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(Vybrané části.)

The second concluding reflection which is suggested by the analysis is that the determination of government policy has been considered in a classical public finance manner, without benefiting from the insights of the more recent public choice approach. In choosing the structure of income support, we have to consider the possibility that the government may follow its own objectives without regard for any notion of social welfare. The public choice theory has tended to emphasise the propensity of governments to expand state activity beyond the socially optimal level, but the reverse may also be true, with governments cutting back state provision. (For an analysis of the changing political forces determining the degree of redistribution, see Lindbeck, 1985.) Would income-tested benefits, being more focused, be more likely to escape the cuts made by right-wing governments? Or would these benefits, lacking a broad political base, be more easily cut, as would be suggested by Director's Law (Stigler, 1970)? Would a basic income, by linking taxes and benefits so directly, be more exposed to political forces? These are interesting and important questions.

## 3 Retirement Pensions

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### 3.1 THE BACKGROUND

#### 3.1.1 The issues

Pensions raise major and controversial issues, not least because of their importance as an income source to large numbers of people and (related) because the combined expenditure on public and private pension schemes in Britain is currently of the order of 11 per cent of GDP (see Barr and Coulter, 1990, table 7.4 for historical data).

The potential list of issues is huge. Should pensions be actuarial, that is with benefits strictly related to past contributions (note that this rules out systematic redistribution from rich to poor)? What is the appropriate role for private pension schemes? What are the effects of pensions on aggregate labour supply, and on saving and output growth? To what extent do employer schemes affect individual decisions: for instance, pension design may reduce shirking (Lazear, 1986); vesting rules (which specify the length of service before a worker gains title to any pension benefits) reduce labour turnover (Wise, 1986); and benefit provisions can encourage older workers to retire early (Stock and Wise, 1988). Nor is concern limited to retirement pensions. Invalidity pensions raise other major issues. How strictly should entry be policed (countries with relaxed entry procedures have found that the number of invalidity pensioners can rise sharply during times of high unemployment, particularly for older workers)? Should an invalidity pension be awarded only if an individual is wholly unable to work, or should there be a graduated pension related to partial inability to work?

Should the size of the pension depend on cause (e.g. a higher pension in the case of industrial injury) or only on outcome?

After discussion in section 3.2 of different ways of organising pension finance, this chapter focuses on two issues: the demographic 'crisis' (section 3.3); and the differential retirement age for men and women (section 3.4). The concluding part of the chapter assesses pensions policy since the Second World War and ventures some brief predictions. The topics are chosen for two reasons: they are matters of current policy debate; and they raise very different sets of issues. The demographic issue is (more or less) a pure efficiency matter; the differential retirement age raises both equity and efficiency issues.

The demographic problem arises out of the twin peaks in the birth rate in 1948 and the mid-1960s, after which the birth rate declined rapidly. The same pattern is found in most industrialised countries. Currently, therefore, workers are plentiful and, since birth rates were low in the 1920s and 1930s, the number of pensioners is not excessive. But the 1948 cohort will retire in the years after 2008, with a second wave in 2025, when the mid-1960s cohort reaches retirement age. Since birth rates after the late 1960s were low, there will be few workers and large numbers of pensioners.

Table 3.1 shows that the effects are widespread and, in some countries, dramatic. On present trends, Germany and the Netherlands are projected to spend around 30 per cent of GDP on state pensions by 2040; averaged across OECD countries, pension spending is set to double from 10 to 20 per cent of GDP. In some countries rising labour force participation is a partial offset. In Germany<sup>1</sup> and Japan, however, the total contribution per head of the working age population is projected to rise by over 50 per cent, requiring substantial rates of economic growth if contribution rates are not to rise. These facts raise two major issues: how large is the problem; and what policies might alleviate matters?

The second issue arises out of the fact that the normal (and frequently mandatory) retirement age for women in the UK is 60, five years younger than for men, raising questions about how appropriately to define the relevant insurance pool, about labour supply and about whether such a rule is discriminatory.

