights of others" (p.476).

Any search for consensus, whether through participatory methods or through comparisons of existing literature, has a tendency to downplay tensions and conflicts. Sen's preference for explicitly political, quasi-democratic procedures, whose purpose is to reach a decision while acknowledging different interests and opinions, rather than to assume them away, does not suffer from the same drawback. However, a second line of criticism can be mounted against both political and consensus-based procedures for selecting functionings: individuals who have lived in long-term deprivation may have limited knowledge of, or aspiration for, the range and level of functionings which can in principle be attained. In particular, oppressed groups may have neither the courage nor the wherewithal to identify or assert their particular priorities. This is a parallel argument to the 'adaptive preferences' critique used by Sen and others against utility-based metric of well-being, as described in the previous chapter.

It is partly for this reason that a more theoretical approach to the identification of functionings has developed. The problem of how to select the dimensions for multi-dimensional analysis is not, of course, unique to the capability approach. One important tradition reaching back to Immanuel Kant attempts to derive basic human needs using transcendental reason, that is, identifying the conditions which must be met in order for human beings to fulfil some definitive characteristics of being human, such as having moral capacity, or powers of critical reflection. Plant et al (1980) and Taylor-Gooby (1991) trace this line of thought through Hegel and Marx to modern day authors such as Albert Weale (1983) and basic need theorists.

Intellectual exchange between approaches founded on the concept of needs and the capability framework have been limited, probably to the detriment of both schools of thought. In a relatively early piece, Sen criticised the basic needs approach for tending

to identify commodity requirements - the means - rather than the ends in themselves (Sen 1994a); a characterisation that did not take into account the full range of approaches under the 'basic needs' banner, as demonstrated by Gough's (2002) comparison between his theory of human need with Nussbaum's capabilities approach.

The theory of human need developed by Doyal and Gough (1991) and explored further in Gough (2000) endeavours to derive a list of needs from universal human goals. Need is defined as the avoidance of serious harm. Serious harm occurs if one is unable to pursue one's vision of the good. To formulate or pursue one's vision of the good, one must be able to engage with others in social participation; hence being prevented from engaging in social participation is another way to describe serious harm. The universal preconditions for such participation are defined as 'basic needs', and are identified as physical health and autonomy (i.e. the capacity to make informed choices). These are insufficiently specific to guide evaluation of well-being or policymaking, however, so Doyal and Gough extrapolate from the basic needs to a set of intermediate needs and societal preconditions. These are as universal and equally important as the basic needs; indeed they are, jointly, logically equivalent. The difference is only the level of detail at which they are specified. The intermediate needs can be grouped into 11 categories and include, for example, adequate nutrition, shelter and healthcare, security in childhood, and significant primary relationships. The societal preconditions include guarantees of civil and political rights, organisation of the means of production and distribution, and so on. Only when it comes to specific need satisfiers - *how* adequate nutrition is to be obtained, or the methods of distribution, for example - does local variability enter into the framework (Gough, 2004).

Doyal and Gough's basic and intermediate needs clearly have a great deal in common with the concept of functionings. Two important differences with Sen's version of the capability approach can be noted: firstly, that the list of needs (functionings) is specified and claims to be universal; and secondly, that the evaluation is to be conducted at the level of actual achievements rather than substantive freedom to achieve (capabilities). The specification of a list makes the approach easier to operationalise, and reduces the problems of conditioned expectations or of hijack by

the powerful associated with political or consensual approaches, as mentioned above. The flipside, however, is the apparent authoritarianism involved in imposing a list of priorities on all people in all situations, without regard to their own values, cultures or beliefs - a charge which is exacerbated by evaluation at the level of functionings rather than capabilities.

Relying on participatory or democratic processes to generate a list of functionings risks allowing the powerful to entrench their position and missing an opportunity to raise the aspirations of the oppressed. On the other hand, drawing on a theoretical or 'expert' derivation of a list risks charges of ignoring people's own priorities and beliefs. These are two sides of the same coin. Recognition of this dilemma has led some authors to adopt a mixed approach. Following Doyal and Gough, Neuburger and Fraser (1993) propose the following hierarchy of functionings:

1. Life (because it is a logical precondition for all functionings);
2. Avoidance of extreme pain and suffering, physical or mental (because this is in almost all cases a precondition for other functionings);
3. Participation in society (for almost all people, participation is a precondition for almost all other functionings. This includes basic education and paid employment or some other means of acquiring a minimum standard of living).

Neuburger and Fraser represent an interesting mix of the theoretical and consensus-based approaches, since although their selection of functionings is *a priori*, the relative weights which should be given to achieving the different functionings by policymakers is to be determined through the political process.

Nussbaum (1995, 2000, 2003) too represents something of a mid-point between the purely theoretical and the political approaches to selection of functionings. She intends that her list of 'central human capabilities' will, or could, be endorsed by a wide range of societies and cultures.<sup>2</sup> Explicitly Aristotelian in orientation, the list is derived *a priori*, from reflection on the meaning of living a human life with dignity,

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<sup>2</sup> Nussbaum's list is of capabilities, since she believes that capabilities, not functionings, are the proper subject of social justice. However it is convenient to consider the list here since it is probably the most celebrated, and controversial, selection of specific 'objects of value' in the capability literature. The corresponding functionings can be inferred from the list.

and from consideration of the goals and aspirations humankind has expressed in its literature over the generations and across cultures. However the list has also been subjected to modifications as a result of Nussbaum's research in India, and is intended, Nussbaum asserts, to be "open-ended and subject to on-going revision" (2003, p.42). The list is included at Appendix 2.2.

Some items on Nussbaum's list are uncontroversial (longevity, being healthy, and being adequately sheltered, for example), but others, such as being able to laugh and play, or being able to live with concern for animals, may strike someone not schooled in the Aristotelian tradition as odd. Nussbaum provides a justification for each, but it is not hard to imagine other capabilities with equally good credentials: being free from arbitrary arrest, or having an adequate standard of living, for example. Some alternatives, also derived through an application of practical reasoning, are canvassed in Alkire and Black (1997). It is hard to avoid the conclusion that the content reflects the personal values and priorities of the author and her times, and that another list in another time and place could be very different. That may not matter if the list commands political consensus in the here and now, although it does cast doubt on claims to universality.

As Qizilbash (1998) articulates, the absence of a specific list of functionings leaves Sen's framework open to the charge of lacking substance and definition, while the precision of Nussbaum's list appears to leave a rather confined space for the value pluralism which is central to modern liberalism. But there may, in fact, be less difference between them than at first appears. Nussbaum proposes a list based on theory and incorporating modifications in the light of exposure to discussion within different cultures and in different locations. Sen advocates that the selection of functionings should be suited to the evaluative project being undertaken, that in the context of social policy this is likely to mean consideration of well-being rather than agency goals, and that whatever selection is arrived at should be open to scrutiny and public debate. Nussbaum's list - or indeed Doyal and Gough's - could well provide the starting point for the kind of debate Sen envisages.

Two authors have attempted to codify the desiderata in an endeavour to provide a more transparent framework for the selection of functionings. Deutsch et al (2000)

suggest that the functionings selected should meet two requirements: (i) not be highly correlated with each other; and (ii) not neglect any important aspect of functioning. Unfortunately this gives rather little to go on! Moreover, it is not clear that a high association between two functionings in a given society, say, between education and health, is reason enough to select just one for evaluation, if both are important components of human functioning.

Robeyns (2003) also offers a set of criteria for selecting functionings:

1. Explicit formulation
2. Methodological justification
3. Sensitivity to context
4. Different levels of generality
5. Exhaustion and non-reduction.

The first and second criteria are designed to ensure transparency, so that the list may be discussed and contested. The selection should be justified with reference to some political, moral or other theory and the process by which it was arrived at explained. The third criterion recognises that different levels of abstraction may be required for different evaluative exercises - more abstract for philosophical discussion, more specific for the measurement of poverty. The fourth criterion recognises that there may be a difference between the ideal list and the list which can be measured or implemented, given constraints on available information. The final criterion echoes the requirements listed by Deutsch et al (2000).

#### 2.2.2. *Measurement of functionings*

Having selected which functionings are to be considered, there is then a question about how each functioning is to be measured, and whether a threshold is to be set for adequate functioning. Unlike for income or expenditure, for a functioning there is not necessarily a single continuous variable, whose distribution can be plotted and for which poverty thresholds can be defined relative to the mean or median. Some authors favour combining a number of different indicators into a single functioning dimension (for example, combining data on whether the home is free from damp, is warm, not

too noisy and sufficiently spacious into the functioning 'being adequately sheltered'). These indicators can be combined by a simple count, or by some data reduction technique like factor analysis, cluster analysis or principal components analysis, or by some other form of weighting. Issues in determining an appropriate set of weights are discussed in the section on valuation of functionings below.

Functioning on a single dimension can then be measured as above or below a fixed threshold, or thresholds, or by a 'fuzzy' membership function (Brandolini and d'Alessio 2001; Chiappero Martinetti 1994, 2000, 2004). A fuzzy membership function assigns level of functioning to an individual on a probabilistic basis in the range 0 to 1, rather than as a binary 0/1 variable, and the shape of the function can be chosen to reflect intuitions about the circumstances being measured. For example, an increasing number of problems with the home might be considered to increase disadvantage in a non-linear fashion, such that an unheated and damp home is more than twice as likely to remove you from membership of the functioning 'being adequately sheltered' than either an unheated or a damp home alone.

More sophisticated versions of a poverty threshold have been proposed to take account of multi-dimensionality, for example, making use of distance functions (in the mathematical sense of 'function') to measure how far an individual is from a reference functioning vector (Deutsch et al 2000; Gaertner and Xu, 2005).

### 2.2.3. *Aggregation of functionings*

Assuming that the selection of functionings and their measurement has been determined, the next question is whether to aggregate different functionings into an overall index, and if so, how this is to be done.

One justification for non-aggregation is to regard basic functionings as absolute; failure to achieve an adequate level of functioning on any one dimension is a sufficient imperative for action. This has a certain appeal, but limits the range of possible conclusions. An alternative is to regard someone as functioning-poor only if they are below an adequacy threshold on *all* selected functionings. These alternatives correspond to union and intersection operators respectively (Chiappero Martinetti

2000). This too is limiting, in that it is not possible to say whether someone who is, for example, poor on three out of four dimensions, is more or less well-off than someone who is poor on none of them.

Further comparisons between individuals can be made, still without aggregation across dimensions, by considering whether one individual's functioning vector dominates another's (Brandolini and D'Alessio 2001). Where there is no dominance, the vectors cannot be ranked, so the result is a partial rather than a complete ordering. Sen, however, frequently reminds us that in many situations a partial ranking is preferable to either saying nothing at all or to a full, but distorted, ranking ("offering us a false choice between silence and babbling", Sen, 1985a, p.31).

If aggregation across functionings to create a single index is required, one approach canvassed by Balestrino (1994) is to calculate an income poverty line for each individual corresponding to the level of income at which he or she can achieve all the selected functionings at an adequate level. The line must be specific to the individual to take account of the different rate at which individuals can or do convert income into valued functionings (see Chapter 1, section 1.4). Working along somewhat similar lines, Lovell et al (1994) exploit an analogy with production economics: an index of economic resources provides the input quantity index, while an index of the functionings achieved by an individual is analogous to the output quantity index. An index of the proficiency with which individuals transform resources into functionings can be derived, akin to the productivity index of production economics. The distance between the individual's achieved functionings and the 'functioning frontier' (the best that can be achieved by any individual given those resources), provides a measure of the amount by which individuals' functioning may fall short of others as a result of differences in their rate of conversion of resources into well-being.

More broadly, Sen (e.g. 1999a) argues that developing equivalence scales which reflect a wider range of differences in rates of conversion than do conventional equivalence scales is one way to tackle the aggregation problem. This is discussed in much greater depth in Chapter 4 below.

An alternative to the equivalence of income in order to aggregate across functioning dimensions is to construct a well-being indicator to which each functioning dimension contributes. This entails defining a set of weights, which determine how much each dimension contributes.

#### 2.2.4. *Valuation of functionings*

A number of authors have been tempted to use techniques such as factor analysis to obviate the need for devising weights. However, as Brandolini and D'Alessio (2001) point out, factor analysis and associated techniques show the relative importance of different dimensions in explaining the overall pattern observed, but they do not offer a valuation function. They are descriptive rather than normative.

Using market prices to evaluate functionings suffers from the same drawback: “[H]ow can evaluatively significant weights – whether of commodities or of functionings – be simply ‘read off’ from some *other* exercise (in this case, of commodity exchange), without addressing the issue of values in this exercise (the comparison of individual advantages)?” (Sen, 1997a, p.207).

Other common approaches are to weight each functioning dimension equally, which has the advantages of simplicity and transparency, or to weight each functioning in proportion to its prevalence in society (frequency-based weights). Thus if a small minority lack a particular functioning, that is given greater weight than another functioning which is not achieved by a larger number. This rests on the assumption that deprivation is less burdensome if it is a common experience, an assumption which requires justification in each context in which it is applied.

Drawing on the tradition of welfarism, Pattanaik (1994) considered whether functioning vectors could be ranked using either individual preferences or some aggregation of individual preferences. However, the first option falls foul of the observation that any given individual's preferences may be adaptive, and the second runs into the same difficulties that beset welfarism in the form of Arrow's impossibility result. As Sen (1981c, 1982, 1985b) has argued, this is partly due to limiting the relevant information to individual preferences; broadening the

informational set is one way forward. Chakraborty (1996) suggests incorporating the views not only of the individual in question but of others in society into the weights for each functioning dimension. This proposal combines individuals' sets of weights into a single set which reflects society's judgement about trade-offs between different functionings, and, he argues, steers a middle course between paternalism (the specification of weights by an 'expert') and libertarianism (taking each individual's valuation as the final word on their own well-being). The idea is an interesting one but given that the procedure involves multiplying each functioning by the sum of all individuals' weights for that functioning, there must be some doubt as to whether it is empirically implementable.

While Sen is clear about some ways in which *not* to derive weights, he is ready to entertain the possibility of a range of weights rather than a fully specified set, and to leave open the question of how weights are to be determined (Sen, 1987, 1997a). He does, however, argue that any weights should be applied in such a way that their operation is transparent, thus allowing them to be open to scrutiny and criticism. This can be combined with illustrating the effect of a range of plausible weights, or calculating how relative weights would have to be changed in order to reverse the result in question. Given that no technical fix can be expected to what is essentially an ethical judgement, this seems a reasonable way of proceeding. Similarly, Neuburger and Fraser (1993) argue that the relative importance of, say, health and education, must necessarily be a subject for democratic debate. The task of the researcher or adviser is to illustrate how the conclusions about the distribution of disadvantage vary according to the priority given to different functionings, and the implications for policy.

### **2.3. Functionings: empirical applications (macroanalysis)**

The problems of selection, measurement, aggregation and valuation of functionings have been solved - more or less satisfactorily and more or less explicitly - in a number of empirical applications of the capability approach. This section considers those which have measured functionings at the level of countries or states.

Sen (1998a) illustrated the use of the capability approach in contrasting the performance of developing and developed countries in terms of the well-being of their populations. In this article, Sen advocates the use of data on mortality, for three reasons: firstly, the intrinsic importance of life, secondly, the fact that all capabilities are contingent on being alive, and thirdly, that because mortality rates are correlated with indicators of a number of other functionings, such as morbidity, adult literacy, and fertility, mortality may act as proxy for the level of achievement of other functionings.

Sen uses data on changes in life expectancy and in GDP per capita in the UK since the beginning of the century, to show that the latter is not a particularly good predictor of the former. Moreover cross-country comparisons suggest that even the relationship between *level* of GNP and life expectancy is not universal, and disappears once the income of the poor and public expenditure on health services are controlled for (see also Anand and Ravallion, 1993). He goes on to present some startling results from analysis of gender and race differentials in mortality in various countries, showing for example that in terms of female survival rates, the black population in the US ranks below China, while Kerala, a large and poor state of India, comes close to matching the white population in the US. Differences in mortality rates between racial groups in the US transcend those created by differences in income.

A similar theme is addressed in Sen (1994b), comparing India and China on the basis of life expectancy, infant mortality, schooling and literacy. Again, Sen brings out differences within each country as well as between them, and shows that no single indicator would be a reliable proxy for the others.

Sen's empirical work highlights a number of aspects of the capabilities approach. Firstly, it demonstrates why economic indicators alone may be insufficient to capture well-being. Secondly, it illustrates how distributional analysis may reveal differences in well-being which are hidden in population averages. Thirdly, it demonstrates that strong policy conclusions can be reached without requiring an agreed specification of weights on a full range of functionings and capabilities. It is enough that the importance of life to anyone, regardless of their position in society, is recognised. Finally, it shows that the framework can usefully be applied to both developing and

developed countries, and even provide a basis for comparing the two. Of course, these insights are not unique to the capabilities approach, but it helps to give them a theoretical grounding.

The United Nations Development Programme's Human Development Index is perhaps the most well-known application of Sen's capabilities approach. Since 1990, UNDP have monitored the performance of countries in terms of life expectancy and educational standards as well as per capita Gross Domestic Product. Previously development had been measured solely in terms of GDP growth, but UNDP became concerned that some countries had experienced high GDP growth without reducing deprivation, while others had achieved high levels of human development without accompanying income growth. It seemed that GDP alone was not a good indicator. The components of the new index were justified as follows:

"Human development is a process of enlarging people's choices. In principle, these choices can be infinite and change over time. But at all levels of development, the three essential ones are for people to lead a long and healthy life, to acquire knowledge and to have access to resources needed for a decent standard of living. If these essential choices are not available, many other opportunities remain inaccessible." (UNDP, 1990, p.10)

Additional choices mentioned, but not included in the index due to absence of comprehensive and reliable information, are political freedom, guaranteed human rights and self-respect. Each of the three measurable components (longevity, education and resources) has equal weight in the final index, which has the advantage of transparency, but is arbitrary.

Longevity is measured using life expectancy at birth, because of "the intrinsic value of longevity, its value in helping people pursue other goals and its association with other characteristics such as good health and nutrition" (p.11). This seems in danger of overkill – the fact that life is a prerequisite for people to pursue other goals is surely sufficient to merit its inclusion. Education was initially measured using adult literacy rates only; later school enrolment ratio was added. The latter seems a surprising choice, given that schooling is an input, and hence, according to Sen at least, may be

expected to produce different outcomes for different individuals, depending on their ability to convert inputs into desirable outcomes, but may be intended to proxy for education beyond literacy. Standard of living was initially measured using log of GDP per capita, adjusted to reflect real purchasing power, but subsequently the log function was abandoned and instead Atkinson's formula for the utility of income was applied, to take account of inequality (UNDP, 1998).

It is interesting that UNDP refers to longevity, education and human rights as choices – capabilities in Sen's terminology – but the index in fact measures functionings. It is not the proportion of people with the opportunity to live to 75 that is counted, but the proportion of people who do in fact live to 75, and similarly for literacy. Trying to establish how many people have the chance to live a long life but choose to shorten it (for example, by becoming a racing driver) would in practice be extremely difficult. On the other hand, if we return to the justification given for selecting life expectancy, literacy and income as the three core components, it may be that functionings are also *conceptually* more appropriate. UNDP's argument is that these components need to be in place for other opportunities to be opened up; but it is actually achieving a certain level of functioning on these components that opens up other opportunities, not the opportunity to achieve on these components.

A number of indices have been developed to complement the Human Development Index, including for example two versions of the Human Poverty Index, HPI-1 with reference values suited to developing countries, and HPI-2 with values suited to the (post-)industrialised world (UNDP, 1998). In Cassen (2002), HPI-1 is used as the basis for calculating relative disadvantage between states in India in the 1990s, and in Seymour (2000), HPI-2 is calculated for the UK at the level of parliamentary constituencies in 1997. The latter contains components on life expectancy (per cent expected to die before age 60), the functional literacy rate, the long-term unemployment rate, and the percentage of population living below 50 per cent of median disposable income. It may come as no surprise that 19 of the worst 30 constituencies according to this index are in London or Glasgow, with the remaining 11 being drawn from other major urban conurbations. Baliaamoune-Lutz (2004) explores a variation on the HDI using fuzzy membership functions for each component of the index, so that the value of the final index reflects the extent of

achievement of the country relative to the record of the best and worst existing countries.

Cornia *et al* (1996) evaluate the effects of transition on the well-being of Eastern and Central Europe's populations. They argue that even if income is a good proxy for well-being in normal circumstances, it is unlikely to serve the purpose during a periods of rapid structural transformation. Firstly, if the social institutions (for example, availability of housing) which provide the context for the conversion of resources into well-being are subject to dramatic change, comparisons over time based solely on individual resources are invalid. Secondly, external shocks may cause changes in the intra-household allocation of resources; hence any measure based on household income is likely to miss important changes. Thirdly, although the shift from rationing and queuing to market prices and consumer choice is likely to have a major impact on various aspects of well-being (for good or ill), these may not be reflected in changes in income or consumption level. Finally, at a practical level, income is not easily measurable in an economy subject to hyperinflation and large fluctuations in relative prices.

Cornia *et al* investigate a wide range of indicators alongside traditional poverty measures for the period 1989-1994, including mortality rates and life expectancy at birth, nutritional status and low birth weight, school enrolment rates, births to underage or unmarried mothers, risk of orphanhood, and incidence of crime. Their results suggest that there was a dramatic deterioration in most indicators of well-being in the region, despite improved overall economic performance towards the end of the period.

Cornia *et al*'s study is an interesting illustration of the importance of using more than just income poverty to assess well-being. They make a strong case against the use of narrow resource-based measures in situations of rapid structural change. They demonstrate that other indicators are both available and sensitive to change, even over a relatively short period, and that it is not necessary to aggregate different dimensions into a single measure. Moreover, analysis by gender, age, and household composition can reveal sub-groups who have been particularly hard-hit; groups who would not necessarily be picked up as the poorest in terms of income. Cornia *et al* do not attempt

to measure changes in freedom of opportunity, and this is a significant omission both in terms of the assumed objectives of political reform in these countries and from the perspective of capability theory.

Falkingham (1999) undertakes a similar exercise for Central Asian republics during transition from communist regimes to market economies. She describes her approach as follows:

"A broad definition of welfare is taken and the indicators of well-being discussed are not limited to standard economic measures of poverty based on incomes or expenditures, but also include trends in selected *capability-based* indicators – reflecting the health and education of the population and the extent to which the social sectors are faring under increasing marketisation; *demographic-based* measures – reflecting individual and household expectations and perceptions about the future; and *socio-environmental* indicators – reflecting the social environment in which people live." (p. iv)

Indicators used which fall under the first heading include life expectancy, morbidity, school enrolment and literacy; under the second heading, fertility rates and divorce; and under the third, crime. She finds evidence of widespread deterioration in standards of living and availability of public goods during the 1990s, accompanied by severe physical, psychological and social stress. Groups of the population previously untouched by poverty have experienced hardship through non-payment of wages due, unemployment, and displacement through civil conflict.

Importantly, Falkingham also identifies ways in which the people affected are responding through sale of assets, increased home production of food, more informal sector activity, and borrowing from better-off relatives. These coping strategies result in higher consumption in the short-run but are not sustainable in the longer term; hence a measure of poverty based solely on cash income or consumption would under-estimate the scale of the problem facing citizens of the Central Asian republics.

The significance of Dasgupta's (1989) contribution is the extension of the range of indicators under consideration to civil and political rights. He uses Taylor and

Jodice's (1983) indices, which gives each country a score from 1 (highest degree of liberty) to 7 (lowest) for political and civil rights respectively. For example, a country with score 1 on the political index, would be one in which the great majority have the right and the opportunity to participate in the electoral process, and political parties may be freely formed. Countries scoring 3 will have systems in which people may elect leaders or representatives but large-scale interference with election results and other non-democratic procedures often occur. A dictatorship scores 7. On the civil rights index, a country with score 1 will have freedom of expression in principle and in evidence in the media, and a reliable justice system. A score of 3 is associated with countries where civil rights are acknowledged but frequently over-ruled by martial law or censorship. Countries in which citizens have no rights in relation to the state score 7.

Dasgupta uses data relating to the world's 50 poorest countries in 1970, and sets the political and civil rights indices alongside per capita national income, life expectancy at birth, infant mortality and adult literacy rates. He comments that although due to data availability he examines only aggregates, he would ideally also have considered the distribution of these indices among the population. The selection of indices is justified on the grounds of a "pluralist conception of a person's good" (p.4), which includes economic welfare (income), positive rights (health and education), and negative rights (civil and political).

Dasgupta finds that political and civil liberties are positively and significantly correlated with per capita income, and with growth in per capita income, and also with improvements in infant survival rates and life expectancy at birth. Surprisingly however, increase in adult literacy is not correlated with per capita income, and it is *negatively* correlated with political and civil liberties. Dasgupta comments, "I have no explanation for this which is compelling to me" (p.39), and one is inclined to agree. Nevertheless, the exercise is important in demonstrating the feasibility of taking into account the political and civil dimensions, which are often referred to elsewhere but seldom pursued.

Civil rights, political rights and, interestingly, the degree of militarisation of society also feature in Slottje's classification of 126 countries according to 20 attributes

(Slottje 1991). Sensitivity analysis shows how the ranking of these countries changes according to plausible alternative methods of summarising the data. By averaging the different weighting criteria, Slottje produces a summary of summaries and finds that Jamaica, New Guinea, Barbados and the Gambia feature among the top (i.e. best) 20 countries. The temptation is to reject this conclusion out of hand on the grounds that it does not correspond to our received ideas about the richest countries in the world; that of course would be to miss the point of using indicators other than GDP per capita to assess development. Nevertheless, it is legitimate to question whether Slottje's average of alternative weighting criteria produces a meaningful index: a consistent rationale can be given for *each* weighting scheme but one cannot average rationales!

Qizilbash (1997) is also concerned to investigate how sensitive these macro-level analyses of functionings are to decisions about operationalisation. By analysing the same data according to different ranking rules - cardinal ordering, as in the Human Development Index, and a Borda ranking, based only on ordinal information - he explores the extent to which dominance occurs, that is, where one alternative outranks another for all relevant weights. This provides an empirical application of Sen's suggestion that even where there is disagreement about precise weights, consensus may be reached about ordering. Qizilbash also argues that the context of the evaluation is all-important, for example because the 'relevant' weights for developing countries may not be the same as those for high-income countries, and hence that the search for all-encompassing indices of well-being for international comparisons is misguided.

In two further pieces, Qizilbash (2002b, 2004) illustrates the robustness, or lack of it, of poverty rankings of provinces in South Africa in 1995/96. He identifies six issues: the selection of dimensions, the choice of indicators for each dimension, the poverty threshold defined for each indicator, the terms of any index which aggregates across dimensions or indicators, the weight attached to different dimensions, and the relative weight given to intensity of poverty compared to its range across dimensions. For example, the policy implications based on a definition of multi-dimensional poverty with thresholds set at the level of 'definite poverty' (the worst category for any functioning, ranked on a scale from 0 to 1) differ from those based on a definition of 'extreme vulnerability' (greater than or equal to 0.65 on any functioning). Resources

directed at states with high rates of 'extreme vulnerability' may not contribute to eradicating poverty in the present but could help to prevent even higher 'definite poverty' rates in the future. On the other hand, in a comparison of a multi-dimensional poverty index than an expenditure-based measure, the relative position of two states, KwaZulu-Natal and Free State, is robust to the choice of dimensions, the selection of baselines and various plausible alternative weighting systems for the multi-dimensional index.

Neuburger and Fraser (1993) make the policy process central to their proposal, which they call Democratic Decision Analysis. A worked example is provided, evaluating the impact of a one per cent of GDP increase in public spending, using empirical values where they exist and hypothetical ones otherwise. A macroeconomic model generates values for the impact of the extra spending on jobs, output, inflation, take home pay and the balance of payments. Next, a satellite model is used to relate these variables to impact on various functionings: life, health, deprivation, general living standards, government stability and liberty. Finally, a set of weights (ideally determined democratically but here hypothetical) are applied to the functionings and a weighted sum of the impact of each economic variable on the set of functionings is calculated.

The macro-level approach to measuring functionings and capabilities is not without its critics. Deneulin (2004) questions whether the well-being of a society can be reduced to an aggregation of the well-being of individuals and Qizilbash (1996) argues that not all capabilities are good capabilities. Nolan and Sender (1992) have taken issue with Sen's interpretation of the evidence on poverty, mortality and life expectancy in China. Their critique is part of a more general concern that in emphasising non-monetary measures, insufficient attention is paid to the role of economic growth in facilitating improvements in standards of living. However the argument seems misdirected, since the capability approach does not deny the instrumental value economic growth can have in securing valued functionings like longevity and literacy; it merely identifies the fact that economic growth is indeed a means and not an end in itself.

Macro-level analyses are rather different from the use to which it is intended to put the capability approach in this thesis. But what lessons, if any, do these comparisons of countries' and states' performances have for comparing disabled and non-disabled people in Britain? Firstly, it is clear that a limited number of basic indicators can be revealing. It is not necessary to have a full account of valuable functionings, let alone detailed information about individual preferences, in order to make comparisons of well-being. Secondly, clarity is required on the difference between inputs and outcomes – a distinction some of the studies reviewed above have blurred. Failure to distinguish between them runs the risk of double-counting (if one indicator is in fact an input to an outcome which serves as a separate indicator), and detracts from the ability of the measure to allow for differences in individuals' conversion rates of inputs into outcomes. Thirdly, it is important to identify strategies people adopt to overcome hardships they are facing – a point made forcefully in Falkingham (1999). For example, the coping strategies of disabled people in Britain may include greater use of informal care - an opportunity cost for other household members - and reducing consumption of non-essential items. A purely income-based measure would therefore under-estimate the disadvantage they face.

#### **2.4. Functionings: empirical applications (microanalysis)**

In Sen (1997c), the focus is on the Western world, considering the different ways in which unemployment causes deprivation in Europe and the US. Among the functionings which Sen identifies as being affected by unemployment, over and above low income, are: psychological well-being, physical health, mortality, motivation, human relations and social responsibility. The main purpose is to compare and contrast the associations between different functionings in Europe and the US, and no attempt is made to combine the indicators into a overall index.

Schokkaert and Van Ootegem (1990) use data from a 1979 survey of the Belgian unemployed, which collects information on 46 'beings and doings' (functionings). Most of the questions are phrased in such a way as to invite respondents to compare their current level of functioning with how they were before they became unemployed. The authors regard this as an advantage, since it may reduce the effect of the unemployed, particularly the long-term unemployed, adjusting their expectations

to their straitened circumstances, and thereby failing to give an 'objective' assessment of their living standard. Factor analysis is used to reduce the 46 functionings to six factors, which together explain about one third of the total variance in individual items. The six factors are self-respect, psychological functioning, physical well-being, social contact, activity level, and financial difficulties.

Schokkaert and Van Ootegem then estimate a regression model for each of the six factors separately, using net household income, income loss since becoming unemployed, age, sex and household composition as dependent variables. Only a small part of the variance in each functioning can be explained using these basic socio-economic characteristics, but the differences between their explanatory power is interesting. Income level is significant for financial difficulties, but not for any of the others, while larger losses of income are significantly associated with lower self-respect. Being male raises the risk of psychological distress, but women are less likely to remain active. Age is associated with lower self-respect and less social contact. The authors suggest their results lead to policy conclusions which could not have been reached from more traditional approaches, for example, that increasing the incomes of the older unemployed is unlikely to be sufficient to overcome their difficulties.

Schokkaert and Van Ootegem's work incorporates some interesting methodological points. Firstly, they demonstrate that the information required to analyse functionings is not necessarily harder to collect than standard income and consumption data collected in household surveys – though concerns may remain in both cases about its reliability. Secondly, while acknowledging that combining their six factors into a single measure would require an assignment of weights, they argue – as Sen does elsewhere – that that is not necessary for generating policy conclusions. They observe, for example, that an extreme set of weights would have to be posited to reject the statement that the living standard of divorced unemployed men is lower than that of most other groups.

Balestrino (1996) reports results from a study he undertook in Pistoia, a relatively prosperous town in northern Italy. The sample is 281 households, each containing at least one member in receipt of assistance from Pistoia's social welfare programme. Eligibility for the programme is assessed by social workers and does not depend on

income, but rather on being malnourished, chronically ill, or being unable to take part in the life of the community, or, if a child, having learning difficulties or behavioural problems. Balestrino defines two kinds of poverty: "income poverty", where household income falls below the official poverty line, and "functioning poverty", where the household contains a member who is malnourished, chronically ill or a child who has learning/behavioural difficulties. He finds that more than one third of the households in the sample who are functioning-poor are not income poor, and suggests that the result gives support to the belief that Sen's conception of poverty is significantly different from traditional income poverty at an empirical level.

Balestrino concludes that if a large proportion of the functioning poor are not income poor, there is no guarantee that raising their incomes will enable them to escape from poverty, and hence that in-kind transfers may be more effective (this is in fact the nature of the Pistoia programme). This brief study has some odd features, and one feels the need to know more about eligibility criteria for the social welfare programme before relying too much on the results. Nevertheless, the article is helpful in drawing out a possible relationship between functioning-poverty and the cash versus benefits-in-kind controversy.

Comparisons between income poverty and functioning poverty are made by a number of other authors. For example, Phipps (1999) identifies ten functionings relevant for children aged 0 to 11, and compares achievement on each functioning in Norway, Canada and the US. Using an approximation of vector dominance, she concludes that children in Norway are better off than their Canadian or American counterparts, although the average incomes of families with children in the three countries are similar.

Lovell et al (1994), pursuing their method based on an analogy with production economics as described in section 2.2.3 above, find that resources are more equally distributed than functionings. This is based on an index of 11 functionings covering health, subjective well-being and social interaction, using Australian data from a 1987 survey. They show that not all individuals are equally proficient in converting resources into functioning, as predicted (or rather, assumed) by the capability

approach. The lack of concordance between individuals identified as resource-poor and those identified as functioning-poor of course has significant policy implications.

For the US, Iceland (2004) examines the relationship between the duration, depth and frequency of spells of income poverty on the one hand, with functionings in the domains of housing, consumer durables, food security, fear of crime, neighbourhood conditions and meeting 'basic needs' (paying bills, going to the doctor, etc) on the other. The data are drawn from the Personal Survey of Income Dynamics. Perhaps because Iceland brings in the dynamic aspect of income poverty, he detects stronger correlations between income poverty and functioning poverty than many other studies: the relationship is particularly strong for food security, consumer durables and basic needs.

In the context of countries of the South, at least three studies have examined the relationship between monetary indicators and functioning poverty using microdata. Klasen (2000) constructed a 14-component measure of deprivation in South Africa in 1993. Each component was scored on a scale of 1 to 5, with 1 representing severe deprivation, 3 a simple, healthy life, and 5 the highest observed level of functioning. Components were aggregated into an overall score using principal components analysis, and the results compared to a simple average score. These turned out to be very close in this case. Examining the overlap between the poor as defined by traditional expenditure-based measures and his index, Klasen identified that the widest divergence was among those who were most deprived. Expenditure poverty did not reflect the severity of disadvantage for this group.

Ruggeri Laderchi (1997, 2001) adopts a related approach, using data on Chile and Peru. Her objective is to assess the difference between using a measure of poverty based on consumption and using measures of functionings. As indicators of basic functioning-poverty for Peru, she uses child stunting, self-reported morbidity, and lack of functional literacy. In the first instance she compares the population categorised as functioning-poor in each of these ways with the population categorised as consumption-poor (using the poverty line in Peru), and finds substantial discrepancies. A fifth of stunted children are not consumption poor, while over half of consumption-poor children are not stunted. The proportions are similar for children

aged 12-15 who are functionally illiterate. For self-reported morbidity, there is no statistically significant relationship with consumption poverty at all.

The factors which seem to affect the relationship between household resources and basic functioning achievement are then examined using regression analysis. For stunting, child age, maternal characteristics, and access to sewerage and clean water are most significant. The author observes that neutralising the effects of lack of sewerage and lack of maternal education would require the income of the poorest to rise by as much as six times. In other words, even if household income were to double, no substantive improvement in child stunting would occur. For self-reported morbidity, age, region, and education are the most important mediating factors, and for functional literacy, parental education.

Ruggeri Laderchi does not explicitly address the distinction between capabilities and functionings (in fact, she seems to use the two terms interchangeably). It could be that for the basic indicators she is considering, achieved level of functioning also represents maximum capability, since everyone would choose to avoid child stunting, morbidity and illiteracy if they could. However it is important for her argument to establish that this is the case; otherwise differences in performance on the functioning indicators for individuals with the same household resources could be put down to differences in preference rather than variation in the ability to convert private income into functionings.

Assuming that Ruggeri Laderchi's interpretation stands, her results are interesting. They suggest that for Peru at least, significant differences in basic functionings do exist between households with the same consumption level and that as a consequence, household consumption is a poor proxy for functioning achievement. Moreover she shows that using household consumption as the sole indicator of poverty would introduce a *systematic* bias in the estimates against certain groups of the population, for example, against people living in a particular region. A range of factors seem to affect the ability of an individual to convert household resources into basic functionings, but the availability of public goods (sewerage, water supply, education) stands out as important.

Brandolini and D'Alessio (2001) explore some of the conceptual issues discussed in their paper (and in the previous sections of this chapter) using 1995 data on Italy. The dimensions for which they have information are health, education, employment, housing, social relationships and economic resources. They first calculate the proportion of the population who falls beneath a chosen threshold on each functioning, and then go on describe the characteristics of the deprived, and give the correlation coefficients between dimensions. A conclusion which is by no means unique to this study is that dimensions of disadvantage are not highly correlated with each other - in this case the highest correlation is 0.40 between housing and economic resources. The authors illustrate various forms of aggregation across dimensions: headcount (whether deprived on any dimension), average functioning score (to take account of the degree of deprivation), and frequency weighting (lower weight ascribed to functionings which many people lack).

Italian data also provide the basis for an application of fuzzy set methodology, carried out by the pioneer of that approach, Chiappero Martinetti (2000). In the first step, a large number of indicators are combined into fifteen 'elementary subsets', which are in turn assigned to five principal dimensions (housing, health, education, social interaction and psychological condition). At each stage, aggregation is on the basis of a membership function which takes the value of 0 for the lowest level of functioning observed, 1 for the highest level and with values in-between determined matching the distribution of the variable within the sample. Chiappero Martinetti explores the average 'membership degree' for each principal dimension by characteristics such as age and gender, and the correlation coefficients between degrees of functioning on different dimensions (with the highest correlation, 0.41, in this case being between education and social interaction). Finally, the five principal dimensions are combined in three different ways, by use of the union, intersection and average operators respectively. The broad groups identified as most deprived are found to be robust to the different specifications: women, the elderly, people living in Southern Italy, and manual workers.

Fuzzy set methodology is flexible, in so far as any membership function can be specified, but it does not, of course, avoid having to make a judgement about what function is appropriate. In this example, the membership function chosen is equivalent

to frequency weights, since it is based on the distribution of each functioning within the sample. As noted above, frequency weights are not intuitively right in all settings: does the fact that many people in my community are depressed make my own depression any easier to bear? Probably not, in fact, in that instance, the reverse might be the case, since the social resources available to support me may be greater if others are not at the same time trying to deal with their own troubles.

A comparison between factor analysis and the fuzzy set approach by Lelli (2001) using data on functionings in Belgium in 1998, found that they produced substantially similar results. In Belgium, women working in the home, the retired and the unemployed were consistently most likely to be identified as functioning-poor. Lelli's conclusion is sensitive to the membership function selected for the fuzzy approach; the fact that one specification of fuzzy membership and factor analysis produce somewhat similar results is not surprising since both are capable of identifying and reflecting variation in the data and the correlation between different dimensions.

The studies using micro-data suggest some interesting lines of enquiry for examining differences in the circumstances of disabled and non-disabled people in Britain. In particular, the relationship between income and functioning-poverty has been shown to vary across different groups and there is every reason to think that this will also apply to disabled people. A common procedure was adopted by these authors: firstly, collecting data on both income and functioning poverty, secondly, analysing the relationship between them, controlling for other variables as appropriate, and thirdly, exploring the extent to which raising income would alleviate functioning poverty, or whether other strategies would be more effective. It is intended to apply the same basic approach in this thesis. One issue which remains to be resolved is how, if at all, different functionings are to be combined into an overall measure of well-being.

## **2.5. Capabilities: general topics**

At the most general level, the capabilities of different groups can be described and compared qualitatively. For example, Lewis (2004) argues that thinking about the constraints on men's and women's capabilities, including money, time, social norms, human capital and the availability of care services, illuminates the gender division

within the household more effectively than traditional analysis of the roles that men and women do in fact fulfil (their functionings) or indeed of their income (which tends to be computed at a household level and thus obscures gender differences).

A more analytical or quantitative approach requires, firstly, that individual capabilities be identified, and secondly, that capability sets can be valued and compared.

### 2.5.1. *Identifying capabilities*

Fleurbaey (2002) neatly summarises the first difficulty that is encountered in attempting to identify capabilities: "a notion of access must be defined, so as to distinguish capability from functioning. [...] this supposes that one can determine whether an unsuccessful individual really had access to a bundle of functionings." (pp.73/4).

The most straightforward approach to identifying whether a given functioning is within an individual's capability set is to ask those who lack the functioning whether this is an enforced lack or voluntary deprivation. Mack and Lansley (1985) developed this method in their survey of British households, known as *Breadline Britain*. They asked a series of questions to establish whether households had a number of items (for example, a car, a foreign holiday), and in those cases where an item was lacking, followed it up by checking whether this was through choice or because the item was unaffordable. Nolan and Whelan (1996) also classify households who lack various items generally perceived to be necessary, and who say this lack is because is due to unaffordability, as 'deprived'. This classification is combined with an income cut-off to identify 'the poor'. Those who are deprived, but have incomes above the threshold, are implicitly assumed to have a low standard of living through choice.

The difficulty with this direct approach is four-fold: firstly, it fails to recognise the extent to which preferences may be conditioned by circumstances; secondly, when combined with an income threshold, it ignores variations in need (other than as a result of household size); thirdly, it allows only for lack of income as a constraint on opportunity; and fourthly, it cannot identify those who lack the capability but 'don't want' the item or activity in question.

The general approach of measuring constraints on functionings to identify what level of functioning is available to the individual has some promise, however. Lessmann (2004) considers that the degree to which someone has the capability to do functioning  $f$ , depends on the financial and other costs to them of doing  $f$ . Similarly, Brandolini and D'Alessio (2001) comment that, "what matters for the measurement of capability is not only the possibility but also the probability to achieve a vector of functionings" (p.13); and Fleurbaey (2004) argues that whether you have the capability to  $f$  depends on which other functionings you have in the present which expand the range of possibilities open to you. In the context of economic capability, Bojer (2004) suggests that this can be approximated by calculating the wage rate an individual can command, multiplying by the time available after attending to personal needs and any caring responsibilities, and subtracting the costs of undertaking paid work. Roemer (1996, 1998a, 2002) develops an account of equality of opportunity which depends on identifying 'types' in the population, who face similar constraints with respect to achieving a particular functioning.<sup>3</sup>

Fleurbaey's view is that any notion of capabilities is likely to result in harshness, at best, and injustice at worst, towards those who fail to take advantage of opportunities deemed open to them (Fleurbaey 1995). His preference is for a theory which restricts its attention to functionings achieved, including 'autonomy' or 'exercise of choice' as functionings in their own right. Whether or not one reaches the same conclusion, it is clear that capability theorists must engage with the challenge of identifying those who are choosing not to exercise a capability, if the concept of capability is to have any independent content.

#### 2.5.2. *Valuing capability sets*

Even supposing it were possible to identify opportunities, the problem of how to compare different capability sets has to be confronted. There has been a lively debate about whether the *number* of options open to an individual is a meaningful measure of the value of a capability set (Jones and Sugden, 1982; Pattanaik and Xu, 1990; van

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<sup>3</sup> This approach is described more fully in Chapter 6 below.

Hees and Wissenberg, 1999; Bavetta, 2004). Since some options are trivial or so remote from what the individual in fact wants, it seems odd to count them as adding significantly to his or her freedom. If a simple count of options is rejected, other principles for valuing a capability set must be determined. Xu (2002) proposes some formal ranking rules and explores their logical properties, while Arneson (1998), at a more intuitive level, suggests five principles for valuing freedom in relation to the choices available:

- (i) No choice, no freedom
- (ii) The more choice, the more freedom
- (iii) The more diverse the choices, the more freedom
- (iv) The more valuable the choices (as judged externally), the more freedom
- (v) The more desired the choices (as judged by the agent), the more freedom.

The judgement of the individual, (v), is not sufficient because of the problem of adaptive preferences and because preferences change over time; the judgement of an external expert, (iv), is not sufficient because an individual's preferences may vary from the norm. Jones and Sugden (1982) rely on a criterion of reasonableness, rather than referring to an external judge or the agent's own preferences: (a) how many options are there that could be reasonably be chosen?, and (b) how strongly could a reasonable person prefer the option he chooses to the other options he might have chosen? 'Reasonableness' is a formulation often used in law, developed and tested through individual cases and building up a body of legal precedent, but it is difficult to see how it could be applied in empirical analysis.

In a more recent piece, Sugden (1998) distinguishes three reasons why opportunity might be thought to have intrinsic value and argues that although different measures are suited to each, all three share the concept of potential preferences.<sup>4</sup> The first is 'opportunity as autonomy': "the richer the set of opportunities from which a person has chosen his way of life, the more that way of life is *his*" (p.311). The second is 'opportunity as exercise': "choosing is good for the mental faculties in something like the way that physical exercise is good for the body" (p.312). The third is 'opportunity

<sup>4</sup> These three reasons are closely related to those articulated by Sen, as described above in Chapter 1, section 1.4.2. See also Bavetta and Guala (2003).

as a demand of justice': a set of options gives more opportunity of this sort if it "tends to assist a representative individual to achieve his own ends, whatever those ends might be" (p.316).

The first and third kinds of opportunity lead to a rejection of the principle that any set containing just one option is necessarily of equal value, since the relation between the option in question and the individual's chosen way of life or conception of the good is relevant to the assessment of those kinds of opportunity. By contrast, all one member-sets are of equal value according to 'opportunity as exercise' (and according to Arneson's criteria listed above). Adding to the number of options an individual has does not necessarily increase their opportunity set, according to any of the conceptions of opportunity (again, in contrast to Arneson): if the addition is one the individual would never have considered choosing, it does not expand the set of possible 'ways of life', nor does it make decisions more demanding, nor does it facilitate the pursuit of any possible ends the individual might have. Hence Sugden comes back to the idea of reasonableness or potential preference: those preferences which someone could reasonably have had, relative to which his or her opportunities can be assessed.

Sugden's contribution clarifies the problem of measurement and suggests some promising avenues to pursue. Nevertheless, by his own admission, further work is needed before properly grounded empirical investigation can be undertaken. He concludes:

"If I am right about the importance of potential preferences, the problem of measuring opportunity has many similarities with the familiar preference-aggregation problems of welfare economics and social choice theory. I began with the hope that, by focusing on opportunity rather than well-being, we might be able to escape those problems; but that hope now seems vain. Perhaps the most we can expect to find are imperfect but workable indices of opportunity, analogous with the money metrics of practical welfare economics" (p.336).

In terms of measurement strategies, Sen offers a number of suggestions (see, for example, Sen 1984, 1985a, 1994a, 1999a). Assessing the entire set of options open to the individual (possibly with weights attached) is acknowledged to be informationally and conceptually demanding; as in other contexts, Sen argues that a partial ordering may be more readily achievable. A more modest proposal is to value the set by the option actually chosen, possibly with added information about the range of options from which the chosen functioning vector was selected (1994a, pp.339-340). If a capability set is very limited, the chosen functioning vector will, of necessity, represent a relatively low level of well-being achievement. This method is close to an assessment of functioning, except that here the range of options open to someone is being judged *through* the option they actually chose. When information about the context of the choice is added, Sen refers to this as a 'refined functioning' (Sen, 1987).

Finally, in *Development as Freedom* (Sen, 1999a), Sen suggests that focusing on one functioning, say employment, and considering the vectors within the capability set which contain that functioning, is another approach to comparing capability sets. He terms this "distinguished capability comparison" (p.82). For one individual, employment may appear in a wide range of feasible functioning vectors, while for another, it is present only in functioning vectors which include sleep deprivation or risk to health or migration. On that basis, one could argue that with respect to the capability for employment, the first individual's capability set has higher value.

Following Sen's suggestion of valuing the capability set by the option actually chosen, Robeyns (2003) marshals a wide range of evidence on men's and women's achieved functionings in Britain in the late twentieth century. She argues that the functionings of physical and mental health, bodily integrity and safety, shelter and environment, and respect, are intrinsically desirable and that any difference between men and women in their achievements in these domains can therefore be ascribed to differences in capabilities. For a second group of functionings, including education and knowledge, mobility, leisure activities and time-autonomy, Robeyns claims there is a *reasonable presumption* that equal capabilities would produce roughly equal levels of functioning between men and women, and hence any difference in average achievement can again be ascribed to differences in capability sets. Finally, Robeyns

considers there to be sufficient divergence of opinion about whether men and women have systematically different preferences with respect to social relations, political empowerment and domestic work, that no inference about capabilities can be made from observed functionings.

## **2.6. Capabilities: empirical applications**

The measurement of capabilities – as opposed to functionings – has been noticeable largely by its absence in the literature to date. A few tentative forays have been made.

Two studies have followed the route of direct enquiry, discussed above in connection with the Breadline Britain surveys. Anand, Hunter and Smith (forthcoming) use the British Household Panel Survey to identify questions corresponding to as many of Nussbaum's list of central capabilities as possible, for example, for 'being able to be adequately nourished', they use 'do you eat meat, chicken or fish every second day?', and 'would you like to eat meat, chicken or fish at least every second day but must do without because you cannot afford it?'. This suffers from the drawbacks identified above, and in addition, the match between Nussbaum's list and the indicators in BHPS is of course far from perfect.

In a parallel piece, Anand and van Hees (forthcoming) conduct a survey asking respondents to rate their own capability to achieve various functionings on a scale of 1 (very good) to 7 (very inadequate). For example, 'I feel the scope to seek happiness in my life is...', and 'I feel the scope to act with personal integrity in my life is...'. While any attempt to measure capabilities is to be welcomed, this approach does seem rather naive. In the absence of cognitive testing, it is not clear how respondents are interpreting the questions, or indeed whether they understand them at all. If they do interpret the questions as being to do with capability in the Sen/Nussbaum sense, how are they to evaluate it in their own lives? What factors should they take into account? To whom should they compare themselves? Fundamentally, the capability approach must seek to evaluate the real freedom individuals have, which will not necessarily correspond to the freedom they feel they have. We do not even have a way of knowing whether the latter is an over- or under-estimate of substantive freedom.

An interesting combination of approaches is employed by Ayres and Simon (2003) in their study of education in rural Tamil Nadu in India. A quantitative survey of functionings like literacy, employment, and standard of living for both parents and children, and a physical survey of the location of schools, were complemented by a qualitative inquiry into the causes of child non-attendance at school. This enabled the authors to conclude that the capabilities for obtaining higher levels of education apparently existed among the lower castes (particularly the Scheduled Castes), since schools were available within a reasonable distance, and the parents were aware of the importance of education. However, the achieved functioning of children from these groups was unlikely to improve while school enrolment carried such high opportunity costs for the family (in terms of domestic or market child labour foregone) and the economic return to education was so low (as a result of discrimination against Scheduled Castes). This study demonstrates the potential for combining quantitative and qualitative approaches, although it also illustrates the vexed problem of identifying which functionings are within an individual's capability set, as discussed above. How high must the opportunity costs be, and how widespread must the discrimination be, before one reaches the assessment that participation in education is not within a child's capability set?

Chiappero Martinetti (1996) considers three constituents of well-being which she regards as essential (though not an exhaustive list): staying alive, being healthy, and acquiring education. Whether or not these functionings are within an individual's capability set, Chiappero Martinetti suggests, is determined by a range of personal characteristics together with the social, economic and physical environment. Failure to achieve a given level of functioning may be a matter of choice or the result of constraint (i.e. a lack of capability); the likelihood that it is the result of constraint can be calculated through analysis of the personal and contextual variables. The empirical work which follows this methodological discussion is, however, restricted to an examination of income and functionings.

A similar approach was adopted previously by Desai and Shah (1988) in their re-analysis of Townsend's (1979) data. Their objective was to identify individuals who are deprived due to lack of resources rather than due to differences in lifestyle preferences, so their framework was restricted to material dimensions of well-being.

They assume tastes are distributed randomly across the distribution and use multivariate techniques to differentiate between systematic variation in deprivation scores due to socio-economic characteristics and random variation due to taste.

Haveman and Bershader (1998, 2001), though they do not refer explicitly to the capabilities framework, calculate a measure of income capability which they call 'self-reliant' income. This is discussed further in chapter 6. Briefly, a self-reliant measure of poverty identifies those who are incapable of generating sufficient income to meet their basic needs even if all who are able worked full-time. This approach is similar to that proposed by Bojer (2004), mentioned above.

Finally, Roemer (1998b), Llavor and Roemer (2001) and Roemer et al (2003) present empirical illustrations of Roemer's conception of equality of opportunity, with regard to access to health care, the allocation of international aid, and income generation, respectively. These applications are discussed more fully in Chapter 6 below, but essentially follow the same method: the attempt is made to partition differentials in the outcome of interest into that part which is due to factors beyond the control of the individual and that which is due to effort (the residual). These are useful exercises in demonstrating the lines along which analysis of constraints on opportunity can be undertaken, although as the authors recognise, the categorisations are simplistic and lead to a greater part of inequalities of outcome being attributed to differences in effort than is likely to be the case.

The set of methods based on attempting to distinguish between choice and constraint face a common drawback, namely, attributing any lower-than-predicted level of earnings or functioning to choice. If there are relevant non-observable characteristics - such as decision-making ability, or hidden additional demand on household resources - capabilities are likely to be over-estimated. On the other hand predictions of wage rates, health and so on, which are taken to define constraints, are necessarily based on observed behaviour, which is itself the product of a mixture of choice and constraint, so this will tend to under-estimate true capabilities. It is clear that methodology for measuring capabilities is under-developed, a problem to which Chapters 6, 7 and 8 of this thesis return.

## 2.7. Remaining issues

Techniques to operationalise the functionings aspect of the capability approach are well-advanced. There seems to be a consensus that the selection of functionings should proceed either by *a priori* identification of a set of basic or central functionings, or through some quasi-democratic or participative process. Measurement of functionings is either by means of a threshold, analogous to an income poverty threshold, or by means of a fuzzy membership function, in most instances based on the distribution of the functioning within the sample.

There is greater divergence of approaches both in principle and in practice with respect to aggregation and valuation of functionings. Many authors prioritise simplicity and transparency and analyse functioning dimensions separately, or aggregate them with a simple count or average. At the opposite end of the spectrum, data reduction techniques can be used to produce a smaller number of dimensions, which can then be evaluated as a vector (for example, calculating distance from a reference vector), or by combining dimensions into an index using frequency weights or fuzzy membership. One important lesson to be drawn from the literature is the need to be explicit and consistent in providing a rationale for the method adopted, wherever it lies along the spectrum of complexity (Chiappero Martinetti 2004).

With respect to capabilities, there is much more work to be done. Conceptual issues, including the fundamental question of exactly what it means to have the capability to achieve functioning  $f$ , are still being discussed. Nevertheless, two dead ends and one promising avenue can be noted. The first dead end - at least dead for the time being! - is attempting to evaluate and compare capability sets overall. Philosophical debates about the nature of substantive freedom need to be further advanced before techniques which approximate a measurement of it can sensibly be attempted. The second dead end is direct enquiry, asking respondents to assess the size or value or content of their capability set. Individuals are not in a position to evaluate the counterfactual (what could you do if you were not doing what you are doing), or to meaningfully compare themselves with others in this respect.

A promising avenue, however, is combining Sen's suggestion of distinguished capability comparison - that is, selecting an important functioning and comparing the vectors in which it occurs across individuals' capability sets - with the line of work developed within and outside the capability approach on identifying constraints on individuals' opportunities. This challenge is taken up in Chapter 6.

### Appendix 2.1: Search protocol and strategy

*Objective:* to identify the range of approaches which have been proposed and/or implemented to operationalise the capability approach

*Search protocol:* there were just two inclusion criteria: (i) empirical application explicitly making use of the capability approach, or discussion of how to operationalise the capability approach, and (ii) English language. No restrictions were placed on the methodology applied or proposed. There was however one quality criterion, namely, that the study demonstrated some understanding of the basic tenets of the capability approach.

#### *Search strategy*

Sources: International Bibliography of the Social Sciences (IBSS-BIDS)  
 Philosopher's Index  
 Human Development and Capability Association bibliography  
 Conference papers from the international conferences on the capability approach, 2001-2004  
 Robeyns (2000)

Robeyns (2000) conducted a review of empirical applications of the capability approach. This was therefore a very useful source for publications up to 1999.

Date limits: 1998-2005 for BIDS and Philosopher's Index (to ensure a good mesh with Robeyns 2000). No date limit for other sources

Types of publication: articles, book reviews (to identify books), books, conference papers, working papers.

The HDCA bibliography, capability conference papers and Robeyns (2000) were searched manually. For IBSS and Philosopher's Index, electronic searches were performed using the following terms (in keyword, abstract or title, unless otherwise specified): capabilit\*  
 functionings  
 functioning & welfare  
 functioning & well  
 Sen\_A\* [in author, keyword, abstract or title]  
 Nussbaum\_M\* [in author, keyword, abstract or title]  
 multi\$dimensional\* AND (poverty OR deprivation OR welfare OR well-being)  
 quality of life [in Philosopher's Index only; too many irrelevant hits in BIDS]  
 standard of living [in Philosopher's Index only; too many irrelevant hits in BIDS]

#### *Results*

A total of 237 references were found to be relevant after screening according to the inclusion criteria. These were entered into a database and classified according to the topic which they addressed: functionings or capabilities; methods of operationalisation and whether micro or macro data; aspect of measurement with which they are concerned. The results are reported more fully in the chapter.

### Appendix 2.2: Nussbaum's list of central human capabilities

1. Life. Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.
2. Bodily Health. Being able to have good health, including reproductive health; to be adequately nourished, to have adequate shelter,
3. Bodily Integrity. Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.
4. Senses, Imagination and Thought. Being able to use the senses, to imagine, think and reason – and to do these things in a "truly human" way, a way informed and cultivated by adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing works and events of one's own choice, religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to have pleasurable experiences and to avoid non-beneficial pain.
5. Emotions. Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general to love, to grieve, to experience longing, gratitude and justified anger. Not having one's emotional development blighted by fear and anxiety. (Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.)
6. Practical reason. Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. (This entails protection for the liberty of conscience and religious observance).
7. Affiliation. A. Being able to live with and toward others, to recognise and show concern for other human beings, to engage in various forms of social interaction, to be able to imagine the situation of another. (Protecting this capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech).  
B. Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails provisions of non-discrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, natural origin.
8. Other Species. Being able to live with concern for and in relation to animals, plants and the world of nature.
9. Play. Being able to laugh, play and enjoy recreational activities.
10. Control Over One's Environment. A. Political. Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association.  
B. Material. Being able to hold property (both land and movable goods), and having property rights on an equal basis with others; having the right to seek employment on an equal basis with others; having the freedom from unwarranted search and seizure. In work, being able to work as a human being, exercising practical reason, and entering into meaningful relationships of mutual recognition with other workers.

Source: Nussbaum (2003).

**PART I: WELL-BEING**

## CHAPTER THREE: INCOMES

### 3.1 Introduction

This chapter uses empirical data from two principal sources to assess the well-being of disabled people in Britain according to income-based measures. The sources are the British Household Panel Survey for the years 1991 to 1998, and the 1996/7 Family Resources Survey (FRS) and Disability Follow-Up. For the FRS and Disability Follow-Up, income data are matched in from the Households Below Average Income dataset for the same year, which is itself derived from FRS. These data sources were described in Chapter 1. The FRS Disability Follow Up uses the OPCS definition of disability, based on ability to carry out a wide range of activities without assistance and graded by severity into ten categories (with 1 least severe). The BHPS definition of disability is based on a question about whether the respondent's health limits his or her day to day activities compared with others of the same age.

The organisation of the chapter is as follows. The first section examines the extent and intensity of income-poverty among disabled people, relative to the non-disabled population. If income is interpreted as a direct measure of well-being, disabled people's position in the overall income distribution gives a good indication of relative well-being. This can be operationalised in terms of the percentages of disabled people in different quantiles of the overall income distribution, or the proportion with incomes below particular thresholds. Various thresholds are explored (half mean income, 40, 50 and 60 per cent of the median). The intensity of poverty among disabled people is assessed in terms of the mean and median poverty gap (Atkinson, 1998).

The second section examines the characteristics of disabled people identified as poor in the first section. The objective here is primarily descriptive, in order that comparisons can be made in subsequent chapters with disabled people identified as poor according to income equivalised for disability, functionings-based and capability measures. The analysis focuses on the distribution of disadvantage by age, gender,

severity and type of impairment, educational qualifications and availability of social support.

In the third section, the immediate causes of poverty among disabled people are explored. Income depends primarily on the individual's own earnings and benefits, and those of his/her household. Each of these components is analysed in turn, looking first at differences between disabled poor and non-poor, and then at differences between disabled poor and non-disabled poor. The extent to which the prevalence among disabled people of socio-demographic characteristics generally associated with poverty (such as low educational qualifications) offers sufficient explanation for observed rates of poverty among disabled people is assessed. Differences in relationships between these other characteristics and poverty for disabled and non-disabled populations are also investigated.

Throughout this chapter, income is defined as equivalised household income. Equivalisation for household size is justified on the grounds that a larger household has greater needs; the same income goes less far in achieving a higher standard of living in a larger household. An argument can be made along similar lines for equivalisation of income for variations in need arising from impairment, but this must wait for the following chapter.

### **3.2 Income as a measure of well-being**

The definition of income used in the following analyses is shown in Box 3.1. There are arguments for and against using current income, as opposed to income averaged over a longer period like a year (Atkinson, 1998). In favour of the shorter period is greater accuracy of recall on the part of respondents (assuming the survey is conducted at a single point in time), and capturing a genuine snapshot of their circumstances. On the other hand, if the objective is to use income as a proxy for living standards, a longer accounting period is preferred, since short-term fluctuations in income are unlikely to be reflected in changes in living standards. In the present case, income is being used to measure living standards, or indeed well-being more broadly; however an annual income figure is not available in the dataset.

The measurement of current income incorporates social security benefits, including those designed to help towards the extra costs of disability. It is doubtful whether these should be included as income, in the absence of any other adjustment to take account of the higher costs of living incurred by some disabled people. However their inclusion is standard practice in official income statistics, such as the *Households Below Average Income* series, and that approach is followed here. A thorough investigation of how the extra costs of disability can be taken into account is undertaken in Chapter 4.

**Box 3.1: Definition of income**

<i>Current</i>	Income in period (week or month) immediately before interview, converted into a weekly figure, and deflated month by month to June 1998 prices
<i>Net</i>	After income tax, national insurance contributions, pension contributions, council tax and maintenance payments have been deducted
<i>After housing costs</i>	After mortgage interest payments and structural insurance premiums, or rent and service charges, and water charges have been deducted
<i>Household</i>	All members at the same address who share a daily meal or living room
<i>Equivalised</i>	Adjusted for household size using McClements scale

Income net of compulsory deductions and pension contributions is used, since it is a better reflection than gross income of the resources available with which to achieve well-being. The question of whether income should be measured before or after housing costs is important, given that housing costs are the biggest single item of expenditure for most families, but the question is not easily resolved. If housing costs are seen as non-discretionary - a necessary expenditure like a tax - then an after housing costs (AHC) measure is appropriate. However, income AHC implicitly

equates the standard of living of someone living in a mansion in the South East of England with someone living in a bed-sit in Wales, provided they have the same income left over after paying their mortgage or rent. Further difficulties arise because of differences between housing tenures. A private tenant, not in receipt of Housing Benefit, presents the simplest case: his 'before housing costs' (BHC) income can be assumed to be a reasonable measure of his 'after housing costs' (AHC) standard of living, since he either chooses to spend a large part of his income on rent, and thus enjoys a higher standard of living through consumption of better accommodation, or he spends less on rent but has more income left over to enjoy in other ways. A tenant in receipt of Housing Benefit however, does not face the same trade-off: one part of her BHC income is available only if she spends it on rent. The situation is further complicated in the case of social housing tenants by the subsidy they receive through paying below-market-rate rents. Their BHC income reflects the potential for a higher standard of living than someone without access to subsidised rents with the same BHC income. Finally, part of the housing costs of owner occupiers who have a mortgage is a contribution to building up an asset, not current consumption, while those who own outright enjoy the benefits of past investment (sometimes called imputed rents). Hills (1998) concludes that the true picture lies between BHC and AHC income as standardly measured. Accordingly, both BHC and AHC figures are shown in the first section of this chapter. Rates of poverty are generally higher for AHC measures than BHC measures for both disabled and non-disabled people, but the difference between the two groups on each measure is similar. In later sections of the chapter, the results presented focus on AHC income, for the sake of simplicity.

Income can be measured at an individual, family or household level. 'Family' is taken to mean the individual plus any spouse plus any dependent children, while 'household' includes all those who share common living space or eating arrangements. Choice of level depends on assumptions about the degree of sharing of income, and hence the degree to which standard of living is shared. The actual extent of sharing is unknown, though it has been explored by Pahl (1989) and Vogler (1994), amongst others. Sutherland (1997) analyses of the effects of making different sharing assumptions. Once again the true picture probably lies somewhere between no sharing (individual level) and total sharing (household level). This might point towards family level, but for the particular group under consideration in this analysis, this may not be

appropriate: a higher proportion of disabled adults remain in the parental home than non-disabled adults, and they may pool resources to a greater extent than more disparate households. Accordingly, income is aggregated to a household level.

Equivalisation of household income for differences in household size and composition has become standard. No equivalisation scale commands universal support. The McClements scale is widely used in the UK and is used here, despite being criticised for under-representing the costs of young children (Middleton et al 1997). A comparison with the modified OECD scale, more commonly used in the rest of the European Union, is given in Appendix 3.1 to this chapter.

There are some concerns about the effect of measurement error in the bottom tenth of the income distribution (DSS, 2000). A proportion of families in the bottom decile group (6 per cent in 1996/7 FRS) have apparently negative incomes. This may come about through mis-reporting of income, or through out-goings of tax, National Insurance, etc, being greater than income in the period in question. The self-employed are over-represented in this group. Other groups with genuinely low (though positive) incomes include pensioners not claiming Income Support (IS) to which they would be entitled, IS claimants obliged to pay large Social Fund contributions, individuals temporarily denied IS (for example, after voluntarily leaving employment), asylum seekers, and unemployed 16/17 year olds living independently and not on government training. For many of these groups, the experience of very low income is fortunately temporary.

Attempts to validate the income distribution derived from the Family Resources Survey, by comparison with other surveys, tax data, and examining the expenditure of those reporting low incomes, indicate two problematic areas: (i) under-reporting of high incomes, and (ii) incomes of the self-employed (Frosztega, 2000; ONS, 2004). The first of these problems is addressed by the 'SPI adjustment', derived from the Inland Revenue's Survey of Personal Incomes. The second problem is harder to resolve: incomes of the self-employed are intrinsically difficult to measure accurately. The Households Below Average Income give two versions of some analyses, one including the self-employed and the other excluding them. For the first stages of the analysis presented here, the same approach is followed, but since the differences

between the two distributions are small, the later stages of analysis simply include the self-employed.

The population of interest is adults of working age: 16 to 59 for women, and to 64 for men. Descriptive statistics (for example means and deciles) are calculated with respect to this population. Weights supplied with the data, designed to counteract sample-selection and non-response bias, are applied.

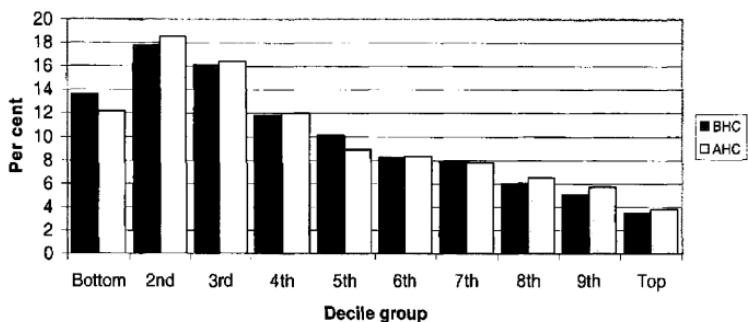
### *3.2.1 Position in the income distribution*

Figure 3.1 shows the distribution of disabled people across income decile groups of the whole working-age population. Dark bars show the BHC distribution and lighter bars the AHC distribution. The two distributions are similar, although the AHC distribution shows disabled people as slightly better off than the BHC distribution. This suggests disabled people spend less on housing than their non-disabled counterparts for a given BHC income – a counter-intuitive result. However, closer examination reveals that within every income decile group except the top two, disabled people are more likely to be in social housing, and hence paying lower rents.

