



CENTRE FOR ANALYSIS OF SOCIAL EXCLUSION



Time and income poverty

by Tania Burchardt

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Contents

Acknowledgements

1. Introduction

- 1.1. Purpose of this study
- 1.2. Outline of the report
- 1.3. Social policies which affect time and income
- 1.4. What do we know about the relationship between time and income?
- 1.5. A model of time and income capability

2. Short of time, short of money

- 2.1. Case studies
- 2.2. Analysis of case studies
- 2.3. The UK Time Use Survey 2000
- 2.4. Free time and disposable income
- 2.5. Time and income poverty
- 2.6. Summary

3. Constraints and possibilities: trade-offs between time and money

- 3.1. Case studies
- 3.2. Applying the model of time and income capability
- 3.3. Time and income capability
- 3.4. Time and income capability poverty
- 3.5. Summary

4. Conclusions

- 4.1. Policy recommendations of the interviewees
- 4.2. Summary of findings from the conceptual model and quantitative analysis
- 4.3. Policy makes a difference, for better or worse

Appendix: UK Time Use Survey 2000 diary codes

References

Endnotes

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1. Introduction

1.1. Purpose of this study

Time and money are two of the main constraints on what people can achieve in their lives. The income constraint is widely recognised by policymakers and social scientists in their concern with poverty. Analysis of the time constraint is more limited and research has often concentrated on dual-earner households, who are more likely to have relatively high incomes. Integrating analysis of time and income reveals some who are missed by traditional poverty measures (for example, those who have to work long hours to keep their families above the poverty line), and some who are classified as time poor but who could reduce their work hours without risking income poverty. The focus of this study is individuals who are significantly limited by time *and* income constraints, for example, those who could escape income poverty only by incurring time poverty, or vice versa. A better understanding of the joint operation of these constraints has implications across a wide range of policy areas, including the drive to abolish child poverty and welfare reform, as well as employment regulations and the work/life balance.

The research on which this report is based used both qualitative and quantitative methods. In the first phase, a small number of semi-structured interviews were carried out with people who were juggling work and family responsibilities, and who felt under both time and income pressure. These interviews gave the researcher some insight into the nature of the strains that people were under and the strategies they adopted to deal with the situation. This helped to inform the second, quantitative, phase of the project, based on the UK Time Use Survey (TUS) 2000. The TUS is a nationally representative household survey, carried out by the Office for National Statistics, which contains detailed information both about people's activities through the day and week, and about their economic and family circumstances. Analysis included the amount of free time and disposable income actually available to individuals and families, and a simulation of other time-income combinations potentially available to them. Finally, a number of the respondents from the first round of interviews were contacted again, about two years after their first contact. This was useful both to give a longitudinal perspective on respondents' circumstances – how outcomes had changed for them as a result of any trade-offs they had made in the intervening period between time and income - and also to check the plausibility of some of the assumptions made in the quantitative analysis.

1.2. Outline of the report

The next section of this chapter provides an overview of social policies which affect time and income budgets, especially those of low-income families. These include working time regulations, paid and unpaid leave entitlements, wage regulation and supplements, social security benefits and the provision of services like childcare and social care. The following section summarises previous research on the relationship between time and income, concentrating in particular on what is known about those in poverty or on the margins of poverty. Finally section 1.5 offers a way of understanding the relationship between time and income, which serves to guide the

analysis in the rest of the report. By examining the resources families have at their disposal and the constraints under which they operate, the model can help to illuminate both the actual free time and disposable income individuals have, and the range of other possible combinations of time and money which they could have, were they to allocate their time differently. This range of possible outcomes is referred to as the individual's time and income 'capability'.

Chapter 2 begins by describing and analysing three case studies drawn from the first round of interviews carried out for the study. The detailed picture of people's lives provided by these interviews is complemented by analysis of data from a large-scale representative survey, the UK Time Use Survey 2000. The results give the distribution of actual free time and disposable income in the UK working-age population and show the characteristics associated with being at risk of having low income and/or little free time.

Chapter 3 turns to the potential trade-offs people can make between time and income. In the first instance, these are illustrated with reference to the second round of interviews: how the balance between paid and unpaid work, and between time and money, changed for respondents in the two years between round 1 and round 2. In some cases this was a direct result of decisions the interviewees had taken, in other cases it was more by force of circumstance. Once again, this is complemented by analysis of survey data, although in this instance the analysis consists of a simulation of the different combinations of free time and disposable income generated by different allocations of time to paid and unpaid work for people in different circumstances. This reveals a small but significant proportion of the population who are unable to secure sufficient income to be above the poverty threshold while meeting their minimal responsibilities, for example to ensure their children are looked after, however hard or long they work. The characteristics of this group are investigated. As well as presenting results for central estimates of time and income capability, the chapter also offers sensitivity analysis around various assumptions in the model, including investigating the distribution of free time between men and women within couples.

Finally, Chapter 4 considers the implications of these results. What changes in policy would help to relieve the double bind of time and income poverty for families at risk of both? The policies considered include those directed explicitly at promoting a work-life balance as well as those not usually included in that category, such as out-of-work benefits and provision of free and subsidised care services.

1.3. Social policies which affect time and income

There are a vast range of policies which potentially affect the disposable income available to families and the amount of time they have left over after their paid and unpaid work. Indeed almost everything the government does is likely to have an impact on time and/or income. What follows is a summary of the current position in those policy areas with the most direct impact. The first category, leave entitlements and regulation of working hours, directly affect the free time available to workers, and in the case of paid leave, income too. The second category is the provision of care services and support for carers, which helps to free up time for both workers and non-

workers, and boosts their income through, for example, childcare subsidies and Carer's Allowance. The third category is wage regulation and supplements, which help to increase the income per hour of work, especially for low paid workers. Finally, social security benefits are the principle source of income for those out of work, and the conditions which are attached to receiving benefits can have important effects on time budgets too.

1.3.1. Leave entitlements and regulation of working hours

There has been a significant expansion in paid and unpaid leave entitlements since 1997 (Campbell, 2006). Maternity leave was increased from 18 to 26 weeks in 2003, and to 52 weeks in 2007. The stated intention is to extend Statutory Maternity Pay (SMP) to 52 weeks also, with the second 26 week period being transferable from the mother to her partner, but at present SMP runs out at 39 weeks (up from 18 weeks to 26 weeks in 2003, and to the current limit in 2007) (BERR Work and Families website, accessed 20/01/2008). Meanwhile the rate of SMP and Maternity Allowance (paid to women with insufficient national insurance contributions to qualify for SMP) have increased faster than inflation and average earnings, nearly doubling between 2000/1 and 2007/8.

Two weeks of paid paternity leave was introduced in 2003. However take up remains comparatively low: only 70 per cent of fathers made use of their entitlement, according to research by the EOC carried out in 2005 (Smeaton, 2006), with father's in professional occupations being more likely to do so than those in low-skilled jobs.

Holidays are the only other form of *paid* leave to which there is a legal entitlement. These have also been extended: from October 2007, the minimum entitlement is 4.8 weeks per year, including bank holidays, which translates to 24 days for an employee who works a 5-day week. This will increase to 5.6 weeks in April 2009. However the UK lags behind many of its European counterparts in terms of the holiday actually taken. In Italy, workers have an average of 7.9 weeks holiday per year, in Germany, 7.8 weeks, 7.6 in the Netherlands – compared to 6.6 in the UK (Alesina et al, 2005).

A right to unpaid parental leave of up to 13 weeks for each child during its first 5 years of life (or up to the age of 18 for a disabled child) was introduced in 1999. Each parent has a separate entitlement to this leave, making a potential 26 weeks over 5 years for each child. However, since the entitlement is unpaid, parents on a tight budget may find it hard to make use of this right in practice.

A right to reasonable 'emergency leave', also known as time off for dependants, was introduced at the same time as parental leave. This right is largely at the discretion of the employer, since the definition of what constitutes a 'reasonable' period of leave is unspecified in the Act. The nature of emergencies which are covered is also rather vague: it must be in relation to the care of a relative (including a child or partner) living in the same house, or to a parent.

This range of new leave entitlements, and the extension of existing ones, gives some support to the government's claim that it is committed to improving work-life balance, especially for families with children. Its approach to the regulation of regular weekly working hours is in stark contrast, however. The UK dragged its heels over

the implementation of the 1993 European Working Time Directive (93/104/EC), introducing regulations only in 1998. The Directive limited the hours that an employee can be required to work to an average of 48 hours per week (averaged over a period of 17 weeks).¹ Crucially, the UK incorporated an 'opt out' clause into its regulations, which allows employees to sign away their right to a maximum 48 hour week. This provision has been strongly criticised by the EU and by trades unions for undermining the purpose and spirit of the original Directive, but despite amending the regulations in 2003 and conducting further consultation in 2004, the government has retained the individual opt out. In practice, 13.1 per cent of all employees were usually working more than 48 hours per week in 2007 (Labour Force Survey, 2007). According to research by the TUC (2003), two-thirds of those working more than 48 hours were expected to do so before being asked whether they are willing to do so, and one in four of those who signed the opt out felt they had no real choice. Indeed, the opt out is often presented as part of, or alongside, the initial employment contract, giving the clear impression that signing it is a condition of employment (DTI, 2004).

The government has defended its position, emphasising that it is up to the individual worker whether he or she chooses to waive the right to a maximum working week, and up to the employer how they wish to arrange their workforce. This is consistent with the individualised approach, as opposed to collective agreements or detailed legal requirements, which characterises the government's attitude to working time, though oddly enough not to other working arrangements such as paid and unpaid leave. The right to request flexible working, introduced in 2003 and extended in 2007, also fits with the individualised approach. This entitles employees with children up to the age of 6 (or 18 if disabled) and carers of adults living in the same house, to request changes in their total hours, pattern of hours, or their place of work, in order to accommodate their caring responsibilities. The employer has a duty to consider such requests, but can refuse if it can be shown that granting the request would be incompatible with the interests of the business. The government claims considerable success for this policy, with a recent report stating over 90% of employers offer some form of flexible working (Whitehouse and colleagues, 2007), but the TUC has criticised the operation of the right in practice (TUC, 2005). It found that more than half a million workers who have asked for a shorter working week had had their requests turned down by their employers, and that three-quarters of all workers had no element of flexibility in their contract. Where employers were offering alternative arrangements, the degree for flexibility was minimal and generally restricted to better-paid employees.

1.3.2. Provision of care services and support for carers

Childcare was until relatively recently seen as a purely private affair; increasingly however, ensuring that there is an adequate supply of high-quality, affordable childcare has been recognised as a government responsibility. The ten-year childcare strategy announced with the Pre-Budget Report in 2004 identified four goals: choice and flexibility (to help parents achieve a work-life balance), availability (for all children up to age 14 who need it), quality (including developing a highly skilled childcare workforce), and affordability. These objectives are being pursued through:

- regulation – for example, requiring childminders to be trained and registered, and bringing nurseries under the OFSTED inspection regime;

- direct provision – for example, the expansion of Sure Start Children’s Centres (1,750 in 2007, with a target of 3,500 by 2010), concentrated in deprived areas; and
- subsidies to providers and to families – for example, through nursery vouchers (12.5 hours a week for each 3- and 4-year old), and Childcare Tax Credit (covering 80 per cent of childcare costs, up to a limit, for parents claiming Working Tax Credit).

The Children’s Plan (DCSF, 2007) announced the extension of nursery vouchers to 15 hours per week by 2010, and a pilot scheme for free provision for 2-year-olds in the most disadvantaged areas.

There is little doubt that these initiatives have expanded the range of childcare available and stimulated improvements in the quality of provision. However, gaps remain. Children’s Centres have limited coverage and since only a minority of poor families live in poor areas, the majority do not have ready access to them. Take up of nursery vouchers is high but lower among low-income families (DCSF, 2007). Childcare Tax Credit is restricted by the eligibility conditions for tax credits in general (not covering, for example, paid work of less than 16 hours a week for lone parents, or less than 16 hours a week for both parents in couples). It is also limited both by an overall maximum (£175 per week childcare costs for one child or £300 for two or more children in August 2007) and by the fact that it covers only 80 per cent of costs up to this maximum. These restrictions can create problems of affordability for families on tight budgets, especially in areas where the costs of childcare are high (Daycare Trust, 2007).

Adults who need personal assistance and their carers have also received some policy attention, although rather less than children and parents. The first national strategy for carers in 1999 was revised in a ‘New Deal for Carers’ in 2007 (DoH, 2007), which announced among other things £25 million to be spent on providing short-term home-based respite care for carers in crisis or emergency situations, and the establishment of a national helpline for carers. According to research for the organisation Carers UK, there is still a long way to go in achieving adequate financial, practical and emotional support for carers (Yeandle and Buckner, 2008). In 2005/6, less than 5 per cent of carers of working age in England had received an assessment of their needs by their local authority, let alone received the services and support they require.

Carer’s Allowance is paid to those looking after a person full-time who is receiving a disability extra-costs care benefit (Attendance Allowance or Disability Living Allowance care component) at a middle or higher rate. However, the allowance is relatively low (£48.65 weekly in 2007/8) and cannot be combined with earnings over a threshold (£95 weekly in 2007/8) which is just over 16 hours per week at the National Minimum Wage. This creates a significant benefits trap for carers who want or need to undertake paid work.

Meanwhile, social services (which provide, directly or indirectly, the bulk of formal care services for disabled adults and the elderly) have seen a modest increase in resources from central government but not sufficient to keep up with rising demand from an ageing population. Services have therefore increasingly been concentrated on

those with greatest need, leaving people with more modest but still significant needs to make their own arrangements or go without.

Moreover, with increasingly fragmented service provision, multiple funding routes, and greater use of direct payments, the time costs of organising social care are considerable. Minister for Employment Relations, Pat McFadden MP recognised that the time costs of accessing public services can sometimes be prohibitive (McFadden, 2007), but initiatives so far to address this issue - like encouraging GPs to hold surgeries in the evening – are limited.

1.3.3. National Minimum Wage, tax credits and social security

The National Minimum Wage (NMW) and tax credits support the incomes of low-earners while a range of social security benefits provide an income for people out of work (as well as some in work).

The adult rate of the NMW was set at £3.60 in 1999, a rate which the government acknowledged was ‘cautious’ and which was criticised as too low by trades unions and others. Fewer workers than predicted were directly affected by its introduction and the feared reduction in employment rates did not materialise (Low Pay Commission, 2000). In response to the emerging evidence of its effects, the rate has been raised since 1999 faster than average earnings (an increase of 48.6% between 1999 and 2006, compared to 35.5% in average earnings), and stands at £5.52 in 2007/8.

The NMW works hand-in-hand with tax credits by providing a floor on wages. In its absence, unscrupulous employers, especially those in sectors with a higher proportion of potential tax credit recipients among their workforce, could reduce wages in the expectation that the difference will be made up by tax credits. The reach of tax credits themselves has also been extended, with full-time (30 hours per week or more) workers without children becoming eligible for the first time in 2003. Overall, take up of Working Tax Credit is estimated to be around 61 per cent of potential recipients, or 82 per cent of potential expenditure, but it is thought to be higher among families with children (90 and 95 per cent respectively) (HMRC, 2007; see also Chzhen and Middleton, 2007).

Rates of social security benefits for families with children have risen faster than prices since 1997, but have only just kept up with increases in average earnings. They remain at a very low level relative to average living standards. For example, in 2007 the rate of Income Support for a lone parent with a child under 11 is just 22.2 per cent of average earnings, and that for a couple with a child of the same age is 28.3 per cent. Meanwhile, the rates for people without children have fallen even further behind – to 10.7 per cent of average earnings in 2007 for single people aged 25 or over (down from 13.4 per cent in 1997), and to 16.8 per cent for couples (down from 21.0 per cent in 1997) (DWP, 2007a).

Work-related conditions for receipt of some benefits have also been extended (DWP, 2007b). From November 2008, Incapacity Benefit will be replaced by Employment and Support Allowance, which will for the first time require some (possibly most) long-term sick and disabled claimants to undertake work-related and jobseeking

activities. Similarly, from the same date, lone parents with a youngest child of 12 or over will have to seek work, and it is intended that the age threshold will reduce to 10 and then to 7 over the period up to October 2010. Failure to comply without good cause will potentially result in benefit sanctions. This significantly reduces the scope lone parents have to prioritise looking after their children over earning a higher income, a choice which is not nearly so acute for parents in couples. It increases the risk that lone parents will have to choose between time poverty through combining paid and unpaid work, and income poverty through incurring benefit sanctions.

In general then, the period since 1999 has been one of expansion in support for individuals and families, especially those with children and those on low incomes. This has been achieved using a variety of policy levers – new legal entitlements and regulations of wages, hours and leave; subsidies, tax credits, and benefits to families; and the direct or indirect provision of services. All of these help to extend the range of options available to families in terms of both time and money. However, some other policies have pulled in the opposite direction – in particular, lack of effective enforcement of a maximum 48 hour working week, maintaining very low rates of out-of-work benefits and increasing work conditionality on benefits for lone parents and disabled people. It seems clear that the government's underlying philosophy is 'work first': adjustments can be made around the edges to help reconcile long hours of employment with family responsibilities, but the option of actually prioritising family or other commitments over paid work (unless you are in the fortunate position of having someone else to support you financially) is gradually being eroded.

1.4. What do we know about the relationship between time and income?

Interest among economists in the question of time use was stimulated by Becker (1965), who drew attention to the allocation of time by households between production-oriented activities (for example, paid work) and consumption-oriented activities (for example, leisure). He proposed that resources should be measured by 'full income': the income that could be generated by a household devoting all its time to the objective of earning income. This time would include activities necessary to sustaining paid employment, such as sleeping and eating, as well as the paid work itself. In practice of course, "Households in richer countries ... forfeit money income in order to obtain additional utility" (p.498), by choosing to allocate more time to leisure. The assumption, in accordance with conventional economic theory, is that households are utility-maximising and that the time allocation chosen necessarily represents the best allocation for that household, given the wage rates its members can command.

Becker's framework has been both used and criticised by those who have followed. For example, Folbre (2004) argues that Becker does not take sufficient account of the role institutions have in shaping the context in which households' time allocation decisions are made. These institutions include the structure of the labour market (availability of different kinds of work and different packages of hours), the availability of social services including childcare, and cultural and social norms. The

broader context in which individuals' make decisions about the allocation of time are incorporated in the framework for analysis developed in the rest of this paper.

Folbre also critiques, as others have done, Becker's treatment of the household as a unit. In practice the dynamics of household decision-making are complex, often involving a mix of altruism, reciprocity, cooperation, conflict, bargaining and exploitation (see Folbre, 1986). This draws attention to the importance of carrying out analysis as far as possible at the individual level, taking into account household resources, rather than starting with the household as the unit of analysis.

Bojer (2006) argues that Becker's framework can be used as a basis for developing a measure of full income *capability*, in accordance with Sen's capability approach. In Bojer's terms, full income capability is the income an individual could generate if he or she spent all available time in paid work, adjusted for variations in 'special needs' (such as disability) and for unavoidable costs (such as children's consumption and childcare). Bojer argues that the time available for paid work is constrained not just by the number of hours in the day, but also by the inflexibility of employers and social norms (for example, mothers may be expected to look after their children rather than undertake long hours of paid work). This approach has much in common with the model outlined in the following section, although here time and income poverty are considered jointly, rather than being combined into a single concept of 'full income'.

The closest equivalent to the approach pursued in this study is research by Robert Goodin and colleagues, which distinguishes between free time and discretionary time (see Goodin, Parpo and Kangas, 2004; Goodin, Rice, Bittman and Saunders, 2005; Rice, Goodin and Parpo, 2006; Goodin, Rice, Parpo and Eriksson, 2008). Free time is the actual time left over after carrying out 'obligatory' activities such as paid work, unpaid work and personal care, but "people may nevertheless spend more time than strictly necessary doing [these tasks], or achieve more in those realms than strictly necessary" (Goodin and colleagues, 2005, p.44). Discretionary time is therefore defined as the residual after the *minimum necessary* time has been expended on paid and unpaid work and personal care.

Goodin and colleagues define minimum necessary paid work as the amount of time necessary to earn a poverty-level income, given the wage rate an individual can command (and taking into account the lower wage rates of part-time workers). Poverty is defined in line with (Australian) convention as 50 per cent of median income. For unpaid work and personal care, there are no similar conventions to draw on for what constitutes a 'poverty line', so Goodin and colleagues propose the mean time spent in these activities minus one standard deviation.² They justify this definition on the grounds that a poverty line should be set relative to the distribution as whole and somewhere in the bottom half. Obviously this leaves open a wide range of possible thresholds; sensitivity analysis with respect to different definitions of the poverty line would be useful.

Goodin and colleagues (2005) operationalise their idea using data from the 1992 Australian Time Use Survey. Mean personal care time is 69.60 hours per week with a standard deviation of 11.73, so the 'poverty line' is set at 57.87 hours per week. For a two-person household, mean unpaid work time is 41.70 hours per week, with a standard deviation of 23.94, producing a poverty line of 17.76 hours. Thresholds are

derived for other household types in a similar fashion. Minimum paid work time varies by earnings potential, but for a two-adult, one-earner, household with children (for example), the average minimum necessary is calculated to be 24.44 hours per week.

People falling below these thresholds can then be compared to those who are 'time poor' based on actual time use. They find that lone mothers are particularly short of discretionary time, followed by mothers in one-earner and two-earner two-adult households. The biggest discrepancy between (actual) free time and (potential) discretionary time is found for two-adult two-earner households – the household type which is often reported as being under the most time pressure.

The authors conclude that there is a systematic "time-pressure illusion" (Goodin and colleagues, 2005, p.60) and in one sense this is of course correct. On the other hand, it is worth noting that subjective time pressure is real enough to those enduring it, and people do not necessarily perceive themselves to have as much discretion as Goodin and colleagues attribute to them.³ It may be important to consider both subjective and objective measures of time poverty to get the full picture (Robinson and Godbey, 1997).

A number of alternative specifications of 'objective' time poverty have been proposed. Bittman (2004) restricts his attention to actual free time available, and defines time poverty relative to the overall distribution of leisure time, setting a threshold at 50 per cent of the median (19 hours and 15 minutes per week for Australia in 1998). By contrast, Vickery's (1977) approach can be seen as an attempt to define *absolute* time poverty, comparable to the US definition of *absolute* income poverty. Vickery observes that the official US poverty line, based on the price of food for a diet that is minimally nutritionally adequate, implicitly assumes that there are substantial time inputs, since the raw ingredients need to be purchased at the cheapest available outlet (potentially requiring time for searching and travel), and prepared or cooked before they can provide nutrition. She calculates the substitutability of time and money near the income poverty line and derives a range of two-dimensional poverty thresholds using an early US time budget study. For example, for a household with one adult and two or three children the poverty threshold is \$78 income and 61 hours of non-market work, or \$172 income and 14 hours of non-market work (in prices contemporary to the year of the paper: 1977). To this she adds 81 hours per week (as a constant) for the minimum necessary personal care and sleep.

Although Ås (1978) does not propose a definition of time poverty, his distinction between four kinds of time is useful:

- (i) necessary time: time needed to satisfy basic physiological needs, for example, sleep, eating, personal hygiene.
- (ii) contracted time: regular paid work. Although there may be a degree of freedom of choice in hours of paid work taking a long perspective, in the course of a single day or week, hours of work are usually fixed.
- (iii) committed time: "we are often committed to do certain activities simply because earlier we chose to do certain things, e.g. get married, buy a house, have children" (p.134).
- (iv) free time: the residual.

Ås acknowledges that the boundaries between these four categories are often blurred – is tending the garden free time or committed time, for example? – but his classification is useful in drawing attention to the longer term dynamics of time use. Earlier decisions about investment in human capital (education and health), about having children, about where to live, and so on, have major consequences for the current range of possible time allocations open to an individual.

Equally, earlier decisions about time use have significant consequences for the different forms of capital now accumulated and available as a resource for individuals to use in combination with current time inputs (Gershuny, 2003). But capital may also need time input in order to be maintained: for example, Gray (2003) focuses on social capital, and shows how its creation and maintenance requires significant time expenditure through providing reciprocal services and investing emotionally in relationships.

In the framework described below, past decisions which influence both the stock of capital available to individuals and the responsibilities they have acquired (for example, children to look after), are regarded as fixed: the analysis is of the current circumstances of the individual, not of the extent to which they may be held responsible for their circumstances. Again, this is consistent with the usual approach to income poverty. We do not generally ask whether someone *could have* earned more money if they had worked harder at school, we analyse the income they actually have. Current levels of capital, and the time necessary to maintain it, are important elements of the framework.

Efforts to measure trends in free time over the latter half of the twentieth century have used a range of definitions but produced broadly similar findings. Gershuny (2000) concludes, on the basis of an analysis of 20 countries, that there was a slight increase in free time for both men and women in the period 1960 – 1990,⁴ although not through the mechanisms that might have been expected. For example, between 1930 and 1970 in the USA and the UK, average hours of domestic work did not fall, despite major changes in technology.

More important perhaps than trends in average free time, is changes in its distribution and character. Paid work has increased for high paid men and decreased for the low paid, contrary to the prediction of Veblen's classic, *Theory of the Leisure Class* (1924), leading Gershuny (2005) to argue that 'being busy' – in particular working long hours – is now a signifier of dominant social status. The pattern of hours, work intensity and degree of autonomy are important as well as the total number of hours (Fagan, 2001). Studies of people who work 'atypical' hours (for example, evenings or weekends) find that they spend less time with their children than those working the same number of hours at a more conventional time of day (Barnes and colleagues, 2006).

At the same time, there has been a convergence between men and women in terms of the balance of paid work, unpaid work and leisure. The importance of taking into account both gender and differences in social status is highlighted by Warren (2003) in her analysis of British Household Panel Survey data. She finds evidence that women in higher income households are able to increase time available for leisure or

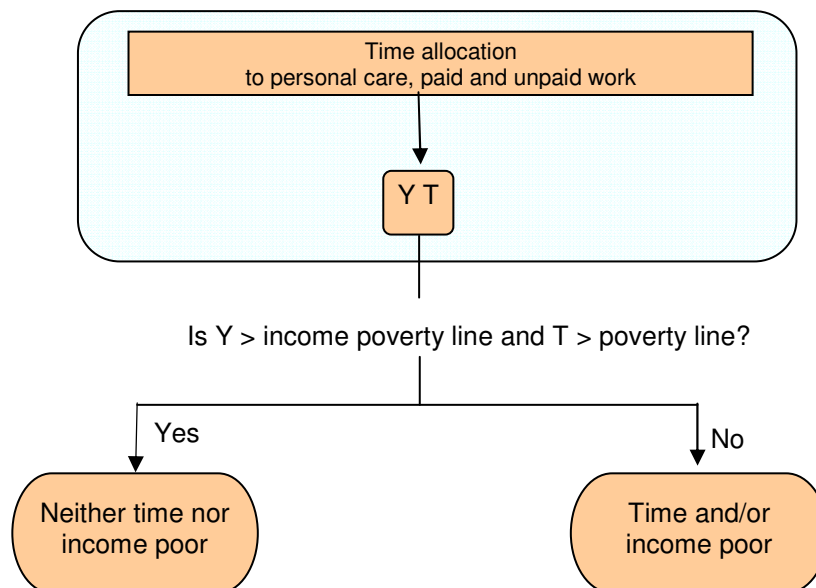
paid work by purchasing help with domestic tasks: 13 per cent of “middle class” women said cleaning was mainly provided by someone outside the family, and over one-third used non-family childcare when they were at work. Interactions between gender and class are an important component of the analysis presented below.

Finally, there is a body of evidence on the time poverty of carers (that is, people caring for another adult) (Bittman et al, 2004; Bittman et al, 2005; Bittman and Thomson, 2000; Habtu and Popovic, 2006). The important role that care for other adults plays in families time budgets is reflected in the model below and in the analysis in the following chapters.

1.5. A model of time and income capability

Figure 1.1 illustrates the comparatively straightforward case where we are interested in the actual free time and disposable income which individuals have. This is the focus of the analysis in Chapter 2. Individuals – in the context of their household and wider environment – allocate their time to personal care, paid work and unpaid work, and this generates a certain level of income, Y , and leaves a certain amount of time, T , left over (this could be 0). (More precise definitions of these terms are given below). We can examine the distributions of Y and T (separately and together), and we may also have a particular interest in those at the bottom of either or both distributions – the time and/or income poor.