TABLE 3.1 Demographic effects on the share of pension expenditure in GDP and financing burdens in various OECD countries, 1984-2040

	1984	2000	2020	2040
<b>Australia</b>				
Pensions as % GDP	6.0	6.7	9.1	12.4
Contributions/head, 15-64 group <sup>a</sup>		100	112	130
<b>Canada</b>				
Pensions as % GDP	6.1	7.7	11.6	15.2
Contributions/head, 15-64 group <sup>a</sup>		103	125	145
<b>Germany</b>				
Pensions as % GDP	13.7	16.4	21.6	31.1
Contributions/head, 15-64 group <sup>a</sup>		106	124	154
<b>Japan</b>				
Pensions as % GDP	6.0	9.4	14.0	15.7
Contributions/head, 15-64 group <sup>a</sup>		115	142	154
<b>Netherlands</b>				
Pensions as % GDP	12.1	13.4	19.6	28.5
Contributions/head, 15-64 group <sup>a</sup>		100	114	139
<b>New Zealand</b>				
Pensions as % GDP	8.9	9.3	13.0	20.3
Contributions/head, 15-64 group <sup>a</sup>		NA	NA	NA
<b>Sweden</b>				
Pensions as % GDP	12.9	12.1	15.9	18.0
Contributions/head, 15-64 group <sup>a</sup>		95	110	122
<b>Switzerland</b>				
Pensions as % GDP	8.8	10.6	16.9	21.1
Contributions/head, 15-64 group <sup>a</sup>		NA	NA	NA
<b>United Kingdom</b>				
Pensions as % GDP	7.7	7.5	8.6	11.2
Contributions/head, 15-64 group <sup>a</sup>		93	101	111
<b>United States</b>				
Pensions as % GDP	8.1	8.2	11.3	14.6
Contributions/head, 15-64 group <sup>a</sup>		96	117	131
<b>OECD average as % GDP</b>	10.3	11.4	15.1	20.2

<sup>a</sup> 1980 = 100.

Source: OECD (1988, 1989).

### 3.1.2 The objectives of pensions

The major objectives of the welfare state were discussed in Chapter 1. They are all relevant to pensions, but four stand out (for fuller discussion of this and other aspects of pension finance, see Barr, 1992).

1. Pensions should offer the elderly an adequate income in retirement (the poverty relief objective). The achievement of this objective usually requires redistribution from rich to poor.
2. Pensions should provide a mechanism which allows individuals to effect a redistribution to themselves over their life cycle (the income smoothing objective).
3. They should be affordable (the macroeconomic efficiency objective).
4. They should create minimal adverse incentives (the microeconomic efficiency objective).

### 3.2 DIFFERENT FORMS OF PENSION FINANCE

The purpose of pensions, from the viewpoint of the individual, is to make it possible to transfer consumption over time, i.e. to consume less than he/she produces during working life so that consumption can continue after retirement. In principle there are two (and *only* two) ways in which an individual can achieve this: by storing current production during working life; or by acquiring a claim on output produced after his/her retirement by the next generation of workers.

(Storing current production) is valid in limited circumstances. Many pensioners, for instance, will have paid off their mortgages during their working lives, enabling them, at least to some extent, to store housing services for their old age. As a general mechanism, however, this approach has at least three glaring deficiencies. First, it is *costly* both in terms of direct costs (e.g. keeping steak frozen for thirty years) and in terms of the opportunity cost of the return which could otherwise be made on such saving. Second is the issue of *uncertainty*, both about life expectancy after retirement and about tastes a long time in the future (e.g. medically mandated dietary restrictions). Third, whilst it is at least in prin-

ciple possible to store goods, and also services deriving from physical capital, it is not possible to store *services deriving from human capital* such as (most important in old age) medical services.

Thus we are left with the second approach – building a claim on output produced by the next generation of workers after one's retirement. In principle, this can be achieved in two ways: through the acquisition of *financial assets*, which can be exchanged for goods after retirement; or through a *promise*, at a family level from one's children or at a national level from government, that one will be cared for in old age. The two pension mechanisms observed in practice, *funded* schemes and *Pay-As-You-Go* (PAYG) schemes follow precisely these two routes.