For both BHC and AHC distributions, the largest concentration of disabled people is in the second lowest decile group. Steadily decreasing percentages appear in the higher decile groups. Relative to the whole population, disabled people are over-represented in the bottom four decile groups. However it is noticeable that the over-representation is less marked in the very bottom decile group: 14 and 12 per cent of disabled people for BHC and AHC distributions respectively, compared to 10 per cent for the population as a whole, by definition.

Given the doubts noted above about the reliability of reporting of self-employed incomes, the same analysis was conducted excluding households containing anyone who was self-employed. The results were very close to those presented in Figure 3.1. The peak concentration of disabled people in the second decile group remained unchanged.

**Figure 3.1: Position of disabled people in the income distribution  
(working-age adults)**



### 3.2.2 Extent of poverty

Table 3.1 shows the proportion of disabled people and of the population as a whole falling beneath various proportions of mean and median BHC and AHC income.

**Table 3.1: Percentages below various poverty thresholds, 1996/7  
(working-age adults)**

Threshold	Disabled	Non-disabled
<b>Before housing costs:</b>		
Half mean	31	18
60 per cent median	32	19
50 per cent median	18	12
40 per cent median	7	5
<b>After housing costs:</b>		
Half mean	37	23
60 per cent median	38	23
50 per cent median	27	17
40 per cent median	13	10
<i>Unweighted base = 100%</i>	2,595	24,771

Source: author's calculations using FRS, Disability Follow-Up and HBAI 1996/7

Half mean income is often taken as a poverty threshold in the UK. Half mean income for the whole population was, in 1996/7, close to 60 per cent of median income (both BHC and AHC), hence similar proportions fall below that threshold. 60 per cent

median income is now being used by Eurostat, and increasingly also in UK official statistics. Thresholds based on the median have the advantage of being less sensitive to measurement error at the extremes of the distribution.

Looking first at the BHC results, just under 1 in 3 disabled people have incomes below half the mean, or 60 per cent of the median, compared to 1 in 5 of non-disabled people. Turning to the AHC results, the proportions categorised as poor are even higher: 37 per cent of disabled people, and 23 per cent of the non-disabled.

For both distributions, using lower thresholds of 50 and 40 per cent of median income defines higher proportions of disabled people than of non-disabled people in poverty, but the differentials between disabled and non-disabled people are smaller. This confirms the impression generated by Figure 3.1, that disabled people are poor relative to the population as a whole, but are not concentrated in the deepest poverty. This can be examined more directly by analysing poverty gaps.

### *3.2.3 Intensity of poverty*

The poverty deficit is calculated as the sum of the differences between actual income and a poverty threshold, for all those whose income falls below the threshold. Dividing this total by the poverty threshold gives what is known as the poverty gap (Atkinson, 1998); dividing the total poverty gap by the number of individuals in poverty gives a measure of intensity of poverty, or mean poverty gap. As a formula, poverty intensity can be written:

$$I = G / \pi F(\pi)$$

where  $I$  is poverty intensity,  $G$  is the sum of shortfalls from the poverty threshold,  $\pi$  is the poverty threshold, and  $F(\pi)$  is the number of individuals below the threshold. It is the average shortfall from the threshold, expressed as a proportion of the threshold value.

This measure is sensitive to measurement error in the lowest incomes, since it is based on mean shortfall. An alternative measure calculates the median poverty gap: instead of dividing the total poverty gap by the number of individuals below the threshold, the poverty gap of the median individual below the threshold is reported.

Both measures of intensity of poverty are calculated in Table 3.2 for disabled and non-disabled people, with respect to four different thresholds, before and after housing costs. Looking first at the results for the mean poverty gap, for disabled people, the average shortfall ranges from 21 per cent to 34 per cent of the threshold value, depending on income definition and poverty threshold. For non-disabled people, the range is 27 per cent to 46 per cent. The table confirms that on average, the intensity of disabled people's poverty is less than that of non-disabled people: whichever threshold is considered, the average gap between disabled people's incomes and the threshold is smaller.

The median poverty gaps are smaller than the mean poverty gaps (especially when the lowest poverty threshold is used), but they show similar differences between the intensity of poverty among populations of disabled and non-disabled people.

**Table 3.2: Intensity of poverty**

<b>Threshold</b>	<b>Mean poverty gap</b>		<b>Median poverty gap</b>	
	Disabled	Non-disabled	Disabled	Non-disabled
<b>Before housing costs:</b>				
Half mean	0.22	0.27	0.18	0.21
60 per cent median	0.23	0.27	0.19	0.22
50 per cent median	0.21	0.28	0.14	0.18
40 per cent median	0.28	0.36	0.16	0.24
<b>After housing costs:</b>				
Half mean	0.30	0.38	0.24	0.30
60 per cent median	0.30	0.38	0.25	0.30
50 per cent median	0.28	0.38	0.19	0.27
40 per cent median	0.34	0.46	0.18	0.27
<i>Unweighted base = 100%</i>	2,595	24,771	2,595	24,771

Source: author's calculations using FRS, Disability Follow-Up and HBAI 1996/7

### 3.2.4 *Summary*

Descriptive statistics reveal that disabled people of working-age are over-represented at the lower end of the income distribution and that the extent of poverty among disabled people is wide: more than 1 in 3 fall below 60 per cent of median income after housing costs. However, the intensity of income-poverty among disabled people is less than that of their non-disabled counterparts. The hypothesis is that the social security system is effective in protecting disabled people from the worst poverty, though it is not generous enough to bring those dependent upon it above commonly-used poverty thresholds.

The exploration of different definitions of income and of poverty has revealed some sensitivity both to whether income is measured before or after housing costs, and to the threshold chosen as a poverty line. In what follows, income after housing costs and a poverty line of 60 per cent median income are used as central definitions. The choice is inevitably somewhat arbitrary; however where interpretation would differ importantly if using other definitions, this is noted.

### 3.3 Characteristics of the disabled poor

Using 60 per cent of median income as a poverty threshold, bivariate analysis (not shown in the table) suggests that among disabled people, being poor is positively and significantly associated with older current age, lower educational qualifications, being in a single-adult household, younger age at onset of impairment, and having a behavioural or intellectual impairment. Neither gender nor severity of impairment are significant.

Of course, some of these characteristics are also associated with poverty for non-disabled people. Similarities and differences in this respect are considered later. Some of these characteristics are also related to each other (older age and lower educational

qualifications, for example). Table 3.3 presents results from a probit regression for the disabled population, with poverty as the dependent variable.<sup>1</sup>

The relationship between poverty and educational qualifications might be expected to vary by age group - an 'A' level may be greater protection against poverty for a 45-year-old than it is for a younger person - but an interaction term added little to the explanatory power of the model. In general, lower educational qualifications are associated with greater risk of poverty for disabled people, with a particularly high penalty for those with no educational qualifications.

Age is included in the estimation in the form of three age groups, 16-29, 30-44 and 45 to pension age, in order to allow for non-linearities in age. These are interacted with age at onset of impairment, using the same categories of age plus onset at birth and onset during childhood. The results indicate that younger current age is associated with greater risk of poverty, while age at onset has a non-linear relationship with poverty. Those impaired at birth face the lowest risk of poverty, perhaps because they receive more in the way of transfers. Those impaired during childhood or early in working life face the greatest risk - although for the oldest current age group, the difference is less pronounced.

Results for type and severity of impairment confirm the conclusions reached through bivariate analysis: severity is not statistically significant, but behavioural and intellectual impairments stand out as carrying an increased risk of poverty. Interacting type and severity of impairment suggests if anything increasing severity is associated with decreasing risk of poverty, but the results are neither consistent nor statistically significant.

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<sup>1</sup> A probit or logit regression is appropriate where the dependant variable is binary (for example, poor = 1, non-poor = 0). Probit and logit regressions give very similar results in most circumstances. Probit is preferred here for ease of interpretation: for each explanatory variable, results are shown in terms of the change in probability of observing the dependant variable equal to 1 associated with a one-unit increase in the explanatory variable.

**Table 3.3: Characteristics associated with poverty among disabled people**  
(Probit regression on income below 60 per cent median equivalised AHC income)<sup>2</sup>

		Marginal probability	Standard error
<i>Gender</i>	Male	+0.07	0.021
<i>Highest educational qualification</i>			
Degree or above	(omitted)		
Further	+0.08	0.045	
Secondary	+0.15	0.043	
Lower vocational	+0.22	0.065	
Other	+0.17	0.063	
None	+0.25	0.031	
<i>Household composition</i>			
Single, no children	(omitted)		
Couple, no children	-0.21	0.026	
Single with children	+0.15	0.052	
Couple with children	-0.06	0.032	
More than 2 adults	-0.22	0.026	
<i>Age and age at onset of impairment</i>			
Age 16-29 and onset at: Birth	-0.00	0.065	
Childhood	+0.24	0.064	
16-29	+0.11	0.053	
Age 30-44 and onset at: Birth	-0.01	0.061	
Childhood	+0.08	0.056	
16-29	+0.09	0.043	
30-44	+0.07	0.041	
Age 45-59/64 and onset at: Birth	-0.01	0.054	
Childhood	+0.09	0.050	
16-29	+0.06	0.041	
30-44	+0.02	0.032	
45-59/64	(omitted)		
<i>Type of impairment</i>			
Locomotion	(omitted)		
Reaching or dexterity	+0.05	0.035	
Seeing or hearing	-0.02	0.041	
Behavioural or intellectual	+0.08	0.030	
Other	-0.01	0.031	
<i>Severity category of impairment</i>			
1 or 2	(omitted)		
3 or 4	-0.01	0.029	
5 or 6	+0.03	0.030	
7 or 8	+0.01	0.033	
9 or 10	-0.04	0.049	

Number of observations: 2,507 Log likelihood: -1521

Likelihood ratio index: 0.084 Predicted probability: 0.37 Proportion correctly classified: 0.67  
Source: author's calculations using FRS, Disability Follow-Up and HBAI 1996/7

The same analysis using the lower poverty threshold of 40 per cent of median income produces similar results, although many of the coefficients are smaller (for example,

<sup>2</sup> Appendix 3.2 offers an interpretation of the statistics which are used to report results from probit regressions throughout the thesis.

there is less difference between high and low qualifications). Using income before housing costs, but returning to the 60 per cent median threshold, again produces similar results. One important difference however is with respect to household composition: using BHC income, the risk of poverty for single adults with no children appears less than when using AHC income. A possible explanation is that single adults are obliged to spend a higher proportion of their income on housing than those in larger households, and that this difference is not fully reflected in the equivalence scales.

Young men, single parents, those with no educational qualifications, and a behavioural or intellectual impairment which they acquired in childhood are at greatest risk of poverty, whether using a low or high poverty threshold, and whether measuring income before or after housing costs.

### **3.4 Immediate causes of poverty**

The equivalised household income of an individual depends on the earnings of each member of the household, the total benefit entitlement, any other income (such as maintenance payments) and composition of the household. Accordingly, in trying to understand the reasons for poverty among disabled people, the role of each of these components can be studied. A comparison between disabled poor and non-poor reveals characteristics associated with poverty, while a comparison between disabled and non-disabled individuals highlights differences and similarities in the mechanisms which produce poverty in the two populations. Section 3.4.1 investigates individual earnings and section 3.4.2 examines household benefit entitlement. Other income turns out to play a minor role for both disabled and non-disabled individuals and households, so these components are not investigated in detail. The composition of households is explored in Appendix 3.1.

#### *3.4.1 Earnings*

Only 16 per cent of disabled individuals with AHC household income below 60 per cent of the median have any earnings, compared to 44 per cent of disabled individuals

above the poverty threshold.<sup>3</sup> Mean net earnings for disabled earners below the poverty line were £57 per week in 1998 prices, compared to £173 for disabled earners above the poverty line.<sup>4</sup>

These basic statistics suggest that there are differences both in opportunities for employment and in remuneration between disabled poor and non-poor. The regression reported in Table 3.4 examines the extent to which 'having some earnings' can be explained by characteristics such as age, educational qualifications and severity of impairment.

Relative to graduates, those with only secondary education or no qualifications at all are less likely to be earning.<sup>5</sup> This is consistent with results for non-disabled people and reflects human capital theory: workers with skills, qualifications and experience are more attractive to employers than those without.

Once again the relationship between current age, age at onset of impairment and probability of earning is complex. The middle age group, 30 to 44, appears to be the most likely to be earning, with the exception of those who were impaired at birth. For the older age group, those who became impaired in early or mid working life are more likely to be in work than either those who became impaired recently, or those who became impaired at birth or during childhood. Individuals in the youngest age group who were disabled at birth have high rates of employment relative to those who were disabled later.

Those with locomotive or behavioural/intellectual impairments are relatively unlikely to be earning. In contrast to the findings on poverty (Table 3.3), there is a clear gradient with respect to severity of impairment: from category 1/2 through to categories 7/8 the likelihood of being in employment decreases, and then flattens out. (In absolute terms, 48 per cent of those in severity category 1/2 are earning, compared

<sup>3</sup> Having some earnings is not synonymous with being in employment. Some of those categorised as unemployed or economically inactive have some (low) earnings, while some of those categorised as in employment report no earnings during the period immediately prior to interview, for example because they are on sick leave.

<sup>4</sup> Includes negative net earnings. The SPI adjustment, equivalisation, and the deduction of housing costs apply only at a household level.

<sup>5</sup> Coefficients for other categories are also negative but not significant, possibly due to small cell sizes.

to just 11 per cent of those with impairments in severity category 7/8, and 5 per cent of those in severity category 9/10).

**Table 3.4: Characteristics associated with having some earnings**  
(Probit regression on whether has some earnings; disabled people only)

		Marginal probability	Standard error
<i>Gender</i>	Male	- 0.01	0.020
<i>Highest educational qualification</i>			
Degree or above		(omitted)	
Further		- 0.06	0.034
Secondary		- 0.10	0.030
Lower vocational		- 0.01	0.054
Other		- 0.05	0.048
None		- 0.26	0.028
<i>Age and age at onset of impairment</i>			
Age 16-29 and onset at: Birth		+0.20	0.072
Childhood		+0.03	0.062
16-29		- 0.02	0.045
Age 30-44 and onset at: Birth		+0.11	0.067
Childhood		+0.12	0.057
16-29		+0.11	0.042
30-44		+0.10	0.038
Age 45-59/64 and onset at: Birth		+0.09	0.058
Childhood		+0.03	0.050
16-29		+0.11	0.041
30-44		+0.07	0.031
45-59/64		(omitted)	
<i>Type of impairment</i>			
Locomotion		(omitted)	
Reaching or dexterity		+0.07	0.034
Seeing or hearing		+0.17	0.042
Behavioural or intellectual		- 0.04	0.028
Other		+0.11	0.032
<i>Severity category of impairment</i>			
1 or 2		(omitted)	
3 or 4		- 0.08	0.024
5 or 6		- 0.15	0.023
7 or 8		- 0.30	0.017
9 or 10		- 0.29	0.015

Number of observations: 2,507

Log likelihood: -1348

Likelihood ratio index: 0.14 Predicted probability: 0.29 Proportion correctly classified: 0.73

Source: author's calculations using FRS, Disability Follow-Up and HBAI 1996/7

Table 3.5 presents a similar picture for level of earnings. Men have significantly higher earnings than women, controlling for other characteristics. This is largely because they are more likely to work full-time, although there are also well-documented hourly pay differentials between the genders (Grimshaw and Rubery, 2001).

The middle age group have the highest net weekly earnings, holding other characteristics constant; high penalties are associated with having no or low educational qualifications and with behavioural or intellectual impairment. The gradient with respect to severity of impairment is not clear, but this may partly be due to small cell sizes for earners in higher severity categories.

The regression reported in Table 3.5 does not distinguish between low earnings due to low rates of pay and low earnings due to working few hours. In fact, disabled workers below the poverty line both work fewer hours per week than those above the poverty line (24 compared to 33), and receive less per hour on average (£2.40 compared to £5.30).<sup>6</sup>

Drawing together the evidence on earnings so far, we have seen that those with no or low individual earnings are more likely to be poor. Among disabled people, those who are either young and had onset of impairment during childhood, or who are towards the end of their working life and had late onset of impairment, those with no educational qualifications, with behavioural or intellectual impairments, and impairments in severity category 7 or above, are least likely to be earning. Among those who are earning, low weekly earnings are the result of a combination of fewer hours per week and lower rates of pay. The least well-paid have similar characteristics to those least likely to be in work; the story of labour market disadvantage among disabled people is a consistent one.

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<sup>6</sup> Hourly figures are approximate due to measurement error in weekly hours and earnings

**Table 3.5: Characteristics associated with higher earnings**  
(OLS regression on log of net weekly earnings, if disabled and earnings > 0)

	Coefficient	Standard error
<i>Gender</i>		
Male	<b>+0.43</b>	0.113
<i>Highest educational qualification</i>		
Degree or above	(omitted)	
Further	- 0.35	0.188
Secondary	- 0.26	0.179
Lower vocational	<b>- 0.80</b>	0.261
Other	- 0.37	0.267
None	<b>- 0.41</b>	0.156
<i>Age at onset of impairment</i>		
Birth	<b>+0.56</b>	0.322
Childhood	+0.30	0.351
16-29	<b>+0.90</b>	0.275
Age 30-44 and onset at: Birth	<b>+0.72</b>	0.327
Childhood	+0.50	0.280
16-29	<b>+0.81</b>	0.204
30-44	<b>+0.67</b>	0.193
Age 45-59/64 and onset at: Birth	- 0.08	0.311
Childhood	<b>+0.58</b>	0.290
16-29	+0.43	0.215
30-44	<b>+0.49</b>	0.174
45-59/64	(omitted)	
<i>Type of impairment</i>		
Locomotion	(omitted)	
Reaching or dexterity	- 0.19	0.179
Seeing or hearing	+0.07	0.183
Behavioural or intellectual	<b>- 0.34</b>	0.170
Other	- 0.06	0.160
<i>Severity category of impairment</i>		
1 or 2	(omitted)	
3 or 4	- 0.09	0.148
5 or 6	- 0.29	0.155
7 or 8	- 0.07	0.243
9 or 10	<b>- 1.39</b>	0.572
<b>Constant</b>	<b>+4.33</b>	0.195

Number of observations: 756

Adjusted R-squared: 0.07

Source: author's calculations using FRS, Disability Follow-Up and IBAI 1996/7

It is also of interest to compare the earnings of disabled and non-disabled individuals. Are the drivers of labour market disadvantage the same? Clearly, characteristics of impairment are relevant only to disabled people, so the analysis is restricted to gender, age and education. Unfortunately, detailed questions on educational qualifications were not asked of the non-disabled sample in the FRS; the closest approximation is given by 'age left full-time education'. This is interacted with age groups in an

attempt to take account of the gradual extension of compulsory schooling since the 1940s.

As noted above, 16 per cent of disabled individuals with household income below 60 per cent of the median have some earnings. Nearly three times as many non-disabled people below the poverty line have earnings (42 per cent). Average net weekly earnings of the non-disabled poor who do work are £102, compared to £57 for the disabled poor. A significant, though reduced, differential remains after taking into account differences in total hours worked: approximately £3.90 per hour for non-disabled workers and £3.30 per hour for disabled workers (for those with positive earnings).

Taking individuals above and below the poverty line together, differentials between disabled and non-disabled populations are smaller, but still large. One-third (33 per cent) of disabled people have some earnings, compared to 78 per cent of non-disabled people. Average net weekly earnings of those with some earnings are £150 and £240 respectively.

To what extent can these differences be explained by the socio-demographic characteristics of disabled and non-disabled populations as a whole? Tables 3.6 and 3.7 show that disability remains important even after controlling for other characteristics. Being disabled is associated with a reduction of 47 percentage point reduction in the probability of having any earnings, holding age, gender and education constant. For those with some earnings, being disabled is associated with a 61 per cent reduction in earnings.

Separate regressions for disabled and non-disabled people indicate that age and educational qualifications have a similar relationship with employment probability for both groups, although the gradient on duration of education appears to be steeper for disabled people.<sup>7</sup> This is given some support by a pooled regression with an interaction term between disability status and age left full-time education: leaving

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<sup>7</sup> Low educational qualifications is correlated with higher severity of impairment; however, the relationship between 'age left full-time education' and employment remains stronger than it is for non-disabled individuals even after controlling for severity of impairment.

school at age 15 is associated with a bigger penalty for disabled people than for their non-disabled counterparts.

**Table 3.6: Whether being disabled makes a difference to probability of employment**  
(Probit regression on whether individual has any earnings;  
both disabled and non-disabled individuals)

		Marginal probability	Standard error
<i>Gender</i>	Male	+0.15	0.006
<i>Age and age left full-time education</i>			
Age 16-29	Not yet left	- 0.54	0.218
	Under 15	- 0.57	0.052
	At 15	- 0.28	0.035
	At 16	- 0.19	0.020
	At 17 or 18	- 0.07	0.021
	After age 18	- 0.02	0.021
Age 30-44	Not yet left	n/a	n/a
	Under 15	- 0.37	0.043
	At 15	- 0.11	0.022
	At 16	- 0.10	0.018
	At 17 or 18	- 0.00	0.018
	After age 18	+0.00	0.018
Age 45-59/64	Not yet left	n/a	n/a
	Under 15	- 0.33	0.028
	At 15	- 0.13	0.019
	At 16	- 0.08	0.020
	At 17 or 18	+0.00	0.020
	After age 18	(omitted)	
<i>Disability</i>	<b>Disabled</b>	- 0.47	0.010

Number of observations: 24,769 Log likelihood: -12,398

Likelihood ratio index: 0.14 Predicted probability: 0.75 Proportion correctly classified: 0.78

Source: author's calculations using FRS, Disability Follow-Up and HBAI 1996/7

**Table 3.7: Whether being disabled makes a difference to earnings**  
 (OLS regression on log of net weekly earnings,  
 for disabled and non-disabled people with earnings > 0)

		Coefficient	Standard error
<i>Gender</i>			
Male		+0.60	0.013
<i>Age and age left full-time education</i>			
Age 16-29	Not yet left	- 1.74	0.072
	Under 15	- 0.82	0.236
	At 15	- 0.78	0.072
	At 16	- 0.65	0.035
	At 17 or 18	- 0.50	0.039
	After age 18	- 0.32	0.041
Age 30-44	Not yet left	n/a	n/a
	Under 15	- 0.58	0.108
	At 15	- 0.54	0.041
	At 16	- 0.45	0.033
	At 17 or 18	- 0.23	0.036
	After age 18	+0.06	0.036
Age 45-59/64	Not yet left	n/a	n/a
	Under 15	- 0.76	0.062
	At 15	- 0.60	0.034
	At 16	- 0.41	0.037
	At 17 or 18	- 0.30	0.042
	After age 18	(omitted)	
<i>Disability</i>			
Disabled		- 0.61	0.032
<i>Constant</i>		+5.24	0.030

Number of observations: 17,832

Adjusted R-squared: 0.18

Source: author's calculations using FRS, Disability Follow-Up and HBAI 1996/7

To summarise, the difference in average earnings between disabled and non-disabled individuals, including those who do not earn at all, is £139 per week, or 79 per cent of the overall average. Higher earnings are associated with reduced risk of poverty; at the mean, an additional £10 per week in earnings reduces poverty risk by 8 per cent for disabled people. Hence, in the absence of countervailing factors, differences in earnings would more than account for the total difference in poverty rates between disabled and non-disabled individuals. However, as we shall see in the next section, earnings are inversely related to benefit entitlement, so the explanation of difference in poverty rates is not so straightforward.

### 3.4.2 Benefits

The mean household benefit income of disabled people with household incomes below 60 per cent of the median is £145 per week, compared to £105 for disabled people above the poverty line. A similar pattern is observed for non-disabled individuals, although the amounts are smaller and the differential is larger: £25 and £97 respectively.

Restricting our attention to individuals in no-earner households, we find higher benefit income is associated with reduced risk of poverty for disabled people. Within no-earner households, 68 per cent of disabled people in the bottom quintile group of benefit receipt are in poverty, compared to 42 per cent of those in the top quintile group of benefit receipt.

The considerably higher benefit income of disabled people under the poverty line, compared to their non-disabled counterparts, goes some way to explaining the differences in depth of poverty between the two groups observed in section 1.3 above. Less than 5 per cent of disabled people below the poverty line report no benefit income (compared to 11 per cent of non-disabled people), mean benefit income is higher, and it is more evenly distributed. 1 in 5 disabled people below the poverty line have benefit incomes less than half the mean benefit income for this group, compared to 2 in 5 non-disabled people in a comparable situation.

Benefits can be classified in a number of different ways, but one simple distinction is between those which are related to other income of the individual and his/her family ("means-tested"), and those which are not ("non-means-tested"). It transpires that disabled people have, on average, higher income from non-means-tested benefits than non-disabled people: £70 per week compared to £21.

Table 3.8 breaks down the amount of benefit from non-means-tested sources by the number of earners in the household, and also expresses it as a proportion of total household income. The average amount of non-means-tested benefits for disabled people is higher for all household types and so is the proportion of total income from this source. Of particular significance is the fact that 23 per cent of total income for

disabled people in single-earner households comes from non-means-tested benefits, compared to just 9 per cent for non-disabled people (£66 and £26 respectively in absolute terms). For disabled people, non-means-tested benefits make an important contribution to overall income, and may be sufficient to ensure that a one-earner model is sustainable.

**Table 3.8: Non-means-tested benefits, by disability and number of earners in the household**

Number of earners in household	Mean amount of non-means-tested benefits (£ per week)		% of total income from non-means-tested benefits	
	Disabled	Non-disabled	Disabled	Non-disabled
Two or more	33	15	8	3
One	66	26	23	9
None	96	44	45	25
All	70	21	29	8

Source: author's calculations using FRS, Disability Follow-Up and HBAI 1996/7

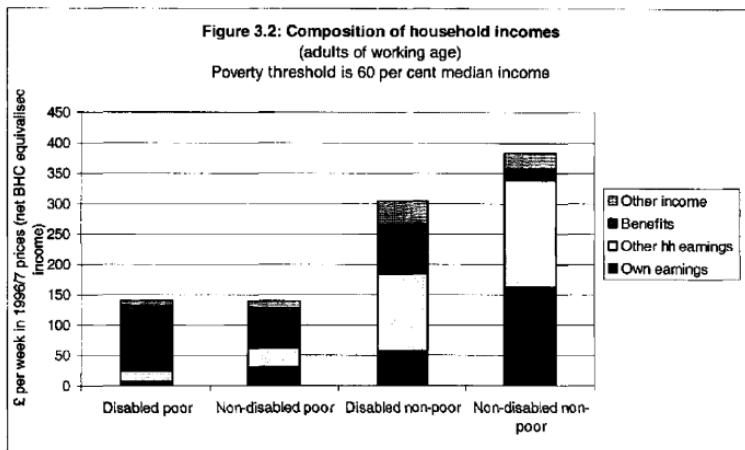
In conclusion, it is clear that without social security, disabled people would be considerably worse off than they currently are. Benefit incomes of disabled people both above and below a threshold of 60 per cent median income are substantial. Benefits are not sufficient to compensate for the over-representation of disabled people in no- and single-earner households; however the availability of non-means-tested benefits may serve to prevent more single-earner households being forced to become no-earner households. The distribution of benefit income for disabled people below the 60 per cent median income poverty line is flatter than for non-disabled people, which helps to explain the relative lack of depth of poverty for the former. Whether the financial support received through the benefits system is sufficient to cover the extra costs incurred by some disabled people is a theme taken up in the next chapter.

### 3.4.3 Summary

In this section, the immediate causes of poverty among disabled people have been examined: employment, earnings, and benefit entitlement. Figure 3.2 summarises this information.

The figure suggests that individuals in the disabled non-poor category have higher 'other' income, both in absolute terms and proportionately, than the non-disabled non-poor group. This is largely due to a higher proportion taking early retirement (for example on ill health grounds) and receiving private or occupational pension income. There is also a small number who receive payments from insurance or compensation after an accident.

Differences in own earnings and other household earnings account for a large proportion of the differences in incomes between poor and non-poor, and between disabled and non-disabled people. The differences in earnings are however offset to some extent by greater benefit entitlement among those who have low or no earnings – especially for disabled people.



### 3.5 Conclusions

This chapter has explored income poverty among disabled people and compared it to poverty among non-disabled people. It sets the context for the subsequent chapters: the extent of poverty among disabled people of working age is greater than among non-disabled people, but the intensity of poverty is greater among the latter. Social security ameliorates but does not prevent poverty measured in this way. Access to employment for the individual and his or her household plays an important role in

protecting against poverty, for both disabled and non-disabled people, and similar factors are associated for each group with greater likelihood of being in employment. In addition to a direct disability penalty, the profile of disabled people means that their chances of being in household with someone in employment are lower: they are older, on average, have lower educational qualifications and are more likely to live in single-person households.

The analysis has demonstrated some of the strengths of an income-based approach to measuring poverty. The money metric is tractable: a wide range of summary statistics can be calculated, the position of different sub-groups in the distribution can be compared readily, sensitivity analysis using alternative definitions and thresholds is eminently feasible. It is also familiar and easily understood, which in turn facilitates comparisons with existing research on relative disadvantage.

On the other hand, the discussion has also shown that although income-poverty is sometimes presented as a more objective or scientific measure than the alternatives, there are in practice a series of judgements which have to be made in operationalising the concept. These are often as arbitrary, or normative, as the decisions which have to be made in operationalising alternative measures such as those suggested by the capability approach. For example, the selection of a 40, 50 or 60 per cent of median income, or indeed some percentage of the mean, as a poverty threshold has implications not only for the estimate of the extent of poverty, but also for which groups are identified as most in need. Choices of equivalence scale and income definition can be equally sensitive. Perhaps because the arguments for and against different income poverty measures are more familiar, these choices seem less controversial.

At the same time, the analysis has pointed to some of the drawbacks of focusing exclusively on income. Table 3.3 showed that more severely disabled people were at no greater risk of poverty than less severely disabled people: this seems counter-intuitive, until we remember that the income measure does not take account of the additional needs that more severely disabled people have. Benefit entitlements predicated on 'extra costs' are included in the calculation of household income, but the extra costs themselves are ignored. This introduces a distortion in comparisons

between more and less severely disabled people, and between disabled and non-disabled people, a distortion which the next chapter attempts to rectify.

More generally, although income-based measures are, naturally, very helpful in providing information about the economic resources available to individuals, they are silent on the uses to which those resources are or can be put. The extent to which possession of economic resources translates into well-being remains unknown.

### Appendix 3.1: Comparison of equivalence scales

Table A3.1: Comparison of equivalence scales

	McClements BHC	McClements AHC	Modified OECD
Head	0.61	0.55	0.67
Spouse	0.39	0.45	0.33
Other second adult	0.46	0.45	0.33
Third adult	0.42	0.45	0.33
Each subsequent adult	0.36	0.40	0.33
Each dependant aged			
0-1	0.09	0.07	0.20
2-4	0.18	0.18	0.20
5-7	0.21	0.21	0.20
8-10	0.23	0.23	0.20
11-12	0.25	0.26	0.20
13	0.27	0.28	0.20
14-15	0.27	0.28	0.33
16 or over	0.36	0.38	0.33

Source: DWP (2005c), Appendices 2 and 6

The first difference to note between the Modified OECD scale and the McClements scale is that the former is on a Before Housing Costs basis only. Since housing costs are an important component of expenditure which has considerable economies of scale, differentiating between Before and After Housing Costs can be seen as an advantage of the McClements scale, if analysis is to be carried out on an AHC basis.

The Modified OECD scale gives more weight to the first adult (and less to second and subsequent adults) than either the BHC or AHC McClements scales. This has the effect of giving single adult households a smaller equivalised income. The Modified OECD scale also gives much greater weight to children aged under 5 than either of the McClements scales, and treats children aged 14 or over as equivalent to an additional adult in the household, whereas for the McClements scales the age threshold for adults is 16.

Sensitivity analysis carried out by DWP for the *Households Below Average Income* series (DWP, 2005c) shows that in general, replacing the McClements scale with the Modified OECD scale results in:

- a greater number of individuals below low-income thresholds (especially for AHC incomes);
- a greater risk of low income for single pensioners and children in single-parent families;
- little effect for households in which someone is in work.

### Appendix 3.2: Statistics used to report probit regression results

The following is an interpretation of the statistics which are used to report results from probit regressions throughout the thesis.

The strength of association between each explanatory variable and the dependant variable is shown by the marginal probability. If  $F(y) = \beta_1x_1 + \dots + \beta_nx_n + \epsilon$ ,  $dF/dx$  is the change in probability of, for example, being poor,  $F(y)$ , associated with a one-unit increase in the explanatory variable,  $x$ , for an individual with mean characteristics,  $x_1$  to  $x_n$ . For dummy variables, the one-unit increase is the discrete change from 0 to 1; for continuous variables it is an infinitesimal change extrapolated out. See Stata Reference Manual Release 6, Vol 3, p71.

The significance of each explanatory variable is indicated by the standard error; those which are significant at the 95% level or above are shown in bold. Alternatively, significance may be indicated by asterisks: one for significance at the 90% level or above, two for 95%, and three for 99%.

Three measures of goodness of fit are presented:

- (i) The log likelihood  $\ln L$  shows the maximized value of the log likelihood function. It is not informative by itself but can be used to compare alternative model specifications.
- (ii) The McFadden's likelihood ratio index (also known as pseudo R-squared) ranges between 0 and 1 and increases as fit improves. It is calculated as  $1 - (\ln L / \ln L_0)$ , where  $\ln L_0$  is the log likelihood estimated with only a constant term.
- (iii) The proportion of observations correctly classified is calculated by setting estimated outcome  $\hat{y} = 1$  if  $F(\hat{y}) \geq 0.5$  and  $\hat{y} = 0$  otherwise, and comparing these estimated outcomes to the observed values of  $y$ .

See Greene (2003), pp 683-686 for a discussion of the relative merits of these and other measures.

### Appendix 3.3: Household composition

Table A3.2 shows the risk of poverty by household composition, comparing disabled and non-disabled individuals. The reference group is couples with no children – who face the lowest risk of poverty among both disabled and non-disabled populations – but it is important to note that the base rate of poverty is more than twice as high for disabled individuals than for non-disabled: 28 per cent and 13 per cent respectively.

For both groups, risk of poverty increases in the following order: more than 2 adults, couple with children, single without children, and finally single parent. The order appears to reflect a combination of needs and earnings power: greater needs (for example, the presence of children) and less earnings power (single adult household) increase risk of poverty.

**Table A3.2: Household composition and risk of poverty, by whether disabled**  
(Poverty threshold 60 per cent median income)

Household composition	Risk of poverty relative to couple with no children		Percent of all individuals in each household type	
	Disabled	Non- disabled	Disabled	Non- disabled
Couple, no children	1.00	1.00	33	22
Single, no children	1.86	2.20	8	4
Single, with child(ren)	2.57	5.75	6	5
Couple, with child(ren)	1.63	2.01	30	47
More than 2 adults	1.16	1.37	23	22
All			100	100

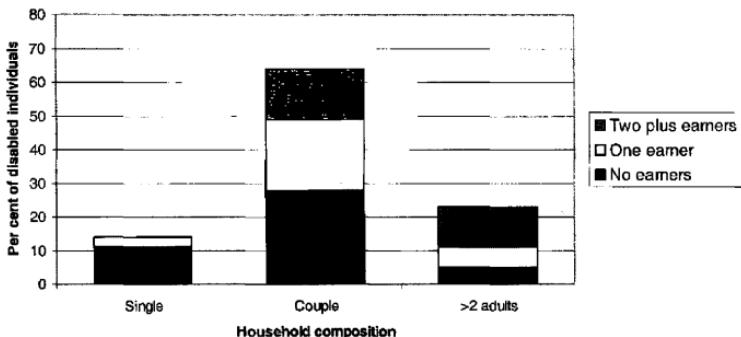
Source: author's calculations using FRS, Disability Follow-Up and HBAI 1996/7

The *absolute* risks are greater for disabled individuals, but the *relative* risks are in every case greater for non-disabled people. This may be because rates of poverty are already high even in relatively low-risk disabled households.

Disabled people are more likely to be living alone – which carries a relatively high risk of poverty – but they are also more likely than non-disabled individuals to be in a couple with no children, which carries a low poverty risk. Other things being equal (which the analysis in the main chapter shows they are not), the composition of households in which disabled people live would tend to protect them from poverty.

However, possibly more important than the existence of other household members, is what those other members are doing. Figure A3.1 shows the number of earners in the household, by household composition, for disabled and non-disabled individuals. Two features can be noted. Firstly, disabled people are four times more likely than non-disabled people to be in households with no earners. Disabled people themselves are less likely to be earning; it appears their spouses and others in their household are also less likely to be working. Just over half of disabled people in households with other adults have earnings from other household members, compared to three-quarters of non-disabled people.

**Figure A3.1: Household composition and number of earners**  
**(i) Disabled individuals**



**(ii) Non-disabled individuals**



The second point to note is that, relative to non-disabled people, disabled individuals in multi-adult households are more likely to be in single-earner households – 31 per cent compared to 25 per cent. This status may be supported by the availability of non-means-tested benefits (such as Incapacity Benefit) payable to a disabled person out of work even if his or her spouse is earning.

Finally, Table A3.3 relates the number of earners in a household to the risk of poverty. It shows that risk of poverty is less strongly related to number of earners in the household for disabled people, but that disabled people are very much more likely to be in high-risk households.

**Table A3.3: Number of earners and risk of poverty, by whether disabled**  
 (Poverty threshold: 60 per cent median income)

Type of household and number of earners	Risk of poverty relative to households with no earners		Percent of individuals in each household type	
	Disabled	Non-disabled	Disabled	Non-disabled
<i>Single-adult households</i>				
No earners	1.00	1.00	11	4
One earner	0.46	0.24	3	4
<i>Multiple-adult households</i>				
No earners	1.00	1.00	32	8
One earner	0.56	0.47	27	23
Two or more earners	0.17	0.09	27	61
All			100	100

Source: author's calculations using FRS, Disability Follow-Up and HBAI 1996/7

## CHAPTER FOUR: EQUIVALISATION

### 4.1 Introduction

In the previous chapter, a given level of income has been assumed to represent the same level of well-being for all individuals. However, as Sen (1983, 1985a, 1992, 1999a and elsewhere) has argued, the rate of conversion of income into well-being depends on a range of factors: personal heterogeneities (including health), environmental diversities (for example, weather and epidemiology), economic setting (including availability of public goods), social norms (determining minimum standards of decent clothing, for example), and distribution within the household. Indeed, Sen often uses disability as an example: "A person with disability has special needs and thus requires more resources to escape a poor life" (Sen, 1994a, p334). Sen's conclusion is that measuring well-being outcomes themselves (valued functionings) is preferable to using income as a proxy. However, there is a technique within the standard economics literature, namely, equivalisation, which is designed to address at least some kinds of variation in the rate at which income is converted into well-being. Equivalisation makes allowance for variations in need by adjusting downwards the incomes of individuals (or households) with greater needs than a reference individual or household. In practice, equivalisation is usually applied to household incomes to account for differences in household size and composition. In principle, it can be applied to any additional need which can be quantified in terms of a proportionate or absolute income gap. This chapter explores equivalisation for additional costs arising from disability.

Sen has acknowledged the possibility of extending techniques of equivalisation as one approach to operationalisation of the capability framework, although measuring functionings directly remains his preferred alternative. In *Development as Freedom*, he says: "for example, family incomes may be adjusted downwards by illiteracy and upwards by high levels of education, and so on, to make them equivalent in terms of capability achievement. This procedure relates to the general literature on

'equivalence scales'" (Sen 1999a, p83). There have been few attempts to date to develop this empirically.<sup>1</sup>

A given fully-equivalised income should in principle be able to secure the same well-being outcomes for whoever possesses it. Accordingly, analysis of well-being on the basis of fully-equivalised incomes should produce results close to those based on analysis of functionings. In practice, the correspondence is likely to be closest in domains where material outcomes are important (like consumption of various goods and services). Well-being based on a broader functioning set, including for example political participation or social interaction, is unlikely to have a linear relationship with fully-equivalised income, since non-income barriers to participation are more prevalent for those functionings making it difficult to translate them into an income metric. Well-being functionings are analysed in Chapter 5 and the comparison between them and equivalised income is presented in Chapter 7.

#### 4.2 Approaches to equivalisation

The additional needs which people with impairments have can be met in a number of different ways. For example, mobility for a wheelchair user can be secured by ensuring that the environment is accessible - buses with wheelchair spaces, lifts to station platforms, ramps to public buildings, and so on - or by making special provision for the individual, through taxi schemes rather than public transport, and personal assistance to carry the wheelchair user up any steps they encounter. Quantifying additional needs as costs to the individual may seem to imply the second, individualised, approach, rather than placing the emphasis on changing environment or society at large. This can be seen as in tension with the social model of disability (as described in Chapter 1). Properly understood, however, estimating the additional needs of disability as individual costs does not imply that the *solution* to the disadvantage experienced by people with impairments is to provide individual income

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<sup>1</sup> Lelli (2005), which was published after the empirical work for this thesis was complete, uses Belgian and Italian data to create equivalence scales for the functioning 'adequate shelter', using an analogous approach to that presented here. She concludes that income differences play only a small part in explaining differences in this functioning and hence that compensating people in monetary terms for functioning shortfalls is not the best policy response.

supplements, rather it is a way of comparing the relative position of disabled and non-disabled people, taking the current physical, social and economic context as given.

In that sense, the costs which might be incurred by disabled people include additional expenditure on items which non-disabled people also purchase (such as heating, laundry and transport), as well as expenditure on items specifically relating to disability (incontinence pads, information in Braille, etc). The magnitude and composition of extra costs are likely to vary by personal characteristics like type and severity of impairment, as well as the social and physical environment in which he or she lives.

There have been many attempts to estimate equivalence scales for children but relatively few attempts for disability. Accordingly, the next section offers a general overview of equivalence scale estimation methods before focusing on extra cost estimates specifically for disability that are produced using analogous measurement techniques.

#### *4.2.1 Equivalence scales for household size and composition*

One common approach to equivalisation is based on analysis of consumption patterns. The so-called Engel method assumes that the welfare of a household is reflected by the expenditure share on food, since, for a given income, a larger proportion of total expenditure in larger households is devoted to food, while for a given household size, a smaller proportion of total expenditure in richer households is spent to food (suggested, though not implemented, in Engel, 1857). Rothbarth (1943) departed from this method by focusing on goods that are specific to adults' welfare (rather than the welfare of the whole household). This can be used to estimate extra costs of children, but is not suitable for estimating costs associated with additional adults in the household. For instance, in two couples with the same income, one with a child and the other without, the difference between the households' expenditures on alcohol or tobacco can be taken to provide an index of the extra cost of the child.

Rothbarth-type measures focus on conditional utility, where children have an impact on the utility of parents only insofar as they affect consumption of adult members of

the household, leaving aside any increase (or decrease) in utility derived by parents directly from having children. The problem is compounded, from a technical point of view, by the fact that whether or not a household contains children is usually influenced by the preferences of parents for having children (i.e. the presence of children is endogenous to the utility derived from them). For this reason, Pollak and Wales argue that "conditional equivalence scales ... cannot be used to make welfare comparisons" (Pollak and Wales, 1979, p220). The latter point is less problematic in the case of disability, since disability status is not chosen, but the inability of equivalence based on consumption patterns to take into account the utility or disutility directly generated by the status concerned applies to disability as much to having children. This is discussed further below in the case of disability.

One key issue with the utility-based estimation of equivalence scales is whether they should be invariant to the utility level at which welfare comparisons are made (referred to as 'equivalence scale exactness' by Blackorby and Donaldson (1993) and 'independence of base' by Lewbel (1989)). Although this property is widely accepted in the economics literature, there is no rationale for assuming that the equivalence scales required for welfare comparisons should be equal for (say) 'rich' and 'poor' households (see Coulter et al, 1992 and Nelson, 1993).

A second approach, known as the Leyden approach, is based on subjective data. A sample of the general population are asked what levels of income correspond to different standards of living; equivalences are then derived from the relationship between income, a subjective evaluation of their standard of living (or needs) and their family composition (see, for example, Kapteyn and Van Praag, 1976; Van Praag and Warnaar 1997). Multivariate models are used to control for other differences across these households.

One problem associated with this approach is that people on different levels of income associate different income levels with a given standard of living. This problem, referred to as the 'preference drift', is resolved in Kapteyn and Van Praag (1976) by selecting the welfare-income relationship for which the equivalent income and household's own income coincides. Mainly due to doubts about the usefulness and the reliability of the subjective data, but also due to other assumptions used in the

estimation, the subjective approach to measurement of equivalence scale has not, as yet, gained widespread popularity.

An alternative uses a panel of experts to judge a basket of goods and services which represents a subsistence minimum for families of varying size and composition. These baskets can then be costed and equivalence scales derived. This approach is criticised for contamination by the value judgements of experts about which items are to be included in the basket, the quantity of items and their quality (Bradshaw et al, 1987). One advantage of this approach is that the experts' judgements, though subjective, are explicit.

Finally, equivalence scales may be derived from the relativities observed in the social assistance system in the country in question. The most obvious problem with these scales is that benefit levels may not have been set with respect to a carefully calculated subsistence minimum, and even if they were, the calculation may not have been revised to keep up with changes in the contents or prices of the basket of minimum necessary goods and services. Moreover, these scales may not be useful for distributional analysis of the whole income distribution since they are derived on the basis of information in the bottom tail of the distribution.

#### *4.2.2 Previous estimates of extra costs of disability*

Table 4.1 gives the estimates of the disability costs obtained using a subjective approach. None of these controlled for the income of respondents, or other differences between households. Estimates relate to regular items of expenditure (excluding, for example, the cost of purchasing special equipment and adaptations). For comparability, they are shown in £ per week in 2002 prices, and as a percentage of average earnings in the year in which the data were collected.

The second study (DIG, 1988) was a response by a lobby group to what they regarded as the absurdly low estimates produced by the first study. This could explain the large difference between the results of the two studies; it also illustrates a weakness with this version of the subjective approach. The approach has the advantage that those who incur the expenditure – here, disabled people – provide the estimates but for

items on which some expenditure would be incurred whether or not the individual was disabled (such as heating and laundry), it is difficult for respondents to evaluate the counterfactual ('what would you spend if you were not disabled?').

**Table 4.1: Subjective estimates of regular extra costs of disability**

Study reference	Data year	Method	Estimates	
			£ per week in 2002 prices	As % average earnings <sup>1</sup>
Martin and White (1988)	1985	Face-to-face interview, random sample of disabled adults. N = 9,982	Low <sup>2</sup>	7.34
			Moderate <sup>2</sup>	13.30
			Severe <sup>2</sup>	20.94
DIG (1988)	1988	Telephone survey of campaigning organisation's membership. <sup>3</sup>	82.41	26.3

<sup>1</sup> Average earnings in year data were collected

<sup>2</sup> 'Low' is OPCS disability severity category 1 or 2, 'Moderate' is severity category 5 or 6, 'Severe' is severity category 9 or 10. See Martin, Meltzer and Elliot (1998) for details.

<sup>3</sup> Non-pensioners only.

**Table 4.2: Estimates of extra costs of disability based on consumption patterns**

Study reference	Data year	Method	Additional costs for two-person household	
			£ per week in 2002 prices	As % of average earnings <sup>1</sup>
Matthews and Truscott (1990)	1985	Spending patterns of disabled and non-disabled, controlling for income.	£7.88 <i>more</i> on fuel, services, tobacco, durables; £8.85 <i>less</i> on transport, clothing.	+2.8 -3.2
Jones and O'Donnell (1995)	1986/7	Engel curves (modified). Working-age physically disabled people only.	Range from 45 % extra (on transport) to 64 % extra (on fuel)	n/a

<sup>1</sup> Average earnings in year data were collected

Table 4.2 gives the results from previous attempts to estimate extra costs based on consumption patterns.<sup>2</sup> Both studies control for income in calculating additional costs,

<sup>2</sup> Klavus (1999) estimated the additional value of benefits-in-kind (such as public health services) required by households containing a chronically ill member to reach the income level of a reference household. He concluded that such households in Finland in 1987 needed "40% more income from non-cash transfers" (p. 622). His results are interesting but not directly comparable to those reported in the table, since his main objective is to show that adding the value of welfare benefits-in-kind to cash

but restrict themselves to making comparisons within specific areas of expenditure, rather than giving an overall estimate.

The relativities in the British social security system between disabled and non-disabled claimants have not been used as the basis for estimating extra costs. However, as an illustration Table 4.3 shows estimates derived from benefit levels (in 2002). Social assistance benefits are available on a means-tested basis and reflect the minimum the government expects an individual to live on. The amount of benefit varies by age and severity of disability (shown as 'minimum' and 'maximum' in the table). Eligibility for extra costs benefits depends on severity of disability, but is not income-contingent.

**Table 4.3: Estimates of extra costs of disability based on social security rates, 2002**

Single person aged 25-59/64	Non-disabled £ per week	Disabled minimum £ per week	Disabled maximum £ per week	Implied range of extra costs £ per week	% of average earnings
Social assistance	53.95	91.85	191.05	37.90 to 137.10	9.8 to 35.5
Extra costs benefits only	0	14.90	95.55	14.90 to 95.55	3.9 to 24.7

Source: Department for Work and Pensions website <http://www.dwp.gov.uk/>, accessed December 2002

Most measures of the income distribution in the UK include these benefits as income but fail to take account of the additional costs towards which the benefits are designed to contribute. This introduces a serious upwards bias in the estimates of disabled people's position in the income distribution, and thereby a downwards bias in the estimates of the total numbers on low incomes or below various poverty thresholds. The implications are explored further in section 4.5 below.

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incomes, without taking into account differences in need, distorts assessments of inequality, rather than to estimate an equivalence scale for the costs of disability.

#### *4.2.3 Standard of living method*

The underlying hypothesis for the method applied in this chapter is that disabled people experience a lower standard of living than their non-disabled counterparts with the same level of income, as a result of the diversion of income to goods and services required because of their impairments and the physical, social and economic environment in which they live. Disability-related consumption is substituted for consumption of goods and services which contribute to their general standard of living. Thus, the operationalisation of this method relies on the identification of a standard of living indicator which would be affected by such a switch in consumption patterns.

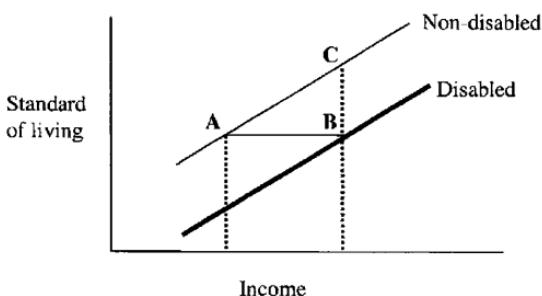
The approach estimates the extra costs of living that people incur as a result of their disability, such as additional heating, laundry and transport costs, or special equipment. It does not attempt to reflect any loss in subjective well-being as a direct result of being disabled. Nor does it include the opportunity costs of disability, for example, the loss of personal earnings, or earnings foregone by friends and relatives in providing unpaid care; household income is treated as exogenous.<sup>3</sup>

Figure 4.1 highlights the theoretical relationship between income, standard of living and disability.

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<sup>3</sup> The opportunity cost may be large and is certainly important, but is not the subject of this estimation. (Similarly, equivalence for household size does not take into account the reduction in parental earnings associated with having children).

**Figure 4.1: Theoretical relationship between income, standard of living and disability**



Standard of living is assumed to rise with income for all households, but for a household with greater needs – for example, one containing a disabled person – the same income results in lower standard of living. Conversely, the same standard of living can be achieved by a household with greater needs if it also has a higher income. Note that although the figure is drawn with the line for disabled people below the line for non-disabled people, this is not assumed in the estimation. In Figure 4.1, income B for a disabled household translates into the same standard of living as income A for a non-disabled household, and B minus A gives an estimate of the extra costs of disability.

The Figure illustrates the simple case where the extra costs associated with disability are a fixed amount, independent of level of income, and where the relationship between income and standard of living is linear. Social security benefits in the UK for children, and for the extra costs of disability, are set at a flat rate, and thus reflect this assumption. But in equivalence for household size, it is usually assumed that extra costs are a proportion of income; in that case the estimation would have to be modified to allow interaction between income and disability. Alternatively, extra costs might rise with income, but with diminishing returns to income in terms of standard of living: a relationship with log income, or square root of income.

Which functional form is appropriate can be determined empirically. Berthoud et al (1993), calculating the extra costs of disability using 1985 survey data, found that income minus income squared was the best specification, indicating that the marginal

return to income in terms of standard of living decreases as income rises, and that extra costs of disability rise with income. (Indicators of standard of living are discussed in more detail below). The estimates of extra costs of disability they derived are shown in Table 4.4, up-rated to 2002 prices.

**Table 4.4: Estimates of extra costs of disability based on standard of living method**

Severity category	£ per week in 2002 prices	As % of average earnings
1 / 2	7	4.6
3 / 4	26	17.3
5 / 6	38	24.7
7 / 8	51	34.0
9 / 10	55	36.4

Source: Adapted from Berthoud et al (1993) Table 5.12, for a "central estimate" of extra costs at income of £100 per week in 1985 prices (£186 pw in 2002 prices), and shown as % of average earnings in 1985.

Berthoud et al's results provide a useful comparison with the results presented below but are limited by the fact that the 1985 survey included only households containing a disabled person. Furthermore there are reasons to believe that extra costs of disability have changed substantially in the last 20 years (see below).

The standard of living approach for measuring extra costs of disability is related to Rothbarth's suggestion that the standard of living of households with different needs may be compared by assessing the level of 'excess income', where excess income is understood to be that which is available for spending on non-necessities (Rothbarth, 1943).<sup>4</sup> There are two common criticisms of this type of approach. The first is that it estimates conditional rather than unconditional welfare (see section 4.2.1 above). This is not problematic for estimation in the case of disability since no-one chooses to be disabled, although it does mean that the results must be interpreted as measuring the additional cost incurred by disabled people in achieving the same level of material well-being, rather than as an overall assessment of differences in utility. The second criticism is that the choice of proxy for standard of living (or excess income) could substantially affect the results. This choice is critical to the success of the method and

<sup>4</sup> Subsequent applications of the 'Rothbarth approach' have concentrated on expenditure devoted exclusively to adults, but his original formulation is more general.

this question is revisited in section 4.3.1 below. One further limitation is common to most methods for deriving equivalence scales: it is assumed that all members of the household share the same standard of living. Research on intra-household allocation of resources alerts us to the fact that in practice this is not always the case (Pahl, 1989).

The standard of living approach avoids some of the disadvantages associated with other methods. In contrast to the subjective approach and minimum budget approach, neither individuals nor experts are required to make judgements for the standard of living method about hypothetical levels of consumption with and without disability. Instead, the differences are deduced from observations of the relationship between standards of living and income. It also avoids the arbitrariness associated with deriving equivalence scales from social security benefit levels. In contrast to the Engel method and related goods-shares methods, it does not require detailed data on expenditure.

### **4.3 Estimation and results**

#### *4.3.1 Data and definitions*

Data are drawn from the 1996/97 Family Resources Survey Disability Follow Up, described above in Chapter 1. An indicator of the household's standard of living is regressed on household income, disability status and other attributes (age, household composition, housing tenure and region), to estimate the relationship between living standards, income and disability.

The dependent variable need not reflect all dimensions of standard of living, since the purpose of the estimation is not to specify a model that can explain variation in standards of living overall; rather, the aim is to quantify how income is related to a component of standard of living (i.e. to obtain an estimate of an income curve), and whether disability – by shifting the income curve to the right – reduces standard of living. Provided the level of the standard of living indicator strictly increases with overall standard of living, and provided that preferences for the good or service

represented by the standard of living indicator do not vary systematically between disabled and non-disabled people, the indicator will be a sufficient proxy.

All other attributes included in the regressions are control variables: they are of interest if either the income or the disability coefficients change with their inclusion. Any interaction terms (with income, disability status, or both) are also of interest. For instance, it is interesting to test whether tenants have different costs of disability as compared to home-owners, and whether low-income households require different resources when compared to high income households because of differences in their style (and thus costs) of living.

This approach requires that a standard-of-living indicator is found that is not simply a statement of income. Moreover, the indicator should consist of goods and services, preferences for which are independent of disability status. For example, expenditure on home helps would not be a good indicator of standard of living since preference for home helps over other goods and services is increased by (some forms of) disability. In general, the closer an indicator comes to representing a universally-valued functioning (such as being able to get out and about), and the further removed it is from a specific form of consumption, the better.

Variations in preferences or tastes are problematic only if they are systematically related to the characteristic of interest (in this case, disability); other variations will be 'averaged out'. Ford (1997) argues that composite indicators, based on a range of different items, are useful in this context, since even if there is a systematic relationship between need and preferences for one item, the relationship is unlikely to be replicated across different items.

Elasticity in the relationship between the standard of living indicator and income is important so that the indicator will be sensitive to changes in available resources. Food expenditure is relatively inelastic, since a minimum is a necessity and there is a limit to how much one can consume, while ownership of consumer durables may be more responsive to income. Elasticity, or responsiveness to changes in income, may itself vary with income. For example, the proportion of households with access to a telephone increases quickly with income at the bottom of the income distribution, but

hardly at all above the median (since nearly 100 percent of richer households have access).

Choosing an indicator which is sensitive to the bottom of the distribution means the results will reflect extra needs (necessities) but may not discriminate well for higher-income households. Choosing an indicator which is sensitive at the top of the distribution means the results will reflect extra expenditure (luxuries). Again, a combined indicator may help to cover the full range. However it is important to remember that the indicator is not intended to measure standard of living overall – it is necessary only that it should be elastic with respect to disposable income for households with a range of tastes.

Comparing families containing more and less severely disabled individuals using the 1985 OPCS Survey, Berthoud et al (1993) found a combined indicator based on ownership of seven consumer durables and five questions about budgeting (including ability to save) behaved reasonably well. In the present case, for the Family Resources Survey, indicators of consumer durables similar to those used by Berthoud et al were tried initially.<sup>5</sup> Indicators which were found to be responsive to income over a reasonable range of income were selected and combined into a composite measure. Details of the full list and composite measure are given in Appendix 4.1.

A second set of variables relating to savings was also tested. The question on whether the household has any savings performed well: highly responsive to income over the full range. This is a particularly satisfactory result since one would expect households with greater disposable income to be more likely to accrue savings over time, and correspondingly that additional needs will tend to reduce prevalence of savings. Overall, 26 percent of non-pensioner households had no savings.

The variable recording amount of savings was unsatisfactory. This may in part be due to problems in its construction – there was a high rate of non-response, responses were given in fairly wide bands, and recorded at family (benefit unit) rather than

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<sup>5</sup> An index of consumer durables may not be a good indicator of standard of living for those who have recently become disabled. However, the proportion of the stock of disabled people who have recently become disabled is small, so the effect on overall estimates will be limited.

household level. Measurement error appears to have made the variable too 'noisy' to provide a useful indicator of standard of living.

Some households containing a disabled person may have a stronger preference to save as a precaution against future expenses, but other households may exhibit weaker preferences to save on the grounds of shorter life expectancy. Disincentives to save exist for recipients or would-be recipients of means-tested social assistance and more disabled people are likely to qualify for such benefits than non-disabled people. However *for a given level of income* the incentives and disincentives to save created by the social security system are the same for disabled and non-disabled people of working age. Overall, it is assumed that a similar range of attitudes towards saving exists among households containing a disabled person as among other households.

The income indicator should reflect the resources that can be disposed of according to the needs and preferences of the household in question. This suggests income should be measured net of direct taxes and social insurance contributions, and at a household level. A further consideration is whether income should be measured before or after housing costs (BHC or AHC); following the exploration of both measures in Chapter 3, the AHC measure is selected here, to avoid repetition of very similar results. Household income is not equivalised for household size or composition; instead variables for numbers and ages of adults and children are included in the models.

Ideally, a measure of permanent income would be used. However the FRS data are cross-sectional. Incomes are also likely to be measured with error; however there is no particular reason to believe that disabled people's incomes will be measured with a different level of measurement error than incomes of non-disabled people. Since the estimates depend on a comparison between the two, we can reasonably expect measurement error not to create a systematic bias.

The disability indicator used is the full OPCS severity score in FRS, which ranges from 0 (no disability) to 22 (the maximum score for any individual in the dataset). Single-adult and couple households are distinguished. For couple households, various specifications of the disability variable in FRS were explored, including: individual's score and dummy variable for whether partner disabled; individual's score interacted

with partner's score; and sum of individual's and partner's scores. This last specification produced the best fit. Households with three or more adults are omitted from the first analysis. This is mainly due to the heterogeneity of this subgroup. For instance, it contains elderly disabled people living with their adult (non-disabled) children, as well as disabled young adults still living with their parents. Any further subdivision to account for these different households reduced the cell size of three-plus person households too much.

Other explanatory variables were determined on the basis of hypotheses about their importance in the relationship between standard of living, income and disability. For instance, tenure is included (as in previous studies) since it is expected that people with the same level of income but differences in terms of home ownership will have different standards of living. Similarly, regional dummies are included to reflect geographical differences in costs of living. Age, and number and ages of children, are other important explanatory variables. Interaction terms were also tested. The inclusion of explanatory variables in the final models was governed by their statistical significance.

#### *4.3.2 Estimates of extra costs of disability*

Table 4.5 provides an overview of results for individuals of working age in different household types from the final model. The subsequent tables (Tables 4.6 to 4.7) illustrate the procedure which was followed to arrive at the final results and various sensitivity tests. The dependent variable in Table 4.5 is whether the household has any savings; consequently a logistic regression was used. The extra costs of disability are calculated by the ratio of coefficients on disability and income; further details of the derivation are given in Appendix 4.1. For instance, for single adults, the ratio of coefficient for disability severity score (0.034) and coefficient for log income (0.736) provides the estimate that this subgroup requires 4.5% more income to maintain their living standards for each unit increase in the disability severity score.

A range of income specifications were explored, including linear and non-linear terms and interaction terms; details are given in Appendix 4.3. A log income specification was found to provide the best fit. This implies that the marginal returns of income to

standard of living measured in this way decrease as income rises. In other words, an additional £1 makes more difference to the standard of living of a poor person than a rich person. The coefficients on income and severity score (the two coefficients used to calculate extra costs) are statistically significant at the 95% level or above for each household type. The likelihood ratio indices – a measure of the explanatory power of the models – while not high, are reasonable for analysis of this kind.

**Table 4.5: Summary of results from final models**

*Logit regressions. Dependant variable (standard of living indicator): 'any savings'.*

Household type:	Single	Couple 1 disabled	Couple Both disabled
AHC income, log	0.756*** (0.069)	0.875*** (0.036)	0.836*** (0.040)
Disability severity score	-0.034*** (0.011)	-0.026*** (0.008)	
Own plus spouse severity scores			-0.033*** (0.006)
Age group	Y	Y	Y
Region	Y	Y	Y
Tenure	Y	Y	Y
Children	Y	Y	Y
Constant	Y	Y	Y
<b>Extra costs estimates</b>			
(i) as % of income, for each point on severity score <i>95% confidence interval</i>	<b>4.5%</b> +/- 2.9	<b>3.0%</b> +/- 1.6	<b>3.9%</b> +/- 1.5
(ii) at mean income, £pw, for: low severity (score 3) medium severity (score 9) high severity (score 17) <i>Mean income, £pw</i>	<b>£23</b> <b>£70</b> <b>£132</b> <b>£173</b>	<b>£36</b> <b>£108</b> <b>£203</b> <b>£399</b>	<b>£96</b> <b>£289</b> <b>£546</b> <b>£412</b>
Number of observations	3,836	15,125	12,301
Log likelihood	2,123	-6,161	-4,773
Likelihood ratio index	0.19	0.17	0.17
Predicted probability	0.58	0.81	0.82
Proportion correctly classified	0.72	0.83	0.84

Notes: Non-pensioner households. All monetary figures expressed in 2002 prices. 'AHC income' = After Housing Costs net household income. For description of disability severity score, see text.

Age group (3 categories); region (11 categories); tenure (3 categories); – entered as dummy variables.

Reference categories: age 16-29, living in the North, owner-occupier.

'Children': number of children in household in each of 3 age categories.

Robust standard errors given in parentheses.

Statistical significance indicated at \*\*\* 99% level \*\* 95% level \* 90% level.

Source: Family Resources Survey and Disability Follow Up (1996/97)

Estimates of extra costs are shown in the bottom two rows of the table, expressed firstly as the percentage of income by which extra costs increase for each additional point on the severity score, and secondly as an amount in £ per week (in 2002 prices) for a household on mean income for each of three levels of severity of impairment.

The estimated extra costs as a percentage of income are higher for single-adult households than for couple households. This is as one would expect. In a couple where only one person is disabled, some substitution of unpaid care for disability-related expenditure may be possible, thereby reducing the extra costs of disability. In a couple where both are disabled, some sharing of equipment and other disability-related resources may be possible, thereby reducing the extra cost per person. However, it is important to note that in couples where both individuals are disabled, the absolute amount of extra costs is likely to be higher than in other household types, since their combined severity score is likely to be higher.

Turning to the illustrations of extra costs for households with mean income, it can be seen that extra costs associated with a low severity of impairment range from £23 (single person) to £96 (couple household, both disabled). Much of the variation arises from differences in mean income by household type. For a high level of severity, extra costs for a household with mean income range from £132 to £546.

Table 4.6 illustrates a sensitivity test, comparing different standard of living indicators. The two indicators are an index of consumer durables, and whether the household has any savings (the indicator used for the summary of results in Table 4.5). In general, the consumer durables indicator produces slightly lower estimates of extra costs as a percentage of income, but they are of the same order of magnitude as for 'any savings'.

**Table 4.6: Comparing standard of living indicators**  
*Ordered logit regressions with 'consumer durables' as dependant variable*  
*Logit regressions with 'any savings' as dependant variable*

Type of household: Standard of living indicator:	Single		Couple, 1 disabled		Couple, both disabled	
	Consumer durables	Any savings	Consumer durables	Any savings	Consumer durables	Any savings
AHC income, log	0.765*** (0.060)	0.756*** (0.069)	0.953*** (0.027)	0.875*** (0.036)	0.927*** (0.030)	0.836*** (0.040)
Disability severity score	-0.030*** (0.010)	-0.034*** (0.011)	-0.018*** (0.006)	-0.026*** (0.008)		
Own plus spouse severity scores					-0.024*** (0.005)	-0.033*** (0.006)
Age group	Y	Y	Y	Y	Y	Y
Region	Y	Y	Y	Y	Y	Y
Tenure	Y	Y	Y	Y	Y	Y
Children	Y	Y	Y	Y	Y	Y
Cut points / constant	Y	Y	Y	Y	Y	Y
<b>Extra costs estimate as % of income, for each point on score</b>	<b>3.9%</b>	<b>4.5%</b>	<b>1.9%</b>	<b>3.0%</b>	<b>2.6%</b>	<b>3.9%</b>
<i>Number of observations</i>	3,830	3,836	15,123	15,125	12,299	12,301
<i>Log likelihood</i>	-6,074	-2,123	-20,795	-6,161	-16,302	-4,773
<i>Likelihood ratio index</i>	0.11	0.19	0.09	0.17	0.08	0.17

For definition of standard of living indicators, see text.

See also Notes to Table 4.5.

Source: Family Resources Survey and Disability Follow-Up (1996/97)

Table 4.7 illustrates how extra costs vary by type of impairment. In order to achieve sufficiently large cell sizes, couple households are combined. Of course, an individual may have more than one type of impairment. Here individuals are classified according to the dimension on which they had the highest score (i.e. the most severe impairment), with any 'ties' being decided in favour of the impairment type higher up the list.

**Table 4.7: Variation in extra costs by type of impairment**  
*Logit regressions with 'any savings' as dependant variable*

	Type of household	
	Single adults	All couples
AHC income, log	0.751*** (0.069)	0.878*** (0.041)
No disability	omitted	omitted
Locomotion	-0.777*** (0.190)	-0.405*** (0.121)
Reaching/dexterity	-0.222 (0.220)	-0.354** (0.162)
Seeing/hearing	0.208 (0.324)	-0.099 (0.217)
Continence	-0.173 (0.411)	0.359 (0.475)
Mental health	-0.349** (0.173)	-0.155 (0.142)
Independence	-0.427 (0.337)	-0.410*** (0.161)
Other	-0.515 (0.436)	-0.163 (0.341)
Age group	Y	Y
Region	Y	Y
Tenure	Y	Y
Children	Y	Y
Constant	Y	Y
<i>Number of observations</i>	3,836	15,518
<i>Log likelihood</i>	-2,116	-6,387
<i>Likelihood ratio index</i>	0.19	0.18
<i>Predicted probability</i>	0.58	0.80
<i>Proportion correctly classified</i>	0.72	0.82

See also Notes to Table 4.5

Source: Family Resources Survey and Disability Follow-Up (1996/97)

Among single adults, those with locomotion impairments, or mental health problems have significant extra costs. Locomotion impairments are also associated with significant extra costs for those in couple households. This group also experience extra costs associated with 'independence' and reaching and dexterity impairments.<sup>6</sup> The categories of locomotion and independence correspond reasonably closely to the eligibility criteria for Disability Living Allowance mobility and care components respectively, but mental health and reaching/dexterity are less well accommodated,

<sup>6</sup> Note that 'Independence' is a rather unsatisfactory category in the original OPCS measure, and refers to ability to carry out self-care activities like toileting and feeding.

and this is reflected in poor coverage of extra costs by benefit payments, as shown in the next section.