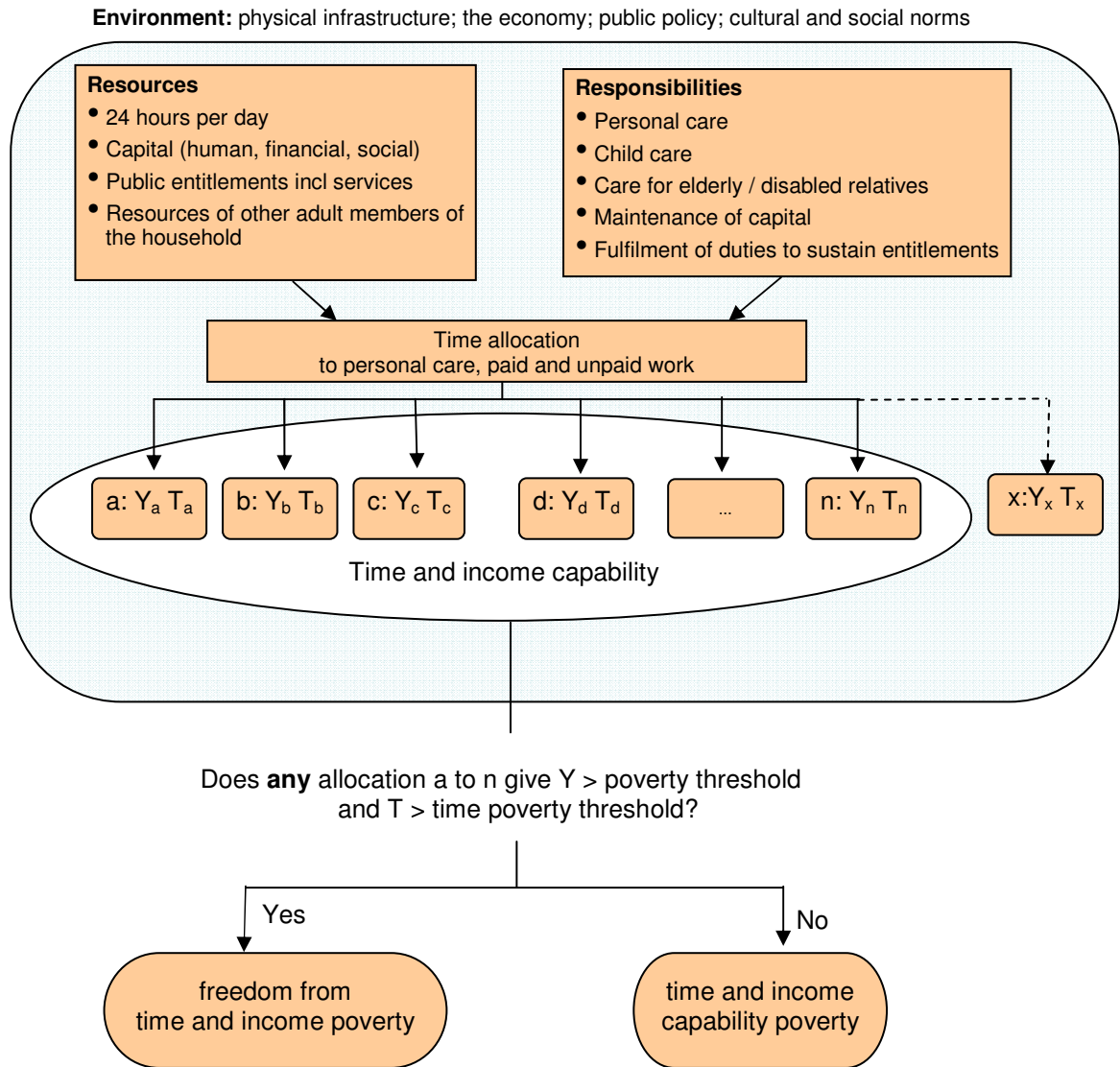
Figure 1.1: Free time and disposable income



However, this is only part of the story. The time allocated by individuals to personal care, paid work and unpaid work is influenced by a wide range of constraints and choices. Moreover, some people have considerably more constraints and fewer choices than others.⁵ Figure 1.2 generalises and expands Figure 1.1 to illustrate the broader context of the particular allocation of time selected by an individual. It

represents the model which is used throughout this report, and in particular to guide the analysis of time and income capability in Chapter 3.

Figure 1.2: Time and income capability



Key

a - n are feasible alternatives
 x is an unfeasible alternative
 Y is disposable income
 T is free time

1.5.1. Context, resources and responsibilities

Two assumptions are made at the outset. The first is that the model is based on individuals rather than households (and for ease of exposition the individual is referred to as female). Individuals are the appropriate unit of analysis for the outcomes – free time and disposable income - since these are experienced by individuals. Of course for many people, the process of arriving at those outcomes includes decisions about the allocation of time to paid and unpaid work made more or less jointly by two or more members of the household, and the resulting time and income may be shared within the household to a greater or lesser extent.⁶ This is taken into account by including the resources of other (adult) members of the household as a potential resource, but it is not assumed that the actual allocation chosen will mean the benefits of this additional resource necessarily flow to the individual in question. This will be determined in part by cultural and social norms, including gender norms, which feature as part of the context in which all the decisions are being made.

The second assumption is that the wider context in which decisions are made can be held constant. This includes the following:

- the physical environment, such as the transport infrastructure, which influences the feasible travel-to-work area (and travel-to-childcare area) of the individual;
- the economy, including prices (which determine what goods and services can be purchased with a given income), the returns to different forms of capital (for example, the wage differential between low and high-skilled workers), the availability of part-time and flexible work, and the overall level of demand for labour;
- the cultural and social context, including gender and other norms which determine who and what is deemed to be an individual's responsibility;
- public policy, which sets out the entitlements an individual has to state support and on what conditions⁷.

Within this context, an individual must decide how to allocate her time between four categories of activity: paid work, unpaid work, personal care and free time. Time spent on paid and unpaid work, and on personal care, is referred to as 'committed time'; free time is the residual.

The individual's decision about how to allocate her time is constrained in two ways: firstly by the *resources* available to her, and secondly by the *responsibilities* for looking after herself and others which she must meet. Together these constraints define a set of feasible time allocations, within a given context. These allocations generate the free time-disposable income pairs represented in Figure 1.2 by $Y_a T_a$ to $Y_n T_n$. Of course, some individuals choose to, or are obliged to, adopt a time allocation which does not enable them to meet their responsibilities, and this is represented in the Figure by allocation x , generating the pair $Y_x T_x$, which lies outside the set of feasible allocations. What constitutes 'meeting their responsibilities' is discussed below.

We can now examine each of the principal components of the model - resources and responsibilities - in more detail. Resources are defined to include time (24 hours per day), since the individual can use her time either directly to meet her responsibilities

(for example by looking after her own children) or indirectly to earn income to pay for goods and services which in turn meet her responsibilities (for example, a childminder). Income is not treated as a basic resource since it is derived through the application of time and one or more forms of capital:

- Financial capital is the most obvious – savings generate income with only a minimal investment of time. (Conversely, debt absorbs income).
- Physical capital, such as a house or piece of equipment, can be used to generate income by renting it out or employing it in the course of paid work.
- Human capital includes educational qualifications, skills, experience and health status, and is a key determinant of the wages an individual can command.
- Finally, social capital, such as having a network of friends and family nearby, may enable the individual to access goods and services without monetary payment.

The individual's stock of each of these forms of capital, especially human capital, is crucial in determining the 'exchange rate' between her own labour and that of others. For example, one hour's labour for a professional can purchase several hours' childcare, because her earnings are several times that of a childminder, while for a manual worker, an hour's labour might only just be sufficient to pay for an hour's childcare, making paid work uneconomic unless other forms of capital (for example, social capital in the form of unpaid care provided by grandparents, or free entitlements) can be brought into play. This implies that for a given set of responsibilities (and holding other forms of capital constant), the range of allocations between paid and unpaid work available to a professional is greater than that available to a manual worker.

In addition to these private resources, the individual may also have a number of public entitlements, for example to unemployment benefit if out of work, or to a disability benefit if unable to work through incapacity.

Turning to responsibilities, the first in the list is personal care, which includes sleeping, eating, washing and so on. These are not counted as 'unpaid work', since in most cases it is not possible to pay someone else to do them for you and still get the same benefit from them.⁸ Time taken for personal care is included as committed time (i.e. non-free time). Clearly, some people choose to spend more time on these tasks than others – a five minute shower may achieve the same degree of cleanliness as a long soak in the tub. The question of the minimum required to meet one's responsibilities is an issue to which we return below.

There are also non-discretionary variations in the time required for personal care. For example, some physical impairments mean it takes longer to eat or to wash; children need more sleep than adults, and so on. These non-discretionary variations restrict the range of feasible time allocations to individuals with different characteristics.

Childcare and care for elderly or disabled relatives may be provided directly, by performing the care oneself, or indirectly, by paying someone else to do so. The extent to which it is acceptable to replace direct by indirect care, the minimum quality of care which must be provided, and the extent of responsibilities for relatives other

than one's own children, are all subject to strong social norms. The interpretation of these norms, and the degree of congruence with personal values, varies considerably (Duncan, 2006).

Caring activities are often simultaneous with other activities, for example, minding the children while cooking the dinner, or keeping granny company while studying for college (Craig, 2005). This creates additional complexity in operationalising the model but conceptually it is clear that time spent fulfilling caring responsibilities, even if something else can be done at the same time, is committed time: the carer is not free to do exactly as she pleases.

Also included in the list of responsibilities is the maintenance of capital. This is to ensure that the model represents a sustainable scenario: if individuals were running down their capital, that would imply that a narrower range of time allocations would be feasible in future. Maintenance of capital involves quite a wide range of activities. Physical capital, such as a house, requires investment of time and/or resources in order to maintain its condition and value. Maintaining human capital means keeping healthy (exercise, diet, adequate rest and so on), as well as keeping skills up to date through continuing education and training. Social capital is in many cases based on reciprocity, and this too requires investment – usually of time – to maintain, although not necessarily in exactly the same time period as the period in which the benefits are received.

The stipulation that maintaining different forms of capital is part of the 'responsibilities' side of the equation is relatively easy to interpret for single people, and for couples provided one treats the couple as a unit. But if one considers the possibility that a couple may split into two households at some point in the future, the question of maintenance of capital becomes more complex. In many cases, a couple's human capital is maintained by one partner remaining in the labour market (frequently the man), and their social capital is maintained by the other partner participating in informal networks of shared care. This may be an entirely satisfactory time allocation for as long as they remain a unit – each benefiting from the capital being maintained by the other – but following a split, the lack of specific forms of capital may be acutely felt. Human capital is not readily translated into social capital or vice versa.

A more sophisticated version of the model presented here would therefore need to incorporate the lifetime dynamics of time allocation. As it is, the future is assumed to be like the present. Equally, the past is taken as given. Previous constraints and decisions the individual has made about allocating her time between different activities, including the accumulation or decumulation of different forms of capital (for example investing in human capital through studying, running into debt which now needs to be serviced), are regarded as fixed constraints on the present situation (Gershuny, 2003).

Given their current stocks of capital and level of responsibilities, some people may be in a position to accumulate additional capital, for example by studying in their spare time. Any such activities are treated in the model as discretionary (i.e. included in free time). Others may find themselves in a 'time poverty trap': needing to work long hours in order to meet their responsibilities (directly or indirectly) and therefore

unable to devote time to increasing their human capital, which would in due course increase their range of options.

Finally, entitlement to public support such as social security, often (and increasingly) comes with strings attached, such as the requirement to seek work. Fulfilment of these conditions is also included in the model in the category of responsibilities which an individual must meet.

1.5.2. Time allocations

The resources an individual commands and the responsibilities which she must meet defines a range of feasible time allocations for her, with activities grouped broadly into personal care, paid work and unpaid work. The residual is free time. Each allocation, labelled as ‘a’ to ‘n’ in Figure 1.2, implies a different combination of free time, T , and disposable income, Y . These terms must now be defined more precisely.

Free time is the time left over after activities to which the individual is committed. The distinction between free and committed time does not rest on the extent to which it is enjoyable – that is an entirely different form of assessment – but rather on the degree of discretion the individual has in the here and now about whether to engage in it. For this reason, all time actually spent on paid work, personal care, domestic, caring or capital-maintenance type activities is treated as committed time.

However, the model requires us to examine all feasible time allocations, not just the observed (actual) allocation and in order to determine what counts as ‘feasible’, we need a definition of the *minimum* required to meet responsibilities of different kinds. Some people will chose to spend longer in activities than is strictly necessary – for example a long soak in the tub rather than a 5-minute shower, or longer hours at work, or time with their children when they do not *need* looking after – and other people may be spending less time than they really need to on some activities, in a way which is unsustainable in the long run, for example, going short of sleep. Different ways of defining these minimum requirements are discussed in detail in Chapter 3 and sensitivity analysis is performed to test the implications of defining the threshold at different levels. Broadly speaking, they may either be absolute (defined with reference to the nature of the activity itself, for example 8 hours for sleep) or relative (defined with reference to the distribution of time people in fact spend in that activity).

Similar issues arise with respect to disposable income. Disposable income is usually taken to be income from all sources net of direct taxes and social insurance contributions (ONS, 2007). For the purposes of this model, we also need to subtract any costs associated with meeting one’s responsibilities – childcare expenses, travel to work, and so on – given the chosen allocation of time to paid and unpaid work. Again, there is a question about the point at which such expenses cross into discretionary expenditure. The response is the same as described above for free time: all actual expenses of this kind (in so far as they can be identified) are deducted from disposable income, but when evaluating the minimum expenditures necessary, levels are defined independently.

1.5.3. Poverty thresholds

Identifying the set of feasible allocations permits analysis of each individual's time and income capability: the range of combinations of free time and disposable income they can secure, consistent with meeting their responsibilities. Various ways of comparing individuals' capability sets are explored in Chapter 3. One approach is to concentrate on those who have no feasible allocation generating both time and income above a poverty threshold. This is parallel to the analysis of actual time and income poverty, based on the observed allocations, presented in Chapter 2.

Income poverty thresholds are conventionally defined in either absolute or relative terms. An example of an absolute threshold is given by the 'low cost but acceptable' budget standard developed by Parker (1998).⁹ For time, a threshold of zero free time is a plausible equivalent of this absolute threshold. The income budget standard defines the minimum income needed to meet a set of basic consumption requirements; the definition of free time is time which is over and above 'committed time'. So, any income in excess of the budget standard takes you out of income poverty, and any time in excess of committed time (i.e. any free time) takes you out of time poverty.

A commonly-used relative threshold for income poverty is 60 per cent of median income. A rough equivalent for time poverty is 60 per cent of median free time. Note, however, that this is not an exact analogy, since the income threshold is based on the distribution of all income, while the time threshold is based only on the distribution of *free* time. (It cannot be based on the definition of total time, since everyone has 24 hours per day).

Actual time and income poverty (chapter 2) is assessed simply on the basis of whether or not observed time and income are above the relevant poverty thresholds. Time and income capability poverty (chapter 3) is assessed on the basis of whether *any* feasible allocation generates time and (simultaneously) income above the relevant poverty thresholds.

For ready reference, Box 1.1 summarises the definition of some of the key terms.¹⁰

Box 1.1: Definition of some key terms

Committed time	Time spent on personal care, paid or unpaid work
Free time (T)	24 hours per day minus committed time
Disposable income (Y)	Equivalised household income (before housing costs), after taxes and National Insurance Contributions, and after childcare costs
Allocation	An allocation of time to personal care, paid work and unpaid work, yielding an amount Y of disposable income and an amount T of free time
Actual time and income	The free time T and disposable income Y generated by the observed allocation for a particular individual
Actual time and income poverty thresholds:	
• absolute definition	observed $T \leq 0$ observed $Y \leq$ budget standard
• relative definition	observed $T \leq 60\%$ of median T for population observed $Y \leq 60\%$ median Y for population
Time and income capability	The range of pairs of disposable income Y and free time T generated by all feasible allocations
Feasible allocation	An allocation which enables an individual to meet his or her responsibilities, according to a definition of minimum requirements
Minimum requirements:	
• absolute definition	Income Y above a budget standard and personal care and unpaid work performed to a standard defined by social norms (as codified by ‘experts’)
• relative definition	Income Y above 60% median observed Y for population and personal care and unpaid work performed to a standard defined relative to population habits
Time and income capability poverty thresholds:	
• absolute definition	No feasible allocation yielding $T > 0$ and $Y >$ budget standard
• relative definition	No feasible allocation yielding $T > 60\%$ median observed T for population and $Y > 60\%$ median observed Y for population

Figure 1.3 illustrates how the model works with some hypothetical examples, with each line representing a different individual. Each allocation of time generates a different combination of free time and disposable income. The thresholds for relative time and income poverty shown on the figure as dashed lines are also hypothetical but are roughly speaking at 60 per cent of observed population median free time and disposable income respectively. Everyone is assumed to have an entitlement to a basic state income (£100 per week) if they do not work.

Person A (the light blue line with square symbols) has high human capital and few responsibilities – no children or other dependent adults – so as soon as she starts working, her disposable income rises rapidly. Of course her free time falls, but she may choose any of a wide range of time allocations without risking either time poverty or income poverty.

Person B (dark blue line with cross symbols) is similar to Person A in that she has few responsibilities for caring for others, but her human capital is lower and consequently the returns to paid work for her are lower. She has to work longer hours in order to achieve the same disposable income as Person A, and as a result, some of her feasible time allocations take her to the left of the time poverty threshold. Nevertheless she has a reasonably wide range of possible allocations free of both time and income poverty.

Life is considerably more complicated for Persons C and D, both of whom have substantial caring responsibilities (here taken to be 70 hours per week). They face not only a decision about how much paid work to undertake, but also about how much replacement care to buy in and how much to provide directly themselves. Person C (yellow line with circle symbols) has similar levels of human capital to Person A. Each hour of paid work she undertakes can pay for two hours of replacement care, because her wages are twice those of the carer. To start with, she might decide not to work but to use all her state income (£100) to purchase replacement care, gaining her a little bit of extra free time, but with no disposable income (i.e. moving right along the bottom axis).¹¹ Initially when she starts working, all her income goes on purchasing replacement care – again, gaining free time but not generating any surplus income. Only when she works more than 35 hours does she begin to see a net financial return from working. At this point, however, any additional paid work will begin to *reduce* her overall free time, though with all the care now paid for, her disposable income can rise quite rapidly. Her time and income capability set is clearly more constrained than her counterpart who has few responsibilities (Person A). With respect to Person B, who has few responsibilities but lower human capital, the dominance is less decisive. C can generate more disposable income than B if she works 70 hours a week or more, but the majority of C's feasible time allocations generate less desirable time and income combinations than B's options.

Person D (pink line with star symbol), with low human capital and substantial caring responsibilities, is clearly worst off of all. Initially, like Person C, she may spend her state entitlement on purchasing replacement care, gaining her the maximum amount of free time she can generate but no disposable income (first point on the line at the right). If she undertakes a few hours of paid work she forfeits the state income, and as her wage rate is the same as that of a replacement carer, she gains no additional disposable income but loses free time (second point on the line). Instead she might choose to rely on the state entitlement and undertake the care work herself (third point

along the line) – same free time but at least gaining a little disposable income. Increasing disposable income from here can be achieved in one of two ways, but both of which reduce free time substantially: either she can continue to provide the care herself on top of her paid work hours, or she can work such long hours (over 70) that she can pay for the care and have a little income left over. The maximum disposable income she can generate in this example is £420 per week, by doing 28 hours of paid work and 70 hours of caring, leaving her with no free time at all. Person D can escape income poverty only by incurring severe time poverty, and can escape time poverty only by incurring severe income poverty: her time-income capability is severely constrained.

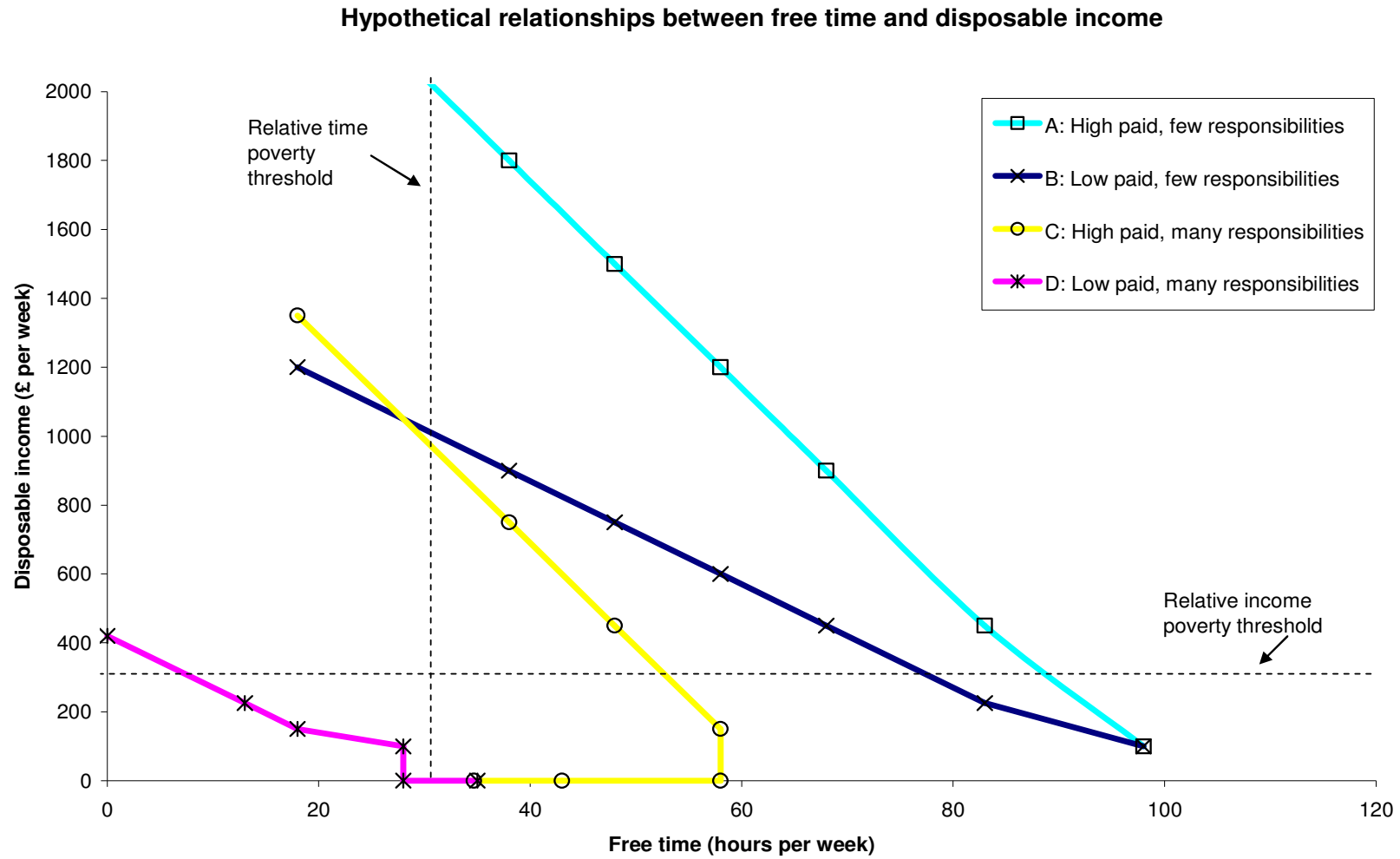
One can see that having heavier responsibilities (Persons C and D) shifts the ‘capability frontier’ to the left, towards time poverty: this is because even in the absence of paid work, these individuals have less free time than those with fewer responsibilities (Persons A and B). Having more responsibilities also shifts the line downwards, towards income poverty: the costs of replacement care must be deducted from earnings before any disposable income can be generated. In addition, the graph shows that having lower human capital (for example, being a lower-skilled worker – Persons B and D) makes the gradient flatter, since converting one hour of free time into income through paid work generates less additional income than for a higher-waged individual. This means it is harder for the lower-skilled to move into the top right quadrant of the graph, where she would be free from both time and income poverty.

In the example shown, no part of Person D’s line crosses into the top right quadrant, in other words, no time allocation for this individual enables her to be free of both time and income poverty. All of the other hypothetical individuals represented in the graph have some chance of locating themselves in the top right quadrant, although a wider range of time allocations produces that result for Person A than for the others. This corresponds to an approximate ranking of time-income capability.

1.5.4. Use of the model in the rest of the report

The model in Figure 1.2 guides the analysis in the rest of this report and frequent reference will be made to it. Chapter 2 is concerned with observed time and income, that is, the particular allocation of time to paid and unpaid work individuals and households have made, generating the observed combination of free time T and disposable income Y (as highlighted in Figure 1.1). Chapter 3 is concerned with time and income capability, that is, all the feasible allocations $Y_a T_a$ to $Y_n T_n$. Chapter 2 therefore deals with the actual amount of time people are spending on various activities (personal care, paid and unpaid work), while chapter 3 deals with the minimum time people could spend on various activities – as defined in that chapter - while still meeting their responsibilities.

Figure 1.3



2. Short of time, short of money

2.1. Case studies

In the early stages of the research, a small number of interviews were conducted with people who found themselves juggling work and family responsibilities, in order to try to understand the nature of the pressures that people were under and the strategies they adopted to deal with the situation. Interviewees were invited from a wide range of sources,¹² but in the event, the majority of those who volunteered were people who had been in touch with the organisation Working Families. Working Families is a national organisation which provides information and support to individuals and employers on work-life balance. The number of respondents is small (11) and they are not in any sense representative of the wider population; these are all people who, firstly, have faced difficulties in reconciling work and family life, secondly, have been in a position to identify and contact an organisation for support, and thirdly, are willing to talk to a researcher about their experience. This makes them unusual, but also particularly valuable informants. Despite having these characteristics in common, there is a diversity of backgrounds and circumstances among them, as shown in Box 2.1 below.

Box 2.1: Socio-demographic characteristics of the interviewees (round 1)

Gender: 10 female, 1 male
 Age: 1 in 20s, 6 in 30s, 4 in 40s
 Household: 8 couples, 3 single parents
 1 to 3 children, aged between 6 months and 10 years
 Ethnicity: 6 White British, 1 White Welsh, 1 White Irish, 1 White European,
 1 English Indian, 1 Black Caribbean (all self-described)
 Region: 2 North, 1 North West, 1 Wales, 1 Midlands, 1 East Anglia, 3 London,
 2 South East
 Highest qualification: range from RSA stage 1, through CSEs and GCSEs, to degree
 and master's degree
 Health and disability: 7 describe health as 'good' or better, 4 describe health as 'fair'
 or 'poor'; 2 have diabetes, 1 has migraine.
 Own employment: 2 not working, 5 part-time, 4 full-time
 Partner's employment (where applicable): 1 not working, 2 part-time, 6 full-time
 Occupational social class: range from 9 (elementary occupations eg warehouse
 stacker) to 1 (managers and senior officials); at least 1 respondent in
 each major category except 5 (skilled trades).
 Approx household income (where known): £500 to £2000 per month

Each person's experiences were unique. The accounts interviewees gave of their determined efforts to ensure their children were well looked after while trying to make ends meet - all too often in the face of considerable obstacles - were impressive and humbling. The summaries below of three case studies cannot do justice to them but they serve to illustrate the range of strategies people adopted to cope with the twin pressures of time and money. All names have been changed to protect confidentiality.

Case study one: *“The whole point was to spend some time with my son so I don’t mind being a pauper for a while”*

Anthea is a Black-Caribbean single parent with a three-year old son, living in London. When first interviewed in 2005, she had until recently been working full-time as a helpline coordinator for a local authority. Her son was at nursery 8.45am to 6pm five days a week, and Anthea described how she had to ‘plan everything, be very efficient – clothes ready tonight for tomorrow’, and cook for two days a time. Both of them were ‘tired and stressed’, and Anthea’s health deteriorated: ‘rashes, colds and flu – stress at work and stress at home’.

This pressure, combined with high childcare costs - only partially covered by a childcare tax credit - which left her with ‘nothing after mortgage, bills and nappies’, led Anthea to decide it was not a sustainable situation. She discovered her employer had a work-life balance policy but when she applied to reduce her hours, they said the policy did not apply to front-line staff. Protracted negotiations followed, lasting nearly a year, during which time Anthea enrolled in an evening course to become a qualified childminder. Eventually, after getting her union involved, Anthea secured agreement from her employer to take a year’s career break.

At the time of the interview, Anthea had begun working as a childminder, looking after her son along with other children. She was relieved to have the situation sorted and ‘glad of the break’. However, despite no longer paying for childcare and being newly eligible for Working Tax Credit, she was worse off financially than when she had been paid by the local authority. Although essential bills were covered, other expenditure meant Anthea was accumulating debts. She commented, ‘The whole point was to spend some time with my son so I don’t mind being a pauper for a while’.

Case study two: *“It’s been a struggle, no doubt about that”*

Jayesh is a married father of Indian origin, living in Middlesex. He and his wife Nisha have a 16-month-old daughter and a 10-year-old son. Jayesh works shifts at a major airport, a 40 hour basic week with extra 8-hour shifts on his rest days whenever he can get them. Nisha works 4½ hours each evening at a distribution company. Between them they bring home about £2000 per month, which is just enough to cover the bills and prevent them getting behind with the mortgage.

Nisha returned to work when Statutory Maternity Pay ran out; although she was entitled to a longer period of leave, it was unpaid and the family couldn’t afford that. At first they managed alright because Nisha’s mother came from India to stay with them, but since she went back things have been difficult. Now if Jayesh has a late shift, finishing at 9 or 10pm, it overlaps with Nisha’s job and there is no-one to look after the baby.

Jayesh does not think paid childcare is an option at the moment, because the baby suffers from bronchitis and sometimes has an attack which requires the use of an asthma pump. He and his wife have been trained how to use it, but they wouldn't be confident that someone else would know what to do. Moreover, if there was an emergency, it would take too long for one of them to get home – half an hour at least.

Both parents have asked their employers to change their shifts. Jayesh requested a fixed early shift (5am – 1pm) and Nisha asked either to move to an earlier shift or to job-share a full-time post. She even found a colleague who was willing to work to this arrangement. Their GP wrote a letter to the employer saying that for the baby's health and safety, it would be better for one or other parent to be at home at all times. Despite these efforts, both employers have prevaricated, claiming that there are waiting lists for changing shifts and that they can't say when a vacancy will become available. Nisha's employer agreed verbally to the job-sharing idea but then withdrew.

Work colleagues have been very helpful, swapping shifts with Jayesh so that he can work early, 'because they know my situation'. Jayesh has also got support from his father who lives nearby and who can keep an eye on their 10-year-old if both parents are at work, but 'he's too old to be doing nappies, we can't expect him to do that'. They can't afford for either of them to give up work altogether: they can only just make ends meet as it is, 'It's been a struggle, no doubt about that', Jayesh comments. All in all, he is left feeling very frustrated: 'We tried our best, we tried everything but it's all in vain basically...I don't know what to do at the moment'.

Case study three: *"Without them I don't think we could have carried on... We couldn't have afforded to"*

Diane is White British, married with three children aged 9, 17 and 18, and lives in Essex. She works 22 hours a week in a pharmacy. Her husband Steve was until recently a double-glazing salesman, but due in part to the extremely long hours, he developed a health problem and is now unemployed. When working, it was not uncommon for him to leave the house at 8am and return at 10.30pm, a 14½ hour day, and weekend work was often required. Unfortunately, because he was formally self-employed, he is not now entitled to Jobseekers' Allowance, so the family are getting by on Diane's part-time wages (about £500 per month), topped up with Working Tax Credit. Both Diane's and Steve's parents help out, buying school clothes and books for the children, for which Diane is very grateful: 'Quite honestly I don't know where that money would come from.... We're not extravagant food-wise, or in any way at all'.