PAYG pensions – the usual form of state scheme – do not pay pensions out of an accumulated fund. Instead, the state taxes the current generation of workers (either through taxation generally, or in the form of national insurance contributions), and uses the proceeds to pay pensions to the retired generation. PAYG is thus a simple tax-transfer scheme.

Under a funded scheme (the usual mechanism in the private sector), an individual (and usually also his/her employer) pays contributions (usually a fraction of the wage) throughout working life into an account run by a pension fund, which can be a private, profit-maximising company or a non-profit occupational scheme. By the time the individual retires his/her past contributions plus the interest, dividends and capital gains they have earned over the years amount to a large lump sum. At its simplest, this is converted into an *annuity*, i.e. an annual income payment for life, with the property that the present value of the pension stream is equal to the lump sum for an individual with average life expectancy. Funded schemes thus combine saving (during working life) with insurance (the annuity). (The annuity is essentially a bet between me and the insurance company. If I take out the annuity, thereby paying over my accumulated lump sum, and promptly drop dead, the insurance company wins the bet; if I live into my high nineties I win the bet, since the present value of the stream of pension payments I receive exceeds the lump sum. One way of thinking about an annuity is as insurance by the individual against living too long.)

The previous paragraph described the generic funded scheme. Schemes in practice take many forms, of which two in particular

should be distinguished. Under a *defined contribution* scheme, the contribution rate is fixed, so that the individual's pension, given his life expectancy, is determined *only* by the size of the lump sum accumulated during working life. The individual therefore bears two sorts of risk: that of unanticipated developments in the rate of return to pension assets during his working life; and that of unanticipated inflation after retirement. Insurance can protect the individual against the risks (described in the previous paragraph) associated with longevity; however, the individual bears the entire risk associated with different real rates of return to pension assets.

Under a *defined benefit* scheme, almost invariably run at a firm or industry level, the firm promises to pay an annuity at retirement; the size of the annuity depends on the employee's wage in his/her final year (or few years) of work and upon length of service; a typical formula is one-eightieth of final salary per year of service, up to a maximum of forty years. Thus the annuity is, in effect, wage indexed until retirement, though as we shall see, not typically indexed thereafter. The employee contribution is generally a fraction of his/her salary. In consequence, the employer's contribution becomes the endogenous variable. In a defined benefit scheme, it is the firm or industry which bears the risk in the face of unanticipated changes in the real rate of return to pension assets.

### 3.3 THE DEMOGRAPHIC PROBLEM

#### 3.3.1 The naive argument

The essence of the demographic problem described earlier is that it leads to an increase in the *gerontic dependency ratio*, i.e. the ratio of pensioners to workers. Under PAYG the problem is obvious: if there are more pensioners per worker, a given contribution by each worker results in a lower real pension for each pensioner. Funding, it is argued, avoids this problem. This section discusses the pitfalls of that argument. Such a view should not be interpreted as an attack on the funding principle, but on expecting funded schemes to do more than they are capable of doing.

The naive funding argument points out that if there is a large generation of workers, as currently, it will build up a large stock of

savings; when they retire, after 2008, and are followed by a smaller workforce, there is no problem since pensioners can live off their accumulated saving. The argument, in essence, is that each pensioner supports himself through his own previous savings; thus there is no problem if there is a large number of pensioners.

The problem with the argument is that it is based on what Samuelson calls the *fallacy of composition*, that is the assumption that because something is true for an individual, it will be true for large numbers of individuals. It is, of course, true that an individual can finance retirement by exchanging previously accumulated money for goods. But if everyone tries to do so, no goods will be produced and the system collapses. At a macroeconomic level, the effect of the demographic problem is that the dissaving of a large pensioner generation out of their large accumulation of pensions funds, will exceed the saving (in the form of pension contributions) of the smaller succeeding workforce. At a given level of output, the resulting fall in saving creates inflationary pressures, reducing the purchasing power of pensions. The result, through a different mechanism is broadly the same as under PAYG (for fuller discussion, see Barr, 1987, chapter 9). Since funding and PAYG are simply methods of organising claims by workers on future output, the similarity of outcome should not be surprising.