#### 4.3.3 Comparison with previous estimates and with extra costs benefits received

The results derived by Berthoud et al (1993) for 1985 data, summarised in Table 4.4, are an average of single and couple households, and cover the full age range. They are therefore difficult to compare directly with the results presented here. For the lowest severity category (1 / 2), Berthoud et al estimate extra costs at 4 percent of income. The average severity *score* in category 1 / 2 is 2.3.<sup>7</sup> The estimate of extra costs based on the 1996/7 results in Table 4.5 for a severity score of 2.3 is between 7 and 10 percent. There are reasons to believe that extra costs of disability have increased since the mid-1980s, firstly, because previously unmet needs can be accommodated with newly-available aids and adaptations (which nevertheless absorb resources which might previously have been available to contribute to overall standard of living), and secondly, because charges for social services have increased and become more widespread (Audit Commission, 2000). So it is plausible that the estimates of extra costs derived from 1996/97 data are higher than those derived from 1985 data. The gradient of extra costs with respect to severity appears to have remained relatively unchanged, however: an 8-fold increase from the bottom to the top of the scale in both cases.<sup>8</sup>

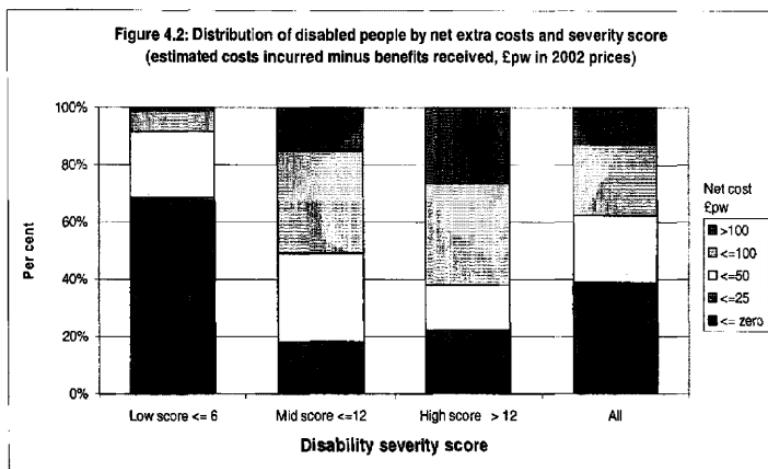
Some individuals receive extra costs benefits, such as Disability Living Allowance (DLA), in recognition of the extra costs of disability which they incur. Figure 4.2 compares the receipt of such benefits to the estimates of extra costs incurred, derived from Table 4.5, for disabled people of working age.<sup>9</sup> The sections of the stacked bars

<sup>7</sup> There are 10 OPCS severity *categories* derived from severity *scores* ranging from 0 to 22.

<sup>8</sup> Comparing category 1/2 with category 9/10 in Table 4.4, and severity score 2.3 with severity score 18.1 (the mean scores for categories 1/2 and 9/10 respectively) in Table 4.5.

<sup>9</sup> Since extra costs are found to rise with income, there is a potential circularity in calculating the amount of income required to raise a disabled person to the same standard of living as a non-disabled person. If compensation is given to the disabled person on the basis of their pre-compensation income, their income will be increased, and hence their extra costs will rise, so further compensation will be required. However if the objective of the exercise is horizontal equity, the first round of compensation is sufficient: the compensation is enough to raise the disabled person to the same standard of living he or she would have had, were he or she not disabled. One implication is that calculation of extra costs of disability should be based on pre-compensation incomes, as it is here.

represent the percentage of the group in question (for example, the first column is disabled non-pensioners with a severity score less than or equal to 6) who are estimated to have *net* extra costs of zero or less, more than zero and up to £25 per week, between £25 and £50 per week and so on.



Source: Family Resources Survey and Disability Follow-Up (1996/97)

Only a small proportion of individuals have their estimated extra costs met in full by the benefits they receive (the bottom section of the stack). The majority of those with low severity scores are short of up to £25 per week, while those with higher severity scores tend to have greater unmet need. Among those who are estimated to face additional costs, the mean net cost is £47 per week (in 2002 prices).

#### 4.4 Extent and depth of poverty after adjustment for extra costs

Having estimated the extra costs of disability, it is now possible to examine how the extent, depth and distribution of poverty is affected by taking these extra costs into account. The results show that applying the estimates for extra costs to disabled people's incomes has substantial effects both on their own position in the income distribution, and on overall estimates of poverty rates. Disability equivalence scales

were derived (by household type) from the final estimates in Tables 4.5 and applied to household-level data from the FRS.<sup>10</sup>

Table 4.8 reports the incidence and severity of income poverty among non-disabled and disabled people. These results are provided for three different measures of income – A, B, and C – which differ from each other in their adjustment for extra costs of disability. The poverty line used is 60 percent of median income for the whole population for the particular definition of income in question. Income A is obtained using the standard *Households Below Average Income*-type income definition (DWP, 2005c), as used in the previous chapter: it includes the disability related benefits received by different members of the household, and equivalisation of household resources is carried out for differences in household size only. Income B is an improvement over A since it deducts 'extra costs' disability benefits (namely, Disability Living Allowance) from household income. The assumption underlying B is that all extra costs of disability are offset by the state benefits available to disabled people. However, as implied by the analysis in the previous section, there is a considerable doubt about the availability and sufficiency of benefits that are available. Income C is the result of deducting from total household income the estimated extra costs of disability as calculated in Table 4.5 for all those identified as disabled.<sup>11</sup>

Obviously, a move from income definition A to B and then to C implies greater income disadvantage for disabled people in comparison to non-disabled people. Results presented in Table 4.8 show that income poverty for disabled people is substantially higher in B (45.2 percent) than in A (24.8 percent). As expected, there is no significant difference in the poverty rate for non-disabled people between A and B.

<sup>10</sup> The estimates for two-adult households were also used for households containing three or more adults. After applying the adjustment for disability, negative incomes were set to zero, and all incomes were then equivalised for differences in household size using the standard McClements scale. Alternative calculations using the Modified OECD equivalence scale are given in Appendix 4.3.

<sup>11</sup> Total household income includes Disability Living Allowance. Thus income definition C takes into account the fact that some disabled people have already been partially compensated for the extra costs of disability through receipt of these benefits.

**Table 4.8: Poverty rate and poverty gap of individuals in households with and without disabled adults, using three different income definitions**

	Poverty rate		Poverty gap	
	Rate	Share of total	Mean	Share of total
<b>Income definition A</b>				
No disabled person in household	22.6	0.77	0.39	0.81
Disabled person in household	36.9	0.23	0.31	0.19
All	24.8	1.00	0.37	1.00
<b>Income definition B</b>				
No disabled person in household	22.7	0.73	0.39	0.77
Disabled person in household	45.2	0.27	0.31	0.23
All	26.2	1.00	0.37	1.00
<b>Income definition C</b>				
No disabled person in household	21.5	0.66	0.38	0.62
Disabled person in household	58.7	0.34	0.46	0.38
All	27.3	1.00	0.41	1.00

Notes: poverty line is 60% median income in each case

Income definition A: after housing costs, including Disability Living Allowance (i.e. state-provided extra costs disability benefits).

Income definition B: after housing costs, minus Disability Living Allowance.

Income definition C: after housing costs, minus extra costs of disability as calculated in Table 4.5.

Source: Family Resources Survey and Disability Follow-Up (1996/97)

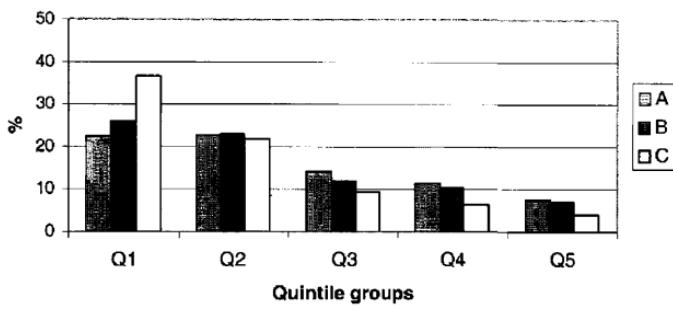
Results for income definition C indicate even greater disadvantage of disabled people relative to the non-disabled, after fully adjusting for the extra costs of disability. The poverty rate among individuals in households containing a disabled person is very high according to this measure: 58.7 percent. These results provide a clear indication of an under-estimation of the poverty incidence among the disabled population in the HBAI-type analysis of income distribution.

Taking account of disability does not just affect the position of disabled households relative to their non-disabled counterparts; it also affects overall estimates of poverty, as shown in the rows for 'All' in Table 4.8. The percentage of the whole working age population estimated to be in poverty (using a poverty line at 60% of median income) changes from 24.8 to 27.3 percent when income definition C is used instead of A.

In terms of the poverty gap, moving from income definition A to B makes little difference to the mean values for disabled and non-disabled, although the share of the poverty gap accounted for by households containing disabled people rises (because the number of such households below the poverty line increases). Income definition C

dramatically increases the average poverty gap among individuals in households containing a disabled person: those households with substantial extra costs who receive little by way of extra costs benefits have a large shortfall. Using this definition, they make up 38 per cent of the total poverty gap, despite representing less than 16 per cent of the working age population.

**Figure 4.3: Share of each quintile group made up by individuals in households with a disabled member, using three different income definitions**



Income definition A: after housing costs, including Disability Living Allowance and Attendance Allowance (i.e. state-provided extra costs disability benefits).

Income definition B: after housing costs, minus Disability Living Allowance and Attendance Allowance.

Income definition C: after housing costs, minus extra costs of disability as calculated in Table 4.5.  
Data source: FRS and Disability Follow-Up 1996/7

The changes in the relative position of the disabled population can also be observed when differences in the whole distribution are analysed. Figure 4.3 shows the share of each quintile group made up by individuals in households with a disabled member, using the three income definitions and quintiles defined on the basis of total population of individuals in non-pensioner households. The share of disabled population in the bottom quintile is between 20 and 25 percent when using definition A and B, but this share is as high as 37 percent for income definition C, which provides clear evidence of disproportional representation of the disabled population in the bottom parts of the income distribution when disability costs are taken into account.

#### **4.5 Characteristics of the disabled poor**

It is not of course surprising that taking account of the extra costs disabled people face reveals greater extent and depth of poverty (although the magnitude of the change is important). Perhaps of more interest is how the distribution of poverty among the disabled population changes after adjustment. Table 4.9 presents results from probit regressions on the probability of having income below 60 per cent of the median, showing the association with various personal and household characteristics.

Gender and household composition retain the association with likelihood of poverty which was shown for unadjusted income poverty in the previous chapter. Similarly, the role of educational qualifications in predicting poverty is as strong if not stronger after adjusting incomes for extra costs. Having a behavioural or intellectual impairment is still associated with greater risk of poverty.

The main difference is with respect to severity of impairment. Where previously severity had no significant association with poverty, a clear gradient is now present, with those in severity category 7 or above having a 33 percentage point disadvantage, compared to those in severity category 1 or 2. Clearly the additional support which the more severely disabled people receive through the benefits system is not sufficient to compensate for the extra costs they are estimated to incur. The differences between each successive pair of categories are statistically significant at the 95% level or above, apart from the final two. It is interesting to note however that the risk of poverty is not greater in severity categories 9/10 than it is in categories 7/8. Since we know that extra costs do rise with severity, this suggests that at the extreme, the financial and other assistance available is somewhat more effective in meeting extra costs than lower down the severity scale.

**Table 4.9: Characteristics associated with poverty for disabled people**  
 (Probit regression on income below 60 per cent median AHC income,  
 equivalised for disability)

	Marginal probability	Robust standard error
<i>Gender</i>		
Male	<b>+0.11</b>	0.022
<i>Highest educational qualification</i>		
Degree or above	(omitted)	
Further	<b>+0.12</b>	0.036
Secondary	<b>+0.12</b>	0.035
Lower vocational	<b>+0.22</b>	0.040
Other	<b>+0.13</b>	0.048
None	<b>+0.31</b>	0.031
<i>Household composition</i>		
Single, no children	(omitted)	
- <b>0.33</b>	0.031	
Couple, no children	<b>+0.14</b>	0.051
Single with children	<b>- 0.32</b>	0.037
Couple with children	<b>- 0.46</b>	0.032
More than 2 adults		
<i>Age and age at onset of impairment</i>		
Age 16-29 and onset at: Birth	<b>+0.00</b>	0.070
Childhood	<b>+0.19</b>	0.051
16-29	<b>+0.16</b>	0.040
Age 30-44 and onset at: Birth	<b>+0.09</b>	0.059
Childhood	<b>+0.09</b>	0.051
16-29	<b>+0.04</b>	0.041
30-44	<b>+0.07</b>	0.039
Age 45-59/64 and onset at: Birth	<b>+0.09</b>	0.051
Childhood	<b>+0.12</b>	0.043
16-29	<b>+0.05</b>	0.039
30-44	<b>+0.01</b>	0.032
45-59/64	(omitted)	
<i>Type of impairment</i>		
Locomotion	(omitted)	
Reaching or dexterity	<b>+0.02</b>	0.035
Seeing or hearing	<b>- 0.01</b>	0.041
Behavioural or intellectual	<b>+0.08</b>	0.030
Other	<b>- 0.05</b>	0.033
<i>Severity category of impairment</i>		
1 or 2	(omitted)	
3 or 4	<b>+0.12</b>	0.027
5 or 6	<b>+0.25</b>	0.024
7 or 8	<b>+0.33</b>	0.020
9 or 10	<b>+0.33</b>	0.019

Number of observations: 2,507 Log likelihood: -1,336

Likelihood ratio index: 0.20 Predicted probability: 0.65 Proportion correctly classified: 0.72

Source: Family Resources Survey and Disability Follow-Up (1996/97)

#### 4.6 Conclusions

This chapter has considered an extension of the income poverty approach, namely equivalisation. Equivalisation addresses one of the criticisms levelled at the pure income approach: that it fails to account for differences in the rate at which income can be translated into well-being. Household size is one commonly acknowledged source of variation, but equivalisation for disability, another important source of variation in needs, is much rarer. Although one could wish for larger sample sizes and a wider range of standard of living indicators to test the robustness of the estimates produced in this chapter, they nevertheless represent a significant contribution to the development of equivalence scales for disability.

The results show that the extra costs of disability are substantial, especially for disabled people living alone, and that such extra costs rise with severity of disability. These are important findings since they have implications for the adequacy of disability-related state benefits and for devising poverty thresholds when comparing poverty across people with varying severity of disability. Taking the extra costs of disability into account has a substantial impact not only on the relative position of disabled and non-disabled people in the income distribution, but also on estimated poverty rates in the population as a whole. The results presented in the previous chapter, comparing incomes of disabled and non-disabled individuals without making any adjustment for extra costs, therefore significantly understate the relative disadvantage of disabled people.

Equivalisation of income for disability and other characteristics is a step towards a recognition of that income is a means to an end rather than an end in itself (at least for most people). Nevertheless it restricts our attention to material well-being, or at least, to those aspects of well-being which can be translated into a money metric. A more thorough-going approach is to measure the valued ends in themselves – a person's functionings – which may include non-material dimensions such as participation in social life. It is to this subject which the next chapter turns.

#### Appendix 4.1: Technical details of estimation

Algebraically:

$$S = \alpha Y + \beta D + \gamma X + k \quad [4.1]$$

where  $S$  is an indicator of standard of living,  $Y$  is household income,  $D$  is disability status,  $X$  is a vector of other characteristics, including household composition.

Following equation [1], the extra cost of disability,  $E$ , is given by:

$$E = dY/dD = -\beta / \alpha \quad [4.2]$$

This can also be verified graphically. In Figure 4.1 in the main chapter,  $\beta$  gives the distance  $BC$  between the two lines, while  $\alpha$  gives their slope, or  $BC$  over  $AB$ . Thus  $\beta / \alpha = BC / (BC/AB) = AB$ , which is the extra cost of disability.

Since the standard of living indicator is binary, logistic regression is used to derive estimates. A logit model is given by the following equation:

$$\log \frac{P_i}{1 - P_i} = \sum_k b_k X_k$$

where  $P_i$  is the probability that a household with given characteristics has the standard of living indicator in question,  $b_k$  are the coefficients associated with different characteristics  $X_k$  of the household. As shown in equation [4.2], the extra costs of disability are calculated by the ratio of two gradients with respect to disability and income. In logistic regression, the same can be achieved by the ratio of the two coefficients (which is also equivalent to the ratio of the corresponding marginal effects).

#### **Appendix 4.2: Index of consumer durables**

For the consumer durables indicator, the following variables were tested individually for responsiveness to income:

- \*Video player
- \*Tumble dryer
- \*Dishwasher
- \*CD player
- \*Access to a motor vehicle
- \*Microwave
- \*Mobile telephone
- \*Washing machine
- \*Home computer
- Satellite TV
- Central heating
- Fridge/freezer
- Telephone

Those marked \* were included in a composite indicator for non-pensioner households. The composite was scored 1 to 6, with 1 representing ownership of two or less of the items (17 percent of households), and 6 representing ownership of seven or more items (10 percent of households). This categorisation was designed to ensure sufficient numbers in each category; no weighting is applied to individual items.

### Appendix 4.3: Testing different income specifications

A number of different income specifications were tried before reaching the final model. Some of these are shown in the table below. Each specification represents a different hypothesised relationship between income and extra costs of disability. A log income specification provided the best fit and was selected for the final model. It suggests that the extra costs of disability rise *proportionally* to income.

**Table A4.1: Testing income specifications**  
 Single adult households  
 Logit regressions using 'any savings' standard of living indicator

	Model 1	Model 2	Model 3	Model 4
AHC income, linear	0.009***	0.009***		
AHC income, log			1.088***	1.087***
AHC income, squared				
AHC income, square root		0.000		0.002
AHC income interacted with severity score				
Severity score	-0.058***	-0.072***	-0.062***	-0.070***
Children	Y	Y	Y	Y
Constant	Y	Y	Y	Y
<i>Log likelihood</i>	-2363	-2363	-2287	-2287

...continued

	Model 5	Model 6	Model 7 = final
AHC income, linear			
AHC income, log			0.756***
AHC income, squared	2.2 x 10 <sup>-5</sup> ***		
AHC income, square root		0.173***	
AHC income interacted with severity score			
Severity score	-0.059***	-0.065***	-0.034***
Children	Y	Y	Y
Region			Y
Tenure			Y
Age			Y
Constant	Y	Y	Y
<i>Log likelihood</i>	-2426	-2394	-2123

'AHC' = After Housing Costs

Statistical significance at \*\*\* 1% level \*\* 5% level \* 10% level n.s. not significant

Source: Family Resources Survey and Disability Follow-Up 1996/97.

**Appendix 4.4: Comparing poverty rates using McClements and Modified OECD equivalence scales for household size and composition**

In Table 4.8, poverty rates were shown for income definitions A, B and C, that is unadjusted incomes, incomes minus disability extra costs benefits, and incomes fully equivalised for disability. For all three income definitions, McClements equivalence scale for differences in household size and composition was applied. The table below compares the poverty rates calculated on that basis and those calculated using the Modified OECD scale.

**Table A4.2: Poverty rates using three different income definitions, and comparing McClements with Modified OECD equivalence scale for household composition**

	Poverty rate (McClements)		Poverty rate (Modified OECD)	
	Index	Poverty share	Index	Poverty share
<b>Income definition A</b>				
No disabled person in h'hold	22.6	76.8	23.1	76.3
Disabled person in h'hold	36.9	23.2	38.9	23.7
All	24.8	100.0	25.6	100.0
<b>Income definition B</b>				
No disabled person in h'hold	22.7	73.1	23.3	73.2
Disabled person in h'hold	45.2	26.9	46.3	26.9
All	26.2	100.0	26.9	100.0
<b>Income definition C</b>				
No disabled person in h'hold	21.5	66.4	21.6	66.3
Disabled person in h'hold	58.7	33.6	59.5	33.8
All	27.3	100.0	27.5	100.0

Notes: poverty line is 60% median income in each case

Income definition A: after housing costs, including Disability Living Allowance (i.e. state-provided extra costs disability benefits).

Income definition B: after housing costs, minus Disability Living Allowance.

Income definition C: after housing costs, minus extra costs of disability as calculated in Table 4.5.  
Source: Family Resources Survey and Disability Follow-Up (1996/97)

The comparison indicates that the poverty rates and shares are not highly sensitive to choice of household equivalence scale. The rates calculated according to the Modified OECD are higher but in nearly all cases are within 1 percentage point of the rates calculated according to the McClements scale.

## CHAPTER FIVE: FUNCTIONINGS

### 5.1 Introduction

Chapter 3 examined disabled people's incomes, as one approach to the assessment of their well-being. Concern that disabled people might not be able to convert income into well-being at the same rate as non-disabled people led, in Chapter 4, to equivalising incomes, such that they would translate into the same level of well-being for a disabled or non-disabled person. However, it was noted that the adjustment could account only for differences in translation of income into material well-being. This chapter takes the process one step further and focuses on direct measures of well-being, material and otherwise; in other words, it focuses on functionings.

Much of the existing literature on disabled people's functioning comes from a medical perspective, measuring, for example, whether an individual is able to raise his or her arm above the head, or able to walk up a flight of stairs. Such measures are not useful as indicators of well-being, since whether or not being unable to walk up a flight of stairs has an adverse impact on well-being depends on contextual factors like the type of accommodation, availability of ramps, stair-lifts, personal assistance and so on: an insight pressed home by the social model of disability.

Evidence on disabled people's functioning in the sense of participation in various aspects of life is more limited. There have been a number of studies of disabled people's employment (for example, Barnes *et al.*, 1998; Berthoud *et al.*, 1993; Burchardt 2000; Meager *et al.*, 1999b), living circumstances and social involvement (Grundy *et al.*, 1999; Hirst and Baldwin, 1994).

The data for this chapter are drawn from the 1996/7 Family Resources Survey (FRS) and Disability Follow-Up and the British Household Panel Survey (BHPS). The FRS contains some information on consumption and somewhat fuller information on productive activity. The Disability Follow-Up contains a module on social and leisure activities, although unfortunately the questions were not addressed to non-disabled respondents. The BHPS is used to complement data from the FRS. It offers fuller

information on productive activity other than paid employment, and collects data on participation in social activities for both disabled and non-disabled individuals.

The structure of this chapter mirrors that of Chapters 3 and 4, to facilitate comparisons. The next section discusses some of the conceptual and empirical issues in measuring functionings, before presenting some descriptive statistics on the extent and depth of functioning poverty among disabled people, compared to the non-disabled population. Section 5.3 explores the characteristics of the functioning-poor, including their age, gender, educational qualifications, household composition and type and severity of impairment. Attempting to model the causes of functioning poverty on different dimensions proved to be largely inconclusive and consequently the results are reported in an appendix. The final section of the main chapter offers some reflections on functioning poverty and its measurement.

## **5.2 Achieved functionings as a measure of well-being**

### *5.2.1 Selection of functionings*

The first task in operationalising functionings as a measure of well-being is to select the functionings to be considered. As Robeyns (2003) argues, the context of the evaluative exercise is an important determinant of the selection: in this case, to inform social policy in Britain through assessment of disadvantage among different sub-groups of the population, specifically, disabled and non-disabled people of working age. This suggests that the functionings selected should relate to generally valued activities and states of being rather than to individuals' own personal goals; they should be relevant for a Western country with a well-developed welfare state; and they should reflect the concerns of both disabled and non-disabled individuals. Moreover the functionings which are selected should be intrinsically valuable, not just valued as a means to achieving some other end. Ideally the selection of functionings and their relative weight would be determined democratically; at the very least the process should be transparent and open to scrutiny and criticism.

Short of conducting a full-scale public debate about the selection of functionings, it is necessary to rely on existing research on what aspects of well-being are important in

formulating social policy.<sup>1</sup> Some evidence can be drawn from the literature on social exclusion, which has sought to explore dimensions of inclusion and exclusion from participation in society. This gives a general overview but since disabled people may have particular needs and interests, it is helpful to consider smaller-scale consultation exercises which have been undertaken with groups of disabled people, to identify additional key functionings that might otherwise be missed. While this process does not live up to Sen's ideal of a democratically determined selection of functionings, it may, by drawing on other research conducted with those directly affected by disability and on a wider academic consensus, move one step forwards from an arbitrary selection of functionings by a single 'expert'.

The Government's strategy for learning disability, developed in consultation with organisations of and for people with learning disabilities, includes the following objectives (DoH, 2001):

- (i) enabling people to have more control over their own lives
- (ii) greater choice and control over where and how to live
- (iii) enabling people to have full and purposeful lives
- (iv) enabling people to develop a range of friendships, activities and relationships
- (v) enabling more people to participate in all forms of employment, wherever possible in paid work
- (vi) access to high quality health care.

The fourth and fifth objectives - friendships, activities and relationships, and employment - can be interpreted directly as functionings which are constitutive of well-being. The sixth objective is arguably instrumental rather than constitutive: access to health care is a means to achieving good health, which in turn is necessary for full participation. The first three objectives listed relate to enhancing disabled people's capabilities (rather than functionings), and to facilitating the formulation and pursuit of what would be called agency goals in Sen's terminology. These are not relevant for the analysis in this chapter.

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<sup>1</sup> The relative merits of alternative approaches, which attempt to derive lists of basic needs or

Much of the evidence on the functionings valued by disabled people comes from research with young people. Jenny Morris has conducted extensive research with disabled young people to identify what they regard as full participation in society. In *Move on Up* (1999), she quotes from material produced by the Gateshead Personal Assistance Pilot project, which describes how personal assistance should enable disabled people to:

- (i) live in their own home
- (ii) have personal and social relationship on equal terms
- (iii) fulfil their role as a parent or partner
- (iv) have access to education
- (v) take on work
- (vi) participate in the social and political life of the community.

Similarly, in her study focussing on young people with high levels of support needs, the young people identified the following components of social exclusion (Morris, 2001):

- (i) not having control over money; not having enough money
- (ii) feeling they have no contribution to make
- (iii) having no friends; finding it difficult to do the kinds of things non-disabled young people do such as shopping, going to the cinema, etc
- (iv) feeling unsafe, being harassed and bullied
- (v) not being listened to.

The first three items on the list represent distinct aspects or dimensions of lack of well-being, the third is probably instrumental to achieving other valued ends, while the last can be seen as a lack of autonomy.

A study focusing on the aspirations of disabled young people from an ethnic minority, based on in-depth interviews with 44 individuals, identified the following (Bignall and Butt, 2000):

- (i) getting a job
- (ii) access to further education
- (iii) getting married and settling down
- (iv) having your own voice.

Disabled young people in their 20s and 30s interviewed for a study of independent living produced a very similar list (Hendey and Pascall, 2001):

- (i) employment
- (ii) independent living
- (iii) social networks
- (iv) citizenship.

Murray (2002) emphasises the importance of friendship, social networks and leisure, arguing that these functionings take on additional significance where opportunities for paid employment are limited. Her interviews with 100 disabled young people found substantial barriers to participation in social activities and networks, despite great importance being attached to them by the respondents.

Finally, a survey of disabled people aged 16-24 for the Disability Rights Commission asked what respondents wanted to achieve by the age of 30 (Wilson, 2003). One-third cited a well-paid job as most important, one-fifth said they wanted their own family, and another fifth said they wanted to have travelled.

Some common themes emerge from these diverse studies. Firstly, capability, understood as autonomy, is of prominent importance to disabled people. Items such as choice and control, the ability to make decisions concerning your own life, to be listened to, or to have a voice, occur in most of the lists above. This is closely related to being able to formulate and pursue a life plan, or to be purposeful. These important aspects of disabled people's concerns are considered below in Chapter 7, exploring the

range of opportunity available in key dimensions, and in Chapters 8 and 9, exploring life plans.

Secondly, four specific functionings recur in many of the consultations: employment, social networks, education and independent living. The emphasis on education is possibly the result of the fact that many of the studies were conducted with young people and this is arguably less relevant for the working age population as a whole. Independent living seems to reflect a combination of valuing financial independence and security, physical living arrangements and, again, choice and control.

We turn now to the more general literature on dimensions of social inclusion. The emergence of social exclusion as a concept in academic discourse has prompted a number of studies to attempt to define domains of inclusion and exclusion. The dimensions of participation identified as important by some of these studies are summarised in Table 5.1.

**Table 5.1: Dimensions of participation identified by studies of social exclusion**

Dimensions of participation	Source							
	A	B	C	D	E	F	G	H
Adequate income or resources	•	•		•	•	•	•	•
Labour market participation	•	•		•	•	•	•	•
Economic participation			•					
Inclusion in social relations / family life	•		•	•	•			•
Cultural participation			•		•			
Democratic and legal participation					•			
Political participation			•				•	
Access to / achievement in:								
Education / training			•			•	•	
Health			•			•	•	
Housing						•		
Services generally	•							

Key to sources:

A Gordon et al (2000)	E Commins (1993)
B Robinson and Oppenheim (1998)	F DWP (2004)
C Walker (1997)	G Palmer et al (2003)
D Paugam (1996)	H Burchardt et al (2002)

Gordon *et al* (2000) is a major study of poverty and social exclusion in Britain, the successor to the Breadline Britain surveys. It includes lack of access to services, an aspect of consumption exclusion which is often overlooked in studies of poverty in developed countries and yet it can be an important source of material and physical deprivation (Atkinson 1998). However, as argued above in the case of healthcare, access to services is generally of instrumental rather than intrinsic value.

Commins (1993), reporting to the European Commission about efforts to combat social exclusion in Ireland, characterises social exclusion as the failure of one or more of economic or social systems, as shown in the table. This is a slightly different approach but the list of forms of participation most likely to be affected by failure of these systems come close to those identified by other studies. Similarly, Walker (1997) sees social exclusion in Britain as being shut out from the social, economic, political and cultural systems which determine the social integration of a person in society.

The UK Social Exclusion Unit (SEU) has avoided giving its own definition, but has developed a wide range of indicators of social exclusion, in conjunction with other government departments (DWP, 2004). For people of working age, these cover low income, employment, training and education, homelessness, drug-taking and smoking and suicide. The last three appear are important indicators of physical and mental health but do not constitute ends in themselves. The others overlap considerably with the definition proposed in Gordon *et al*.

For convenience, the dimensions of participation are grouped in the table into four categories: economic, social, political, and services. Economic participation can be split into consumption (adequate resources) and production (labour market or other productive activity) and the table makes clear the strong consensus around these as key dimensions of social inclusion. They also fit well the forms of participation identified as important in qualitative studies with disabled people. The social dimension is considered by several studies of social inclusion, although not as consistently as the economic dimension. This too featured prominently in the accounts given by disabled people.

Consideration of political participation or citizenship, which is mentioned in a minority of studies of social inclusion and in a minority of studies of disabled people's aspirations, is held back for the following chapter, on capabilities. It seems likely that while people value the *opportunity* to participate in political life, they would not necessarily regard themselves as worse off if they chose not to participate. Hence this dimension of well-being is better evaluated as a capability rather than as a functioning.<sup>2</sup>

Access to services is instrumental in achieving participation in valued functionings, but access to services is not valued as an end in itself. The test is whether an individual who is participating adequately in the other categories of functioning (consumption, production and social interaction) would be regarded as lacking well-being if they were not also accessing services. The answer is clearly no. What is important is the outcome – participation – not the means to secure that participation. In practice, it may be necessary to use indicators of means as proxies for the outcome of interest, but in principle it is the outcomes which should be the focus of attention.

Drawing on this analysis, the rest of this chapter concerns itself with three main dimensions:

- I. Consumption
- II. Production
- III. Social interaction

'Consumption' includes basic necessities like being sheltered, warm, nourished and clothed, as well as more sophisticated functionings like travelling and listening to music. The chief determinant of consumption is access to material resources, but it is mediated by the type and range of needs those resources have to cover, and the availability and costs of relevant goods and services. The income required to achieve

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<sup>2</sup> A similar argument could be made for the other dimensions: that it is the opportunity to participate rather than the level of functioning which is important. This is an argument for skipping the evaluation of functionings altogether, in favour of capability sets. If evaluation of functionings is to be carried out at all, it is more plausible that the levels of consumption, productive activity and social interaction matter to individuals, than it is that the level of political participation matters. Hence the selection of these dimensions for analysis in this chapter.

to a given level of functioning on the Consumption dimension will vary according to the availability of public goods and how hospitable the environment is, for example.

'Production' is short-hand for being engaged in a socially-valued activity. This includes, but is not restricted to, paid work. The social status of the job, often reflected in the rate of pay, is an indicator of the extent to which it is valued. Other socially-valued activities include studying or training, caring for children or relatives, and voluntary work. The main 'activities', or rather states, which are not socially valued are being unemployed, being long-term sick or disabled, and being retired - unless of course they are combined with one of the activities listed above. Being retired is arguably a socially-valued (or at least legitimated) 'activity' for those over state retirement age, but our interest is in those of working age. Activities which may be fulfilling but which are not socially-valued, such as creative endeavour (valued by society only highly selectively and often long after the creation has taken place) are not regarded as contributing to well-being functioning on the Production dimension, although they may well constitute agency goals.

'Social interaction' contributes to well-being at many different levels. At the most basic is emotional engagement with close family or friends. The absence of such contact may be experienced as loneliness or depression. More generally, participation in, or identification with, a wider group, whether cultural, religious, interest-based, or simply a group of friends, is taken to be constitutive of well-being.

### *5.2.2 Measuring functionings*

Most functionings can be achieved at various levels: an individual may be better or worse nourished, more or less mobile, and so on. This suggests that functionings should be measured on a continuous or ordinal scale. In practice the indicators available to measure functionings are binary or have a limited number of unevenly-spaced categories. The indicators available in the two datasets are as shown in Table 5.2.

**Table 5.2: Indicators of functionings in FRS and BHPS**

Functioning	Indicator (and dataset)	Type
Consumption	Income (FRS & BHPS)	Continuous
	Consumer durables (FRS & BHPS)	Ordinal
	Access to a car (FRS & BHPS)	Binary
	Home ownership (FRS & BHPS)	Binary
	Problems with accommodation (BHPS)	Ordinal
	Deprivation indicators (BHPS)	Ordinal
Production	In employment or training, studying, bringing up children, caring for a relative (FRS & BHPS) or engaged in voluntary activity (BHPS)	Ordinal
	If in work: occupational skill level (FRS & BHPS)	Ordinal
	earnings (FRS & BHPS)	Continuous
Social interaction	Frequency of participation in leisure activities (BHPS)	Cardinal
	Has someone to rely on in a crisis (BHPS)	Ordinal

Of course, there are many aspects of functioning on these dimensions which are not captured by the available indicators. The consumption indicators do not tell us about some basic functionings like nutrition or warmth (although we may be able to infer them from the level of income and standard of accommodation); nor do they tell us about some more sophisticated functionings like being entertained and stimulated (although we may be able to infer them from the level of income, access to private transport and availability of relevant hardware). The production indicators give relatively full information about paid employment but rather less about other kinds of socially valuable activity. The social interaction indicators are good on the availability of immediate emotional support but weak on wider social networks or cultural participation.

Nevertheless, these indicators provide sufficient information for three types of analysis: firstly, the position of disabled people in the overall distribution of functionings, secondly, the extent of functioning poverty, and thirdly, the depth or intensity of functioning poverty among disabled and non-disabled people.

For continuous or cardinal variables, the position of disabled people in the overall distribution of functionings can be measured by dividing the population into decile groups, in an exactly analogous way to income. The extent and depth of poverty can be measured relative to various thresholds defined in terms of proportions of the mean or median value.

With ordinal variables, a number of different strategies are possible. For some, it is reasonable to assume that the points on the scale are evenly spaced with respect to well-being, in other words to treat the ordinal scale as a cardinal one. However in many cases, to treat an ordinal scale as a cardinal scale is clearly misleading: for example, it seems unlikely that having two people to rely on in a crisis is twice as good as having only one. The second strategy, then, is to seek a partial or dominance ordering (Sen, 1992). If a higher proportion of one group (say, non-disabled adults) score the top score on a particular variable than another group (disabled adults), and a higher proportion of non-disabled adults also score the next highest score, and so on, until the lower reaches of the scale where the position is reversed, then it is possible to say that non-disabled adults are better off than disabled adults according to this variable, without making any assumption about the spacing of the points on the scale. This can be used as an assessment of the position of disabled adults in the distribution of functionings.

To measure the extent of poverty with an ordinal variable, it is necessary to set one or more poverty thresholds. This effectively turns an ordinal variable into a binary one. Thresholds may be set *a priori*, for example, by asserting that lacking a friend to turn to in any one of the five scenarios presented to BHPS respondents is sufficient to constitute functioning poverty in this respect. Alternatively, they may be set by fixing the proportion of the overall population which is to fall below the threshold, or a proportion of the median value which is to constitute a poverty line – though the median value does not have the same meaning as for a cardinal or continuous variable.

Binary variables are a special case of ordinal variables. It is possible to make accurate comparisons between groups directly: for example, if 80 per cent of non-disabled adults have access to a car, but only 60 per cent of disabled adults, one can conclude

that in this respect, non-disabled adults have a higher level of functioning. Thresholds can be set only at the 0/1 boundary, but individual binary variables may be combined into ordinal indexes (see below).

Measuring the depth of functioning poverty is difficult in the absence of cardinal scales. It is possible to calculate the number of categories which an individual would have to move through in order to cross the threshold, but since moving between, say, categories 0 and 1 is not necessarily the same 'distance' as moving between categories 1 and 2, it is not clear how to interpret such a measure. Accordingly, no attempt is made to quantify depth of functioning poverty using non-cardinal scales, although some observations can be made about the gap between the position of functioning-poor disabled people and the poverty threshold on the one hand, and the equivalent gap for non-disabled functioning-poor on the other.

Some of the indicators are better conceptual matches to the underlying functioning than others. Income is only an approximate guide to consumption, as demonstrated in the previous chapter.<sup>3</sup> However, it can be defended as a proxy for a range of important functionings in the absence of more direct indicators (see Anand and Sen, 2000, for a similar argument in the context of the Human Development Index). Specific items of consumption, such as consumer durables, a house or a car, are likewise only weakly correlated with overall levels of consumption. Unfortunately, a detailed and comprehensive breakdown of expenditure is not available in either survey. The shortcomings of the indicators listed here may be partly overcome by combining them into a single index, thus allowing variations in taste to be offset against each other; the rationale and mechanism for doing so is discussed further below. Being unable to afford various items or activities, such as an annual holiday, replacing worn out furniture, or having friends round, have been used in a number of studies to indicate deprivation or a low standard of living (Townsend, 1979; Mack and Lansley, 1985; Nolan and Whelan, 1996; Gordon *et al.*, 2000). Subjective assessments of various aspects of functioning (for example, satisfaction with the household's financial situation, job satisfaction, or satisfaction with social life) are also available in the

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<sup>3</sup> Income is defined here as in Chapter 3, i.e. including extra costs benefits and without making any adjustments for the extra costs of disability. This is to preserve a clear distinction between the three approaches: income as traditionally defined, fully equivalised income, and functionings.

BHPS, but these are not used as indicators of level of functioning, because of the problem of adaptive preferences discussed in Chapter 1 and Chapter 8 below.

Socially-valued activities take various forms, and most of these can be captured by the indicators listed under 'Production'. A hierarchy of activities can be generated if some assumptions are made about the extent to which various activities are valued by society: for example, if it is assumed that paid work is more highly valued than studying, which, as preparation for work, is in turn more highly valued than unpaid caring activities. For those in employment, occupational status and earnings can be taken to reflect the degree to which their work is socially valued (although of course social and economic value are not perfectly correlated).

Two aspects of social interaction are reflected in the indicators for the final dimension: participation in leisure activities, and the availability of social or emotional support.

### *5.2.3 Combining functionings*

Several approaches to combining functionings were discussed in Chapter 2, section 2.2.3. In deciding between these approaches it is important to distinguish two levels at which we might wish to combine functionings. One is combining indicators within a particular dimension to summarise the achieved level of functioning in that dimension, for example, combining access to a car, standard of accommodation and levels of saving or debt to summarise consumption functioning. Combining different dimensions of functioning, for example, consumption, production and social interaction, into a single index is altogether more ambitious and arguably inappropriate.

For the first level of combination, any of the techniques for data reduction (cluster analysis or fuzzy sets) are suitable, though a simple summation is more transparent. The justification for cluster analysis rests on the idea that if two indicators are highly correlated they should count for less than their simple sum, to avoid double counting. It is not clear that this justification always applies: for example, an individual's earnings potential is highly correlated with that of his or her spouse, yet in calculating

the couple's total earnings potential, one would not wish to count either partner's contribution at less than its full value. In some cases, items which are correlated may be complementary, so that having both components makes the pair more valuable than each alone: for example, having access to a car *and* the money to run it.

Fuzzy set theory provides a way of dealing with indeterminacy where the source of indeterminacy is the absence of sharply defined class membership. Between the two extremes of 'definitely functioning-poor' and 'definitely not functioning-poor' in some particular respect, individuals are distributed with varying degrees of probability, the shape of the distribution being a matter for the analyst to select. The aggregation of variables defined in this way makes use of set theory, so that overall functioning poverty may be the intersection or the union of the relevant sets. The intersections and unions are of course probabilistic in the same way as the component sets. Thus while fuzzy set theory may appear to help with the aggregation problem, in fact comparable problems arise: the question of where to set a threshold becomes the question of what shape of probability distribution to select, and the question of whether poverty on all indicators or any one indicator should constitute overall functioning poverty reappears as the choice between intersection or union of sets.

Whatever method is adopted, combining indicators into a single index at the level of a particular dimension of functioning makes sense in principle, because all the indicators are measures of the same underlying functioning.

But the conceptual justification for attempting to combine different dimensions is lacking. As discussed in Chapter 1, the rationale for measuring well-being functionings rather than agency achievement or capabilities must rest in part on a paternalist attitude: the selected functionings are those that the state or society has determined are important. In that case substitution between different functionings is invalid: a sufficiently high level of functioning must be achieved in all dimensions. It is possible to say that a low level of functioning on more than one dimension is worse than a low level of functioning on only one dimension, but high functioning on one dimension cannot compensate for low functioning in another respect. Functioning well-being is intrinsically multidimensional. Thus it is possible to measure functioning on each dimension, and if thresholds are set, to measure the number of

dimensions on which individuals are functioning-poor, but not to create a single index of functioning poverty.

### 5.3 Position in the distribution of functionings

Table 5.3 lists various aspects of functioning on the consumption dimension, and shows the proportion of disabled adults who achieve those functionings compared to all adults of working age. Ordinal variables (such as the number of consumer durables in the household) have been translated into binary indicators by choosing a threshold corresponding as closely as possible to 60 per cent of the median value – the threshold used for much of the analysis of income in the previous chapter.<sup>4</sup> It is recognised that the median of an ordinal scale does not have the same meaning as the median of a continuous scale.

**Table 5.3: Functioning on the consumption dimension: separate components**  
*Column percentages*

	FRS		BHPS	
	Disabled	Non-disabled	ADL-limited	Not ADL-limited
Income above 60 % median	62	77 ***	70	83 ***
Owner-occupier	58	75 ***	62	77 ***
Access to a vehicle	73	87 ***	74	87 ***
At least five consumer durables <sup>a</sup>	87	94 ***	85	91 ***
Four or fewer problems with accommodation <sup>b</sup>	-	-	90	94 ***
Deprived in two or less respects <sup>c</sup>	-	-	73	88 ***

Difference between disabled and non-disabled statistically significant at  
\* 90%    \*\* 95%    \*\*\* 99% level or above

<sup>a</sup> For both FRS and BHPS: washing machine, dishwasher, microwave, telephone, CD player, computer, satellite dish, video. For FRS only: fridge, tumble drier. For BHPS only: television, cable TV.

<sup>b</sup> Not available in FRS. In BHPS: cramped, neighbours, noise, light, heat, condensation, leaks, damp, rot, pollution/environment, vandalism/crime.

<sup>c</sup> Not available in FRS. In BHPS: keeps home adequately warm, pays for an annual holiday, replaces worn out furniture, buys new clothes, eats meat at least alternate days, feeds visitors at least once a month.

Sources: author's calculations using 1996/7 FRS, Disability Follow-Up and HBAI; BHPS Wave 6

<sup>4</sup> The threshold value often cannot be exact, since values on ordinal variables are discrete rather than continuous.

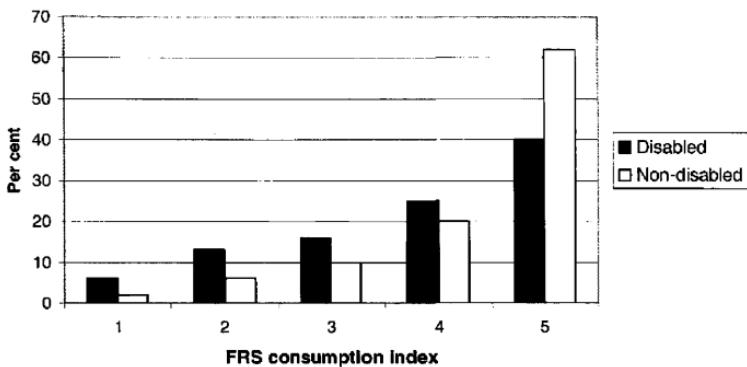
Indicators which are available in both the FRS and BHPS datasets show a consistent pattern, with disabled adults less likely to achieve a given level of functioning, although it should be borne in mind that the definitions of disability differ.<sup>5</sup> The smallest difference between disabled and non-disabled is in terms of the proportion experiencing multiple problems with their accommodation. However, the survey does not collect information about some problems with accommodation which might affect disabled people in particular, such as ease of movement around the house and the availability of adaptations.

By counting the number of component functionings on which individuals are achieving an adequate level, an index of consumption functioning can be produced. This is illustrated in Figures 5.1 and 5.2 for the FRS and BHPS respectively. The figures can be interpreted as showing the position of disabled adults in the distribution of consumption functioning, relative to non-disabled people. For both groups, the proportion at each point on the index increases as the index rises, in other words, a larger share of the group achieves the highest level of consumption functioning than at each preceding level. However, disabled adults are over-represented on the bottom four points of the FRS consumption index relative to non-disabled people, and the bottom five points of the BHPS index.

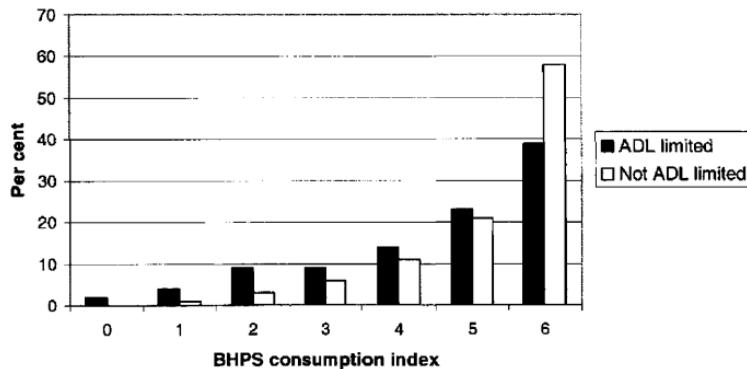
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<sup>5</sup> The FRS uses the OPCS definition of disability, based on a set of up to 108 questions about ability to manage various practical and mental tasks, and classified into ten severity categories. The BHPS definition is based on a single question which asks respondents whether their "health" limits their daily activities.

**Figure 5.1: Position in the distribution of functionings: consumption (FRS)**



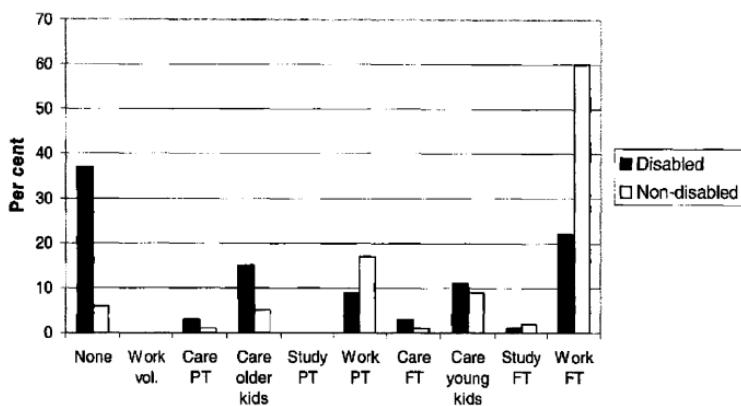
**Figure 5.2: Position in the distribution of functionings: consumption (BHPS)**



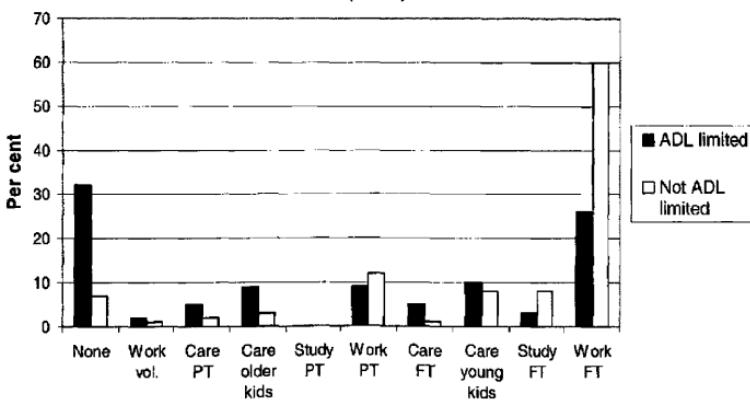
For the production dimension, activities are ordered according to the degree to which they are socially-valued. The assumptions are as follows: firstly, that paid work is more highly valued than studying, which is in turn more highly valued than unpaid work and caring; secondly, that the more hours an individual is engaged in an activity, the more valuable is their contribution; and thirdly, that looking after young children is a full-time activity while looking after older children can be combined with other

part-time activity. Individuals are classified on this basis according to the most highly socially valued activity in which they are engaged. The information available in FRS and BHPS is similar, although the way data on studying and caring are collected differs in the two surveys. Information on voluntary work is available only in BHPS. Figures 5.3 and 5.4 show the position of disabled and non-disabled adults in the distribution of functionings on the production dimension.

**Figure 5.3: Position in the distribution of functionings: production (FRS)**



**Figure 5.4: Position in the distribution of functionings: production (BHPS)**



In contrast to the consumption dimension, the relationship between the index and the distribution of disabled adults is not monotonic. Differences between disabled and non-disabled adults are also uneven – a higher proportion of disabled adults appear at some points fairly high on the index (such as caring for young children) than the proportion of non-disabled adults. Overall, however, it is clear that disabled adults are much less likely to be engaged in any socially-valued activity at all (63 per cent compared to 94 per cent of the general population using the FRS scale, 69 per cent compared to 95 per cent using the BHPS scale), and among those that are, a smaller proportion are working and a higher proportion are in caring roles.

For those in work, the degree to which their activity is socially-valued is indicated by earnings and occupational class. Earnings of disabled and non-disabled individuals were investigated in Chapter 3. That analysis showed that being disabled was associated with a 46 per cent reduction in earnings, after controlling for differences in age, gender and education. Table 5.4 compares the occupational status of disabled and non-disabled workers using the FRS, and shows that disabled workers are over-represented in the lower three occupational groups.

**Table 5.4: Occupational class of disabled and non-disabled workers**

Occupational class	Column percentages	
	Disabled workers	Non-disabled workers
Unskilled	7	4
Partly-skilled	18	15
Skilled manual	22	19
Skilled non-manual	22	22
Managerial and technical	28	33
Professional	3	7

The cumulative difference between disabled and non-disabled workers' occupational class is statistically significant at the 99% level or above

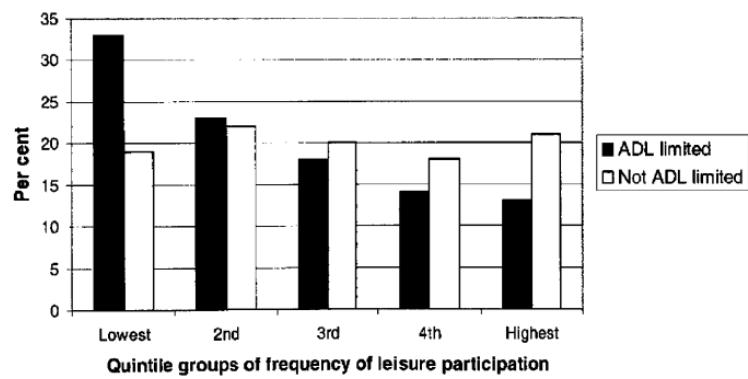
Source: author's calculations using 1996/7 FRS and Disability Follow-Up

In the BHPS, two forms of social interaction can be assessed. The first is participation in leisure activities. The range of activities asked about is as follows: walking, swimming or playing sport; watching live sport; going to the cinema; going to theatre or a concert; eating out; going out for a drink; visiting or being visited by friends; DIY or car maintenance; working in the garden; attending evening classes; and attending a

local group. For each type of activity, respondents are asked how often they participate. An index can therefore be constructed showing the frequency of participation in leisure activities. Some approximations are necessary since frequencies are reported in bands (1 for at least once per month, 4 for at least once per week, 0.5 for several times a year, 0 otherwise), but the resulting index has a range from 0 (none of the listed activities undertaken as often as several times a year), to 44 (each of the listed activities undertaken at least once per week), and the observed distribution is normal in the range 1 to 35.<sup>6</sup>

Figure 5.5 divides the distribution into quintile groups and shows the percentage of disabled adults in each.<sup>7</sup> One-third of disabled adults appear in the lowest quintile group, who score less than 7 on the index (a score achieved by, for example, undertaking one activity at least once a week, and three other activities at least once a month). The percentage of disabled people in each group falls as we move up the distribution, so that only 13 per cent of disabled adults are in the highest quintile group (score 16.5 or more).

**Figure 5.5: Position in the distribution of functionings: social interaction (leisure; BHPS)**



<sup>6</sup> There is a slight peak at 0; 35 is the maximum observed value; mean 12.1.

<sup>7</sup> In principle, there should be 20 per cent of all adults in each quintile group. However, the fact that the smallest unit of division possible on the index is 0.5 means that some variation in size of quintile group occurs.

The second measure of social interaction in BHPS concerns the availability of emotional support, based on five questions in the self-completion section of the questionnaire:

1. Is there anyone who you can really count on to listen to you when you need to talk?
2. Is there anyone who you can really count on to help you out in a crisis?
3. Is there anyone who you can totally be yourself with?
4. Is there anyone who you feel really appreciates you as a person?
5. Is there anyone who you can really count on to comfort you when you are very upset?

These can be combined into an index, as shown in Table 5.5. Fortunately, a large majority of the general population, and of disabled adults in particular, report that they have someone (not necessarily the same person) to offer emotional support in all the respects listed. However, there is a statistically significant difference between disabled adults and the general population: 13 per cent of disabled adults feel they lack support in at least one respect, compared to 8 per cent of adults overall.

**Table 5.5: Position in the distribution of functionings: emotional support (BHPS)**

Number of respects in which has emotional support	<i>Column percentages</i>	
	ADL-limited	Not ADL-limited
0	2	0
1	1	1
2	2	1
3	2	2
4	6	4
5	87	92

The cumulative difference between disabled and non-disabled workers' occupational class is statistically significant at the 99% level or above

Source: author's calculations using BHPS Wave 7 (not available in Wave 6)

### 5.4 Extent of functioning poverty

For most of the indicators, there are no obvious thresholds below which someone should be considered functioning poor. The effect of placing a threshold at various points on the index can be examined by showing the cumulative percentages on the index, as in Table 5.6 for the two consumption indices.

Whatever threshold is chosen, a higher proportion of disabled adults are classified as functioning-poor than non-disabled adults. The gap between rates of poverty among disabled and non-disabled adults rises in percentage point terms as the threshold rises, but the gap as a percentage of the overall poverty rate falls.

**Table 5.6: Extent of functioning poverty on the consumption dimension**

<i>Cumulative column percentages</i>		
Threshold on FRS consumption index	Disabled	Non-disabled
0	6	2
1	19	9
2	35	18
3	60	38
4	100	100
Threshold on BHPS consumption index	ADL-limited	Not ADL limited
0	2	0
1	6	1
2	15	4
3	24	10
4	38	21
5	61	42
6	100	100

Sources: author's calculations using 1996/7 FRS, Disability Follow-Up and HBAI; BHPS Wave 6

Between one-fifth and one-quarter of all adults would be counted as functioning poor if a threshold of 2 was chosen on the FRS index, or 4 on the BHPS index; these proportions correspond to the proportion of the overall population identified as income-poor in Chapter 3 by the '60 per cent median' threshold, before or after housing costs. Using these thresholds, 35 to 38 per cent of disabled adults are

consumption-poor – again close to the proportions identified in Chapter 3. This correspondence is not reason in itself to set the threshold at this level and further investigation of the overlap between income and functioning poverty will be undertaken in Chapter 7.

On the production dimension (Table 5.7), it could be argued that the poverty threshold should be whether the individual is engaged in any productive activity at all. Such a threshold would classify around 1 in 3 disabled adults as poor, and around 1 in 15 non-disabled adults. An alternative would be to draw the line at any *full-time* productive activity, whether that is caring, studying or working, with the hierarchy of activities determined as described above in section 5.2.2. In that case, around 60-65 per cent of disabled adults would be production-poor, compared to 25-30 per cent of non-disabled adults. Finally, if the definition of productive activity is restricted to full-time paid work, around three-quarters of disabled adults would be identified as poor on the production index, compared to four-fifths of non-disabled adults.

**Table 5.7: Extent of functioning poverty on the production dimension**

Threshold on production index	Cumulative column percentages			
	FRS		BHPs	
	Disabled	Non-disabled	ADL-limited	Not ADL limited
No productive activity	37	6	32	7
Voluntary work	-	-	34	8
Caring part-time	40	7	39	10
Caring for school-age children	55	12	48	13
Studying part-time	55	12	-	-
Working part-time	64	29	57	25
Caring full-time	67	30	61	26
Caring for pre-school children	78	39	71	34
Studying full-time or training	78	41	74	42
Working full-time	100	100	100	100

Source: author's calculations using 1996/7 FRS and Disability Follow-Up; BHPs Wave 6

The threshold corresponding to between one-fifth and one-quarter of the overall population – i.e. the level of poverty identified as income poor according to a 60% median income measure in Chapter 3 – would lie somewhere between part-time study and part-time work. This would classify any sort of paid work plus any full-time

caring or studying as productive activity. Around 60 per cent of disabled adults would be production-poor according to this definition.

Gaps between disabled and non-disabled rates of poverty are largest if the threshold is set low on the production index. Poverty rates for disabled adults are at least three or four times as high as for non-disabled people up to the point on the scale which includes part-time work. After that point, poverty rates for disabled people are around twice the non-disabled rates.

The index for one part of the social interaction dimension, that which is concerned with participation in leisure activities, is more tractable since it can be treated as a continuous scale (though with 'health warnings' as above about the approximations involved). This allows us to calculate thresholds as various proportions of the mean or median value, as in Table 5.8. One third of disabled adults score less than 60 per cent of the median value on the leisure participation index, compared to just under one fifth of adults overall. (60 per cent of the median corresponds to a score of 7.2).

**Table 5.8: Extent of functioning poverty on the social interaction dimension: leisure participation (BHPS)**

Thresholds on leisure participation index	Cell percentages	
	ADL-limited	Not ADL-limited
Under half mean	26	13 ***
Under 60 % median	33	18 ***
Under 50% median	23	10 ***
Under 40% median	16	7 ***

Difference between disabled and non-disabled statistically significant at

\* 90%    \*\* 95%    \*\*\* 99% level or above

Source: author's calculations using BHPS Wave 6

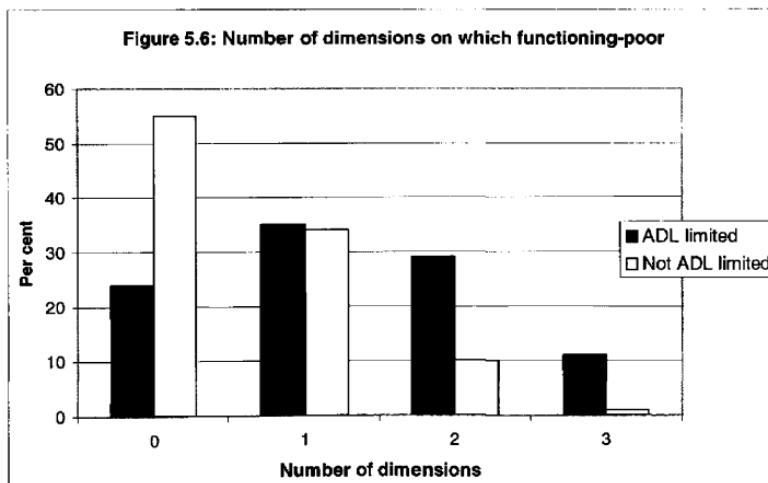
For the other component of social interaction, namely emotional support, overall poverty rates and rates for disabled adults converge as the threshold rises on the index. But for both groups there is a clear discontinuity between having support in four respects, and having support in all five respects. This seems a sensible point to set the threshold, and identifies 13 per cent of disabled adults and 8 per cent of non-disabled adults as poor.

**Table 5.9: Extent of functioning poverty on the social interaction dimension: emotional support (BHPS)**

Threshold on index of emotional support	<i>Cumulative column percentages</i>	
	ADL-limited	Not ADL limited
0	2	0
1	3	1
2	5	2
3	7	4
4	13	8
5	100	100

Source: author's calculations using BHPS Wave 7

If a threshold for each dimension of functioning is selected, the number of individuals in poverty on one or more dimensions can be calculated. Figure 5.6 shows the result for the BHPS, using thresholds set at point 4 on the consumption index, any work or any full-time activity on the production index, and lacking emotional support in at least one respect or falling below 60 per cent of the median on the leisure participation index. (These thresholds correspond as possible to the point at which between one-fifth and one-quarter of all adults are classified as poor).



Overall, a narrow majority of adults are poor on none of these dimensions, and the percentage poor on one, two and three dimensions falls steadily. Only three per cent

achieve a level of functioning below the threshold for all three dimensions. The picture for disabled people is more complex. Only one in four escape functioning-poverty altogether, and the largest group - one in three - are poor on just one dimension. Poverty on all three dimensions is more common than for the population as a whole, but still relatively rare: one in ten. Table 5.10 gives more detail, showing the overlap between different dimensions of functioning poverty (using BHPS data).

**Table 5.10: Overlap between different dimensions of functioning poverty (BHPS)**

Dimensions of functioning poverty	<i>Column percentages</i>	
	ADL-limited	Not ADL-limited
None	25	55
Consumption only	8	11
Production only	17	6
Social only	10	16
Consumption & production only	10	2
Consumption & social only	8	5
Production & social only	11	2
Consumption, production & social	11	1
All	100	100

Source: author's calculations using BHPS Waves 6 and 7

## 5.5 Depth of functioning poverty

The depth of functioning poverty is the gap between the poverty threshold and the actual level of functioning achieved. For a continuous variable such as income, it is possible to calculate precisely, as shown in Chapter 3. However for the ordinal variables with which this chapter is largely concerned, a similar calculation would require making the bold assumption that difference between, say, points 1 and 2 on the production index is equivalent to difference between points 3 and 4, and so on. The results would be seriously misleading where the points on the scale are not evenly spaced in terms of severity of poverty.

Though not a precise figure, an impression of the distance which disabled people would have to move in order to escape functioning poverty, or to align their poverty rate with that of non-disabled people, can be gained from the figures of distribution of functionings. For example in Figures 5.1 and 5.2 on consumption, although disabled

people lag behind their non-disabled counterparts until the highest point on the index, there is no significant concentration at the bottom of the scale. If each column representing disabled people shifted one place to the right, rough equality would be achieved.

In contrast, Figures 5.3 and 5.4 (for the production dimension) suggest a much larger distance between disabled and non-disabled people. The largest concentration of disabled people is right at the bottom of the scale, while the largest concentration of non-disabled people is at the other extreme. It is not necessary to move through each of the intermediate categories on the scale in order to shift from one to another, but the distance in terms of productive activity is nevertheless considerable.

Both components of the social interaction dimension present a picture closer to the consumption dimension than the production dimension. Differences between disabled and non-disabled people are significant but are not concentrated at any particular point in the distribution.

### **5.6 Characteristics of the functioning-poor**

This section explores the characteristics of disabled individuals classified as poor on each of the three dimensions of functioning. For consumption and production poverty, analysis is undertaken using the FRS, since the FRS has more detail on type, severity and onset of impairment, and to facilitate comparisons with income poverty. The BHPS is used to analyse social interaction, since it is the only source to contain detailed information on leisure participation and emotional support for both disabled and non-disabled people. In the first instance, thresholds are used which classify around 20 to 25 per cent of the overall population as poor. The sensitivity of the results is checked by running the same analysis using lower thresholds (i.e. ones that classify fewer people as poor).

Table 5.11 begins by showing the characteristics associated with consumption poverty for disabled people, using a poverty threshold of less than 2 on the FRS consumption index. (A score of two on the consumption index could be achieved by having access to a vehicle and being an owner-occupier, for example). Men are slightly more likely

to be poor than women, and younger people are more likely to be poor than older age groups. In terms of household composition, single adults with or without children are most likely to experience consumption poverty, followed by couples with children. The differentials here are large. The coefficients on age group suggest there may be a lifecycle effect: some components of the consumption index, such as home ownership, are usually acquired later in life. Other components, such as consumer durables and having access to a car, may become more useful when there are children in the family, which makes the relatively high risk for single parents and couples with children especially serious.

Those with low educational qualifications, especially those with no qualifications at all, are considerably greater risk of poverty than those with higher qualifications. We saw in Chapter 3 that those with low or no qualifications were less likely to be earning, and that those without earnings were at greater risk of income poverty. The impact of qualifications on consumption poverty may come by the same route.

There is no significant relationship between age at onset of impairment and risk of consumption poverty, but having a behavioural or intellectual impairment once again stands out as high risk. There is a gradient with severity of impairment, increasing from category 1/2 through to 7/8. Interestingly, disabled people with impairments in the highest severity categories are at slightly *lower* risk of consumption poverty than those immediately below them on the severity scale. This may be because they have better access to benefits and support services.

These results are broadly similar to the results for income poverty in Table 3.3 in Chapter 3. The main difference is with respect to severity of impairment, which is not significantly related to income poverty but is strongly associated with consumption poverty. Clearly, lack of income is an important cause of consumption poverty, so a similarity in the characteristics of income-poor and consumption-poor is to be expected. The fact that there are differences between the two sets of results suggest that other factors, such as severity of impairment, are also relevant. This hypothesis is explored further in the following section.

Setting the poverty threshold at less than 1 on the consumption index produces similar results; the characteristics of the very poor are similar to the characteristics of the poor in general. The only differences are with respect to gender (men are not more likely to be very poor than women, although they are more likely to be poor in general) and severity of impairment (not significantly associated with severe poverty).

**Table 5.11: Characteristics associated with consumption poverty for disabled people (FRS)**  
(Probit regression on FRS consumption index, threshold < 2; disabled people only)

		Marginal probability	Standard error
<i>Gender</i>	Male	+0.05	0.022
<i>Age group</i>	16-29	+0.22	0.042
	30-44	+0.07	0.029
	45-59/64	(omitted)	
<i>Highest educational qualification</i>	Degree or above	(omitted)	
	Further	+0.13	0.050
	Secondary	+0.24	0.044
	Lower vocational	+0.26	0.067
	Other	+0.25	0.067
	None	+0.37	0.032
<i>Household composition</i>	Single, no children	(omitted)	
	Couple, no children	- 0.40	0.024
	Single with children	+0.03	0.056
	Couple with children	- 0.22	0.024
	More than 2 adults	- 0.38	0.021
<i>Age at onset</i>	Birth	(omitted)	
	Childhood	+0.07	0.046
	16-29	+0.01	0.040
	30+	- 0.06	0.039
<i>Type of impairment</i>	Locomotion	(omitted)	
	Reaching or dexterity	- 0.02	0.026
	Seeing or hearing	+0.01	0.024
	Behavioural or intellectual	+0.06	0.024
	Other	- 0.08	0.024
<i>Severity category of impairment</i>	1 or 2	(omitted)	
	3 or 4	+0.06	0.031
	5 or 6	+0.12	0.034
	7 or 8	+0.20	0.042
	9 or 10	+0.14	0.064

Number of observations: 2,505 Log likelihood: -1,355

Likelihood ratio index: 0.20 Predicted probability: 0.38 Proportion correctly classified: 0.73  
Source: author's calculations using FRS 1996/7, Disability Follow-Up and HBAI

Turning to production poverty, and defining those with no full-time activity nor any part-time paid work as poor, we find entirely different relationships with age and household composition. Young disabled people are least likely to be production-poor, by a considerable margin. Couples with children and single parents face the lowest risks of production poverty; this is not surprising given that caring for children under the age of 5 is defined as a full-time productive activity. Single adults without children are the most likely to experience production-poverty.