When both Diane and Steve were working, the grandparents also helped with childcare. Diane's parents are retired and live quite nearby. Diane would take her youngest daughter to school and either Diane's parents or Steve's mother would pick her up and look after her at home until Diane got back. Diane's mother also helped out with some household chores, like the ironing. 'Without them I don't think we could have carried on – we couldn't have afforded to', Diane says. As it was, she felt they were always in a rush, and there was no time for anything 'except the basics'.

Diane is studying for an NVQ level 3 in pharmacy which she hopes will enable her to get a better job. She spends at least 10 hours a week studying, in the evenings after the children are in bed.

2.2. Analysis of case studies

A number of features of these case studies can be understood with reference to the model of time and income capability presented in chapter 1. At the broadest level, we can see the ways in which the economic and cultural environments affect the opportunities these families have and the decisions they make. Anthea finds that childminding is not valued as highly economically as her previous work for the local authority, which is beginning to create financial problems for her. Jayesh is very highly qualified – he has a degree in Commerce, Accountancy and Economics from an Indian university – but this is not recognised or rewarded in the UK labour market. It is hard to see this as anything other than discrimination.

Public policy shapes the context in which their decisions are made too: Anthea, Jayesh and his wife Nisha have all exercised their right to request flexible working, although only Anthea has so far met with any success (and that after a long struggle). Lack of effective legal scrutiny over employers' delays and refusals seems to be a problem. Diane is unable to make use of that provision because her youngest child is above the age threshold (age 5) for that entitlement. In her interview, she commented this was 'ridiculous', since in her view older children still need looking after.

In addition, all the families are influenced by social norms and expectations. Jayesh is clear that while it is reasonable for his father to mind their 10-year-old, asking him to look after the baby would be too much. It is not clear to what extent this is informed by gender norms and to what extent it is about respect for elders; probably both are in play.

The case studies illustrate the wide range of resources, both levels and types, available to different families. Firstly, and so obvious that it is easy to miss, Jayesh and Diane's families each have two lots of 24 hours at their disposal – their own and their partner's – whereas Anthea has only one. Whether these hours are used directly to meet responsibilities such as childcare or converted into income through paid work, having two adults significantly expands the room for manoeuvre.

Secondly, in terms of human capital, Diane and her husband Steve have relatively low secondary-level qualifications (CSEs), so they find they have to work comparatively long hours in their jobs in order to generate sufficient income to keep the family in the clear. Anthea, on the other hand, has a (British) degree, so she is able to command a wage which enables her to pay for a full-time nursery place, at least for a short period (and supported by tax credits). As already noted for Jayesh, the translation of human capital into wage rates is not always straightforward, mediated as it is by cultural factors.

Although human capital is often proxied by educational qualifications, the case studies also highlight other aspects. Anthea, Jayesh and Nisha all demonstrate

considerable determination and ingenuity in negotiating with their employers: skills which are not formally documented but which have the potential to make a significant difference to the outcomes for their families.

In terms of social capital, Diane is able to draw on both financial and practical assistance from her parents and from her husband's parents. They live nearby and obviously have a very good relationship with Diane and her family. This makes an enormous difference to the family's time budget, as well as paying for some essentials like school clothes. Jayesh, too, had help from Nisha's mother when the baby was born, and sometimes has help from his father, but this is more constrained. Nisha's mother lives on another continent. Anthea does not have family nearby. Accordingly, she has had to make much greater use of paid childcare, or to provide it herself.

Other forms of social capital also feature in the case studies. Anthea got support from her trade union in her negotiations with her employer, while Jayesh's good relations with his work colleagues meant they have been willing to swap shifts to help him out.

Physical and financial capital did not emerge as significant factors in these three case studies, although in some of the other interviews, access to a car, and having a dishwasher, were mentioned as major time-savers, while owning a house with only a low mortgage was mentioned as an important bonus on the financial side.

Public entitlements, in the form of tax credits, play a crucial role for both Anthea and Diane. Anthea was previously benefiting from a childcare tax credit, when she was working for the local authority, and now she is on the lower wage as a childminder herself, she qualifies for working tax credit and child tax credit. Diane also receives tax credits. But in other respects, it is the inadequacy of public entitlements which is highlighted in these case studies. Diane's husband does not qualify for Jobseekers' Allowance, despite being unemployed, because his National Insurance contributions over the last two years were insufficient, and they cannot claim income-related JSA because of Diane's job. For Jayesh and Nisha, the legal entitlement to longer period of maternity leave was no use, because it was unsupported by Statutory Maternity Pay after six months. They could not afford it.

On the responsibilities side of the equation, all the respondents talked about the difficulties of arranging childcare, through informal and formal arrangements. Anthea and Jayesh both had pre-school children needing 24 hour supervision. Diane was keen to point out that even though her youngest was 9, she still needed considerable parental time input, whether ferrying to and from school, helping her with homework or 'real time together'. For Jayesh, his daughter's bronchitis created additional complications: they needed to be confident that whoever was looking after her could administer the medication, and one or other parent needed to be near enough to attend quickly in an emergency. Health was also an issue for Anthea (pressure at work and home leading to frequent minor illnesses for her and her son), and for Diane's husband (excessively long hours leading to development of a serious health problem, which prevented him from working). In both cases, health problems were directly linked to time pressure and exacerbated an already stressful situation.

The particular combination of responsibilities and resources each family has leads to a range of possibilities, within the broader economic and cultural environment. From

that range of possibilities, wider for some and narrower for others, each family has chosen, or arrived at, a different solution. Anthea has decided to spend more time with her son, in the process downgrading (possibly temporarily) from a better to less well paid job, which means that she is building up debts. Jayesh and Nisha can generate just enough income to make ends meet by working between them 62½ hours a week plus overtime, but they face seemingly insuperable scheduling difficulties. Diane and Steve are getting by in terms of both money and time with significant input from their parents.

One of the interesting features revealed by these examples is the dynamic nature of the trade-offs between time and income. Both Anthea and Diane have chosen to invest precious time in their evenings to acquire new qualifications (childminding certification for Anthea and an NVQ for Diane), in the hope of increasing their options in the future, including perhaps a higher wage rate. The case studies appear to contain elements which are unsustainable in the long term, for example, Anthea's financial situation, and Jayesh and Nisha's precarious juggling of shifts. Similarly, although the flow of support is currently from the parents to Diane and her husband, a close relationship of that kind seems likely to produce a reciprocal flow at some point in the future.

The model presented in chapter 1 reflects this dynamic to a certain extent, by building in requirements to maintain different forms of capital, for example keeping qualifications (human capital) up to date, offering reciprocal help (social capital), and not getting into debt (financial capital), but does not incorporate the possibility of opting for an intentional, temporary, disequilibrium (for example, time poverty or financial debt) in order to obtain a better steady state in the future.

2.3. The UK Time Use Survey 2000

The three case studies described above, and the rest of the first round of interviews, provided valuable insights into the difficulties people face in balancing paid work and family life and the strategies they adopt to get by. But of course we don't know to what extent these are typical of the circumstances and experiences of the population in general. For that purpose, we turn to analysis of a large-scale representative survey of households in the UK, known as the Time Use Survey (TUS), carried out by the Office for National Statistics in the year 2000. Information on many of the features which emerged as significant in the round 1 interviews is contained within the TUS, for example, childcare arrangements, wages, and availability of help from parents and others, but the survey does not contain all the information we might want, for example, we don't know whether the respondents are a member of a trade union, or whether they themselves have strong negotiation skills. The rich and nuanced picture of people's lives provided by the qualitative interview data is complemented by the somewhat cruder, but representative and statistically robust, quantitative data from the survey.

The TUS was designed to be representative of the household population in the UK. The achieved sample size was 6,414 households, a response rate of 61 per cent. All individuals aged 8 or over were asked to complete an individual questionnaire (N=11,664) and to keep a diary detailing their activities in 10-minute slots for two

days, one weekday and one weekend day (N=19,898). Three-quarters (73 per cent) of eligible individuals in sample households completed diaries, which is a good response rate in comparison to other time use surveys, but nevertheless means the overall response rate for diaries from the target sample is just under half, at 45 per cent. For this reason ONS have calculated weights to counter potential bias arising from differential non-response (Elliot, 2002), and these are applied in the results shown below.¹³

Results are based on the working-age population (age 16-59 for women and 16-64 for men), since different issues arise in considering the activities of children and the retired population. For the analysis in this chapter, and in accordance with the model presented in chapter 1, total actual time spent on three broad categories of activity is counted as committed time: personal care, paid work, and unpaid work.¹⁴ Travel in pursuit of these activities is also included. Personal care includes sleep. Paid work includes employment and self-employment, working in a family business without pay, and job-seeking activities. It does not include education or unpaid training. Unpaid work uses the 'third person criterion', that is, whether the task could in principle be performed by someone else without losing its purpose. For example, the purpose of washing up is to get the dishes clean and this can be done by someone else, whereas the purpose of watching a film is (usually!) to enjoy it, so getting someone else to watch the film on your behalf would miss the point. Broadly speaking, unpaid work includes domestic tasks, childcare and unpaid care for others. Voluntary work for organisations is not included, as this is regarded as leisure.

It is worth stressing that this definition of committed time reflects the time people are actually spending on personal care, paid and unpaid work, which is not necessarily the same as the minimum amount of time they could get away with spending on these activities. Analysis of their time and income capability – the free time and disposable income they could generate under various different scenarios – must wait for the next chapter. There is also no implication that free time is enjoyable or that committed time is miserable. People may be bored or lonely in their free time but stimulated during work time and have great fun looking after their children.¹⁵ The distinction between free and committed time lies not in subjective value but in the extent to which the individual has discretion over engaging in the activity, in the short term. Once an employee has a contract, he or she is expected to turn up for work; once children are born, they need to be looked after somehow or other; everyone has to fit in nutrition and sleep. Of course, in the longer term, many of these commitments can be altered, especially paid work hours, but again analysis of these alternative, hypothetical, scenarios must wait for chapter 3.

Returning to the construction of the committed time measure, for each time slot in the diary, respondents were asked to record their main activity and any secondary activity in which they were engaged.¹⁶ If either the main or the secondary activity falls into the category corresponding to 'committed' time, that time is counted as committed. Free time is simply 24 hours minus committed time for the diary day in question. A weekly figure is calculated by multiplying the weekday diary total by five and adding the weekend diary day total multiplied by two.¹⁷

Free time is measured for each individual. An individual may be time poor despite the fact that her partner is not, due to an unequal distribution of free time within the

household, and this can be detected only by analysing poverty at an individual level. It is often thought that women's increased participation in the paid labour force has not been matched by a decrease in their domestic labour, such that they are now at greater risk of bearing a 'double burden', although analysis of trends over time do not necessarily bear this out (Gershuny, 2000). Chapter 3 includes some analysis of how time is distributed within households.

The empirical definition of free time is thus reasonably close to that outlined in the model in chapter 1. The main difference is failure to include time allocated to maintenance of different forms of capital, which is difficult to identify in TUS. The definition of income is more problematic. Ideally, we would want a measure of individual command over resources – not the same as individual income receipts, since there is usually some sharing within households, but not the same as equivalised household income either, since sharing is often unequal (Pahl, 1989; Sutherland, 1997). In the absence of detailed information on intra-household distribution, and in common with most other income poverty research, equivalised household income is used as the least-bad approximation.

Information on household income in TUS comes in various forms. A general question about asks respondents to indicate into which of 11 consecutive ranges their gross household income falls. This has three limitations for the present analysis: (i) it provides gross incomes rather than disposable income; (ii) it is in bands rather than exact amounts, which makes it difficult to manipulate, for example, to adjust for differences in household size; and (iii) the responses are of doubtful accuracy (see Burchardt, 2006).

More detailed information on net earnings is available, and on other sources (but not amounts) of income. Total household net incomes can be imputed by combining this information with estimates from another survey (the Family Resources Survey). This is a Before Housing Costs measure.¹⁸ The resulting distribution of net income gives a reasonable match to the government's official income statistics.¹⁹

Detailed information is collected in TUS on the use of paid and unpaid childcare, although not on expenditure. To make good this omission, estimates of the average cost per hour per child of each type of childcare, adjusted for regional variation, are taken from the Department for Education and Skills national childcare survey (Bryson and colleagues, 2006) and applied to the usage reported by parents in TUS (see Burchardt, 2006 for details). Total childcare costs for each household are then subtracted from household net income, to give *disposable* income.²⁰

Finally, disposable income is equivalised for differences in household size and composition using the Modified OECD scale (DWP, 2007c).

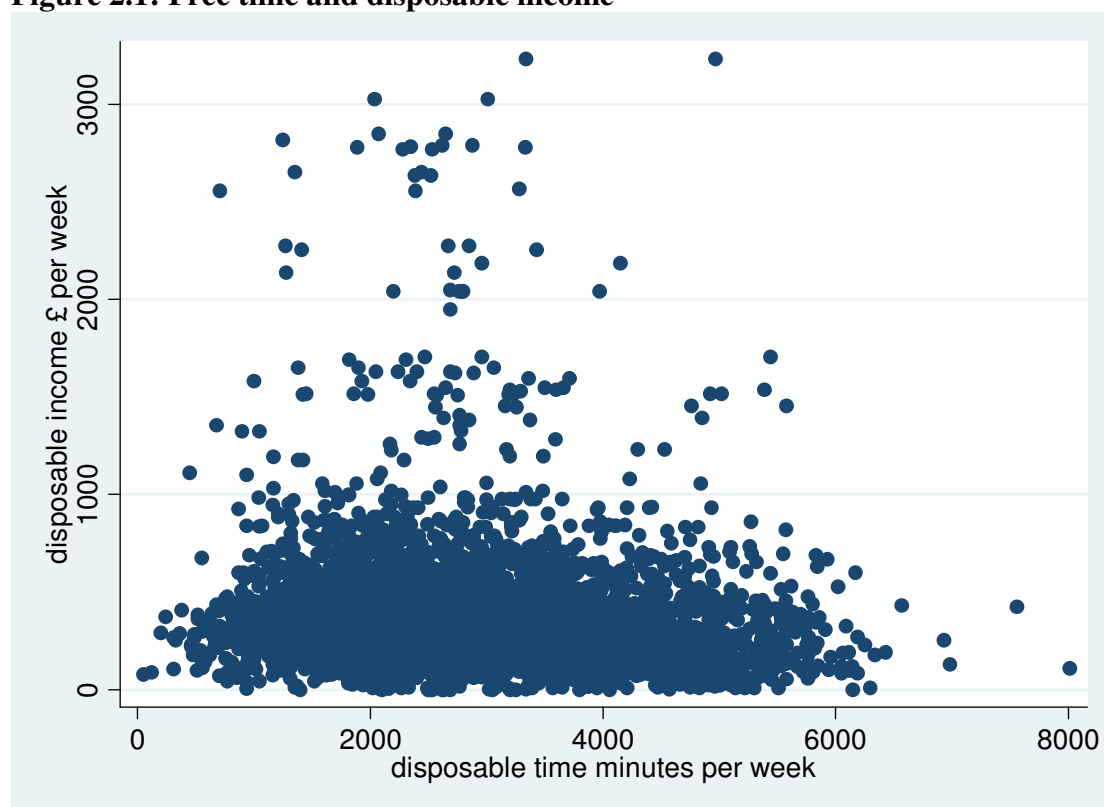
2.4. Free time and disposable income²¹

Figure 2.1 shows the equivalised disposable income and free time generated for each individual in the sample by the allocation between paid and unpaid work they have chosen (or have been obliged by circumstances to adopt). Those towards the bottom left corner of the graph have little free time and a low income; this includes people

who are working long hours for low wages, or who have significant caring responsibilities. Those towards the top right of the graph have plenty of free time and disposable income. This group includes high earners without children or other caring responsibilities. In the top left of the graph are those with relatively high incomes but little time left after their paid and unpaid work hours, while in the bottom right are those with plenty of time but little money – the unemployed, for example.

Overall, there is a significant, though weak, negative association between free time and disposable income (-0.12). In other words those with more time tend to have less money and vice versa.

Figure 2.1: Free time and disposable income



It is easier to see the relationship between time and income if we divide the working age population into ten equal groups by income (decile groups). This is shown in Figure 2.2.

Free time among the bottom income decile groups is substantially higher than further up the income distribution. To translate into more familiar terms than minutes per week, the bottom income decile group have 57 hours and 5 minutes free time per week, while the top income decile group have 44 hours and 40 minutes.²² This is to be expected, since those with the lowest income are also least likely to be in paid work – a major component of committed time as defined here. Nearly three-quarters (73%) of the bottom income group are not in paid work compared to just one-fifth (21%) of the top income group.

The breakdown of committed time into its components is shown in Figures 2.3 and 2.4; the first figure is for all people of working age while the second is restricted to

those who have some paid work. Recall that personal care includes sleep, and that unpaid work includes looking after children, caring for others, and domestic work.²³

Figure 2.2

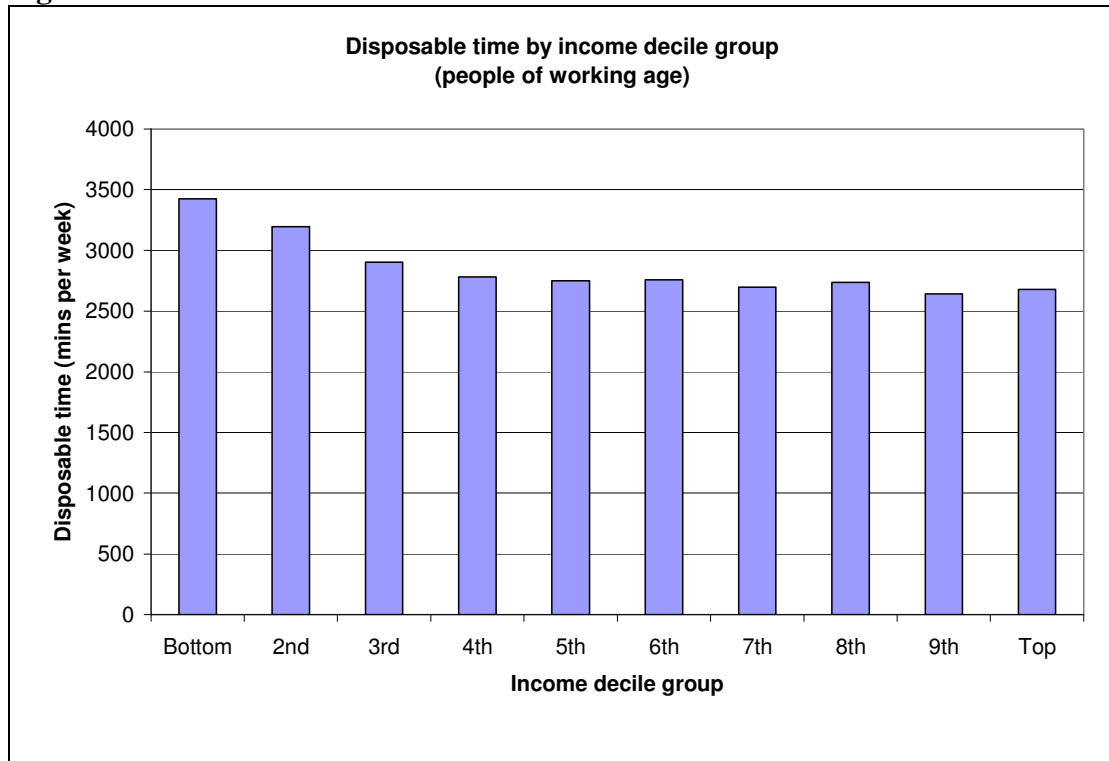
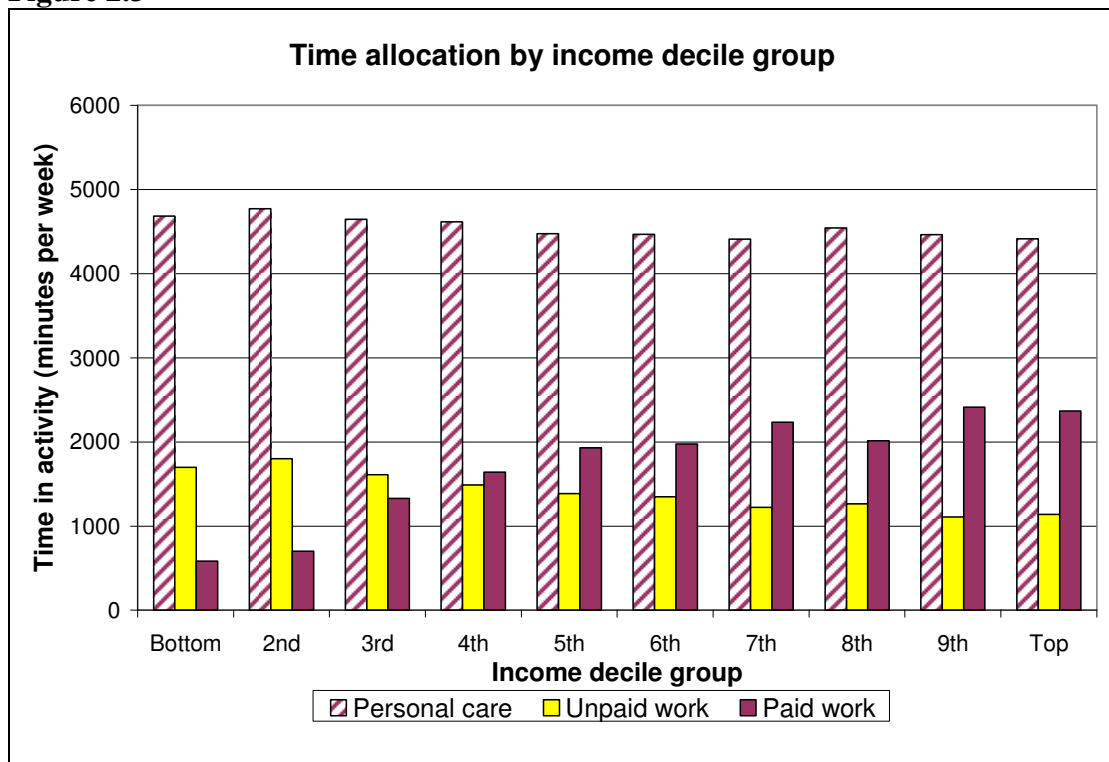


Figure 2.3

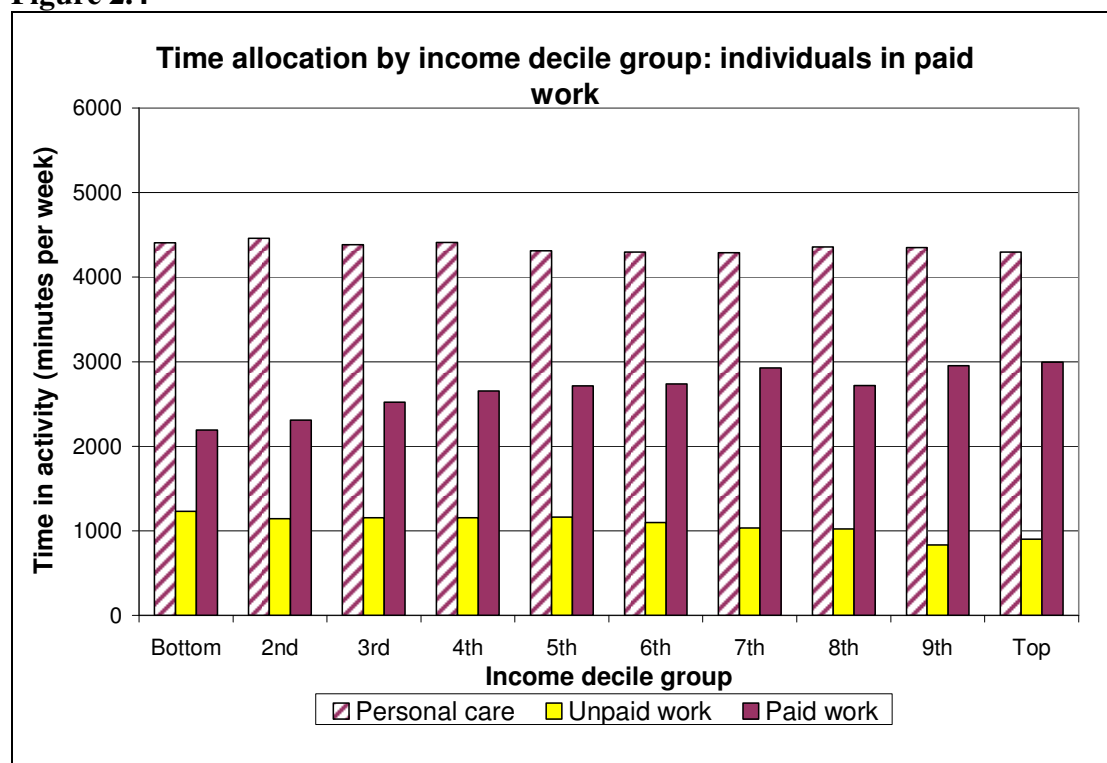


There is a slight, but statistically significant, fall in minutes spent on personal care with increasing income. The bottom two income decile groups spend an average of just under five hours per week more on personal care than the top two income decile groups. The difference appears to be due in part to a direct trade-off between paid working hours and time for personal care, since when we restrict our attention to those with some paid work (Figure 2.4), the personal care gradient with respect to income is much less pronounced, but there are also other contributory factors, such as the younger age profile of the bottom income decile groups (the youngest and oldest age groups spend longer on personal care than the middle age group).

Unpaid work has the opposite gradient, falling over ten hours from the bottom to the top decile group (from 28 hours 17 minutes to 18 hours 59 minutes). This is consistent with the higher income groups using some of the income to purchase services to meet their domestic and caring responsibilities, rather than providing the labour directly themselves, although it also reflects differences in the population composition at the two ends of the income distribution: families with children are concentrated at the bottom of the distribution.

Individuals with some paid work do about half the amount of unpaid work, on average, of those without paid work – 17 hours 39 minutes, compared to 34 hours 23 minutes per week. The gradient in unpaid work with respect to income is less pronounced among individuals in paid work (Figure 2.4), although it remains the case that lower income groups do more than higher income groups.

Figure 2.4

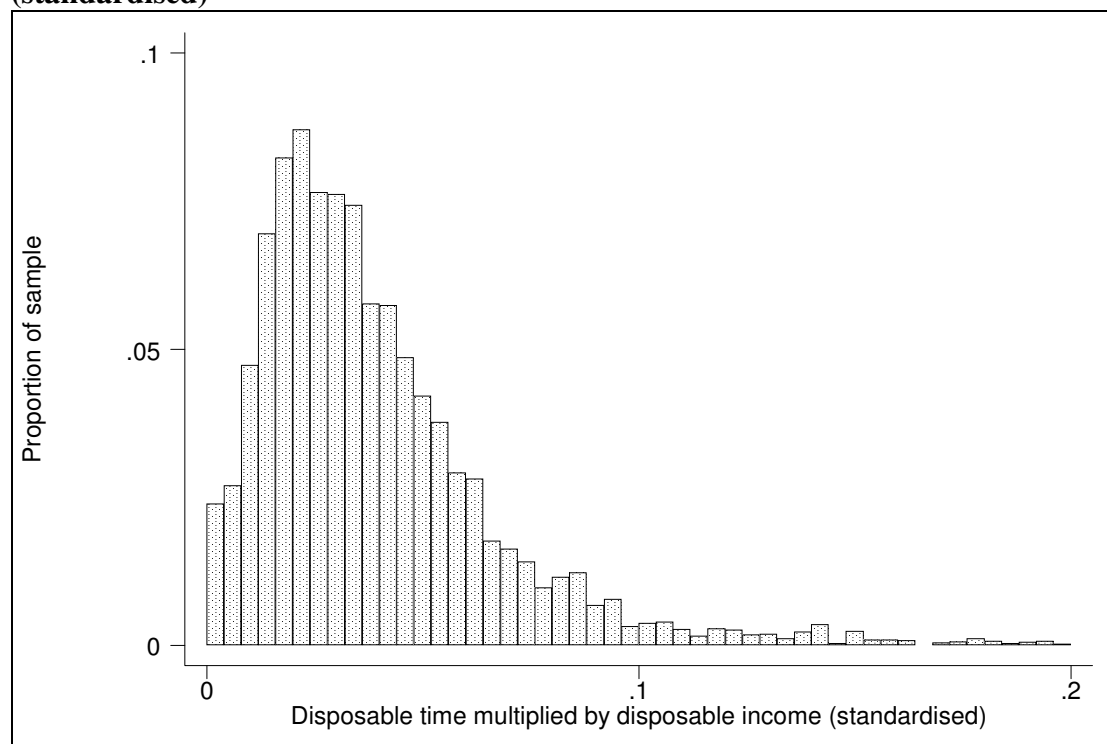


Average paid work time per week across the whole working age population (i.e. including those with full-time, part-time and no paid work) is 28 hours 47 minutes. Again, there is a strong gradient with respect to income, partly driven by the higher

proportions of the upper income groups who are in work, but partly also by hours of work. Among those with some paid work, the total time given to paid work (including travel to work) is 36 hours 30 minutes in the bottom income group, rising to 49 hours 53 minutes in the top income group.