#### 3.3.2 Insurance arguments

Microeconomic theory leads to the same conclusion. Chapter 2 set out the sort of market failures which make private insurance inefficient or impossible in the face of adverse selection and moral hazard. These are not the only problems insurance markets face. In particular, private insurance requires in addition (i) that the insurable risk is known or estimable, and (ii) that individual risks are independent. Neither is a problem for the probability distribution of age-at-death: statistics on life expectancy are well developed; and the probability that I will die at a given age is, by and large, independent of anyone else's age-at-death.

The objective of income smoothing, however, requires that individuals can make plans about consumption after retirement. Thus they need to know about their real pension, and hence require information about price levels after retirement, i.e. about

the probability distribution of future levels of inflation. Herein lies the problem: it is not possible for a private insurance company to predict the probability distribution of inflation, say, thirty years hence. Moreover, if any one member of a funded pension scheme faces a given rate of inflation, so do they all, so that the inflation risk is most emphatically *not* independent across individuals. Put another way, the mechanism of private insurance can offer protection against an *individual* shock, but not against a *common* shock like a decline in the workforce.

If pensioners cannot insure each other, could they obtain protection in some other way? The answer would be yes only if real rates of return to pension assets were independent of inflation. As an empirical matter, this is not the case. The dependence is partly the result of distortions elsewhere (e.g. non-indexed tax systems) which could in principle be corrected. However, where an inflationary shock represents other adverse movements in the economy, no private agency can offer a complete hedge against inflation. Bodie (1989) argues that short-term deposit accounts are the least bad hedge, since short-term interest rates are revised frequently; Zeckhauser and Patel (1987) find that buying futures contracts on government bonds eliminates only about one-third of the risk of unanticipated inflation.

(Thus inflation is an uninsurable risk; and private-sector hedges offer incomplete protection.) Though there is controversy as to why no private-sector financial instruments offer a risk-free real return, the empirical conclusion is clear. Bodie's survey points out that 'virtually no private pension plans in the US offer automatic inflation protection after retirement' (Bodie, 1990, p. 36). Gordon, in her cross-national survey, concludes that 'indexing of pension benefits after retirement . . . presents serious difficulties in funded employer pension plans. . . .' (Gordon, 1988, p. 169).

In sum, a defined benefit scheme, can offer the individual protection against unanticipated inflation during his/her contribution years. Neither type of scheme, however, deals well with post-retirement inflation.

### 3.3.3 The economic growth argument

A different line of defence argues that funding leads (i) to an increase in savings, hence (ii) to increased investment, and hence (iii) to higher output growth than PAYG, and thereby makes it

easier to finance pensions in the face of demographic change. Each of the three links requires qualification.

On the first link, it is, in any case, only while a fund is building up that saving might be higher; in steady state, saving by workers is matched by dissaving by pensioners. Furthermore, opinion is divided as to whether funding increases saving even during the build-up phase. The debate is both theoretical and empirical. A key question is whether increased pension saving (e.g. through a funded scheme) does or does not offset other saving. The answer depends on the broader determinants of saving, and in particular on the extent to which people save only or mainly to finance retirement, or whether they save also to make bequests.

To understand the roots of the debate it is necessary to go back to a famous paper by Feldstein (1974). He argued that PAYG financing tends to reduce saving; but that if pensions induce earlier retirement, savings would increase to pay for a longer retirement after a shorter working life. He therefore concluded that the issue is theoretically indeterminate.