The gradient with respect to educational qualifications is similar to that observed for consumption poverty, although less steep. Although the association between paid work and qualifications is strong, paid work is only one component of the production index and the association between qualifications and caring responsibilities is weak or non-existent.

The pattern of impairment characteristics is similar to that for consumption poverty. Age at onset is not significant; behavioural or intellectual impairments appear to carry a particularly heavy penalty. Risk of production poverty rises with severity of impairment, and in this case the gradient continues right up the scale.

Shifting the poverty threshold so that only those with no productive activity whatsoever are counted as poor has little effect on the characteristics found to be associated with poverty. The differentials between household types, and between severity categories of impairment, become sharper but retain the same pattern.

**Table 5.12: Characteristics associated with production poverty for disabled people (FRS)**  
 (Probit regression on FRS production index, threshold no full-time activity nor part-time paid work; disabled people only)

		<b>Marginal probability</b>	<b>Standard error</b>
<i>Gender</i>	Male	+0.03	0.022
<i>Age group</i>	16-29	- 0.22	0.041
	30-44	- 0.15	0.029
	45-59/64	(omitted)	
<i>Highest educational qualification</i>	Degree or above	(omitted)	
	Further	+0.08	0.038
	Secondary	+0.10	0.035
	Lower vocational	+0.04	0.060
	Other	+0.03	0.056
	None	+0.22	0.030
<i>Household composition</i>	Single, no children	(omitted)	
	Couple, no children	- 0.18	0.032
	Single with children	- 0.28	0.053
	Couple with children	- 0.39	0.033
	More than 2 adults	- 0.18	0.036
<i>Age at onset</i>	Birth	(omitted)	
	Childhood	- 0.03	0.045
	16-29	- 0.05	0.041
	30+	+0.02	0.039
<i>Type of impairment</i>	Locomotion	(omitted)	
	Reaching or dexterity	+0.04	0.026
	Seeing or hearing	- 0.02	0.023
	Behavioural or intellectual	+0.14	0.023
	Other	- 0.02	0.024
<i>Severity category of impairment</i>	1 or 2	(omitted)	
	3 or 4	+0.06	0.028
	5 or 6	+0.09	0.030
	7 or 8	+0.23	0.031
	9 or 10	+0.31	0.028

Number of observations: 2,507 Log likelihood: -1,380

Likelihood ratio index: 0.17 Predicted probability: 0.64 Proportion correctly classified: 0.72  
 Source: author's calculations using FRS 1996/7, Disability Follow-Up and HBAI

For examining the characteristics of those in poverty on the social interaction dimension, the same threshold used at the end of the previous section is applied, namely, under 60 per cent on the leisure participation index or lacking emotional support in one or more respects. The analysis uses the BHPS, so the definition of disability is based on limitations in daily activity, and there are some minor

differences in the way characteristics are classified. No 'age at onset' variable is available, types of impairment are coded differently, and severity of impairment is represented by the number of activities of daily living with which difficulty is reported, from 1 to 4.<sup>8</sup>

Table 5.13 shows the results. Very few of the listed characteristics are significantly associated with social interaction poverty at all – as indicated by the low likelihood ratio given below the table. Just three characteristics stand out as associated with higher risk of poverty in this dimension: having no educational qualifications, having a mental health problem or behavioural impairment, and being more severely impaired. Age, gender and household type do not seem to matter.

Lowering the poverty threshold to under 40 per cent of the median value on the leisure participation index has little impact. Type and severity of impairment remain significant and no new characteristics become significant.

Comparing Tables 5.11, 5.12 and 5.13, it is clear that greater severity of impairment is a significant correlate of greater risk of functioning poverty across these three dimensions. This is of course in contrast to the results shown in Chapter 3 for income poverty, where there was no gradient with respect to severity. Individuals with mental health problems or intellectual impairments also seem to be more likely to be functioning-poor across dimensions. The relationship with characteristics other than disability is more varied between dimensions, with younger people more at risk of consumption poverty and less at risk of production poverty than older people, for example, although having low educational qualifications is a risk factor across dimensions.

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<sup>8</sup> The activities are doing the housework, climbing stairs, dressing, and walking for more than 10 minutes. If someone reports limitation in daily activities but does not indicate difficulty with any of these particular activities, they are assumed to be limited in one other activity.

**Table 5.13: Characteristics associated with social interaction poverty for disabled people (BHPS)**

(Probit regression on BHPS social interaction poverty, threshold under 60 per cent on leisure participation index or lacking emotional support in one or more respects; disabled people only)

		Marginal probability	Standard error
<i>Gender</i>	Male	- 0.02	0.039
<i>Age group</i>	16-29	- 0.04	0.057
	30-44	- 0.03	0.050
	45-59/64	(omitted)	
<i>Highest educational qualification</i>	Degree or above	(omitted)	
	Further	+0.02	0.070
	Secondary	+0.02	0.062
	Lower vocational	+0.06	0.067
	Other	+0.32	0.211
	None	+0.13	0.052
<i>Household composition</i>	Single, no children	(omitted)	
	Couple, no children	- 0.07	0.065
	Single with children	+0.01	0.117
	Couple with children	+0.04	0.074
	More than 2 adults	+0.06	0.065
<i>Type of impairment</i>	Musculoskeletal	(omitted)	
	Heart, lung, stomach	+0.01	0.050
	Seeing or hearing	+0.02	0.038
	Mental or behavioural	+0.13	0.044
	Other	+0.03	0.039
<i>Severity of impairment</i>	1 ADL	(omitted)	
	2 ADLs	+0.09	0.056
	3 ADLs	+0.12	0.065
	4 ADLs	+0.17	0.073

Number of observations: 734

Log likelihood: -462

Likelihood ratio index: 0.05 Predicted probability: 0.41 Proportion correctly classified: 0.64

Source: author's calculations using BHPS Waves 6 and 7

Finally, Table 5.14 shows results from an ordered logit regression on the number of dimensions of functioning-poverty experienced by disabled adults.<sup>9</sup> Unlike the marginal probabilities reported in the preceding tables, coefficients from a logit cannot be interpreted directly in percentage point terms, but a positive coefficient

<sup>9</sup> Ordered logit regression is appropriate where the dependent variable is ordinal, rather than dichotomous (in which case logit or probit regression may be appropriate), or continuous (in which case Ordinary Least Squares regression may be appropriate).

indicates that the characteristic is associated with an increased risk of experiencing a higher number of dimensions of poverty, relative to the omitted characteristic.

**Table 5.14: Characteristics associated with poverty on multiple dimensions for disabled people (BHPS)**

(Ordered logit regression on number of dimensions on which poor; thresholds given in text; disabled people only)

		Coefficient	Standard error
<i>Gender</i>			
	Male	+0.11	0.151
<i>Age group</i>			
	16-29	- 0.15	0.235
	30-44	- 0.19	0.195
	45-59/64	(omitted)	
<i>Highest educational qualification</i>			
	Degree or above	(omitted)	
	Further	+0.41	0.271
	Secondary	+0.57	0.243
	Lower vocational	+1.07	0.258
	Other	+0.28	0.667
	None	+1.39	0.204
<i>Household composition</i>			
	Single, no children	(omitted)	
	Couple, no children	- 1.52	0.275
	Single with children	- 0.03	0.428
	Couple with children	- 1.02	0.288
	More than 2 adults	- 1.11	0.269
<i>Type of impairment</i>			
	Musculoskeletal	(omitted)	
	Heart, lung, stomach	+0.35	0.197
	Seeing or hearing	+0.15	0.149
	Mental or behavioural	+0.90	0.170
	Other	+0.17	0.153
<i>Severity of impairment</i>			
	1 ADL	(omitted)	
	2 ADLs	+0.72	0.186
	3 ADLs	+0.71	0.218
	4 ADLs	+1.58	0.310

Cut 1: -0.80. Cut 2: +0.97. Cut 3: +3.07

Number of observations: 715 Log likelihood: -819 Likelihood ratio index: 0.11

Source: author's calculations using BHPS Waves 6 and 7

The association between consumption poverty and age on one hand, and between production poverty and age on the other, appear to cancel each other out, so that the risk of experiencing poverty on multiple dimensions is not significantly associated with age group. Single people, whether with or without children, face the highest risk of suffering multiple functioning-poverty, while couples without children face the

lowest risk. Low educational qualifications are strongly associated with increased risk: a result consistent with the results for each dimension shown above. As expected, mental or behavioural impairment, and more severe impairment, are each associated with increased risk of poverty on more than one dimension.

### 5.7 Conclusion

This chapter began by canvassing the dimensions of well-being which might be relevant for assessing the relative disadvantage of disabled and non-disabled people in Britain. The three broad dimensions selected - consumption, productive activity, and social interaction - were given support both from the general literature on social inclusion and from in-depth studies with disabled people, especially young disabled people, about what aspects of participation in society were most important to them. In translating these broad dimensions into measurable indicators, a number of pragmatic choices had to be made as a result of data limitations. The household surveys on which the analysis draws were not designed with the capability approach in mind, and, as a result, the detail they afford on income measures is not always matched by detail on broader and non-material aspects of well-being.

Nevertheless, the results were informative. On the consumption dimension, it was clear that non-disabled people's functioning dominated that of disabled people's functioning: whatever weights were selected for the component indicators of that dimension, non-disabled people would be found to be better off. In the case of productive activity, there was no dominance, but a very low weight would have to be placed on full-time employment as a contributor to production functioning, and a high weight on caring for young children, if disabled people were to be found to be better-off than non-disabled people in terms of production functioning. With respect to social interaction, both the indicators used showed non-disabled people to be less at risk of exclusion and isolation, and hence non-disabled people's functioning on this dimension also dominates that of disabled people.

The extent of functioning poverty varied according to the threshold set for each dimension, as one would expect. The ranking of disabled and non-disabled people was not sensitive to the choice of threshold, however. The gap between disabled and

non-disabled people's functioning poverty rates was greater for a lower threshold on the production dimension, suggesting that there is a disproportionate concentration of disabled people in 'deep' poverty on this dimension. As many as 1 in 3 disabled people of working age are identified as having no productive activity whatsoever, neither paid nor unpaid, full-time or part-time, working, studying or caring. Whatever the barriers are to full-time employment in a competitive labour market, it is difficult to believe that it is necessary or desirable for such a high proportion of disabled people to be inactive.

For the most part, this chapter eschewed aggregating across functionings, on the principle that in the absence of a justification for any particular weighting of dimensions, transparency is the most important virtue. The exception to this is a description of the number of dimensions on which individuals are excluded (using the higher of the two thresholds explored above). This analysis showed that 11 per cent of disabled people were functioning poor on all three dimensions (consumption, production and social), compared to just one per cent of non-disabled people.

The later sections of this chapter explored the characteristics of the functioning poor among disabled people. Key risk factors for suffering multiple functioning-poverty were shown to include being a single person, whether with or without children, having low educational qualifications, having mental health problems or an intellectual impairment, and having a greater severity of impairment.

This chapter has illustrated one way to operationalise a functioning-poverty measure, though it makes no claim to be the definitive approach. It has revealed greater variation in the comparisons between disabled and non-disabled people than a unidimensional measure such as income is able to do and has broadened the analysis to include non-material dimensions of well-being. The results will be compared in Chapter 7 with similar analyses based on income poverty, equivalised income poverty and opportunity poverty.

### Appendix 5.1: Causes of functioning poverty

In considering the causes of functioning poverty among disabled people, two sorts of comparisons are useful. The first is between the disabled poor and the disabled non-poor and the second is between the disabled poor and the non-disabled poor. The first of these highlights characteristics associated with poverty and the second indicates whether these characteristics are unique to disabled people or shared by the non-disabled poor.

Attribution of causation, rather than merely association, must remain tentative since it is always possible that an alternative model including additional variables or relating variables in a different way would produce a different interpretation.

#### A5.1.1 *Causes of consumption poverty*

One of the prime causes of consumption poverty is clearly low income. Indeed, as consumption poverty has been operationalised here, income poverty is a *component* of consumption poverty. The causes of low income were explored in Chapter 2, and included household composition, employment status of the individual and any other household members, and benefit entitlement (which in turn depended in part on severity of impairment).

As Atkinson (1998) argues, there are barriers to consumption in addition to low income. Firstly, the financial resources available to a household depend not only on current income, but also savings and expected future income. Savings may be used to purchase large items (such as a car or consumable durables) or to put down a deposit on a house. Expected future income is one of the determinants of whether a financial institution will be willing to lend money for the purchase of a house, and may also influence current household spending decisions. These factors apply equally to disabled and non-disabled people.

Secondly, a given level of financial resources will translate into a higher level of consumption in some circumstances than in others. People living in different parts of the country face different prices, and there may also be individual variation in price. For example, a disabled person may need an adapted car – more expensive than an ordinary vehicle – or a wheelchair-accessible house. As well as variations in price, there are variations in need, in other words, in what the financial resources of the household have to cover. A larger household will need to spend more on everyday items such as food, leaving less for major purchases like a car or consumer durables, and similarly, some disabled people face extra costs in daily living.

Where consumption poverty is modelled by lack of specific goods and services, the desirability and usefulness of those goods and services to an individual will also affect his or her likelihood of experiencing consumption poverty. A washing machine may be particularly useful in a household with young children, or a household with someone who is incontinent, so both household type and type of impairment are relevant. The physical capacity of an individual to make use of a particular good is also relevant: a car is little use if no-one in the household can drive, for example, but a microwave may be especially valuable for someone who is unable to bend down to use a conventional oven. There are also of course variations in taste which do not

relate to any observable characteristic – some individuals have an ideological objection to cars, for example.

Despite having sufficient financial resources and a desire to purchase a good or service, there may be a remaining barrier to consumption, namely, availability. A transaction requires a seller as well as a buyer. There is evidence of disabled people being denied goods and services for no reason other than the fact of their impairment (Meager *et al.*, 1998), and this is the subject of one part of the 1995 Disability Discrimination Act.

Drawing this discussion together, we hypothesise that consumption depends on financial resources, desirability and usefulness of particular goods or services, and the availability of goods and services. Financial resources depend on current income and savings, expected future income, household type (due to variation in need), severity of impairment (due to extra costs of disability), and region (variation in prices). The desirability and usefulness of the goods depend on household type, physical capacity of the individual and variations in taste. The availability of goods depends on the degree of discrimination experienced.

The index of consumption poverty modelled below is based on the FRS, but omitting the low income component. The causes of low income have already been investigated; the interest here lies in the relationship between low income and other aspects of consumption poverty. Income as an explanatory variable may or may not have a linear relationship with probability of consumption poverty; accordingly different model specifications are tested. Expected future income is proxied by the oldest age at which anyone in the household left full-time education.<sup>10</sup> Neither taste nor discrimination are directly observable. Variations in taste which are related to income, household type, or type or severity of impairment will be reflected in the coefficients on those variables: the interpretation of these coefficients needs to be sensitive to their dual role as direct influences and as proxies for variations in taste. Age group is also included in the regressions to pick up any variation in taste relating to age (with the expectation that older age groups have both had more time to acquire assets and have a greater preference for the sorts of goods included in the index than younger groups). Other variations in taste are assumed to be random. Similarly, discrimination is likely to have both a systematic and a random component: the systematic component relates to type and severity of impairment and the random component appears in the error term.

The sign of the coefficients on region and type of impairment will vary: more expensive regions will have a positive sign, and types of impairment associated either with extra costs or with reduced physical capacity will have a positive sign. There is no clear prediction for the sign on household type: larger households have greater day-to-day needs and hence lower resources for other consumption, but the usefulness of many goods, such as a car or consumer durables, increases with household size.

Table A5.1 shows the results from two regressions, in the middle column for consumption poverty of disabled people and in the right-hand column for

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<sup>10</sup> Highest educational qualification is available in FRS for disabled people only.

consumption poverty of non-disabled people.<sup>11</sup> Results which are significant at the five per cent level are shown in bold. Alternative specifications of income and of age were tested but did not to improve the explanatory power of the models.

The results are in line with the hypotheses formulated above. Income, savings and higher education (proxying for expected income) protect against consumption poverty, and older individuals have a better chance of having acquired the goods included in the index. The effect of stronger preferences for consumer goods appears to outweigh the effect of extra mouths to feed as far as household type is concerned: couples with or without children are the least likely to suffer consumption poverty. Living in a region with high prices, like London, does appear to increase the risk of poverty, while regions with low prices like Wales are associated with a lower risk. An exception is Scotland, which has low prices but a relatively high risk of consumption poverty. This anomaly may be explained by the low rate of owner-occupation in Scotland, the result of historical and cultural factors rather than poverty.

In terms of type and severity of impairment - which in this equation stand for variations in extra costs, physical capacity, taste and likelihood of experiencing discrimination - sensory impairments stand out as causing higher risk of consumption poverty, while the familiar pattern of increasing risk with severity of impairment up to category 7 or 8 is once again observed.

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<sup>11</sup> A likelihood ratio test, comparing a model in which disability status was interacted with all other explanatory variables (the saturated model), with a model in which disability status entered simply as a control variable, did not reject the saturated model. The saturated model is equivalent to running separate regressions for disabled and non-disabled people, and since this makes results easier to present and interpret, that is the procedure followed here.

**Table A5.1: Determinants of the probability of being in consumption poverty (FRS)**

(Probit regression on FRS consumption index without income component, threshold < 3; disabled and non-disabled separately)

	<b>Disabled</b> Marginal probability	<b>Non-disabled</b> Marginal probability
<i>Household income<sup>a</sup></i>	- 0.0015	- 0.0006
<i>Any savings in household</i>	- 0.25	- 0.26
<i>Age left full-time education<sup>b</sup></i>		
Pre 14/still in edn	+0.10	+0.13
14-16	(omitted)	(omitted)
17-19	- 0.13	- 0.10
20+	- 0.15	- 0.08
<i>Age group</i>		
16-29	+0.18	+0.20
39-44	+0.09	+0.07
45-59/64	(omitted)	(omitted)
<i>Household composition</i>		
Single, no children	(omitted)	(omitted)
Couple, no children	- 0.25	- 0.14
Single with children	+0.03	+0.12
Couple with children	- 0.17	- 0.18
More than 2 adults	- 0.10	- 0.11
<i>Region</i>		
Greater London	(omitted)	(omitted)
North	- 0.11	- 0.14
Yorks & Humberside	- 0.15	- 0.13
N West	- 0.15	- 0.17
E Midlands	- 0.21	- 0.15
W Midlands	- 0.19	- 0.17
E Anglia	- 0.28	- 0.16
S East	- 0.14	- 0.14
S West	- 0.16	- 0.15
Wales	- 0.20	- 0.16
Scotland	+0.03	- 0.09
<i>Type of impairment</i>		
Locomotion	(omitted)	
Reaching or dexterity	- 0.03	
Seeing or hearing	+0.07	
Behavioural or intellectual	- 0.00	
Other	- 0.06	
<i>Severity category of impairment</i>		
1 or 2	(omitted)	
3 or 4	+0.08	
5 or 6	+0.09	
7 or 8	+0.21	
9 or 10	+0.13	
Number of observations	2,588	21,899
Log likelihood	-1,255	-10,747
Likelihood ratio index	0.30	0.22
Predicted probability	0.55	0.28
Proportion correctly classified	0.77	0.84

<sup>a</sup> Net income after housing costs, £ per week. <sup>b</sup> Maximum in household.

Source: author's calculations using FRS 1996/7, Disability Follow-Up and HBAI

Differences between the results for disabled and non-disabled adults, where they exist, tend to show that differentials between disabled people are sharper than between non-disabled people. For example, the coefficient on income is larger for disabled people (both absolutely and relative to mean predicted probability), indicating that a rise in income for a disabled individual reduces the risk of consumption poverty to a greater extent than for a non-disabled person. In addition of course there is variation among disabled people due to type and severity of impairment.

A regression for disabled and non-disabled adults together, including disability status as an explanatory variable, indicates that being disabled increases the risk of experiencing consumption poverty by 45 per cent for someone with 'average' characteristics, after controlling for all the other causes of consumption poverty identified.

#### *A5.1.2 Causes of production poverty*

Those falling below the poverty threshold used in the previous section on the production index are neither in any kind of paid work, nor studying or caring for children or relatives full-time. The determinants of being in paid work are fairly well-known and were explored in Chapter 3. They include human capital, represented primarily by educational qualifications, but also by previous work experience. For disabled people, severity of impairment was also found to be strongly negatively correlated with probability of employment, as was having a mental or behavioural impairment. This probably reflects a combination of physical or mental capacity and discrimination by employers.

The determinants of studying or caring full-time are less clearly defined. There is no reason to suppose that they are the same as the determinants of being in employment so it does not seem sensible to attempt to model them jointly. Rather they are conceived of as a series of alternatives: the probability of being in paid work is first estimated for the whole sample, then, for those not in paid work, the probability of studying full-time, then for those neither in paid work nor studying, the probability of caring for young children, and so on.

The main determinant of the probability of studying full-time, for those not in paid work, is expected to be age. Most people complete their full-time education in their teens or early twenties. Within that age group, those who have been most academically successful are most likely to remain in education. Unfortunately the FRS does not contain sufficient detail on educational qualifications to model staying-on rates. Remaining in education can be expensive, hence one would expect young people from better-off families to remain in education longer, other things being equal. This is difficult to capture in the FRS data, since students may be included at their term-time address and report low household incomes, even if their family of origin is well-off. Some young disabled people spend longer in education, either because they have missed out on education at a younger age or because social services does not know what else to do with them (for example 'adult training centres' for people with learning difficulties). Others leave earlier than their non-disabled peers, because they have had an unsatisfactory schooling experience or face barriers to continuing in education, for example poor physical access to further and higher

education buildings or lack of other practical and educational support (Wilson, 2003). Part 4 of the Disability Discrimination Act, which related to educational institutions, came into force only in 2002, following the Special Educational Needs and Disability Act 2001.

A model of the probability of being in full-time education or training (for those who are not in paid work) fits poorly, because many relevant factors - academic record and family income - are not available in the dataset. Disability is associated with a statistically significant lower probability of being in full-time education or training, for any given age group. Interacting disability and age group did not improve the fit of the model. There are too few observations to model the probability for disabled people separately, so we cannot tell whether there are some types or severities of impairment which are particularly disadvantaged. It is interesting to note however that if they are not in paid work, 19-22 year olds are *more* likely to be in full-time education than 16-18 year-olds. Those who leave school at 16-18 may not find work, while those who leave later have higher employment rates.

The principal determinant of the probability of caring for young children is clearly whether there are young children in the household. This itself is likely to be influenced by the age of the individual and whether they have, or have had, a partner. It is also known that family formation patterns are influenced by educational level, particularly that of the mother (Ferri et al, 2003), with women who stay longer in education delaying childbirth. The probability of caring for young children can then be modelled as age interacted with education, and marital status (married or cohabiting; widowed, divorced or separated; or never married). Differences between disabled and non-disabled people are expected to depend on age at onset of impairment: those disabled before child-bearing age sometimes experience barriers to forming partnerships and starting a family (Hendey and Pascall, 2001).

Excluding those who are in paid work or full-time study, 15 per cent of disabled people in the remaining sample are looking after children under school age, compared to 42 per cent of non-disabled people. This difference is partly due to the older age profile of the disabled population, but within each age group, disabled people are less likely to be looking after young children. Table A5.2 controls for age, as well as gender, marital status and educational level. Interaction terms did not improve the explanatory power of the model significantly.

Disabled women in this group are around twice as likely as disabled men to be looking after young children but after controlling for other characteristics, this difference disappears. Among the non-disabled sample, the gender difference remains even after controlling for other characteristics. Disabled people who became disabled at birth are significantly less likely to be looking after young children, but neither type nor severity of impairment is important.

**Table A5.2: Some determinants of probability of looking after children under school-age, if not in paid work or full-time study (FRS)**  
 (Probit regressions; FRS; disabled and non-disabled separately<sup>12</sup>)

		Disabled Marginal probability	Non-disabled Marginal probability
<i>Gender</i>	Male	- 0.01	<b>-0.17</b>
<i>Age left full-time education</i>	Pre 14/still in edn	- 0.00 (omitted)	<b>+0.15</b> (omitted)
	14-16	- 0.01	<b>+0.04</b>
	17-19	+0.02	- 0.01
	20+		
<i>Age group</i>	16-24	(omitted)	(omitted)
	25-34	- 0.00	<b>+0.05</b>
	35-44	- 0.04	- 0.19
	45+	- 0.37	- 0.51
<i>Marital status</i>	Married/cohabiting	(omitted)	(omitted)
	Divorced/separated/widowed	- 0.03	- 0.17
	Never married	- 0.04	- 0.24
<i>Age at onset</i>	Birth	(omitted)	
	Childhood	<b>+0.06</b>	
	16-29	<b>+0.05</b>	
	30+	+0.03	
Number of observations		1,781	4,453
Log likelihood		-345	-1,801
Likelihood ratio index		0.37	0.35
Predicted probability		0.03	0.21
Proportion correctly classified		0.92	0.80

Source: author's calculations using FRS 1996/7 and Disability Follow-Up

The determinants of the probability of caring full-time for a relative are likewise largely circumstantial: there has to be a relative in need of care. Age is once again likely to be important, since older individuals are themselves more likely to have ageing spouses or parents. In general, women of working age are more likely to take on full-time caring roles than men (Parker and Lawton, 1994). The availability of alternative sources of support is also relevant: whether there are other adults within or outside the household who could take on that role. (Information in FRS is restricted to other adults in the household).

The same percentage (6 per cent) of disabled and non-disabled adults who are not in paid work, full-time study or looking after young children, are caring full-time. Table

<sup>12</sup> A pooled model was not rejected by a likelihood ratio test, suggesting that the underlying coefficients for disabled and non-disabled people are similar. Disability status is itself significantly associated with a lower likelihood of looking after children full-time, controlling for other characteristics. Results from separate regressions are presented here in order to be able to include age at onset for disabled people.

A5.3 considers the probability of caring, controlling for age, gender, household composition and disability.

This is the first of the functionings considered in this chapter where no difference is observable between disabled and non-disabled people and serves as a useful reminder that disabled people are often providers as well as recipients of care. Women, older age groups, and those who are part of a couple with children are more likely to be full-time carers, whether disabled or not.

**Table A5.3: Some determinants of probability of caring full-time if not in paid work, full-time study or looking after young children (FRS)**  
(Probit regression; FRS; disabled and non-disabled together)

	Marginal probability
<i>Disability status</i>	
Disabled	0.00
<i>Age group</i>	
16-29	- 0.04
30-44	- 0.01
45+	(omitted)
<i>Gender</i>	
Male	- 0.02
<i>Household composition</i>	
Single, no children	(omitted)
Couple, no children	+ 0.05
Single with children	+ 0.06
Couple with children	+ 0.11
More than 2 adults	+ 0.05

Number of observations: 4757 Log likelihood: -846

Likelihood ratio index: 0.05 Predicted probability: 0.04 Proportion correctly classified: 0.95

Source: author's calculations using FRS 1996/7 and Disability Follow-Up

#### *A5.1.3 Causes of social interaction poverty*

There are two parts to social interaction functioning as modelled here: participation in leisure activities and having emotional support. Of course the two may interact: someone who is unable to go out to socialise may find it difficult to maintain close, supportive, friendships, and someone who carries heavy emotional burdens alone may not wish to go out or may lack friends to socialise with.

Beginning with leisure activities, barriers to participation may include: low income, transport difficulties, lack of appropriate local facilities, lack of time and not having friends to go with. Each of these problems is likely to be exacerbated for disabled people: a given level of income may also need to cover the extra costs of disability, even where public transport and local facilities exist they may be inaccessible, and friendships can be hard to maintain in the face of practical difficulties. In addition, disabled people may be discriminated against in the provision of leisure services.

Although the FRS does not ask non-disabled respondents about leisure activities, and hence cannot be used for comparative analysis, it does ask in some detail about the

difficulties disabled people experience. One quarter of disabled people said that if more help or better facilities were available, they would engage in leisure activities more often. Higher proportions of those who are more severely impaired see potential benefits of such assistance, rising to nearly half of those with impairments in severity category 9 or 10. The types of assistance or facilities most commonly cited were transport and physical support from another person. 81 per cent of those who wanted to visit friends or family more often mentioned transport as a problem, as did 76 per cent of those who wanted to go to the countryside, seaside, zoos, parks or gardens, and 64 per cent of those who wanted to go to a restaurant or pub more often.

As discussed for consumption poverty above, another cause of non-participation may simply be that the individual does not wish to participate. The range of activities included in the BHPS list is broad, but nevertheless there are many individuals who enjoy leisure not included there or prefer not to go out at all. Preferences are unobservable but may be related to some extent to age and household composition – these variables are therefore included in the analysis. There is no reason to think that preferences for leisure will differ systematically between disabled and non-disabled people.

Table A5.4 compares the causes of non-participation in leisure activities for disabled and non-disabled people using the BHPS. We do not know what public transport is available in the localities in which respondents live, but whether they have access to a car is included. Likewise, we do not know whether there are local facilities, and if so, whether they are accessible. The availability of local facilities may be correlated with income, since the better-off tend to live in areas with better facilities. Discrimination is unobservable but may be systematically related to type and severity of impairment.

Income works in the expected direction: higher income protects against leisure non-participation, and the effect is stronger for disabled than non-disabled people. Access to a car is very important for disabled people but not significant for non-disabled people, confirming the views expressed by disabled respondents in the FRS that transport is a key factor. Seeing friends infrequently is associated with increased risk of non-participation (though as noted above the causation may work in either direction). Severity of impairment is also a risk factor for disabled people.

**Table A5.4: Some determinants of probability of non-participation  
in leisure activities (BHPS)**

(Probit regressions on whether under 60 per cent of median value on leisure participation index; BHPS; ADL limited and not ADL limited separately<sup>13</sup>)

	ADL-limited	Not ADL-limited
	Marginal probability	Marginal probability
<i>Household net income</i>		
Income	- 0.0005	- 0.0002
Income squared	2.1x10 <sup>-7</sup>	5.6x10 <sup>-8</sup>
<i>Transport</i>		
Access to a car	- 0.11	- 0.02
<i>How often sees closest friend</i>		
Most days	(omitted)	(omitted)
At least once a week	+0.06	- 0.00
Less often	+0.12	+0.08
<i>Age group</i>		
16-29	-0.08	<b>-0.11</b>
30-44	-0.03	-0.02
45+	(omitted)	(omitted)
<i>Household composition</i>		
Single, no children	(omitted)	(omitted)
Couple, no children	+0.03	<b>+0.05</b>
Single with children	+0.07	<b>+0.17</b>
Couple with children	<b>+0.15</b>	<b>+0.11</b>
More than 2 adults	<b>+0.17</b>	<b>+0.12</b>
<i>Severity of impairment</i>		
1 ADL	(omitted)	
2 ADLs	+0.09	
3 ADLs	+0.05	
4 ADLs	<b>+0.18</b>	
Number of observations	686	5,697
Log likelihood	-766	-4,805
Likelihood ratio index	0.05	0.04
Predicted probability	0.30	0.17
Proportion correctly classified	0.70	0.82

Source: author's calculations using BHPS Wave 6

<sup>13</sup> A pooled model was not rejected by a likelihood ratio test, suggesting that the underlying coefficients for disabled and non-disabled people are similar. Disability status is itself significantly associated with a higher likelihood of non-participation in leisure activities, controlling for other characteristics.

**Table A5.5: Some determinants of lack of emotional support (BHPs)**  
 (Probit regression on whether lack emotional support in any of five respects; BHPs;  
 ADL limited and not ADL limited separately<sup>14</sup>)

	ADL-limited Marginal probability	Not ADL- limited Marginal probability
<i>Household net income</i>		
Income	- 0.00017	- 0.00002
<i>How often sees closest friend</i>		
Most days	(omitted)	(omitted)
At least once a week	+0.007	+0.0003
Less often	+0.03	+0.03
<i>Household composition</i>		
Single, no children	(omitted)	(omitted)
Couple, no children	- 0.00	- 0.00
Single with children	+0.03	+0.00
Couple with children	+0.07	+0.00
More than 2 adults	+0.12	+0.00
<i>GHQ score &gt; 2</i>		
Yes	+0.04	+0.05
<i>Severity of impairment</i>		
1 ADL	(omitted)	
2 ADLs	- 0.05	
3 ADLs	- 0.02	
4 ADLs	- 0.05	
Number of observations	607	5,155
Log likelihood	-214	-1,366
Likelihood ratio index	0.04	0.02
Predicted probability	0.11	0.07
Proportion correctly classified	0.88	0.92

Source: author's calculation using BHPs Waves 6 and 7

The other component of the social interaction dimension, lack of emotional support, shares some of the same possible causes, but may also relate to low self-esteem or poor mental health. This is included in Table A5.5 through the GHQ score: the GHQ is a 12-item questionnaire about self-esteem, anxiety and depression, and a score of more than 2 is often used as an indicator of poor mental health. Household composition turned out not to be significant, but disability status, mental health and seeing friends infrequently were. Income was significant for disabled people. However the results must be interpreted with caution since the explanatory power of the models are poor.

<sup>14</sup> A pooled model was not rejected by a likelihood ratio test, suggesting that the underlying coefficients for disabled and non-disabled people are similar. Disability status is itself significantly associated with a higher likelihood of lacking emotional support in at least one respect, controlling for other characteristics.

## CHAPTER SIX: CAPABILITY AS OPPORTUNITY

### 6.1 Measuring capabilities

#### 6.1.1 *Incomes, functionings and capabilities*

In the preceding chapters, the well-being of disabled people has been measured on the basis of income, income adjusted for variations in need, and functionings. The rationale for using income is partly pragmatic: it is relatively easy to measure and apparently facilitates interpersonal comparisons. It also has conceptual underpinnings: income can be converted into a wide variety of goods and services which generate utility and economic welfare for the individual concerned. It is not necessary to specify the objectives an individual has, or any specific outcomes with which the evaluator is concerned, in order to obtain a measure of well-being.

The disadvantages associated with income as a measure of well-being can also be categorised as pragmatic and conceptual. On the pragmatic side, there are measurement problems: how exactly income should be defined (static or dynamic, before or after housing costs, etc), and how public goods can be included, for example. On the conceptual side, aspects of well-being which cannot be purchased (such as having good social relations<sup>1</sup>) are not captured by income-based measures, and variations in the ability of individuals to convert income into well-being compromise the interpersonal comparability of income-based measures. The second of these conceptual problems can be addressed at least partially by equivalising incomes for variations in need, as demonstrated in Chapter 4.

The main rationale for using functionings rather than income is that functionings are ends in themselves, not merely the means to an end. Problems associated with non-monetary well-being, public goods, and variations in rates of conversion from income to well-being are thus circumvented. However, measurement of well-being in the functionings space raises its own difficulties. Firstly, in practice, direct indicators of valued ends (such as being well-nourished or having good friends) are far and few

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<sup>1</sup> This is not to deny that lack of income can be a contributory factor in producing or sustaining poor social relations.

between. Substitution of proxies is sometimes crude and may even force us back to using income. Secondly, there is the question of which functionings should form the focus of evaluation: those most valued by the individual ('agency goals') or those basic functionings generally held to be important in the society in question ('well-being' in Sen's terminology). I argued in Chapter 1 that the only reason in principle to prefer evaluation of functionings to capabilities was paternalistic - that individuals would not necessarily choose what was in their best interests. This implies that evaluation of functionings should be in terms of well-being, not agency goals, and it was on this basis that the analysis in Chapter 5 proceeded. There are further questions about whether separate dimensions of functioning should be combined, and if so, how they should be weighted.

At a more fundamental level, although focusing on well-being functioning is coherent, it leaves the evaluation open to the criticism that it has overlooked the importance of variation in individuals' preferences and objectives in life - variation which the original approach of measuring well-being by income can accommodate to a certain extent. For a non-paternalist, this variation needs to be reflected in a measure of well-being.

The rationale for using capabilities is threefold. Firstly, capabilities, like functionings, focus on ends rather than means. Secondly, capabilities, like income, accommodate variations in preferences and life plans, by measuring the opportunity to achieve various functionings rather than the functionings themselves. Thirdly, if freedom itself is thought to have value, measuring capabilities can capture the distribution of that value.<sup>2</sup>

The claim that freedom itself has value is a strong one. It requires that freedom has value whether or not it is appreciated by the individual concerned: despite the fact that decision-making is sometimes burdensome or even agonising, it is better to have significantly-different options to choose between. The intrinsic value of freedom is a

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<sup>2</sup> A number of other reasons for being concerned with capabilities, rather than functionings or income, were canvassed in Chapter 1, but many were rejected as not strictly requiring a move to capabilities. For example, the act of choosing, or the fact of having chosen, can contribute directly to utility. This may be so, but if it is an important aspect of well-being it should be included as a functioning in its own right: the functioning of choosing.

fundamental tenet of modern liberalism, albeit interpreted differently by contractarian, libertarian and communitarian schools of political philosophy. It is the contractarian interpretation with which we will be chiefly concerned. Libertarians favour the idea of negative freedom: basic liberties, defined as the absence of some kinds of constraint, are constitutive of social justice and are intrinsically valuable (for example, Nozick 1974). An assessment of the extent of libertarian freedom would therefore focus on the types of constraint operating on an individual, not on the functionings he or she was able to achieve. Communitarians regard freedom as an attribute of groups or communities rather than individuals (for example Walzer, 1983), an interpretation which the capabilities approach may be able to illuminate but is not its main motivation.

Modern contractarian liberalism holds that the respect in which freedom is intrinsically valuable is the freedom to pursue your own conception of the good life. The state cannot know, and should not determine, individuals' conception of the good life, but social justice requires that it should provide the conditions under which all conceptions of the good (within reason) can be pursued with equal facility. The relevant conditions have been variously interpreted – as maximal civil liberties plus a maximin distribution of primary goods by Rawls, as equal resources by Dworkin (1981), as compensation for factors beyond individual control by Le Grand (1991) and Roemer (1998a), and equality of capability by Sen (e.g. 1992).

### *6.1.2 Capability as opportunity*

Providing the conditions in which all reasonable conceptions of the good can be pursued with equal facility is closely allied to the idea of equality of opportunity. For convenience, I therefore refer to the contractarian liberal interpretation of capability as 'capability as opportunity'. While Le Grand, Roemer and Sen (on some occasions, e.g. 1988) appear to require equality of opportunity in all spheres, Rawls, Dworkin and Sen (on other occasions, e.g. 1999a) can be seen as championing the lesser claim that specific goods, resources or functionings should be within every individual's grasp.

Measuring the opportunity set of one individual as a whole and comparing to the opportunity set of another individual, has proved to be theoretically challenging and I am not aware of any empirical applications. There are unresolved debates about whether the number of different options is relevant, and if so, whether they must be significantly different in order to count; that in turn raises the question of how 'significance' is to be determined (Pattanaik and Xu 1990; Sugden 1998; Bavetta 2004; van Hees and Wissenberg 1999; Xu 2002). Arneson (1989) argues that the question of 'how much' opportunity cannot be separated from the question of 'how valuable' the opportunities in question are, and Sen appears to agree: "A set of three alternatives we see as 'bad', 'awful' and 'dismal' cannot, we think, give us as much real freedom as a set of three others that we prefer a great deal more and see as 'great', 'terrific' and 'wonderful'." (1990a, p.469. See also Sen, 1991a). But whose assessment of the value of opportunities is relevant? If the individual's own assessment is sovereign, in other words if the value of opportunities is assessed relative to the individual's own preferences, the motivation for examining opportunity, rather than achievement, rapidly collapses. Why not simply measure whether an individual achieves his or her idea of the good life, rather than whether s/he has the opportunity to do so? For opportunity to matter independently of achievement, the value of opportunity must at least to some extent be independent of individual preferences (Sen, 1996).

Fortunately it is not necessary to measure the entire opportunity set in order to capture the value of freedom as conceptualised by at least some protagonists in the liberal tradition. Provided a list of specified functionings, goods or resources are within an individual's capability set, that may be sufficient to determine that he or she has the opportunity to pursue any reasonable conception of the good life. How the list is specified depends on the particular theory in question, but a reasonable starting point for functionings is the list of dimensions of participation outlined in the previous chapter. 'Capability as opportunity' under this interpretation is thus what Sen calls well-being freedom and is the direct counterpart of well-being achievement investigated in the chapter on functionings. Well-being freedom is attained if all individuals have the *opportunity* to consume at a reasonable level, participate in productive activity, and engage in social interaction, although individuals may in fact choose not to participate in any of those things.

A Rawlsian would certainly wish to add that individuals should be guaranteed certain basic liberties – the kinds of negative liberty characteristically supported by libertarians. Sen also frequently makes references to political and civil liberty in his discussions of the importance of freedom (e.g. Sen 1997c, 1999a, 1999c). So we could add political participation to the list of opportunities to investigate. It is important that this is conceptualised as a capability rather than a functioning. It would be difficult to justify the inclusion of actual political participation as a constitutive part of well-being but the opportunity to have a voice on matters of policy, locally or nationally, can legitimately be considered an important aspect of equality of capability. To make the contrast clear, one need only consider those who would be defined as disadvantaged according to each formulation: for functioning, the contention would have to be that failure to vote or otherwise participate in the political process is sufficient to demonstrate well-being disadvantage, while for capability, the much more reasonable contention is that anyone who *lacks the substantive opportunity* to vote or otherwise participate in the political process is disadvantaged.

The empirical task for ‘capability as opportunity’ is therefore to identify individuals who do or do not have specific functionings within their capability set. All attempts to operationalise the concept of opportunity are confronted by its inherent unobservability, since what someone could have done but is not doing is a counterfactual. Previous attempts to overcome this difficulty are discussed in section 6.2.1 below, and the approach pursued in this chapter is outlined in section 6.2.2. Difficulties which remain in identifying whether a particular functioning are within an individual’s opportunity set are discussed at the end of the chapter.

One objection which may be made to this approach is that a particular functioning (say, employment) may be within an individual’s capability set only as part of a generally undesirable functioning vector. Recall that a capability set is made up of a number of alternative feasible functioning vectors; each vector consists of the functionings which are simultaneously achievable. It could be that employment-functioning is a component of only a small number of vectors, and that the other functionings in these vectors are highly undesirable. For example, it might be that

employment-functioning is a component only of vectors which include very low levels of functioning in terms of family life and physical health. Employment is strictly-speaking within the individual's capability set, but it is not part of a vector that he or she would be likely to choose.

This objection draws attention to the fact that while a particular functioning may be within capability sets of two individuals, their respective capability sets may be very far from equal. Equality of opportunity in this interpretation is a minimalist conception; it requires only that someone has the possibility to achieve functioning F, it says nothing about how difficult it is for them to achieve it or what must be sacrificed in order to achieve it.

As we shall see, in practice the operationalisation of this conception of opportunity does provide some information about how difficult it would be for different individuals to achieve the functioning in question, but it does not directly address the issue of which other functionings are simultaneously achievable. Sen describes the approach as "distinguished capability comparison" (1999a, p.82). It does not compare capability sets as a whole, but simply whether a specific functioning is within an individual's capability set. This is a limitation, but it has the significant advantage of circumventing the issues involved in the valuation of capability sets which have yet to be resolved theoretically, let alone empirically.

## **6.2 Measuring capability as opportunity**

### *6.2.1 Previous approaches*

Attempts to operationalise definitions of poverty or deprivation which incorporate the idea of an 'enforced lack' of resources necessary to achieve a given standard of living have grappled with the problem of unobservability of the counterfactual: Seebohm Rowntree's response was to differentiate primary and secondary poverty. Primary poverty occurred where income was clearly insufficient to cover minimal basic needs even if spent efficiently, while secondary poverty occurred where income was estimated to be sufficient but where basic needs were nevertheless not met. Studies in the 'Breadline Britain' tradition (Mack and Lansley 1985, Nolan and Whelan 1996,

Gordon et al 2000) ask respondents who report that they do not have a particular item (for example, a television) whether they would like one, and if so, whether the lack is a result of it being unaffordable. While Rowntree's approach can be criticised for being too narrowly objective, and therefore failing to take account of constraints on spending patterns beyond family size and composition, the Breadline Britain approach is over-reliant on respondents' own accounts. For the consumption dimension, for example, we need to know whether someone *could* achieve a reasonable standard of living, whether or not they actually wish to own any number of household items or access any number of services.

A more thorough-going approach to the assessment of whether a particular functioning is within an individual's opportunity set is suggested by Chiappero Martinetti (1996) and by Roemer (1998a). Chiappero Martinetti argues that an individual's capability set is determined by a range of personal characteristics together with the social, economic and physical environment. Failure to achieve a given level of functioning may be a matter of choice or the result of constraint. The likelihood that it is the result of constraint can be calculated, Chiappero Martinetti suggests, by using personal characteristics and contextual variables to predict levels of functioning for the population in general. If an individual's level of functioning is below that predicted by the model, it can be assumed to be a matter of choice rather than constraint.<sup>3</sup> In her own empirical work, Chiappero Martinetti has concentrated on the measurement of functionings, pioneering the use of fuzzy set methodology to obtain multi-dimensional and probabilistic measures of poverty, rather than pursuing the measurement of capabilities (Chiappero Martinetti 2000, 2004).

Similarly, Roemer (1996, 1998a, 2002) suggests the population can be divided into types, where each type is defined by a vector of characteristics deemed to be beyond individual control (for example, IQ, income level of parents, number of siblings). Within each type, individuals vary in terms of the amount of effort they are willing to make in order to achieve desirable outcomes. The distribution of effort is itself a characteristic of the type, but an individual's position within the distribution is taken

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<sup>3</sup> One type of constraint is of the form that two desirable functionings (eg paid work and looking after young children) are mutually incompatible. Although the individual appears to have a choice, this is treated as a constraint in Chiappero Martinetti's approach.

to be a matter of choice. Thus if any member of the type achieves a particular functioning, it can be taken to be within the capability set of all members of the type.

Roemer has applied this idea in a number of contexts. The first is with respect to paying for health care for smoking-induced lung cancer (Roemer, 1998b). Roemer argues that taxes on smokers (i.e. on tobacco) should reflect the extent to which smoking behaviour is regarded as within individual control, although he recognises that the translation from principle into practice may be far from perfect. In principle, then, the population is divided into types according to factors which influence smoking behaviour but which are beyond individual control: "sex, age, level of education, and perhaps occupation" (p. 241). Within each type, there is a distribution of effort to refrain from smoking, in this example proxied by the lifetime duration and intensity of their smoking habit. An individual is held responsible for his or her position within the distribution of 'effort' for his or her particular type, but not for the average likelihood of smoking or the shape of the effort distribution associated with the type. The proposal is that individuals are taxed according to the additional costs of treating lung cancer which arise because of his or her position in the effort distribution. Roemer does not attempt to quantify this example but he argues that in principle it reflects a fairer taxation system than either the status quo or removing taxes on tobacco altogether.

The second example attempts to answer the question, how should international aid be distributed to equalize opportunities among recipient countries for achieving per capita GDP growth? (Llavador and Roemer 2001). Here types are defined using variables borrowed from another study of economic development, and which include initial income of the country, diversity of ethnic groups and language, rate of assassinations (presumably political assassinations), money supply and 'institutional quality'. The effort each country makes is identified with economic management, as defined by the World Bank. Llavador and Roemer then fit a model of growth rates by type and show that an equal opportunity policy would allocate less to African countries and more to East Asian countries than does current aid policy.

This example will strike many readers as bizarre. Clearly, the actual motivations of donor countries are enormously complex and questions of social justice - whether for

equal opportunity or some alternative scheme - are far from the top priority. Moreover, the idea that a country can be said to make an effort, and that effort is well-captured by a World Bank assessment of 'good' economic management (regardless of the intentions of local political leaders, whether democratically elected or otherwise), involves some controversial metaphysical, economic and normative assumptions. Finally, the model of growth rates implemented by Llavorad and Roemer, albeit based on another more detailed study, is far from comprehensive. For these reasons, this example is best understood as illustrative of Roemer's method, rather than placing too great a weight on the substantive conclusions.

Finally, Roemer et al (2003) use data on pre- and post-tax income distributions in nine European countries and the US to ask whether fiscal regimes are consistent with equality of opportunity. They attempt to partition income differentials into that part which is due to factors beyond the control of the individual and that which is due to effort (the residual). Just two factors are taken to be beyond individual control: parental education (divided into three or four groups), and IQ of the individual (divided into above or below average). As the authors recognise, this categorisation is crude and leads to a greater part of income inequality being attributed to differences in effort than is actually the case.

Haveman and Bershader's approach to measuring poverty, although developed independently, follows the same idea. Haveman and Bershader (1998, 2001) develop a measure of 'self-reliant poverty', identifying those people who are incapable of generating sufficient income to meet their basic needs. They model a family's 'Net Earnings Capacity' (NEC) as the earnings that would be generated if every adult member worked full-time. The NEC is calculated on the basis of a human capital model of earnings potential, adjusted for constraints on working (ill health or disability) and costs of working (primarily child care). Any family whose NEC falls below the official poverty line is deemed unable to be self-reliant, and hence poor in this sense. Families whose NECs are above the poverty line are deemed to be capable of self-reliance; if their actual incomes are below the poverty line, the implication is that this is through choice.

Haveman and Bershader provide a useful starting point, but the range of constraints which they take into account is again limited and there is no recognition of the effect of unobserved constraints. They define groups (Roemer's types) broadly, and hence arrive at a higher estimate for the proportion of the population for whom an income above the poverty line is within their capability set than a more closely defined model would produce.

#### 6.2.2 *A dual approach*

The approach pursued in this chapter addresses some of these difficulties. It has four principal features. First, like Chiappero Martinetti and Roemer, it begins with the assumption that information about the functionings within an individual's capability set is based on the range of functionings that similar people achieve. The counterfactual for any one individual is unobservable (what he or she *could* have been doing if he or she was not engaged as presently). However, if someone similar to person A in all relevant respects is doing F, then F is also within person A's capability set.

Second, the definition of 'similar in all relevant respects' is a vector of those personal and environmental characteristics regarded as beyond individual control, and relevant to the functioning in question. Thus, if age, gender and ethnicity are the only characteristics regarded as beyond an individual's control, the capability set of a white woman aged 34 is given by the range of functionings which white women aged 34 achieve. All functionings achieved by similar individuals are within the capability set of each of those individuals.<sup>4</sup>

Third, the approach recognises that the extent to which particular factors are under an individual's control is a matter of degree, and that an assessment of these factors may require normative judgements to be made. The precise extent to which individuals are able to alter aspects of their circumstances is often unknown. Age, gender, ethnicity and parental background are beyond an individual's control on any account, but the

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<sup>4</sup> If there are other functionings which none of the individuals achieve, but which they could achieve if they so wished, those functionings are within the capability set but will not be identified as such by this

extent to which level of education obtained is within an individual's control is unknown, and possibly unknowable. The extent to which it is *regarded* as within an individual's control will vary according to the theory of human agency and freedom adopted. The assessment of whether a particular functioning is within an individual's capability set in this case necessarily involves normative judgements.

The difficulty of drawing distinctions between characteristics which are the result of choice, constraint and luck has been the subject of lively debate in recent political philosophy (see, for example, Dworkin, 2000, Hansson, 2004, Risse, 2002, Vallentyne, 2002). In general, those sympathetic to the value of effective or positive freedom will tend to regard more factors as beyond individual control, while those closer to the negative freedom end of the spectrum will tend to be more parsimonious.<sup>5</sup> In the limit, a 'positive' conception tends to determinism (in which case capabilities are reduced to functionings), and a 'negative' conception tends to the total absence of constraints (in which case everyone has identical capability sets).

Taken together, these premises indicate that capability as opportunity can best be modelled by examining the range of functionings of similar individuals. The starting point is the assumption that everyone has the particular functioning of interest (for example, adequate consumption) in his or her capability set. Possible constraints on achieving that functioning can then be taken into account. Constraints are characteristics of individuals or features of the environment which are regarded as beyond individual control. Initially, a wide range of characteristics are so regarded; in each successive stage, some characteristics are removed from the description. At each stage, a predicted probability of achieving a particular functioning is calculated for each individual. Individuals who are predicted by the models to have a high probability (relative to the overall mean for the sample) of, for example, adequate

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approach. This is a weakness, but not a problematic one, since for the present analysis the groups of similar individuals are large and the functionings under consideration are common ones.

<sup>5</sup> In principle, someone could espouse an account of freedom as negative freedom, while still acknowledging that many social and economic factors act as constraints on individuals. Hayek might fall into this camp. However in general, negative liberty is associated with a strong account of human agency and recognition of fewer constraints as legitimate grounds for compensation or intervention. See Le Grand (1991) for a discussion and Risse (2002) for an account of the relationship between equality of opportunity and free will.

consumption functioning, are classified as being relatively unconstrained in their consumption functioning.

The fourth feature of the approach is its recognition, and treatment, of the problem of unobserved constraints. It is unsatisfactory to assume that any difference from predicted outcomes is a matter of choice, when any model, however sophisticated, cannot capture the effects of constraints not included in the data, such as an individual's ability to make good decisions, nor can it reflect the impact of bad luck. Accordingly, the first analysis presented in each section below, which starts from the assumption that everyone has the functioning of interest in his or her capability set, is complemented wherever possible by an analysis starting from the opposite assumption, viz, that no-one who fails to achieve the functioning has it within his or her capability set. In the second analysis, individuals who do not achieve the functioning in question are classified according to whether they state they would like to participate in the activity or not. This provides a check on constraints omitted from the first analysis, since those who wish to participate but are not doing so, are presumably constrained in some way.

This second analysis is an incomplete check on the first analysis because individuals who face only unobserved constraints (including bad luck), and who do not wish to participate, will remain incorrectly classified as having the capability in question. This is particularly problematic where adaptive preferences are suspected, for example, where someone who has suffered long-term deprivation reports that they are happy with that situation. This analysis cannot account for adaptive preferences; they are treated more fully in Part II of the thesis.

Those who actually achieve the functioning in question (call it F) by definition have F in their capability set. For those who do not achieve F, the classification produced by the first analysis described above can be cross-tabulated with the classification produced by the second analysis, to produce the summary shown in Table 6.1.

**Table 6.1: Classification of those not achieving functioning F**

Functioning F	Constrained	Unconstrained
Desired	(1) Lack capability (and regretted)	(3) Probably lack capability
	(2) Lack capability (not regretted)	(4) Probably have capability
Not desired		

Group (1) can be reliably classified as lacking the relevant capability: they wish to, but cannot, achieve the functioning in question. Group (2) lack the capability but do not necessarily regret that lack (except perhaps in so far as it restricts their freedom). Group (3) probably face unobserved constraints such as bad luck, and should be added to the 'lack capability' groups. Group (4) can be deemed to have the capability to achieve F, although at present they are not exercising that capability. Classification of group (4) must remain tentative, since their apparent disinclination to participate may be the result of an adaptive preferences and/or they may face hidden constraints.

For the first analysis, a number of conceptual issues have to be resolved in determining the order in which layers of constraints – or, equivalently, descriptors of similar individuals – are removed. The objective is clear: to order the layers, starting with the factors that are clearly a matter of choice for the individual, and ending with factors that are uncontroversially beyond individual control. One difficulty is the fact that the extent to which a particular factor (for example, place of residence) is under an individual's control may depend on who that individual is. The members of a family with school-age children who own a house and live in an area with depressed house prices are more constrained in where they live than a privately-renting recent graduate with no family commitments living in the same area. The difficulty is that the same order of layers must be used for all individuals. Including interactions between layers in the model does not help because it is the order in which variables are removed that is at issue. The somewhat unsatisfactory solution reached here is to

allow the order of layers to be determined by the extent to which a factor is regarded as under individual control for *most* people.

The second issue is the treatment of preferences and beliefs, including cultural values and personal commitments. Are these always to be regarded as under an individual's control? Some long-established habits may be difficult to distinguish from addictions: are these properly thought of as preferences? Is the belief that it is your duty to look after an ailing relative under your control to the same extent as the belief that there are no jobs available in the nearby city? It seems clear that we need to distinguish between more and less superficial preferences and beliefs. Beliefs which are subject to strong cultural norms (like those relating to family responsibilities) should be classified as being less under an individual's control. Similarly, preferences which are deep-rooted (such as an addiction) or which have so shaped an individual's life that it would require major upheaval to change, must be classified as being outside an individual's control to a greater degree than slighter preferences. Implementing this in practice is difficult given the paucity of attitudinal data in the surveys and lack of information about the social groups with which the individual identifies.

A third issue is the time dimension: future and past. With respect to the future, it may be that a factor is under an individual's control in the long term but not in the short. For example, counselling may enhance self-confidence; but in the short-term, a severe lack of confidence in oneself can be a serious impediment to employment. Changes which could only occur in the future need to be given less weight (a form of discounting), so that factors subject only to longer-term change are regarded as less within an individual's control than more immediately remediable circumstances.

The appropriate treatment of the past depends on the question being asked: in particular, whether the exercise is descriptive or normative. If the objective is the essentially descriptive one of indicating whether an individual's current capability set contains a particular functioning, the layers should be ordered according to the degree to which factors are under the control of the individual in the present (in other words they could be changed now or in the future). How an individual came to be in the situation is irrelevant, since everything in the past is literally beyond his or her

control. So for each factor (for example, educational qualifications) the focus should be on current considerations, such as:

- (i) whether the individual is in a position to make a good decision, for example, in possession of relevant information;
- (ii) what options are open to the individual to change the factor in question;
- (iii) the cost of taking each of those options, in financial and other terms.

The purpose of the analysis in this chapter is descriptive. However it is worth noting in passing, that if the objective were to be the normative one of indicating the degree to which individuals should be held responsible for their situation, then choices and constraints in the past would become important.<sup>6</sup> Indeed, in assigning responsibility for the current situation, whether the decision that led to it was made last week or last year is strictly irrelevant. What matters is, firstly, the constraints that operated at the time of the decision, and, secondly, what could now be done to mitigate the situation. It is over this issue that the debate about the deserving and undeserving poor diverges from Sen's capability framework, the former being a normative enterprise and the latter a descriptive one.<sup>7</sup>

#### 6.2.3 *Estimation*

For each functioning (consumption, production, social interaction and political engagement), a fully-specified model is estimated, including as many explanatory variables as are relevant and available in the dataset. The left-hand-side variable is binary and indicates whether the individual has achieved functioning above a given threshold, with thresholds set in the same way as in previous chapters. The probability of achieving the functioning for each individual can be predicted from the estimated coefficients. Individuals who are predicted to have a high probability (relative to the

<sup>6</sup> See Dworkin (2000) and Hild and Voorhoeve (2004) for other discussions of this issue.

<sup>7</sup> In making this distinction, I do not mean to imply that Sen's framework has no normative content. Sen's assertion that functionings-space is the relevant space in which to evaluate equality, and his endorsement of the value of freedom, are both normative judgements. Further decisions have to be made in operationalising the framework (for example, selection of functionings or the degree to which a factor is under an individual's control in the present) which also have normative content. However, the assessment of whether a functioning is within an individual's capability set is essentially a descriptive exercise.

overall mean for the sample) of, for example, adequate consumption functioning, are classified by this analysis as having the functioning of 'adequate consumption' in their capability set.<sup>8</sup>

The classification of predicted probabilities from the full model corresponds to the assumption that all the explanatory variables in the model are factors beyond the individual's control. To weaken this assumption – say, to treat region of residence as a matter of choice rather than constraint – predicted probabilities are re-calculated, this time treating all members of the estimation sample as if they lived in the region of residence associated with the highest probability of achieving the functioning in question. Note that the model itself is not re-estimated; all that is altered is the range of factors which are allowed to determine the predicted probability of achieving the functioning F. The predicted probability calculated from this hypothetical scenario represents the likelihood that the individual would be able to achieve functioning F, were they to exercise their choice to live in the most favourable region.

The procedure has two potential problems with respect to the consistency and efficiency of the estimates, with implications for the interpretation of results: omitted variables (including the effect of bad luck) and endogeneity. These are discussed in Appendix 6.1.

### 6.3 Capability for consumption: income

#### 6.3.1 Methods

Consumption capability depends on the income and other resources available to the individual, the needs which that income has to cover, and the extent of opportunity to spend it. The income available depends primarily on the individual's employment

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<sup>8</sup> There is no uniquely correct threshold for differentiating high from low predicted probability in a logit regression. The higher the predicted probability of functioning, the fewer constraints an individual faces. There is no uniquely correct threshold because the notion of capability is a continuum. Use of the sample average is common (see for example Greene, 2003, p.683-686) and appropriate in this case: the interpretation of 'high probability' is 'predicted to have a *better chance than the average*' of functioning F. An alternative would be to use a threshold of 0.5, with the interpretation that 'high predicted probability' meant *more likely than not* to have functioning F. However, for the functionings in question, this would result in large numbers of individuals being classified as having 'high predicted probability' despite having low probability compared to the sample as whole.

capability (and that of other household members), the earnings they would command, and benefit entitlement in and out of work. Capital may also be important, but is unlikely to be a major factor for those near the consumption capability poverty threshold.

The needs which a given income has to cover vary by composition and size of household, disability status, geographical location (due to variations in the cost of living), and the quality and range of free or subsidised public goods on offer.

The extent of opportunity to spend income is affected by the availability of the goods and services themselves, and the availability of goods and services which are instrumental to successful consumption (for example, transport to get you to the place of sale). As highlighted in Gordon et al's (2000) survey of access to services, availability is determined not only by the existence of the good or service, but also its physical accessibility, the cultural appropriateness of what is on offer, and the willingness of the provider to transact with you.

Modelling all these factors simultaneously, taking account of the extent to which they are under an individual's control, would be too complex. Instead, the analysis below concentrates on the income that could be available to an individual (defined as earnings capability and benefit entitlement for the household), adjusted for variations in need arising from household size and composition.<sup>9</sup> Thus the results are closer to the idea of income capability than of consumption capability. Firstly, Haveman and Bershader's (1998, 2001) method is followed to reach an estimate of the income that would be obtained if every adult in the household worked full-time, adjusted to reflect the costs of going out to work (simplified to consist solely of childcare costs). Secondly, the benefit income each household would be entitled to if no-one was in paid work is calculated. The higher of these two figures is taken to be the household's income capability. Finally, the income capability is equivalised for household size and composition to reach an estimate of consumption capability. All analysis is carried out using data from the British Household Panel Survey (BHPS).

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<sup>9</sup> Variations in need due to disability were explored in detail in Chapter 4.

Some of the variables in this calculation are unambiguously beyond the individual's control in the present and future – wage rates commanded by those with a given level of human capital and the rules governing benefit entitlement, for example. Other variables, such as region of residence and educational qualifications (which affect the wage which can be commanded), and household composition (which affects the costs of going out to work), are arguably within an individual's control to a greater extent. Accordingly, while predicted consumption capability from the full model takes all these factors into account, two other sets of results are also presented, progressively weakening the assumption about factors being beyond an individual's control. For clarity of exposition, the description below follows the procedure for the full model from beginning to end, before turning to the procedure for versions with weaker assumptions.

The most important limitation of the procedure for identifying consumption capability is that it assumes every adult would be able to find, and undertake, full-time employment, should they choose to do so. This is clearly an unrealistic assumption. The factors which determine whether full-time employment, or indeed any employment, is within an individual's capability set are explored in the next section. The results of the present analysis need to be interpreted as consumption capability *conditional on* the capability of full-time employment.

Predicting earnings capability is complicated by the fact that earnings are observed only for those respondents currently in employment, whereas we wish to estimate what each sample member would earn, were he or she to work full-time. Individuals who have selected into the labour force are likely to have greater earnings capability, on average, than those who have not, and hence, the distribution of observed earnings cannot be simply imputed to those not currently in the labour force. To circumvent this difficulty, earnings capability is predicted by means of a Heckman selection model (see Haveman and Bershadker, 2001; Greene, 2003, pp.782-787). Details are given in Appendix 6.1.

These coefficients are then used to predict earnings capability for the whole sample. Thus individuals with the same characteristics are predicted to have the same earnings capability, regardless of whether they have selected into the labour force or not. The

earnings capability of each member of the household is summed to produce an estimate of household earnings capability. Finally, for households containing dependent children, childcare costs are subtracted from estimated earnings capability. It is assumed that if every adult in the household works full-time, paid childcare will be required for children under 5 years of age, and part-time paid care for children aged 5 to 15. Figures for childcare costs, by age group, were taken from a study of parents' demand for childcare (Woodland et al, 2002) and are also summarised in Appendix 6.2. In principle other costs of working could also be included at this stage.

In-work income is therefore assumed to equal full-time net earnings of each adult member of the household minus childcare costs. For simplicity, potential in-work benefit income is ignored. The main such benefit at the time of the survey was Working Families Tax Credit, which had limited coverage compared to current in-work credits. Other sources of income such as investments or maintenance transfers are also omitted.

Potential out-of-work income is assumed to consist of state benefit entitlement, if all adult members of the household are non-employed. Again, short of constructing a microsimulation model of the tax-benefit system, some simplifying assumptions need to be made. In this case, the benefits considered are Income Support (IS - including premiums for children and disability), Housing Benefit (HB - for tenants, assumed to pay 100 per cent of housing costs), and Disability Living Allowance (DLA). IS and HB are the main social assistance benefits, while DLA makes an important contribution to the additional costs of living faced by some disabled people.

The income capability of the household is then taken to be whichever is the higher of their in-work earnings capability or their out-of-work benefit entitlement. While it must be acknowledged that there are sources of income other than those included in these estimates, and that therefore the actual income capability of households is likely to be higher than suggested here, the main purpose of this analysis is a comparison between sub-groups in the population. It is hoped that the under-estimation of income capability due to omission of income sources is similar across sub-groups.

The household income capability is equivalised for differences in costs of living due to differences in household composition using the McClement's scale to arrive at an individual income capability. Other equivalisation factors could in principle be applied at this stage (for example, to account for differences in need due to disability or regional cost of living differences), but since equivalisation was considered in detail in Chapter 4, the results are presented here without additional equivalisation in order to maintain the focus on the calculation of income capability.

Finally, the income capabilities of respondents in the four gender and disability status sub-groups are compared to two poverty lines: 60 per cent of median income capability, and 60 per cent of median real income. The former has the advantage of using a consistent measure of income and poverty line, while the latter is useful for comparison with analyses in other chapters. More comprehensive comparisons, using a range of poverty lines, is given in Chapter 7.

This completes the description of the procedure for calculating and processing results from the full model of consumption capability, which incorporates the assumption that all variables in the model represent factors beyond individual control. As mentioned above, however, this assumption may be too strong for those who are further towards the 'free will' end of the 'free will - determinism' spectrum. Accordingly, the procedure is repeated twice, each time deleting variables from the list of those regarded as beyond individual control.

Version 1: gender, disability status, age,  
health status, educational qualifications, family composition,  
housing tenure, region of residence.

Version 2: gender, disability status, age,  
health status, educational qualifications, family composition.

Version 3: gender, disability status, age.

Thus by version 3, only characteristics which are unambiguously beyond individual control remain. Note that the underlying regression coefficients remain the same throughout the versions (as estimated from the full model, version 1); what changes is

the list of characteristics on which earnings capability is calculated, the nature of the costs which are subtracted from earnings capability to reach net earnings capability (omitting childcare if family composition is treated as a matter of choice), and benefit entitlement. Where a characteristic (for example, region) is assumed to be a matter of choice, each individual is attributed the most favourable value (for example, South East) for the purposes of calculating their income capability.

### 6.3.2 *Results*

The table below (Table 6.2) gives poverty rates based on observed income for disabled and non-disabled men and women, to provide the context for the results on income capability shown later. More detailed analysis of income poverty was reported in Chapter 3; this table serves as a reminder that poverty rates are considerably higher among both disabled men and women, than among the non-disabled population.

**Table 6.2: Poverty rates based on observed incomes,  
by sex and disability status**

*Per cent below 60 per cent median net equivalised BHC household income*

	Disabled	Non-disabled
Men	28	14
Women	31	18
All	30	16

Source: author's calculations using BHPS Wave 6

Table 6.3 gives the estimates of net earnings capability (in pounds per week in 1996/7 prices), derived as described in the previous section, for individuals and then summed across individuals to get a household figure. It is important to bear in mind that the earnings capabilities shown are based on the assumption that all adults can secure full-time employment – an unrealistic assumption, especially for disabled people. Nevertheless it is interesting to see that on this basis, the individual earnings capabilities of disabled people slightly exceed those of the non-disabled, despite the fact that the actual earnings of disabled people in work and disabled people's incomes

overall are lower than the average for non-disabled people. This suggests two things: (i) that a substantial part of the explanation of the low incomes of disabled people lies in lack of access to employment, rather than in low earnings potential; (ii) that disabled people out of work have a higher earnings capacity than non-disabled people out of work, on average. The latter observation is consistent both with the existence of discriminatory barriers to employment for disabled people (so that even those with relevant skills are not employed) and with the idea that disabled people may have a higher reservation wage, since their out of work incomes will be generally be higher than for non-disabled people.