Having got a feel for the relationship between disposable income and free time, it is interesting to consider their joint distribution. Who is most likely to have both low income and little free time? A conventional economic approach would value each hour of free time at the (potential) wage rate of the individual to produce a measure of 'full income' but this is unsatisfactory for a number of reasons.²⁴ Instead, each of the time and income dimensions were standardised to lie between 0 and 1, and then multiplied together, to create a time-income index. Note that this means if either disposable time *or* disposable income is zero, the overall index is also zero. The units are arbitrary, but it provides a continuous, and consistent, measure with which to make comparisons between individuals. Figure 2.5 shows its overall distribution.²⁵

Figure 2.5: The distribution of free time multiplied by disposable income (standardised)



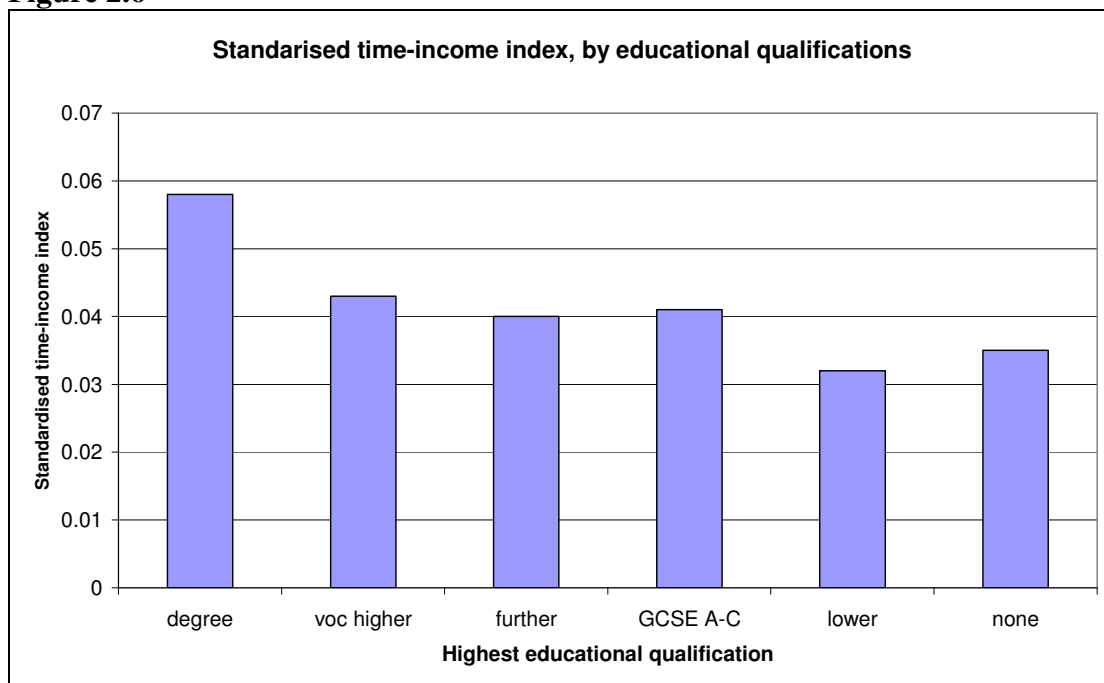
It is a skewed normal distribution, with a long upper tail: in other words, the majority of people have mid-range values of time and income, a significant number have low values of time and/or income, and a small number have either a great deal of money, or time, or both. Who are these people in the different parts of the distribution?

Looking at various characteristics in turn, we find that the following are significantly associated with a high average value on the time-income index:

- being male
- being at either end of the age range (16-29 or 45-64)

- being White or Indian (compared to Pakistani or Bangladeshi – insufficient numbers of other ethnic groups to be able to compare)
- being non-disabled
- living in London, the rest of the South East, or East Anglia (followed by most other regions and countries of the UK, with the exception of the North East which has a significantly lower average value)
- being part of a couple with no children (followed jointly by couples with children and single people without children; lone parents have significantly lower average time-income)
- being in full-time paid work or a full-time student (followed by part-time work, unemployed or long-term sick; people who give their economic activity as looking after family have the lowest average value on the time-income index)
- not being a carer (for an elderly or disabled person)
- having a degree (see Figure 2.6).

Figure 2.6



Some of these characteristics reflect higher resources (human capital in the form of educational qualifications, and not being disabled, for example, or extra time resources because of being in a couple) and we would therefore expect them to be associated with higher values on the index. Others reflect having fewer obligations (not having children, not being a carer), and we would also expect these to be associated with higher values. The association between high values on the index and being male, and being White or Indian appears to reflect the cultural context in which resources and obligations are distributed in society, or, to put it more bluntly, the impact of sexism and racism. Many of these associations were apparent in the case studies analysed at the beginning of this chapter too.

The relationship between economic activity and the time-income index is also interesting. While the preceding analysis indicated that paid work was associated with less free time, it seems that this is outweighed by the association with higher income.

Hence those who are in full-time work are better off than any other economic activity group in terms of the combined time-income index (full-time students are also included in this group, although for them it is a case of plenty of free time but low disposable income). People looking after the home and family have the lowest value on the index because they tend to have little free time as a result of their unpaid work, and low incomes, unless they have a relatively high-earning partner.

Of course, many of these characteristics are also associated with each other. Multivariate analysis is needed to establish whether they each have an *independent* relationship with the time-income index. An Ordinary Least Squares regression confirms that indeed they do, with two exceptions: once all the other characteristics are controlled for, being a carer is no longer significantly associated with a lower value on the index, but being from an Indian ethnic background emerges as a disadvantage relative to being White.²⁶

2.5. Time and income poverty

In policy terms, individuals and families who are at risk of having little free time and/or low disposable income are of particular interest. Defining a poverty threshold on each dimension is one way to facilitate analysis of the 'worst off'. But how are these thresholds to be set? Broadly speaking, there are two approaches in conventional income poverty analysis. One is to set the threshold relative to the distribution (commonly, at 60 per cent of median disposable income), and the other is to set an absolute threshold, defined for example by a 'budget standard' - the income required to purchase a basket of goods and services regarded as the minimum required by different types of family. The relative approach can be applied to the time dimension straightforwardly, by setting the time poverty threshold at 60 per cent of median free time. The application of the absolute approach to time is less clear-cut: what should count as the minimum (free) time required by different types of family? This question is considered in more detail in Chapter 3. This section concentrates on relative measures of poverty in both the income and time dimensions, using 60 per cent of the median as the threshold in each case, with sensitivity analysis presented for lower and higher thresholds.²⁷

Median free time for working age adults in this sample is 44 hours and 30 minutes, so a threshold set at 60 per cent of the median is 26 hours and 42 minutes. Overall, 11.6 per cent of working age adults are time poor according to this measure. The corresponding income poverty rate is 21.7 per cent. This is shown in the central panel of Table 2.1. Fortunately, however, when we look at the overlap between these two groups, it represents only 1.6 per cent of all working age adults. A majority (68.3%) of working age adults are neither time nor income poor, and the remainder are either income poor but not time poor (20.1%) or time poor but not income poor (10.0%).

Naturally, the proportions classified as poor depend on the position of the poverty thresholds. The top panel of Table 2.1 shows results for lower thresholds, 50 per cent of median time and of median income, and the bottom panel shows results for higher thresholds, at 70 per cent of median time and of median income. The estimate of the percentage of the population who are both time and income poor ranges around the central estimate of 1.6 per cent to 0.8 per cent using the lower threshold, and 4.4 per

cent using the higher threshold. This indicates that the joint distribution of time and income is denser just above the central poverty threshold than it is just below the threshold, since more people are brought into the classification 'poor' by moving the threshold up by 10 percentage points of the median than are excluded by bringing the threshold down the same distance.

Table 2.1: Time and income poverty

Using poverty thresholds of 50%, 60% and 70% of free time and of disposable income for working age adults

cell percentages

threshold: 50% median	Time poor	Not time poor	<i>All</i>
Not income poor	5.7	78.3	83.9
Income poor	0.8	15.3	16.1
<i>All</i>	6.5	93.6	100

threshold: 60% median	Time poor	Not time poor	<i>All</i>
Not income poor	10.0	68.3	78.3
Income poor	1.6	20.1	21.7
<i>All</i>	11.6	88.4	100

threshold: 70% median	Time poor	Not time poor	<i>All</i>
Not income poor	14.8	56.2	71.0
Income poor	4.4	24.5	29.0
<i>All</i>	19.3	80.8	100

Table 2.1 reports the percentages of working-age adults in time and income poverty, but we might also be interested in the children who are members of these households. What proportion of children experience the effects of parental time and/or income poverty? The figures are shown in Table 2.2.

Table 2.2: Children in time and/or income poor households

Percentages of all children in income-poor households and households in which at least one adult is time-poor, using 60% median thresholds

Household:	At least one adult in household time poor	No adult in household time poor	<i>All</i>
Not income poor	21.3	43.9	65.2
Income poor	6.7	28.1	34.8
<i>All</i>	28.0	72.0	100

The table indicates that children are at a much higher risk of being in a time and income poor household than the risk faced by working age adults – 6.7% of children compared to 1.6% of adults. This is partly because the presence of children in a household is a risk factor for time poverty, and for income poverty, as analysed in more detail below. The children need looking after (directly or by paying for childcare) and household expenses tend to be higher – meaning increasing paid work hours or having lower disposable income. Overall, 28 per cent of children (nearly one in three) live in households where at least one adult is time poor.

In addition to the proportion of adults and children who can be considered to be in poverty according to various definitions, the severity of poverty is also of interest. Returning to adults, Table 2.3 uses poverty thresholds of 60% of median time and income, and shows the depth of poverty for different sub-groups in the sample. The depth is measured by the gap between the individual's time (or income) and the poverty threshold, expressed as a percentage of the value of the poverty threshold.²⁸ So a gap of 10.0 would indicate an average 10 per cent shortfall below the poverty line for that group.

The top panel in Table 2.3 shows income poverty gaps, which are of course zero among the sub-group not in income poverty. Among the income poor, however, the average shortfall is just over 13 per cent, and there is a slightly bigger gap among those who are time poor as well as income poor (13.6%).

The lower panel in Table 2.3 shows time poverty gaps. Again, the gap is larger among those who are both time and income poor (10.3%) than among those who are just time poor (8.1%). This suggests that when time and income poverty are combined, the severity of time poverty and of income poverty tends to be worse – a 'double whammy'.

Table 2.3: Time and income poverty gaps

Average income poverty gap,
expressed as a percentage shortfall from the poverty line

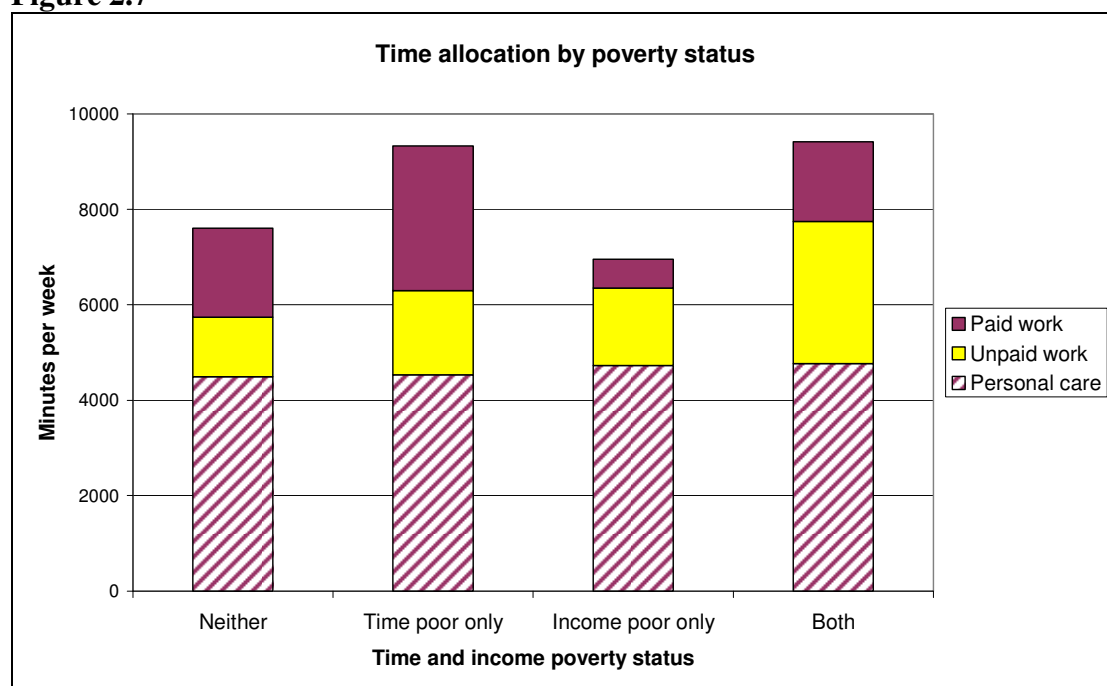
	Time poor	Not time poor	<i>All</i>
Not income poor	0	0	0
Income poor	13.6	13.1	13.1
<i>All</i>	2.0	3.0	2.9

Average time poverty gap,
expressed as a percentage shortfall from the poverty line

	Time poor	Not time poor	<i>All</i>
Not income poor	8.1	0	1.1
Income poor	10.3	0	0.8
<i>All</i>	0.8	0	1.0

The time allocations of the time and income poor are different to those of the non-poor, as shown in Figure 2.7 (using poverty thresholds at 60% median). Personal care time is fairly constant across the four groups, but the total amounts of time on paid and unpaid work, and the balance between them, varies considerably. For example, comparing the time and income poor (labelled 'Both' in the Figure) to those who are time poor only, we can see that although the two groups have similar total committed time, those who are both time and income poor spend a much higher proportion of their time in unpaid work (childcare, caring for others, and so on), while the time poor only do more paid work. This is an important observation, though not surprising: spending a higher proportion of your time in unpaid activities is likely to create a higher risk of income poverty, other things being equal.

Figure 2.7



Those who are neither time nor income poor do more paid work than those who are income poor only, but they do the least unpaid work of all the groups.

Table 2.4 offers a summary of the *composition* of the four groups, concentrating on those characteristics which were found to be significant in the analysis of the time-income index above. A few of the most striking findings are highlighted below. In comparison to the other groups, the time and income poor are:

- much more likely to be female
- more likely to be young (16-29)
- more likely to be from an ethnic minority
- less likely to be in a couple with no children, much more likely to be in a couple with children, and, together with the income poor only, more likely to be a lone parent
- quite likely to be in full-time work

- much more likely to give their economic activity as looking after the family
- together with the income poor only, less likely to have a degree, and much more likely to have no qualifications
- much less likely to live in London.

Table 2.4: Characteristics of the time and/or income poor

	Neither	Time poor only	Income poor only	Time and income poor	All
% male	54	44	49	26	51
% 16-29	27	20	33	37	27
% 45-64	35	28	33	19	34
% White	97	94	91	86	95
% disabled	11	8	22	15	13
% single no kids	11	7	15	6	11
% couple no kids	29	20	19	8	26
% lone parent	7	7	19	21	10
% couple with kids	45	59	29	60	44
% FT work	65	71	15	33	55
% unemployed / LT sick	6	2	23	5	9
% looking after family	4	6	17	41	7
% carer for other adult	14	14	16	11	15
% degree	19	18	9	10	17
% no qualifications	27	27	44	41	31
% London	11	11	13	5	12
% North East	3	5	7	8	4

Table 2.5 shows how the *risk* of poverty varies by characteristic. A higher risk of being income and time poor is significantly associated with:

- being female
- being older (aged 45-64, compared to 16-29)
- being Pakistani or Bangladeshi (compared to White)
- being in a lone parent household or a household of a couple with children
- looking after the home/family (compared to being in full-time paid work)
- having some or significant caring responsibilities
- having low or no educational qualifications, and
- living in the North East or North West, East or West Midlands, South East or South West, Scotland or Northern Ireland (compared to Eastern region).

Table 2.5: Risk of being time and/or income poor, by characteristic
(Row percentages)

	Neither	Time poor only	Income poor only	Time and income poor	<i>N</i> = 100%
Men	71.5	8.7	19.0	0.8†	2185
Women	65.0	11.3	21.3	2.4*	2411
Age 16-29	66.4	7.3	24.2	2.2†	1219
Age 30-44	67.4	13.4	17.4	1.8	1797
Age 45-64	71.0	8.2	19.9	0.9*	1580
White	69.4	9.9	19.2	1.5†	4416
Black-Caribbean	52.9	3.8	37.8	5.5	18
Black-African/other	32.8	21.7	39.9	5.6	19
Indian	45.1	14.4	37.8	2.7	39
Pakistani/Bangladeshi	43.4	6.9	41.9	7.8*	57
Chinese	42.1	44.1	13.8	0.0	7
Other	58.7	5.9	33.1	2.4	37
Non-disabled	69.9	10.6	18.0	1.6†	3983
Disabled	58.4	6.1	33.7	1.9	590
Single no kids	66.4	6.3	26.5	0.8†	455
Couple no kids	77.2	7.8	14.5	0.5	1158
Lone parent	49.2	7.1	40.3	3.4*	478
Couple with kids	70.7	13.6	13.5	2.2*	2131
Other	54.8	6.7	37.5	1.0	374
FT work	80.8	12.9	5.3	1.0†	2455
PT work	70.0	11.7	16.7	1.7	859
Unemployed	41.5	2.0	56.0	0.4	140
Retired	55.4	0.6	44.0	0.0	159
FT education	43.7	0.0	56.3	0.0	171
Looking after home/family	36.4	7.7	46.7	9.3*	361
Long-term sick/disabled	49.8	2.9	46.3	1.1	233
Other	36.0	3.0	59.5	1.5	147
Caring responsibilities					
- none	74.2	7.2	18.1	0.6†	1890
- some	69.4	11.2	18.1	1.3*	1960
- significant	46.3	15.4	31.8	5.5*	746
Qualifications					
- degree or higher	77.8	11.0	10.3	0.9†	729
- vocational higher	72.2	13.7	13.0	1.1	512
- further	70.9	8.7	19.1	1.3	593
- GCSE A-C	71.9	10.1	16.7	1.3	890
- lower	62.8	8.0	26.1	3.1*	303
- none	60.3	8.9	28.7	2.2*	1410
- other	62.3	11.6	24.6	1.5	159

cont'd...

Table 2.5 cont'd...

	Neither	Time poor only	Income poor only	Time and income poor	<i>N</i> = 100%
North East	55.2	10.8	31.0	2.9*	202
North West	66.2	9.5	21.6	2.7*	524
Yorks & Humber	66.4	8.9	23.9	0.8	425
East Midlands	70.3	11.4	17.0	1.3*	443
West Midlands	69.7	9.2	19.4	1.7*	363
Eastern	72.5	11.0	16.2	0.3†	425
London	67.5	9.2	22.6	0.7	349
South East	67.9	13.7	16.3	2.1*	632
South West	72.5	6.9	18.1	2.5*	426
Wales	69.7	8.5	21.0	0.8	200
Scotland	68.7	8.5	21.2	1.6*	504
Northern Ireland	70.5	10.8	17.4	1.3*	103
All	68.3	10.0	20.1	1.6	4596

Notes:

† reference category

* risk of being both time and income poor significantly different from reference category (at 95% confidence level)

As with the analysis of time-income index in the previous section, we can see clearly the influence of resources and responsibilities, and the wider economic and cultural context in these findings. Two of these relationships are illustrated in Figures 2.8 and 2.9: educational qualifications (as an example of the relationship between poverty risk and resources), and child and adult care by gender (as an example of the relationship between poverty and responsibilities, in a strongly gendered cultural context).

Figure 2.8 confirms that higher levels of human capital protect against time and income poverty, as predicted by the model in chapter 1. Although the numbers experiencing time and income poverty simultaneously are fortunately small, there is a strong gradient from 0.9 per cent of those with a degree, to 3.1 per cent of those with below-GCSE qualifications and 2.2 per cent of those with no qualifications. There is also a strong increase in the risk of income-only poverty as the level of qualifications falls, partly as a result of the higher risk of unemployment. The combined effect is a very strong gradient in the chance of being free of both time and income poverty, from 78 per cent of those with a degree to 60 per cent of those with no qualifications.

An index of caring responsibilities can be created by counting the number of children in the household, giving additional weight to younger children, adding information about any other caring responsibilities (such as for elderly relatives) and adjusting to take account of whether there is another adult in the household to potentially share caring responsibilities. Figure 2.9 is based on such an index. 'Significant' caring responsibilities refers to a household in which there is, for example, a pre-school child in a single-parent household, or a baby and an elderly parent in a couple household.

Figure 2.8

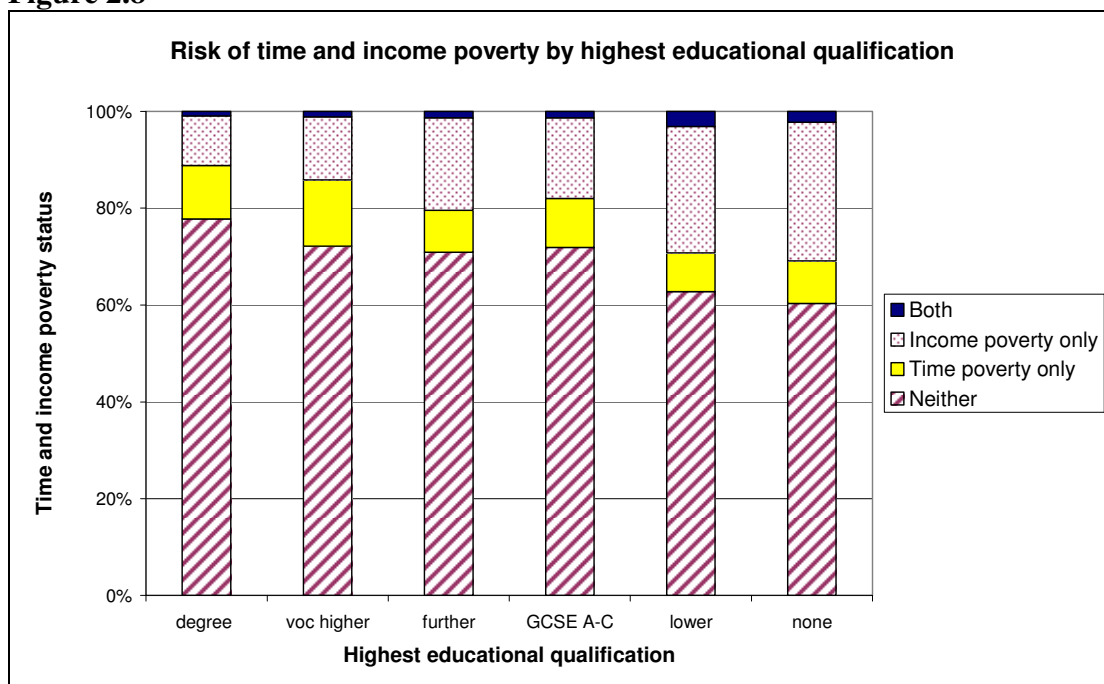
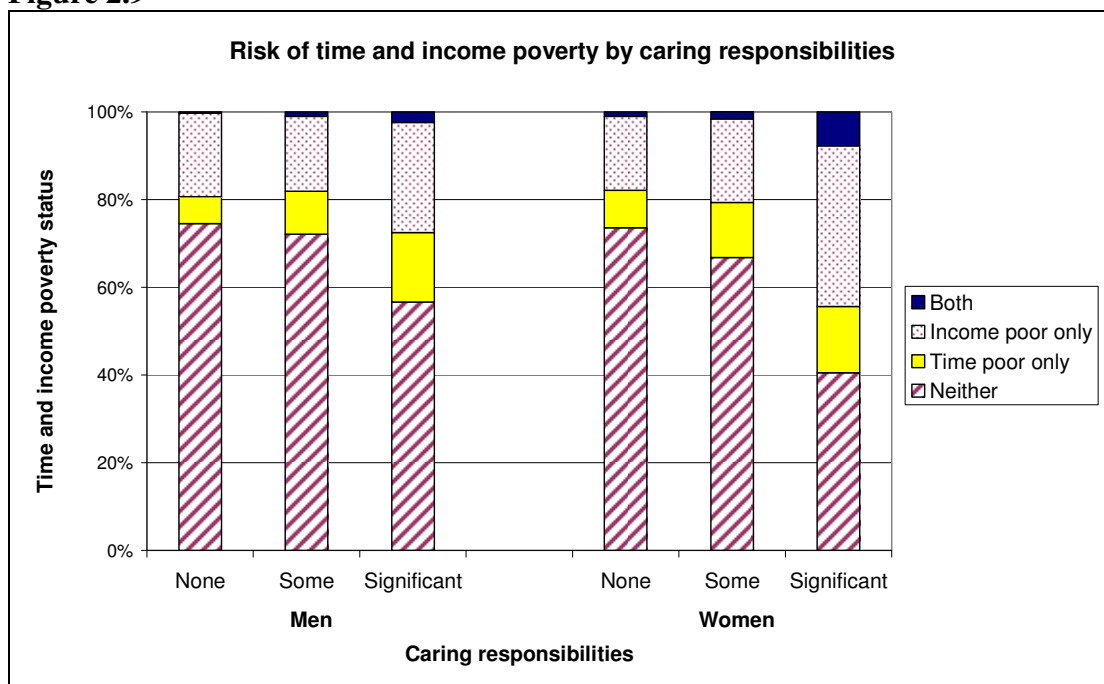


Figure 2.9



As the model in chapter 1 would lead us to expect, those with more substantial caring responsibilities are at greater risk of time and income poverty, and particularly at greater risk of experiencing both simultaneously. The effect is apparent for both men and women but is especially pronounced for women. Only two-fifths of women in households with significant caring responsibilities are free from both time and income poverty compared to over half of men in that situation (40 per cent compared to 57 per cent). The different burdens of responsibility are an important contributor to differences in the risk of time and income poverty.

Of particular concern are the 1 in 3 of the time and income poor who are in full-time work (see Table 2.4; see also analysis in Gardiner and Millar, 2006). Their options appear to be severely limited: attempting to escape income poverty by increasing their work hours will only exacerbate their time poverty, and attempting to escape time poverty by decreasing their work hours or paying someone else to look after the children (for example) will only deepen their income poverty. It is this kind of situation, where time and income capabilities are very constrained, which the analysis in the next chapter is designed to explore in greater depth.

2.6. Summary

This chapter has explored the free time and disposable income which are generated by individuals' and families actual allocations of time to various activities, among the working age population. Free time has been defined as time left over after paid work, unpaid work (including domestic tasks and childcare) and personal care (including sleeping, washing and eating). The distinction between free time and committed time is not how enjoyable it is - people may be bored in their leisure time and very satisfied in their work - but rather the degree to which the individual has discretion over doing the activity in the short term.

Overall, disposable income and free time were shown to be weakly negatively correlated, that is, people with more disposable income tend to have less free time and vice versa. On average, the bottom income decile group have 57h 5m free time per week while the top income decile have only 44h 40m.

Time spent on personal care was found to be more or less constant across income groups, but paid work increases dramatically, both in terms of the proportion of income group who undertake any paid work (from 27 per cent of the bottom decile group to 79 per cent of the top decile group) and the average number of hours they do (36h 30m among those who work in the bottom income group, compared to 49h 53m in the top income group). Conversely, unpaid work hours fall as income rises, from 28h 17m in the bottom income decile group to 18h 59m in the top income decile group. This is partly because of the lower income groups contain more families with children and more disabled people, and partly because the higher income groups are able to use some of their income to substitute their own labour on household tasks with that of other people.

Both the qualitative and the quantitative evidence pointed to the significance of resources and responsibilities in shaping individuals' disposable income and free time. Resources included, crucially, having another adult in the household, being able to call on others outside the household (especially grandparents, but also work colleagues and trade union representatives), and having higher educational qualifications, increasing the financial reward to each hour of paid work. Resources were also strongly influenced by social policy, for better or worse: tax credits were a key feature of many household budgets, and paid leave entitlements were important. On the other hand, unpaid leave entitlements were difficult to use, some out of work benefits were too restrictive in scope, and the right to request flexible working was in

several cases an empty promise, as a result of employers' prevarication and lack of effective external enforcement.

Cultural influences on the distribution and use of resources and responsibilities could be detected in both the qualitative and the quantitative evidence. Women had lower average values on the time-income index than men, as a result of having more caring responsibilities, especially childcare, and access to fewer resources. Qualifications were not translated into the same degree of earning power for some ethnic minority respondents as for the White majority, and this was detectable in the time-income index, with Pakistani and Bangladeshi people at higher risk of a low value on the index, even after controlling for other characteristics.

The Time Use Survey provides a detailed snapshot at a point in time, but the qualitative evidence suggested that there were important dynamics to the trade offs between time and money: several respondents were sacrificing valuable free time to invest in further qualifications, with a view to widening their future job prospects, while others were drawing intensively on social and financial capital, in a way which seemed unlikely to be sustainable in the long term. In some cases, these pressures had led to deterioration in physical or mental health.

The final section of the chapter looked at time and income poverty, using relative definitions of poverty based on a threshold 60 per cent of the median for each dimension. One in nine working age adults have less than 60 per cent of median free time, and one in five have less than 60 per cent of median disposable income. Fortunately, however, the overlap between these groups is small, with only 1.6 per cent of the working age population suffering both time and income poverty (according to this definition). Among this relatively small group, the 1 in 3 who are already in full-time work are of particular concern, since their options for escaping either time or income poverty appear to be limited.

Children are at a higher risk of being in a household affected by time and income poverty. Among children, 6.7 per cent are in an income-poor household in which at least one adult is also time poor. These children are unlikely to be getting either the material circumstances or the parental input they need in order to thrive. A further 21.3 per cent are in households in which at least one adult is time poor, although they are not income poor. Overall, a *minority* of children (43.9 per cent) are in households free of both time and income poverty.

This chapter has concentrated on the allocations of time at which people have arrived – whether by choice or force of circumstance. But as the model presented in chapter 1 showed, a range of other combinations of free time and disposable income may be available to people, if they allocate their paid and unpaid work efforts differently. Perhaps some of those currently time poor could avoid this outcome, without risking income poverty, by reducing their paid work hours or by employing someone else to take care of some of their unpaid duties? Perhaps some of those currently income poor could work longer hours – if they could find an appropriate job - and still avoid time poverty? It is to this kind of analysis that Chapter 3 now turns.

3. Constraints and possibilities: trade-offs between time and money

3.1. Case studies

It was apparent from both rounds of interviews conducted for this study that while all the respondents made decisions about trade-offs between time and money, often exploring different possibilities carefully and with great courage and determination, in the end they rarely felt they had a choice. This seems paradoxical until we consider the very strong social norms under which we all operate. One such norm relates to standards of living. While for one interviewee ‘struggling to make ends meet’ meant not being able to afford her daughter’s cello lessons, for another it meant missing a friend’s birthday party, because she had ‘no clothes that weren’t half worn out’. Although nearly all the interviewees described ingenious ways of making their incomes stretch as far as possible, the standard of living they were seeking to preserve - what they regarded as the basics - varied greatly. Norms relating to care of children were equally strongly felt, and also exhibited considerable variation. For example, one mother of a pre-school-age child said of childminders, “I wouldn’t trust the ones around here with a dog!”, despite the fact that not using paid childcare presented her with considerable scheduling difficulties, juggling paid work and caring for the child. In contrast another mother with a child of the same age was looking forward to increasing her use of a childminder from one to three days a week, ‘for my sanity’. In one sense the norms are subjective constraints, but they are none the less real for that. They are the kind of restriction on a person’s capability set that can be detected in qualitative data but which are much harder to reflect in quantitative analysis.

In addition to strong social norms, there were significant practical and objective constraints for many respondents. These were particularly apparent when comparing round 1 and round 2 interviews, approximately two years apart, for example where circumstances had changed in a way which altered the responsibilities a family had to meet. This is illustrated in the first case study described below. Despite these constraints, many of the interviewees did find a way of changing the allocation of their time to create a better balance between free time and disposable income, even where this was far short of their ideal. This is illustrated in the second case study described below.

Case study four: *‘Penniless but lucky, that’s how we feel’*

At the time of the first interview, Helen, a married, White British mother with GCSE-level qualifications, had a one-year-old son, Kevin. Before maternity she had worked as a receptionist five mornings a week, and she wanted to return to this job for three mornings rather than five, but her employer refused, on the grounds that this arrangement would not be ‘cost-effective’ for the business. Helen was therefore looking for other work.

She had decided against using paid childcare to enable her to work longer hours for several reasons. Firstly, nurseries were expensive - she had calculated that she would be left with £30 a week from 21 hours work, an effective wage rate of £1.43 per hour. Secondly, she felt long hours in a nursery were unsuitable for young children, ‘I’ve

seen the miserable faces of children stuck in nursery 8am to 6pm. It's a real shame'. Childminders were less expensive but, she felt, unreliable. In general, she believed children were a lot happier if they had plenty of time with their parents. Helen's parents had initially offered to look after the baby while she worked, but her father had recently had a heart operation which was not completely successful, so their capacity to help was limited. She thought about three mornings a week would be the maximum she could ask of them.

Helen's husband, Dave, worked a 37½ hour basic week as a maintenance technician in the NHS, bringing home about £300 a week. He took overtime whenever he could, all Saturday and sometimes a half day on Sunday too, to get a bit extra. With Helen not working, they were just about getting by, although Helen commented, 'We've had to put holidays on hold'. They found other ways to economise too: 'I've started walking a lot more – not just for exercise but just really to put a limit on the petrol we're using...Now we have got the time, I do a lot more walking'.

At the time of the first interview, then, the family has just about enough income to maintain what they regard as a reasonable standard of living and although Dave sometimes misses out on seeing Kevin because of his overtime hours, Helen has plenty of time and wants to take some paid work if she can find a suitable pattern of hours. Their circumstances had been transformed by the time of the second interview, two years later, by the arrival of twins. They had just celebrated their first birthday. With three pre-school children, the idea of Helen returning to work had been put on hold for the time being: 'The figures just don't add up for me to work at the moment'.

Their responsibilities have increased significantly, and at the same time resources have reduced. There is less overtime available for Dave now. They are getting tax credits but the amount, Helen says, is 'pitifully low'. She is particularly dismayed that only one 'baby element' is payable for twins, especially since, as she explains, all sorts of costs are greater with twins than with two consecutive babies – only one set of hand-me-down clothes so the other set needs to be bought, a double pushchair rather than two uses of a single pushchair, and so on. In their first few months, they were getting through 280 nappies a fortnight.

The result is that both time and money constraints have tightened drastically. Small pluses and minuses make a big difference. For example, the weekly visit of a 'HomeStart lady', provided by a local charity, is 'fabulous – she's an absolute diamond'. This enables Helen to get some jobs done which otherwise don't get a look in, is a help with dropping off and fetching her older son Kevin from nursery, so that she doesn't have to get the twins in and out of car each time. On the other hand, getting around on foot is now very difficult – there is often insufficient room on the pavement for the double pushchair and Kevin walking beside it, and it is very heavy to push with all three on board. In addition, 'speed is of the essence now', needing to fit in journeys between the twins' feeding times. This meant investing in a larger car, a significant outlay at a time that they could ill afford it. Another time-saving investment was a dishwasher, a birthday present from Dave to Helen which as she describes has 'really made a big difference to our lives'. It has freed up half an hour in the morning and in the evening, previously taken up with washing bottles and doing the dishes, in which they can now play with the children. Even these relatively short time savings are highly valued.

Kevin attends nursery two mornings a week, which at £9 a session is, Helen says, ‘A bit of a squeeze for us’ – an indication of just how tight the family budget is. From the following term Kevin will qualify for a free nursery place (through the nursery voucher scheme) but Helen felt Kevin needed a more stimulating environment with opportunities for messy play, something it is difficult for her to provide at home while looking after the twins and ‘them crawling all over the floor’.

Needless to say, the parents’ sleep, let alone time for themselves, has been badly hit. Helen says she was hallucinating through lack of sleep at one point. She has also put on weight. ‘There’s no ‘me-time’ at all, absolutely not’. But it is not all bad: Helen says they feel, ‘Penniless but lucky’.

Case study five: *‘You have to weigh it all up money-wise’*

The change in Julie’s circumstances between the first and second interviews was largely a result of a decision she took to prioritise time with her son, Ben, aged 3 at the time of the first interview. Julie is a White British single parent living in the Midlands, with CSE-level and some vocational qualifications. When first interviewed, she was working 8am – 4pm Monday to Friday as a team leader in a warehouse, earning a salary just above the Working Tax Credit threshold. Ben’s father had recently stopped paying child support, and this had not been re-instated despite a court case.

Julie was able to work because Ben attended nursery full-time, and a before and after school club, which together cost £141 per week. In addition to the financial costs Julie felt there were costs for the relationship between her and Ben: both were tired when they got home in the evening, so Ben would get upset, and that would make Julie upset (‘sometimes you feel like screaming, you need chill out time - count to 10 in the kitchen, to gather my senses back together’). Nevertheless, they had a routine which mostly worked, and they could get by financially, although ‘It’s like juggling balls sometimes, to be honest, you feel like burying your head in the sand sometimes’.

The first crisis came when Julie’s employer wanted to change her hours to a shift that would not have worked with the after-school club, which has a cut-off of 5.30pm. When Julie explained why this was not possible, her manager suggested she should give Ben a key to the house to let himself in – at the age of 3½! In any case, even if Ben had been older, Julie would not have accepted the idea: ‘He’ll never be a latch key kid’. As a result, Julie was made redundant.

After a short spell in a job which fitted within school hours, but was paid only at the national minimum wage, Julie found a job working as a fundraiser for a charity. Although the hours are 9 – 5 Monday to Friday, she can work from home two days a week, which means on those days she can take Ben to and from school directly. This reduces the cost of out-of-school care and has helped to give them more time together in the mornings and evenings.

This flexibility comes at a cost, however: Julie's basic pay is one-third what she earned in the warehouse. She can supplement this with performance-related-pay if she exceeds her fundraising targets, and she now qualifies for Working Tax Credit, Child Tax Credit and Childcare Tax Credit. Despite this, she is harder up than before, but, Julie says, 'At the end of the day, the biggest thing is to have more time with my son'.

3.2. Applying the model of time and income capability

Julie's position at the time of the first and second interview illustrate two different points in her time and income capability set. In the first, she has approximately £440 per week net income which is reduced to about £300 per week disposable income after paying for full-time nursery and for before- and after-school care. She can just about fit in 8 hours sleep, and Ben is looked after, but Julie has no free time over and above that: her day begins at 6am and finishes at 10pm, with every minute in-between taken up with looking after Ben, travelling to and from childcare and work, work itself, and essential household tasks. By the time of the second interview, her net income has fallen to about £290 per week, but she is purchasing much less in the way of childcare, so her disposable income is around £260 per week. She still has next to no time for herself (apart from a few hours on a Saturday when Ben sees his father), but is happier using a bit more of her time to look after Ben herself rather than working in a less flexible, but higher paid, job to earn the money to pay for childcare.

There are a number of features of this trade-off. Firstly, as discussed in the previous chapter and in the model in chapter 1, the resources someone can command and the responsibilities which they have to meet shape the range of options available to them, within a given economic and cultural context. But within that range, there are a number of variables at the individual's discretion to a greater extent: the number of hours they work, and the extent to which they purchase services (like a nursery place) to meet their responsibilities, or provide the input themselves.

Of course, the degree of choice an individual has over the hours they work is limited – Julie was unable even to persuade her first employer to keep the hours the same, let alone re-arrange them to fit with her needs or preferences – and many jobs come with a fixed shape and size. Similarly, even if someone wants to purchase a service to replace some of their own direct labour, that service may not be available in the right place, at the right time or with the right quality. Helen had not been able to locate any childcare in her area that met her requirements, and this was not uncommon among other interviewees, especially those who had children with special needs. So the computation below of people's time and income capability sets, based on working hours from 0 to 60 a week, and purchase of replacement services from none to the maximum each family could use, should be seen as the best case scenario: the potential range of free time and income available to them, were the services and paid work hours they want forthcoming.

3.2.1. Formalisation

Following the model presented in chapter 1, the free time and disposable income produced by a given allocation of time to paid and unpaid work are a function of the resources and obligations of the household, and the wages (prices) they face. Thus

free time is equal to the original time resource (24 hours per day, 7 days per week, for each adult in the household) plus any additional resources brought into the household (paid childcare, paid domestic services, unpaid help from others, and free state childcare), minus time spent on meeting personal care, childcare and domestic work, minus paid work and journey time. This can be represented (for simplicity, for a single-adult household) by the following equation (1):

$$(1) \quad T_1 = 24 * 7 - U - R - P_1 - J + S + B_1$$

where T_1 is weekly free time, given the chosen allocation 1

U is un-tradeable time, which includes personal care and a minimum of parental input to childcare. No-one else can perform these tasks on the individual's behalf.

R is tradeable time, i.e. unpaid work, which comprises most childcare, all domestic work and all care for other adults

P_1 is paid work time. This is a variable in the model, computed at 0, 16, 30 45, and 60 hours per week.

J is journey time for work and taking children to childcare; it varies by weekly hours of paid work and paid childcare, and by whether the household has access to a car.

S is help provided for free either by the state or by friends and family

B is tradeable time bought, i.e. replacement care or domestic services. It is a variable in the model, computed at 0 and the maximum, as described below.

More precise definitions of these terms are given below when we turn to the operationalisation of this model with UK Time Use Survey data.

B , the domestic and care services which are purchased, can vary between a minimum of 0 and a maximum determined by the budget constraint (which in turn depends on the ratio of the individual's wage rate to the cost of replacement services) and by the tradeable hours constraint (the maximum purchased cannot exceed total tradeable time, R , net of free help provided, S).

The disposable income generated by a particular allocation of time is given by state benefit income (which depends on hours of paid work, among other things), plus total earnings, minus the cost of any services bought, and journey costs. This is represented in equation (2):

$$(2) \quad y_1 = s_1 + (w_p * P_1) - (w_b * B_1) - j$$

where y is disposable income, given the chosen allocation 1

s is state benefit / tax credit income, given paid work hours

w_p is wage rate

w_b is cost per hour of purchased replacement care or domestic services

j is travel costs for work and paid childcare

These equations reflect the model in Figure 1.2 fairly comprehensively, but with some exceptions. On the resources side, human capital is captured in the wage rate, w_p , and social capital is reflected in the help available for free from others (part of S). No

measure of financial capital is included, because it is unclear how to quantify the mechanisms through which this translates into free time and disposable income.²⁹ However, in so far as greater financial capital reduces journey times and costs (for example, through car ownership, or location of residence) this will be reflected in the terms relating to travel, J and j . Public entitlements are summarised in free services from the state and social security (part of S , and s).

On the obligations side, the equations include terms for personal care, childcare, care of other adults, and other domestic work. It does not include terms for maintenance of human or financial capital (for example, training, health-related activities or financial management). This is because it is difficult to ascertain what time is required for maintenance of this kind. Some recognition of the need to maintain social capital is included in the model in so far as S , help received from others, is evaluated net of help *provided* to others. However this is a rough-and-ready approximation, since typically help may be provided at a different stage in the lifecycle than it is received (as for example when grandparents provide childcare, and are looked after later in life by their adult children). The equations also do not include a term for time necessary to sustain state entitlements – for example, jobseeking activity if out of work.

Once again it is important to note that the values of many of these terms depend on the broader social and economic context. However since this context is similar for all members of the sample we are analysing - unlike in Rice and colleagues' (2006) cross-national comparisons - it does not need to be explicitly modelled in this analysis which is principally concerned with comparison between people within the UK.³⁰

We are particularly interested in the maximum free time and disposable income which can be generated, while still meeting minimum obligations. This requires us to define what constitutes minimum obligations for different types of household, and what counts as meeting them.

3.2.2. Definitions of minimum obligations

As in the analysis in the previous chapter, the model is implemented for adults of working age (16-59 for women, 16-64 for men). A further restriction on the sample for this analysis is that the individual is a member of a household with a 'simple' structure, that is, a single adult or a couple, with or without dependent children. This accounts for around three-quarters of households, the remainder being households of parent(s) with grown-up children, and various combinations of related and unrelated adults. This restriction is necessary because of the additional uncertainty about how household responsibilities and finances are, or could be, shared in more complex households.

Absolute and relative definitions

In general there are two ways to define the minimum necessary time and income to meet responsibilities. The first is absolute: defining a minimum with reference to a fixed standard. This is the way in which the US official poverty line is calculated, for example: three times the cost of a basket of food, the contents of which was fixed in 1965. The multiple was determined by the proportion of total income which the poor spent on food (Glennerster, 2000). The second way to define a minimum is relative,

i.e. with respect to the actual distribution in the population of time spent on the activity, or the actual distribution of disposable income in the population.

The advantages and disadvantages of absolute and relative approaches are not necessarily the same when applied to time as when applied to income. In the case of income, it is often argued that unless frequently updated, an absolute threshold fails to reflect that what constitutes an adequate standard of living is determined in part by the surrounding social context: if standards of living in general rise over time, so too does the threshold of adequacy. On the other hand, a relative definition, such as 60 per cent of median income, is arbitrary.

With respect to time, it is comparatively straightforward to make and justify judgements about the minimum necessary for some activities. For example, around 8 hours sleep per night for adults is a common standard; babies and young children need to be supervised at all times (by somebody, not necessarily by the parent, and not necessarily as the supervisor's sole activity), and so on. In this way, an absolute definition of the minimum necessary time to fulfil the responsibilities of a given individual or family can be constructed and justified. On the other hand, some activities have much less clear absolute requirements: what is the minimum time required for domestic work like cleaning, washing clothes and shopping?

Relative definitions of minimum time requirements for various activities imply that how much time you need to spend on a given activity depends on how much time other people are spending on that activity, which is not intuitively plausible for activities like sleep, although it is conceivable with respect housework. In addition, unlike income, time is bounded at the upper end (24 hours a day). This means that relative thresholds like 60 per cent of the median which make sense for income are nonsensical when applied to components of committed time: for example, a threshold of 60 per cent of median personal care (sleeping plus eating, washing and so on) would give a threshold of 6 hours 23 minutes per day, which is less than most people would regard as an adequate night's sleep, let alone fitting in other personal care tasks to that time as well. In many cases, a threshold of 80 per cent of median seems more plausible; this was also the conclusion reached by Goodin and colleagues (2005) for parts of their analysis.

The main results in section 3.3.1 use absolute definitions of minimum income and minimum time. This is because it is clear that many families are obliged to, or choose to, allocate their time in ways which do not allow them to meet their (socially-constructed) obligations, so including these allocations in the *definition* of minimum necessary time and income, as is implied by a relative approach, seems circular and unhelpful. On the other hand, some better-off families purchase goods and services which enable them to spend less time on domestic work and childcare. Since one of the objectives of this analysis is to assess the trade-offs between time and income, it is inappropriate to include the various mixes of time and income families have in fact chosen in the definition of the minimum necessary time on various activities.

Nevertheless, sensitivity analysis using relative definitions of both time and income, and absolute time with relative income, are given in section 3.3.4. Details of the assumptions made to construct both absolute and relative thresholds are given below.

Minimum necessary personal care

Box 3.1: Minimum necessary personal care

Absolute definition: 8 hours sleep + 2 hours eating, washing & dressing
(+ 1 hour if disabled)
= 10h per day if non-disabled, 11h if disabled

Relative definition: 80% of median personal care time, by disability status
= 8h 31m per day non-disabled, 8h 51m if disabled

Sleep is the principal component of personal care time (see Box 3.1). The American Academy of Sleep Medicine (2007) states that most men and women of working age require between 7 and 8 hours of sleep per night. Burton and Phipps (2007) set the minimum requirement at 8h in their analysis, while Vickery (1977) uses 7h 54m. On this basis, 8h seems a reasonable figure for an absolute standard.

For other aspects of personal care, there is less clear guidance. Vickery (1977) uses 2h 18m, which I have rounded down to 2h for the absolute definition here (compensating for the fact that 8h for sleep was at the upper end of the plausible range).

None of the previous studies makes allowance for the additional personal care time required by people with impairments. However, since many impairments make personal care tasks like washing and eating more time-consuming, some impairments require additional tasks to be undertaken (specific exercises, or taking medication, for example), and some are associated with increased fatigue and hence a greater requirement for rest, it seems reasonable to include an additional allowance for this; 1h per day is a 'symbolic' figure.³¹

The relative definition of personal care time, following Rice and colleagues (2006), is set at 80% of median, and this is lower than the absolute definition. The threshold for non-disabled adults of 8h 31m is close to the figure used for all adults in Goodin and colleagues (2005) of 8h8m, which was also derived using a relative approach.

Personal care forms the main component of U – un-tradeable time in equation (1) above. It cannot be performed by someone else on your behalf and is an individual-level requirement.

Minimum necessary childcare

The total minimum necessary time for which children must be supervised is split into three parts: compulsory schooling, parental input, and tradeable childcare. Although in principle all childcare could be purchased (i.e. 24 hours a day for young children), it is assumed under both the absolute and relative definitions that some minimum input by parent(s) themselves is required, given contemporary social and cultural norms.

Box 3.2: Minimum necessary childcare

Absolute definition: hours per day per child

Age	Total supervision required	Minimum parental input	Compulsory school hours	Maximum tradeable childcare
0-2	24	6	0	18
3-4	24	5	0	19
5-9	24	4	5	15
10-12	24	3	5	16
13-14	20	2	5	13
15-16	6	1	5	0

Relative definition: hours per day per child

Age	Total supervision required	Minimum parental input (80% median)	Compulsory school hours	Maximum tradeable childcare
0-2	24	2	0	22
3-4	24	1	0	23
5-9	24	0.5	5	18.5
10-12	24	0	5	19
13-14	20	0	5	15
15-16	5	0	5	0

Starting first of all with the justification for the total hours of supervision required: there is no legal requirement in the UK but the children's charity NSPCC recommends that a child under 13 should not be left unsupervised (for example, alone in the house). In a similar vein, Play England (part of the National Children's Bureau) take the view that 14 is the right age for children to be let out alone, generally speaking. The charity 4Children reports that only one-quarter of parents think that 11-13 year olds are old enough to look after themselves (Buck, 2007). Accordingly, the total number of hours of supervision required for children up to the age of 13 is set at 24. For 13 and 14 year-olds, "a few" hours unsupervised seems to be considered acceptable. This is consistent with qualitative evidence from Noden (forthcoming): the 14 and 15 year olds he interviewed said they would not have wanted to have been left alone when they were younger, and did not want time they currently spent without someone there (around 0.5 to 3 hours on the days when it occurred) to increase. However, other sources suggest that 15 and 16-year olds are generally not considered to require childcare outside school hours. Accordingly, the total supervision required for this age group is set equal to compulsory school hours, plus, for the absolute definition only, a minimum of parental time.

A 35 hour school week for children of compulsory school age is averaged over a 7-day week to produce the figure of 5 hours per day.³² This is common to the absolute and relative definitions.

Exactly how much is the minimum time a child should have with his or her parent is clearly a value judgement, and one which is likely to vary considerably across children and parents.³³ An in-depth study in the 1980s found that mothers estimates of various activities they undertook with or for their children amounted to about 50 hours per week, although some of this could potentially have been substituted by other forms of care (Piachaud, 1984). In the interviews carried out for this study, parents certainly thought there was a minimum, but they found it difficult to put a figure on it, since they often aspired to have more time with their children than they were currently able to do, and it was a case of 'more is better'. These were the responses given by those able to give a figure or a description of the absolute minimum they thought was required:

- 5 hours per day up to the age of 2 (8 hours away from a parent is too much)
- 4 hours per day for a child aged 5, not expected to reduce as he gets older
- 5 hours per day for ages 5 to 7 (all the time before and after school, when not asleep), could be less for older children
- 5 hours per day for ages 5 to 13 (all the time before and after school, when not asleep)
- 2 hours per weekday for a 12 year old, plus 'most of' the weekend.

It is difficult to extrapolate this into a general position, both because of the small numbers and the variation of opinion. The most one can say is that there is support for a minimum of 4 or 5 hours in a central period of childhood, and, for some but not all parents, a view that younger children need more parental input than older children. This is reflected in the figures shown in Box 3.2 for the absolute definition: starting at 6 hours per day for babies, and falling to 1 hour per day for teenagers (this might be helping with homework, for example). Note that the minimum specified here is for the child, and could be provided by either parent, or by a combination.

Because of the uncertainty surrounding this assumption in particular, sensitivity analysis is presented in section 3.3.3 below. Results are computed with a stronger and a weaker assumption: 6 hours per day for children of any age and 1 hour per day for children of any age, respectively.

The relative definition of minimum parental input is based on analysis of the actual time spent by either parent looking after their children (aged up to 14) without doing anything else simultaneously. This might be thought of as 'quality time', although it is not of course the same as the time for which the parent is 'available' to the child, time which might also contribute to the parent's sense of meeting their minimum responsibilities towards the child. In practice parents spend time with their children in a wide variety of ways (Craig, 2005, 2006). The figures given in Box 3.2 are 80 per cent of the median value for households with children, by the age of the youngest child in the household. For 10-14 year-olds, 80 per cent of the median amount of dedicated parental time per week (32 minutes) was so small when split between 7 days that it was rounded down to zero.

The maximum tradeable childcare hours, i.e. childcare that may be purchased, provided for free by someone else, or provided directly by a parent, is the residual: total supervision, minus minimum parental input, minus school hours. This is common to the absolute and relative definitions.

The extent to which different forms of childcare can be simultaneous with other activities is discussed below.

Minimum parental input to childcare forms part of U – un-tradeable time. Schooling forms part of S – state help provided for free. Tradeable childcare forms part of R – tradeable time.

Minimum necessary domestic work

Box 3.3: Minimum necessary domestic work	
Absolute definition:	
Household type	hours per week per household
Single adult, no children	12h 35m
Couple, no children	31h 52m
Lone parent	21h 10m
Couple with children	33h 39m
Relative definition:	
Household type	hours per week per household
Single adult, no children	6h 48m
Couple, no children	20h 16m
Lone parent	18h 48m
Couple with children	26h 48m

It is not obvious what the minimum necessary domestic work is in an absolute sense. Vickery (1977) suggested between 30 and 55 hours per week, depending on household composition, for food-related activities, house care, care of clothing, shopping and household management. However, given the changes in domestic economy since 1977, these estimates do not provide much of a guide. Instead, the figures for the absolute definition were based on the average (mean) time spent on domestic work by households which receive neither free (informal or state) nor paid-for domestic assistance and are around the income-poverty line.³⁴ This sub-sample was used to define the minimum in order to avoid the circularity inherent in basing a minimum on a distribution which includes those who have chosen to replace their time with purchased services, as discussed at the beginning of section 3.2.2.

Naturally, households who neither buy nor receive free assistance spend longer on than the average of all households on domestic tasks. It also appears to be the case that poorer households tend to spend longer on domestic tasks than richer households, perhaps because the latter have a greater number of time-saving gadgets such as dishwashers and freezers, and are likely to shop by car and less frequently (budgeting on a monthly rather than a weekly or daily basis).

The relative definition of minimum domestic work is calculated as 80 per cent of the median time actually spent on domestic work for all households (Box 3.3). This gives results fairly close to the estimates of Goodin and colleagues (2005), also based on a relative definition, of between 5h 17m and 11h 29m for single adults without children, between 6h 32m and 11h 13m for couples without children, between 10h 25m and 25h 45m for lone parents, and between 13h 8m and 28h 16m couples with children.

All domestic work is assumed to be tradeable, and therefore forms part of R. It is defined at a household level.

Minimum necessary care for other adults

The data do not allow us to identify whether people have friends and relatives for whom they could in principle provide care, but for whom they are instead employing care services, or leaving them to cope on their own. Thus our measure of care for other adults is based on recorded activities rather than an assessment of potential obligations. The minimum necessary is defined simply as the care which is actually being provided, within or outside the household, and it is the same for the absolute and relative definitions.

The distribution of time spent caring for other adults is highly skewed, with two-thirds of working age people living in households in which no care for other adults is provided, but 5 per cent of people living in households in which more than 14.5 hours per week (870 minutes) is provided. The mean is 155 minutes per week.

All care for other adults is assumed to be tradeable and is therefore included in R. This assumption is probably too strong; most carers have a relationship with the person they care for which cannot be perfectly substituted by another (paid) individual. Just as with childcare, a minimum component of care for other adults probably needs to be provided by the carer him/herself. However, this is likely to vary enormously across particular relationships and there is no way of assessing its magnitude in these data.

Journey time to work and childcare

Average journey to work times are calculated depending on whether part- or full-time work is undertaken (16-29 hours, or 30+ hours per week) and whether the household has access to a car. The population density of the area in which the individual lives was also included in the estimates initially (as a proxy for urban / rural), but it proved not to be a significant determinant of travel time. If anything, those in denser areas appeared to have longer journey times. For full-time workers with a car, average weekly journey time was 4h 59m; those without a car spent an additional 46m per week on average.

Surprisingly, average weekly travel to part-time paid childcare (16-29 hours per week) was longer on average than to full-time childcare (30+ hours per week). The means were 3h 35m and 3h 10m respectively. It could be that a higher proportion of full-time childcare is provided at or near the parent's place of work, in which case travel time would be counted as travel to work rather than travel to childcare (to avoid double-counting).

Journey times are the same for the absolute and relative definitions.

Simultaneity

One significant complication is the fact that various activities can be carried out simultaneously. Moreover, the extent to which an activity can be simultaneous with another may depend on who is doing it.³⁵ In general, it was assumed that *with the exception of most childcare*, any unpaid or paid work could not be simultaneous with other activities contributing to committed time (other unpaid or paid work, or personal care). Unpaid work or childcare could be simultaneous with leisure, but is still counted as unpaid work or childcare time. More precisely, the following assumptions were made:

- paid work cannot be simultaneous with any other activity;
- personal care, domestic work, and care for other adults cannot be simultaneous with each other, but each can be simultaneous with some childcare (see below);
- minimum parental input to childcare can be simultaneous for all children in the household, but not simultaneous with any other activity;
- all other childcare can be simultaneous with personal care, domestic work, or care for other adults;
- any childcare provided by parents can be simultaneous for all children in the household;
- any childcare which is purchased must be provided per child, per hour.

This means that the computation of R – tradeable time, including all domestic work and care for other adults, and some childcare – is complicated, because if it is actually purchased (B), it needs to be paid for hour by hour, whereas if it is met directly through unpaid work, some elements can be carried out simultaneously.

Free time in single adult and couple households

Single adult households are relatively straightforward, because there is no need to make an assumption about who is undertaking household tasks.³⁶ Couple households are more complicated. Firstly, time allocation decisions are interdependent (my partner's decision to go out to work means either I have to look after the children or we find or pay someone else to do so), and secondly, free time may be distributed more or less equally within the household.

The first of these complexities is taken into account in the way that the components of equations (1) and (2) above are calculated for couples. The second is reflected in a range of assumptions about intra-household sharing of free time, explored in section 3.3.2 below. The main results make the assumption of an egalitarian household, in

which the allocation of unpaid work is made so that any available free time is shared as equally as possible between the two adults. (This may not result in identical amounts of free time because paid work, journey to work, and personal care time are all inalienable to the individual.) The alternative assumptions are represented by the ‘master’ and ‘slave’ scenarios: in the ‘master’ scenario, the individual does his or her own paid work (which is a variable in the model), any associated travel, and his or her own personal care, but none of the household tasks such as childcare or domestic work; his or her partner is the ‘slave’ who is left with all the household tasks, and his or her own inalienable tasks.

3.2.3. Calculation of resources and wage rates

Help received from others and from the state

(a) Services

The TUS asks respondents whether they or anyone else in the household has received help in the last 4 weeks with a range of activities:³⁷

- food preparation
- cleaning, tidying up
- ironing clothes
- shopping or errands
- care of elderly or sick
- repairs and construction
- vehicle servicing (car, bikes, etc.) including car repair
- working in the garden
- watering plants
- taking care of pets
- transport or removals
- household accounts
- window cleaning
- cleaning the car
- any other

TUS also asks how often, for how long, whether this was as part of the helper’s normal paid work, and whether or not the household paid for the help.³⁸ Together, these questions provide rich information on the informal assistance received by households (i.e. not paid for and not part of the helper’s normal paid work), and on the free formal assistance received (i.e. not paid for but part of the helper’s normal paid work). The latter is for convenience referred to as help from the state (for example, social services), although it could also include help from voluntary organisations.

The distribution of informal help received is highly skewed. 90 percent of working age adults live in households in which no help of this kind is received. For the remaining 10 per cent, the median is 2 hours per week, but the mean is 8 hours per week. The mean for the whole sample is 50 minutes per week.

As with the help provided *by* the household to other adults, it is assumed that the help received is the same as the potential for this kind of assistance, i.e. all social capital is being drawn on. This is not likely to be the case, but an exploration of the dynamics of social capital itself lies outside the scope of this research.