**Table 6.3: Individual and household net earnings capability, by disability status and level of constraints taken into account**  
*£ per week*

Level of constraints taken into account	Individual			Household		
	Disabled	Non-disabled	Disabled as % of non-disabled	Disabled	Non-disabled	Disabled as % of non-disabled
Version 1: all constraints included	231	220	105	465	480	97
Version 2	284	268	106	563	588	96
Version 3: minimal constraints included	431	363	119	864	827	104

Predicted net earnings capability (also net of childcare costs in household versions 1 & 2), if all adults in full-time work. Not equivalised for household size.

Source: author's calculations using BHPS Wave 6

For both disabled and non-disabled, earnings capabilities rise at each successive version, both at an individual and at a household level. This is as one would expect: as fewer characteristics are regarded as constraints (i.e. as more aspects of an individual's situation are treated as subject to change at will), estimated earnings capabilities rise. By version 3, all individuals are assumed to be able to secure the best region of residence, health status, educational qualifications and family composition to maximise their earnings; the only remaining constraints are age, gender and disability status itself.

Benefit eligibility depends on fewer characteristics than does earnings potential; in fact of those considered, only family composition and disability status and severity are important. Consequently the household benefit capability varies only between

versions 1 and 2 (which take the number of children in a household to be beyond individual control) and version 3 (which does not make that assumption). All versions take disability status to be beyond individual control.

Household benefit capability is slightly higher among disabled than among non-disabled people, due to the availability of disability-specific benefits (Table 6.4). On average for version 1, earnings capability is higher than benefit capability, but for 7 per cent of non-disabled people and 13 per cent of disabled people, the reverse is true. For version 3, benefit capability is higher than earnings capability for 5 per cent of non-disabled people and for 8 per cent of disabled people. For individuals in these households, their income capability is based on what their benefit entitlement would be if all household members were out of work, while for the majority of individuals, income capability is based on combined household earnings were every adult in the household to be in full-time work.

**Table 6.4: Household benefit capability, by disability status and version**

	<i>£ per week</i>		
	Disabled	Non-disabled	Disabled as % of non-disabled
Versions 1 & 2: all constraints included	168	138	122
Version 3	141	108	131

Versions 1 and 2 include payments for children, Version 3 does not. Not equivalised.

Source: author's calculations using BHPS Wave 6

The individual income capabilities shown in Table 6.5 are equivalised for differences in household composition. They are not equivalised for the extra costs of disability – that issue is explored in depth in chapter 4. The figures indicate that men have higher income capability than women, but the differences between disabled and non-disabled people are negligible. The higher benefit entitlement appears to compensate in those cases where household earnings capability is lower. All groups have significantly higher income capability in version 3 than in earlier versions. In other words, if one assumes that individuals can overcome many of the apparent constraints operating on them, they have the achievement of fairly high incomes within their capability set.

**Table 6.5: Net individual income capability, by sex, disability status and version***£ per week*

	Disabled			Non-disabled			<i>Disabled as % of non-disabled</i>
	Men	Women	All	Men	Women	All	
Version 1: all constraints included	377	365	370	382	347	365	101
Version 2	456	449	452	463	427	445	102
Version 3: minimal constraints included	776	752	763	703	689	696	110

Predicted net income capability if all adults in full-time work. Equivalised for household size.

Source: author's calculations using BHPS Wave 6

Estimated income capabilities are expressed relative to two poverty lines in Table 6.6. The poverty line in the top panel is 60 per cent of median income capability for the whole sample, recomputed for each version. Overall for version 1, 11 per cent of disabled people and 12 per cent of non-disabled people are poor according to this measure, with women being at greater risk than men. These rates are lower for all groups than the poverty rates reported in Table 6.2 based on observed incomes. A large part of the difference is explained by the fact that the income capabilities here assume everyone can access full-time paid work, whereas the observed incomes reflect the actual rates of non-employment, which particularly affects women and disabled people. (Employment capability is explored in the next section.) In addition, the distribution of income capabilities differs from the distribution of observed incomes.

By version 3, income capability poverty rates for both disabled and non-disabled people are significantly lower than for version 1, as expected. The difference between disabled and non-disabled people's rates has all but disappeared; again, this is not surprising since the number of characteristics which are allowed to count in the calculation of income capability has been reduced to a minimum by version 3.

**Table 6.6: Income capability poverty**  
*Per cent under 60 per cent median income*

	Disabled			Non-disabled		
	Men	Women	All	Men	Women	All
Poverty line defined using income capability						
Version 1	9.2	12.8	11.1	7.5	16.5	12.0
Version 2	8.3	14.7	11.7	6.6	14.5	10.6
Version 3	0.6	2.4	1.5	2.9	2.9	2.9
Poverty line defined using observed income						
Version 1	1.8	5.6	3.8	2.2	7.2	4.7
Version 2	0.6	1.6	1.1	0.7	3.1	1.9
Version 3	0.0	0.0	0.0	0.0	0.0	0.0

Equivalised for household size  
 Source: author's calculations using BHPS Wave 6

The alternative poverty line used for the bottom panel of Table 6.6 is 60 per cent of median observed income. The rationale for using this line in an assessment of income capability poverty is that one may be interested in whether individuals are able to bring themselves above a given level of income (defined, perhaps, as a minimum acceptable standard of living in today's society). However, caution must be exercised in interpreting these results because the level of estimated income capability (as opposed to its distribution) is affected by the range of sources of income which are included, and as explained above, a number of simplifying assumptions have been made. The results broadly follow the same pattern as the results based on an income capability poverty line, although the rates throughout are substantially lower. By version 3, no-one is deemed to lack the capability to secure an income above the observed income poverty line.

Table 6.7 cross-tabulates income capability poverty (based on the income capability poverty line) and observed income poverty, for disabled and non-disabled people, and compares the results for version 1 and version 3. In version 1, over two-thirds of disabled people (68 per cent) are classified as non-poor by both measures. A further 6.5 per cent are poor according to both measures (observed income below the poverty line and estimated to lack the capability to increase income above the poverty line). Among non-disabled people the corresponding figures are 81 per cent and 5 per cent.

**Table 6.7: Comparison of income capability poverty and observed income poverty**

**Version 1**

<b>Observed income</b>	<i>Disabled (= 100%)</i>		<i>Non-disabled (= 100%)</i>	
	<b>Income capability</b>	<b>Poor</b>	<b>Income capability</b>	<b>Poor</b>
Poor		6.5	22.2	5.0
Non-poor		3.1	68.2	4.3
				10.1
				80.6

**Version 3**

<b>Observed income</b>	<i>Disabled (= 100%)</i>		<i>Non-disabled (= 100%)</i>	
	<b>Income capability</b>	<b>Poor</b>	<b>Income capability</b>	<b>Poor</b>
Poor		0.9	27.8	1.7
Non-poor		0.6	70.7	1.1
				13.5
				83.7

60% median income poverty line used in both cases.

Source: author's calculations using BHPS

The cases classified differently by the two measures are also of interest. Those whose observed incomes are above the poverty line but who are estimated to lack the capability to be non-poor (bottom left corner of each panel) are either receiving income from sources other than those included in the calculation of income capability (for example, investment income, maintenance payments or other state benefits), or have the good fortune to be earning above the level expected for an individual with their characteristics. A slightly higher proportion of non-disabled than disabled people fall into this category.

Finally, 22 per cent disabled people and 10 per cent non-disabled people are poor on the basis of observed income, but non-poor in terms of income capability. As mentioned above, this is mainly explained by the fact that full-time paid work is not available to all those who want it (contrary to the assumption on which income capability is calculated here), but could also reflect individuals choosing not to earn the maximum they could earn.

As described in section 6.2.2 above, the classification of this group can be cross-checked with subjective indicators of satisfaction with income, to attempt to detect

unobserved constraints. Among those who are income poor but are classified as having the capability to avoid income poverty (i.e. 22 per cent of disabled people in version 1, and 10 per cent of non-disabled people), there is a presumption that those who are dissatisfied with their income are facing unobserved constraints. One indicator available in BHPS is the response to the income question in a block which begins:

*Here are some questions about how you feel about your life. Please tick the number which you feel best describes how dissatisfied or satisfied you are with the following aspects of your current situation.*

One of the following prompts is 'Income of your household'. Respondents are invited to indicate their satisfaction on a scale from 1 (completely dissatisfied) to 7 (completely satisfied). A threshold of 3 or below can be used to indicate dissatisfaction. On that basis, of the income poor but income capability non-poor group (in Version 1), 48 per cent of non-disabled and 61 per cent of disabled people are dissatisfied with their income, suggesting that for these people there are hidden constraints on achieving sufficient income.

## **6.4 Capability for productive activity: employment**

### **6.4.1 Methods**

Capability for full-time employment is explored in this section; corresponding tables for capability for *any* employment are given in Appendix 6.3. Assessing the extent of capability for full-time employment among different sub-groups is useful for connecting with estimates of consumption capability in the previous section, since consumption capability was calculated on the (unrealistic) assumption that all household members could work full-time. 'Any employment' is more general and reflects one of the components of functioning on the productive activity dimension defined in Chapter 5. Of course full-time and part-time paid employment do not exhaust the possibilities of productive activity, but they are important components and exploring capability for other forms of productive activity is beyond the scope of this chapter.

The procedure followed is similar to the procedure above for income capability, although simplified by the fact that the dependent variable is binary (in or out of full-time employment) and is directly observed for all members of the sample. The binary dependent variable means that logit regression is appropriate; this in turn requires that a threshold be set to differentiate high and low predicted probability of employment, to compare with actual employment status. As discussed in section 6.2.3 above, the selection of a threshold is inevitably somewhat arbitrary; in line with common practice, the mean value for the relevant sub-sample is used.

#### 6.4.2 *Capability for full-time employment: results*

Table 6.8 shows actual proportions of different sub-groups in the population who are not in full-time employment. Full-time employment is defined as 35 hours per week or more. The figures are a reminder of the very large gap in full-time employment rates between disabled and non-disabled people. It is likely that this gap reflects more limited opportunities for employment among disabled people, but these statistics alone do not lead directly to that conclusion: part of the gap could be explained by different preferences for employment among disabled and non-disabled people.

**Table 6.8: Actual proportion not in full-time employment,  
by sex and disability status**  
*Per cent of working age population not in full-time paid employment*

	Disabled	Non-disabled
Men	72	37
Women	83	64
All	78	51

Source: author's calculations using BHPS Wave 6

The following analysis attempts to unpick lack of full-time employment functioning into that part which results from limited capability and that part which is the result of genuine choice. This is a challenging task, and one which requires normative judgements to be made about the extent to which various factors are under an individual's control.

Table 6.9 summarises the results from logit regressions on full-time employment probability for sex and disability sub-groups in the population. (Further details are given in Appendix 6.1). The regression estimates are used to predict probability of full-time employment for each individual in the sample. This probability is then compared to the mean probability for the relevant sub-group and categorised as 'High' if above the mean, and 'Low' otherwise. The categories of predicted full-time employment probability are then compared to the individual's actual full-time employment status, thereby generating the four central columns of the table.

As before, all results are based on the same underlying regressions (one for men, one for women). The versions differ by the range of characteristics which are treated as constraints.<sup>10</sup>

- Version 1:      age, gender, ethnicity, parental social class, disability status  
                     physical and mental health status  
                     educational qualifications, previous work experience  
                     marital status, number and ages of children, caring  
                     responsibilities, tenure and region of residence
- Version 2:      age, gender, ethnicity, parental social class, disability status  
                     physical and mental health status  
                     educational qualifications, previous work experience
- Version 3:      age, gender, ethnicity, parental social class, disability status  
                     physical and mental health status
- Version 4:      age, gender, ethnicity, parental social class, disability status

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<sup>10</sup> The influence of children on employment probability is treated as relatively easily within individual control, since childcare can in principle be arranged. It was treated as relatively difficult to change with respect to income capability because although parents may choose whether to look after their children themselves or to arrange childcare, either route has an impact on disposable income.

**Table 6.9: Full-time employment capabilities,  
by gender, disability status and version**

Average predicted probability of having full-time employment capability

	Disabled		Non-disabled	
	Men	Women	Men	Women
Version 1: all constraints included	27	19	65	36
Version 2	38	30	71	53
Version 3	62	69	88	85
Version 4: minimal constraints included	63	69	88	85

Source: authors calculations using BHPS Wave 6

The average capabilities for full-time employment of men and women in version 1, with all constraints included, are similar to the proportions of men and women actually in full-time employment. This is necessarily so, given that version 1 is based directly on a regression of characteristics (constraints) on whether or not the individual is in full-time employment. The fact that the average predicted probability is close to the actual probability is just a measure of the efficiency of the regression.

For versions 2 to 4, higher proportions of men and women are predicted to have full-time employment within their capability set, because fewer of their actual characteristics and circumstances are treated as binding constraints. It is interesting to note that whether or not family responsibilities are regarded as constraints makes a very large difference to estimated full-time employment capability (the main difference between versions 1 and 2), especially for women. The inclusion or exclusion of mental and physical health (the difference between versions 3 and 4) makes little difference, possibly because disability status is already taken into account.

Table 6.10 categorises predicted full-time employment capabilities into high and low, and compares these to actual status.

**Table 6.10: Categories of predicted and actual full-time employment status,  
by version, gender and disability**

*For definitions of categories and versions, see text*

Disabled men		Row percentages			
<i>Predicted probability of FT employment:</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	
Actual FT employment status:	No	No	Yes	Yes	
Version 1 (all constraints included)	3	70	7	18	100
Version 2	12	62	14	12	100
Version 3	34	37	25	3	100
Version 4 (minimal constraints)	35	38	25	3	100

Non-disabled men		Row percentages			
<i>Predicted probability of FT employment:</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	
Actual FT employment status:	No	No	Yes	Yes	
Version 1 (all constraints included)	17	19	52	12	100
2	20	15	56	8	100
3	34	3	61	1	100
Version 4 (minimal constraints)	34	3	62	1	100

Disabled women		Row percentages			
<i>Predicted probability of FT employment:</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	
Actual FT employment status:	No	No	Yes	Yes	
Version 1 (all constraints included)	9	72	11	8	100
2	23	60	14	4	100
3	74	8	17	0	100
Version 4 (minimal constraints)	75	8	17	0	100

Non-disabled women		Row percentages			
<i>Predicted probability of FT employment:</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	
Actual FT employment status:	No	No	Yes	Yes	
Version 1 (all constraints included)	18	46	26	10	100
2	46	19	32	3	100
3	65	0	35	0	100
Version 4 (minimal constraints)	65	0	35	0	100

Rows may not sum to 100 due to rounding  
Source: author's calculations using BHPS Wave 6

Taking the results for disabled men as an example, the first row of the table indicates that if all possible constraints are taken into account, 3 per cent of disabled men are not in full-time work despite having a high predicted probability of full-time employment. They might be considered to have full-time employment capability, but be choosing not to exercise it. A further 70 per cent of disabled men are not in full-time work, and, with a low predicted full-time employment probability, are deemed to lack full-time employment capability. A relatively small proportion (18 per cent) are predicted to have low full-time employment probability but are nevertheless working full-time. Finally, 7 per cent are categorised as having a high predicted probability of full-time employment and, in accordance with prediction, are in full-time work.

These proportions change as more factors are taken to be under individual control, rather than treated as constraints on capability. For example, the proportion categorised as having full-time employment capability but choosing not to exercise it, rises from 3 to 35 per cent. In other words, by version 4, nearly half of those not working full-time are deemed to have the capability to do so.

Similar patterns are observed for non-disabled men, although the proportion who are not in work is much smaller. Of those not in full-time work (36 per cent of the total), 47 per cent are initially categorised as having full-time employment capability. This proportion rises to nearly 100 per cent by version 4.

One of the drawbacks of this approach, as noted above, is that lack of functioning due to *unobserved* constraints is attributed to choice. A cross-check on the classification reached on the basis of predicted probabilities of full-time employment is provided by examining respondents' stated preferences for full-time employment. Someone who states that he or she would like to work for 35 hours or more a week, who is predicted to have high full-time employment probability, but who is nevertheless not working full time, is likely to be facing unobserved constraints.<sup>11</sup> On the other hand, care needs to be taken in interpreting stated preferences for employment, since preferences may be conditioned by expectations and circumstances. For example, if a respondent says

she does not want work full-time because of her caring responsibilities, should this be treated as a preference or a constraint? For this analysis, stated preferences are taken at face value; adaptive preferences are explored in more depth in Chapter 8. Table 6.11 cross-tabulates the categories based on predicted probabilities for version 1 with stated preferences for full-time work, for all those not currently in full-time employment.

**Table 6.11: Comparison of predicted full-time employment capability (version 1) with stated preferences**

*Men and women not in full-time employment*

Disabled men		Cell percentages	
		Unconstrained	Constrained
Does not want FT work		0	13
Does want FT work		4	83

Non-disabled men		Cell percentages	
		Unconstrained	Constrained
Does not want FT work		1	5
Does want FT work		46	48

Disabled women		Cell percentages	
		Unconstrained	Constrained
Does not want FT work		1	18
Does want FT work		10	71

Non-disabled women		Cell percentages	
		Unconstrained	Constrained
Does not want FT work		1	10
Does want FT work		27	62

Source: author's calculations using BHPS Wave 6

The group who may be facing unobserved constraints (including bad luck) are shown in the bottom left-hand corner of each panel – 4 per cent of disabled men not in full-time work, for example. This group have high predicted probability of full-time employment and state that they want it, but are nevertheless not working full-time. This group makes up a higher proportion of non-disabled people not in full-time work

<sup>11</sup> An alternative explanation is that they are in undeclared employment. Unfortunately, by definition, this cannot be identified using survey data.

than the proportion of disabled people, although the former has a smaller base. The difference suggests that the models reflect the constraints preventing disabled people working full-time (for example, ill health) more accurately than the constraints on non-disabled people (for example, 'random' unemployment).

A large majority (83 per cent) of disabled men not in work are predicted to face significant constraints by the first approach and state that they would like full-time work: their lack of full-time employment capability is unambiguous. A further 13 per cent also lack full-time employment capability, although it is not a lack that they at present regret. This is an important group for capability analysis, and one which would be missed by traditional measures of unemployment.

Using version 1 of the models, very small proportions of each gender and disability status sub-group are found to have full-time employment capability but be choosing not to exercise it (top left corner). Equivalent tables using version 4 of the models (not shown) find between 7 and 17 per cent of each sub-group in this category.

These results suggest that among those who are not in full-time work, the proportions who lack full-time employment capability are similar for disabled and non-disabled people. However, since a higher proportion of disabled people are not in full-time work (see Table 6.8), overall the proportion of disabled people who lack full-time employment capability is higher: 72 per cent for men and 82 per cent for women, compared to 37 per cent for non-disabled men and 63 per cent for non-disabled women.

## **6.5 Capability for social interaction: leisure**

Various indicators of social interaction were explored in the previous chapter. Here the focus is on just one - the frequency of leisure activities. Respondents were asked how often they engaged in the following activities:

- walk, swim or play sport
- watch live sport
- go to the cinema

- go to the theatre or a concert
- eat a meal out
- go for a drink
- visit or are visited by friends
- work in the garden
- do DIY or car maintenance
- go to an evening class
- attend a local group.

The response, 'at least once a week' was coded as 4, 'at least once per month' as 1, and 'several times a year' as 0.5, and these were then summed across activities, to give an approximate index of the frequency of all leisure activities per month for each respondent. The index ranged from 0 to 35 with a median value of 11.5. The threshold for adequate functioning was set as 60 per cent of the median (i.e. 6.9), as described in the previous chapter. As a reminder, Table 6.12 shows the proportions of disabled and non-disabled people who fell under this threshold at wave 6.

**Table 6.12: Participation in leisure activities**  
*Percentage falling below 60 per cent of median activity*

	Disabled	Non-disabled
Men	31	19
Women	38	22
All	35	20

Source: author's calculation using BHPS wave 6

Of course, many of these individuals may be choosing not to engage in leisure activities of the kinds listed. The first approach to identifying those that do have the capability for leisure is to estimate the probability of engaging in leisure activities, given the constraints which different people face. The constraints considered are as follows:

Version 1: age, gender, disability status  
 health, children, marital status, caring responsibilities,  
 educational qualifications  
 household income, hours of work, access to a car

Version 2: age, gender, disability status  
health, children, marital status, caring responsibilities,  
educational qualifications

Version 3: age, gender, disability status

Being employed is expected to be positively correlated with leisure activity, but long hours of work may reduce the opportunity for leisure, hence hours of work are entered as a grouped variable rather than a linear term (see Appendix 6.1 for details of regressions). Educational qualifications are included as a proxy for socio-economic classification. People from lower socio-economic groups have been found to be less likely to participate in leisure activities (Fox and Richards, 2004).

As was the case for consumption and production capability, all versions are based on the same underlying regression, but differ with respect to which variables are set to optimal values for the purpose of predicted probabilities of participation. The predicted probability of participation in leisure activities rises with each successive version, as expected, with a particularly marked change between versions 2 and 3. This indicates that whether health, children, marital status, caring responsibilities and educational qualifications are regarded as within an individual's control or not significantly influences the assessment of leisure capability.

The predictions of leisure activity from logit regressions, categorised into below-average predicted probability (Low) and above-average predicted probability (High) are shown in Table 6.13, broken down by actual participation in leisure (above threshold = yes, below threshold = no).

In version 1, when all characteristics are treated as constraints, 22 per cent of disabled people and 16 per cent of non-disabled people are found to have the capability for leisure activity but not to be exercising it. By version 3, these percentages have risen to 35 per cent and 20 per cent respectively.

**Table 6.13: Categories of predicted and actual leisure activity status, by version**  
*For definitions of categories and versions, see text*

Disabled people		Row percentages		
<i>Predicted leisure probability</i>	<i>Actual leisure participation</i>	<i>High</i>	<i>Low</i>	<i>High</i>
		No	No	Yes
Version 1 (all constraints included)	22	13	43	22
Version 2	24	11	47	17
Version 3 (minimal constraints)	35	0	65	0
				100

Non-disabled people		Row percentages		
<i>Predicted leisure probability</i>	<i>Actual leisure participation</i>	<i>High</i>	<i>Low</i>	<i>High</i>
		No	No	Yes
Version 1 (all constraints included)	16	4	68	12
Version 2	18	2	75	5
Version 3 (minimal constraints)	20	0	80	0
				100

Source: author's calculations using BHPS wave 6

Given that there are potentially rather a large number of unobserved constraints (availability and accessibility of facilities, for example), a comparison with an approach based on identifying preferences could be informative. In the same block of questions as the question on income satisfaction described in section 6.3.2 above, there are questions on satisfaction with, 'The amount of leisure time you have' and, 'Use of your leisure time'. Respondents are invited to indicate their satisfaction on a scale from 1 (completely dissatisfied) to 7 (completely satisfied). Using a threshold of 3 or below on *either* variable to indicate dissatisfaction, Table 6.14 cross-tabulates dissatisfaction with leisure with the categories produced by version 1 of the previous analysis, for those individuals whose observed leisure activities is below the leisure participation threshold.

Among disabled people, 19 per cent are dissatisfied with their leisure activity in some respect and are predicted to face significant constraints in engaging in leisure. Fewer non-disabled people (10 per cent) fall into this group.

A further 30 per cent of disabled people and 33 per cent of non-disabled people are dissatisfied with their leisure, although the model does not identify significant constraints. These individuals may face unobserved constraints.

**Table 6.14: Comparison of predicted leisure capability (version 1)  
with stated preferences**

*Men and women below leisure functioning threshold*

<b>Disabled</b>		<i>Cell percentages</i>	
		Leisure capability	
		Unconstrained	Constrained
Satisfied with leisure		30	21
Dissatisfied with leisure		30	19

<b>Non-disabled</b>		<i>Cell percentages</i>	
		Leisure capability	
		Unconstrained	Constrained
Satisfied with leisure		44	13
Dissatisfied with leisure		33	10

Source: author's calculations using BHPS wave 6

Unlike the analysis for income and employment capability, fairly high proportions of both disabled and non-disabled people are found to have leisure capability but be choosing not to exercise it (top left corner of each panel). This is not unreasonable: not everyone wishes to spend their spare time engaged in the activities listed at the beginning of this section. It is therefore particularly important to evaluate leisure, considered to be part of the broader dimension of social interaction, in terms of whether it is within an individual's capability set, rather than as a functioning. Simply asking individuals whether they would like to participate in leisure activities is not sufficient; that would overlook those who do not wish to participate but would be constrained if they did choose to do so (21 per cent of the disabled people and 13 per cent of the non-disabled people currently not participating in leisure).

## 6.6 Capability for political engagement

There are a wide range of forms of political engagement: participation in national or local party politics, being active in a national, local, workplace or single-issue campaigning organisation, attending demonstrations or engaging in direct action, or simply making use of democratic rights to vote and address your concerns to elected representatives. Data on some of these aspects of participation are available in BHPS,

and the analysis in this section makes use of a composite measure, coded as 1 if the respondent *either* voted in the 1997 General Election *or* is active in a political party, trade union, environmental group, parents association or a tenants association, and coded 0 otherwise.<sup>12</sup> The analysis is restricted to those aged 18 or above, since 18 is the minimum age to be eligible to vote in a general election. Table 6.15 shows the proportions of the sample who are observed not to be politically engaged according to this measure. Around 1 in 5 are not politically engaged, and there is little variation by either gender or disability status.

**Table 6.15: Political engagement**  
*Percentage neither voting nor active in campaigning organisation*

	Disabled	Non-disabled
Men	20	23
Women	22	21
All	21	22

Source: author's calculation using BHPS wave 7

A range of factors are hypothesised to act as constraints on political engagement<sup>13</sup>:

- Version 1:      age, gender, ethnicity, disability status  
                          educational qualifications, health  
                          belief in political system
- Version 2:      age, gender, ethnicity, disability status  
                          educational qualifications, health
- Version 3:      age, gender, ethnicity, disability status

An indicator of 'belief in the political system' (or, conversely, of a sense of alienation) on a scale from 3 to 18 is constructed based on three questions about political efficacy: 'the government reflects the will of the people', 'ordinary people can't affect government decisions', and 'the government puts the nation before its party'. Each of

<sup>12</sup> These variables are available at wave 7. The responses at wave 7 are matched to individuals at wave 6, to facilitate analysis of other characteristics.

<sup>13</sup> See Heath (2004) for a discussion of some of the relevant factors.

these questions is assessed on a scale of 1 (strongly agree) to 5 (strongly disagree) plus 'can't choose'. For the purposes of this index, 'can't choose' is taken to indicate lack of interest and is coded as 6. This index is then split into four categories, representing approximate quartile groups of the distribution.

The predictions of political engagement from logit regressions, categorised into below average predicted probability (Low) and above average predicted probability (High) are shown in Table 6.16. Details are given in Appendix 6.1.

**Table 6.16: Categories of predicted and actual political engagement, by version**  
*For definitions of categories and versions, see text*

<b>Disabled people</b>					<i>Row percentages</i>	
<i>Predicted probability of political engagement</i>		<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	
<i>Actual political engagement</i>		No	No	Yes	Yes	All
Version 1 (all constraints included)		10	10	49	31	100
Version 2		11	9	51	29	100
Version 3 (minimal constraints)		16	4	73	7	100

<b>Non-disabled people</b>					<i>Row percentages</i>	
<i>Predicted probability of political engagement</i>		<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	
<i>Actual political engagement</i>		No	No	Yes	Yes	All
Version 1 (all constraints included)		12	8	61	19	100
Version 2		12	7	63	18	100
Version 3 (minimal constraints)		14	5	69	12	100

Source: author's calculations using BHPS wave 6 (and 7)

In version 1, 10 per cent of disabled people and 12 per cent of non-disabled people appear to have the capability for political engagement but are not exercising it – in other words, around half of those who are politically unengaged. However by version 3, these percentages rise to 16 and 14 per cent respectively – over two-thirds of the relevant sub-groups.

For the sake of completeness, these results can be cross-tabulated with a subjective indicator of interest in politics, to ascertain whether some of those who are not politically engaged and are classified as 'unconstrained', nevertheless evince a high

motivation to be engaged (Table 6.17). A four-point scale representing the level of interest in politics can be constructed by combining whether the individual supports, or feels closer to, a particular party and his or her stated level of interest in politics in general. This is then divided into two categories and compared with the results from version 1 of the first analysis.

**Table 6.17: Comparison of predicted political engagement capability (version 1) with stated interest in politics**

*Men and women who are not engaged in political activity*

Disabled		Cell percentages	
		Unconstrained	Constrained
No/low interest in politics	37	42	
Some/high interest	12	8	
Non-disabled		Cell percentages	
		Unconstrained	Constrained
No/low interest in politics	52	35	
Some/high interest	9	4	

Source: author's calculations using BHPS wave 6 (and 7)

Relatively small proportions of politically inactive disabled and non-disabled people (8 and 4 per cent respectively) express some or a high degree of interest in politics and are constrained from pursuing that interest. We can be confident these groups lack political engagement capability.

Small numbers may face unobserved constraints on participation ('Some/high interest' but 'Unconstrained'): 12 per cent of politically inactive disabled people and 9 per cent of non-disabled. An alternative interpretation is that neither voting nor active in a campaigning organisation reflect their particular interests.

The majority of politically inactive disabled and non-disabled people claim to have little interest in participating, but of these, around half would be constrained from participating if they chose to do so. Again, this highlights the importance of analysis in terms of capability rather than functioning.

## 6.7 Conclusion

This chapter has explored one approach to operationalising the idea of capability as opportunity. The introduction argued that at least some versions of liberal contractarianism require only that some specific functionings are within all individuals' capability sets, in contrast to the stronger position that the goal is for all capability sets to be equal. Adopting the former interpretation allows some progress to be made in identifying capabilities, while the latter is beset with philosophical and methodological difficulties.

To recap, the approach pursued here starts from the assumption that if someone similar to person A in all relevant respects is doing functioning F, then F is also within A's capability set. 'Similar in relevant respects' is determined by a vector of characteristics or constraints which are beyond the individual's control. The composition of this vector requires normative decisions about the existence and extent of free-will enjoyed by individuals. Moreover, it assigns a functioning to an individual's capability set probabilistically. In this way, whether a particular functioning is within an individual's capability set is, strictly speaking, a matter of degree: they would face greater or lesser obstacles in achieving the functioning in question.

Because it is often the case that not all 'relevant respects' can be identified or observed, the first analysis is complemented by seeking to identify the preferences of individuals. This helps to identify cases in which unobserved constraints are likely to be operating. The combination of approaches takes us further than either can alone: relying on the identification of constraints alone risks over-estimating capability by assuming away unobserved constraints; relying on subjective reports alone cannot distinguish lack of capability among those who do not wish to participate at present, and runs the risk of treating those whose preferences have been conditioned by long-term disadvantage as on a par with those whose preferences are more demanding.

The extent to which the implementation of this dual approach is satisfactory varies by the capability in question. For consumption capability, the analysis focused on the capability to achieve an income above the poverty line, either through out of work

benefits or through all adults in the household working full-time. On this basis, and treating the maximum number of characteristics as constraints, 77 per cent of disabled adults observed to be poor had the capability to be non-poor, as did 67 per cent of non-disabled adults. However, this assumes that all adults have the capability to work full-time, i.e. both the personal capacity and the substantive opportunity to do so. The second capability investigated was therefore employment capability. This analysis found that - using version 1 - small proportions of disabled men and women out of work had employment capability (4 and 5 per cent respectively), compared to around 1 in 3 of non-disabled men out of work (29 and 33 per cent respectively). .

Assessment of social and political capabilities were somewhat less satisfactory, because it was more difficult to identify the constraints on these kinds of functionings. However, the comparison with subjective assessments of the desire to participate was revealing. Around one-third of disabled and non-disabled people who were not engaged in leisure activities apparently faced unobserved constraints in participation; similarly, around one in ten of each group who were politically unengaged were detected by cross-tabulation with subjective indicators as being likely to be subject to unobserved constraints. Significant proportions in both the leisure and political participation analyses were found to be satisfied with their non-participation, emphasising the importance of analysis in terms of capability rather than functioning. However, since some of these individuals would face constraints if they did decide to take up a leisure activity or get involved politically, it is necessary to evaluate their 'objective' capability, not simply rely on their current subjective appraisal of the situation.

Although there is clearly much more work to be done to refine these estimates, the chapter has shown, firstly, that it is possible to make progress on operationalising whether or not a given functioning is within someone's capability set, and secondly, that in so doing, significant empirical differences between functioning and capability are revealed. Some of those who are not engaged in a particular functioning nevertheless have the capability to do so, while others lack the capability. The proportions of different subgroups in the population who lack the capability to participate vary widely. In the following chapter, the extent of variation between

subgroups in capabilities is compared to the variation in functionings and in income poverty.

### Appendix 6.1: Details of regressions

The procedure has two potential problems with respect to the consistency and efficiency of the estimates, with implications for the interpretation of results. The first is the problem of omitted variables, i.e. variables not included in the right-hand side (RHS) but relevant to the determination of the probability of the functioning F. If an omitted variable is not systematically related to RHS variables (in other words, if it is exogenous), the coefficients on the RHS variables will not be biased, although a smaller proportion of the actual variation in the probability of functioning will be explained by the model than if the omitted variable could be included. In addition, some individuals will be mistakenly classified as having a high (or low) probability of functioning. This is always a potential problem in empirical modelling, but it is hoped that the main types of constraint have been captured, albeit crudely in some cases.<sup>14</sup>

One exogenous variable omitted from the models deserves particular attention, namely, bad luck. Despite having characteristics generally associated with a high probability of functioning F, an individual may find himself not able to participate in F through no fault of his own. (For the sake of discussion, assume the functioning is employment and that the labour market does not clear). Bad (and good) luck are by definition exogenous so the omission does not bias estimates for RHS variables, but it is important to bear in mind when interpreting the results. Some of those who appear to be voluntarily non-employed (high predicted probability of being in work, but not actually in work), are in fact the victims of bad luck. Again, the classification arising from the regressions in the first approach is cross-checked against the results from the second approach (based on stated preferences), so those outcomes of bad luck which are regretted by the individuals concerned will be picked up. Individuals who experience bad luck but are not unhappy with the outcome, for whatever reason, remain misclassified.<sup>15</sup>

A potentially more difficult issue arises where the omitted variable is systematically related to another RHS variable, in other words, where it is endogenous. In this case, RHS coefficients may be biased in the sense that part of the explanatory power attributed to the included variables properly belongs to the omitted variable. However, as outlined above, the regressions are here being used as a descriptive rather than an causal device. The objective is simply to describe the employment probability of groups of individuals with different combinations of characteristics.

One omitted variable which is at least partly endogenous is the individual's disposition to participate in a particular functioning; omitted because it is unobservable. This is likely to be a determinant of both past and present probability of participation, and may also be related to age, education and so on. One response to this type of problem when using panel data is to run a fixed effects regression, which

<sup>14</sup> A check on the classification of individuals into high/low functioning probability for the full model is provided by the second analysis, based on stated preferences, although as discussed above this check is itself imperfect.

<sup>15</sup> Haveman and Bershader (2001) adjust predicted earnings by a random draw from the standard error distribution of the earnings equations to preserve the actual variation in earnings, thus allowing for bad luck. This is appropriate since they are concerned with aggregate poverty rates but is not appropriate for classifying particular individuals as above or below the poverty line, or, as in the present case, as above or below a functioning probability threshold.

regresses changes in participation for each individual on changes in that individual's characteristics over the period of observation. Disposition to participate, assuming it is a fixed characteristic of an individual, is thus 'differenced out'. Unfortunately, much else of interest is also differenced out: constraints such as ethnicity, parental social class and education, for example. In so far as the disposition to participate is itself caused by factors beyond the individual's control, it should ideally be regarded as a constraint on participation and be included in the RHS, so that only variation resulting from disposition to participate in so far as it is a freely-chosen 'taste' is excluded from the estimate of participation probability (see Roemer et al, 2003, for a discussion). This is in effect achieved by omitting 'disposition to participate' itself while including factors which structure disposition to participate, but it is at the cost of the coefficients on RHS variables reflecting a combination of their direct impact on probability of participation and their indirect impact through disposition to participate.

#### *A6.1.1 Wage prediction regressions for individual earnings capability*

The objective is to estimate the wages each individual would earn if he or she worked full-time, taking account of his or her characteristics such as educational qualifications, disability status and so on. The coefficients for these characteristics cannot be estimated directly because there is selection into full-time employment: those for whom wages are observed are not a random sample of the whole population. For example, individuals who can command a higher wage may be more likely to work full-time, while individuals with either a high reservation wage or who would command only a low market wage may be less likely to work full-time (or indeed part-time).

Heckman (1979) proposed a two-step technique to address this problem, as described in Greene (2003), pp 782-786. The underlying relationship between the earnings the  $j$ th individual would command if he or she worked full-time, and a set of characteristics,  $\mathbf{X}$ , including for example age and educational qualifications, which determine earnings can be represented as:

$$y_j = \mathbf{X}_j \beta + u_{1j} \quad (1)$$

where  $\beta$  is a set of coefficients corresponding to  $\mathbf{X}$  and  $u_1$  is a disturbance term.

The equation describing selection into full-time employment  $z$  is:

$$z_j = \mathbf{W}_j \gamma + u_{2j} \quad (2)$$

where  $\gamma$  is a set of coefficients corresponding to  $\mathbf{W}$ , the characteristics which determine selection, and  $u_2$  is a disturbance term. Typically,  $\mathbf{X}$  includes some but not all the same variables as  $\mathbf{W}$ .

$y_j$  is observed only if  $z_j > 0$  (in words: the full-time wage is observed only for individuals in full-time employment), and the two equations are further related by the fact that the disturbance terms  $u_1$  and  $u_2$  are correlated:  $\text{corr}(u_1, u_2) = \rho$ .

In the first step of Heckman's procedure, the selection equation (2) is estimated using probit regression and a 'non-selection hazard' (also known as the inverse Mills ratio)

is calculated for each observation. In the second step, the wage equation (1) is augmented with the non-selection hazard calculated in the first step, and estimated using ordinary least squares regression. This correction, together with appropriate transformation of the standard errors, means that the coefficients for the wage equation can be interpreted directly as showing the marginal effect of each characteristic on wages, whether or not a wage is actually observed.

The statistics software Stata implements a generalisation of the Heckman selection model using maximum likelihood estimation (StataCorp, 1999, vol.2, pp 14-28). Along with the coefficients and standard errors for both the selection equation and the corrected wage equation, Stata reports  $\rho$ , the correlation between the disturbance terms  $u_1$  and  $u_2$  for the two equations, and  $\sigma$ , the standard error of  $u_1$ . It also calculates a likelihood ratio test of the independence of the two equations (i.e. with a null hypothesis that  $\rho = 0$ ). Provided the likelihood ratio statistic  $\chi^2$  is significantly different from 0, the use of a Heckman selection model is justified. This condition is met for each of the models shown in Table A6.1 below.

**Table A6.1: Heckman selection model of log of net weekly full-time earnings**

	Men		Women	
	Coefficient	Standard error	Coefficient	Standard error
<b>Wage equation</b>				
Age	<b>0.079</b>	0.006	<b>0.079</b>	0.007
Age squared	<b>-0.001</b>	0.000	<b>-0.001</b>	0.000
Disability				
Not limited in daily activities	omitted		omitted	
Limited in daily activities and has health problems/conditions x 1	0.012	0.048	<b>0.121</b>	0.063
x 2	<b>0.201</b>	0.088	<b>0.220</b>	0.071
x 3	0.033	0.104	-0.175	0.110
x 4	0.183	0.255	0.035	0.105
x 5	0.248	0.358	<b>0.650</b>	0.231
x 6+	-0.011	0.360	-0.214	0.354
Subjective health status <sup>1</sup>	<b>-0.030</b>	0.011	<b>-0.032</b>	0.011
Highest educational qualification				
higher nursing / teaching etc	omitted		omitted	
further	<b>-0.157</b>	0.026	<b>-0.258</b>	0.030
secondary	<b>-0.235</b>	0.031	<b>-0.323</b>	0.034
other	<b>-0.291</b>	0.029	<b>-0.391</b>	0.030
none	<b>-0.321</b>	0.036	<b>-0.444</b>	0.040
Region				
inner london	omitted		omitted	
outer london	-0.025	0.057	-0.080	0.055
rest of south east	-0.095	0.051	<b>-0.202</b>	0.047
south west	<b>-0.190</b>	0.055	<b>-0.330</b>	0.055
east anglia	-0.139	0.063	<b>-0.316</b>	0.066
east midlands	<b>-0.249</b>	0.055	<b>-0.314</b>	0.056
west midlands conurbation	-0.175	0.067	<b>-0.385</b>	0.067
rest of west midlands	<b>-0.202</b>	0.059	<b>-0.272</b>	0.060
greater manchester	<b>-0.211</b>	0.063	<b>-0.204</b>	0.063
merseyside	-0.135	0.076	<b>-0.364</b>	0.097
rest of north west	<b>-0.118</b>	0.061	<b>-0.258</b>	0.060
south yorkshire	<b>-0.221</b>	0.070	<b>-0.241</b>	0.070
west yorkshire	<b>-0.217</b>	0.066	<b>-0.400</b>	0.064
rest of yorks and humberside	-0.179	0.064	<b>-0.335</b>	0.073
tyne and wear	<b>-0.242</b>	0.076	<b>-0.303</b>	0.069
rest of north	<b>-0.221</b>	0.062	<b>-0.270</b>	0.065
wales	<b>-0.207</b>	0.060	<b>-0.258</b>	0.062
scotland	-0.198	0.055	<b>-0.285</b>	0.051
Constant	<b>4.289</b>	0.125	<b>4.344</b>	0.130
<b>Selection equation</b>				
Marital status				
married/cohabiting	omitted		omitted	
widowed/divorced/separated	<b>-0.297</b>	0.102	0.104	0.083
never married	<b>-0.275</b>	0.073	-0.071	0.076
Age youngest child in hhld				
0-2	omitted		omitted	
3-4	0.146	0.134	-0.160	0.144
5-10	-0.011	0.099	0.059	0.107
11-15	-0.174	0.105	<b>0.642</b>	0.108
none	0.152	0.082	<b>1.364</b>	0.087

Caring responsibilities	none	omitted	omitted	
	under 20 hours per week	-0.046	0.080	<b>-0.161</b> 0.077
	20-34 hours per week	-0.258	0.233	<b>-0.527</b> 0.258
	35+ hours per week	<b>-0.735</b>	0.238	-0.284 0.199
Housing tenure	owner-occupier	omitted	omitted	
	private tenant	<b>-0.503</b>	0.070	<b>-0.648</b> 0.082
	social tenant	<b>-0.366</b>	0.070	-0.128 0.073
Age		<b>0.141</b>	0.013	<b>0.156</b> 0.017
Age squared		<b>-0.002</b>	0.000	<b>-0.002</b> 0.000
Disability	Not limited in daily activities	omitted	omitted	
	Limited in daily activities and has health problems/conditions x 1	-0.322	0.117	<b>-0.281</b> 0.143
	x 2	-0.905	0.171	<b>-0.598</b> 0.149
	x 3	<b>-0.834</b>	0.198	<b>-0.665</b> 0.211
	x 4	<b>-1.380</b>	0.391	-0.130 0.242
	x 5	<b>-1.529</b>	0.519	<b>-1.164</b> 0.415
	x 6+	<b>-1.395</b>	0.583	-0.967 0.540
Subjective health status <sup>1</sup>		-0.043	0.030	-0.037 0.030
Highest educational qualification	higher	omitted	omitted	
	nursing / teaching etc	-0.057	0.080	-0.141 0.085
	further	<b>-0.286</b>	0.087	<b>-0.251</b> 0.092
	secondary	<b>-0.203</b>	0.084	<b>-0.252</b> 0.085
	other	-0.093	0.104	<b>-0.395</b> 0.102
	none	<b>-0.228</b>	0.091	<b>-0.630</b> 0.099
Region	inner london	omitted	omitted	
	outer london	0.116	0.148	0.035 0.149
	rest of south east	0.123	0.130	0.047 0.126
	south west	0.269	0.142	-0.112 0.141
	east anglia	0.177	0.163	-0.076 0.171
	east midlands	0.126	0.141	-0.056 0.142
	west midlands conurbation	0.100	0.170	0.004 0.169
	rest of west midlands	<b>0.328</b>	0.158	-0.047 0.154
	greater manchester	0.330	0.173	0.171 0.135
	merseyside	0.083	0.200	<b>-0.469</b> 0.216
	rest of north west	0.171	0.162	0.111 0.157
	south yorkshire	0.147	0.184	0.076 0.185
	west yorkshire	0.143	0.172	0.141 0.172
	rest of yorks and humberside	0.156	0.167	-0.297 0.178
	tyne and wear	-0.019	0.192	0.200 0.182
	rest of north wales	<b>0.358</b>	0.169	-0.003 0.169
	scotland	0.144	0.158	0.052 0.157
Constant		<b>-1.691</b>	0.316	-3.076 0.356
$\rho$		<b>-0.446</b>	0.074	<b>-0.237</b> 0.088
$\sigma$		<b>0.379</b>	0.010	<b>0.325</b> 0.008
Log likelihood		-2834		-2244
Likelihood ratio test of independent equations ( $\rho=0$ ): $\chi^2$		<b>18.08</b>		<b>6.77</b>
Number of observations		3472		3632

Notes:

1 Subjective assessment of health over the last 12 months, from 1 (excellent) to 5 (very poor). Coefficients shown in bold are statistically significant at 95% level or above.

*A6.1.2 Regressions predicting probability of employment, social interaction and political engagement*

Estimations for the employment, social interaction and political engagement capabilities are more straightforward since participation and non-participation are directly observed for all sample members; there are no selection effects to take into account. Since the outcome of interest in each case is binary, logit regressions are appropriate.

**Table A6.2: Logit regressions on probability of *full-time* employment**

		Men		Women	
		Coefficient	Standard error	Coefficient	Standard error
Ethnic group	white	omitted		omitted	
	black	0.044	0.391	0.505	0.341
	asian	-0.164	0.356	0.535	0.409
	chinese/other	-0.104	0.489	-0.150	0.503
Age		0.141	0.028	0.199	0.035
Age squared		-0.002	0.000	-0.003	0.000
Disability	Not limited in daily activities	omitted		omitted	
Limited in daily activities and has health problems/conditions	x 1	-0.648	0.227	-0.462	0.274
	x 2	-1.461	0.321	-0.852	0.289
	x 3	-1.557	0.400	-0.837	0.408
	x 4	-2.641	1.076	-0.083	0.443
	x 5	-2.368	1.066	-2.325	1.057
	x 6+	-0.651	1.319	-0.184	1.245
Father's social class	non-manual	omitted		omitted	
	manual	0.056	0.116	0.048	0.113
	other <sup>1</sup>	0.048	0.139	0.237	0.140
Mother's social class	non-manual	omitted		omitted	
	manual	0.080	0.145	-0.274	0.135
	other <sup>1</sup>	0.143	0.121	-0.021	0.115
Subjective health status <sup>2</sup>		-0.013	0.060	-0.044	0.059
Log of GHQ score <sup>3</sup>		-0.007	0.016	0.009	0.016
Highest educational qualification	higher	omitted		omitted	
	nursing / teaching etc	-0.491	0.158	-0.652	0.163
	further	-0.792	0.172	-0.665	0.179
	secondary	-0.835	0.171	-0.846	0.166
	other	-0.587	0.213	-1.100	0.200
	none	-0.870	0.184	-1.414	0.196
Propn of years since age 16 in employment		2.355	0.198	2.325	0.188
Marital status	married/cohabiting	omitted		omitted	
	widowed/divorced/separated	-0.324	0.209	0.178	0.157
	never married	-0.325	0.152	0.104	0.150
Age youngest child in household	0-2	omitted		omitted	
	3-4	0.321	0.257	-0.217	0.283

5-10	0.024	0.189	0.235	0.209
11-15	-0.029	0.202	<b>1.216</b>	0.204
none	<b>0.554</b>	0.163	<b>2.271</b>	0.169
<b>Caring responsibilities</b>				
none	omitted		omitted	
under 20 hours per week	0.025	0.151	-0.237	0.145
20-34 hours per week	-0.031	0.434	<b>-1.001</b>	0.514
35+ hours per week	<b>-0.806</b>	0.465	0.098	0.381
<b>Housing tenure</b>				
owner-occupier	omitted		omitted	
private tenant	<b>-0.630</b>	0.152	<b>-0.694</b>	0.171
social tenant	<b>-0.359</b>	0.139	0.091	0.140
<b>Regional unemployment rate<sup>4</sup></b>	0.583	1.018	0.834	0.848
<b>Constant</b>	<b>-2.603</b>	0.993	<b>-5.795</b>	0.883
<i>Log likelihood</i>	-1547		-1527	
<i>Likelihood ratio index</i>	0.18		0.22	
<i>Predicted probability</i>	0.61		0.34	
<i>Proportion correctly classified</i>	0.73		0.76	
<i>Number of observations</i>	2801		3054	

Source: BHPS Wave 6 (with some data matched from other waves)

Notes:

<sup>1</sup> 'Other' social class includes parent was not present, parent in armed forces, and missing data.

<sup>2</sup> Subjective assessment of health over the last 12 months, from 1 (excellent) to 5 (very poor).

<sup>3</sup> GHQ score is from 0 to 12 on General Health Questionnaire, a standard instrument used to assess likelihood of psychiatric illness. Higher score suggests greater probability that the respondent has a diagnosable illness.

<sup>4</sup> Male unemployment rate for men, female unemployment rate for women, for region in which the respondent lives.

Coefficients shown in bold are statistically significant at 95% level or above.

**Table A6.3: Logit regressions on probability of any employment**

	Men		Women	
	Coefficient	Standard error	Coefficient	Standard error
Ethnic group				
white	omitted		omitted	
black	0.650	0.499	-0.367	0.366
asian	0.221	0.534	-0.005	0.403
chinese/other	-0.111	0.688	-0.017	0.562
Age	<b>0.264</b>	0.038	<b>0.154</b>	0.038
Age squared	<b>-0.004</b>	0.000	<b>-0.003</b>	0.000
Disability				
Not limited in daily activities	omitted		omitted	
Limited in daily activities and has health problems/conditions x 1	<b>-1.149</b>	0.278	<b>-0.733</b>	0.249
x 2	<b>-1.931</b>	0.333	<b>-1.249</b>	0.250
x 3	<b>-2.154</b>	0.407	<b>-1.811</b>	0.352
x 4	<b>-2.051</b>	0.734	<b>-1.792</b>	0.428
x 5	<b>-2.592</b>	0.884	<b>-2.760</b>	0.695
x 6+	<b>-1.594</b>	1.390	<b>-1.797</b>	1.353
Father's social class				
non-manual	omitted		omitted	
manual	-0.281	0.182	<b>0.308</b>	0.131
other <sup>1</sup>	0.198	0.214	<b>0.519</b>	0.161
Mother's social class				
non-manual	omitted		omitted	
manual	0.231	0.222	0.125	0.158
other <sup>1</sup>	<b>0.402</b>	0.185	0.195	0.135
Subjective health status <sup>2</sup>	-0.155	0.085	<b>-0.150</b>	0.064
Log of GHQ score <sup>3</sup>	<b>-0.066</b>	0.024	0.002	0.018
Highest educational qualification				
higher	omitted		omitted	
nursing / teaching etc	<b>-0.523</b>	0.249	<b>-0.683</b>	0.213
further	<b>-0.876</b>	0.259	<b>-1.049</b>	0.223
secondary	<b>-0.594</b>	0.266	<b>-1.130</b>	0.211
other	<b>-0.891</b>	0.307	<b>-1.193</b>	0.242
none	<b>-0.905</b>	0.270	<b>-1.368</b>	0.229
Propn of years since age 16 in employment	<b>3.886</b>	0.270	<b>3.885</b>	0.211
Marital status				
married/cohabiting	omitted		omitted	
widowed/divorced/separated	-0.539	0.293	-0.241	0.169
never married	<b>-0.921</b>	0.237	-0.277	0.189
Age youngest child in hhld				
0-2	omitted		omitted	
3-4	-0.036	0.400	<b>0.736</b>	0.232
5-10	0.193	0.306	<b>1.067</b>	0.189
11-15	0.552	0.314	<b>2.072</b>	0.218
none	<b>1.084</b>	0.266	<b>2.031</b>	0.170
Caring responsibilities				
none	omitted		omitted	
under 20 hours per week	0.339	0.226	-0.222	0.153
20-34 hours per week	<b>-1.088</b>	0.529	<b>-1.361</b>	0.372
35+ hours per week	<b>-2.106</b>	0.256	<b>-0.713</b>	0.357
Housing tenure				
owner-occupier	omitted		omitted	

private tenant	<b>-0.848</b>	0.206	<b>-0.526</b>	0.179
social tenant	<b>-1.106</b>	0.176	<b>-0.438</b>	0.137
Regional unemployment rate <sup>4</sup>	<b>3.570</b>	1.467	<b>2.595</b>	0.900
Constant	<b>-5.989</b>	1.431	<b>-4.651</b>	0.969
<i>Log likelihood</i>		-809		-1276
<i>Likelihood ratio index</i>		0.39		0.30
<i>Predicted probability</i>		0.82		0.72
<i>Proportion correctly classified</i>		0.88		0.81
<i>Number of observations</i>		2810		3078

Source: BHPS Wave 6 (with some data matched from other waves)

Notes:

<sup>1</sup> 'Other' social class includes parent was not present, parent in armed forces, and missing data.

<sup>2</sup> Subjective assessment of health over the last 12 months, from 1 (excellent) to 5 (very poor).

<sup>3</sup> GHQ score is from 0 to 12 on General Health Questionnaire, a standard instrument used to assess likelihood of psychiatric illness. Higher score suggests greater probability that the respondent has a diagnosable illness.

<sup>4</sup> Male unemployment rate for men, female unemployment rate for women, for region in which the respondent lives.

Coefficients shown in bold are statistically significant at 95% level or above.

**Table A6.4: Logit regression on probability of participation in leisure activities**  
 Participation defined as 7 times per month or more (i.e. over 60 per cent of median frequency for whole sample)

		All	
		Coefficient	Standard error
Gender	male	<b>0.357</b>	0.075
Age group	16-29	<b>0.875</b>	0.093
	30-44	<b>0.185</b>	0.086
	45-59/64	omitted	
Disability	Not limited in daily activities	omitted	
Limited in daily activities and has health problems/conditions	x 1	-0.146	0.160
	x 2	-0.107	0.178
	x 3	<b>-0.435</b>	0.209
	x 4	<b>-0.660</b>	0.300
	x 5	-0.559	0.353
	x 6	1.191	0.788
	x 7	<b>-1.808</b>	0.850
GHQ score > 2 <sup>1</sup>		-0.142	0.075
Lacks emotional support <sup>2</sup>		<b>-0.468</b>	0.107
Subjective health status <sup>3</sup>		<b>-0.257</b>	0.042
Paid work hours	none	omitted	
	1-34	-0.165	0.100
	35-44	-0.121	0.090
	45+	<b>-0.418</b>	0.128
Household composition	single adult no children	omitted	
	couple no children	-0.134	0.147
	single adult with child(ren)	<b>-0.656</b>	0.213
	couple with child(ren)	<b>-0.542</b>	0.148
	more than two adults	<b>-0.542</b>	0.143
Access to a vehicle		<b>0.371</b>	0.098
No. of organisations in which active <sup>4</sup>		<b>0.384</b>	0.040
Constant		<b>1.588</b>	0.185
<i>Log likelihood</i>		-2940	
<i>Likelihood ratio index</i>		0.07	
<i>Predicted probability</i>		0.80	
<i>Proportion correctly classified</i>		0.81	
<i>Number of observations</i>		6410	

Source: BHPS Wave 6 (with some data matched from other waves)

Notes:

<sup>1</sup> GHQ score is from 0 to 12 on General Health Questionnaire, a standard instrument used to assess likelihood of psychiatric illness. Higher score suggests greater probability that the respondent has a diagnosable illness.

<sup>2</sup> As part of self-completion questionnaire at Wave 7, respondents are asked whether they have a person or persons who will listen, help in crisis, with whom they can relax, who appreciates them, and who they can count on for comfort. Respondents who lack support in any one of these five respects are categorised as lacking emotional support. Responses merged back into Wave 6.

<sup>3</sup> Subjective assessment of health over the last 12 months, from 1 (excellent) to 5 (very poor).

<sup>4</sup> List of 16 organisations, including, for example, tenants association, scouts/guides; asked at Wave 7.  
Responses merged back into Wave 6.  
Coefficients shown in bold are statistically significant at 95% level or above.

**Table A6.5: Logit regression on probability of participation in political activities**  
 Political participation defined as either having voted in 1997 general election or being active in a political party, trades union, environmental group, parents association or tenants association

		All	
		Coefficient	Standard error
Gender	male	<b>-0.276</b>	0.078
Age group	18-34	omitted	
	35-59/64	<b>1.099</b>	0.082
Disability	Not limited in daily activities	omitted	
Limited in daily activities and has health problems/conditions x 1		0.043	0.195
	x 2	-0.104	0.217
	x 3	-0.018	0.255
	x 4	-0.446	0.337
	x 5	0.057	0.475
	x 6+	-0.582	0.830
Ethnic group	white	omitted	
	black	-0.598	0.428
	indian	0.442	0.365
	pakistani/bangladeshi	<b>1.881</b>	0.781
	other	<b>-0.586</b>	
Country of birth	elsewhere	omitted	
	UK	<b>0.565</b>	0.177
Highest educational qualification	higher	omitted	
	nursing / teaching etc	<b>-0.245</b>	0.123
	further	<b>-0.456</b>	0.108
	secondary	<b>-0.463</b>	0.141
	other	-0.369	0.453
	none	<b>-0.646</b>	0.116
Subjective health status <sup>1</sup>		<b>-0.098</b>	0.049
Access to a vehicle		<b>0.533</b>	0.104
Perceived political efficacy <sup>2</sup>	very high	omitted	
	high	-0.125	0.106
	low	-0.018	0.116
	very low	0.169	0.123
Constant		<b>0.644</b>	0.249
Log likelihood		-2185	
Likelihood ratio index		<b>0.06</b>	
Predicted probability		<b>0.83</b>	
Proportion correctly classified		<b>0.83</b>	
Number of observations		5109	

Source: BHPS Wave 6 (with some data matched from other waves)

Notes:

<sup>1</sup> Subjective assessment of health over the last 12 months, from 1 (excellent) to 5 (very poor).

<sup>2</sup> Index of political efficacy, as described in chapter text, section 6.6.

Coefficients shown in bold are statistically significant at 95% level or above.

### Appendix 6.2: Childcare costs

Childcare costs were estimated from the second Department for Education and Skills survey of parents' demand for childcare (Woodland et al, 2002). The survey included a representative sample of over 2,500 parents of children aged 0-14 who used childcare, whether paid or unpaid.

Costs of childcare for parents working full-time are required for the purposes of the consumption capability estimation in section 6.3 above. Among parents who used any paid childcare, these were £52 per week on average for lone parents and £64 per week for couples where both work full-time. 26 per cent of parents employed full-time were lone parents, so the weighted average for all parents employed full-time is £61 per week.

The average weekly costs for parents of children of different ages using some paid childcare (whatever the employment status of parents) were as follows:

pre school age only	£49
mixed pre-school and school age	£43
school age only	£27

Unfortunately these figures are not broken down by employment status of parents. The proportions of parents with pre-school only (20%), mixed (25%) and school-age only children (57%), were similar for lone parents and couples. If we assume that the distribution of ages of children of working parents is similar to the distribution of ages of children altogether, we can distribute the mean of £61 for all full-time working parents in the ratio given by the average costs for all parents for children of different ages:

pre school age only	£82
mixed pre-school and school age	£73
school age only	£46

Finally, these figures were deflated by the RPI (all items) index to convert to 1996 prices.

There are a number of issues with these estimates. Firstly, the costs of childcare for parents not currently working full-time would not necessarily be the same if they were to work full-time as the childcare costs of parents currently in full-time employment, since there is heterogeneity in the population. They might be higher (this could be one reason why those parents are not currently working), or lower (because lower-income families have lower childcare costs, and more lower-income parents are out of work). Secondly, it would be preferable to disaggregate childcare costs to a greater extent, for example, by exact age and number of children. Unfortunately these statistics are not given in the DfES research report. Thirdly, the calculations are based on parents who pay for at least some childcare, which at present accounts for only half of all parents in full-time work. However, it seems reasonable to assume that if *all* parents were in full-time employment, nearly all would have to pay for at least some childcare.

### Appendix 6.3: Capability for any employment

The results for capability for any employment (did some paid work in the week before interview, or had a job that he/she was away from) follow the same methods and pattern of presentation as capability for full-time employment. Accordingly, the tables are presented with little commentary.

**Table A6.6: Actual proportion not in any employment,  
by sex and disability status**  
*Per cent of working age population not in paid employment*

	Disabled	Non-disabled
Men	59	16
Women	61	26
All	60	21

Source: author's calculations using BHPS Wave 6

**Table A6.7: Employment capabilities, by sex, disability status and version**  
*Average predicted probability of having paid work capability*

	Disabled		Non-disabled	
	Men	Women	Men	Women
Version 1: all constraints included	41	40	86	76
Version 2	55	48	90	81
Version 3	80	91	98	98
Version 4: minimal constraints included	86	93	98	99

Source: authors calculations using BHPS

**Table A6.8: Categories of predicted and actual employment status, by version, gender and disability**

*For definitions of categories and versions, see text*

Disabled men		Row percentages		
Predicted probability of employment:		High	Low	
Actual employment status:		No	No	Yes
Version 1 (all constraints included)		2	57	18
2		9	51	26
3		29	28	36
Version 4 (minimal constraints)		39	20	37
				4
				100

Non-disabled men		Row percentages		
Predicted probability of employment:		High	Low	
Actual employment status:		No	No	Yes
Version 1 (all constraints included)		4	10	75
2		6	7	80
3		14	1	83
Version 4 (minimal constraints)		15	1	83
				1
				100

Disabled women		Row percentages		
Predicted probability of employment:		High	Low	
Actual employment status:		No	No	Yes
Version 1 (all constraints included)		3	57	18
2		7	53	21
3		56	5	39
Version 4 (minimal constraints)		59	2	39
				0
				100

Non-disabled women		Row percentages		
Predicted probability of employment:		High	Low	
Actual employment status:		No	No	Yes
Version 1 (all constraints included)		8	16	63
2		13	12	66
3		26	0	74
Version 4 (minimal constraints)		26	0	74
				0
				100

Rows may not sum to 100 due to rounding    Source: author's calculations using BHPS Wave 6

**Table A6.9: Comparison of predicted employment capability with stated preferences for any work**  
*Men and women not in employment*

		<i>Cell percentages</i>	
		Unconstrained	Constrained
Disabled men	Does not want work	2	61
	Does want work	1	36
<b>Non-disabled men</b>		<i>Cell percentages</i>	
		Unconstrained	Constrained
	Does not want work	10	32
	Does want work	20	38
<b>Disabled women</b>		<i>Cell percentages</i>	
		Unconstrained	Constrained
	Does not want work	3	63
	Does want work	2	31
<b>Non-disabled women</b>		<i>Cell percentages</i>	
		Unconstrained	Constrained
	Does not want work	19	40
	Does want work	15	26

Source: author's calculations using BHPS

Table A6.9 shows greater proportions of those not in any form of employment who have employment capability but are apparently choosing not to exercise it (top left corner of each panel), than the equivalents for full-time employment (Table 6.11). The difference is particularly marked for non-disabled people. This is plausible: having the capability for *some* employment is a fairly low threshold, so many individuals are estimated to have the capability, but equally there are several reasons why people may be choose not to exercise it, for example because they are studying, looking after children or volunteering.

## CHAPTER SEVEN: COMPARING INCOMES, EQUIVALISED INCOMES, FUNCTIONINGS AND OPPORTUNITIES

### 7.1 Introduction

The previous four chapters have examined well-being and disadvantage among disabled people according to their incomes, equivalised incomes, functionings and opportunities. The extent and, where possible, the intensity, of disadvantage have been considered. The characteristics of those falling below a 'poverty threshold' according to each metric have been described by means of comparisons between disabled and non-disabled poor, and between the disabled poor and disabled non-poor. This chapter aims to draw together the preceding analyses, by addressing the following questions<sup>1</sup>:

- Does the difference between the extent of disadvantage among disabled and non-disabled people vary according to whether disadvantage is measured by income, equivalised income, functionings or capability?
- Is the distribution of disadvantage among the disabled similar according to the different measures?
- What is the correlation between different kinds of disadvantage? Are the associations stronger for disabled or non-disabled people? Who is income poor but not functioning poor (or vice versa)?

These questions are addressed in sections 7.2 to 7.5 below. In the final section of this chapter, the implications for analysis of poverty of the comparison between different measures are briefly considered. A fuller discussion of the policy issues raised by the findings of the thesis as a whole is reserved for the conclusions (in Chapter 10).

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<sup>1</sup> The term 'poverty' will sometimes be used in place of disadvantage, where it is more convenient. It is not intended to be specific to the income metric.

A number of methodological questions arise in the comparison of income, equivalised income, functioning and capability poverty. Each chapter has examined the effect of different poverty thresholds on estimates of the extent of poverty. In the case of income poverty and equivalised income poverty, this takes the form of different proportions of mean or median population income. In the case of functioning poverty, it takes the form of different positions on the index of each dimension of functioning (for example, for consumption functioning, the threshold might be possessing fewer than four consumer durables, or possessing fewer than three consumer durables). In the case of capability poverty, it takes the form of how many layers of constraints are included (for example, whether family composition is taken to be within an individual's control or not). Taking into account more layers of constraints increases the proportion of the population classified as capability-poor. One threshold may be regarded as superior to another on pragmatic grounds, but in principle any threshold is valid. Whether poverty among disabled people is found to be higher according to an income measure rather than a functioning or capability measure, will be highly sensitive to the selection of poverty thresholds for each measure. The analysis presented below responds to this difficulty in two ways: firstly, by showing comparisons according to various thresholds, and secondly, by concentrating on a comparison of the *difference* between disabled and non-disabled poverty rates according to the various measures – a sort of difference in difference approach. These differences are likely to be less sensitive to the selection of a particular threshold.

Other difficulties arise due to drawing data from more than one source. The two surveys, FRS and BHPS, do not use identical definitions of disability, nor indeed of other characteristics. The FRS is preferable because its definition of disability permits finer distinctions to be made by severity of impairment. However the FRS does not contain details of social and political functioning or capability for the whole population. Where comparisons are made using the social and political dimensions, other measures (such as income poverty) are re-calculated using BHPS, so that comparisons are made within-survey rather than between surveys. This also means that the correlation between different kinds of poverty can be assessed.

## 7.2 Extent of poverty

Table 7.1 shows rates of poverty according to different measures of poverty, for disabled and non-disabled people, using BHPS data. Each is shown for a higher and a lower threshold. The two right-hand columns of the table calculate percentage-point and percentage differences between the rates for disabled and non-disabled people.

The rates of poverty according to unadjusted income, equivalised income, consumption and production functioning measures are similar in BHPS and FRS. For unadjusted income, the BHPS rates are slightly lower, but the absolute differences between disabled and non-disabled are very close in the two surveys. This is reassuring in terms of the comparability of the two sets of results.

As expected, disabled people are found to have higher rates of poverty whichever measure or threshold is used. Naturally, also, the rates of poverty are lower when a lower threshold is used, whatever measure of poverty is in question. Absolute differences between disabled and non-disabled poverty rates are lower for the lower thresholds, but percentage differences are higher for all measures except unadjusted income. There are some interesting contrasts to be drawn out.

Firstly, the difference between disabled and non-disabled people's rates of poverty are smaller for the unadjusted income measure than for the measures based on income equivalised for the extra costs of disability. The unadjusted income measure understates both the level of poverty among disabled people, and size of the gap between disabled and non-disabled people. This is a direct consequence of not taking into account the extra costs of living incurred by disabled people.

Secondly, one might expect the equivalised income poverty rates and the consumption functioning poverty rates to be similar: household income (adjusted for needs) is an important determinant of consumption. On the other hand, there is no particular reason to think that the poverty thresholds selected for consumption functioning

should correspond to 60 or 50 per cent of median income. In fact the rates for *unadjusted* income (using the 60 per cent median threshold) and consumption functioning (using the threshold of less than three items on the index) are closer. This indicates that for some of the items included in the consumption functioning index, disabled people are not as disadvantaged relative to non-disabled people as is the case for the indicators of standard of living used in Chapter 4 to calculate the equivalisation for the extra costs of disability.