The distribution of help from the state is even more unevenly distributed, as one would expect. 98 per cent of working age adults live in households in which no help of this kind is received, but for the remaining 2 per cent, the assistance can be very significant. The median for those who receive some help is 4 hours per week and the mean is 14 hours per week. The mean for the whole sample is 15 minutes per week.

Once again, it is assumed that the household is accessing its full entitlement to free state services. This is not realistic but an estimate for take-up of social services is not available. Paid-for services, whether formal or informal, are not included here, as they are part of B – purchased services – which is one of the variables in the model.

In addition, some households received free formal and informal help with childcare. This is recorded in a detailed set of questions about childcare arrangements for all children in the household aged 0-14, per hour per child. The total unpaid childcare hours received by the household is calculated (excluding compulsory school hours).

Total unpaid childcare, informal help, and free formal help received by the household are the components which together make up S – help received from state or friends and family. It is defined at the household level.

(b) Social security, tax credits and taxation

The state may also provide assistance in the form of income, through social security and tax credits. The benefits and tax credits system is highly complicated, with eligibility and rates of payment depending on literally hundreds of characteristics, and take-up is imperfect especially for means-tested benefits. For this reason, rather than attempting to create a full tax-benefit simulation model for the TUS sample, estimates of the incomes of households with no earnings were made using the Households Below Average Income (HBAI) dataset, based on the Family Resources Survey. Out-of-work incomes were then imputed to the TUS sample, based on household composition (number of adults and number of children) and whether any member of the household was disabled. The range was £127 per week for a single non-disabled person with no children, to £279 per week for a couple household including a disabled person and three children (in year 2000 prices).

In equation (2) above, this is s – state benefit income, which depends on hours of paid work. It is defined at the household level.

The incomes of households with earnings are also affected by the tax-benefit system: positively by tax credits and in-work benefits such as Child Benefit, and negatively by income tax and National Insurance Contributions. Effective marginal tax rates vary by household type, level of earnings and hours of paid work (because tax credits have hours-related thresholds). The effect of the tax-benefit system was therefore estimated by regressing total net income on gross earnings for different household types and different hours of paid work, using the HBAI dataset.³⁹ Net incomes were then

calculated in the model in TUS, using these coefficients and varying by hours of paid work and household type. However, as the reliability of these estimates is perhaps doubtful, the main analysis below uses gross earned income, net of costs like childcare and other purchased services, to make consistent comparisons between individuals within the model.

Wage rates

(a) Own wage rate

Wages are observed only for those individuals actually in paid work, whereas the model requires us to estimate wages for all individuals so that their potential time and income - their capability set - can be evaluated. Attributing the average observed wage of those in work to those out of work would be misleading, firstly, because the characteristics of those in and out of work differ in ways we might expect to be related to their earning potential, and, secondly, because being in work is itself likely to be related to the wage you can command. This is known as selection. Fortunately, a technique which is commonly used in labour economics is available to get around this problem: the Heckman selection regression.⁴⁰ This estimates the probability of being in work, and then estimates the wage, conditional on being in work, with coefficients corrected for the selection effect. The coefficients derived in the second stage can then be applied to the whole sample, in and out of work, to give a consistent estimate of earning potential.

In order to make the estimates more robust, the regressions were run using a larger survey than TUS and one that is designed to measure earnings and employment, namely the Labour Force Survey.⁴¹ Regressions were run separately for men and women because the relationship between personal characteristics, employment and earnings remain very different for the two sexes. In addition, for women, separate selection and wage equations were run for full-time and part-time earnings. There were insufficient cases of part-time work to estimate this separately for men. For men, the equation estimating the probability of being in employment included: whether he has a partner; is disabled; ethnicity; unemployment rate for the postcode sector in which he lives; highest educational qualification; age and age-squared. For women, the variables were the same, with the addition of the age of the youngest child in the household.⁴² For each sex, the earnings equation included the selection correction, highest educational qualification, age and age-squared, whether disabled and ethnicity.⁴³

Finally, the coefficients from the earnings equations were used to compute potential wages (separately for men and women, and differentiating between full and part-time wages for women) for the TUS sample.

Table 3.1: Observed and estimated potential hourly wages in TUS sample

	Observed hourly wage (for those in work)	<i>N</i>	Estimated potential hourly wage (all)	<i>N</i>
Men – full-time	7.52	1721	9.19	3188
Women – full-time	6.22	1116	7.10	3554
Women – part-time	9.35	863	6.33	3554

As can be seen from Table 3.1, observed hourly wages in TUS do not give a particularly good guide to potential wages, as estimated in LFS for individuals with the same characteristics. In particular, the observed part-time wage for women in TUS is surprisingly high, suggesting either a very significant selection effect and/or measurement error.

The estimated potential wage rates provide the value for w_p in equation (2) above.

(b) Costs of replacement care

There are a wide range of goods and services individuals and families can buy to save time (Piachaud, 2008). For the purposes of the analysis here, this simplified to the costs of buying services to replace the individual's own domestic and care work. The cost of buying in domestic services and care for other adults is estimated from the wages observed in the sample of people in those occupations. There are 149 individuals in the sample with the Standard Occupational Code (SOC) for cleaners and domestics (9233), and their mean wage rate is £4.99 per hour (in year 2000 prices). There are 114 individuals in the sample with the SOC for care assistants and home carers (6115), and their mean wage rate is £4.98 per hour. For childcare, costs vary widely by type of childcare and age of child.

Table 3.2: Paid childcare costs, £ per hour per child

Age of child	Weighted average cost
0	2.39
1	2.83
2	2.78
3	2.30
4	2.45
5	2.27
6	2.59
7	2.39
8	2.39
9	2.89
10	1.27
11	1.59
12	0.46
13	2.01
14	0.19

Fortunately, TUS contains detailed information on the use of different forms of childcare, for different ages of children and whether payment was made. However, it does not contain information on costs. Costs per hour by type of childcare were taken from the Department for Education and Skills childcare survey (Bryson et al, 2006), adjusted for inflation and regional differences in price. An average cost by age of child was then calculated, weighted by the types of *paid* childcare used by parents in TUS for that age of child. This produces a rather uneven spread, as shown in Table 3.2. Few households used paid childcare for older children and very young children, so the estimates are based on relatively small numbers. The figures may be thought to be low in general. This is because they include, in due proportion, all types of childcare for which any payment is made, including for example after school clubs, local authority playgroups, and babysitters, where payments may be fairly low.

Finally, for each household, the costs of replacement domestic services, care for other adults, and paid childcare are combined into a single weighted average, reflecting that household's demand for the respective services. This figure is the term w_b in equation (2) above.

This completes the description of the application of the model of time and income capability to the Time Use Survey. The next section presents the main results.

3.3. Time and income capability

3.3.1. Main results

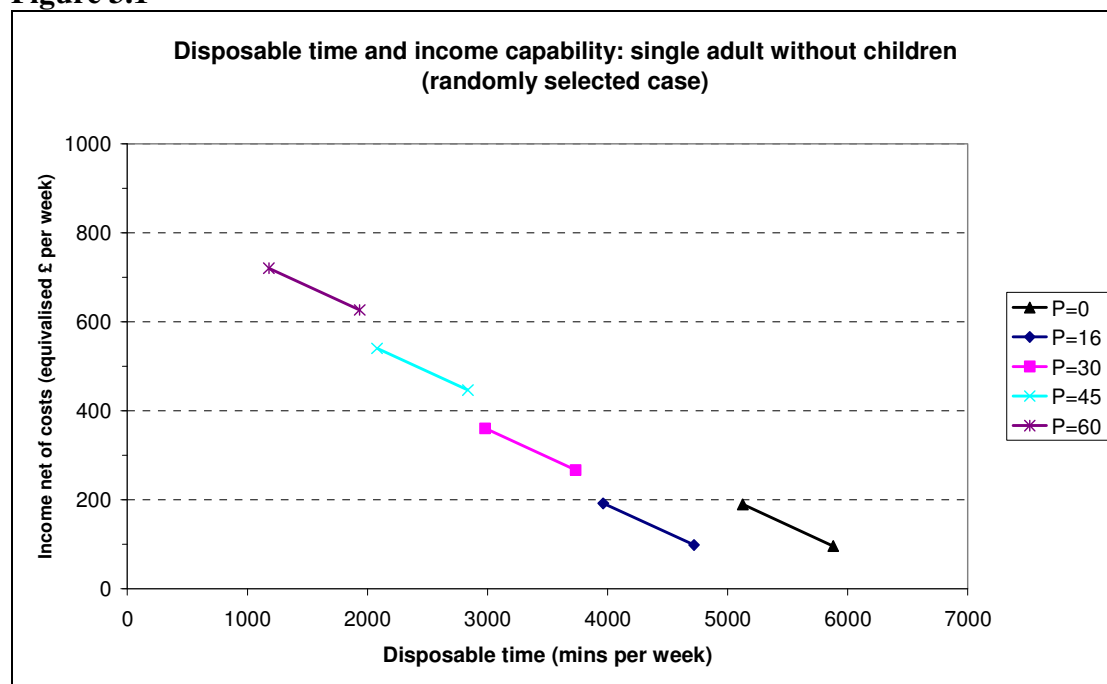
Individual examples

For each adult, the free time and income which would be generated by different allocations of time to paid and unpaid work, given his or her obligations and other resources is calculated. For single adults, the time and income consequences of paid work at 0, 16, 30, 45 and 60 hours per week are calculated, and for members of a couple, the consequences of working these hours in combination with a partner working any of these hours. At each level of paid work, anything between zero and the maximum possible number of hours of 'replacement' services (domestic, childcare or care for other adults) may be purchased.⁴⁴ For the main results, the minimum responsibilities are defined in absolute terms, and couples are assumed to distribute free time within the household in an egalitarian fashion. Incomes are gross earnings (or benefits) net of costs.

As an illustration, results for a 'typical' case of a single adult selected from the dataset are shown in Figure 3.1. The horizontal axis is free time in minutes per week and the vertical axis is income in equivalised £ per week (year 2000 prices, using modified OECD equivalence scale). Each line segment is for a different value of paid work hours, P , as shown in the key. In general, fewer hours of paid work means lower income and more free time, so the line segment at the bottom right is the one corresponding to no paid work. There is a disjunction between the line for $P=16$ and $P=0$ because for the latter, income comes from social security, rather than from earnings. In the absence of social security, income would be zero when $P=0$.

In general, purchasing replacement services increases free time and decreases income, so the point towards the top left of each line segment represents 0 replacement hours purchased ($B = 0$) and the point towards the bottom right represents the maximum number of hours purchased ($B = \max$). However, this is not always the case: if the costs of replacement care per hour are higher than the hourly wage earned per hour, or with particular configurations of responsibilities (see section on *Simultaneity* above), purchasing services may reduce free time as well as income, and would therefore usually be an unattractive option in these circumstances.

Figure 3.1



A continuous line joining the line segments in Figure 3.1 represents the maximum extent of this individual's time and income capability and the area to the left and below this line represents the individual's time and income capability set (although some combinations may be regarded as unfeasible – an issue discussed further below).

The individual in Figure 3.1 was chosen from the single adults without children in the dataset, to provide a fairly simple example. Figures 3.2 to 3.6 show individuals chosen for particular characteristics, to illustrate the ways in which resources and responsibilities shape people's capability sets.

Figures 3.2 and 3.3 contrast a high wage and a low wage individual, neither of whom have any caring responsibilities. Figure 3.2 has a degree, and an estimated full-time wage rate of £16.10 per hour. Figure 3.3 has no educational qualifications and an estimated full-time wage rate of £4.34 per hour. We can immediately see that Figure 3.2 has a far greater range of time and income possibilities than does Figure 3.3. The difference arises because the steps between the line segments in Figure 3.2 are greater: each additional hour of paid work generates more income. Even if Figure 3.3 works 60 hours a week, he only generates an income of around £389 a week (compared to £1442 for Figure 3.2), and that leaves him with 2h 48m free time per

day for a seven day week. He can choose to have an additional 1h 45m per day or so for himself by purchasing replacement services, but of course this reduces his disposable income, to £295 per week.

Figure 3.2

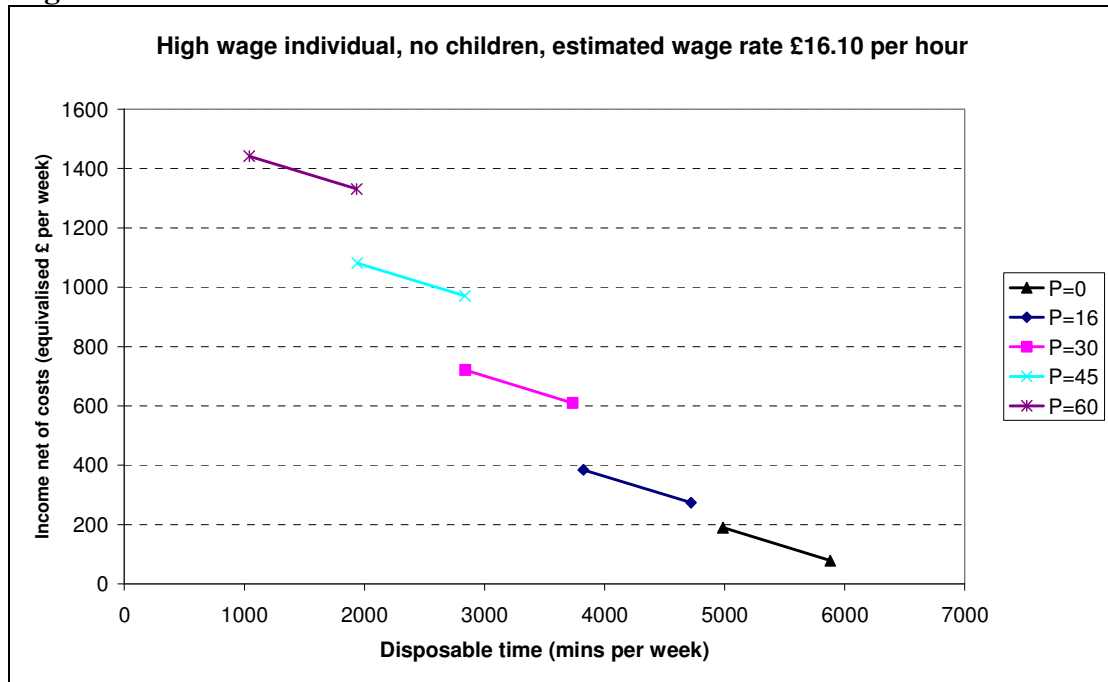
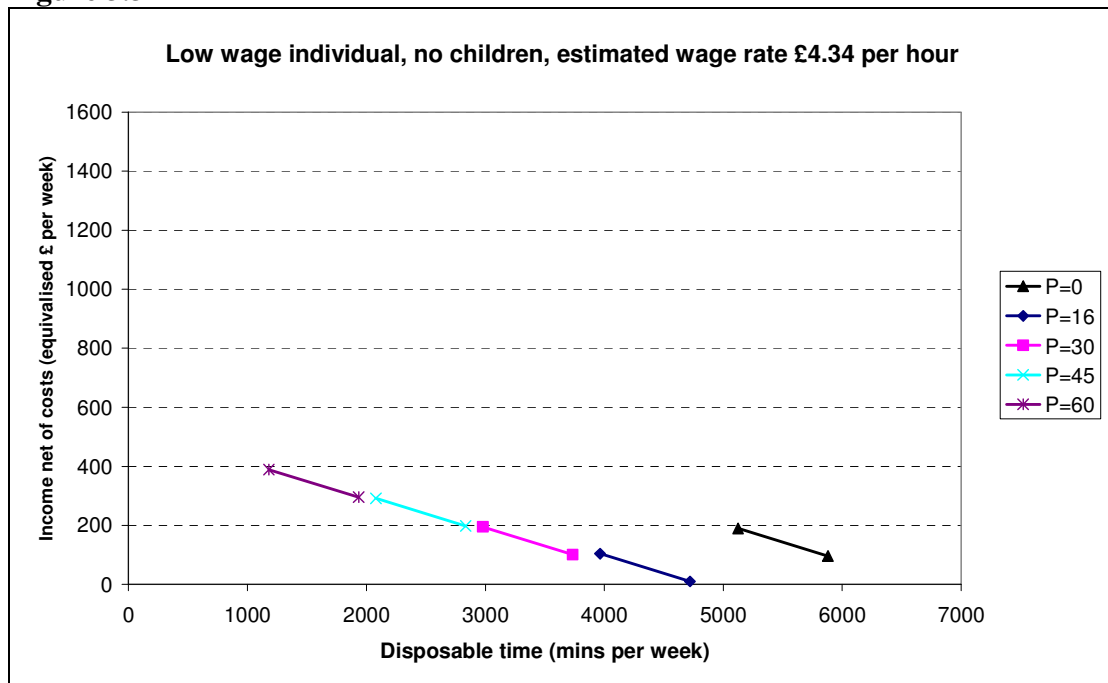


Figure 3.3



Figures 3.4 and 3.5 have similar wage rates, but different caring responsibilities – Figure 3.4 is on her own while 3.5 is a lone parent with two children aged 7 and 10. The lone parent has much less free time to start with, and her earnings only slowly increase her income, because she has to pay for childcare if she works outside school hours. Once she is working full-time, her wage rate increases (from the estimated

part-time rate of £6.22 per hour to the full-time rate of £7.64), and she is able to pay for childcare and still have a reasonable amount left over. However, this is at the cost of ‘negative’ free time, in other words, she does not have enough time for the minimum personal care, domestic tasks and so on, as defined using the absolute definitions above. By contrast, the woman in Figure 3.4 can keep the financial returns to her additional hours of work, without incurring time poverty.

Figure 3.4

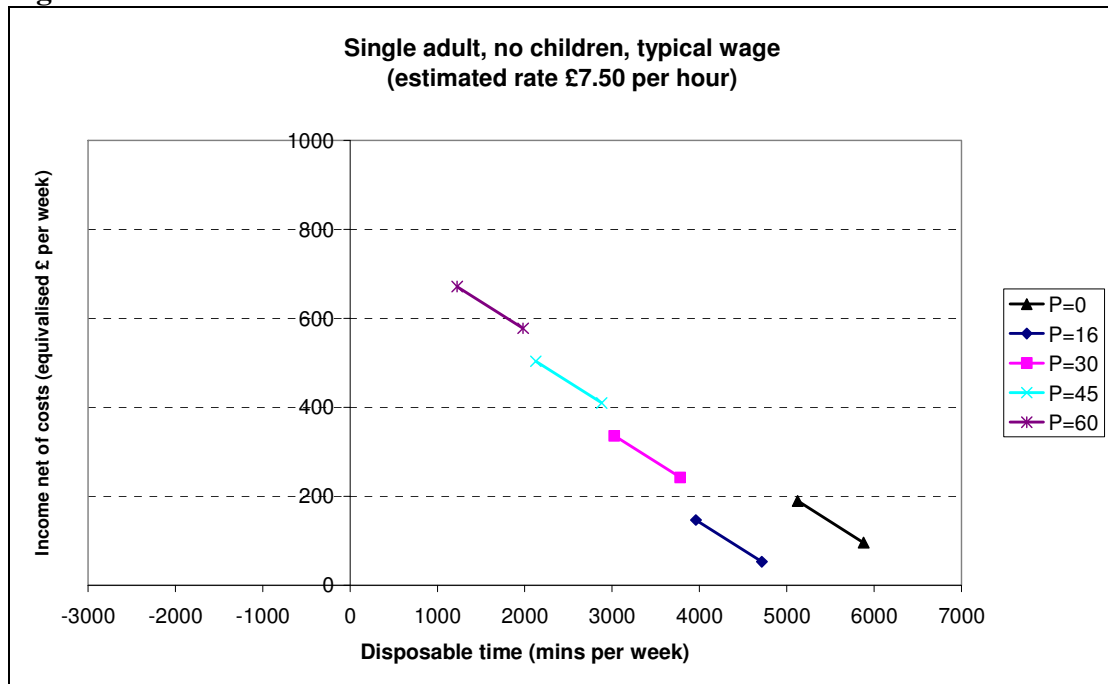
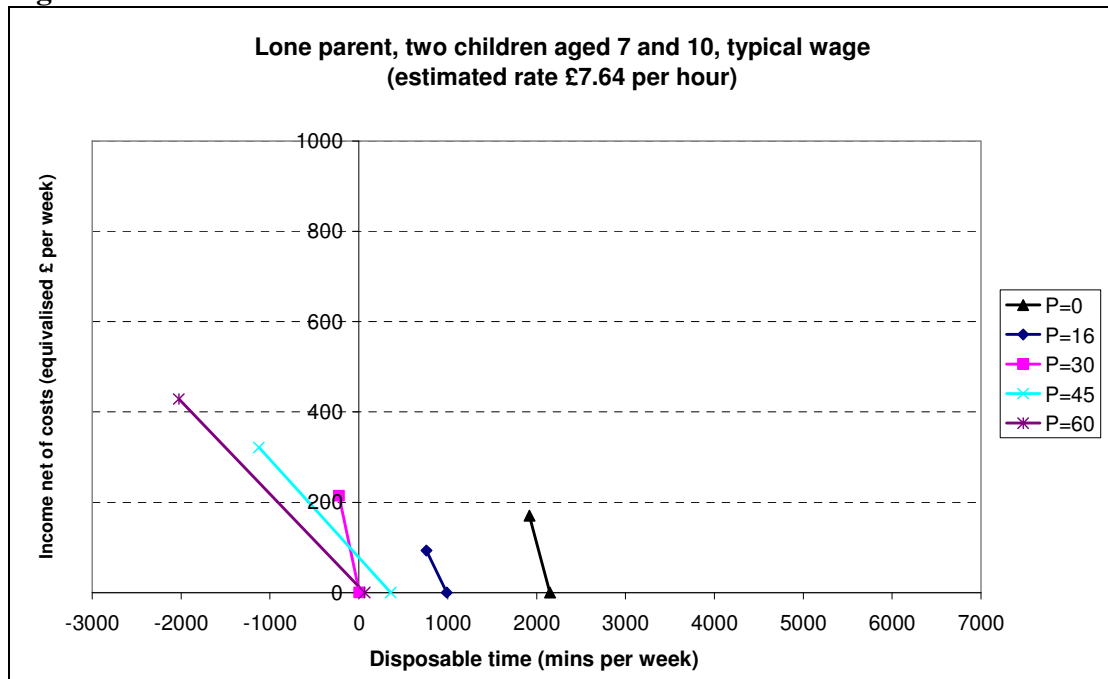
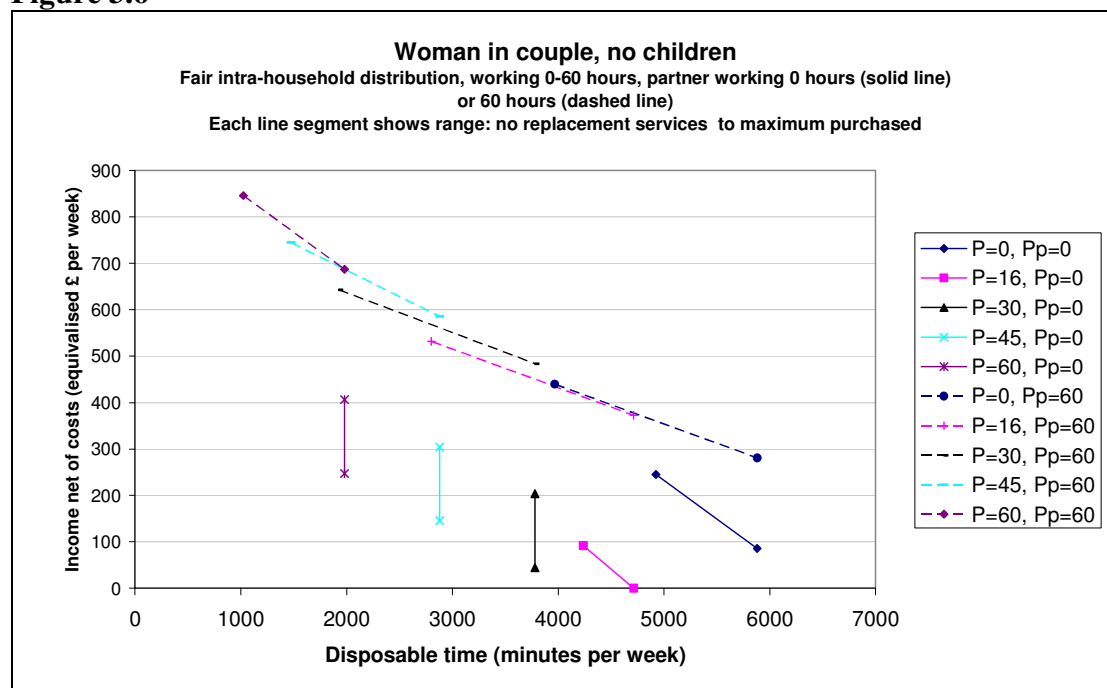


Figure 3.5



So far, the figures have illustrated cases involving single adults, with or without children. Figure 3.6, the last in this series, is for an individual who is part of a couple. Again each line segment represents a different number of paid work hours, this time including her partner's hours as well as her own. The dashed lines are where the individual herself is working between 0 and 60 hours and her partner is working 60 hours, the solid lines are where the individual herself is working between 0 and 60 hours and her partner is not working at all. Within each line segment, one end represents the situation in which no replacement services are purchased (usually top left end) and the other represents the consequences of purchasing maximum services (bottom right). Naturally, if her partner is not working, her (equivalised) income is lower – the solid lines are below the dashed lines. Since these calculations are on the basis of an egalitarian distribution of free time within the household, whether or not her partner is working makes a substantial difference to her own free time, too. Increasing her paid hours when he is not working does not have as negative an impact on her free time as when he is working, and purchasing replacement services when he is not working rarely buys any additional free time at all.

Figure 3.6



Of course, couples may well not take this kind of approach to distribution of tasks and free time. Section 3.3.2 below explores some alternative scenarios for couples.

Feasible allocations and a time-income capability index

Figures like those in the previous sub-section help to visualise the relationships between time and income and the role of resources and responsibilities in shaping them. But we also want to be able to summarise and make more systematic comparisons between people with different characteristics and circumstances. Who has a larger time and income capability set and who has a smaller one?

To answer this question we first of all need to decide whether all time and income coordinates are to be considered feasible or whether some should not count as part of

a person's capability set. This issue was raised in Chapter 1 in discussion of the model of time and income capability. For example, in Figure 3.5, the points associated with paid work of 30 or more hours without purchasing replacement services leave the individual with negative free time: she cannot meet her minimum obligations. On the other hand, if she works these hours and purchases replacement services (primarily paid childcare in her case), she can just meet her obligations in terms of time (leaving her with between 0 and a few minutes of free time per week), but only by spending all of her income. This is also not feasible: she would have nothing with which to pay the rent, purchase food or provide any of the other basic necessities for her family.

Accordingly, we need to define a threshold for each dimension, such that if an allocation produces time or income below the threshold, it is deemed an unfeasible allocation. Effectively, this moves the x and y (time and income) axes in the Figures; a measure of time and income capability can then be calculated as the area bounded by the repositioned axes and the time-income capability boundary created by joining the outermost points of the line segments.⁴⁵

Where should the feasibility thresholds be set? In the first instance, the time threshold is set at 0. This means that any allocation which prevents the individual from meeting his or her minimum obligations is deemed unfeasible, but it does not allow for any free time above this minimum – no time for leisure activities, or to pursue individual goals and objectives such as spending more than the absolute minimum time on looking after the children. For income, the threshold is set at the (absolute) poverty line in the first instance, based on a budget standard definition of minimum income for families of different compositions (Box 3.4).⁴⁶ As for the time threshold, this should enable an individual to meet his or her minimum obligations, but does not leave any room for extras.

Box 3.4: Income feasibility threshold, by household type

	£ per week in year 2000 prices
Single no children	116
Couple no children	159
Single with children	116 + 35 per child
Couple with children	159 + 31.5 per child

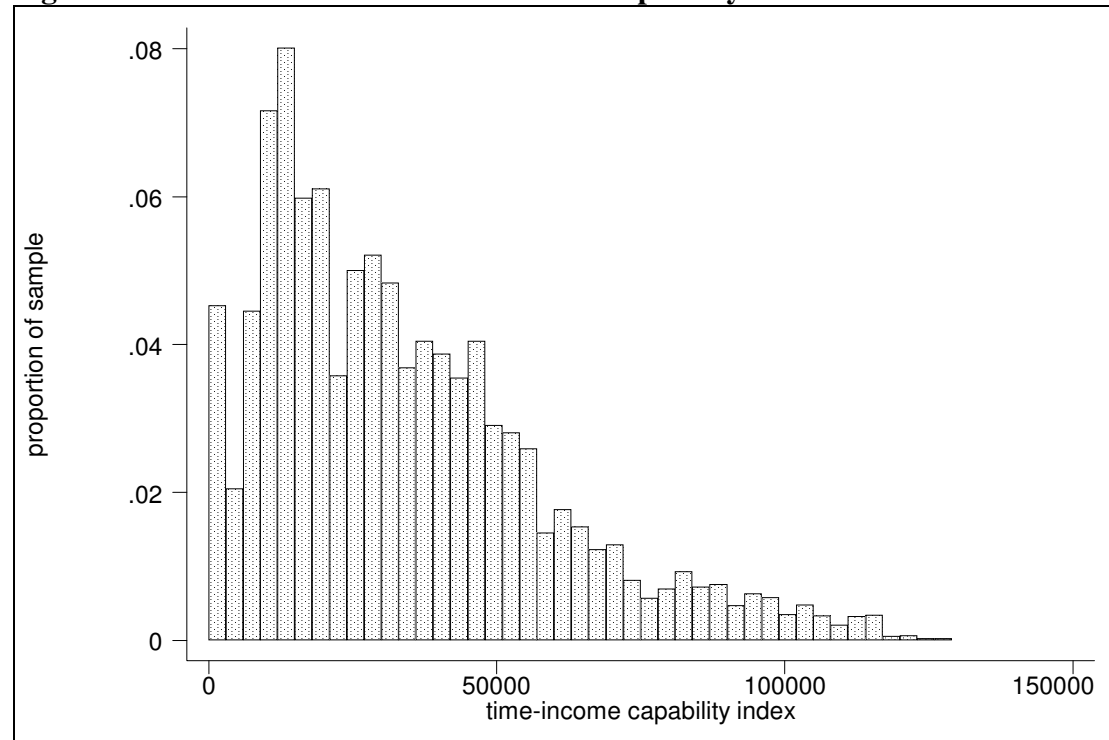
(derived from Family Budget Unit 'low cost but acceptable' minimum income standard: Parker, 1998)

Using relative definitions of time poverty and income poverty (for example, 60% of median free time and of disposable income) would be an alternative way of setting the feasibility thresholds. This is explored in section 3.4 below when we turn to classifications of time and income poverty.