To make this clearer, the consumption index is recalculated in the next rows of the table omitting the income component of the index (leaving access to a vehicle, consumer durables and home ownership as components). The thresholds are kept at the same level, with the result that the proportions classified as poor are higher (more people lack 3 of 5 components than lack 3 of 6 components). What is interesting though, is that the difference between disabled and non-disabled people's consumption poverty rates are similar, if anything slightly greater, when the income component is dropped. This indicates that the relative disadvantage of disabled people in consumption is not purely driven by income differentials; there are also other obstacles to achieving an adequate level of consumption. The results for equivalised income support the hypothesis that one such obstacle is the requirement to spend a proportion of income on disability-related items, leaving less disposable income for purchasing cars, mortgages and consumer durables.

The differences between disabled and non-disabled rates of production functioning poverty are much higher, for either threshold shown, and both in absolute and proportionate terms, than for any other measure of poverty. This indicates that the production dimension is not well reflected in income or consumption-based measures. If being engaged in some kind of productive activity matters for its own sake, rather than simply for the income it may generate, then income-based measures alone are not adequate to describe the relative position of disabled and non-disabled people. One might expect these much lower rates of productive activity among disabled people to have an adverse effect on their income and consumption poverty (since paid employment is one component of productive activity). This is undoubtedly the case, as explored in Chapter 3, but the effect is mitigated by the availability of social security benefits.

**Table 7.1: Extent of poverty according to different measures and thresholds:  
British Household Panel Survey**

Measure and threshold	Disabled poverty rate (%)	Non- disabled poverty rate (%)	Absolute difference (percentage points)	Percentage difference (difference as % of non- disabled rate)
<b>Income<sup>i</sup></b>				
< 60 per cent median	30	17	13	76
< 50 per cent median	24	14	10	71
<b>Equivalised income<sup>ii</sup></b>				
< 60 per cent median	49	19	30	158
< 50 per cent median	38	14	24	171
<b>Functionings</b>				
<i>Consumption<sup>iii</sup></i> Index < 4	38	24	14	58
Index < 3	24	12	12	100
<i>Consumption w/o income<sup>iv</sup></i>				
Index < 4	55	37	18	49
Index < 3	32	16	16	100
<i>Production<sup>v</sup></i>				
None of: paid work, FT study, FT caring	48	17	31	182
No productive activity	32	10	22	220
<i>Social<sup>vi</sup></i>				
under 60% median leisure or lacks emotional support in 1+ respects	40	25	15	60
under 40% median leisure or lacks emotional support in 1+ respects	27	14	13	93
<b>Capability</b>				
<i>Consumption<sup>vii</sup></i> : < 60% median income capability				
all constraints	11	12	-1	-8
minimal constraints	2	3	-1	-33
<i>Production<sup>viii</sup></i> : lacks full-time employment capability				
all constraints	85	43	42	98
minimal constraints	23	2	21	1050
<i>Social<sup>ix</sup></i> : low leisure activity capability				
all constraints	35	16	15	94
minimal constraints	0	0	0	0
<i>Political<sup>x</sup></i> : low political engagement capability				
all constraints	41	27	14	52
minimal constraints	11	17	-6	-35

Notes: 'Disabled' indicated by limitation in activities of daily living.

<sup>i</sup> Current, net, after housing costs, household income, equivalised for household size only. Thresholds set within working age population. See Chapter 3.

<sup>ii</sup> Income definition as above, but equivalised for extra costs of disability: see Chapter 4. Equivalisation for mean severity of impairment in FRS applied to all disabled people in BHPS.

<sup>iii</sup> BHPS consumption index is a count of the following: income above 60% median, owner-occupier, has access to a car, has at least five consumer durables, four or fewer problems with accommodation, and deprived in two or less respects. See chapter 5.

## Notes to Table 7.1 continued:

- <sup>ii</sup> BHPS consumption index without income component, maximum value is 5.
- <sup>v</sup> Hierarchy of activities: full-time paid work, full-time study, caring for children under school age, caring for others full-time, part-time work (first threshold), caring for school-age children, caring for others part-time (second threshold), voluntary work, no productive activity. See chapter 5.
- <sup>vi</sup> Based on frequency of participation in leisure activities (index ranges from 0 to 35), and five questions about availability of emotional support. See chapter 5.
- <sup>vii</sup> Income capability is less than 60% of median income capability – with income capability calculated taking into account all observable constraints ("all constraints"), or only taking into account only fixed characteristics such as age and gender ("minimal constraints"). For details, see chapter 6.
- <sup>viii</sup> Lower than average predicted probability of full-time employment capability. For details, see chapter 6.
- <sup>ix</sup> Lower than average predicted probability of engaging in leisure activities more frequently than 60% of median frequency for whole sample. For details, see chapter 6.
- <sup>x</sup> Lower than average predicted probability of engaging politically (voting in general election or participating in campaigning organisation). For details, see chapter 6.

A measure of social functioning is available only in BHPS. This shows smaller differences between disabled and non-disabled than for production functioning, of a similar magnitude to differences in consumption functioning or the measure based on unadjusted income. Among the measures considered so far, equivalised income and production functioning show the biggest differences between disabled and non-disabled poverty rates.

The bottom panel of the table shows poverty rates based on the 'capability as opportunity' calculations made in chapter 6. The higher and lower thresholds shown are of a slightly different kind than for the other measures in the table. For the higher threshold, capability has been calculated taking into account all the observable constraints believed to be relevant (for example, educational qualifications, health status, family composition, age, ethnicity); in other words this represents the view that most characteristics are beyond an individual's control. For the lower threshold, capability has been calculated on the basis that only a small number of fixed characteristics are beyond an individual's control (for example, only age, gender and ethnicity).

For consumption capability, the figures shown represent the percentage of individuals whose income capability is estimated to be below 60 per cent of the median income capability of the whole sample. The differences between disabled and non-disabled on this measure are very small and negative, for both the versions. This suggests that, *on the assumption of access to full-time employment*, there would be little difference

between disabled and non-disabled people's income-generating capabilities. However, as the next rows of the table demonstrate, disabled people do not have equal capability for full-time employment, whether minimal constraints or a full range of constraints are taken into account. The results also indicate that for both disabled and non-disabled people, income capability poverty rates are lower than observed (unadjusted) income poverty rates, especially if only minimal constraints are taken into account. This is to be expected: if one assumes that the restrictions on individuals earning an income are few, then almost everyone has the capability to secure an income above the poverty line.

For production capability, the figures shown represent the proportion who are predicted to have a low probability of being in full-time employment, with the basis of that prediction depending on how many constraints are taken into account. For the version taking as many relevant constraints into account as possible, the percentages for lacking employment capability correspond closely to the percentage of disabled and non-disabled people who are in actual fact not in full-time employment (not shown in the table). This should come as no surprise, since that merely reflects the fact that the underlying model of the determinants of full-time employment is a good one.

Of more interest is the fact that even if only minimal constraints are taken into account, the gap between disabled and non-disabled people's production capability remains large. Nearly all non-disabled people are predicted to be able to work full-time if their education, work experience and family circumstances are assumed to be within their control, but one-fifth of disabled people are predicted to remain at a significant disadvantage.

For social capability, the results are highly sensitive to the number of constraints taken into account. If most characteristics are assumed to be beyond an individual's control, the gap between disabled and non-disabled people's opportunities to engage in leisure pursuits is large. If only disability status, age and gender are regarded as fixed, everyone has the opportunity to engage in leisure opportunities frequently, and the difference between disabled and non-disabled disappears.

In general, the more characteristics which are regarded as within an individual's control, the smaller the absolute difference is found to be between the opportunities of disabled and non-disabled people. This is because much of the observed disadvantage of disabled people is due to characteristics other than disability – such as educational qualifications, family circumstances and locality.

Finally, for political capability, the difference between disabled and non-disabled people is relatively small, and is even reversed if only minimal constraints are taken into account. This is in part due to the older age profile of disabled people and the strong positive correlation between age (included as a constraint in all versions) and propensity to vote.

### **7.3 Intensity of poverty**

We cannot calculate poverty gaps for all the measures because many use non-continuous variables, but an approximation to the poverty gap is the proportion of those who are poor according to the higher threshold who also fall beneath the lower threshold. So for example, in the FRS, 71 per cent of disabled people who are income poor using the 60 per cent median income threshold are also below the 50 per cent median income threshold, compared to 74 per cent of non-disabled people. Table 7.2 shows these quasi poverty gaps for the different poverty measures. They cannot meaningfully be compared across dimensions, but within each, disabled and non-disabled quasi poverty gaps are commensurable.

For the basic income measure, consumption capability and political capability, the figures indicate a greater intensity of poverty for non-disabled people than for disabled people. By contrast, for equivalised income (which takes account of variation in needs by severity of impairment) and all the functioning measures, the intensity of poverty for disabled people is greater than for non-disabled people. In Chapter 3 it was hypothesised that the social security system provided better protection against extreme income poverty for disabled people; it would appear that this protection does not carry over into poverty conceptualised and measured in other ways.

**Table 7.2: Quasi poverty gaps**  
*Percentage of poor according to higher threshold  
 who are also beneath lower threshold*

Poverty measure	Source	Disabled %	Non-disabled %
Income	FRS	71	74
	BHPS	80	82
Equivalised income	FRS	83	73
	BHPS	76	74
Consumption functioning	FRS	54	50
	BHPS	63	50
Consumption w/o income	FRS	51	37
	BHPS	58	43
Production functioning	FRS	67	50
	BHPS	67	59
Social functioning	BHPS	68	56
Consumption capability	BHPS	18	25
Production capability	BHPS	27	5
Social capability	BHPS	0	0
Political capability	BHPS	27	63

Note: see Table 7.1 and Appendix Table A7.1 for definitions of thresholds and measures

#### 7.4 Correlation between different measures of poverty

We now turn to looking at the overlap between different measures of poverty.

Table 7.3 shows correlation coefficients for disabled and non-disabled people, which give an overall indication of the association between poverty according to one measure and poverty according to another. This set of results is drawn from BHPS data; the corresponding tables for FRS are given in Appendix 7.2. The top two panels use the higher poverty thresholds described in Table 7.1, while the bottom panels use the lower thresholds.

**Table 7.3: Correlation between poverty rates according to different measures**

Tables show pair-wise correlation coefficients

*(i) Higher poverty thresholds*

Disabled people	I	E I	C f	Ci f	Pr f	S f	C c	Pr c	S c
	1	2	3	4	5	6	7	8	9
1 Income < 60% median	1.00								
2 Equiv I < 60% median	<b>0.72</b>	1.00							
3 Consumption func < 4	<b>0.60</b>	<b>0.54</b>	1.00						
4 Consumption w/o I < 4	<b>0.34</b>	<b>0.38</b>	<b>0.67</b>	1.00					
5 Production func < high	<b>0.10</b>	<b>0.16</b>	<b>0.16</b>	<b>0.11</b>	1.00				
6 Social func < high	<b>0.02</b>	<b>0.10</b>	<b>0.14</b>	<b>0.12</b>	<b>0.09</b>	1.00			
7 Consumption cap: all	<b>0.21</b>	<b>0.29</b>	<b>0.18</b>	<b>0.11</b>	-0.07	<b>0.09</b>	1.00		
8 Production cap: ali	<b>0.14</b>	<b>0.19</b>	<b>0.10</b>	0.04	<b>0.24</b>	<b>0.12</b>	0.06	1.00	
9 Social cap: all	<b>0.18</b>	<b>0.08</b>	<b>0.14</b>	<b>0.03</b>	<b>0.11</b>	0.04	-0.02	<b>0.12</b>	1.00
10 Political cap: all	<b>0.11</b>	<b>0.10</b>	<b>0.16</b>	<b>0.16</b>	0.01	-0.01	<b>0.08</b>	-0.03	<b>0.08</b>
Non-disabled people	I	E I	C f	Ci f	Pr f	S f	C c	Pr c	S c
	1	2	3	4	5	6	7	8	9
1 Income < 60% median	1.00								
2 Equiv I < 60% median	<b>0.90</b>	1.00							
3 Consumption func < 4	<b>0.58</b>	<b>0.57</b>	1.00						
4 Consumption w/o I < 4	<b>0.33</b>	<b>0.34</b>	<b>0.66</b>	1.00					
5 Production func < high	<b>0.17</b>	<b>0.19</b>	<b>0.11</b>	<b>0.08</b>	1.00				
6 Social func < high	<b>0.04</b>	<b>0.08</b>	<b>0.07</b>	<b>0.09</b>	0.02	1.00			
7 Consumption cap: all	<b>0.24</b>	<b>0.32</b>	<b>0.23</b>	<b>0.17</b>	<b>0.05</b>	0.01	1.00		
8 Production cap: all	<b>0.19</b>	<b>0.21</b>	<b>0.19</b>	<b>0.14</b>	<b>0.22</b>	<b>0.04</b>	<b>0.15</b>	1.00	
9 Social cap: all	<b>0.18</b>	<b>0.15</b>	<b>0.13</b>	<b>0.09</b>	<b>0.04</b>	<b>0.09</b>	<b>0.06</b>	<b>0.22</b>	1.00
10 Political cap: all	<b>0.09</b>	<b>0.08</b>	<b>0.13</b>	<b>0.13</b>	-0.04	-0.05	<b>0.10</b>	<b>-0.12</b>	<b>0.04</b>

*(ii) Lower poverty thresholds*

Disabled people	I	E I	C f	Ci f	Pr f	S f	C c	Pr c	S c
	1	2	3	4	5	6	7	8	9
1 Income < 50% median	1.00								
2 Equiv I < 50% median	<b>0.74</b>	1.00							
3 Consumption func < 3	<b>0.53</b>	<b>0.56</b>	1.00						
4 Consumption w/o I < 3	<b>0.39</b>	<b>0.42</b>	<b>0.79</b>	1.00					
5 Production func < low	0.05	<b>0.09</b>	<b>0.09</b>	<b>0.10</b>	1.00				
6 Social func < low	<b>0.10</b>	0.03	<b>0.11</b>	<b>0.18</b>	<b>0.14</b>	1.00			
7 Consumption cap: min	<b>0.16</b>	<b>0.10</b>	0.07	0.05	-0.05	-0.02	1.00		
8 Production cap: min	-0.09	-0.04	-0.06	<b>-0.07</b>	<b>0.31</b>	<b>0.09</b>	-0.07	1.00	
9 Social cap: min	-0.03	-0.03	0.01	0.04	0.04	<b>0.08</b>	-0.01	0.00	1.00
10 Political cap: min	0.03	0.02	0.07	0.06	<b>-0.12</b>	-0.02	<b>0.12</b>	<b>-0.13</b>	0.03
Non-disabled people	I	E I	C f	Ci f	Pr f	S f	C c	Pr c	S c
	1	2	3	4	5	6	7	8	9
1 Income < 50% median	1.00								
2 Equiv I < 50% median	<b>0.93</b>	1.00							
3 Consumption func < 3	<b>0.53</b>	<b>0.50</b>	1.00						
4 Consumption w/o I < 3	<b>0.38</b>	<b>0.36</b>	<b>0.76</b>	1.00					
5 Production func < low	<b>0.11</b>	<b>0.12</b>	<b>0.08</b>	<b>0.06</b>	1.00				
6 Social func < low	<b>0.04</b>	<b>0.04</b>	<b>0.04</b>	<b>0.05</b>	<b>0.03</b>	1.00			
7 Consumption cap: min	<b>0.20</b>	<b>0.21</b>	<b>0.15</b>	<b>0.12</b>	-0.01	-0.02	1.00		
8 Production cap: min	0.01	0.01	-0.01	-0.02	<b>0.18</b>	0.01	-0.01	1.00	
9 Social cap: min	<b>0.12</b>	<b>0.12</b>	0.01	0.00	<b>0.07</b>	0.02	-0.01	0.02	1.00
10 Political cap: min	<b>0.05</b>	<b>0.05</b>	<b>0.09</b>	<b>0.09</b>	-0.02	-0.09	<b>0.03</b>	<b>-0.07</b>	0.01

## Notes to Table 7.3:

Coefficients in **bold** are statistically significant at the 95% level.

Abbreviations: I income; func functioning; w/o without; cap capability.

Column headings correspond to row labels.

For definitions of measures and of higher and lower thresholds, see Table 7.1. Source: BHPS

Looking first at disabled people, and using the higher thresholds: all the statistically significant correlation coefficients are positive; in other words, those who are poor according to one measure are more likely to be poor according to another measure. However, many of the coefficients are small. For example, the correlations between production functioning poverty and all other kinds of poverty are each less than 0.20, with the exception of production capability. For income-based measures and consumption poverty, the low correlation with production functioning can be explained by the fact that although the high threshold of production functioning includes full-time work as one of the categories, it also includes part-time work, full-time caring and full-time study as productive activities, all of which are associated with low incomes. This highlights the fact that a multi-dimensional approach to poverty, for example by means of measuring functionings, results in different qualities or aspects of an individual's situation being reflected by different dimensions. A multi-dimensional approach should not entail finding many different measures of the same thing.

The correlations between income, equivalised income and consumption functioning poverty are all relatively high. This is reassuring because they *are* all attempting to measure the same underlying phenomenon. The correlations between these and consumption capability are lower than might be expected. This can be explained by the fact that this measure of consumption capability includes the assumption that everyone can access full-time paid work.

The correlation between functioning and capability on the production dimension is 0.24 for disabled people. The definitions of functioning and capability for production are closer to each other (for the higher thresholds) than for the consumption dimension. However the fact that the correlation is still fairly low indicates that the observed functioning and the predicted opportunity to function are far from perfectly

correlated. Some individuals have the opportunity to participate but are choosing not to, while others are functioning above their predicted capability.

Finally, the correlations between social functioning and other measures of poverty, and between political capability and other measures of poverty, are relatively low. This suggests these dimensions are orthogonal to the other dimensions and ways of measuring poverty. One would hope that in a democracy political capability was unrelated to other aspects of poverty and it appears that this is indeed the case, except that the income- or consumption-poor are also more likely to lack political capability.

The patterns for non-disabled people (still concentrating on the higher thresholds) are broadly similar to the patterns observed for disabled people, and the coefficients are generally of a similar magnitude. This indicates that the association between disadvantage in one space or dimension (for example, income) and disadvantage in another space or dimension (for example, social capability) is no stronger or weaker for disabled people than for non-disabled people. Exceptions to this are the correlation between income and equivalised income, which is of course lower for disabled people since equivalence affects their incomes to a greater extent than it does for non-disabled people, and the correlations between production capability and several other measures, which are in most instances lower for disabled people. This suggests that access to employment is less strongly associated with material well-being and other functionings and capabilities for disabled people than for non-disabled people, despite the fact that their *rates* of production capability poverty are high; the former perhaps have better-developed alternative sources of income, goods and services, and social interaction.

Turning to the bottom panels of the table, which show correlations based on lower poverty thresholds, the patterns become more diverse.<sup>2</sup> In general, the correlations for corresponding pairs of measures are as large or larger for the lower thresholds than for the higher thresholds, where they are significant. This indicates that deep poverty on one dimension is more strongly associated with deep poverty on another, than poverty

<sup>2</sup> Table 7.2 shows 0% of disabled and non-disabled people lacking social capability, using the lower thresholds. This is rounded down; there are in fact a small number of individuals who are estimated to lack social capability. Hence, it is possible to generate a correlation coefficient, albeit insignificant.

defined more broadly. It is of course a smaller group and there may be less diversity in the characteristics of this very disadvantaged section of the population.

### **7.5 Characteristics of the poor**

While correlation coefficients indicate the degree of association between different kinds of poverty, they are not informative about the characteristics of individuals who are consistently or inconsistently classified by the different measures. Some comparisons between functioning and capability (by dimension) were carried out in chapter 6, so these are not repeated here. Instead, Table 7.4 concentrates on income, equivalised income and functioning poverty. The results are based on FRS, in order to make use of the more detailed information about disability in that survey.

The first comparison (column I) is between income poverty and equivalised income poverty. Overall, 39 per cent of disabled people are not poor on either measure, 36 per cent are poor according to both measures, and 25 per cent are poor only on an equivalised income basis.<sup>3</sup> The comparison in column I is between the last two groups.

Few characteristics are statistically significant in distinguishing between the two groups, but two stand out. The first is household composition. Individuals in households with children are more likely to be both income poor and equivalised income poor (compared to being just equivalised income poor) than single individuals. This may be because individuals in households with children have a high likelihood of being in income poverty even without taking into account the extra costs of disability, so not many of them move across the poverty threshold once equivalisation for disability is added – they just slip deeper into poverty.

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<sup>3</sup> No-one is poor according to income poverty but not according to equivalised income poverty, because the equivalisation process makes an downwards adjustment to all disabled people's incomes.

The other characteristic which distinguishes the group who are poor on both counts from those who are only equivalised income poor, is severity of impairment. The more severe the impairment, the less likely it is that the individual will have been classified as both income poor and equivalised income poor. As explored in Chapter 4, this is because the unadjusted income measure does not take into account the steep gradient in extra costs of disability associated with severity of impairment.

The second column compares those who are equivalised income poor and consumption functioning poor (excluding the income component of consumption functioning), with those who are just equivalised income poor. Overall, 29 per cent of disabled people are poor on neither count, 10 per cent are consumption poor but not equivalised income poor, 17 per cent are equivalised income poor but not consumption poor, and the remaining 44 per cent are poor on both counts. The comparison in column II is between the latter two groups.

**Table 7.4: Characteristics of disabled people, by poverty status**  
 Probit regressions; dependant variables as specified in column headings (using higher poverty thresholds); disabled people only

<b>Dependant variable:</b> <i>Explanatory variables</i>	I		II	
	Equivalised income poor <i>and</i> income poor ('1') compared to equivalised income poor <i>but not</i> income poor ('0') Marginal probability	Standard error	Equivalised income poor <i>and</i> consumption poor ('1') compared to equivalised income poor <i>but not</i> consumption poor ('0') Marginal probability	Standard error
<i>Gender</i>				
Male	0.009	0.028	0.023	0.025
<i>Highest educational qual'</i>				
Degree or above	omitted		omitted	
Further	-0.031	0.063	0.076	0.044
Secondary	0.084	0.058	0.113***	0.040
Lower vocational	-0.031	0.087	0.102*	0.052
Other	0.143*	0.075	0.130**	0.045
None	0.069	0.050	0.264***	0.045
<i>Household composition</i>				
Single, no children	omitted		omitted	
Couple, no children	-0.118***	0.035	-0.344***	0.037
Single with children	0.114**	0.053	-0.084	0.066
Couple with children	0.139***	0.040	-0.331***	0.049
More than 2 adults	-0.018	0.043	-0.384***	0.048
<i>Age and onset of impairment</i>				
Age 16-29 and onset at: Birth	-0.040	0.086	0.201***	0.031
Childhood	0.152**	0.070	0.209***	0.027
16-29	0.038	0.065	0.198***	0.028
Age 30-44 and onset at:				
Birth	-0.137*	0.077	0.105*	0.051
Childhood	0.028	0.069	0.191***	0.031
16-29	0.079	0.052	0.139***	0.034
30-44	0.069	0.052	0.016	0.043
Age 45-59/64 and onset at:				
Birth	-0.057	0.068	0.067	0.049
Childhood	0.045	0.058	0.093**	0.042
16-29	0.038	0.050	-0.001	0.044
30-44	0.035	0.042	-0.034	0.036
45-59/64	omitted		omitted	
<i>Type of impairment</i>				
Locomotion	omitted		omitted	
Reaching or dexterity	0.079*	0.044	-0.033	0.041
Seeing or hearing	0.018	0.058	-0.057	0.054
Behavioural or intellectual	0.114***	0.039	0.028	0.034
Other	0.071*	0.043	-0.051	0.039

Table 7.4 cols I and II cont'd

	I cont'd		II cont'd	
<i>Severity of impairment</i>				
1 or 2	omitted		omitted	
3 or 4	-0.225***	0.043	0.015	0.036
5 or 6	-0.282***	0.041	0.028	0.035
7 or 8	-0.381***	0.040	0.092***	0.034
9 or 10	-0.454***	0.042	-0.013	0.053
<i>Number of observations</i>	1528		1526	
<i>Log likelihood</i>	-936		-770	
<i>Likelihood ratio index</i>	0.10		0.15	
<i>Predicted probability</i>	0.59		0.76	
<i>Proportion correctly classified</i>	0.67		0.74	

Statistically significant at \*\*\* 99% \*\* 95% \* 90% level

Source: FRS

**Table 7.4 continued: Characteristics of disabled people, by poverty status**  
 Probit regressions; dependant variables as specified in column headings (using higher poverty thresholds); disabled people only

<b>Explanatory variables</b>	<b>Dependant variable:</b>	III		IV	
		Equivalised income poor and production poor ('1') compared to equivalised income poor but not production poor ('0') Marginal probability	Standard error	Equivalised income poor and leisure poor ('1') compared to equivalised income poor but not leisure poor ('0') Marginal probability	Standard error
<i>Gender</i>	Male	0.019	0.025	0.054**	0.027
<i>Highest educational qual.</i>					
Degree or above	omitted			omitted	
Further	0.057	0.046	-0.053	0.060	
Secondary	0.065	0.044	-0.021	0.059	
Lower vocational	0.019	0.067	0.068	0.087	
Other	0.017	0.069	-0.055	0.081	
None	0.144***	0.044	0.135***	0.046	
<i>Household composition</i>					
Single, no children	omitted			omitted	
Couple, no children	-0.120***	0.035	-0.030	0.033	
Single with children	-0.283***	0.057	0.031	0.055	
Couple with children	-0.359***	0.044	0.005	0.041	
More than 2 adults	-0.027	0.042	0.059	0.043	
<i>Age and onset of impairment</i>					
Age 16-29 and onset at: Birth	-0.262***	0.095	-0.126	0.073	
Childhood	-0.279***	0.082	-0.112	0.067	
16-29	-0.199***	0.070	-0.082	0.059	
Age 30-44 and onset at:					
Birth	-0.116	0.079	-0.030	0.071	
Childhood	-0.186***	0.073	-0.100	0.060	
16-29	-0.135***	0.056	-0.015	0.051	
30-44	-0.141***	0.054	0.012	0.051	
Age 45-59/64 and onset at:					
Birth	0.013	0.063	-0.047	0.061	
Childhood	-0.028	0.059	0.110*	0.059	
16-29	-0.066	0.052	-0.058	0.047	
30-44	-0.034	0.041	0.002	0.041	
45-59/64	omitted		omitted		
<i>Type of impairment</i>					
Locomotion	omitted		omitted		
Reaching or dexterity	0.004	0.039	-0.154***	0.038	
Seeing or hearing	-0.102**	0.055	-0.061	0.052	
Behavioural or intellectual	0.042	0.033	-0.066*	0.037	
Other	0.029	0.037	-0.127***	0.037	

Table 7.4 cols III and IV cont'd

	III cont'd	IV cont'd
<i>Severity of impairment</i>		
1 or 2	omitted	omitted
3 or 4	-0.011	0.036
5 or 6	-0.008	0.035
7 or 8	0.119***	0.032
9 or 10	0.183***	0.030
<i>Number of observations</i>	1528	1528
<i>Log likelihood</i>	-761	-951
<i>Likelihood ratio index</i>	0.14	0.05
<i>Predicted probability</i>	0.76	0.37
<i>Proportion correctly classified</i>	0.78	0.65

Statistically significant at \*\*\* 99% \*\* 95% \* 90% level

Source: FRS

**Table 7.4 continued: Characteristics of disabled people, by poverty status**  
 Probit regressions; dependant variables as specified in column headings (using higher poverty thresholds); disabled people only

<b>Dependant variable:</b> <i>Explanatory variables</i>	V		VI	
	Equivalised income poor and functioning poor in <=1 dimension ('1') compared to equivalised income poor but not functioning poor ('0')	Marginal probability Standard error	Functioning poor in <=1 dimension and equivalised income poor ('1') compared to functioning poor but not equivalised income poor ('0')	Marginal probability Standard error
<i>Gender</i>				
Male	-0.005	0.011	0.086***	0.021
<i>Highest educational qual.</i>				
Degree or above	omitted		omitted	
Further	0.009	0.016	0.078	0.038
Secondary	0.029*	0.012	0.065	0.038
Lower vocational	0.022	0.015	0.188***	0.033
Other	0.018	0.017	0.059	0.052
None	0.099***	0.024	0.213***	0.036
<i>Household composition</i>				
Single, no children	omitted		omitted	
Couple, no children	-0.062***	0.020	-0.258***	0.033
Single with children	-0.038	0.034	0.094	0.052
Couple with children	-0.043**	0.025	-0.266***	0.044
More than 2 adults	-0.015	0.024	-0.399***	0.039
<i>Age and onset of impairment</i>				
Age 16-29 and onset at: Birth	dropped		0.063	0.056
Childhood	-0.004	0.034	0.207***	0.029
16-29	0.028	0.016	0.165***	0.031
Age 30-44 and onset at:				
Birth	0.019	0.026	0.112**	0.047
Childhood	-0.007	0.032	0.120**	0.043
16-29	-0.034	0.030	0.091**	0.036
30-44	-0.059**	0.034	0.096***	0.033
Age 45-59/64 and onset at:				
Birth	-0.007**	0.031	0.099**	0.043
Childhood	-0.001	0.027	0.132***	0.036
16-29	-0.030	0.028	0.081**	0.034
30-44	-0.043**	0.024	0.014	0.029
45-59/64	omitted		omitted	
<i>Type of impairment</i>				
Locomotion	omitted		omitted	
Reaching or dexterity	-0.048**	0.026	0.014	0.033
Seeing or hearing	-0.060**	0.036	0.009	0.041
Behavioural or intellectual	-0.006	0.016	0.086***	0.028
Other	-0.015	0.019	-0.017	0.032

Table 7.4 cols V and VI cont'd

Severity of impairment	V cont'd		VI cont'd	
1 or 2	omitted		omitted	
3 or 4	0.019	0.012	0.084***	0.026
5 or 6	0.026**	0.011	0.185***	0.023
7 or 8	0.038***	0.011	0.238***	0.021
9 or 10	0.038**	0.009	0.229***	0.019
<i>Number of observations</i>	1487		2041	
<i>Log likelihood</i>	-309		-1034	
<i>Likelihood ratio index</i>	0.13		0.17	
<i>Predicted probability</i>	0.96		0.76	
<i>Proportion correctly classified</i>	0.94		0.74	

Statistically significant at \*\*\* 99% \*\* 95% \* 90% level

Source: FRS

Individuals with low educational qualifications are more likely to be both equivalised income poor and consumption poor. This could suggest that individuals with higher educational qualifications prioritise spending on the items which make up the consumption index (such as consumer durables) and make cuts elsewhere in the household budget. An alternative explanation is that disabled people with higher educational qualifications have been poor for a shorter period, and hence still own a number of assets (car, house, etc). In this connection, it is worth noting that younger people are more likely than older people to be consumption poor as well as equivalised income poor. Older people have had the chance to accumulate assets over their lifetimes.

Couples with or without children are less likely than single people to be consumption poor as well as equivalised income poor. This probably reflects different spending patterns in different kinds of households; a freezer is an expensive investment for one person but could be a long-term saving for a family of six.

There is a trend towards greater severity of disability being associated with greater likelihood of being both consumption poor and equivalised income poor, but most of the coefficients are not statistically significant.

<sup>4</sup> Column III in the continuation of Table 7.4 compares individuals who are both equivalised income poor and production poor, with those who are equivalised income poor only. Just over one-fifth of disabled people (22 per cent) are poor according to neither measure; 17 per cent are production poor but not equivalised income poor.

The two groups compared are those who are poor on both counts (45 per cent) and those who are equivalised income poor but not production poor (16 per cent).

Broadly speaking the results follow a similar pattern to column II, the comparison between equivalised income poverty and consumption poverty. The relationship with severity of impairment is more marked: disabled people with more severe impairments are more likely to be production poor and equivalised income poor than just equivalised income poor. As was explored in Chapters 3 and 5, access to paid work for disabled people with severe impairments is seriously limited.

Column IV compares poverty on the social dimension and equivalised income poverty with equivalised income poverty alone. The FRS does not contain a measure of emotional support, so the indicator for the social dimension is here limited to participation in leisure activities. Just under one-third of disabled people (31 per cent) are neither equivalised income poor nor leisure poor; 8 per cent are leisure poor but not equivalised income poor. The two groups compared are those who are poor on both counts (23 per cent of the total) and those who are equivalised income poor but not leisure poor (39 per cent).

Among those who are equivalised income poor, men are more likely to be also social functioning poor than are women. Once again, educational qualifications play an important role. Those with no educational qualifications are more likely than those with a degree-level qualification to be leisure poor as well as equivalised income poor. Clearly there are barriers to leisure activities for disabled people other than income, and it appears that these barriers are more often insuperable for disabled people with lower qualifications.

Type of impairment is also significant when it comes to leisure participation. Disabled people with locomotion impairments are more likely than other impairment groups to be both leisure poor and equivalised income poor. Those with reaching/dexterity impairments are especially likely to be able to access leisure activities, despite being income poor. There is also a strong gradient with respect to severity: the more severely impaired are much more likely to be leisure poor as well as equivalised income poor.

The comparisons in columns V and VI, the last part of Table 7.4, are slightly different. They use a combined measure indicating whether an individual is poor on any of the three dimensions of functioning.<sup>4</sup> Column V compares those who are both equivalised income poor and functioning poor in at least one respect (57 per cent of the total), with those who are only equivalised income poor (4 per cent). Column VI reverses the selection: those who are poor in both respects, compared to those who are functioning poor only (24 per cent).<sup>5</sup>

In column V, individuals with low educational qualifications are more likely to be both equivalised income poor and functioning poor than just equivalised income poor. This matches the results for each of the three functioning dimensions considered separately.

Couples are less likely to be functioning poor as well as equivalised income poor, in accordance with the results for the consumption and production dimensions. With respect to age, the consumption and production dimensions pull in opposite directions (and age is not significant for the leisure dimension); the combined effect is that those in the middle age group 30-44 or older people who became disabled at that age are least likely to be both functioning poor and equivalised income poor.

In terms of type and severity of impairment, those with locomotion impairments are more likely to be functioning poor in addition to being equivalised income poor, compared to those with sensory impairments or reaching and dexterity problems. Those who are more severely impaired are more likely to be poor on both counts: the positive association between severity and functioning poverty on the production and leisure dimensions combines with the non-significant trend on the consumption dimension.

Turning to the group who are functioning poor but *not* equivalised income poor (column VI), we find that there is a significant difference by gender. Men are more

<sup>4</sup> As in Column II, using consumption functioning without the income component.

<sup>5</sup> The remaining 15 per cent are neither equivalised income poor nor functioning poor on any dimension.

likely to be poor on both counts than to be just functioning poor, compared to women. This suggests, perhaps, that non-income factors are more important in determining women's functioning than men's. Measures of income poverty disguise this gender difference, because income is measured at the household level while at least some of the functioning dimensions are at the individual level.

Those with lower educational qualifications are more likely to be poor on both counts than just functioning poor; as are single people with or without children. (Couples with or without children are in any case less likely to be functioning poor.) On the whole, the younger age groups are more likely than the older age groups to be equivalised income poor as well as functioning poor, and within each age group, those whose impairment developed during childhood are more likely to be poor in both respects. The older age groups may have secured a reasonable income but still face barriers to successful functioning, especially on the production dimension.

Disabled people with behavioural or intellectual impairments are more likely to be both equivalised income poor and functioning poor than to be just functioning poor, compared to other impairment groups. This reflects the very high rates of poverty among this group (cf column I). The strong gradient with severity in this comparison is also consistent with the high rates of poverty among the more severely impaired.

It is in the nature of multi-dimensional analysis that it is difficult to generalise about the results. Indeed, if one set of characteristics were consistently associated with a greater risk of poverty, whichever dimension and however measured, there would be little to be gained from engaging with this more elaborate framework. The first finding, then, is that measures of poverty based on income, income equivalised for the costs of disability, and functionings, not only produce different estimates of the rate of poverty, they also identify different kinds of people as particularly at risk.

The second general observation is that while income and equivalised income are necessarily household measures, some aspects of functioning (especially the production and social dimensions) can relatively easily be calculated at an individual level. This means that intra-household differences in the risk of poverty can be

identified, for example by gender. For example, we saw that among those who are equivalised income poor, men are more likely to be unengaged in leisure activities.

Finally, both the equivalised income measure and the functioning poverty measures reveal variations by type and severity of disability that are obscured in the unadjusted income poverty measure. Disabled people with intellectual or behavioural impairments are at significantly higher risk of being functioning-poor as well as income poor than are disabled people with other impairments. Crucially, the unadjusted income measure fails to take into account the extra costs associated with greater severity of disability and cannot reflect the non-income barriers faced especially by the more severely impaired, and hence underestimates the extent of disadvantage both in terms of standard of living and in terms of participation in society.

### **7.6 Implications for measuring poverty**

To conclude this chapter, we can return to the questions posed in the introduction. Firstly, the analysis of the extent of poverty among disabled and non-disabled people according to the different measures (unadjusted income, income equivalised for the extra costs of living with disability, functionings and capabilities), showed that poverty rates were higher among disabled people whichever measure was considered, and whichever poverty threshold on that measure was used. Hence if the question of interest is simply, 'Is poverty more prevalent among disabled or non-disabled people?', one could answer unambiguously, and indeed, as it turns out, one would not need to go beyond a traditional income-based poverty rate.

In most instances, however, the questions for researchers and policymakers alike are more complex than simply which of two broad sub-groups has a higher rate of poverty. Digging beneath the surface reveals important differences between the various approaches to measuring poverty. For example, the difference between disabled and non-disabled poverty rates in terms of production functioning is far greater than for income-based measures of poverty. This draws attention to the need to address what disabled people can *do* in their lives, and not just concentrate on their command over resources. Interestingly, the gap on the production dimension between

disabled and non-disabled is large whether one uses a low threshold (paid work only) or a higher threshold, including in addition activities like full-time study, looking after pre-school-age children, or caring full-time for another adult. The fact that the gap remains even if this broader range of activities is included suggests that disabled people are not compensating for their lack of access to the labour market by engaging in other socially valued activities (at least not those captured by the survey). Whether this is a matter of choice, or because there are also barriers for disabled in pursuing these other activities can be ascertained only by moving from a measure of functioning to a measure of capability.

As is to be expected, the gap between disabled and non-disabled rates of equivalised income poverty is larger than the corresponding gap for unadjusted income poverty. But this fact in itself highlights an important point. Unadjusted income poverty rates, such as those used in the UK government's *Households Below Average Income* (HBAI; DWP, 2005c), can be misleading if used to compare the relative position of disabled and non-disabled people. HBAI-type incomes include social security benefits to which individuals are entitled because they incur additional costs of living due to their disability, but no adjustment is made to the total household income to take into account that these additional costs reduce the standard of living of the individuals in the household, relative to a household with the same total income which does not contain a disabled person. This discrepancy becomes particularly noticeable for individuals with more severe impairments.

Turning to the capability-as-opportunity poverty measures, the differences between disabled and non-disabled poverty rates are generally small if few characteristics are regarded as beyond an individual's control. Of course, if few characteristics are regarded as fixed, the differences between the characteristics disabled people could have, if they made the necessary changes, and the characteristics of non-disabled people, are reduced. If education and region are within individual control, for example, both groups could come to have a similar educational profile, for example, and live in similar areas of the country. In this case, naturally, the difference between their poverty rates would be less. Many of the contributors to the observed poverty rates among disabled people are not directly related to their disability, but rather to their other characteristics – education, work history and so on.

Allowing more characteristics to count as constraints brings the capability poverty rates closer to the observed functioning poverty rates (and to income poverty rates), and also widens the gap between disabled and non-disabled people. The key question is to what extent are the characteristics which disabled people are observed to have the result of genuine constraints and to what extent is a matter of choice? As was argued in Chapter 6, this is inescapably normative question, depending on one's position in the free will-determinism debate, a debate which has gone on for several millennia. The appropriate role for the social scientist, arguably, is to make the value judgements explicit, and to demonstrate the implications of adopting one or another position. There is not a uniquely correct answer to whether a disabled and a non-disabled person have equal opportunity to avoid poverty, or gain employment or any other functioning; rather it depends on the extent to which we believe an individual can, or can be expected to, transform his or her circumstances.

Section 7.3 considered the intensity of poverty for disabled and non-disabled people. The unadjusted income measure indicated that disabled people were better protected from extreme poverty (relative to non-disabled people), as a result of being eligible for higher rates of social security benefits. However this advantage was not found to carry through to equivalised income poverty – indicating that once variations in need are taken into account, disabled people are more at risk than non-disabled people of extreme poverty. Moreover, functioning measures and the production capability measure showed disabled people to be at greater risk of deeper poverty than non-disabled people (on the admittedly limited basis of quasi poverty gaps). These observations go to the heart of one of the basic motivations for moving away from a pure income-based measure put forward by the capability theorists. If the rate at which individuals are able to convert income into well-being varies, for example as a result of disability, then income is not a good proxy for well-being. Income is a means to an end, but the effectiveness of the means depends on the individual recipient and his or her circumstances. Instead we need measures which get closer to the valued ends themselves.

Analysis of the correlations between different measures of poverty among disabled people found that they were all positively correlated (if they were significantly

correlated at all). Again, one might draw the conclusion that going beyond a traditional income measure was unnecessary, since it provides the same basic information as other less familiar, more cumbersome measures. However, this misses the fact that although positive, many of the pairs of poverty measures are only weakly correlated – especially the social and political dimensions with the others. A genuinely multi-dimensional approach to the identification of poverty or well-being entails measuring *different* dimensions, not seeking to find alternative measures of the same underlying phenomenon.

The pairs which are more highly correlated are the various combinations among the unadjusted income, equivalised income and consumption functioning measures. These properly *are* trying to measure the same underlying dimension. On the whole, the equivalised income measure is preferred among these, for reasons which will be explained below.

A range of reasons were uncovered for the differences in the characteristics of disabled people poor on both an income-based measure and a functionings measure compared to those who are only equivalised income-poor (or only functionings-poor). They included:

- differences between household-level measures (such as income) and individual-level measures (production functioning);
- duration of poverty (recently income-poor may not yet be consumption-poor), or stage in the lifecycle (older people have had more chance to acquire assets; on the other hand, they may be more vulnerable to production functioning poverty);
- variation in the prioritisation of expenditure and preferences of individuals (for example, larger households being more likely to choose to purchase consumer durables);
- barriers to particular forms of participation (for example, according to type or severity of impairment);
- the protective effect of educational qualifications (those with high-level qualifications are less likely to experience combined income and functioning poverty than those with no educational qualifications).

The ideal measure of poverty would reflect and be sensitive to these differences: to individuals' positions within households, their stage in the lifecycle, the duration of their current circumstances, their choices and the range of constraints operating on them.

In practice, no single measure can fulfil all these requirements. Each of the measures considered in this chapter has advantages and disadvantages. Unadjusted income is clearly defined, arithmetically tractable, and plays an important role in determining the opportunities open to individuals across a wide range of dimensions of well-being. The body of analysis and interpretation accumulated over several decades using income as an indicator of poverty must also count significantly in its favour. But this familiarity may lend income-poverty an aura of precision and objectivity which is not entirely warranted. Although claims have been made for a 'scientific' definition of poverty (Gordon et al, 2000), the selection of thresholds for income poverty is no less, and no more, arbitrary than the selection of thresholds for other measures.<sup>6</sup> The translation of a household-level measure into an indicator for individuals involves heroic assumptions about the distribution of resources within a household. More fundamentally, failing to take into account variations in the rate at which individuals can convert income into well-being can lead to misrepresentations of the position of various sub-groups.

<sup>6</sup> In *Poverty and Social Exclusion in Britain*, the authors make the claim that their definition of poverty is more objective or scientific than the alternatives. The poverty threshold is derived by means of an assessment of the relationship between income and deprivation, where deprivation is defined as enforced lack of a given number of goods or services which are regarded by more than 50 per cent of the population as a necessity and which meet reliability and validity criteria. This is then adjusted to exclude people on high income (the definition of which is not stated). At least three aspects of this definition are arbitrary: the selection of a 50% threshold of opinion to define a necessity, the levels of reliability and validity required of the items to be included in the deprivation index, and the exclusion of 'high income/high deprivation' cases. For a more detailed critique, see McKay (2004). There is no doubt that the judgements made by the authors in deriving the poverty threshold are *reasonable*, but they are judgements nonetheless.

Income equivalised for one such source of variation – that due to disability – improves the closeness of approximation to a measure of well-being. In particular, it diminishes the distortion in the relative position of disabled and non-disabled people and in the distribution of poverty among disabled people. Equivalisation of this kind is no more complex to operationalise than other forms of equivalisation which are standardly performed (such as for household size), and it produces an income-based measure which shares many of the attractive features of unadjusted income. Although the precise form of the equivalisation proposed in Chapter 4 could undoubtedly be improved (for example, by using a wider range of indicators of standard of living and verifying the robustness of the results using a larger sample), in principle fully equivalised income is unequivocally preferred to unadjusted income.

Measuring functionings has the advantage over equivalised income that it can reflect dimensions of well-being which are not principally income-related. This advantage clearly does not apply to the consumption dimension, since the main determinants of consumption are income and the needs which that income has to cover. Moreover many items of consumption are also measured at the household rather than the individual level. For these reasons, there seems little to be gained by measuring consumption functioning rather than fully-equivalised income. The same cannot be said for the production and social dimensions, which, as the comparisons in this chapter have shown, are not closely associated with (equivalised) income poverty. If these 'beings and doings' are valuable in their own right, it is important to measure them separately.

However, assessing poverty by measuring functionings can fall uncomfortably between two stools. On the one hand, the dimensions which contribute to well-being have to be selected, a range of indicators found for each dimension, and an ordering generated within them. This can all seem arbitrary and unduly prescriptive of the kind of life which corresponds to a state of well-being. In these respects, measures of functionings are less convenient than income-based measures. On the other hand, functionings do not distinguish between individuals who are choosing not to pursue some particular activity (such as paid work) and those who are unable to do so. In this respect, measures of functioning do not closely match the underlying concept of well-being which is appropriate to public policy: namely, providing individuals with

substantive freedom, such that they may pursue their own well-being or other goals (see the argument in Chapter 1).

Measuring capability as opportunity brings us closer to what is intrinsically valuable. It also has the advantage of forcing normative questions about the extent of free will attributed to individuals to be made explicit. It reduces the unease about the choice of dimensions in the functionings approach because it measures opportunity to participate rather than actual functioning and is therefore less prescriptive. This approach inevitably finds fewer people in poverty than a functionings-based approach, since some of those not achieving a particular functioning are found to have the opportunity to achieve that functioning, should they wish to do so. This is not necessarily a disadvantage, however. It creates less distortion in the comparison between disabled and non-disabled people than other approaches *provided* that the correct constraints on opportunity can be identified. On the other hand the capability-as-opportunity approach is considerably more complex to operationalise and is more demanding in terms of information.

This concludes the comparisons between income, equivalised income, functionings and opportunity as presented in this chapter, and, thus, the first part of the thesis. However, in one important respect the measure of capability-as-opportunity discussed here and in Chapter 6 is incomplete. It takes preferences (for example, preferences for employment versus non-employment, or voting versus abstaining) as given, and regards those who have capability but do not exercise it as being equally well-off as those who do exercise it. This ignores the process of the formation of preferences, which may itself have been subject to constraints. For example, a disabled person may have been given little encouragement to see themselves as a useful member of society, and hence may not have formed the intention to work, or to vote, or indeed to pursue any other socially-valued activity. Even if those opportunities are nominally open to him or her, their usefulness is negated by the conditioning of expectations which often accompanies long-term disadvantage. Part II of this thesis therefore sets out to examine the process of preference formation itself, by means of investigating the aspirations disabled and non-disabled young people develop. Such an approach takes us beyond the definition of well-being used throughout the first part of the thesis, into the realm of assessing the extent to which people are able to form their own plans of

life (agency goals) and then to pursue them. It reflects a deeper interpretation of the requirements of the capability approach: capability as autonomy, not mere opportunity.

### Appendix 7.1: Extent of poverty (Family Resources Survey)

**Table A7.1: Extent of poverty according to different measures and thresholds:  
Family Resources Survey**

Measure and threshold	Disabled <sup>i</sup> poverty rate (%)	Non- disabled poverty rate (%)	Absolute difference (percentage points)	Percentage difference (difference as % of non- disabled rate)
<b>Income<sup>ii</sup></b>				
< 60 per cent median	38	23	15	65
< 50 per cent median	27	17	10	59
<b>Equivalised income<sup>iii</sup></b>				
< 60 per cent median	59	22	37	168
< 50 per cent median	49	16	33	206
<b>Functionings</b>				
<i>Consumption</i> <sup>iv</sup> Index < 3	35	18	17	94
Index < 2	19	9	10	111
<i>Consumption w/o income</i> <sup>v</sup>				
Index < 3	49	30	19	63
Index < 2	25	11	14	127
<b>Production<sup>vi</sup></b>				
None of: paid work, FT study, FT caring	55	12	43	358
No productive activity	37	6	31	517

Notes:

<sup>i</sup> 'Disabled' indicated by score greater than zero on OPCS disability severity scale.

<sup>ii</sup> Current, net, after housing costs, household income, equivalised for household size only. Thresholds set within working age population. See Chapter 3.

<sup>iii</sup> Income definition as above, but equivalised for extra costs of disability: see Chapter 4.

<sup>iv</sup> FRS consumption index has a maximum value of 4. It is a count of the following: income above 60% median, owner-occupier, has access to a car, has at least five consumer durables. See chapter 5.

<sup>v</sup> FRS consumption index without income component; maximum value 3.

<sup>vi</sup> Hierarchy of activities: full-time paid work, full-time study, caring for children under school age, caring for others full-time, part-time work (first threshold), studying part-time, caring for school-age children, caring for others part-time (second threshold), no productive activity. See chapter 5.

**Appendix 7.2: Correlation between poverty rates according to different measures, based on FRS**

**Table A7.2: Correlation between poverty rates according to different measures, based on FRS**

Tables show pair-wise correlation coefficients

*(i) Higher thresholds*

<b>Disabled people</b>	I	E i	C f	Ci f	P f	S f
	1	2	3	4	5	6
1 Income < 60% median	1.00					
2 Equiv income < 60% median	0.63	1.00				
3 Consumption func < 3	0.59	0.52	1.00			
4 Consumption w/o income < 3	0.36	0.44	0.75	1.00		
5 Production func < high	0.20	0.30	0.22	0.19	1.00	
6 Social func < 2	0.11	0.18	0.17	0.16	0.15	1.00

<b>Non-disabled people</b>	I	E i	C f	Ci f	P f	S f
	1	2	3	4	5	6
1 Income < 60% median	1.00					
2 Equiv income < 60% median	0.96	1.00				
3 Consumption func < 3	0.65	0.65	1.00			
4 Consumption w/o income < 3	0.40	0.41	0.70	1.00		
5 Production func < high	0.33	0.33	0.27	0.18	1.00	
6 Social func < 2	n/a	n/a	n/a	n/a	n/a	n/a

*(ii) Lower thresholds*

<b>Disabled people</b>	I	E i	C f	Ci f	P f	S f
	1	2	3	4	5	6
1 Income < 50% median	1.00					
2 Equiv income < 50% median	0.56	1.00				
3 Consumption func < 2	0.42	0.43	1.00			
4 Consumption w/o income < 2	0.29	0.39	0.82	1.00		
5 Production func: none	0.02	0.18	0.15	0.18	1.00	
6 Social func: none	0.06	0.12	0.13	0.13	0.06	1.00

<b>Non-disabled people</b>	I	E i	C f	Ci f	P f	S f
	1	2	3	4	5	6
1 Income < 50% median	1.00					
2 Equiv income < 50% median	0.95	1.00				
3 Consumption func < 2	0.51	0.50	1.00			
4 Consumption w/o income < 2	0.40	0.40	0.84	1.00		
5 Production func: none	0.22	0.23	0.21	0.18	1.00	
6 Social func: none	n/a	n/a	n/a	n/a	n/a	n/a

**PART II: AUTONOMY**

## CHAPTER EIGHT: AGENCY GOALS AND ADAPTATION

### 8.1 Introduction

In Chapter 6, an approach to measuring capabilities was adopted which assessed whether a particular functioning (for example, paid employment) was within an individual's capability set or not. This was termed 'capability as opportunity', because it considers the contemporary opportunity an individual has, given fixed constraints, to achieve a functioning. Two features of this approach were noted: (i) it focuses on the capability to achieve functionings which are selected with reference to the policy context and individual well-being, rather than on functionings which are prioritised by the individual him or herself; and (ii) preferences are treated as exogenous, that is to say, the shape an individual's preferences happen to take is regarded as irrelevant for the purposes of comparing well-being. Two individuals with employment capability in their capability set, one of whom exercises it and one of whom does not, are regarded as equally well-off in the 'capability as opportunity' metric, without reference to the reasons for the decisions the individuals have made.

In this chapter, an approach which I term 'capability as autonomy' is introduced, which attempts to address these two issues. Instead of asking 'Is functioning  $f$  within person  $P$ 's capability set?', this approach considers the question, 'Does  $P$  have the capability to choose  $f$ ?'. This formulation allows the factors which have influenced the development of  $P$ 's preferences to be taken into account. It acknowledges that the 'menu' of options presented to an individual can influence not only his actual choice but also the formation of his preferences (Sen, 1997b). In what circumstances did  $P$  develop his view of the opportunities open to him? Did he have positive role models and access to high quality advice and information? Is it possible that his expectations were conditioned by his experience to the extent that the opportunities that others take for granted were beyond his horizon?

This in turn facilitates a broader view of the functionings which are relevant to the evaluation. Once we have an appreciation of the circumstances surrounding the formation of an individual's preferences, it makes sense to ask whether they have

been able to pursue and achieve the objectives which they set for themselves. In other words, the achievement of agency goals can be considered alongside a more narrowly focused evaluation of well-being. For evaluation of well-being, the functionings selected are those which are relevant to the policy context, are related to the individual's being, and which the individual has reason to value, even if he or she does not in fact prioritise them. Examples considered in Chapter 6 included an adequate level of consumption, engagement in productive activity, social interaction and political participation. Agency goals, by contrast, are the objectives the individual sets for him or herself. "A person's 'agency freedom' refers to what the person is free to do and achieve in pursuit of whatever goals or values he or she regards as important." (Sen, 1985b, p.203). They are likely to overlap with well-being, since most people do wish to promote their own well-being, but are unlikely to be limited to it. They might include, for example, becoming a painter or having children. As discussed below, agency goals may be adaptive, which is why it is important to consider them in the context of an assessment of the process by which they were formed.

Capability as autonomy, then, seeks to assess the extent to which individuals have freely chosen their objectives, and the extent to which they have been able to achieve them. Of course, the approach has its own limitations, primarily of an empirical nature: it adopts a lifetime perspective, and therefore demands long-run longitudinal data, and in principle requires detailed information about life aspirations at several points in time. Not surprisingly, the gaps between theoretical requirements and actual data availability are large.

This chapter begins at a theoretical level by developing a critique of capability as opportunity and providing more detail on the motivation for capability as autonomy, including a discussion of the problem of adaptive preferences and evidence for their existence. It then moves on to the first part of an empirical analysis of capability as autonomy, in the context the aspirations young people form for their future independence, education and occupation. Section 8.3 reviews existing knowledge on the influences on development of aspirations, among young people in general and among disabled young people in particular. Section 8.4 introduces the 1970 British Cohort Study and uses data from the age 16 survey to analyse the aspirations of

disabled and non-disabled teenagers, and the influences on their formation. The chapter concludes with an assessment of whether there is evidence of adaptation in this context.

The second part of the empirical analysis required for a comprehensive assessment of capability as autonomy, namely, the extent to which individuals are able to realise their agency goals, is reserved for Chapter 9.

## 8.2 Capability as autonomy

### 8.2.1 *The problem of adaptation*

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To understand the significance of the distinction between 'capability as opportunity' and 'capability as autonomy' we need to return to one of Sen's key arguments against utilitarianism. The argument takes different forms in different places (e.g. Sen 1983, 1985a, 1985b, 1999a), but the underlying point is that subjective assessments of well-being are flawed as a metric for equality or social justice because of the phenomenon of adaptation.<sup>1</sup> In general terms, adaptation may be said to occur when an individual's assessment of his or her situation is influenced by his or her past experience (Elster, 1982). When the past experience is one of luxury, such as someone who has become accustomed to fine wine, the issue is often referred to as the problem of 'expensive tastes'. The individual would feel deprived if denied access to fine wine, but, intuitively, this deprivation should not be given equal weight to the deprivation felt by someone on the poverty line. At the other end of the spectrum:

"The battered slave, the broken unemployed, the hopeless destitute, the tamed housewife, may have the courage to desire little, but the fulfilment of those disciplined desires is not a sign of great success and cannot be treated in the same way as the fulfilment of the confident and demanding desires of the better placed" (Sen, 1987, p.11).

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<sup>1</sup> See also Teschl and Comim (2005).

Nussbaum makes a similar case in her piece on women and adaptive preferences (Nussbaum, 2001). She reports the experience of a woman who had been the victim of prolonged domestic violence, who believed at the time the abuse was being perpetrated that this was simply a woman's lot in life. Only after having escaped from the relationship did the woman come to recognise that her rights had been violated. This woman's contemporary subjective evaluation of her situation was not a reliable indicator of whether an injustice was in fact taking place.

Adaptation may also occur in more mundane circumstances, for example, a gradual upwards shift in expectations associated with rising living standards, or coming to terms with a bereavement. There is nothing wrong with adaptation *per se*; indeed in many circumstances it is a very beneficial psychological mechanism. But its existence does imply that subjective states, the bedrock of utilitarianism, and in particular the distribution of current subjective well-being, are related to the previous distribution of advantage and disadvantage in a perverse way: in the presence of adaptation, previous disadvantage is likely to result in a higher subjective well-being, other things being equal.

Examples such as these lead Sen and Nussbaum to reject utility-based metrics of well-being. Instead, the capabilities approach invites us to consider objective measures of functionings and capabilities. That ensures that the 'object of value' is not itself subject to distortion through adaptive preferences, but does not circumvent the issue of adaptation altogether. The same problem can arise in two further contexts: the selection of functionings to be evaluated, and the definition of a capability set.

The selection of functionings was discussed in Chapters 2 and 5. To recap, Nussbaum recommends the selection of functionings or capabilities to be evaluated should be based on a pre-defined list (Nussbaum, 2003), while Sen makes a distinction between well-being and agency goals. If circumstances and past experience influence preference formation, it is reasonable to assume they can also influence the goals an individual develops. Thus it appears that the problem of adaptation also applies to evaluating advantage and disadvantage in terms of agency goal achievement. The agency goals of the woman in Nussbaum's example might have included loyalty to her violent husband, yet any assessment which concluded she was better off than

another woman who was in the process of extracting herself from an abusive relationship would seem perverse, or at least incomplete. The fact that agency goal achievement is vulnerable to the critique based on the phenomenon of adaptation was one reason why Chapter 5 analysed functionings on the basis of well-being achievement rather than agency goal achievement.

Moving from an assessment of functionings to an assessment of capabilities might be thought to help. It allows individuals' priorities to differ from those defined by an expert or by society as constituting well-being, without risking the evaluation itself being influenced by adaptive preferences. By focusing on whether selected well-being functionings are within an individual's capability set, rather than on whether those functionings are in fact achieved, the capability-as-opportunity approach assesses individuals with the same 'well-being opportunity' as having the same level of well-being, even if some of those individuals have chosen to pursue objectives other than their own well-being.

The problem of adaptation arises again, however, this time in the guise of defining whether a functioning is within a given capability set or not. Suppose the functioning of 'attending university' is within the capability set of two 18-year-olds, Mohammed and Henrietta. Henrietta wants to go to university, Mohammed wants to go straight into the family business. Capability as opportunity would assess these two individuals as having the same level of well-being freedom with respect to higher education. But if we add in the further information that Henrietta has always assumed that she will go to university because in everyone in her family has done so for generations back, whereas the possibility has never crossed Mohammed's mind and no-one has ever encouraged him to think otherwise, the capabilities of the two individuals no longer seem quite so equal. The formation of the preference for undertaking higher education has itself been influenced by circumstances which are far from equal or, perhaps, just.

One response to this scenario is to refine the definition of capability to take into account subjective constraints; to say, a functioning is within a capability set only if it is recognised by the individual as being within his or her grasp. But this seems too drastic a restriction: there are many opportunities which neither Mohammed nor Henrietta have considered (flying a hot air balloon, emigrating to New Zealand,

learning Greek) but which, for the sake of argument, could be easily realised. It seems right that these should be included in the definition of their capability set even though these options are not, and have never been, present to their minds.

This difficulty is not made explicit in Sen's exposition of the capabilities framework. He does not advocate the capability-as-opportunity approach as such but nor does he develop an account of the formation of individual life-plans. On the question of selection of functionings for evaluation, he suggests that any selection must suit the purpose of the evaluation in question, but in general terms, the functionings should be selected from among those which the individual has 'reason to value' (for example, Sen 1998a, 1999a). This is a cryptic phrase. If it is interpreted as reasons of which the individual is him or herself conscious, it does not circumvent the problem of adaptation. If, as seems more likely, it is interpreted as reasons which the individual would acknowledge as good reasons, were he or she in possession of appropriate knowledge and experience, that knowledge and experience needs to be specified. Following that through could lead to convergence between Sen and Nussbaum's positions, since the latter asserts that her list of basic capabilities is derived from an examination of those activities and states of beings which humans have valued and for which they have striven over the ages and across cultures.

### *8.2.2 Evidence for adaptation*

Before proceeding to outline the attractions of capability-as-autonomy as an alternative interpretation of the evaluation of capabilities, it is worth pausing to consider to what extent the phenomenon of adaptation actually exists in the real world. Sen and Nussbaum's examples of adaptation are either hypothetical or anecdotal, and describe situations which are, one would hope, the exception rather than the rule. Fortunately, there is a stronger evidence base for the existence of adaptation outside the capabilities literature, provided by studies in psychology, economics and sociology over the last several decades. The brief review which follows focuses on adaptation to changes in standard of living.

A number of cross-sectional studies are highly suggestive of a process of adaptation, but it cannot be shown conclusively without longitudinal data. With respect to

adaptation to income level, Stutzer (2004) finds that individuals with higher income also report higher values for the 'absolute minimum income required to make ends meet'. This suggests that the frame of reference shifts in line with experience of deprivation or wealth. Several authors have found that satisfaction is positively correlated with recent perceived improvements in financial circumstances, sometimes more strongly so than with level of income (Graham and Pettinato, 2002, for Peru and Russia; Ingelhart and Rabier, 1986, for France and Belgium; Davis, 1984, for the US); however, the interpretation of these results is unclear because the subjective assessment of whether there has been a change in income is likely to be endogenous to satisfaction.

There are a small number of studies using "genuine panel data and objective indicators of standard of living. Some focus on job satisfaction and wages: for Britain, Clark (1999) found that job satisfaction was related to changes in wages (controlling for levels of wages), and Grund and Sliwka (2003) produced similar results for Germany. Clark *et al* (1998) showed that the likelihood of men quitting a job was related to the change in their wages over the last year, but not to the level of their wages. These results suggest that workers adapt to the level of wages, such that periodic increases in wages are required to maintain the same level of satisfaction.

Others studies focus on household income. For example, Chan *et al* (2002) use two-wave panel data for Singapore and Taiwan to show that both baseline income and change in income are strongly related to change in perceived income adequacy. By contrast, Diener *et al* (1993), using two-wave panel data for the US, find that change in income does not affect overall subjective well-being independently of income level. Finally, Ravallion and Lokshin (2001) use two-wave panel data for Russia and conclude that change in household income is a strong independent predictor of change in subjective economic welfare, controlling for baseline income.

This brief summary indicates that there is sufficient evidence that subjective adaptation to objective changes in standard of living is a phenomenon which should be taken seriously. There are also studies on adaptation in other contexts, as summarised for example by Winkelman and Winkelman (1998) and Frederick and Lowenstein (1999).

### 8.2.3 *Autonomy*

According to a capability-as-autonomy, two individuals have equal capabilities if they have each been able to freely formulate and pursue a plan of life. It is natural to connect this conception to Sen's description of 'agency freedom'. In its most fully-developed sense, agency freedom requires, firstly, that an individual's values, beliefs and aspirations have been formed in conditions under which alternative plans of life could also have been formulated, and secondly, that the particular plan of life chosen can be pursued. Having significantly different options open to you in the here and now is not sufficient for capability as autonomy (Bavetta 2004). As Bavetta and Guala (2003) express it: "autonomy provides a certain value to one's action by linking in a coherent fashion one's achievements with one's preferences, as part of a process of self-conscious creation" (p.428).

The idea of rational economic man which underlies the theory of market economics takes preferences as given and evaluates outcomes according to the extent to which those preferences are satisfied (Hollis 1996); capability as opportunity reflects this approach. Capability as autonomy recognises the possibility that values and preferences may not be freely chosen.

Capability as autonomy meets many of the criticisms levelled at other approaches to measuring well-being. It takes agency goals seriously, but, unlike utilitarianism or capability-as-opportunity, it is not vulnerable to a critique based on adaptation because the process by which preferences are formed (and adapted) is explicitly part of the overall assessment of capability. It also respects variation in individuals' objectives (unlike functionings-based assessments), and acknowledges the value of freedom. It is the only approach which meets all these criteria.

Autonomy is not, of course, directly observable, nor are there any obvious proxies. One might be tempted by survey questions which ask respondents to reflect on their life as a whole, for example, 'Broadly speaking how satisfied are you with your life?', but the evidence suggests that the problem of adaptive preferences is especially severe with questions of this kind. Autonomy consists of two parts – the formation and

pursuit of life plans. An alternative approach is therefore to study each part separately. The formation of life plans can be examined through the influences on a person's aspirations, including, for example, their past experience and current socio-economic circumstances. This should allow an assessment of the range of aspirations which an individual in a particular set of circumstances was likely to have been able to form to be added to information on the actual aspirations which he or she did develop.

Of course, everyone is influenced by their experience and circumstances, so that in one sense everyone's aspirations are conditioned by their circumstances, positively or negatively. However, the result of the conditioning is not equal in its impact.<sup>2</sup> Take occupational aspirations as an example. There are undoubtedly social costs for a young person brought up with the expectation of becoming a doctor in choosing instead to become a plumber, but these are not comparable to the practical, financial and social barriers to a young person from an uneducated background forming the aspiration of going to university or taking up a profession. One test of the effect of conditioning is therefore the costs that would be involved in departing from the conditioned norm. Another test is whether the conditioned expectation leads to an aspiration which will tend to expand the individual's future capability set, or to contract it. Education is the typical example of an aspiration which tends to open up other avenues rather than closing them down. In this way, the effect of conditioned expectations is asymmetric.

Finally, there may be some influences on the formation of aspirations which are regarded as fair and some which are regarded as unfair. For example, it is only reasonable that someone who cannot sing in tune has a lower chance of forming the aspiration to become an opera singer (hopefully!) than someone who is musically talented. Which attributes should be considered as legitimate restrictions on someone's aspirations and which should not is a parallel debate to the distinction between constraints and preferences discussed in Chapter 6. It depends on the theory of social justice and the account of free will which are being applied. These important

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<sup>2</sup> In typically dramatic form, Sen (1981b, pp 203/4) contrasts Galileo, who was forced to recant his beliefs with threats of torture, with a child who leaves behind his childhood desire to be an engine-driver. Sen's point is that changes in preferences which occur as a result of critical reflection on newly-acquired knowledge and opportunities are entirely consistent with autonomy, while changes in preferences which are a result of a diminution of opportunity are not.

debates are side-stepped in this chapter by offering a description of the influences on the formation of aspirations, without committing to a position on whether these influences are unfair. However, some such influences – like ethnic identity and social class background – are likely to be counted as unfair by any reasonable conception of social justice.

In practice, we have little information about the aspirations of adults but there are data available on the aspirations of young people, linked to information about outcomes in early adulthood. The formation of aspirations is therefore explored in the remainder of this chapter, and the extent to which they are realised in adulthood is investigated in Chapter 9. This approach is demanding, both in terms of data requirements and in terms of analysis, but in principle it provides a fuller representation of capabilities than is offered by alternative approaches.

### **8.3 The formation of life-plans**

#### *8.3.1 Content and importance of life plans*

There has been extensive research since the 1960s on the aspirations young people develop for their future lives. Much of this literature concentrates on occupational aspiration, partly stemming from sociologists' interests in the intergenerational transmission of social class, and this concentration is reflected in the overview which follows. Research on how mid-teens themselves think about the future has consistently found that choice of occupation is important, along with further education, leaving home and starting a family (Barry, 2001; Morrow and Richards, 1996; Trempala and Malmberg, 1998).