The time-income capability index is the capability equivalent of the time-income index constructed in chapter 2. The index in chapter 2 was based on actual free time and disposable income – i.e. a single point in the time-income capability set - whereas the capability index includes the full range of time-income combinations which an

individual can generate by working different numbers of hours and purchasing different amounts of replacement services, while still meeting minimum obligations.⁴⁷ Figure 3.7 shows the distribution of the index. The value of the index is the area of the time-income capability set so the units are £ hours per week, although this is informative only by comparison with other values on the index.

Figure 3.7: Distribution of the time-income capability index



The first thing to note is that 2.4 per cent of people of working age in the TUS sample have *no* feasible allocations in their capability set at all: however many hours they work and however much unpaid work they do or services they buy, they cannot secure an income above the absolute income poverty line and meet their minimum responsibilities.

Secondly, the distribution is highly skewed. Over two-thirds of the sample have values below the mean (33,921), and there is a long upper tail.

Looking at various characteristics in turn, we find that the following are significantly associated with a high value on the time-income capability index:

- being male
- being at the top age range (45-64)
- being White or Indian (compared to Pakistani or Bangladeshi – insufficient numbers of other ethnic groups to be able to compare)
- being non-disabled
- having a partner
- being without children, or having only older children (pre-school children associated with lowest values on the index)
- having a degree

- living in the North West, East Midlands, East Anglia, London, the South East, the South West, or Scotland (compared to living in the West Midlands).

Two of the stronger associations are illustrated in Figures 3.8 and 3.9: educational qualifications and number/age of children respectively.

Figure 3.8

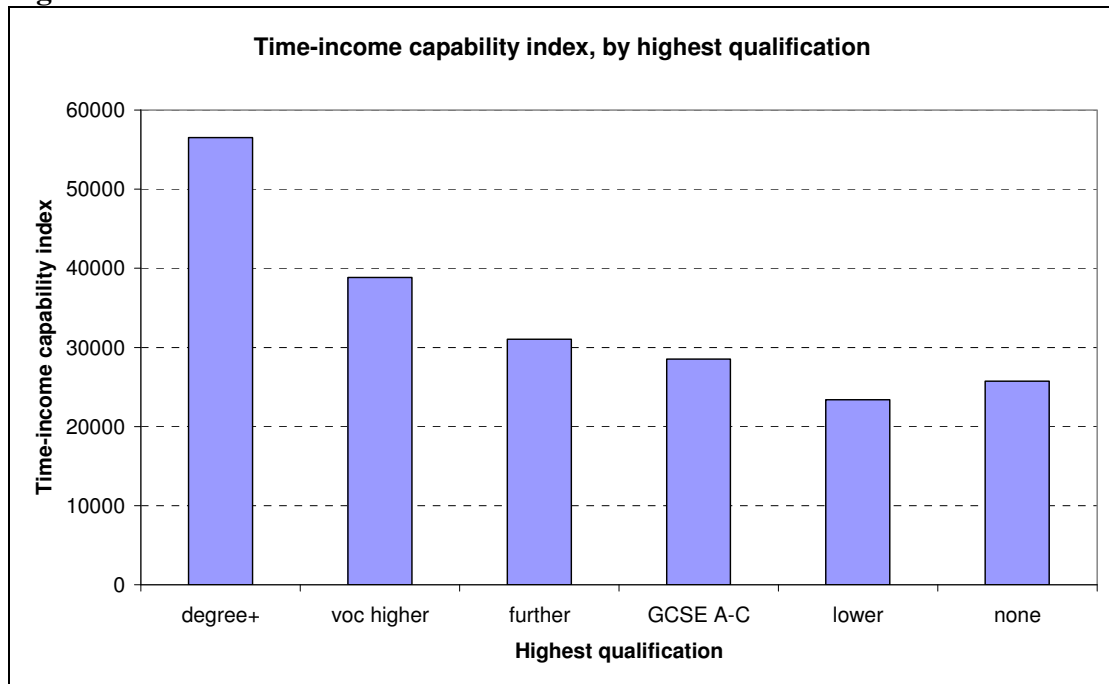
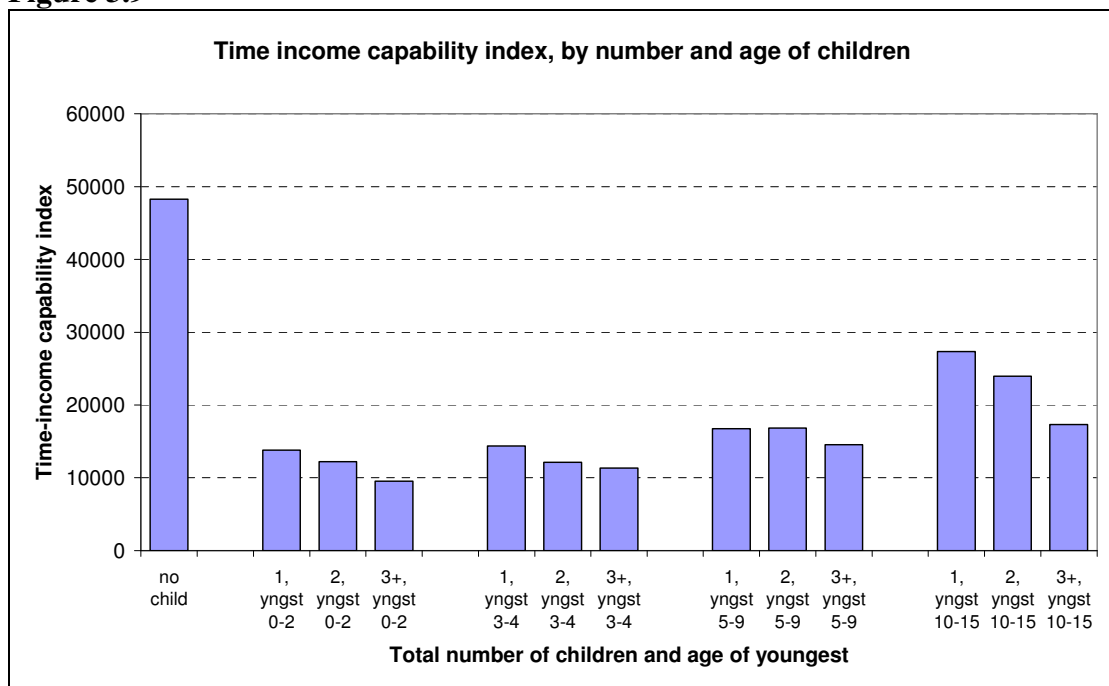


Figure 3.9



Multivariate regression on the time-income capability index, using these same characteristics as explanatory variables confirms that most are independently and significantly associated with the index.⁴⁸ The exception is ethnicity, which is no longer significant once other characteristics are controlled for (although its lack of significance may reflect small numbers in the sample for some ethnic minorities).

Most of the associations are as we would expect from the model. More human resources in the form of having a partner, not being disabled and having higher human capital to ‘sell’ in the job market all expand the time and income capability set. More responsibilities, in the form of more or younger children, contract the capability set.

One advantage of quantifying the time and income capability set is that we can assess what additional resource, in terms of time or income, would be required to equalise capability sets for people with different characteristics. As before, the assumption underlying the calculations is that an increase in free time is worth the same as a *proportional* increase in income, so if free time increases by 20 per cent, this is equivalent to a 20 per cent increase in income. (This is because we are modelling the time-income capability set as an *area*). In practice, additional time, or additional income, is likely to produce decreasing marginal returns (it is worth less as you get more of it). Moreover the relative value of additional time and additional income is likely to vary between people, depending on their interests and preferences.

Nevertheless, using a standard metric like the time-income capability index allows us to make comparisons between people. For example, regression results indicate that to have the same time-income capability as a non-disabled, White, female graduate of average age, living alone with no children in the Eastern counties and who has 40h free time and £220 per week (the reference person), a disabled woman with otherwise identical characteristics would need an additional income of £136. A lone parent with one child aged 0-2 would need an additional income of £939 compared to the reference person. Someone with no educational qualifications would need an additional £707, while someone who had a partner could manage with £513 less. These figures are merely illustrative but they indicate the importance of both the range of *responsibilities* a person has and the *resources* they have at their disposal in shaping their time-income capability set.

3.3.2. Sensitivity analysis (i): intra-household distribution

The results so far presented for couples have assumed an egalitarian distribution of free time within the household between partners. But of course this may not be the case.⁴⁹ Figures 3.10 and 3.11 show how an individual’s free time may vary with different intra-household distributions – from the ‘master’ scenario in which he or she leaves all collective responsibilities to the other partner, through the egalitarian distribution, to the ‘slave’ scenario in which he or she undertakes not only his or her own personal care and paid work, but also all the potentially shared tasks.

Figure 3.10 shows a man in a fairly typical couple with no children – around average potential wages and no additional caring responsibilities. The thicker, upper, line shows the central estimate if his partner works 60 hours per week, with his own working hours ranging from 0 to 60. The thinner, and lower, line shows the same for the situation in which his partner does not work. The horizontal dashed lines

stretching to either side of each point on each line indicate the range of free time which this man could end up with, depending on whether he is a ‘slave’ (the left-hand end of each dashed line), or a ‘master’ (the right-hand end of each dashed line), or something in between. The range is very wide: for example, if he works 30 hours a week but he is a ‘master’, he can end up with nearly the same amount of free time as he would not working at all under an egalitarian distribution.

Figure 3.10

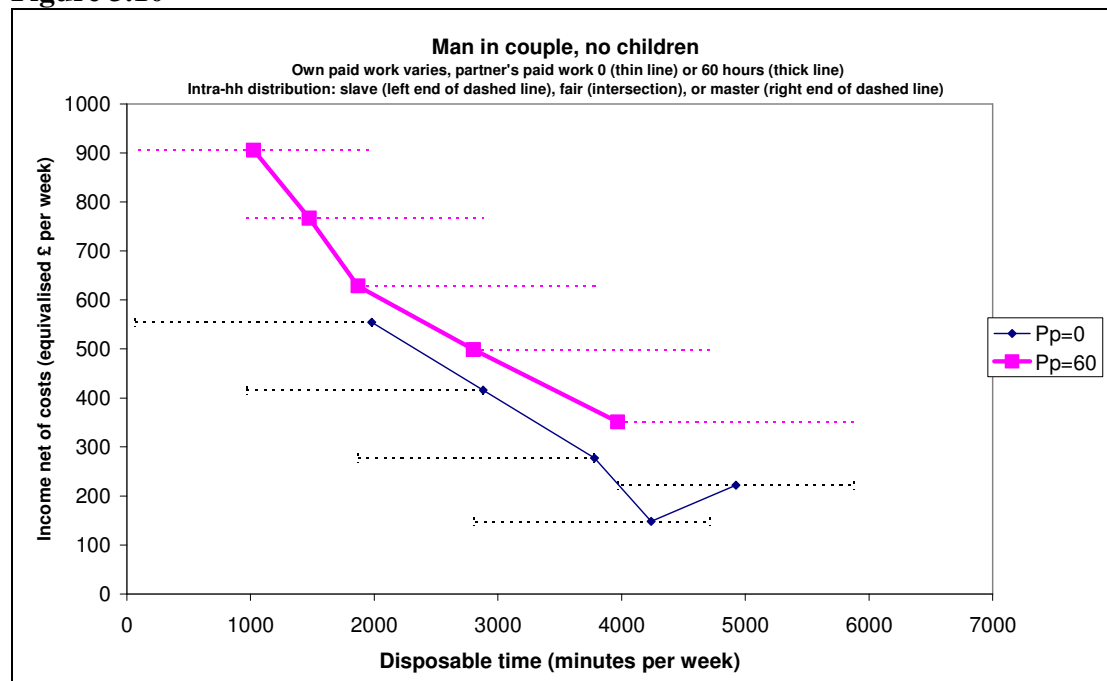


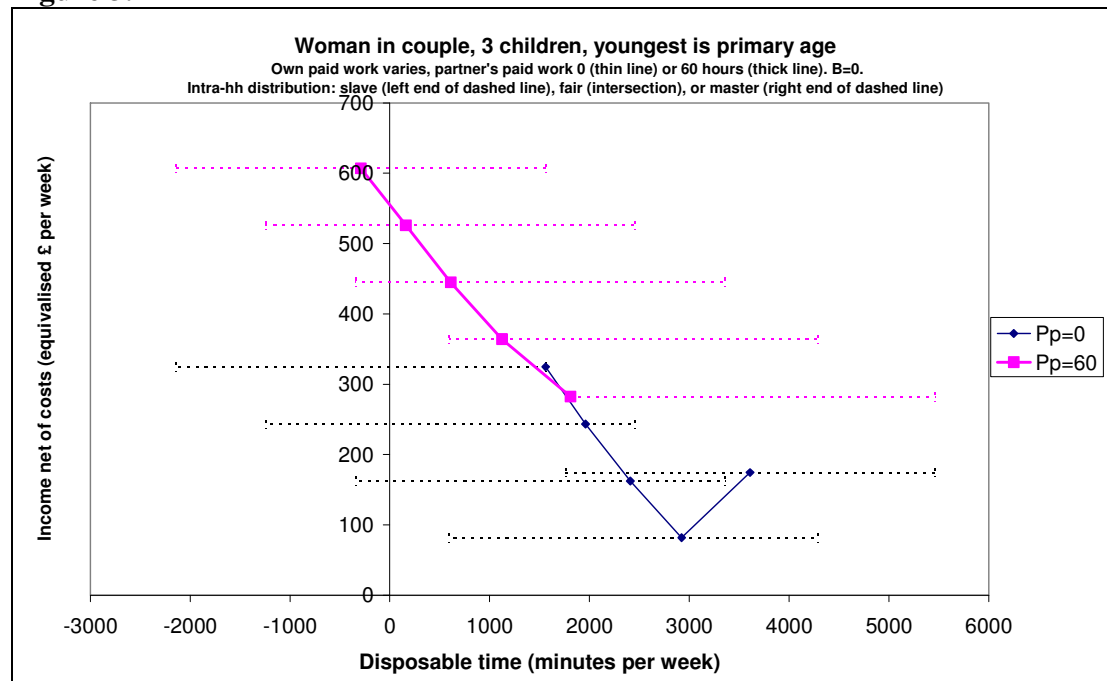
Figure 3.11 shows a woman in a couple with three children, the youngest of whom is at primary school. For her, the difference between an egalitarian and a ‘master’ or ‘slave’ intra-household distribution is even more dramatic: because there are more potentially shared responsibilities (mainly childcare, but also more domestic work) than in a couple without children, how they are distributed makes even more difference to the outcomes for the two members of the couple. Many of the ‘slave’ distributions in this case produce negative free time, meaning that she would not be able to manage all the tasks allocated to her, unless she went short on sleep, for example.

One interesting question which arises is where couples actually locate themselves on this spectrum. The time and income capability model cannot answer this directly, but by comparing the actual free time derived from the activities recorded by men and women in the Time Use Survey diaries, with the simulated free time for comparable hours of paid work generated by the model under the assumptions of egalitarian, ‘master’ or ‘slave’ arrangements, we can assess to which assumption the actual distribution most closely approximates.⁵⁰

Men in couples have on average 5h 23m more actual free time per week than their partners, but on a corresponding egalitarian distribution they would have only 12 minutes more than their partners (keeping paid work hours of both partners fixed, and matching to the nearest simulated equivalent). This suggests that actual intra-household distributions more often locate men towards the ‘master’ end of the

spectrum and, accordingly, women more often towards the ‘slave’ end of the spectrum. Indeed, comparing the differences between the actual distribution and the simulated egalitarian distribution, the actual intra-household distribution for two-thirds (64 per cent) of women is on the ‘slave’ side of an egalitarian distribution.

Figure 3.11



Further analysis suggests women who work longer paid work hours are more likely to be ‘slaves’ than women who work shorter hours, whereas men who work longer paid work hours are more likely to be ‘masters’ than their counterparts who work shorter hours.

3.3.3. Sensitivity analysis (ii): variations on assumptions about parental input to childcare

In section 3.2.2, it was noted that the assumptions about minimum parental input to childcare were particularly uncertain. Variation 1 replaces the sliding scale of 6 hours minimum parental input per day for a baby to 1 hour for a teenager, with a flat requirement of 1 hour for a child of any age. Variation 2 replaces the sliding scale with a flat requirement of 6 hours per day. The impact on the free time of lone parents is shown in Table 3.3 for a range of paid work hours; results for lone parents are shown because their simulated free time is more sensitive to assumptions about childcare.

If the parent does not purchase any replacement services such as paid childcare, the effect of varying the assumption about minimum parental input acts as a constant – positively for variation 1 and negatively for variation 6 – on free time, regardless of paid work hours.

Table 3.3: Effect on free time of varying assumption of minimum parental input to childcare, for lone parents

Paid work hours	Care purchased	Free time (mins per week)		
		Variation 1	Central estimate	Variation 2
None	none	2161	1935	1598
16	none	998	772	435
30	none	41	-185	-522
45	none	-859	-1085	-1422
60	none	-1759	-1985	-2322
None	max	3079	2862	2452
16	max	1471	1313	1002
30	max	1207	871	432
45	max	835	265	-265
60	max	256	-488	-1068

Note: Variation 1 is 1 hour per day for a child of any age
 Central estimate is sliding scale from 6 hours for a baby to 1 hour for a 15-16 year old
 Variation 2 is 6 hours per day for a child of any age

However, if the maximum childcare and other services are purchased (remembering that the maximum is defined by the budget constraint or by the maximum services the household can make use of, whichever is lower), the effect of varying the assumption about minimum parental input to childcare increases with paid work hours. Reducing the minimum parental requirement increases the total amount of childcare which is tradeable; as the budget constraint is eased by higher earnings with more hours of paid work, the difference to the parent's free time becomes more noticeable.

The effects are also larger for families with more children, and with either mostly very young (variation 1) or mostly very old (variation 2) children.

3.3.4. Sensitivity analysis (iii): absolute and relative definitions of minimum responsibilities

The results so far have used the absolute definitions of minimum responsibilities presented in the Boxes earlier in this chapter. Table 3.4 illustrates how much difference using relative definitions instead makes to estimates of free time, for a range of household types and paid work hours.

The differences between the absolute and relative estimates are not entirely regular but some general patterns can be observed. In all cases, free time using a relative definition of minimum responsibilities is larger (on average) than free time using an absolute definition. This is what we would expect given the differences in the definitions outlined in the Boxes earlier in the chapter.

The difference in free time between absolute and relative definitions is more or less constant with respect to paid work hours where no replacement services are purchased. When replacement services are purchased, the difference remains constant for families without children, but for families with children the difference in free time between absolute and relative definitions tends to increase with paid work hours.

Table 3.4: Comparison of free time estimates, using absolute and relative definitions of minimum responsibilities

Paid work hours and household type	Care bought:	Absolute	Relative	Absolute	Relative
		none	none	max	max
Single adult					
None		5020	6034	5786	6469
30		2903	3917	3674	4354
60		1103	2117	1880	2558
Couple no children					
None, none		4792	5805	5788	6470
30, 16		3103	4112	3708	4377
60, 60		888	1901	1908	2577
Lone parent					
None		1990	2322	2892	3395
30		-132	200	862	1524
60		-1932	-1600	-452	765
Couple + children					
None, none		3929	5336	4856	5813
30, 16		2237	3625	3153	4108
60, 60		17	1433	958	2260

3.3.5. Position of actual time and income within time-income capability set

Chapter 2 concentrated on individuals' actual free time and disposable income, while this chapter has explored the range of combinations of free time and disposable income which they could secure, if they allocated their time differently. It would be interesting to compare the position of the actual combination of time and income 'chosen' or arrived at by an individual, and his or her range of possibilities.

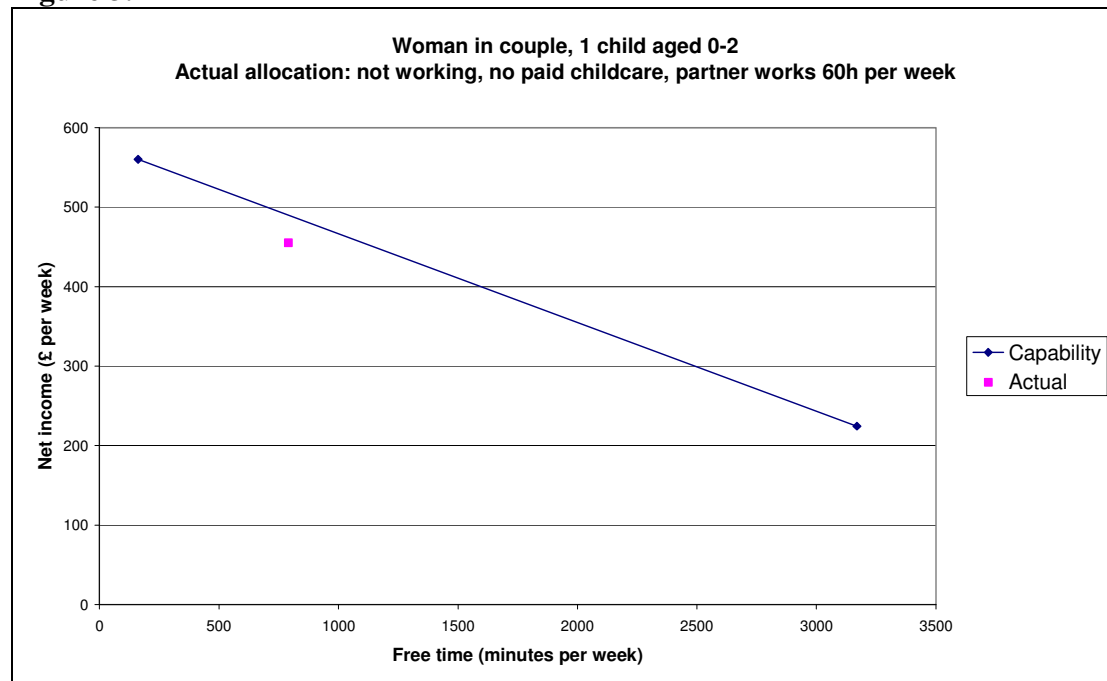
Unfortunately, this is not straightforward, because a number of assumptions have been made, by necessity, in calculating people's time and income capability.

Nevertheless, two examples are discussed below which give an insight into the way in which people's actual allocation may relate to their capability set.⁵¹

Figure 3.12 shows a case drawn from the data: a woman who is part of a couple and has one child aged 0-2. In actual fact, this woman does not work, and does not purchase any childcare. Her husband works 60 hours per week. Her capability set is formed by the possibility of her working anything up to 45 hours per week herself (more than that produces negative free time, and is therefore treated as unfeasible in this instance), and by her husband working as little as 16 hours per week (less than

that produces income below the poverty line, and is therefore also treated as a boundary on their feasible set). He is a graduate, so his earning potential is quite high. The boundary of her capability set is shown by the line in Figure 3.12, and the time and income generated by her actual allocation is shown by the square dot.

Figure 3.12



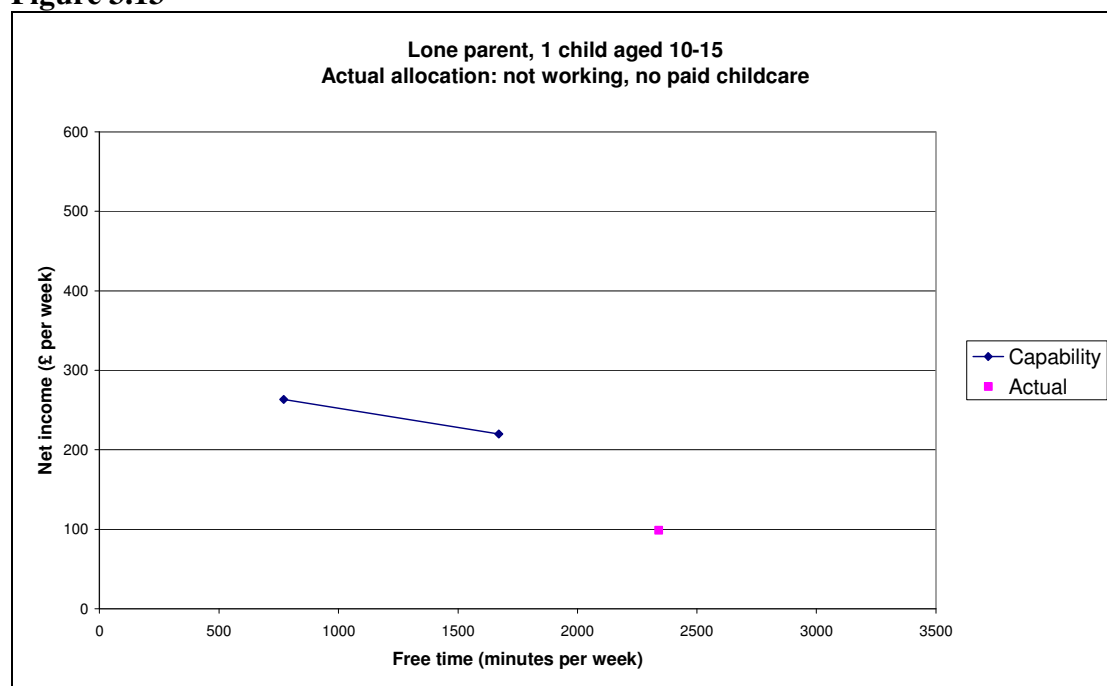
We can see that the actual allocation lies underneath the capability boundary. Why might this person be ‘choosing’ an allocation which produces less time and/or less income than she could? There seem to be two explanations in this case. Firstly, her partner is earning slightly less per hour than he is predicted to be able to earn. This could be because the wage estimations are imperfect or because he has priorities other than maximising his hourly wage in choosing his occupation – a not unreasonable position.

Secondly, the capability set shown is based on the assumption of an egalitarian distribution of free time within the couple. (The previous section explored some alternative assumptions). In actual fact, within this couple, the distribution of free time is not equal at all: she has 13h10m per week and he has 23h20m per week (even though he works 60 hours per week). If they had a more egalitarian distribution of free time between them, the square dot would move to the right in the Figure, closer to the capability boundary.

The next example presents a case where the ‘chosen’ allocation lies outside the capability set altogether. This may seem paradoxical until we recall that the capability set is restricted, by definition, to *feasible* allocations, that is, allocations which enable people to have income above the poverty line and sufficient time to meet their minimum obligations (i.e. they have zero free time or more). Figure 3.13 shows a lone parent with one child aged 10-15. She does not have a very high level of qualifications (GCSE level) so her earnings potential is somewhat limited, and this, combined with her responsibilities for running the household and looking after her

child on her own, mean that her capability set is small. The figure is on the same scale as the previous one, so one can immediately see the difference in the range of options available to the two families.

Figure 3.13



This woman would need to work at least 30 hours per week to generate net income above the poverty line, and up to 60 hours to get a decent income, but this would mean paying for some out-of-school care and leave her with relatively little free time (12h 51m per week).

In practice she is not working, which solves the problem of shortage of free time, but produces a net income below the poverty line (which is £151 per week in her case). What we cannot know for sure from the survey data to what extent this is a conscious choice and to what extent she has been unable to find work that meets her needs, but her responses to the survey do indicate that she is not currently seeking paid work, and that her main reason is that she is 'looking after home/family'. It may be that she is prioritising time with her child.

3.4. Time and income capability poverty

As discussed in chapter 1, those who have no feasible allocations of time, that is, who cannot secure an income above the poverty line and still have free time above what threshold is chosen (0 in the analysis for the main results above), can be considered capability poor. In this section, we investigate the risk factors for capability poverty, using three different definitions:

- absolute minimum time requirements, with time poverty threshold set at 0 free time, and absolute income poverty ('absolute/absolute')

- absolute minimum time requirements, with time poverty threshold set at 0 free time, and relative income poverty at 60% of median income ('absolute/relative')
- relative minimum time requirements, with time poverty threshold set at 60% of median free time, and relative income poverty at 60% of median income ('relative/relative').

Rates of poverty using these definitions are shown in Table 3.5.

Table 3.5: Rates of time-income capability poverty, according to different definitions

Definition	Poverty rate
'absolute/absolute'	2.4
'absolute/relative'	3.1
'relative/relative'	3.0

The rates are higher than poverty rates based on actual allocations of time (see chapter 2). This suggests that some of those who are avoiding income poverty or time poverty in practice are doing so by means of an allocation which would be classified as unfeasible in the assessment of time-income capability, for example, by making do with less sleep or cutting back on time with the children below what might be regarded as a minimum (variously defined).

There are others whose time-income capability includes the possibility of being non-poor but who are choosing an allocation which results in time or income poverty (for example a dual-earner professional couple working long hours have within their capability set an allocation with much reduced paid work hours, without risking slipping below the income poverty threshold, so although a classification based on their actual free time and income would show them to be poor, an analysis based on their time and income capability does not). However, the fact that the overall rates of poverty are higher when considered in terms of time-income capability than when considered in terms of actual allocations suggests that the number of people obliged to settle for 'unfeasible' allocations is greater than the number of people choosing a sub-optimal combination of free time and disposable income.

Who, then, is at greatest risk of time and income capability poverty? The following characteristics are common to all three definitions of capability poverty:

- being a woman
- aged 16-29 (followed by 30-44)
- not having a partner
- more children in the household
- younger children in the household
- having lower, or no, educational qualifications
- living in Scotland, the North East, London or the East Midlands (with East Anglia, the South East, and Wales being the lowest risk areas).

The combination of these characteristics means that lone parents are at extremely high risk of having no feasible allocations above the time and income poverty thresholds: 56 per cent, 42 per cent and 44 per cent of lone parents are time and income capability poor for the absolute/absolute, absolute/relative and relative/relative definitions respectively.

Children are also concentrated in time and income poor households. Depending on how the poverty thresholds are set, between 10 per cent (absolute/absolute definition) and 14 per cent (absolute/relative definition) of all children are in time and income poor households. To re-iterate, this implies that however the parent(s) organised their time, however many hours of paid work they undertook, they would not be able to secure an income above the poverty line and be free of time poverty.

Another way of examining who is most at risk of time and income poverty is to find the minimum number of hours which each individual or couple must work in order to generate income above the poverty line. Among single adult households, 14 per cent cannot get an income above the poverty line, however many hours they work (using absolute thresholds for both time and income poverty). Among the remainder, 2 per cent must work 60 hours per week and 11 per cent must work at least 45 hours per week. The majority can work either 30 or 16 hours per week (44 and 43 per cent respectively).

Among couple households (with or without children), less than 1 per cent must work 60 hours per week between them, 10 per cent must work at least 45 hours per week. The majority (64 per cent) must work at least 30 hours between them, and only one quarter (26 per cent) can get away with working as few as 16 hours per week.

As we might expect, the characteristics associated with a higher minimum number of paid work hours required to avoid income poverty are having more responsibilities (more or younger children) and fewer resources (being single, younger, and poorly qualified).

Conversely, we can examine how much income is generated if individuals work as many hours as they can, without jeopardising their time for other essential activities. These calculations show that the maximum income women can generate, when their work time is constrained by meeting their other responsibilities, is about half that of men (£388 compared to £763 on average). Young people, disabled people, single-adult households, those with many or young children, and those with low qualifications are similarly constrained. Once again, the impact of these variables combines, so that lone parents, on average, can generate a maximum of £128 per week, compared to £714 per week for single adults without children.

3.5. Summary

This chapter has explored the trade-offs which people can make between time and income. The range of possible combinations of free time and disposable income available to each individual in the sample has been modelled, keeping fixed their responsibilities (for example for children) and the resources at their command

(potential wage rates, social capital and so on), while varying their hours of paid work and how much in the way of replacement services (primarily childcare) they purchase.

Not all combinations of free time and disposable income available in principle are feasible in practice. For example, spending every last penny on childcare would leave the family with nothing to eat, and spending every last minute at work would leave no time to sleep. These extremes are uncontroversially ‘unfeasible’ but exactly where the dividing line between feasible and unfeasible should be drawn is more difficult to determine. Two principal alternatives were presented in this chapter: an absolute definition of minimum obligations, and a relative definition, with some sensitivity analysis of variations on those themes. The absolute definition was preferred because the way in which the relative definition is based on the observed distribution of time allocations in the population introduces a degree of circularity (if many people are obliged to choose allocations which give them less time on a particular activity, say time spent with children, than they believe is right, then this limitation is built into the definition of adequacy). However, the absolute definition also has its drawbacks, principally the arbitrary nature of some judgements of minimum standards.

Despite these caveats, the range of possible combinations of time and income, bounded by a minimum income and a minimum time threshold – the time-income capability set or area – was found to be informative for comparisons within the sample. Considerable variation in the size and shape of these capability sets was found in the sample, as explored in section 3.3.1.

Consistently with the model presented in chapter 1, those with larger time-income capability sets tended to be those with more resources at their disposal – for example having another adult in the household, and having a high potential wage rate (associated with high educational qualifications and absence of disability or ill health) – and those with fewer responsibilities, for example, having no children or only older children in the household. These are similar characteristics to those associated with high values on the index of actual free time and disposable income analysed in chapter 2. Unsurprisingly, people who have a wide range of options available to them tend to choose an allocation which gives them more free time and disposable income; those with few options are often obliged to make do with less.

Another aspect of time-income capability explored in this chapter was the distribution of free time among couples (section 3.3.2). This again showed a wide variation. In practice, men in couples have on average 5h 23m per week more free time than their partners, but the simulation suggested that if couples organised their time so as to equalise free time between them as far as possible, keeping their paid work hours constant, an egalitarian intra-household distribution would produce an average of just 12m more free time for men per week. Indeed, for two-thirds (64 per cent) of women in couples in the sample, their actual free time was less than it would be if there was an egalitarian intra-household distribution, according to the simulation.

The final section of the chapter investigated time and income capability poverty, that is, the proportions of people who would be unable to generate an income above the poverty line without incurring time poverty (or vice versa). Three alternative definitions of poverty were used, based on absolute thresholds for both time and income, and absolute threshold for time and a relative threshold for income, and

relative thresholds for both time and income. These showed that between 2.4 and 3.0 per cent of working age adults were time and income capability poor, depending on the definition. Children were concentrated in poor households, so that the proportion of children in time and income capability poor households was between 10 and 14 per cent. Lone parents – with generally few resources and intensive responsibilities - were at especially high risk: between 42 and 56 per cent were time and income capability poor. To re-iterate, the implication is that however they organise their time, however hard they work paid or unpaid, they are condemned to either time or income poverty, or both.

Of course the constraints they are operating under are in part determined by the economic and social policy context. It is to these factors that the next chapter turns its attention.

4. Conclusions

4.1. Policy recommendations of interviewees

When the interviewees for this study were asked what they would change ‘if they had a magic wand’ about government policy, the behaviour of employers, or other services, they were not short of suggestions. Recommendations ranged across several areas.

Childcare

- Sure Start centres to open at evenings and weekends, so that parents who work full-time can still make use of them;
- schools should not assume that parents can come in for meetings and so on during working hours – not lack of interest, just can’t get time off;
- more childcare facilities for children with special needs and disabled children;
- childcare for odd days when the school is closed (eg for teacher training) – the schools should provide an alternative;
- more holiday playschemes, including for children with special needs;
- longer hours to be covered by the nursery vouchers for 3 and 4 year olds;
- more financial help with childcare costs;
- reduce the number of children that childminders can take (better for the children) – charges will go up but government should increase the financial help to parents too;
- a childcare credit for being at home with your children, £20 a week, to pay for the sorts of things a child would do in nursery like going swimming and all the toys and equipment.

Employment rights and flexible working

- ensuring people know their rights – all very well on paper but if you don’t know about them, they’re no use to you;
- make flexible working a right, not just being able request it: if it’s down to the individual person, they have to make a fuss and that can damage their relationship with their employer, but if it’s a legal right everyone knows where they are and there’s no bad feeling;
- reduce the get-out clauses for employers refusing flexible working requests – should be more stringent tests of what is a reasonable excuse;
- rights to flexible working for parents of children older than 6, because older children need looking after too;
- employers should not be able to prevaricate for months on end about flexible working agreements, leaving you in limbo not knowing what will happen;
- blanket restrictions on unscheduled leave (eg if your child is ill) discriminate against people who have genuine reason in a particular period for needing more time off, should be considered by employers on a case by case basis.

Pay, leave and benefits

- jobs which fit within school hours should not automatically be paid at the minimum wage, if it's the same job with shorter hours it should be paid the same rate;
- a longer period of maternity pay, because 6 months is the wrong time to go back, just when weaning the baby;
- 'baby bonus' for each baby if you have twins, not just for one.

Some of these recommendations have been incorporated into government policy since the interviews took place, such as extending statutory maternity pay beyond six months, (slightly) increasing the number of hours of free childcare available through nursery vouchers, and the stated intention to raise the child age threshold for the right to request flexible working. Other recommendations reflect policies which existed at the time of the interviews, but which were clearly not happening in practice. The complaint that part-time work meant a reduction in hourly pay, even with the same employer and sometimes the same job as a full-time colleague, came up several times in the course of the interviews – a clear contravention of the equal pay directive for part-time work (BERR, 2008). Delays in responding to flexible working requests were also reported by several interviewees, despite the fact that the law sets out a specific timetable, with a maximum of 42 days between the request and a final decision in all but exceptional circumstances. These are clearly areas where more effective enforcement is required.

Many of the recommendations made by interviewees around childcare highlight gaps in existing provision, for example, for the odd days when schools are closed. The suggestion that it should be the school's responsibility to provide an alternative could be difficult to implement in practice, since school premises are often in use on those days, but might be feasible at the level of the local authority – a one-day playscheme for instance.

The recommendation that there should be an equivalent to childcare tax credit for parents looking after their children at home, albeit paid at a reduced level, is an interesting one. Parents who look after their own children at home do incur costs - for play materials and trips and so on - which are not incurred by parents whose children are in full-time nursery. At present, the latter are subsidised but the former are not. In so far as state subsidy for childcare is about creating high quality and stimulating environments for children, and not simply about getting parents out to work, there is a case to be made for payments to parent-carers and other relatives.

A number of issues could usefully be taken up in the government's response to the recent review of the right to request flexible working (Walsh, 2008). In the opinion of some interviewees for this study, employers were taking advantage of the wide range of reasons for refusing requests that are regarded as legitimate under the current legislation. Procedures for appealing against these decisions are ineffective because many employees feel too exposed to take a case against their employer and do not want to risk their future working relationships. This is consistent with the picture presented by Stevens and colleagues (2004) in their survey of awareness and take-up of flexible working arrangements.

A further issue which emerged from analysis of the interviews but which was not raised explicitly by interviewees as a recommendation – perhaps because it is difficult to know how to legislate for it – was the enormous difference which could be made by having a sympathetic line manager. In many cases, interviewees reported that this was the difference between remaining in work and leaving employment altogether, or moving to a different job. This was also a strong theme in Dean's (2007) investigation of work-life balance for low-income parents on a deprived estate in London. Prosecution of managers who step over the line into discriminatory behaviour could help to sharpen awareness among the remainder, as well as on-going efforts by government, business organisations and the trade unions to spread good practice. Empowering employees to exercise their rights, through collective action in trade unions, through campaigns to raise awareness of entitlements, and through individual assistance from organisations like Working Families, is also important.

4.2. Summary of findings from the conceptual model and quantitative analysis

The Time Use Survey on which much of the quantitative analysis in chapters 2 and 3 is based was carried out in the year 2000. As the outline in chapter 1 indicated, there have been many changes in policy since that time which have affected time and income budgets: an extension of paid and unpaid leave entitlements, some expansion of childcare provision, wider eligibility for tax credits and a higher minimum wage, in combination with steady or reducing rates of out-of-work benefits and tightening work conditionality. In addition, working patterns have continued to evolve, with an increasing proportion of women working, but the proportion of employees working long hours (over 45 hours per week) falling: from 24 per cent in 2000 to 21 per cent in 2008 (ONS, 2008). However, although many of these changes are significant, the changing landscape does not imply that there is nothing to be learned from analysis of the TUS.

Firstly, much of the analysis is based on more fundamental aspects of the relationship between resources and responsibilities, and the trade-offs between time and income. While the *levels* of income, for example, for different families will have changed since 2000, the demands on families with more and younger children relative to single people without children are likely to have changed rather less. Secondly, the model in chapter 1 and the analysis in chapter 3 aim mainly to establish and explore a different way of thinking about time and money, which has implications not just for the evaluation of which families are better and worse off, but also for the kinds of consideration which are relevant designing and evaluating a wide range of policies. Thirdly, analysis of responses to time use questions included in an ONS omnibus survey in 2005 suggests that the pattern of time use has changed rather little since 2000 (Lader, Short and Gershuny, 2006).

This section summarises some of the findings from the rest of the report. The following section considers how policy makes a difference to the time and income capability of individuals and families, and what can be done to ensure that the difference it makes is positive.

One theme which runs throughout this report is the importance of looking at time and income jointly. If we consider time on its own, the most advantaged are workless couples without children and among the most disadvantaged are people working long hours. But of course workless couples have low and falling incomes (in real terms) while many of those working long hours have high incomes: of the 83 per cent of the bottom decile of the time distribution who are working, one quarter are working more than 48 hours per week, and the average equivalised disposable income of the bottom decile of the free time distribution is nearly one and half times that of the top decile of the time distribution. To get a comprehensive picture of how well off someone is, we need to consider both time and income together.

Using standard relative definitions of poverty (60 per cent of median) and looking at actual free time and disposable income, we find that although the ‘time and income poor’ and those who are ‘time poor only’ have similar total committed time, those who are both time and income poor spend a much higher proportion of their time in unpaid work (childcare, caring for others, and so on), while the time poor do more paid work. This is an important observation, though not surprising: spending a higher proportion of your time in unpaid activities is likely to create a higher risk of income poverty, other things being equal.

Another distinction which runs through this report is between the actual free time and disposable income people have and the range of time-income combinations they have available to them – their time-income capability. Differences between these emerge in a number of ways:

- some people appear to be time poor if we look at their actual free time, but have the possibility of being non-time-poor (for example by reducing paid work hours) without incurring income poverty;
- some people avoid income poverty but only at the cost of incurring time poverty – not having enough time to meet all their responsibilities.

For many people, the actual level of time of income they obtain will be on their capability boundary – that is, they cannot improve their position in one dimension (say, income) without reducing their position on the other (say, free time). But where this boundary lies relative to time and income poverty thresholds (however defined) varies widely, which means that some people – those with high resources and few responsibilities - have a considerably greater range of time-income combinations available to them than others. They have greater substantive freedom to organise their life in a way which fits their own priorities, and leaves them time over and above meeting their minimum obligations to pursue whatever goals they have in life – be they related to work, family or something else altogether.

Analysis of time-income capability in chapter 3 reveals that the following characteristics are associated with a high risk of having no feasible allocations of time at all – no amount of paid or of unpaid work which will enable the individual to secure an income above the poverty line and sufficient time to meet minimum obligations:

- being a woman

- aged 16-29 (followed by 30-44)
- not having a partner
- more children in the household
- younger children in the household
- having lower, or no, educational qualifications.

These characteristics reflect a mixture of limited resources (low human and social capital) and a high level of responsibilities (more and younger children), which reflects the structure of the model presented in chapter 1. Particularly striking are the findings for lone parents: between 42 and 56 per cent of lone parents (depending on the definition of the poverty thresholds) are time and income capability poor; that is, they cannot simultaneously escape time and income poverty, however they allocate their time between paid and unpaid work.

4.3. Policy makes a difference, for better or worse

International comparisons have demonstrated the very significant impact different welfare states have on families' time budgets, for example in their comparison of the 'temporal welfare state' in France, Germany, Sweden, the USA and Australia, Rice and colleagues (2006) conclude: "Moving from France to Sweden, you would gain around 9 extra hours per week – time to spend as you please". Stay-at-home mothers are supported to a greater extent in France and Germany, while couple parents do particularly well in Sweden, and lone mothers benefit – relative to other household types – in USA and Australia. Similarly, Burton and Phipps (2007) find that the time and income available to families with children varies considerably, with Canadian and American families suffering a more serious time crunch than families in Sweden or the UK. The differences are particularly stark for lone parents.

This confirms the importance given to public policy in the model of time and income capability developed in this study. Public policy is crucial in setting the context in which individuals and families make decisions about paid and unpaid work and the trade-offs between them: the availability of different kinds of jobs in the economy, the rate of return to human capital, leave entitlements and benefits in and out of work, the availability, quality and cost of childcare, transport infrastructure...the list goes on.

Public policy can help to expand people's time-income capability in two basic ways: by increasing the resources available to them (for example, by increasing the income obtained from an hour of paid work) or by helping them to meet their responsibilities (by free or subsidised services). Equally, public policy can constrict people's time-income capability, for example by imposing additional conditions on eligibility for benefits and services.

In addition to the recommendations made by the interviewees listed above, there are two aspects of the conceptual model and survey analysis which have a bearing on current areas of policy development.

The first is support for people in the process of acquiring educational and vocational qualifications. One of the strongest relationships in the quantitative analysis is that between human capital (as indicated by qualifications) and reduced risk both of actual

time and income poverty and of time and income capability poverty. Those with low or no educational or vocational qualifications consistently face the biggest constraints on both dimensions: an hour of paid work at the rate commanded by someone with no qualifications is unlikely even to be sufficient to pay for childcare for that hour, never mind providing net time or income gains. This was particularly acute for people with other disadvantages which reduce their human capital in economic terms, such as disability. Having higher educational qualifications can offset the employment disadvantage of being disabled to a considerable extent.

Consequently, support for people to develop their educational potential, as young adults and later in life, is a crucial way in which government policy can help to expand people's time-income capabilities. However, studying can be expensive financially, and is always time consuming. A number of the interviewees for this study had enrolled in night school or were engaged in long-distance learning in the evenings and weekends, in order to try to expand their range of job options, but this investment in future expansion of capability was at the cost of short-term sharp reduction in actual free time. Government support could take a number of forms: regulation, to ensure employers provide adequate time off for employees studying for work-related qualifications; extension of childcare tax credits to cover parents' study hours as well as paid work; and taking a more long-term view of the value of studying for qualifications in 'welfare to work' rules: a qualification beyond basic literacy and numeracy will not necessarily have an immediate payback in terms of employment, but it is an investment for future that in the long run will produce better job opportunities.

The second implication for policy is the importance of considering parental time, alongside household income, in thinking about strategies to abolish child poverty. It would be something of an own goal if financial child poverty were abolished at the cost of children being deprived of their parents, because they were working from morning till night, and then through the night as well. Submissions by children, parents and professionals to the *Good Childhood Inquiry* all emphasised the importance of families having unpressurised time to do things together (The Children's Society, 2007).

Although there is no clear consensus about how much time is required, there is a sense that what many families have at the moment, especially those where the only or both parents work, is too little. In setting a child poverty target, the government has effectively defined an income below which it believes no child should fall. It would be a good idea to develop, in consultation, an equivalent for time: what is the minimum level of dedicated time with his or her parent that each child should be able to have? Of course, families could still choose to organise their affairs differently, but the government would have a clear objective to ensure that if they so chose, families could have a minimum of quality time together. Judging by the very widespread perception that family time is under pressure, a government commitment of this kind would be popular.

This would of course have implications for other areas of government policy, in particular for the hours of work at which tax credits become payable,⁵² the National Minimum Wage (to ensure that sufficient earnings can be generated in a shorter working week, even by the lowest-skilled), and for work conditionality on benefit

receipt for families in different circumstances. On this basis, it is very difficult to see the reforms announced late in 2007 and due to commence in October 2008, obliging lone parents to seek and take paid work when their youngest child reaches the age of 12 – let alone the lower threshold of age 7 which is proposed by 2010 – as consistent with promoting children's best interests. As the analysis in chapter 3 showed, lone parents are already the group at highest risk of time and income capability poverty. A more holistic version of the Jobcentre Plus 'better off' calculation is urgently required, to take into account the time costs of moving into paid work as well as the potential financial benefits. No person, and especially no parent, should be forced to choose between one kind of poverty and another.

Appendix: UK Time Use Survey 2000 diary codes

Respondents were invited to record their activities using their own words and these were subsequently coded by trained clerks. Single digit codes indicate broad categories of activity, under which 2, 3 and 4 digit codes give progressively greater detail (in so far as this is possible given the information provided by the respondent). The following diary codes were selected to indicate activities contributing to committed time:

Personal care

0 including sleep, sick in bed, eating, wash and dress

53 rest

901 travel related to personal business

Paid work

1 including main job, second job, lunch breaks, job seeking

911 travel in the course of work

913 travel to/from work

914 travel to work from a place other than home

Unpaid work

300 unspecified household and family care

31 food management

32 household upkeep

33 making and care for textiles [laundry, ironing, etc]

36 shopping and services, *except*

3614 shopping or browsing at car boot sales or antique fairs

3615 window shopping or other shopping as leisure

37 household management

38 childcare of own household members

39 help to an adult household member

42 informal help to other households

931 travel related to household care

936 travel related to shopping

937 travel related to services

938 travel escorting a child (other than education)

939 travel escorting an adult (other than education)

942 travel related to informal help to other households

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Endnotes

Chapter 1

¹ Special rules apply to a number of categories of workers, for example, doctors, sea transport, mobile workers in inland waterways and lake transport, workers on board sea going fishing vessels, air transport, mobile workers in road transport, the armed forces, the police and emergency services, and 16 and 17 year-olds in any occupation. The regulations do not apply to the self-employed.

² For unpaid work, the mean and standard deviation are calculated separately for different household types.

³ Reisch (2001) argues that it is not only the lack of time available which contributes to a sense of being pressurised, but also the time of day at which ‘free time’ occurs, the extent of control the individual has over when it occurs, and the degree to which it is synchronised with the free time of others with whom one wishes to spend leisure time.

⁴ Extending this analysis into the 1990s, Fisher (2003) finds that free time receded again, returning to the level of the early 1970s.

⁵ The model has some features in common with the sustainable livelihoods approach used in international development. See DfID (2001).

⁶ The model does not address the problems which can be generated for families by members’ free time failing to overlap, so that leisure cannot be enjoyed together (Jacobs and Gerson, 2001; Warren, 2003).

⁷ Hill (2005) is an interesting example of attempting to incorporate a measure of the social wage into the calculation of a standard of living, alongside free time.

⁸ Reid (1934) calls this the ‘third person criterion’.

⁹ A more recent version was recently produced (Bradshaw and colleagues, 2008), but the Parker study is closer in to period of data collection for the UK Time Use Survey 2000.

¹⁰ Goodin and colleagues (2005, 2008) use the term ‘discretionary time’. In the terms used here, discretionary time is the free time generated by the feasible allocation that yields income Y at the poverty line and maximum T .

¹¹ In fact she is unlikely to choose this option unless she has a preference for caring work over paid work because the time-income pair generated is dominated by another point in her feasible time allocations – she can gain the same disposable time but more disposable income by working much longer hours.

Chapter 2

¹² Including organisations which support people with caring responsibilities (such as Maternity Alliance, Carers UK, Disability Alliance and Working Families), trade unions which represent low-paid workers (including USDAW, UNISON, T&G, GMB, AMICUS and PCS), and an organisation of self-employed people. I am very grateful to all of these organisations for their assistance.

¹³ Using the variable `wtdt_ug`, which is for individuals who have completed diaries of an adequate standard.

¹⁴ See Appendix for details of diary codes

¹⁵ The analysis here does not take account of scheduling, that is, whether disposable time occurs at a period when other people with whom the individual wishes to share free time are available. This has been shown to be an important issue for some people, especially those with atypical work hours (Jenkins and Osberg, 2005; Presser, 1994).

¹⁶ Unless the main activity was sleep or paid work, in which case secondary activities are not recorded. Childcare is one of the activities which often occurs as a secondary activity – eg making dinner and supervising children’s homework. Some passive childcare is nevertheless likely to have gone unrecorded, for example if both the parent and the children are in the house but they are not engaging with one another.

¹⁷ Only individuals who completed two diary days at a standard judged acceptable by ONS are included. This means dropping 1082 below-standard diaries and 166 diaries where no ‘pair’ exists.

¹⁸ *Before housing costs* means that the income is measured before rent or mortgage payments have been made. There is a debate about whether ‘before housing costs’ or ‘after housing costs’ measures give a better indication of people’s standard of living - see DWP (2007c) for a discussion. In the context of this study, imputing housing costs would have introduced a further layer of complexity without adding significantly to the interest or value of the results.

¹⁹ See Burchardt (2006) for details of the methodology and comparison of the resulting imputed income distribution and the distribution in Households Below Average Income.

²⁰ According to the model in chapter 1, expenditure on other services, such as domestic help, which are purchased to save unpaid work time for members of the household should also be deducted from income. However, childcare is by far the most significant of these purchased services.

²¹ All the results in this section are for working age people (16-59 for women, 16-64 for men).

²² Conversely, dividing the working age population into ten equal groups by disposable *time*, the average disposable income in the bottom time decile group is £430 per week in 2000 prices, and £298 per week for the top time decile group.

²³ These components, together with paid work, do not sum exactly to total non-disposable time, because a principal activity in one component (eg eating) may be simultaneous with a secondary activity in another component (eg childcare). This time is counted only once in total non-disposable time, but occurs in each of the relevant component totals.

²⁴ Although the ‘price’ of each hour of free time (its opportunity cost) may be *roughly* approximated by the wage rate, this is not the same as its value to the individual. Moreover, even in purely financial terms, an additional hour of work will not yield a full hour’s wages, after taxes, childcare and other expenses are taken into account. Finally, additional hours of paid work may be unavailable or impractical.

²⁵ The graph is trimmed at the 99th percentile (0.2); the maximum value is 0.62.

²⁶ Details of the regression available from the author on request.

²⁷ The median used to define the poverty threshold is for the population of working age adults (for both time and income). This means that the income poverty statistics here are not directly comparable to the government’s official low income statistics in the Households Below Average Income (HBAI) series, which use the median of the whole population (including children and pensioners) to define the poverty threshold. The median income of working age adults is higher than that of the whole population; this means that a higher proportion of working age adults are poor according to the measure used in this chapter than in HBAI.

²⁸ Technically, this is known as one of the Foster Greer-Thorbecke (FGT) measures of poverty, with $\alpha = 1$. It is defined as the mean shortfall from the poverty line across the whole population (or sub-group), expressed as a percentage of the value of the poverty line.

Chapter 3

²⁹ The analysis uses a ‘before housing costs’ measure of income and income-requirements throughout.

³⁰ Wage rates were initially estimated with regional dummies, to check for variations in return to human capital characteristics by region. But including region variables did not significantly add to the explanatory power of the model, so were dropped. They were however retained for estimating selection into employment.

³¹ A number of studies have attempted to calculate the higher financial costs associated with disability (for example, Zaidi and Burchardt, 2005; Burchardt and Zaidi, 2008; Smith and colleagues, 2004) but no systematic attempt has been made, so far as I aware, to do the same for time costs. This would be an interesting topic for further research.

³² Holidays reduce the contribution compulsory school makes to childcare provision over the course of a year. However, the model is based on weekly time and income, and the majority of weeks in the year are term-time weeks.

³³ Bianchi and colleagues (2006) found that parental time spent on childcare had increased since the mid-1970s in several countries - USA, Canada, UK, France, the Netherlands, and Australia – and that the increase was especially marked in the UK, despite a higher proportion of women now being in paid employment.

³⁴ Between 40 and 80 per cent of median income.

³⁵ The model attempts to take into account simultaneity but it does not address scheduling issues; that is, when in the day various activities are taking place, and how that coincides or otherwise with other family members.

³⁶ Children are assumed not to contribute to household time and income capability. In practice many older children do help with housework, care of younger children, and care of disabled or ill parents, and some have earnings, but it is not desirable to build in to a model of a household's capabilities an *expectation* that they will contribute.

³⁷ This set of questions also includes an item on childcare, but the much more detailed information collected elsewhere in the questionnaire is used instead.

³⁸ The data on how often and for how long needed cleaning, as some respondents who received substantial and on-going help appear to have been confused about the difference between these two questions. This needs to be resolved in any future use of this module in other surveys.

³⁹ Gross earnings were entered as a continuous variable but split into fifths of the distribution, to allow for non-linearities.

⁴⁰ See also Kan and Gershuny (2006).

⁴¹ For the quarters corresponding to the TUS fieldwork period: Autumn and Winter 2000, and Spring and Summer 2001.

⁴² Age of youngest child was not significant for men so was dropped for the male equation. A number of other potentially relevant variables were tried for both men and women, including number of children, whether providing care for other adults, access to a car, but none were significant.

⁴³ The dependant variable for the earnings equation was log earnings, where earnings were calculated from usual weekly hours including paid overtime and weekly gross earnings. The applicability of the Heckman selection regression was tested and found to be adequate, although there are limitations to this approach. Details available from the author on request.

⁴⁴ As described in section 3.2.1, the maximum possible hours of replacement services may be constrained by available income, or by the total number of tradeable hours R , net of free help S .

⁴⁵ The area enclosed is a natural interpretation of a time-income capability set. Since the two dimensions, time and income have equal weight in the product, this formulation embodies the specific assumption that an increase in time is equivalent to a proportionate increase in income (and vice versa). This holds whatever units are chosen. Other assumptions are possible, for example that time-income capability should be represented by T^2y or $\log Ty^2$. However, in the absence of a compelling argument for any of these variations, the simpler formulation is preferred. A conventional economic approach would be to value each hour of free time at the individual's wage rate, to give a measure of 'full income' (Becker, 1965). But this is unsatisfactory, as discussed in chapter 2, because although the 'price' of each hour of free time (its opportunity cost) may be roughly approximated by the wage rate, this is not the same as its *value* to the individual (Sen, 1997).

⁴⁶ The original budgets were calculated in 1997, which is reasonably close in time to the UK TUS in 2000, using the standard Family Budget Unit methodology: see Parker et al (1998) and the FBU website <http://www.york.ac.uk/res/fbu/budgets.htm>. (Bradshaw and colleagues, 2008, have produced a more recent version but this relates to a period more distant from the time of TUS data collection). The budgets have been updated here to 2000 prices. The 'Low cost but acceptable' standard was used, excluding alcohol, and using the estimate for families

out of work (because the main additional element in the budget for families in work was childcare, which is here costed separately). The families for which the budget were originally calculated each had two children, aged 10 and 4. The Modified OECD equivalence scale has been applied here to these budgets to derive poverty thresholds for other types of family.

⁴⁷ There are other differences between the indexes of a more technical nature: the capability index is not standardised (because, being based on simulations, there is not a meaningful distribution on which to standardise); and the capability index uses gross earnings (or benefit income) net of costs, rather than net income, for reasons discussed in section 3.2.3 above.

⁴⁸ Details available from the author on request.

⁴⁹ There is a considerable literature on this subject. See, for example, Phipps, Burton and Osberg (2001).

⁵⁰ There are a number of differences between actual disposable time and simulated disposable time. Firstly, actual disposable time depends on actual work hours (a continuous variable), whereas the model computes results only for discrete hours (0, 16, 30, 45 and 60), so the match is approximate. Secondly, actual disposable time is derived from total time spent on personal care and unpaid work (and paid work), whereas the disposable time capability is based on the minimum time required for these activities.

⁵¹ These examples use net income for both actual income and income capability.

Chapter 4

⁵² Other studies have also recommended a re-examination of the support available for ‘mini-jobs’ (less than 16 hours per week), especially for lone parents: Bell and colleagues (2007).



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