Although specific aspirations change through the teenage years and early adulthood as interests change and the young person becomes more 'realistic' (Kelly, 1989; Rindfuss *et al.*, 1999), the level of occupational and educational aspirations are significant predictors of later outcomes (Bynner, 1998; O'Brien and Jones, 1999; Pilling, 1990; Schoon, 2001). In other words, the formation of 'preferences' (aspirations) is a potentially important constraint on, or facilitator of, an individual's capability set later in life. As the following section shows, the influences on the

formation of aspirations include many features of the social system such as social class and schooling. This supports the idea that measuring capability as opportunity (the extent to which people are able to do what they want to do) may miss important sources of inequality or injustice (the formative influences on their preferences).

### *8.3.2 Influences on aspirations*

Different disciplinary perspectives have focused on different factors affecting the formation of young people's ideas about what they want to do when they leave school and in adult life. Psychologists tend to emphasise character traits and personal identity. According to this school of thought, occupational choice and career development is essentially a process of developing and implementing a 'self-concept'. Banks *et al* (1992) found that young people who were least fatalistic in their outlook were most likely to be successful in staying on in education or gaining employment. Haller and Miller (1971) drew attention to the importance of self-perception, particularly in terms of successfulness and independence.

Sociologists have drawn attention to the role of social class. Being from a higher social class background is strongly associated with higher occupational aspirations, and is also associated with a higher likelihood of achieving the occupation of choice (Furlong, 1992; Kelly, 1989; Robertson and Symons, 1988; Schoon and Parsons, 2002). Characteristics like gender and ethnicity are also important. Although there has been some convergence between boys and girls since the 1970s in the jobs they identify as desirable, strong gender differences remain (Kelly, 1989). Differences between ethnic minorities are complex, with children from Asian, especially Indian, backgrounds showing greater tendency to want to continue in education and achieve higher-status occupations (Raby and Walford, 1981), while children from Caribbean ethnic backgrounds tend to be more disaffected.

Peer group, parental and teacher expectations have each been found to be important influences on the young person (Carter, 1962; Furlong, 1992; Haller and Miller, 1971; Kelly, 1989; Schoon, 2001; Schoon and Parsons, 2002). The evidence on the impact of the school environment has been more mixed however, with some studies finding little school-specific effect (Raby and Walford, 1981).

Economists have emphasised the way in which a young person who has already had some academic success will be more likely to be motivated to acquire further qualifications and skills, and will also be in a better position to access those opportunities (Carter, 1962; Furlong, 1992). Conversely, lack of success or recognition at school can produce a downwards spiral. Local labour market conditions are also significant, again both in terms of the motivation they may give to young people and in terms of the actual opportunities available to them (Bynner, 1998; Carter, 1962; Raby and Walford, 1981; Schoon and Parsons, 2002).

### *8.3.3 Disabled young people's aspirations*

Research on young disabled people's transition to adulthood has tended to focus on health and social services, and outcomes in terms of independent living, rather than on education and employment – perhaps indicative of a poverty of expectations on the part of researchers and professionals. Nevertheless, when asked, disabled young people express their ideas about the future in similar terms to their non-disabled peers (Morris, 2002), although they may be less clear about how they will achieve their goals (Dean, 2003; Norwich, 1997).

One exception is research by Walker (1982) comparing the experiences of a cohort of disabled and non-disabled children all born in 1958. The proportion of disabled youngsters who aspired to semi-skilled and unskilled jobs was six times the proportion of non-disabled young people with those aspirations. Despite these modest aspirations, only one-fifth of disabled 18-year-olds had achieved the occupational group of the job they had desired at age 16, compared to one-third of non-disabled youngsters. Walker also found that the gap between aspirations and outcomes widened as the 'careers' of the young people progressed. A spell of unemployment had the effect of further reducing aspirations.

Similar findings were produced by a study of teenagers with cerebral palsy or spina bifida (Anderson and Clark, 1982). Two-fifths of these young people who were attending mainstream school at age 16 said that they wanted to get a job; three years later only 17 per cent of them had done so. Similar proportions of disabled and non-

disabled young people wanted to marry and have children, but a lower per cent of the disabled group thought that they would do so. A follow up study ten years later (Clark and Hirst, 1989) found only half of those who had wanted to get a job were working, and only 20 per cent of those who had wanted to get married were married. Most were still hoping to achieve what they regarded as full adult status.

A small-scale qualitative study suggested that working class disabled young people were not generally encouraged to achieve academically at school (Preece, 1996). This in turn affected the goals that the young people set for themselves. There is some evidence that aspirations among pupils in special schools are lower than among special educational needs pupils in mainstream settings (Polat *et al.*, 2001). In a review of disability discrimination in education in general, Gray (2002) reported that stereotyping of some disabled children by teachers remained a problem, as did under-expectation of their academic abilities.

Parents also play an important role for disabled young people, and children with less well-educated parents may face additional barriers to educational achievement (Hendey and Pascall, 2001). Preece (1996) found that although in some cases parents did try to give encouragement, they often lacked the knowledge or education themselves to make an effective intervention. Similarly, given that it may be necessary to negotiate with education and health authorities, and possibly with social services, to ensure that the best equipment and support is in place for the child, parents who are less confident in dealing with professionals may be at a disadvantage (Morris, 2002).

Disability also interacts with other forms of disadvantage (Hirst, 1987; Lakey *et al.*, 2001). The Black and disabled young people interviewed by Bignall and Butt (2000) had similar aspirations to their non-disabled counterparts but had in some cases experienced double discrimination in pursuing their goals, on account of their ethnicity and their disability.

Despite these difficulties, many disabled young people are resilient and formulate positive aspirations for themselves, against the odds. Priestley (1999) and Low (1996) describe a number of different mechanisms disabled children and young people use to

resist the stereotypes and roles into which they are placed. There can also be positive feedback from early encouragement to make choices (Cowen, 2001) and earlier achievement (Hendey and Pascall, 2001): disabled young people who do succeed in gaining educational qualifications than those who leave school without qualifications are much more likely to have positive aspirations for the future, and to secure independence and employment in early adult life.

#### **8.4 Aspirations of disabled and non-disabled 16 year-olds**

##### *8.4.1 1970 British Cohort Study*

The initial 1970 British Cohort Study (BCS70) sample was all children born in a particular week in 1970 (achieved sample N= 17,198). The orientation and funding of the study were medical in origin. Subsequent sweeps of data collection during childhood broadened out the scope of the study into educational, psychological and social fields. At age 16, 11,622 sample members were successfully traced and provided some information (an estimated 70 per cent of the eligible sample). However not all survey instruments were completed for all of them. Questionnaires completed by the young people asked, among other things, about their aspirations and expectations for the immediate and medium term future (leaving school or continuing in education, occupation, leaving home and starting a family). Teachers and parents were also asked about their hopes and expectations for the young person. Extensive information was collected about health and impairment, psychological profile, home background and work experience.

The questions used to construct a definition of disability are described in Appendix 8.1; briefly, a combination of information provided by the parents and health professionals is used, producing a three-way classification of not disabled, uncertain status, and disabled. Uncertain status is accorded where the information from different sources is not consistent, and these young people probably have less severe impairments. Overall, 3.2 per cent of 16 year olds in the sample are disabled according to this classification.

#### 8.4.2 Disabled and non-disabled young people's aspirations

Three key types of aspirations are considered: leaving home, further education, and employment. For some, more than one indicator is available. Where possible, a distinction is made between expectation (what the young person thinks *will* happen) and aspiration (what he or she would *like* to happen).<sup>3</sup>

Table 8.1 indicates that disabled young people are slightly less likely to expect to leave home in the near future. Given that respondents are aged 16 at this point, wanting to leave home 'within the next year' - in the context of Britain in the late twentieth century - probably indicates an unsatisfactory situation at home. On the other hand, the vague responses, 'sometime in the future', or 'not sure', could suggest a lack of confidence in the possibility of independence, potentially a particular difficulty for disabled young people. However, in response to another question, disabled youngsters are more likely to say that it will 'matter very much' to them to live away from home in adult life: 28 per cent compared to 20 per cent of non-disabled young people. This indicates a gap between expectation and aspiration: they would like to live independently but they are less confident than their non-disabled peers about when or whether that will be possible.

**Table 8.1: Expectation of leaving home**

Are you thinking of leaving home...	Column percentages		
	Not disabled	Uncertain status	Disabled*
Within the next year	8.4	7.0	5.4
1-3 years' time	31.6	31.9	33.6
Sometime in the future	46.8	45.2	42.7
Not sure	13.2	15.9	18.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<i>Number of obs</i>	4830	270	110

\* Comparing 'within the next year' and 'not sure' (indicating uncertainty over future plans), difference between non-disabled and disabled young people statistically significant at the 90% level

Source: BCS70 age 16 survey

<sup>3</sup> Statistical significance cannot be straightforwardly reported for many tables because the indicators are categorical rather than ordinal or continuous. However, where possible, the significance of specific differences is given. Differences not marked with asterisks should be assumed to be non-significant.

The question on the importance of living independently occurs in a block of 14 questions about the importance of various aspects of adult life. Responses can be combined to create an index of what the young person thinks will be the most important features of adult life for them, grouped as 'job' (having a full-time job), 'control' (having more control over your life), 'family' (leaving home, getting married, having children), 'politics' (for example, being able to vote) and 'fun' (for example, going to nightclubs). The appendix to this chapter gives more details of the questions.

**Table 8.2: The most important aspect of adult life**

*column percentages*

	Not disabled	Uncertain status	Disabled
Job	61.1	58.0	52.6
Job and control	16.5	19.2	12.4
Control	7.2	5.5	11.3
Job and family	4.1	2.8	5.2
Job, control and family	2.7	3.1	5.2
Family	2.3	2.4	3.1
Other single aspect	1.3	1.2	3.1
Other combination	4.9	9.0	10.4
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<i>In any combination:</i>			
Job	87.7	89.0	80.4
Control	29.2	32.6	33.0
Family	10.9	12.2	16.5
<i>Number of observations</i>	<i>4324</i>	<i>255</i>	<i>97</i>

For details of the derivation of this index, see Appendix.

Source: BCS70 age 16 survey

Table 8.2 shows that disabled people are somewhat less likely to rate having a full-time job as the single most important aspect of adult life, or among the most important. However, the overall picture is one of similarity rather than difference between the three groups.

Disabled respondents are more likely to place a high value on individual autonomy. This is consistent with having experienced greater frustration at a lack of control over their own lives to date, and with the qualitative evidence presented at the beginning of Chapter 5 above on the functionings regarded as important by young disabled people.

With respect to family, the table confirms that disabled young people place a higher value on developing their own family, especially living independently.

Turning to immediate expectations of continuing education, Table 8.3 shows the proportion of young people who say they will leave full-time education at the end of the school year. The question is asked in slightly different forms at three places in the survey; combining these gives the three categories shown in the table.

**Table 8.3: Expectations of leaving full-time education at 16**

Will you leave FT education?	column percentages			
	Not disabled	Uncertain status	Disabled	Learning disabled**
No – stay on	59.8	61.5	61.9	49.4
Yes – leave	33.4	31.6	31.0	39.0
Don't know / inconsistent responses	6.9	6.9	7.1	11.7
Total	100.0	100.0	100.0	100.0
Number of obs	4952	247	84	231

\*\* Difference between intention to stay on among learning disabled and non-disabled statistically significant at 95% level

Source: BCS70 age 16 survey

Young people with learning difficulties are extracted from the other groups and shown separately in the right-hand column. Not surprisingly, a much lower proportion of this group expect to stay on in education. Among the other groups there is little variation – three-fifths expect to stay on.

Differences emerge in terms of what the young people are staying on to do. Just over half (53 per cent) of the non-disabled staying on are planning to do A levels, compared to 44 per cent of the disabled (statistically significant at 90% level). A higher proportion of disabled young people expect to be continuing to do O levels or CSEs, while most of the learning disabled who are staying on expect to be doing vocational courses or training.

Among those who expect to leave, there are also divergent expectations (although the figures need to be treated with caution due to small cell sizes). Half of the non-disabled expect to have or job or be looking for one, compared to only one-third of

disabled youngsters. Nearly half of the latter expect to be heading for the Youth Training Scheme (YTS).<sup>4</sup>

When asked why they are intending to leave full-time education, the reasons chosen by non-disabled young people from a pre-defined list are more strongly weighted towards the positive (for example, 'I want to earn to gain independence', 'I want to go elsewhere to complete my training') than the reasons given by disabled young people (for example, 'I have always taken it for granted', 'My teacher advised me to leave'). The difference between learning disabled and non-disabled in this respect is statistically significant at the 99% level.<sup>5</sup>

In a different survey instrument, young people are asked what they would *like* to do after this school year, as opposed to what they expect to do. The responses indicate generally similar aspirations among disabled and non-disabled young people, although the former are more inclined towards vocational courses than continuing academic study (Table 8.4). Not surprisingly, perhaps, those with learning difficulties are more likely than other groups to express an aspiration to leave education.

**Table 8.4: Aspirations for next year**

What do you want to do next year?	column percentages			
	Not disabled	Uncertain status	Disabled	Learning disabled***
Continue FT education	45.6	49.1	37.1	20.5
Vocational training	10.0	12.3	14.3	12.1
Get a job	26.8	22.2	28.6	37.4
YTS or unemployment	14.0	13.2	12.9	26.5
Don't know	3.6	3.3	7.1	3.6
Total	100.0	100.0	100.0	100.0
Number of obs	3980	212	70	166

\*\*\* If responses are scored 1 to 5, difference between average score for learning disabled and for non-disabled statistically significant at 99% level

Source: BCS70 age 16 survey

<sup>4</sup> YTS was a notorious programme for unemployed school leavers during the mid-1980s. The training provided was very limited and exit rates to employment were low (Bynner, 1998).

<sup>5</sup> Based on list of twelve possible reasons, with multiple responses allowed. Positive: earn independence, can't study subject I want to at school, have a particular course in mind, want to leave home, want to get married, want to complete training elsewhere. Negative = always taken it for granted, need to earn, most of my friends are leaving, parental advice, teachers advice, I'm not bright enough.

In the longer term, disabled young people are less likely to see themselves working in a profession than their non-disabled counterparts, but on the other hand they are more likely to think that they will be continuing to study (Table 8.5). Overall, however, the shape of disabled young people's longer-term aspirations is similar to that of their non-disabled counterparts.

**Table 8.5: Activity envisaged in five years' time**

<b>Looking ahead 5 years, what do you see yourself doing?</b>	Not disabled	Uncertain status	<i>column percentages</i>	
			Disabled**	Learning disabled***
Working ...				
in a profession	35.0	35.3	23.8	20.6
in an office	16.7	13.3	16.3	5.5
in a skilled trade	10.4	10.6	8.8	16.1
with my hands	8.3	10.1	10.0	19.6
in the open air	3.4	2.3	5.0	9.6
At college or university	17.6	17.4	25.0	11.1
Something else	8.6	11.1	11.3	17.6
Total	100.0	100.0	100.0	100.0
<i>Number of obs</i>	4495	218	80	199

If responses are scored 1 to 7, omitting 'at college or university'.

\*\* difference between disabled and non-disabled is statistically significant at 95%

\*\*\* difference between learning disabled and non-disabled is statistically significant at 99%

Source: BCS70 age 16 survey

The young people in the survey are also asked what type of 'job/career/profession' they will want to do 'in life', and are invited to choose from a list of 15 categories (plus 'Other'), ordered roughly in terms of the amount of qualifications and training that would be required for each one. In Table 8.6 these have been translated into the more familiar Standard Occupational Classification, although the correspondence between categories is only approximate in some cases (see Appendix for details).

In contrast to the pattern of expectations for what they will be doing in five years' time, a higher proportion of disabled young people than non-disabled young people are aiming for a professional occupation (though the difference is not statistically significant). They are less likely want to go into 'associate professional' jobs – here this includes teaching and nursing. Young people with learning difficulties are disproportionately aiming for craft occupations and lower-status jobs.

Overall, a round one-third of each group of young people are undecided or want a job not covered by the listed categories. A follow-up question reveals that a lower proportion of disabled young people have a specific job in mind.

Table 8.6: Occupational aspirations

What type of job/career/profession will you want to do in life?	column percentages			
	Not disabled	Uncertain status	Disabled	Learning disabled ***
Professional	20.9	23.1	25.3	10.3
Associate professional and technical	11.2	10.1	6.3	8.9
Clerical and secretarial	18.8	13.9	16.5	8.9
Craft and related	7.9	8.0	2.5	13.2
Personal and protective services	4.8	5.0	2.5	7.5
Sales	3.2	2.5	3.8	5.2
Plant and machine operatives	1.4	1.7	2.5	5.2
Agriculture and fishing	2.2	2.5	3.8	7.5
Other/can't decide	29.7	33.2	36.7	33.3
Total	100.0	100.0	100.0	100.0
Number of obs	4792	238	79	213

\*\*\* If occupations are scored 1 to 8, excluding 'other/can't decide', difference between average score for learning disabled and non-disabled is statistically significant at 99% level.

Source: BCS70 age 16 survey

Finally, it is interesting to consider the teenagers' feelings about themselves and the future in general. A block of questions ask about attitudes towards fate and individual agency, responses to which can be used to construct a locus of control scale (Rotter, 1966). A high score indicates someone who has an internal locus of control – they feel that their actions make a difference and that effort will be rewarded; the opposite end of the scale represents a more fatalistic outlook. A second set of questions ask about the personal strengths the young people feel they have (for example, reliability, responsibility, tidiness), and a third set is designed to measure self-esteem. These are summarised for all disabled and non-disabled young people in Table 8.7. Respondents are also asked to assess their job prospects (higher score indicates greater confidence);

the results are summarised in the bottom rows of the table, with results for young people with learning difficulties shown separately.

**Table 8.7: Feelings about the future**

	Not disabled	Uncertain status	Disabled	Learning disabled	mean scores
Locus of control	60.3	59.7	57.8*	n/a	
Personal strengths	3.6	3.4*	3.3*	n/a	
Self-esteem	15.1	14.5*	14.3*	n/a	
Job prospects	0.61	0.60	0.59	0.56*	

\* indicates statistically significant difference from 'not disabled' score, at 90 per cent level or above  
 Source: BCS70 age 16 survey

The four indicators show a consistent pattern: disabled young people are less confident about their ability to make their way in the world.

To summarise the findings of this section: compared to non-disabled 16 year-olds, disabled young people expect not to leave home so soon but have a more strongly felt aspiration to live independently in adult life. Disabled young people without learning difficulties are as likely as their non-disabled counterparts to expect to stay on in education after 16; those with learning difficulties are more likely both to want and to expect to leave school.

In the longer run, a high proportion of disabled young people are aspiring to a professional occupation. Getting a job may matter slightly less to disabled young people, relative to other aspects of adult life, than is the case for non-disabled young people, but this is partly because of the considerable emphasis disabled young people place on the importance of autonomy in adult life (being able to make their own choices).

Overall, then, the picture is one of high aspirations, and with little difference between disabled and non-disabled teenagers (without learning difficulties) in this respect. Disabled youngsters do, though, have slightly more limited *expectations*, and, perhaps relatedly, significantly lower self-esteem and belief in self-efficacy. Young people with learning difficulties are at greater risk of relatively low educational and

future occupational aspirations. This descriptive analysis sets the scene for the following section, which considers the formative influences on aspirations, and the extent to which they vary by disability status.

#### *8.4.3 Factors influencing the formation of aspirations*

The review of existing literature in section 8.3 is used as a basis for selecting variables which might represent influences on the formation of aspirations. Those available in BCS70 for the 16 year olds are listed below. Other variables which would ideally be included are local conditions (such as unemployment rate, whether there is a dominant local employer), peer group aspirations, and the experience of siblings.

<i>Personal</i>	<i>Personal history</i>
• age (all age 16 in BCS70)	• previous educational achievement
• gender	• work experience
• ethnicity	• bullying
• impairment (severity, type, age at onset)	• boy/girlfriend
• health (mental and physical)	
• self-esteem	
• 'locus of control'	
• attitude to school	
<i>Parental</i>	<i>School characteristics</i>
• aspirations / expectations	• teacher assessment of ability
• interest in school / homework	• teacher assessment of behaviour
• education	• specialist support
• occupation / social class	• careers advice
• supportiveness	• type of school
• residence with teen	

Table 8.8 reports the findings from bivariate analysis. The first column (A) indicates whether disabled young people in the survey are more likely to have the listed characteristic than non-disabled young people. The columns headed B show whether the listed characteristics are associated with higher aspirations for young people in general, with respect to three key aspirations – expecting to leave home sooner rather than later, positive aspirations for the immediate future<sup>6</sup>, and longer-term occupational

<sup>6</sup> What he or she wants to do next year, as in Table 8.4, with staying on in education scored as highest aspiration and 'don't know' as lowest.

aspiration. Finally, the columns headed C show whether the listed characteristics are more strongly associated with disabled young people's aspirations than they are with non-disabled people's aspirations.

To summarise, with respect to leaving home (column 1.B), young women, with an internal locus of control, from a higher social class background and with strong academic potential are more likely to aspire to leaving home sooner. Young people from Indian, Pakistani or Bangladeshi backgrounds, and those who feel their parents are very supportive are less likely to want to leave home. The patterns for disabled and non-disabled young people are similar, although the prevalence of some important factors differs between disabled and non-disabled people (column A): disabled young people are less likely to have an internal locus of control and are less likely to be considered to have strong academic potential. They also feel their parents are less supportive. Parental factors seem to matter more for disabled people with respect to leaving home (column 1.C): both the social class and educational background of the parents, and their supportiveness (working in opposite directions). Young people with mental health problems or learning difficulties are less likely to aspire to leaving home sooner.

Column 2 relates to having positive immediate plans. Nearly all the listed characteristics are associated in some way with this aspiration, and mostly in the expected direction: good self-image, strong academic potential, good experience at school, supportive parents, and so on. It is worth noting, however, that having had work experience and found it useful, and having received many different forms of careers advice, are negatively associated with positive immediate plans. This may be a selection effect: those who do not wish to continue in education may be more likely to opt for (and benefit from) work experience and careers advice. Several characteristics are more strongly associated with positive aspiration for disabled people than for non-disabled people: self-esteem and internal locus of control, parental education and social class, teacher's attitude, academic ability and not being bullied. Young people with mental health problems, and those who became impaired at a younger age are less likely to have positive immediate plans.

Finally, positive longer-term occupational aspirations are associated with a similar range of characteristics as are immediate plans. One interesting difference is the association between being from an Indian ethnic background and strong occupational aspiration. There are a couple of additional differences between disabled and non-disabled young people too: parental aspirations matter more in this respect for disabled young people, as does having had a paid job and attending a mainstream school. While for immediate plans, young people with mental health problems appeared to be at a disadvantage, for longer term plans it is those with hearing impairment who are less likely to have positive aspirations.

Table 8.8: Bivariate associations between characteristics and aspirations

Characteristics	A	1. Leaving home sooner		2. Positive immediate plans <sup>†</sup>		3. Higher-status occupation	
		B	C	B	C	B	C
<i>Personal</i>							
Male	Y	N		N		N	Y
Ethnicity (cf White): Black				N			
Indian		N	-	N	-	Y	-
Pakistani/Bangladeshi		N	-	N	-		-
Other				N			
More severe impairment	Y						
Type of impairment:							
mental health	Y	N	Y	N	Y		
Sight	Y						
Hearing	Y	-	-	-	-	N	Y
Speech	Y					-	-
musculo-skeletal	Y						
other physical	Y						
Learning	Y	N	Y	N	n/a		n/a
Younger age at onset of imp'mt	Y			N	Y		
Ill health	Y					N	Y
Higher self-esteem	N			Y	Y	Y	
Internal locus of control	N	Y		Y	Y	Y	Y
Positive attitude to school		N		Y		Y	Y
<i>Parental</i>							
Positive education aspirations for teenager	N	Y		Y		Y	Y
Positive education expectations for teenager				Y		Y	
# times parent visited school	Y	Y		Y		Y	
Strong parental interest in homework (reported by teen)				Y		Y	
Father stayed on at school		Y	Y	Y	Y	Y	
Mother stayed on at school		Y	Y	Y	Y	Y	
Father high qualifications		Y	Y	Y	Y	Y	Y
Mother high qualifications		Y	Y	Y	Y	Y	Y
Father higher social class		Y	Y	Y	Y	Y	
Mother higher social class		Y	Y	Y	Y	Y	
Supportiveness of parents (reported by teen)	N	N	Y	Y		Y	
Number of natural parents resident with teen		N		Y		Y	
<i>Experience</i>							
Teacher good assessment of academic performance to date	N	Y		Y	Y	Y	
Had useful work experience				N		N	
Paid work in last year	N	Y					Y
Has not been bullied	N			Y	Y	Y	
Has had boy/girlfriend	N	Y	Y	N		N	
<i>School</i>							
High reading ability	N	Y		Y	Y	Y	
High writing ability	N	Y		Y	Y	Y	
High maths ability	N	Y		Y	Y	Y	Y
Never removed from class due to behaviour				Y		Y	
Specialist help given	Y	N		N		N	
Several forms of careers advice				N			
Mainstream school (cf special)	Y			Y		Y	Y

## Notes to Table 8.8:

Column A: higher proportion of all disabled young people have this characteristic than non-disabled: Y is higher, N is lower, blank is no difference.

Columns B: association with high aspiration (all young people): Y is positive, N is negative.

Columns C: association (positive or negative) with high aspiration stronger for disabled than for non-disabled young people. For C', comparison excludes young people with learning difficulties.

† Ranked as follows: staying in education, vocational training, job, unemployment/YTS, don't know. Only those associations significant at 90% level or above are shown in the table.

- indicates too few observations

The exploration of bivariate relationships provides the foundation for multivariate analysis. Logit regressions were performed for each kind of aspiration, with the explanatory variables selected as indicated by the bivariate analysis.<sup>7</sup> Note that because of the way the aspiration variables are coded, positive coefficients on characteristics indicate they are associated with *lower* levels of aspiration. Some pairs of variables were too highly correlated with each other to be included in the same regression (correlation coefficient  $\geq 0.6$ ); in these cases the one of the pair which had lower explanatory power was dropped.<sup>8</sup> For each variable, 'missing' was included as a possible value, so as to retain as many respondents in each regression as possible and to allow for potential item non-response biases. A summary of the results is shown in Table 8.9, excluding the coefficients for 'missing' values.

Firstly, with respect to leaving home, the overall picture is that young people from a lower social class background and whose parents are less well-educated are likely to want to leave home later. There are some other interesting relationships: boys want to leave home later than girls, other things being equal, as do young people of both sexes from Indian, Pakistani or Bangladeshi households. Young people who already have a boy/girlfriend are more likely to want to leave home sooner, perhaps an indicator of early independence or maturity.

In the pooled regression shown in the table, the differences in aspiration to leave home by disability status are not significant, controlling for all the other

<sup>7</sup> Logits are used for 'expects to leave home sooner' and 'intends to leave education at 16', since the right-hand side variables are binary and an ordered logit is used for 'aspires to lower-status occupation', since that variable is an ordered and categorical.

<sup>8</sup> The following variables were dropped: parental expectations (highly correlated with parental aspirations), father/mother left school at earliest opportunity (father's/mother's qualifications), maths, reading and writing scores (teachers assessment of academic performance), and bullying (self-esteem).

characteristics. Further analysis, not shown in the table, indicates that some characteristics are, however, more important for disabled young people than for their non-disabled counterparts.<sup>9</sup> Parental interest in school (as measured by number of times s/he has visited), for example, is positively associated with a disabled young person wanting to leave home later, while it is not significant for non-disabled young people. The level of the father's educational qualifications exerts a similar influence for disabled and non-disabled young people, but the effect is much stronger for the former.

Turning to the teenagers' immediate plans for leaving education or not, the overall picture is similar to that presented by the bivariate analysis. Boys are less ambitious than girls at this age. Interestingly, after controlling for other social and demographic characteristics, teenagers from ethnic minority backgrounds are more likely to intend to stay on than White teenagers.

The attitudinal and personality variables are all significantly associated with positive plans for the immediate future. Young people with high self-esteem and a positive attitude to school are more likely to want to continue in education. Parental and teenager aspirations are quite closely correlated (although oddly, teenagers whose parents would like to see them going on to FE, but not necessarily to HE, are likely to have higher aspirations on average than those whose parents definitely want them to go on to HE). Similarly, those young people whose teachers give them a strong academic rating are more likely to want to continue in education.

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<sup>9</sup> Logit with disability variable interacted with characteristics selected on the basis of Table 8.8 and on the basis of a logit for disabled people only.

**Table 8.9: Multivariate logit regressions, showing associations between characteristics and aspirations**

Characteristics	1. Expects to leave home later		2. Intends to leave education at 16		3. Aspires to lower-status occupation	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
<b>Personal</b>						
Disability status: not disabled	omitted		omitted		omitted	
disabled	-0.352	0.250	-0.477	0.312	-0.317	0.219
learning disabled	-0.006	0.184	-0.169	0.210	0.184	0.148
uncertain status	-0.068	0.151	0.183	0.187	0.109	0.128
Gender: female	omitted		omitted		omitted	
male	<b>0.355</b>	0.065	<b>0.305</b>	0.080	<b>0.218</b>	0.054
Ethnicity: White	omitted		omitted		omitted	
Black	-0.287	0.402	<b>-1.126</b>	0.522	-0.635	0.321
Indian	<b>1.109</b>	0.330	<b>-1.551</b>	0.465	<b>-0.759</b>	0.220
Pakistani/Bangladeshi	<b>1.342</b>	0.490	<b>-1.085</b>	0.462	<b>-0.987</b>	0.296
Other	0.385	0.334	-0.082	0.507	<b>-0.617</b>	0.305
Higher self-esteem	<b>0.019</b>	0.009	<b>-0.066</b>	0.002		
Internal locus of control					<b>-0.011</b>	0.002
Positive attitude to school	<b>0.048</b>	0.009	<b>-0.127</b>	0.011	<b>-0.071</b>	0.008
<b>Parental</b>						
Aspirations for teenager: HE	omitted		omitted		omitted	
FE	<b>-0.413</b>	0.129	<b>-1.059</b>	0.156	<b>-0.321</b>	0.111
vocational training	0.194	0.145	-0.251	0.161	<b>0.591</b>	0.120
leave	0.244	0.143	<b>1.635</b>	0.157	<b>0.698</b>	0.117
other	-0.045	0.188	<b>0.878</b>	0.198	<b>0.588</b>	0.153
don't know	<b>0.744</b>	0.373	<b>1.490</b>	0.384	<b>1.054</b>	0.290
Highest parental qualification: degree	omitted		omitted		omitted	
teaching/nursing	-0.054	0.151	0.230	0.221	<b>0.621</b>	0.135
A level	0.267	0.132	0.263	0.187	<b>0.435</b>	0.117
O level	<b>0.582</b>	0.114	<b>0.515</b>	0.159	<b>0.540</b>	0.100
other	<b>0.697</b>	0.128	<b>0.757</b>	0.168	<b>0.692</b>	0.108
none	<b>0.656</b>	0.124	<b>1.016</b>	0.164	<b>0.656</b>	0.105
Parental social class: I / II	omitted		omitted		omitted	
I / II and other	<b>0.209</b>	0.102	<b>0.454</b>	0.151	0.093	0.092
III manual / non-manual	<b>0.314</b>	0.110	<b>0.618</b>	0.150	0.276	0.095
III and lower	<b>0.351</b>	0.129	<b>0.597</b>	0.168	<b>0.326</b>	0.109
IV / V	<b>0.408</b>	0.158	<b>0.880</b>	0.194	0.263	0.131
other	0.110	0.142	<b>0.514</b>	0.182	<b>0.277</b>	0.118

Table 8.9 continued...

Characteristics	1. Leaving home later		2. Less ambitious immediate plans		3. Lower-status occupation	
<i>Experience</i>						
Teacher poor assessment of academic performance to date	<b>0.125</b>	0.043	<b>0.424</b>	0.061	<b>0.331</b>	0.036
Work experience: useful	omitted		omitted		omitted	
maybe useful	-0.313	0.172	0.088	0.201	0.075	0.063
not useful	<b>-0.402</b>	0.135	-0.019	0.161	-0.065	0.112
none	<b>-0.196</b>	0.079	<b>-0.180</b>	0.093	<b>-0.144</b>	0.142
Has boy/girlfriend	yes, now	omitted	omitted			
yes, before	<b>0.163</b>	0.074	<b>-0.183</b>	0.090		
no	<b>0.447</b>	0.086	<b>-0.439</b>	0.110		
<i>School</i>						
Specialist help given	-0.113	0.215	<b>-0.719</b>	0.237		
Type of school: mainstream	omitted		omitted		omitted	
special	0.781	0.589	-0.517	0.520	-0.050	0.403
other	0.082	0.116	<b>0.692</b>	0.132	<b>0.349</b>	0.094
Constant (s)	<b>-2.012</b>	0.346	-0.211	0.446	[Y]	[...]
Number of observations	4830		5125		4995	
Log likelihood	3041		2190		7249	
Likelihood ratio index	0.07		0.35		0.08	
Predicted probability	0.60		0.36		[...]	
Proportion of cases correctly classified	0.65		0.80		0.76	

Notes:

'omitted': reference category for categorical variables

'n/a': not included in this regression

Coefficients shown in **bold** are statistically significant at 95% level or higher

Source: BCS70 age 16 survey

Parental influence is apparent in other ways too: teenagers with better educated parents and parents from a higher social class background are more likely to want to continue to further and higher education. This intergenerational transmission of educational advantage and social class is of course a common finding.

Finally, two aspects of the young person's experience are of interest. Firstly, work experience is associated with *low* aspiration for immediate plans (looking ahead, this is also the case for longer-term occupational aspiration). This might seem perverse, but it is possible that the causation works in the opposite direction: young people who have already decided that they want to continue in education are less likely undertake work experience and are less likely to find it rewarding if they do so. Secondly, those who have or have had a girl/boyfriend are more likely to want to leave school: an

indication perhaps of prioritising relationships over education or a general indicator of maturity.

As was the case for leaving home, disability itself is not independently associated with higher or lower aspirations in terms of immediate plans. An exploration of interaction terms did not reveal any consistently significant interactions between disability and other characteristics. A separate regression for disabled people indicated that young people with mental health problems or with hearing impairment were least likely to have positive immediate aspirations.

The right-hand column of the table shows the results for occupational aspiration. The results follow a very similar pattern to the results for respondents' immediate educational plans.

### 8.5 Conclusions

This chapter began by setting out the arguments for evaluating 'capability as autonomy' rather than 'capability as opportunity'. They turned on the problem of adaptation – the way in which individuals' preferences are influenced by their previous experience of, for example, deprivation or advantage. 'Capability as autonomy' makes the formation of preferences itself a focus of analysis, in order that the choices individuals make and the goals they set for themselves can be understood in the context of the 'expensive tastes' or 'conditioned expectations' they have developed.

The particular application of this idea explored in the empirical part of the chapter was the formation of aspirations among a cohort of young people. Aspirations for independence (proxied by leaving home), continuing education and occupation in adult life were examined, comparing disabled and non-disabled young people.

The bivariate analysis indicated that while disabled and non-disabled young people have similar aspirations, the *expectations* of disabled young people are often lower, especially among those with learning impairments. They aimed high, but were sufficiently realistic to acknowledge that there would be difficulties in their path. The

multivariate analysis confirmed that, controlling for other characteristics, disabled and non-disabled young people have similar aspirations. There is no evidence here to support the idea that disabled young people in general have adjusted their aspirations to their disadvantaged status in society.

This is perhaps contrary to expectations, and certainly contrasts with findings from Walker's (1982) study on a cohort born in 1958. A closing of the gap since the 1970s (when Walker's cohort were in their teens) between disabled and non-disabled young people's aspirations is consistent with the move towards greater integration of disabled pupils in mainstream education which has taken place over the period. It could also reflect the growing strength of the disability civil rights movement, creating more role models for disabled teenagers and fostering a stronger belief that disabled people can make a useful contribution to society. It would be rash to draw firm conclusions about causality from a comparison between only two cohorts, but this optimistic interpretation is consistent with the timing of the apparent change in the aspirations of disabled young people.

By contrast, other fixed characteristics and indicators of socio-economic disadvantage were found to be strongly correlated with low aspiration in this cohort, across the three different types of outcome. Gender, ethnicity, parental education and social class, school experience and the attitudes of teachers and parents were all important influences. In so far as this indicates conditioning of expectations - the teenagers' aspirations being shaped by the expectations of society at large and individuals more closely involved with them - this is a matter of concern for an evaluation of relative advantage and disadvantage based on agency goals. If the agency goals themselves are dependent on social position, one young person's success in achieving his goals cannot be straightforwardly interpreted as equivalent to another person's success in achieving her goals. Rather, an attempt must be made, as illustrated in this chapter, to take into account the process of formation of these goals.

### Appendix 8.1: Definition of disability in age 16 survey of BCS70

Information about the disability status of the young people comes from parents and health professionals. Parents of the teenager in the cohort were asked:

*Does your teenager have an impairment, a disability or a handicap?  
(By 'impairment' we mean a physical or mental abnormality or illness. By 'disability' we mean difficulty in doing one or more mental or physical activities that average 16 year olds can do. By 'handicap' we mean a disability which interferes with the opportunities that others take for granted, e.g. problems with accessing facilities in a public buildings, not being considered for jobs he or she could manage if given a chance; other people are put off without even knowing what he or she is like.)*

Despite the efforts of the survey designers, it appears that some parents did not fully understand the definitions being proposed, since some teenagers are reported as having a disability but not an impairment, or a handicap but not an impairment.

Health professionals (often the school nurse) administering the medical examination were asked:

*Is there any evidence that this teenager has now, or has had in the past, any significant illness, developmental problem, defect or handicap?*

and

*Is there any evidence of any impairment, disability or handicap?*

For each condition or impairment identified by the health professional, she or he is also asked to report whether this results in no disability, slight disability or marked disability.

The overlap between parents' and health professionals' assessments of the teenager's disability status is far from perfect. Table A8.1 shows just those cases where information is available from both sources.

**Table A8.1: Parental and health professional's assessment of teenager's disability status**

*cell percentages*

Parent	Nurse				Total
	None	Impairment not disabling	Slight disability	Marked disability	
No impairment, disability or handicap	80	11	4	0.3	95
Some impairment, disability or handicap	2	1	1	1	5
Total	82	12	5	1	100%

For 80 per cent of teenagers there is agreement between parent and nurse that they are not disabled (plus possibly 11 per cent who the nurse identifies as impaired but not disabled). For 2 per cent there is agreement that they have some (slight or marked)

disability, but a further 4.3 per cent are identified as disabled by the nurse but not by the parent, and 3 per cent are identified as disabled by the parent but not by the nurse.

For the purposes of this analysis, in order to include as much information as possible, a teenager is classified as disabled:

- if he or she is identified as impaired, disabled or handicapped by the parent *and* as having a slight or marked disability by the nurse.
- if he or she is identified as impaired, disabled or handicapped by the parent but information from the nurse is missing
- if he or she is identified as having a slight or marked disability by the nurse but information from the parent is missing.

If information is supplied by both parent and nurse but the information is inconsistent, the disability status of the teenage is classified as 'uncertain'. It is likely that the young people in this category have a less severe impairment, although there could be cases where the parent or nurse is aware of an impairment which is hidden to the other.

In all other cases where information is supplied by one or both of the parent and nurse, the disability status is 'not disabled'. Where information is missing from both parent and nurse, the disability status is missing.

This approach permits the inclusion of cases where information is available from only one source, but does not give priority to the information supplied by either nurse or parent in cases where there is disagreement. The breakdown is given in Table A8.2.

**Table A8.2: Disability status of cohort members**

	Number	Percent	Percent of non-missing
Not disabled	8,885	76.4	91.7
Uncertain	486	4.2	5.0
Disabled	313	2.7	3.2
Missing	1,938	16.7	
Total	11,622	100.0	100.0

The questionnaire completed by health professionals also provides some information about type of impairment, and additional questions are asked of teachers and parents about some aspects of learning disability and mental health. For many analyses, the comparison is between disabled and non-disabled young people, and type of impairment can be considered alongside other possible explanatory factors. However, where the outcome of interest relates to education or occupation (either aspirations or achievements), it seems sensible to separate out young people with learning disability, since in that case their impairment is likely to have a direct impact on the outcome. While in principle there is no reason why a young person with a mobility impairment should be any more or less likely to want to go on to university than a young person with full use of her legs, a young person with a severe learning impairment is inherently less likely to find that an attractive proposition. In accordance with the

social model of disability outlined in Chapter 1 of the thesis, the primary focus of the analysis is on differences between disabled and non-disabled people which arise as a result of the social, economic and physical environment, rather than on differences which are intrinsic to impairment.

Cohort members with learning difficulties are identified from the following:

information from nurse -

- any mental or educational retardation (2.2 per cent of valid responses)
- any mental handicap (1.3 per cent)

information from teachers -

- whether dyslexic (0.3 per cent)
- reading ability 'severely' or 'moderately' impaired, relative to others of same age (4.6 per cent)
- writing ability 'well below average' (2.1 per cent)

information from parents -

- whether dyslexic (1.7 per cent).

There is considerable overlap between the young people identified by these different questions. Overall, 5.8 per cent of 16 year-olds are identified as having learning difficulties (some of whom are not disabled according to the definition above). Excluding those who are identified as having learning difficulties from the disabled sample leaves 215 individuals who are disabled, 419 whose disability status is uncertain, and 8,668 individuals who are not disabled. The disabled thus make up 2.3 per cent of the sample without learning difficulties. Cell sizes for specific analyses are sometimes lower than this because of other missing information.

### Appendix 8.2: Index of 'Most important aspect of adult life'

Each dimension of the index is created by summing responses to the questions listed below, which are prefaced by, 'How much do you think the following will matter to you in adult life'. Possible responses are 1 'matters very much' 2 'matters somewhat' 3 'doesn't matter'.

'Job': having a full-time job

'Control': taking more responsibility for myself, not being bossed about, being free to decide what I want

'Family': living away from home, getting married, having children of my own

'Politics': being able to vote, being involved in the local community, taking an active part in politics

'Fun': having more fun, being able to go to nightclubs, going to x-rated films, being legally able to drink alcohol in public.

Since different dimensions have a different number of contributing components, the sum of responses for each dimension is then normalised so that it lies between 0 and 1. Finally, for each individual, the dimension with the lowest score is found (lowest because that represents the one which matters most). In the case of a tie, all dimensions with the lowest score for that individual are listed.

**Table A8.3: Correspondence between categories of occupational aspiration and Standard Occupational Classification**

<b>Categories listed in BCS70 (in order presented in questionnaire)</b>	<b>Approximate equivalent SOC and category used in Table 8.6</b>
Professional (needing a degree)	2. Professional
Managerial/Nursing/Teaching	3. Associate professional and technical
Trained clerical (e.g. bank clerk)	4. Clerical and secretarial
Administrative – office work	4. Clerical and secretarial
Worker on farm/agriculture/fishing industry	90. Agriculture and fishing
Craftsman/designer – making or designing small individual objects	5. Craft and related
Maintenance worker – repairs and service	5. Craft and related
Processing worker – computing information technology	4. Clerical and secretarial
Food industry/restaurant worker	6. Personal and protective services
Salesman/representative/shop worker	7. Sales
Health worker	6. Personal and protective services
Worker in manufacturing, assembling products or goods	8. Plant and machine operatives
Service work – cleaning, dishwashing	6. Personal and protective services
HM Forces	9. Other / can't decide
Job not included above	9. Other / can't decide
Can't decide	9. Other / can't decide

## CHAPTER NINE: CAPABILITY AS AUTONOMY

### 9.1 Introduction

The previous chapter explored aspirations for further education, occupation and independence (as indicated by wanting to leave home) among disabled and non-disabled people at age 16. It found that while disabled and non-disabled young people had similar aspirations, the expectations of disabled young people were often lower – they reckoned that their chances of achieving their aspirations might be limited. This chapter investigates the extent to which they were correct in that estimation, and examines other influences on the relationship between teenage aspirations and outcomes in early adult life.

Interpreting the concept of capability as implying autonomy, as distinct from the more static concept of opportunity, means adopting a longitudinal perspective. Greater autonomy is achieved where both the conditions in which preferences are formed and the circumstances in which those preferences are pursued allow a wide range of options which individuals have reason to value. By combining the understanding of the formation of aspirations gained in the previous chapter with the analysis of the realisation of those aspirations presented in this chapter, it is possible to characterise the degree of autonomy attained by young people from different backgrounds. Many characteristics are associated consistently with autonomy in both phases (formation and pursuit of agency goals), but since some characteristics are associated with limited aspiration but a wider range of subsequent opportunity, and other characteristics with broad aspirations but limited opportunity to pursue them, the characterisation of the degree of autonomy takes the form of an ordering of groups with different characteristics rather than a precise quantification.

The remainder of this introductory section describes the survey of the 1970 British Cohort Study (BCS70) carried out when the cohort members were age 26. Section 9.2 presents results on educational, occupational and independent living outcomes at age 26 and section 9.3 compares these outcomes to the aspirations the young people expressed ten years previously. Section 9.4 offers a characterisation of autonomy,

combining results from this and the previous chapter; section 9.5 concludes this part of the thesis.

### *9.1.1 The age 26 survey of BCS70*

As many as possible of the original birth cohort and subsequent joiners were traced and contacted in 1996. The cohort members were by this time aged 26. They were invited to fill in a questionnaire covering, among other things, disability status, educational qualifications, employment, and living arrangements. It is a straightforward survey instrument, which makes for ease of analysis; however it is also less detailed than the age 16 survey which collected information from parents, teachers and health professionals as well as the cohort members themselves. There is therefore less opportunity for triangulating information from different sources.

Some information about the current location of approximately 13,500 of the original 16,000 cohort members was known in 1996, and these formed the target sample for the 26-year follow-up. The response rate to this sweep was 67 per cent, and there were another 6 per cent who were known to have died. Given that it was ten years since the previous survey, this can be regarded as a very good response rate; however, any non-response raises questions about whether the sample is still representative. The survey documentation provides full details of response bias (Despotidou and Shepherd, 2002). Compared to the age 16 survey, the age 26 follow-up has information from proportionately fewer respondents whose fathers were from a manual social class, fewer with impaired reading ability, fewer who have been in care, and fewer who had four or more addresses between the ages of 10 and 16. These differences are generally not large. For example, 49.0 per cent of respondents in the age 16 survey had fathers from a manual social class, while 47.6 per cent of respondents in the age 26 survey were in that group.

As far as disability is concerned, 63 per cent of those who are 'definitely not' disabled at age 16 are also respondents to the age 26 survey, compared to 61 per cent of those who are 'definitely' disabled or whose disability status is uncertain. Those with learning difficulties or with mental health problems at age 16 are more likely than those with other kinds of impairment to be lost to the survey. Those whose

impairment is assessed by the nurse as 'marked' at age 16 are less likely to respond to the age 26 survey than those whose impairment is 'slight' or 'not disabling'. Similarly, those who attended a special school are less likely to be retained in the survey than those who attended a mainstream school.

These differential response rates need to be borne in mind when interpreting the results of longitudinal analysis which follow. The fact that the more disadvantaged disabled people are less likely to have been retained in the survey than those from a more privileged background or whose impairments are less severe means that the differences between disabled and non-disabled shown in bivariate analysis will tend to *understate* the true magnitude of the differences between the two groups. Multivariate analysis, which can compare the outcomes for disabled and non-disabled people while holding constant other characteristics (such as social class background), is likely to be more informative.

This chapter presents results from respondents who provided information at both age 16 and age 26. There are 7144 such respondents, although item non-response, and the selection of sub-samples of particular interest, mean that the sample size for any given analysis is likely to be smaller. A longitudinal definition of disability is used, described fully in Appendix 9.1, according to which 2.3 per cent of the sample are disabled at both ages, 4.9 per cent were disabled at 16 but not at age 26, and 14.5 per cent became disabled between the ages of 16 and 26. The rate of onset is rather higher than might be expected and may in part be an artefact of the different way in which questions were asked in the two surveys, as discussed in the Appendix. However, the fact that over half of this group report having had an accident since the age of 16, a rate well above the sample average, gives some reassurance that the identification of this group is not just measurement error.

## 9.2 Outcomes at age 26

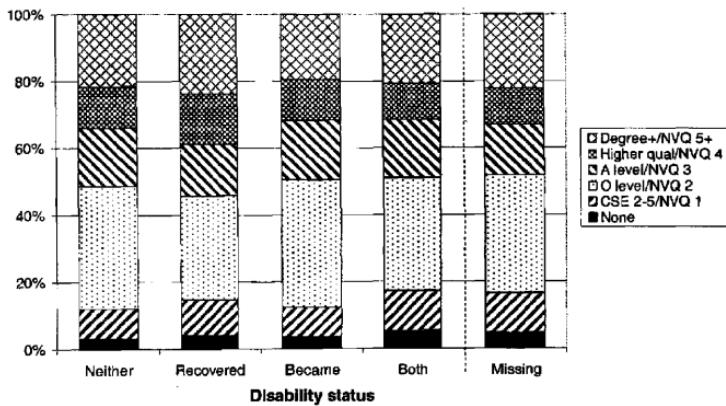
### 9.2.1 *Educational outcomes*

By age 26, the majority of the sample have completed their formal education. Figure 9.1 shows the highest level of qualification they have obtained. Comparing those who

were disabled at both age 16 and 26 with those disabled at neither age (omitting those with learning disability), the former are slightly more likely to have no qualifications or only NVQ level 1 or equivalent. However, the difference is not statistically significant. Examining academic and vocational qualifications separately indicates that at the top and bottom of the scale, differences between disabled and non-disabled young people are minimal. In the middle of the range, disabled people are more likely to achieve NVQ qualifications at levels 3 and 4 than are non-disabled people, whereas the latter are more likely to achieve A levels.

**Figure 9.1**

**Highest qualification at age 26 by longitudinal disability status**



These results do not take account of the problem of non-random attrition, as noted above. A simple regression reveals a strong effect of parental educational qualifications on qualifications obtained by the young person. It also shows that young people disabled at both ages 16 and 26 are less likely to achieve higher educational qualifications than their non-disabled counterparts from the same background (Table 9.1). For example, comparing two individuals with 'average' characteristics for the sample, the one who is disabled at both ages is estimated to be 23 per cent less likely to obtain a degree, and 36 per cent more likely to obtain no

educational qualifications, than a young person unaffected by disability.<sup>1</sup> These are quite large effects, though not as large as the effects of parental education.

Disabled young people spend longer in education than their non-disabled counterparts, although as we have seen, they do not obtain higher qualifications as a result. Two-fifths (41 per cent) of non-disabled young people left full-time education before the age of 17, compared to one-third of disabled young people. One third (31 per cent) of disabled young people remained in education after the age of 20, compared to 28 per cent of non-disabled young people. This is consistent with the expectations expressed by disabled young people at age 16 that they would stay on in education (Table 8.6), and that a higher proportion of those staying on were expecting to follow vocational or secondary-level courses rather than A-levels.

**Table 9.1: Highest qualification obtained, controlling for parental qualifications**  
Ordered logit regression.

Categories of highest qualification as for Figure 9.1, none = 0, degree+/NVQ5 = 5

	Coefficient	Standard error
<b>Disability status</b>		
disabled at neither age	omitted	
recovered	0.084	0.125
became disabled	-0.129*	0.074
disabled at both ages	-0.317*	0.190
missing	-0.049	0.062
<b>Highest parental qualification</b>		
degree + teaching, nursing, etc	omitted	
A level	-0.914***	0.126
O level	-0.961***	0.107
other	-1.378***	0.088
none	-1.805***	0.095
missing	-2.129***	0.090
	-2.159***	0.079
<b>Cut points</b>		
	-5.106	0.099
	-3.627	0.079
	-1.630	0.070
	-0.835	0.068
	-0.136	0.067
<i>Number of observations</i>	6106	
<i>Log likelihood</i>	-9261	
<i>Likelihood ratio index</i>	0.05	

Statistically significant at \*\*\* 99% \*\* 95% \* 90%

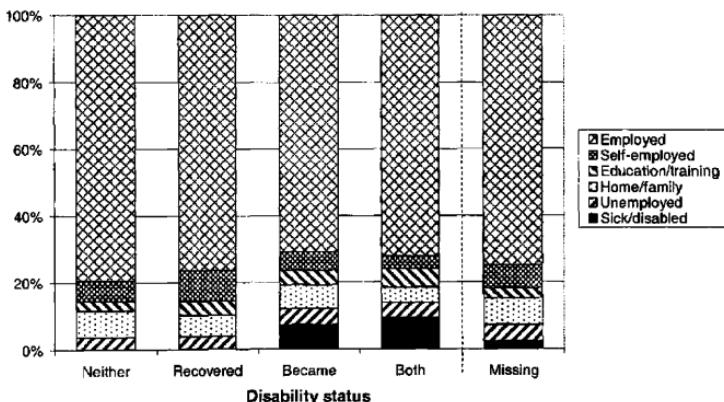
<sup>1</sup> In the ordered logit there are multiple outcomes corresponding to the different levels of educational attainment, so a single 'marginal effect' for disability cannot be calculated. Rather there is a marginal effect associated with disability for each outcome.

### 9.2.2 Occupational outcomes

Figure 9.2 gives a breakdown of current economic activity (at age 26), by disability status. Nine percent of young people disabled at both ages and 7 per cent of those who have become disabled since age 16 selected the category 'sick or disabled' as the best description of what they were currently doing. Strictly speaking, this is a state rather than an activity, but it is noteworthy in itself that this was the best description they could select for their situation. Consistently with the results above, a slightly higher proportion of disabled young people are still in education. Many fewer, compared to the non-disabled, are in self-employment or in employment. Cumulatively (that is, ordering the categories in the same way as shown in the chart), the difference between the 'disabled at neither age' and 'disabled at both ages' groups is highly statistically significant.

**Figure 9.2**

**Economic activity at age 26 by longitudinal disability status**



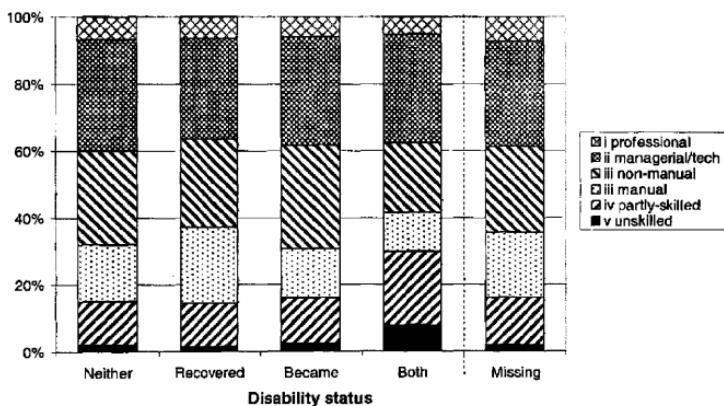
It is interesting that those who have become disabled since age 16 show greater resemblance in this instance to the disabled at both ages group than to the disabled at neither age, whereas in Figure 9.1 this was not the case. The attainment (or non-attainment) of educational qualifications is likely to be affected by experience at school at younger ages – prior to the onset of disability for this group - whereas labour

market activity is affected by contemporary circumstances as well as previous experience.

Examining the experience of the years between ages 16 and 26 reinforces the differences observed at age 26 between disabled and non-disabled groups. Among young people disabled at both age 16 and 26, 4.5 per cent have never had a paid job, compared to less than half a percent of young people disabled at neither age. Of those with some experience of unemployment (57 per cent of disabled and 53 per cent of non-disabled young people), young disabled people are much more likely to have had an extended period looking for work: 45 per cent were unemployed for six months or more, compared to 30 per cent of the non-disabled.<sup>2</sup>

**Figure 9.3**

**Social class (based on occupation) at age 26 by disability status**



Note: classification based on Registrar General's Social Class 1981, to facilitate later comparison with age 16 data.

Turning to those in work, Figure 9.3 shows a breakdown of social class, based on current occupation, by disability status. Young people disabled at both ages are less

<sup>2</sup> Unemployment is a subset of being out of work. Disabled people out of work are less likely to classify themselves as unemployed than non-disabled people; hence the figures for unemployment are likely to show smaller differences between groups than figures for being out of work. However, information on duration out of work is not available in the age 26 survey.

likely to be in work; if they do manage to secure employment, it is disproportionately in unskilled and partly-skilled occupations. The cumulative difference between their occupational social class and that of the 'disabled at neither age' group is statistically significant.

Once again, however, it is important to take account of the possible effect of attrition bias on these results. Table 9.2 shows results from a simple regression on social class at age 26 controlling for parental social class.

**Table 9.2: Social class (based on occupation) at age 26,  
controlling for parental social class**

Ordered logit regression.

Categories of social class as for Figure 9.3, professional = 1 and unskilled = 6.

	Coefficient	Standard error
<b>Disability status</b>	omitted	
	disabled at neither age	
	recovered	0.157 0.130
	became disabled	0.087 0.081
	disabled at both ages	0.523** 0.220
<b>Parental social class</b>	missing	0.022 0.065
	i, ii	omitted
	mixed i, ii	0.529*** 0.090
	iii	1.119*** 0.085
	mixed iii	1.366*** 0.101
	iv, v	1.659*** 0.125
<b>Cut points</b>	other	1.423*** 0.082
		-1.712 0.079
		0.576 0.070
		1.791 0.074
		2.811 0.079
<b>Number of observations</b>		4.997 0.119
	<b>Log likelihood</b>	<b>5364</b>
	<b>Likelihood ratio index</b>	<b>-8138</b>

Statistically significant at \*\*\* 99% \*\* 95% \* 90%

Note: mixed parental social class indicates one parent of the social class indicated, the other parent of a lower social class or 'other' background. 'Other' social class if both parents students, long-term unemployed, unclassifiable, or dead.

Not surprisingly, parental social class has a strong association with the occupations of their offspring at age 26. The regression also shows that for a given parental social class background, disabled young people are significantly less likely to be working in high-status occupations than their non-disabled counterparts: an individual with

otherwise 'average' characteristics is 39 per cent less likely to be working in a profession and 67 per cent more likely to be in an unskilled occupation if he or she is disabled at both ages, compared to someone who is disabled at neither age. This is the case even though there is strong selection into employment (i.e. many more disabled young people are not in work at all).

Some data are also available about the hourly pay received by those in work. The average (mean) rate of pay for young people disabled at neither age is £5.50 per hour, compared to £4.70 for young people disabled at both ages. Controlling for their educational qualifications, OLS regression results on log of hourly wage indicate that disabled young people earn 11 per cent less than non-disabled (significant at 95 per cent level).<sup>3</sup>

#### *9.2.3 Independent living outcomes*

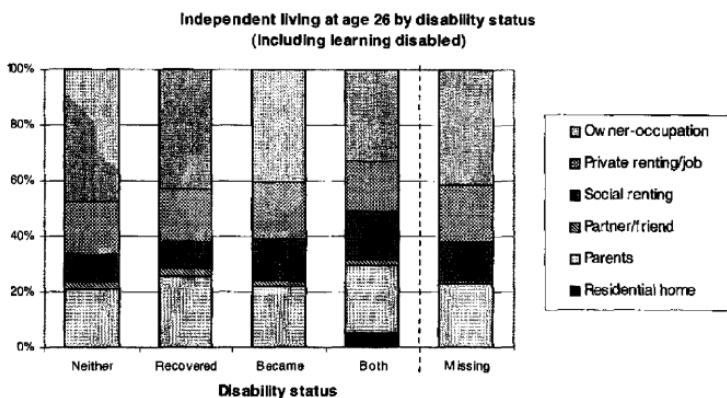
Independent living for disabled people has come to mean having choice and control over accommodation and support and does not imply managing without any support at all (NCIL, 2004). In considering independent living outcomes, it is therefore appropriate to include all disabled people, including those with intellectual impairments, since unlike for the education and occupation outcomes, in this case a learning impairment does not intrinsically affect the outcome. As a general purpose survey, BCS70 does not ask about independent living *per se*, but it does collect information about the living arrangement of the respondent. Although in principle independent living may be achieved in any setting, whether a communal establishment or a private household, in practice residential care and continuing to live in the parental home tend to be associated with less choice and control for the individual. It is important to bear in mind that living independently from parents has particular significance for some disabled young people: it represents a more significant assertion of independence than for non-disabled young people, whose ability to live by themselves in due course is rarely in question.

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<sup>3</sup> This finding is consistent with other studies on the 'pay gap' between disabled and non-disabled workers. See, for example, Meager et al (1999b).

Figure 9.4 gives a breakdown of living arrangements at age 26 by disability status. A small proportion (5 per cent) of young people who were disabled at both age 16 and 26 are living in residential care; none of the other groups are in that situation. Young people disabled at both ages are also more likely to be living with their parents or to be renting from a housing association or the council. A significantly smaller proportion (33 per cent compared to an average of 45 per cent) are owner-occupiers. A high proportion (25 per cent) of those who were disabled at 16 but not 26 are still living with their parents; perhaps this is a reflection of taking longer to find their feet after an earlier experience of disability.

**Figure 9.4**



Note: 'Private renting/job' includes renting from a private landlord, renting (landlord unknown), lodgings, religious institutions, barracks and halls of residence. Prisons, hostels and hotels, which account for no more than 0.4% of any group, are omitted.

If all but the bottom three categories (residential home, other communal, and living with parents) are counted as independent living, 30 per cent of young people disabled at both ages are not (yet) living independently, compared to 21 per cent of young people disabled at neither age, and this difference is statistically significant. A logit regression on 'living independently', controlling for parental social class, confirms that both young people disabled at ages 16 and 26, and young people who recovered from disability in that period, are less likely than the 'disabled at neither age' group to be living independently.

### 9.3 Outcomes relative to aspirations

Thus far, educational, occupational and independent living outcomes have been considered in their own right. In this section, the outcomes are related to the aspirations the young person expressed at age 16, to evaluate the extent to which the individual has been able to fulfil the plans they set out at an earlier age. Of course, a person's objectives may change as they grow older - their tastes may change or experience may teach them to be more or less ambitious - but in so far as systematic differences between groups can be detected in the fulfilment or otherwise of teenage aspirations, this will provide an indication of the degree of autonomy enjoyed by the different groups.

#### 9.3.1 *Fulfilment of educational aspirations*

At age 16, information was collected on whether the young person was aiming to leave education at the earliest opportunity or to stay on (and if so, what kind of course they would like to take), and whether they were planning to go on after 18 to university or other further or higher education. This can be matched to information collected at age 26 on qualifications obtained, to indicate whether the individual's intentions were fulfilled. Figure 9.5 shows whether achievement matched aspirations ('same'), exceeded aspirations ('higher'), or was not as high as had been hoped ('lower'). Young people disabled at both ages are less likely to exceed their educational aspirations and they are more likely to do less well than they had hoped, compared to the other groups. The difference between them and the non-disabled group is statistically significant at the 90 per cent level.

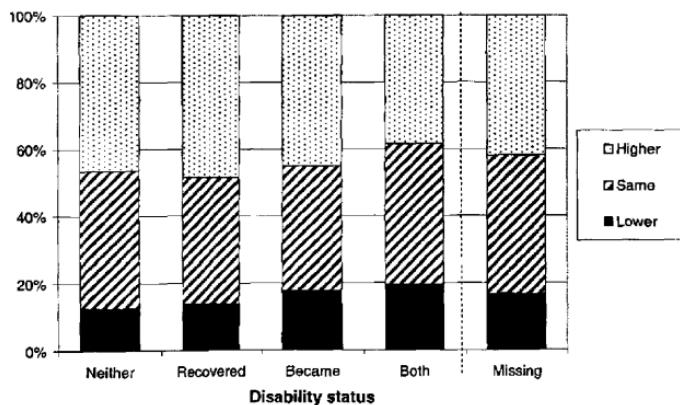
In general, those with lower aspirations are more likely to achieve or exceed them - this is not surprising in one sense, since it is easier to 'do better' than leaving school at 16, than it is to 'do better' than gaining an A level. Indeed by definition 100 per cent must equal or do better than the lowest aspirational category. This pattern may also be due to the fact that the aspirations were gauged at age 16; many of those who were already intending to leave had probably made definite plans to do so, while plans further in the future (for example, going to university) may have been less firmly in place. It is interesting to note that for most groups (except the 'recovered' group),

those who wanted to continue education after 18 but not in a university or polytechnic were less likely to achieve or exceed their aspiration than those who said they wanted to go to university/poly (HE). This could be because there is a less well-established route into post-18 non-HE education than there is from A levels to university or polytechnic.

Encouragingly, by age 26 young people are more likely to have achieved or exceeded their educational aspiration as expressed at age 16 than to have fallen below it. Comparisons by disability status are difficult to interpret because of the small number of cases in some groups. However, it appears – tentatively – that those disabled at both ages who aspired to university or polytechnic are less likely to achieve that than the similarly-aspiring among the never disabled group. Table 9.3 gives a breakdown of destinations by the original level of aspiration, comparing the 'never disabled' with a combined group of those with experience of disability in adulthood (i.e. those disabled at both ages together with those who became disabled between the age of 16 and 26).

**Figure 9.5**

**Educational achievement relative to aspirations, by disability status**



**Table 9.3: Educational achievement relative to aspirations,  
by disability status**  
Row percentages

**Non-disabled**

Aspiration at 16	Educational qualification at age 26				<i>Number = 100%</i>
	No quals	2ndry	Further	Higher	
Leave at 16	5.3	70.8	15.6	8.3	737
Stay on post 16	0.8	44.0	22.2	33.0	1036
Stay on post 18	0.0	9.9	14.4	75.7	786

**Disabled at both ages or became disabled**

	No quals	2ndry	Further	Higher	<i>Number = 100%</i>
	Leave at 16	Stay on post 16	Stay on post 18		
Leave at 16	3.9	77.1	11.1	7.8	153
Stay on post 16	0.5	44.2	22.6	32.6	190
Stay on post 18	0.0	14.0	21.8	64.3	193

These descriptive data give rise to a number of questions. Are these results robust to problems of attrition bias? Does the level of aspiration make more difference to the outcome for some groups than others? Does parental background influence outcomes relative to aspirations, and if so, does it operate in the same way for different groups? These questions can be explored through multivariate analysis.

Firstly, regressing disability status on whether aspirations are met or exceeded and allowing for attrition bias by controlling for parental background indicates that those who became disabled between the ages of 16 and 26 are significantly less likely to achieve their aspirations than those disabled at neither age. The point estimate suggests those disabled at both ages are also less likely to achieve their aspirations, but there are insufficient cases for the result to be statistically significant.

Secondly, Table 9.4 addresses the question of whether level of aspiration makes a difference to outcomes.<sup>4</sup> The first panel of results shows the effect of aspirations and disability status on the level of educational qualifications obtained. The results confirm that level of aspiration is strongly associated with actual outcome. They also show that those who became disabled between the ages of 16 and 26 were less likely to have positive outcomes, whatever their level of aspiration. The marginal effect of becoming disabled on the likelihood of obtaining a degree is minus 19 per cent, while

<sup>4</sup> For simplicity of presentation with interaction terms, the disability status 'missing' group is not included in the regressions.

the marginal effect on the likelihood of obtaining no educational qualifications is plus 24 per cent, compared to a non-disabled person, assuming both individuals have otherwise average characteristics. Once again, the point estimate for those disabled at both ages is also negative, but not significant.

**Table 9.4: Effect of educational aspirations and disability status on outcomes**

Ordered logit regressions on highest qualification attained by age 26

Categories of highest qualification as for Figure 9.1, none = 0, degree+/NVQ5 = 5

	Main effects		Interaction model	
	Coefficient	Standard error	Coefficient	Standard error
<b>Level of aspiration at 16</b>				
stay post 18	3.409***	0.101		
stay post 16	1.454***	0.086		
leave at 16	omitted			
<b>Disability status</b>				
disabled at neither age	omitted			
x stay post 18			3.466***	0.112
x stay post 16			1.394***	0.094
x leave at 16			omitted	
recovered	0.102	0.167		
x stay post 18			0.190	0.441
x stay post 16			0.748*	0.413
x leave at 16			-0.282	0.327
became disabled	-0.253***	0.093		
x stay post 18			-0.375	0.237
x stay post 16			0.127	0.229
x leave at 16			-0.181	0.174
disabled at both ages	-0.241	0.249		
x stay post 18			0.688	0.680
x stay post 16			1.121*	0.653
x leave at 16			-0.990*	0.540
Cut points	-3.081 -1.329 1.178 2.187 3.009	0.138 0.075 0.073 0.080 0.087	-3.101 -1.345 1.167 2.177 3.001	0.142 0.080 0.077 0.084 0.091
<i>Number of observations</i>	3233		3233	
<i>Log likelihood</i>	-4320		-4314	
<i>Likelihood ratio index</i>	0.14		0.14	

Statistically significant at \*\*\* 99% \*\* 95% \* 90%

See Table 9.1 for details of dependent variable

The second column interacts these two sets of variables to test whether aspirations make more (or less) of a difference to educational outcomes for disabled people. Focusing first on a comparison between those disabled at neither age, and those disabled at both ages, we can see that positive aspirations are associated with higher

subsequent achievement for both groups. In terms of marginal effects (not shown in the table), the difference between high and low aspiration for a non-disabled person appears to have a greater impact on educational outcomes than it does for a person disabled at both ages, whether the outcome of interest is attaining a degree, or, at the other end of the spectrum, having no educational qualifications. The implication is that a disabled person's own goals are less closely related to his or her outcomes than for a non-disabled person with otherwise similar characteristics: a significant restriction of autonomy.

The previous section showed that parental education was strongly associated with educational outcomes for their children and the previous chapter showed that parental education was also strongly associated with young people's aspirations. The question to which we now turn therefore is whether the educational achievement relative to aspirations is also influenced by parental background, as measured by parental education. Once again, two sets of results are presented, one showing main effects and one showing an interacted model.

The first model confirms that both educational aspirations and parental background are significantly associated with attainment. It also shows that young people who become disabled appear to be at a particular disadvantage in attainment relative to their aspirations. This is perhaps to be expected: a major life event has intervened between the time at which aspirations are formed and the time at which attainment is being measured. The point estimate indicates that young people disabled at both ages are also disadvantaged but it is not statistically significant.

**Table 9.5: Educational outcomes controlling for aspirations, disability status and parental education**

Ordered logit regressions on highest qualification attained by age 26

Categories of highest qualification as for Figure 9.1, none = 0, degree+/NVQ5 = 5

	Main effects		Interaction model	
	Coefficient	s.e.	Coefficient	s.e.
<b>Aspiration at 16</b>				
university/poly teaching; tech/art college	omitted		omitted	
post 18 n.o.s.	-1.621***	0.169	-1.648***	0.170
A level	-1.615***	0.204	-1.654***	0.206
post 16 vocational	-1.507***	0.141	-1.512***	0.142
post 16 O level/CSE	-3.106***	0.142	-3.115***	0.143
post 16 n.o.s.	-3.126***	0.204	-3.140***	0.205
leave at 16: job	-2.498***	0.158	-2.511***	0.158
leave at 16: job	-4.048***	0.152	-4.063***	0.152
leave at 16: other	-3.837***	0.156	-3.849***	0.156
<b>Parental highest qual</b>	degree+	omitted		
teaching, nursing	-0.449***	0.170		
A level	-0.464***	0.144		
O level	-0.733***	0.119		
other	-0.772***	0.131		
none	-1.167***	0.124		
<b>Disability status x parental qual</b>				
disabled at neither age	x degree+	omitted	omitted	
x teaching, nursing			-0.266	0.197
x A level			-0.421***	0.160
x O level			-0.739***	0.134
x other			-0.764***	0.146
x none			-1.167***	0.138
<b>recovered</b>		0.042	0.193	
x degree+			1.055*	0.567
x teaching, nursing			-2.053**	0.996
x A level			-0.825	0.834
x O level			-1.236*	0.666
x other			-1.246*	0.741
x none			-0.977	0.693
<b>became disabled</b>		-0.256**	0.107	
x degree+			-0.267	0.230
x teaching, nursing			-0.772*	0.432
x A level			-0.173	0.408
x O level			0.221	0.323
x other			0.151	0.355
x none			0.101	0.325
<b>disabled at both ages</b>		-0.396	0.275	
x degree+			-0.925*	0.568
x teaching, nursing			1.050	0.288
x A level			1.443	0.154
x O level			0.602	0.430
x other			-0.108	0.926
x none			0.317	0.711

Table 9.5 cont'd

	Main	Interacted
Cut points	-8.141 -6.239 -3.595 -2.466 -1.538	0.219 0.156 0.130 0.122 0.114
Number of observations	2655	2655
Log likelihood	-3281	-3273
Likelihood ratio index	0.19	0.19

Statistically significant at \*\*\* 99% \*\* 95% \* 90%

Interacting parental education with the young person's disability status suggests that for non-disabled people, having parents with low educational levels is significantly associated with low educational attainment *relative to aspirations* for the child. For young people who recover from disability, the difference in attainment relative to aspirations between those whose parents have a degree and others is even more marked than the corresponding difference for non-disabled young people. For the remaining two disability groups (become disabled and disabled at both ages), parental qualifications appear to make relatively little difference, although the lack of significance could be due to small sizes.

To summarise the results in this section, young people who become disabled between the ages of 16 and 26, and – with weaker evidence, given the small cell sizes – those who are disabled at both ages are less likely to achieve or exceed their educational aspirations than their non-disabled counterparts. This result holds with or without controls for parental background. The level of aspirations is itself an important determinant of attainment, but aspirations are a less significant determinant of attainment for disabled people than for non-disabled people. Young people with highly-educated parents are more likely to achieve relative to their aspirations and this association is more important for those who recover from disability than it is for the non-disabled or other disability groups.

### 9.3.2 Fulfilment of occupational aspirations

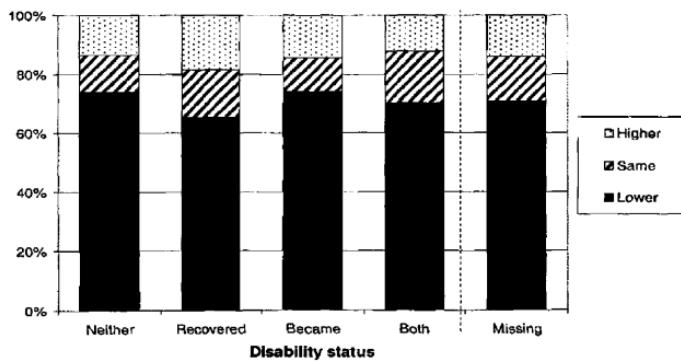
At age 16, respondents were asked what they expected to be doing in five years' time, with pre-coded responses ranging from 'in a profession' to 'working in the open air'. The categories roughly correspond to the classification of social class based on

occupation used above for occupations at age 26, though with the addition of 'at a university/polytechnic' and 'doing something else'. If these are treated as equivalent to 'in full-time education' and 'not in work' at age 26, an approximate match between aspirations and outcomes can be made. A hierarchy is imposed from full-time education at the top (on the assumption that by age 26 this is most likely to be a higher degree), through the occupational social classes i to v, to 'not in work' at the bottom.

Figure 9.6 shows what proportion of each disability status group exceeded, met or fell below their aspiration. In contrast to the results for educational attainment, a majority of all groups have not attained the level of occupation that they expected when asked ten years previously. This is partly because 35 per cent expected to be working in a profession, whereas in the event only 6 per cent are doing so. At first glance, young people disabled at both age 16 and 26 are not more likely than other groups to have fallen below their initial aspiration, although marginally fewer have exceeded their aspiration.

**Figure 9.6**

**Occupational outcomes relative to aspirations, by disability status**



In Table 9.6, a classification based on occupational class for those in work and a single category for all those not in work is used. This is then compared to occupational aspirations at age 16, for selected groups of respondents. As was seen in

Table 9.3 for educational aspirations, those with lower aspirations are more likely to achieve or exceed them. Compared to the non-disabled group, those who became disabled or were disabled at both ages have lower chances of attaining their aspiration whatever the level of their aspiration, because so many of them are not in work at all.

An ordered logit regression on occupational outcomes, controlling for disability status and aspirations, indicates that outcomes were better for those with higher aspirations (whether because of those higher aspirations or because both the high aspirations and the outcomes were influenced by some other factor, such as parental social class). Comparing by disability status but controlling for level of aspiration, non-disabled young people had better outcomes than young people who became disabled (significant at 99 per cent) and the point estimate suggests also better than young people who were disabled at both ages (not significant). There is no evidence however that aspirations of young people disabled at both ages or who became disabled were more or less closely associated with outcomes than for non-disabled people: interaction terms between disability status and aspirations were not statistically significant.

**Table 9.6: Occupational achievement relative to aspirations,  
by level of aspiration and disability status**  
Row percentages

**Non-disabled**

Aspiration at 16	Managerial, professional	Clerical, craft	Personal, protective, sales	Labourers	Not in work
Professional or assistant	56.9	15.2	14.9	1.2	11.8
Clerical or craft	29.7	41.2	15.4	2.1	11.5
Personal, sales, operatives	20.5	22.5	31.7	5.2	20.1
Farm or 'other'	34.7	21.1	24.4	3.0	16.8

**Disabled at both ages or became disabled**

	Managerial, professional	Clerical, craft	Personal, protective, sales	Labourers	Not in work
Professional or assistant	46.8	24.1	10.3	0.5	18.2
Clerical or craft	24.4	34.8	17.0	1.5	22.2
Personal, sales, operatives	18.5	22.2	24.1	5.6	29.6
Farm or 'other'	27.8	23.1	19.7	5.8	23.7

Table 9.7 presents results from an ordered logit regression on occupational outcome, controlling for aspirations, own educational attainment and parental background. Individuals still in full-time education are omitted and the dependent variable is ordered from professional occupation through the occupational social classes, with 'not in work' as a final category. A positive coefficient therefore indicates an association with a poorer occupational outcome.

The regression confirms that lower aspirations are independently associated with poorer outcomes, even after controlling for background factors like parental social class. It also confirms that young people who become disabled are significantly less likely than the non-disabled to achieve high occupational status relative to their aspirations: 29 per cent less likely to be in a professional occupation, relative to a non-disabled person (and assuming 'average' other characteristics in both cases), and 35 per cent more likely to be out of work. The point estimate for young people disabled at both ages is also positive but it does not reach statistical significance.

Both parental social class, and, independently, the young person's own educational attainment influence their occupational status relative to their aspirations. Interactions between each of these sets of characteristics and disability status did not produce significant results and hence are not reported in the table.

Summarising the results on occupational outcomes, we find that higher aspirations are associated with better outcomes, independently of individual and background characteristics. Occupational outcomes are better, relative to aspirations, for young people with high educational qualifications and from a higher parental social class background. Young people who become disabled are at a significant disadvantage, even after controlling for other factors. Differences between young people disabled at both ages and non-disabled young people are not statistically significant in most cases, but the point estimates are indicative of some disadvantage.

**Table 9.7: Occupational attainment controlling for aspirations, disability status, own educational qualifications and parental social class**

Ordered logit regressions on occupation at age 16. Excludes those in full-time education. Categories from professional occupation = 1, through to partly skilled/unskilled occupation = 5, and not in work = 6

	<b>Main effects</b>	
	Coefficient	Standard error
<b>Aspiration at 16</b>		
profession	omitted	
managerial/technical	0.263**	0.122
skilled non-manual	0.049	0.116
skilled manual	0.661***	0.134
partly-skilled / unskilled	0.671***	0.122
<b>Disability status</b>		
disabled at neither age	omitted	
recovered	0.133	0.174
became disabled	0.348***	0.102
disabled at both ages	0.259	0.272
<b>Own educational qualifications</b>		
degree+ / NVQ 5,6	omitted	
higher qual / NVQ 4	0.900***	0.133
A level / NVQ 3	1.717***	0.128
O level / NVQ 2	2.161***	0.123
CSE 2-5 / NVQ 1	2.756***	0.172
none	3.807***	0.308
<b>Parental social class</b>		
i, ii	omitted	
mixed i, ii	0.222*	0.118
iii	0.492***	0.113
mixed iii	0.563***	0.134
iv, v	0.906***	0.162
other	0.571***	0.118
<b>Cut points</b>		
	-0.967	0.115
	1.669	0.119
	3.105	0.128
	3.839	0.133
	4.699	0.141
<i>Number of observations</i>	2714	
<i>Log likelihood</i>	-3994	
<i>Likelihood ratio index</i>	0.11	

Statistically significant at \*\*\* 99% \*\* 95% \* 90%

### 9.3.3 Fulfilment of aspirations for independence

With respect to living independently, disabled young people with learning impairments are re-included in the analysis. In all disability sub-groups, the proportion who were living independently by age 26 was higher among those who

had said at age 16 that they wanted to leave home early, than among those who were uncertain or who had wanted to leave home 'sometime in the future' (Table 9.8). The differences between disability sub-groups and the not disabled group are generally not statistically significant.

**Table 9.8: Independent living outcomes, by aspirations and disability status**  
Percent of each cell living independently at age 26

<b>Aspiration at 16</b>	<b>Longitudinal disability status</b>				<b>Missing</b>
	<b>Neither</b>	<b>Recovered</b>	<b>Became</b>	<b>Both</b>	
Leave home now or within three years	84.8	87.9	82.8	86.2	84.6
Leave home sometime in the future or uncertain	74.4	66.0	74.0	71.1	71.3
<b>Number</b>	<b>2759</b>	<b>152</b>	<b>519</b>	<b>67</b>	<b>768</b>

Once again it is important to take into account possible attrition bias, and potential influences on leaving home other than aspirations and disability status. Table 9.9 shows that after controlling for parental background and the young person's own educational qualifications, young people disabled at both ages are significantly less likely to achieve independent living (relative to their aspirations): 11 per cent less likely, for an individual with 'average' characteristics. Those who became disabled between age 16 and 26 are not disadvantaged in this respect, perhaps because for at least some, the onset of disability occurred after they had left home. Educational achievement is also significant; those whose highest qualification is further or secondary level are less likely to be living independently than those who went to university. Interactions between disability status and other variables were not significant so results for an interacted model are not shown.

**Table 9.9: Independent living controlling for aspirations, disability status and own educational qualifications**

Logit regression on living independently at age 26

	Main effects	
	Coefficient	Standard error
<b>Aspiration at 16</b>		
leave now/ within 3 years	omitted	
leave in future / uncertain	-0.613***	0.091
missing	-0.382***	0.098
<b>Disability status</b>		
disabled at neither age	omitted	
recovered	-0.239*	0.146
became disabled	-0.043	0.094
disabled at both ages	-0.478**	0.205
<b>Own educational qualifications</b>		
degree+ / NVQ 5,6	omitted	
higher qual / NVQ 4	-0.282	0.215
A level / NVQ 3	-0.274**	0.148
O level / NVQ 2	-0.316***	0.107
CSE 2-5 / NVQ 1	-0.293**	0.122
none	-0.291**	0.132
missing	-0.343***	0.126
<b>Parental social class</b>		
i, ii	omitted	
mixed i, ii	0.231*	0.124
iii	-0.055	0.114
mixed iii	0.047	0.134
iv, v	-0.149	0.159
other	0.134	0.115
Constant	1.899***	0.119
Number of observations	5553	
Log likelihood	-2868	
Likelihood ratio index	0.01	

Statistically significant at \*\*\* 99% \*\* 95% \* 90%

#### 9.4 Characterisation of autonomy

It may be helpful at this point to re-cap the reasons for analysing aspirations and outcomes, as this chapter has done. Many assessments of the circumstances of disabled people examine their position in the labour market, their incomes and the extent to which they are able to live independently (for example, Burchardt 2000). Indeed, this was the approach followed in Chapter 5 of this thesis, looking at disabled people's functionings. One criticism is that the outcomes selected for analysis and the

thresholds for adequate functioning are chosen by the researcher (albeit informed by theory and consultation) and may not be of primary importance to the individual. Of greater significance, the critic argues, is whether an individual achieves his or her objectives in life. This then leads us to consider individual aspirations and the extent to which they are fulfilled – as examined in this chapter. However, this too can be faulted: if the formation of an individual's aspirations has been stunted by lack of encouragement or lack of role models, or conditioned by low expectations of success, then the fulfilment of those modest aspirations may not signify a good outcome overall. As Sen argues,

"It is thus important...to favour the creation of conditions in which people have real opportunities of judging the kind of lives they would like to lead".  
(Sen , 1999a, p63)

The dataset analysed here does not contain the dramatic examples of lack of opportunity for reflection which Sen cites in this context ('battered slaves and hopeless destitutes'), but it does contain young people at a considerable disadvantage compared to their peers: with a range of impairments, from family backgrounds with little education and sometimes little support, and in the context of a labour market with high youth unemployment.

Hence we need an overall assessment which takes into account both the extent to which aspirations were limited and the extent to which aspirations have been fulfilled: a measure of autonomy. There is no direct way in which the probability of an individual having limited aspirations and the probability of an individual being limited in their ability to fulfil their aspirations can be combined quantitatively. However it is possible to identify characteristics which are independently associated with limited aspirations, and characteristics which are independently associated with reduced chances of fulfilment of aspirations, and then to categorise them as follows:

- a) limited aspirations and limited fulfilment ('doubly deprived')
- b) limited aspirations but good chances of fulfilment ('cautiously successful')
- c) broad aspirations but limited fulfilment ('frustrated ambition')
- d) broad aspirations and good chances of fulfilment ('autonomous').

The analysis in Chapter 8 provides the basis for identifying characteristics associated with limited aspirations in each of the areas examined, and the analysis reported above together with supplementary regressions shown in Appendix 9.2 to this chapter provides the same for fulfilment of aspirations. Characteristics which are significantly associated both with aspirations and with fulfilment of aspirations are easy to classify. Characteristics which are significant with respect to aspirations but not with respect to fulfilment are classified as 'good chance of fulfilment' and are allocated to group (b), the cautiously successful, or (d), the autonomous, according to whether they are associated with high or low aspirations. Similarly characteristics which are associated with fulfilment but not with the formation of aspirations are classified as 'broad aspirations' and are allocated to categories (c), those with frustrated ambition, or (d), the autonomous, according to whether they are positively or negatively associated with fulfilment. (Characteristics which are associated with neither the formation nor fulfilment of aspirations are omitted). For most of the variables the comparison is self-explanatory: high parental social class is contrasted with low parental social class, for example. For disability status, the reference category is young people disabled at neither age, and for ethnicity the reference category is White.

The results are shown in Table 9.10. Looking first at educational aspirations and achievement, ethnicity, locus of control<sup>5</sup>, parental social class and qualifications, and teacher's assessment of academic performance at age 16, are all consistently associated with the degree of autonomy enjoyed by the individual; for example, coming from a low parental social class background is associated with both low aspirations and low likelihood of achieving relative to those aspirations. Other relationships are more complex, for example, self-esteem, parental aspirations and whether the young person attended a special or mainstream school influence aspirations but not fulfilment. Gender is unusual in that girls have higher aspirations than boys but are less likely to achieve them. It is a moot point whether having limited aspirations but a good chance of achieving them represents more or less autonomy than having broad aspirations but a limited chance of achieving them (i.e. the

<sup>5</sup> Locus of control is a scale indicating the extent to which the individual feels fatalistic about his/her life. 'Internal' locus of control means believing that your own actions make a difference to outcomes in your life, 'external' locus of control means a more fatalistic attitude.

comparison between groups (b) and (c)). Finally, becoming disabled is not significantly associated with the formation of aspirations (since by definition the disability does not exist at age 16 this is not surprising), but it is associated with lower likelihood of achieving educational aspirations by age 26. The same holds – although with less statistical robustness – for those disabled at both ages.

The results for occupational aspirations and fulfilment broadly follow the same pattern as for education.

With respect to independent living, some additional characteristics come into play and the relationships are somewhat different. Gender, parental qualifications, teacher's assessment, and whether the individual had a boy/girlfriend at age 16 are all consistently associated with degree of autonomy. Young people from a Pakistani or Bangladeshi background are less likely to want to leave home and are less likely to do so compared to their White counterparts, while young Indian people are similarly unlikely to want to leave home but are more likely to in fact do so. Locus of control, attitude towards school, supportiveness of parents (as assessed by the young person), the composition of the household and parental social class are associated with the formation of aspirations to leave home but not with their fulfilment. Finally, all disability statuses are associated with lower likelihood of achieving independent living (though the estimate for disabled at both ages does not reach statistical significance), although disability at age 16 is not associated with the formation of aspirations for independence.

Looking across the different domains, it is striking that being disabled - whether at both ages 16 and 26, only at 16 or only at 26 - occurs only in column (c): frustrated ambition. There is no poverty of aspiration among these groups compared to their non-disabled counterparts but there are significant barriers to the achievement of those aspirations.

**Table 9.10: Characteristics associated with more and less autonomy**

<b>Domain</b>	<b>(a) Limited aspiration and limited fulfilment: 'doubly deprived'</b>	<b>(b) Limited aspiration but good chance of fulfilment: 'cautiously successful'</b>	<b>(c) Broad aspiration but limited fulfilment: 'frustrated ambition'</b>	<b>(d) Broad aspiration and good chance of fulfilment: 'autonomous'</b>
<b>Education</b>	Black external locus of control low parental social class low parental qualifications poor teacher assessment	male low self-esteem low parental aspirations special school	became disabled (disabled at both ages) female	Indian Pakistani/Bangladeshi internal locus of control high self esteem high parental aspirations high parental social class high parental qualifications good teacher assessment mainstream school
<b>Occupation</b>	low parental social class poor teacher assessment	male Black external locus of control low parental aspirations low parental qualifications	became disabled disabled at both ages female Pakistani/Bangladeshi	recovered from disability Indian internal locus of control high parental aspirations high parental soc class high parental qualifications good teacher assessment
<b>Independent living</b>	male Pakistani/Bangladeshi low parental qualifications poor teacher assessment no boy/girlfriend at 16	Indian external locus of control positive attitude to school low parental social class supportive parents both natural parents resident	became disabled (disabled at both ages) recovered from disability female	internal locus of control negative attitude to school high parental qualifications high parental social class good teacher assessment unsupportive parents step or lone parent family had boy/girlfriend at 16

Characteristics in parentheses are not statistically significant but are categorised according to the point estimates.

### 9.5 Conclusions

Section 9.2 of this chapter explored the educational, occupational and independent living outcomes for a cohort of young people at age 26 and identified some of the influences on variations in outcome for different groups. The following section related these outcomes to the aspirations the same young people had expressed ten years earlier. Finally, section 9.4 combined information on the influences on the formation of aspirations with information on the influences on the fulfilment of aspirations, to provide a characterisation of autonomy. This enables us to say, for example, that a young person who is from a low social class background and whose teacher gives a poor assessment of his or her academic performance has unambiguously less autonomy with respect to occupation than a young person from a higher social class background with a strong academic performance, and this effect is felt both through the limitation of aspirations and the likelihood of being able to fulfil even those limited aspirations.

In between these two groups are those who have limited aspirations but are generally able to achieve what they set out to do, and those who have high aspirations but find themselves frustrated in attempting to fulfil them. As noted above, it is unclear which of these groups should be considered to have a greater degree of autonomy, but it is certain that their capabilities are more restricted than those who face few limitations in either the formation or fulfilment of aspirations, and that their capabilities are wider than those who are limited at both stages.

Disability emerges as a significant factor but by no means the only or the foremost characteristic which shapes the degree of autonomy which individuals enjoy. By and large, it seems young disabled people in this cohort formulated similar aspirations to their non-disabled counterparts in their teenage years, but were frustrated in the achievement of these aspirations to a greater extent. This observation leads to three linked conclusions. Firstly, contrary to the hypothesis with which Chapter 8 began, disability does not in itself lead to downwardly-conditioned expectations or aspirations among young people. Secondly, characteristics other than disability do shape the formation of agency goals among disabled people, so even though adaptation is not a particular issue with respect to disability, it does need to be taken

into account with respect to social class, gender and ethnicity, to name but three prominent influences. Finally, autonomy demands freedom both in the selection and pursuit of agency goals. In the case of disability, it is in the latter respect where we observe significant limitations.

Using the concept of 'capability as autonomy', as this chapter has done, makes considerable demands on data, since it requires long-span longitudinal data and the collection of both subjective and objective information. This limits the range of contexts in which it can be applied, but the argument of Part II of this thesis has been that it is theoretically superior to the alternative conceptualisations of the capability approach. 'Capability as autonomy' evaluates the fulfilment of the individual's own life objectives (thus avoiding an external prioritisation of functionings: the principal criticism levelled at a functionings-based approach), while at the same time taking account of the circumstances in which the preferences of individuals are formed (in contrast to 'capability as opportunity').

### Appendix 9.1: Longitudinal measure of disability

Table A9.1 (column headed 'Full') shows respondents' disability status at age 16 and 26. The questions are not the same at the two ages. At age 16, the indicator is based on information from the parent and/or nurse, referring to impairment, handicap or disability. At age 26, the indicator is based on information from the cohort member him/herself, referring to long-term health problems, illness, infirmity or disability. Due to missing or inconsistent information, some individuals' status is uncertain. In these cases, additional information about the type of conditions reported is used to make a judgement about the likely disability status of the individual. This information is available at both ages. Some reassurance about the validity of the 'became disabled' categories is given by the fact that over half of these groups report at age 26 that they have had an accident or injury which required hospital treatment since the age of 16, and this is well above the average rate of accidents for the sample.

**Table A9.1: Longitudinal disability status**

Disability status	Full		Summary		Summary excl. those with learning difficulties	
	N	col.%	N	col.%	N	col.%
Disabled at neither age	4489	62.8	4489	78.4	4459	78.9
Disabled at 16, not at 26	68	1.0	279	4.9	263	4.7
Disabled at 16, not at 26 (probably)	211	3.0				
Became disabled between 16 & 26	789	11.0	829	14.5	819	14.5
Became disabled betw. 16 & 26 (probably)	40	0.6				
Disabled at both ages	81	1.1	129	2.3	111	2.0
Disabled at both ages (probably)	48	0.7				
Missing / don't know	1418	19.9	-	-	-	-
All	7144	100.0	5726	100.0	5652	100.0

The 'Summary' column offers a shorter classification, allocating the 'probably' categories to their definite counterparts, and showing the percentage each category makes up of the total valid responses (i.e. omitting 'Missing/don't know').

Finally, the right-hand column gives the same summary, but excluding young people who reported learning impairments at either age 16 or 26. According to the social model of disability, it is important to distinguish between disadvantage which arises directly from the nature of the impairment and disadvantage which arises from the circumstances in which people with impairments find themselves. Learning impairment is likely to have a direct effect on the attainment of qualifications and subsequent labour market experience, so for the analysis of these outcomes, the relevant sample is those without learning impairments. For the analysis of independent living outcomes, however, all disabled people are included.

## Appendix 9.2: Supplementary regressions on achievement at age 26 relative to aspirations

### 1. Education

Dependent variable: highest qualification obtained by age 26 (0 = none to 6 = degree or higher)

Ordered logit estimates

Number of obs = 1216  
LR chi2(32) = 818.18  
Prob > chi2 = 0.0000  
Pseudo R2 = 0.2208

Log likelihood = -1443.5815

hacvocq	Coef.	Std. Err.	z	P> z	[90% Conf. Interval]	
edasp_2	-.9485013	.2481472	-3.82	0.000	-.1356657 -.5403355	
edasp_3	-1.397668	.2873426	-4.86	0.000	-.1.870304 -.9250313	
edasp_4	-.887988	.2050179	-4.33	0.000	-.1.225212 -.5507636	
edasp_5	-1.943157	.2111286	-9.20	0.000	-.2.290433 1.595881	
edasp_6	-2.299999	.326851	-7.04	0.000	-.2.837621 -1.762377	
edasp_7	-2.068659	.2497281	-8.28	0.000	-.2.479435 -1.657903	
edasp_8	-3.111831	.2554051	-12.18	0.000	-.3.531935 -2.691727	
edasp_9	-2.728615	.2586174	-10.55	0.000	-.3.154003 -2.303227	
longdisx-2	.3131741	.321222	0.97	0.330	-.2151892 .8415373	
longdisx-5	-.3083858	.1873762	-1.65	0.100	-.6165923 -.0001794	
longdisx-7	-.7560317	.5268769	-1.43	0.151	-.1.622667 -.1106037	
longdisx-99	-.1442032	.2297694	-0.63	0.530	-.5221401 .2337338	
male	.4560169	.11.97987	3.81	0.000	.2589656 .6530681	
eth_2	-1.573729	.8007439	-1.97	0.049	-.2.890836 -.2566229	
eth_3	.2199249	.5292876	0.42	0.678	-.6506758 1.090526	
eth_4	1.762834	.8100175	2.18	0.030	.4304734 3.095194	
eth_5	-1.657029	1.188146	-1.39	0.163	-.3.611356 .2972974	
eth_99	.0510642	.2320381	0.22	0.826	-.3306045 .432733	
locus	.0340734	.0104802	3.25	0.001	.016835 .0513118	
f22score	-.0131985	.0184736	-0.71	0.475	-.0435848 .0171878	
parclass_2	-.1649503	.2035485	-0.81	0.418	-.4997577 .1698572	
parclass_3	-.4263232	.2092982	-2.04	0.042	-.770588 .0820583	
parclass_4	.3731501	.2575777	-1.45	0.147	-.7968277 .0505275	
parclass_5	-.7188388	.3273512	-2.20	0.028	-.1.257284 -.1803939	
parclass_6	-.4904649	.2671447	-1.84	0.066	-.9298789 -.0510509	
fmhqual_1_2	-.507797	.2993634	-1.70	0.090	-.1.000206 -.015388	
fmhqual_1_3	-.4445713	.2630552	-1.69	0.091	-.8773586 -.011984	
fmhqual_1_4	-.5740765	.2236834	-2.57	0.010	-.9420029 -.20615	
fmhqual_1_5	-.4803655	.2537439	-1.89	0.058	-.897738 -.0629949	
fmhqual_1_6	-.6118053	.2476005	-2.47	0.013	-.1.019073 -.2045397	
fmhqual_99	-.5546553	.2742058	-2.02	0.043	-.1.005685 -.1036279	
16_1	-.6744516	.0719878	-9.37	0.000	-.7928609 -.5560422	
<hr/>						
_cut1	-8.382553	.7816204			(Ancillary parameters)	
_cut2	-6.048106	.7304656				
_cut3	-3.077786	.7232323				
_cut4	-1.87928	.7207678				
_cut5	-.8151767	.7166579				

Key to independent variables:

edasp: educational aspiration at age 16, from 1 university/polytechnic (omitted) to 9 leave at age 16 to 'do something else'  
longdisx: longitudinal disability status, 0: not disabled (omitted), 2: recovered, 5: becomes disabled, 7: disabled at both ages  
male: male (female omitted)  
eth: ethnic group, 1: white, 2: black, 3: indian, 4: pakistani/bangladeshi, 5: other, 99: missing  
locus: locus of control at age 16, higher figure indicates more internal locus of control.  
f22score: self-esteem at age 16, higher figure indicates greater self-esteem  
parclass: parental social class, 1: parent or parents social class i or ii (omitted), 2: mixed i or ii and lower social class, 3: iii, 4: mixed iii and lower social class, 5: iv or v, 6: other, including unclassifiable and dead  
fmhqual: highest parental qualification, 1: degree (omitted) through to 6: none, and 99: missing  
16\_1: teachers assessment of academic performance at age 16, lower score is better.

## 2. Occupation

Dependent variable: occupational status at age 26 (1 = FT education, 2 to 6 = high to low social class, 7 = out of work)

Ordered logit estimates

Number of obs = 1231  
 LR chi2(33) = 483.28  
 Prob > chi2 = 0.0000  
 Pseudo R2 = 0.1132

Log likelihood = -1892.7093

act26x	Coef.	Std. Err.	z	P> z	[90% Conf. Interval]
ge4ax_2	.1803437	.1670904	1.08	0.280	-.0944956 .455183
ge4ax_3	.1163381	.1974455	0.59	0.556	-.2084308 .4411071
ge4ax_4	1.004495	.2367683	4.24	0.000	.6150455 1.393944
ge4ax_5	.7589391	.2467206	3.08	0.002	.3531197 1.164758
ge4ax_6	.9763144	.2947457	3.31	0.001	.4915008 1.461128
ge4ax_7	.5820239	.2474173	2.35	0.019	.1750586 .9889892
longdisx-2	-.0849936	.2972525	-0.29	0.775	-.5739304 .4039432
longdisx-5	.4073855	.1729955	2.35	0.019	.1228332 .6919377
longdisx-7	1.076147	.5665359	1.83	0.067	.1113809 2.040912
longdis-99	.3909939	.2107703	1.86	0.064	.0443076 .7376802
male	-.3964508	.1161414	-3.41	0.001	-.5874864 -.2054151
eth_2	.6767712	.9770555	0.69	0.489	-.9303421 2.283884
eth_3	.2546577	.4408477	0.58	0.563	-.4704723 .9797876
eth_4	1.706545	.8587193	1.99	0.047	.2940772 3.119012
eth_5	-1.725728	1.187264	-1.45	0.146	-3.678604 .2271483
eth_99	.0512754	.2859329	-0.18	0.858	-.5215931 .4190423
locus	-.0094855	.0089679	-1.06	0.290	-.0242365 .0052654
parclass_2	.2572984	.1777674	1.45	0.148	-.0351029 .5496997
parclass_3	.6779571	.1776464	3.82	0.000	.3857547 .9701594
parclass_4	.4184994	.2187354	1.91	0.056	.0587117 .778287
parclass_5	1.071399	.2814455	3.81	0.000	.6084621 1.534335
parclass_6	.3545878	.1729814	2.05	0.040	.0700587 .6391168
16_1	.2822532	.0632644	4.46	0.000	.1781924 .3863139
parstat_2	.6412319	.249998	2.56	0.010	.2300217 1.052442
parstat_3	-.0703956	.2103177	-0.33	0.738	-.4163374 .2755462
parstat_4	.1750132	.4952524	0.35	0.724	-.6396045 .9896308
parstat_99	-.205073	.2395287	-0.86	0.392	-.5992273 .1890812
havcocc_0	2.284412	.6633854	3.44	0.001	1.192472 3.376352
havcocc_1	2.169799	.2771149	7.83	0.000	1.713986 2.625612
havcocc_2	1.692102	.1893	8.94	0.000	1.380731 2.003472
havcocc_3	1.352699	.1937103	6.98	0.000	1.034074 1.671324
havcocc_4	.550454	.2044523	2.69	0.007	.2141599 .8867482
havcocc_9	1.015717	.2211578	4.59	0.000	.6519444 1.379489
(Ancillary parameters)					
_cut1	-2.145068	.6666182			
_cut2	-.678226	.6552139			
_cut3	1.662324	.658736			
_cut4	3.091373	.6625979			
_cut5	3.839174	.664556			
_cut6	4.669512	.667424			

Key to independent variables:

ge4ax: at age 16 'where will you be in 5 years' time?', 1: univ/poly (omitted), 2: profession, 3: working in an office, 4: skilled trade, 5: working with my hands, 6: working in the open air, 7: something else  
 parstat: parents residing with teen at age 16, 1: both (omitted), 2: step, 3: lone, 4: other, 99: missing  
 havcocc: highest qualification at age 26, 0: none to 5: degree or above (omitted), 9: missing

For other variables, see key to previous table.

## 3. Living independently

Dependent variable: living independently (0 = no, 1 = yes)

Logit estimates

	Number of obs	=	2266
LR chi2(26)	=	138.92	
Prob > chi2	=	0.0000	
Pseudo R2	=	0.0588	

Log likelihood = -1111.0562

liveind	Coef.	Std. Err.	z	P> z	[90% Conf. Interval]
lvhomex_1	-.4944238	.1246247	-3.97	0.000	-.6994132 -.2894343
lvhomex_9	.1785988	.2762004	0.65	0.518	-.2757105 .6329081
longdisx_2	-.4713614	.2843413	-1.66	0.097	-.9390612 -.0036616
longdisx_5	-.2893181	.1724573	-1.68	0.093	-.5729852 -.0056511
longdisx_7	-.1040728	.4077817	-0.26	0.799	-.774814 .5666683
longdis-99	-.1750373	.2101182	-0.83	0.405	-.520651 .1705763
male	-.399771	.107747	-3.71	0.000	-.576999 -.2225431
eth_2	-.4225358	.9099176	-0.46	0.642	-.1919217 1.074145
eth_3	-.6456771	.4480829	-1.44	0.150	-.1382708 .0913537
eth_4	-1.13656	.6997145	-1.62	0.104	-2.287488 .0143676
eth_5	-.4945291	.8524089	-0.58	0.562	-1.896617 .9075587
eth_99	-.6993684	.3121594	-2.24	0.025	-.1212825 -.1859118
fmhqual_2	-.1593739	.3094733	-0.51	0.607	-.6684122 .3496644
fmhqual_3	-.3656518	.2499646	-1.46	0.144	-.7768069 .0455034
fmhqual_4	-.5356476	.2013479	-2.66	0.008	-.8668355 -.2044598
fmhqual_5	-.3671798	.2246169	-1.63	0.102	-.7366417 .0322821
fmhqual_6	-.2890426	.2151566	-1.34	0.179	-.6429438 .0648585
fmhqual_16	-.0477743	.19296	0.25	0.804	-.2696168 .3651653
parstat_2	-.8507081	.3066731	2.77	0.006	.3462758 1.35514
parstat_3	.3262149	.2223623	1.47	0.142	-.0395385 .6919683
parstat_4	.2455831	.4440763	0.55	0.580	-.4846093 .9762716
parstat_99	.6054024	.2789373	2.17	0.030	.1465913 1.064214
hbl_2	-.1509923	.140131	-1.08	0.281	-.3814873 .0795026
hbl_3	-.8091334	.1516808	-5.33	0.000	-1.058626 -.5596407
hbl_99	-.3325763	.2665717	-1.25	0.212	-.7710478 .1058952
cons	3.138122	.254503	12.33	0.000	2.719502 3.556742

Key to independent variables:

lvhomex: at age 16, expect to leave home 0: now or within 3 years (omitted), 1: sometime in the future or unsure, 9: missing

hbl: at age 16, boy/girlfriend status 1: has now, 2: has had before, 3: has never had, 99: missing

cons: constant

For other variables, see keys for previous two tables.

**CONCLUSIONS**

## CHAPTER TEN: CONCLUSIONS

### 10.1. Introduction

Comparisons between disabled and non-disabled people have been made throughout the thesis. The next section of this concluding chapter therefore attempts to draw together some of the main results to provide an overview of the relative position of disabled people in society, from a number of different perspectives.

Reflecting on the results in the context of contemporary Britain leads to various policy implications, which are outlined in section 10.3. They range from social security and employment policy to the 'cash versus care' debate and what can be done to promote the autonomy of individuals in particularly disadvantaged sub-groups of the disabled population.

The exploration of the circumstances of disabled people is important in its own right. It has also served as a case study for investigating the relative merits of different approaches to measuring well-being and disadvantage. The strengths and limitations of the different measures are assessed in section 10.4, guided by the criteria set out in the introduction to the thesis: theoretical justification, bias, ease of calculation and usefulness for policy.

Finally, section 10.5 returns to the central objective outlined in the introduction: examining the feasibility of operationalising the capability approach. The lessons which can be learned from the exercise undertaken in the thesis are identified and some pointers are offered for areas which are in need of further methodological development.

### 10.2. The relative disadvantage of disabled people in society

It came as no surprise that the analysis of incomes in Chapter 3 revealed widespread poverty among disabled people: over one-third were below a poverty line of 60 per cent of median before housing costs income, compared to 23 per cent of non-disabled

people.<sup>1</sup> Less familiar, perhaps, were the figures showing that disabled people were not concentrated among the poorest of the poor but in the second income decile group of the distribution of incomes of people of working age; the comparatively generous social security benefits available to disabled people appears to protect them from the depth of income poverty that others endure. This was confirmed by calculating poverty gaps: using the same poverty threshold, the mean poverty gap for disabled people was 0.23 compared to 0.27 for non-disabled people.

Among disabled people, those with mental health problems or learning difficulties were most at risk of poverty.<sup>2</sup> Human capital (as proxied by educational qualifications) and household composition (especially the presence of another potential earner) were also important factors.

The following chapters investigated alternative measures of well-being and disadvantage, and with a very few exceptions, they too showed that disabled people were at a disadvantage relative to non-disabled people. This might lead to the conclusion that there is no need to look beyond conventional income poverty, and this indeed would be the case if the only question were the ranking of these two groups, broadly defined. Any more detailed or subtle questions, however, reveal significant differences between the results based on various measures.

Some of the findings based on income poverty as conventionally defined were supported by the analysis using incomes equivalised for the lower rate at which disabled people can convert income into well-being, because of their higher costs of living. Those with mental health problems or learning difficulties, single adults, and those with low or no educational qualifications are at greatest risk of poverty, whether income is equivalised for disability or not.

Other findings, such as the greater extent of poverty among disabled people, were reinforced and made starker: a poverty rate of 59 per cent among disabled people on

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<sup>1</sup> In 1996/7.

<sup>2</sup> The terminology differs between surveys. Intellectual impairment and learning difficulties are here used synonymously.

the basis of fully equivalised income, compared to 22 per cent for non-disabled people (using a 60 per cent of the median threshold).

Yet other findings were completely reversed: according to the equivalised income measure, disabled people experience greater intensity of poverty than non-disabled people, on average, with a mean poverty gap of 0.46. Far from being protected by the social security system, the analysis suggested that extra costs benefits were inadequate both in value and in scope. Moreover, once the extra costs of disability is taken into account, there is a steep gradient in the risk of poverty with severity of impairment, with those at the top of the scale being three times more likely to experience poverty than those with mild impairments.

Comparisons between disabled and non-disabled people in terms of functioning were complicated by the multi-dimensional nature of functioning and of the multiple indicators for each functioning dimension. Nevertheless, it was clear that non-disabled people's functioning dominated that of disabled people on the consumption dimension (with or without the inclusion of an income component in the indicator).

There was no strict dominance on the production dimension, because a higher proportion of disabled than non-disabled people were engaged in some highly-ranked activities (such as looking after young children) while the opposite was true for other valued activities (such as full-time employment). All plausible weighting schema would, however, produce the same conclusion, namely, that disabled people are significantly disadvantaged in terms of production functioning. Moreover, the heavy concentration of disabled people in the group engaged in no socially-valued activity at all, in sharp contrast to the pattern for non-disabled people, suggests that the depth of poverty on this dimension is significant, at least in qualitative terms.

Disabled people were also found to be at greater risk with respect to both components of an indicator of social functioning (participation in leisure activities and availability of emotional support), confirming that the disadvantage experienced by disabled people is not limited to the material aspects of life.

Overall, more severely disabled people, those with mental health problems or learning difficulties, and those with low or no educational qualifications were found to be at greater risk than others of experiencing poverty on a larger number of functioning dimensions. These characteristics are a recurring theme in the analysis of poverty according to several of the different measures.

The relative position of disabled and non-disabled people with respect to capabilities, where capability is understood in the sense of 'capability as opportunity', depends on where the line is drawn between constraints and factors deemed to be within individual control. For example, with respect to political engagement, an estimation based on a full set of constraints suggests disabled people are significantly more likely to lack political capability than non-disabled people (41 per cent and 27 per cent respectively). By contrast, an estimation based on just age, gender, ethnicity and disability status itself being beyond individual control suggests that only 11 per cent of disabled people lack the capability, compared to 17 per cent of non-disabled people. There is therefore no uniquely correct answer to whether disabled or non-disabled people are at greater risk of political capability poverty; the answer depends on one's view of the extent of free will. The absence of a uniquely correct answer is not, of course, the same as there being no answer at all: it is simply that one must add to the specification of the question before an answer can be computed. In many ways this is an advantage, since it forces value judgements to be made explicit.

For social capability, disabled people were shown to be at a disadvantage relative to non-disabled people with a fully-constrained estimation, and on a par with non-disabled people otherwise. For production capability, disabled people were disadvantaged whichever range of constraints were taken into account, while for consumption capability, calculated on the assumption of access to full-time employment, disabled people were on a par with non-disabled people or even at a slight advantage.

Part II of the thesis broadened the focus to measures of the formulation and pursuit of agency goals. These are not directly comparable with the measures of well-being poverty discussed in Part I, although some threads run through both kinds of analysis. Encouragingly, young people with physical and sensory impairments were found to

have a robust sense of their aims in life and to be forming a similar range of aspirations for future education, occupation and family life as their non-disabled counterparts. They were slightly less confident that they would be able to achieve their goals – their expectations of adult life were lower – and as the analysis in Chapter 9 demonstrated, these doubts were, sadly, entirely justified. One group, namely young people with learning impairments, stood out in the analysis as less likely to know what they wanted to do, and, if they did state an aspiration, for that to be more limited in ambition. As noted above, this group, along with those with mental health problems, is one which frequently emerges from the analysis as particularly disadvantaged.

The human and social capital of the family of the young person – as evidenced by the educational qualifications of the parents and their social class – were found to be hugely important determinants of a young person's aspirations, for disabled and non-disabled people alike. Again, this is a common theme in the analysis of the risk factors for poverty, measured in many different ways. It is a salutary reminder that although disability may be a convenient stratification for analysis, it is not necessarily the most salient characteristic of an individual.

Capability as autonomy has two crucial components – the formation and the pursuit of agency goals. While young (physically or sensorily) disabled people were not significantly disadvantaged relative to their non-disabled peers with respect to the first component, the difference between them on the second was striking and depressing. Young disabled people aim high but already by their mid-twenties significant gaps have opened up between them and their non-disabled contemporaries in the extent to which they have been able to fulfil their aspirations, whether for qualifications, employment or independence. Most characteristics associated with formulating positive aspirations are also associated with a high likelihood of being able to pursue them, but disability appears to be unusual in this respect. The strongest evidence was for those who became disabled, and this is perhaps to be expected: a major life event intervened between the time when the aspirations were formed and when we observed the outcomes in early adulthood. But there was also evidence of a similar process of frustrated ambition for those who were disabled at both ages.

### 10.3. Policy implications

The contrast between poverty based on incomes as conventionally defined and fully equivalised incomes points towards two areas of concern. The first is the government's official statistics on poverty and low income, used to define government targets and measure progress, as well as being the standard reference point for other organisations and researchers with an interest in distributional issues. The statistics are based on the *Households Below Average Income* (HBAI) series, which includes extra costs benefits in the definition of income, but does not take account of the extra costs which those same benefits are designed to affray. An appendix to the main tables in HBAI offers some sensitivity analysis, but the value selected for disability equivalisation is arbitrary and the fact that the results are sensitive to the inclusion even of that relatively low figure for the extra costs of disability is not reflected in the headline figures presented in the report, or indeed in the use to which the government and many other bodies put the statistics.

At the very least, the HBAI series should exclude disability extra costs benefits from the definition of income, although as the analysis in Chapter 4 above shows, this does not equivalise effectively between disabled and non-disabled people, since the scope and amount of extra costs benefits fit the actual costs incurred poorly. Moreover, subtracting extra costs benefits from the calculation of income means that no amount of uprating of extra costs benefits could make rates of poverty among disabled people fall; a perverse result. A better alternative, then, is to use an equivalisation procedure such as that outlined in Chapter 4, so that the same level of equivalised income for households with and without disabled members represents the ability to attain the same standard of living. Resistance to this move within government has been ascribed to a concern that the methods for deriving equivalence scales for disability are technically difficult and incorporate too many arbitrary choices.<sup>3</sup> It is certainly true that there are technical and normative decisions to be made in deriving any equivalence scale, but the case of disability raises *fewer* theoretical challenges than the standard equivalisation for household size and composition (since disability status is not chosen while parental status usually is), and the techniques are exactly similar.

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<sup>3</sup> Personal communication from Analytical Services Division, Department for Work and Pensions.

It seems plausible that an unacknowledged source of reluctance within government is the political embarrassment that would accompany incorporating equivalisation for disability into the statistics: a slight worsening of the overall poverty statistics and a significant deterioration in the relative position of disabled people.

The second area of concern is extra costs benefits themselves. Firstly, the estimation of extra costs incurred indicates that the level of benefit received by disabled people is inadequate: an average shortfall of £47 per week in 2002 prices. Research reported elsewhere (Zaidi and Burchardt, 2005) found that the principal problems were restricted eligibility and low take-up, rather than that benefit levels were too low (although this too was the case for some individuals with high costs). Disability Living Allowance (DLA) is the main benefit for people of working age and is paid to those with significant mobility problems or need for assistance with self-care; the analysis in Chapter 4 suggested that those with reaching/dexterity impairments, and those with mental health problems, also faced significant extra costs. These groups are not currently eligible for any specific financial assistance.

Social security as a whole is of crucial importance in supporting disabled people's incomes. This was clearly demonstrated in Chapter 3. Adequate incomes are necessary but not sufficient for participation in key activities in society. Functionings and capabilities also need direct policy support; a point emphasised by the social model of disability as much as by the capability approach. Interventions may be individually targeted (such as direct payments, discussed below), or directed towards transforming the social, economic and physical environment in which disabled and non-disabled people coexist. These are both ways to reduce the constraints on participation and hence widen disabled people's capability sets. One tool for implementing wider changes to the environment is anti-discrimination legislation, which has been slowly progressing in the UK since the original Disability Discrimination Act in 1995. Importantly, the Act adopts a concept of discrimination which is not limited to attitudes or to intentional mis-treatment, but includes failure to provide facilities or services which give disabled people equal access. For the public sector organisations, the legal requirements have been extended to include a duty to actively promote disability equality, with respect to both employment and service provision. Its effectiveness remains to be seen.

Within the broad area of disability policy, much of the government's energy and resources is currently directly towards raising the employment rate among disabled people. The very large gaps between disabled and non-disabled people in terms of production functioning demonstrated here certainly supports the contention that this is an important area for intervention. Two insights from the analysis could be helpful in informing the direction of the government's policy. Firstly, although there is significant variation in production functioning (and indeed in employment capability) by type and severity of impairment, these are by no means the only influential factors. The low rates of employment among disabled people are also affected by their over-representation among the unqualified, and in the areas of the country with weaker economic performance. This was clearly demonstrated by the analysis of employment capability which showed a closing of the gap between disabled and non-disabled people's predicted employment probability when factors like educational qualifications, health and region were taken to be within individual control. Accordingly, policies which seek to improve employment rates among disabled people need to look beyond the disability to the other attributes of the individual – such as human capital – and beyond the individual to attributes of the environment. Giving due attention to contextual factors is of course very much promoted by both the social model of disability and the capability approach.

Secondly, focusing exclusively on paid employment is inadequate. There are many other forms of productive and socially-valued activity, such as caring for children or others, voluntary work, and studying. It need not be the case that someone who is excluded from paid employment, for whatever reason, is also excluded from these other activities, and yet around one third of disabled people are in this category. The almost total lack of policies to support and facilitate participation of disabled people in other forms of productive activity is a great loss both to the individuals concerned and to society as a whole. Worse still, some aspects of benefit administration make it *more* difficult for disabled people to study or work voluntarily. Incapacity Benefit claimants, for example, may trigger a review of their benefit status, if Jobcentre Plus personal advisors believe their voluntary employment or study indicates an improvement in their condition and possible fitness for work.

When canvassing for dimensions of well-being to be included in the selection of functionings in Chapter 5, one which attracted considerable support in studies based on interviews with disabled people themselves was 'choice and control'. This was taken up in the analysis of capabilities, rather than functionings, and especially in the discussion of autonomy in Part II of the thesis. Since this has been a demand of the disabled people's movement for many years, the idea has begun to feed through into some areas of policy thinking. One example is the shift away from provision of social services by local authorities towards 'direct payments': a budget granted to an individual disabled person on the basis of a needs assessment, with which they can arrange their own personal assistance. Under the old system, local authorities attempted to ensure that disabled people were functioning at an adequate level in many different respects - eating, dressing, toileting and so on. The new system can be seen as endeavouring to widen the client's capability set rather than to achieve specific functionings. Although the social services have not been the focus of this thesis, the development of direct payments is clearly consistent with promoting policies in accordance with the capability approach.

The findings in Chapter 8, on the positive aspirations of physically disabled young people, can be seen as a success story. Research on an earlier cohort of disabled young people born in 1958 found significant differences in the outlook of disabled and non-disabled teenagers (Walker, 1982); this appears to have disappeared by the time the cohort born in 1970 were on the brink of transition into adulthood. Although the reasons for this change must remain speculative, reducing segregation in education and a wider variety of positive role models for disabled people are plausible candidates.

This lends support to the movement for greater integration of disabled children in mainstream education and may help to point the way forward for the group of young people who still endure a poverty of aspiration: those with learning impairments. While it is not now unusual to come across a wheelchair user or someone with a sight impairment featured in a novel or television programme or newspaper in an active and positive role, it remains almost unknown for someone with a learning impairment to be similarly presented. It is in the nature of learning impairment that not all occupational avenues will be open - we are unlikely to have a learning-impaired

Secretary of State for Work and Pensions though we currently have one who is blind – but that should not be taken to imply that people with learning difficulties have no useful role to play in society, or that the opportunity to make choices about their own lives, consistent with their abilities, is not equally important. Other research with people with learning impairments has shown that experience of making small decisions early in life helps to build confidence and develop the capacity to make larger decisions later on (Cowen 2001).

#### **10.4. Strengths and weaknesses of different measures of disadvantage**

##### *10.4.1. Subjective well-being*

Five measures of disadvantage have been considered in this thesis: incomes, incomes equivalised for the extra costs of disability, functionings, capability as opportunity and capability as autonomy. Subjective well-being (SWB) was outside the original scope of the comparison, although some interesting issues relating to SWB have been thrown up in the course of the investigation. In particular, although one of the principal reasons for rejecting SWB is the argument from adaptive preferences, it appears that the same argument recurs in modified form with respect to capabilities, if capabilities are conceptualised as opportunities. It may also arise in the context of the selection of functionings for evaluation, if this selection is made on the basis of a quasi-democratic or participative process. In both cases, the re-emergence of the problem of adaptive preferences is because any metric which seeks to respect the plurality of human ends and the sovereignty of the individual must at some point defer to the decisions of the individual him or herself, and this inevitably raises the possibility that some adaptation or conditioning will influence the outcome. The implication is not that we should turn (or return) to utility or SWB as an overall measure of well-being, since the capability approach makes a number of other arguments against the use of SWB (for example, that happiness and satisfaction do not exhaust the possible goals of human beings, and that SWB does not capture the intrinsic value of freedom) which still stand. Rather, the implication is that capability theorists should refrain from *ruling out* the use of subjective information, and seek to explore in greater depth the processes which lead to a narrowing of the range of

possibilities an individual is prepared to consider. This, of course, is the agenda set out by 'capability as autonomy'.

#### *10.4.2. Closeness of fit*

To return to the comparison of the measures of well-being which were the original focus of this thesis; four criteria were set out in Chapter 1. The first was closeness of fit between the theoretical framework and the operational measure. Income poverty, whether fully equivalised or not, is problematic in this respect. If one takes the relevant theoretical framework to be utilitarianism, income is a poor proxy for utility, since many contributors to subjective well-being are not income-related. Restricting attention to 'economic well-being' does not help, firstly, because there is no theoretical justification for dividing a subjective state into its economic and other parts, and, secondly, because even within the material domain, the same level of income translates into different levels of subjective well-being according to the individual's past experience of wealth or deprivation.

If one adopts an alternative theoretical framework, such as Rawls' account of social justice or Nozick's libertarianism or indeed Sen's capability approach, income does not fare any better. For Rawls, income is but one among several primary goods whose distribution is a matter of concern. For Nozick, the means through which income was acquired rather than the level of income is the relevant consideration. For Sen, income is one among many entitlements that provide the means for individuals to achieve valued beings and doings.

Sen's argument, of course, is that we should measure these valued beings and doings directly, in other words, we should make our assessment in terms of functionings. This then has a better theoretical fit; if we select functionings (through a process of democratic deliberation or otherwise) which reflect intrinsically valuable activities or states, it matches with Sen's concept of well-being achievement. This is, though, only one step along the road which Sen invites us to take. He advocates the independent value of freedom, arguing that it is not only what we achieve but what we have the substantive opportunity to achieve which is valuable.

Capability as opportunity offers a good match for the social model of disability developed by organisations of disabled people, as outlined in Chapter 1. The social model emphasises the role of the social, economic and physical environment in facilitating or preventing the participation of people with impairments in society, rather than focusing solely on their personal characteristics, and this is exactly what capability as opportunity seeks to do. Conceptualising disability in this way shows it to be one particular form of capability poverty. Impairment is a constraint like any other; when combined with other aspects of the wider environment, the result is a restricted capability set.

Another aspect of capability as opportunity which meshes with the social model of disability is the respect for individual preferences which it encapsulates. While the evaluation is conducted in terms of key aspects of participation (consumption, production, social interaction and political engagement), it is the opportunity to participate rather than actual participation which is assessed. This means that the individual may choose other priorities for him/herself than those set by the evaluator or policymaker, which chimes with the importance given by the social model to choice and control for disabled people.

Capability as opportunity is an operationalisation of Sen's concept of well-being freedom but within the capability framework as a whole it is a somewhat unsatisfactory half-way house. It may indeed be the appropriate space for evaluating social policy, because we are not usually able to identify individual's agency goals, but selecting a set of functionings which we believe it is important for people to achieve ('well-being'), and then holding back from an assessment of whether they are in fact achieving them through deference to their possible preferences, is incoherent. Either we should bite the paternalist bullet and evaluate well-being achievement in functionings space, or we should take the further step into evaluating the achievement of agency goals and the extent of agency freedom. Capability as autonomy, then, emerges as the measure which offers the best fit between theory and indicator.

#### *10.4.3. Bias*

The second criterion is the extent to which the measure accurately reflects the relative position of different groups in society, especially disabled and non-disabled people. Naturally, what counts as 'accurate' depends on what one regards as the proper dimensions on which to assess disadvantage. Some measures may perform poorly even in their own terms, however: unadjusted income, for example, systematically underestimates the extent of disadvantage experienced by disabled people, even in the narrow sphere of material standard of living with which it concerns itself. Equivalisation is precisely designed to improve on unadjusted income in this respect and the transformation in the relative position of severely disabled people which results is an indication of the degree of distortion which stood to be corrected. This correction is limited to the relative position of disabled and non-disabled people and does not address the differential rates of conversion of income into material well-being associated with other characteristics. It is to be expected that similar transformations might accompany equivalisation for other characteristics.

The fact that equivalised income focuses on material dimensions of well-being means that it does not accurately reflect wider aspects of well-being. If the intention is to capture this broader concept, in principle (though not in the case of the comparison between disabled and non-disabled people), the relative position of two groups could be misrepresented by equivalised income, if, for example, one was marginally better off in terms of standard of living but significantly worse off in terms of production and social functioning. These are better reflected by direct measures of functioning.

Functioning measures, in turn, run into difficulties where different proportions of the groups under consideration are choosing not to participate in one or another functioning. For example, suppose disabled and non-disabled people had equal access to the labour market but the former were – entirely as a matter of choice and without any suspicion of adaptive preferences – choosing not to work, then a functionings-based measure would mistakenly reveal significant disadvantage among disabled people. In practice, preferences for basic well-being functionings are unlikely to vary systematically between socio-demographic groups, so in most cases this worry about functioning measures may be academic.

Capability as opportunity measures seek to address that limitation of functioning measures, by classifying those who are genuinely choosing not to achieve a particular functioning as equally well-off as those who are indeed achieving that functioning. The potential distortion in capability as opportunity measures arises because of adaptive preferences. These were not detected with respect to disability in the analysis in chapter 8, but were in evidence with respect to gender, social class and other key influences on a young person's experience. If the expectations of a young woman from a family with no familiarity with further or higher education have always been that her role in adult life will be to marry and have children, she may not have formed the preference for employment outside the home. If there is a job she could do and an employer willing to take her on, capability as opportunity could classify her as equally well-off in terms of employment capability as her counterpart from a professional background who decided at the age of 10 that she was going to become a doctor. Capability as autonomy, by contrast, recognises that the nature of a person's preferences, and the circumstances in which they were formed, cannot be assumed to be neutral in evaluating their relative disadvantage.

#### *10.4.4. Ease of use*

The third criterion is ease of calculation and manipulation of the measure, and its comparability across time and place. Here the conventional income measure comes into its own. Although there are technical difficulties in collecting high-quality income data and many value judgements to be made in setting poverty thresholds and so on, nevertheless its sheer familiarity and saturation coverage gives it a significant advantage over other measures in this respect. Equivalising income for the costs of disability is not difficult, and once achieved, the measure can be manipulated in exactly the same way as unadjusted income. However, it has been used in the literature very little and hence comparisons will be limited until such time (if ever) as its use becomes commonplace.

There may, of course, be competing demands on an income measure. Already, the *Households Below Average Income* series presents statistics before and after housing costs, with and without including the incomes of the self-employed, and with respect

to several different poverty thresholds. Equivalisation for the extra costs of disability is only one refinement among many which could be proposed; differential rates of conversion might also apply to pregnant women, by region, and according to variations in social norms or the availability of public goods. It is arguable, though, that disability is the most widespread, enduring, and quantitatively significant variation which is not yet reflected in standard income measures for the UK. Women are pregnant for a maximum of nine months in any year and on average for rather less than 18 months in a lifetime. A major part of regional variation in the cost of living is reflected already in the after housing costs measures of income. Variations in social norms or access to public goods would become important in cross-national comparisons, but within the UK, their effect is likely to be less dramatic (though this would need to be established empirically). A case can be made, then, that taking account of the extra costs of disability is the most pressing modification to conventional income-based measures of disadvantage in the context of UK social policy.

A functionings measure is multi-dimensional and hence both more demanding in terms of data (arguably, although data on income itself can be acquired only with a whole battery of survey questions), and in terms of analysis. Since the concept of functionings is a relatively recent arrival in social science, large scale surveys are not well adapted to their measurement beyond some basic and rather crude indicators. When it comes to analysis, the researcher must accommodate the messy and apparently inconsistent results which are inevitable when dealing with multiple dimensions, or succumb to the temptation to aggregate across functioning dimensions. The reductionist strategy is neater but risks losing the unique insights which genuinely multi-dimensional analysis can generate.

Both capability measures are yet more complex, by a considerable margin. This is not surprising since they require the evaluation of a counter-factual: what could this individual do or be (or choose), other than his or her current state? No doubt this is also the reason why the review in Chapter 2 found that there have, to date, been very few empirical studies using the capability aspect of Sen's approach, as opposed to functionings. Capability as opportunity demands a data source rich enough to capture a wide range of possible constraints on an individual's behaviour, ideally at a peer-

group and social level as well as at an individual level, and including information on attitudes as well as behaviour. Whether with perfect or, more realistically, imperfect data, evaluating capability as opportunity is also technically demanding.

Capability as autonomy requires long-run longitudinal data including questions on aspirations and expectations for the future. It cannot be evaluated momentarily but only over a period long enough to assess both the process of the formation of preferences and their possible realisation: in the example here, 10 years, but ideally even longer. Moreover it does not produce a tidy, quantitative, appraisal of degrees of autonomy, such as might be suitable for a statistical series, but provides a more nuanced account of the relative advantage and disadvantage of different groups.

#### *10.4.5. Usefulness for policy*

The final criterion listed in Chapter 1 was the usefulness of the measure as a guide to policy. Here opinions will vary according to the particular policy in question. Income data are useful if the policy issue is straightforward redistribution of income. Even here one might prefer a fully equivalised income measure, to ascertain whose standard of living was lowest, or consumption capability measures, to identify those who *cannot* achieve an adequate standard of living, rather than simply those who are not achieving that level. For many other policy questions, the richer information provided by a multi-dimensional measure will be preferred. Capability as opportunity measures are particularly revealing in this respect, in so far as they include, in practice, a mini-simulation of the effect on the desired outcome (say, employment) of altering one or other constraint. Capability as autonomy measures perhaps have rather fewer policy applications, since their time horizon is whole lifetimes (or substantial parts of them), rather than the more immediate and contemporary measures of disadvantage which most policies require.

Table 10.1 provides a somewhat crude summary of the preceding discussion by ranking the measures according to each of the four criteria. Clearly there is no outright 'winner'; no one measure consistently out-performs the others. One can conclude, however, that equivalised income is preferable to unadjusted income in all circumstances except where the ease of calculation is of over-riding importance.

Equivalised income itself is easier to calculate and manipulate than other alternatives, but otherwise scores poorly.

**Table 10.1: Ranking of measures of disadvantage by criteria**

	Income	Equivalised income	Functioning	Capability as opportunity	Capability as autonomy
Theoretical justification	5	4	2	3	1
Distortion of relative positions	5	4	3	2	1
Ease of calculation	1	2	3	4	5
Usefulness as a guide to policy	5	4	2	1	3

Ranking from 1 (high) to 5 (low)

A measure based on functionings performs neither very well nor very badly on any of the criteria. Finally, although neither of the two capability measures are straightforward to calculate or use, they have strengths which mirror each other: capability as opportunity provides analysis from which policy implications can be readily deduced, while capability as autonomy does greater justice to the theoretical framework from which it is derived and offers the fullest and deepest account of the lives of the individuals in question. Using a combination of measures may enable one to compensate for the shortcomings of each.

### **10.5. Operationalising the capability approach**

What, then, can we conclude about the feasibility of operationalising the capability approach? Firstly, techniques of equivalisation have much greater potential than has hitherto been realised or put into effect. In this thesis, equivalisation has been extended to address variations in need arising due to disability, but as noted above there are other sources of variation which could be treated in a similar way. Extensions beyond disability could be of particular value in international

comparisons, where, for example, the availability of public goods are likely to be more variable, and hence the effectiveness with which income can be converted into well-being will also vary.

There have been rather more empirical applications attempting to measure functionings, and the application in this thesis has followed in their wake. The selection of functionings and their relative weights remains somewhat arbitrary, despite efforts by authors such as Robeyns (2003) to provide selection criteria. However we should not expect a technical fix for this problem, it is an inevitably normative process. One possibility is to derive a list of important functionings theoretically, following Nussbaum (2003) or drawing on theories of human needs such as Doyal and Gough (1991). These have the advantage of offering a secure foundation but the disadvantage of appearing to impose a set of values on the evaluation of well-being which the individuals being evaluated would not necessarily accept. The strategy pursued here is to maximise transparency both in the selection process and in the analysis of the results, so that any value judgements are laid bare. With this in mind, the trend towards ever-more sophisticated techniques for reducing vast numbers of variables into a manageable number of 'factors', 'components' or 'fuzzy sets', whose substantive meaning is opaque to the reader and very often one suspects to the author as well, is regrettable. Since one of the comparative advantages of functioning-based measures is their usefulness as a guide to policy, it is a mistake to translate readily identifiable functioning dimensions into complex aggregate measures.

This thesis has drawn a distinction between capability as opportunity and capability as autonomy. The distinction is important, I believe, if the capability approach is to avoid being hoist on its own petard, although it has received scant attention in the literature. Utilitarianism is rejected, at least in part, because of concerns about the influence of past experience - which will have occurred in conditions of imperfect social justice (at best) - on current assessments of value. Capability as opportunity risks making the same error: it assumes that current preferences over whether to exercise a particular functioning or not within the capability set are immaterial to the assessment of well-being or disadvantage. A deeper concept of capability as

autonomy, which incorporates the influences on the development of an individual's preferences into the assessment, is not vulnerable to the same objection.

Capability as autonomy, as illustrated in Chapter 9, yields a typology rather than a quantitative analysis of the degree of autonomy enjoyed by different individuals. Those whose agency goals are formed in conditions which limit the range available to them, and who are also disadvantaged in pursuing those goals can be termed 'doubly deprived'. Those who are similarly deprived in terms of the formation of goals but have greater opportunity to achieve them, can be described as 'cautiously successful'. A third group, who have a broader scope of aspirations but face considerable barriers to pursuing their objectives, are likely to experience 'frustrated ambition', while those who are in the fortunate position of having a wide capability set both with respect to the formation and pursuit of agency goals are truly autonomous.

Unfortunately, though conceptually more robust, a measure of capability as autonomy is not practicable in many circumstances, especially those most closely connected with policy. Nevertheless it is worthy of more research in its own right and to provide crucial background for interpreting the results of more immediately accessible indicators of capability.

Capability as opportunity itself poses a considerable challenge in terms of operationalisation. This should not be read as a counsel of despair, however: all new concepts take time to mature into readily usable, practical measures. Important methodological developments were made in Chapter 6, emphasising the extent to which capability as opportunity is a matter of degree and the necessity of making explicit normative judgements about the extent of free will which is being assumed. There is no uniquely correct answer to the question as to whether a particular functioning is within an individual's capability set. With those premises in place, it was possible to develop workable indicators of capability as opportunity, albeit with crude models in some cases for the kinds of constraints operating on individuals. More work is undoubtedly required to refine and improve on these measures. In particular, it would be desirable in future work to be able to explicitly model trade-offs between functionings; in other words to assess whether a given functioning-*vector* is within an individual's capability set, rather than simply whether a particular

functioning occurs in any vector within the set. This would take us one step closer to the evaluation of a capability set overall, an objective which has, as yet, eluded definition even in theory, let alone empirical application.

"The search for an approach that would be at once both 1) informationally sensitive, and 2) informationally undemanding is unlikely to be successful" (Sen, 1994a, p337). There are bound to be trade-offs between ease of calculation and manipulation (income-based measures, including equivalisation) and comprehensiveness and enlightenment (capability measures, whether of current opportunity or the more ambitious lifetime assessment of autonomy). What we should surely seek to avoid are approaches which are informationally demanding and yet do not add significantly to the insights which can be gained from other approaches (for example, those based on functioning). It is hoped that this thesis will provide some useful equipment for those who wish to venture beyond conventional indicators of poverty and disadvantage, and contribute to the confidence with which they plan their journey.

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