Aaron (1982) surveys three theoretical models of the determinants of saving: the life-cycle model (which rules out bequests); the multigenerational model (which allows bequests); and the short-horizon model (which relaxes the assumption that individuals make rational lifetime plans based on, more or less, full information). Feldstein's use of the life-cycle model was criticised *inter alia* on the grounds that with a life-cycle model an increase in PAYG benefits *must* reduce savings; with a multigenerational model, in contrast, increased benefits could instead increase bequests (and hence not reduce savings). Aaron summarises the theoretical debate by observing

that a person determined to find a respected theoretical argument to support a preconception will find one, and that a person without preconceptions will find a bewildering diversity of answers in economic theory about whether social security [i.e. pensions] is more likely to raise or to lower consumption or labor supply . . . To get by this theoretical impasse, one turns with hope to the empirical research . . . As will become clear, most of these hopes remain unfulfilled. (Ibid., p. 28)

Feldstein's empirical work, based on time-series data, concluded that the US social security scheme (which is PAYG)



reduced personal saving by about 50 per cent and the capital stock by 38 per cent below what it would have been in the absence of the social security system. There were several lines of criticism: additional variables such as the unemployment rate or a measure of permanent income tended to reduce the effect on saving, and to destroy its statistical significance; and the results were highly sensitive to the time-period over which the relation was estimated. The results were finally discredited by Leimer and Lesnoy (1982) who found an important error in some of Feldstein's data. They also pointed out that the results are very sensitive to the way in which people are assumed to form expectations.

Aaron (1982, p. 45) concluded that 'it would be pointless to continue the . . . debate, even if better data should become available'. Subsequent work (Auerbach *et al.*, 1989; Auerbach and Kotlikoff, 1990) uses a 75-period life-cycle general equilibrium model to simulate the effects of demographic change under different pension regimes. The results highlight the key role of expectations and their impact on retirement behaviour. Since the formation of expectations is unmeasurable, the issue remains unresolved.

So far as the second link is concerned, increased saving does not necessarily lead to more investment; pension savings could instead be used to buy old masters. On the third link, the objective is to channel resources into their most productive investment use. But it cannot just be assumed that pension managers make more efficient choices than other agents. Nor do state funded schemes necessarily fare better. Experience in Sweden and Japan, where the state earnings related pensions are funded, suggests that such schemes 'offer powerful evidence that this option may only invite squandering capital funds in wasteful, low-yield investments [which] should give pause to anyone proposing similar accumulations elsewhere' (Rosa, 1982, p. 212).

### 3.3.4 Policies to cope with demographic change

What policies, then, might government adopt? In principle there are only three solutions. Either demand could be reduced by paying lower pensions (reducing pensioner demand) or by maintaining real pensions financed out of higher contributions (thus reducing worker demand). Alternatively, and the only complete solution, output could be increased sufficiently so that a constant

contribution rate can finance an unchanged real pension. This can be done in only two generic ways: by increasing output per worker; and/or by increasing the number of workers. The first can be achieved through improvements in the quantity and quality of capital equipment, and in the quality of labour. Relevant policies are:

- (a) increased investment in physical capital, such as machinery and factories;
- (b) increased research and development expenditure (i.e. not only more, but better machines);
- (c) increased investment in human capital, producing a better educated and trained workforce.

Policies to increase the number of workers include:

- (d) reducing the rate of unemployment;
- (e) encouraging married women to rejoin the labour force, for instance through adequate child care facilities;
- (f) raising the age at which retirement pensions are paid, or giving people an incentive to defer retirement;
- (g) importing labour (generous immigration policies, 'guest-workers'): obvious solutions under this head would be to award UK passports to Hong Kong citizens; and West Germany is absorbing workers from the (younger) East German population.

The previous paragraph is not controversial (see, for instance, Holzmann 1988; Falkingham, 1989). What is controversial is whether or not funding leads to higher output growth than PAYG. Funding has no bearing on policies (c)–(g). It is true that pensions affect labour supply; but to the extent that that is relevant, what matters is the *level* of the pension not its *source*. Any effect must be through the first two policies. This brings us back to earlier arguments which suggested scepticism about the likely size of the effect of funding on saving and investment. The conclusion is that policy should be concerned with all of policies (a)–(g), rather than focusing too sharply on funding, which (i) is only an indirect method of attack, and (ii) relates only to the first two policies.

### 3.4 THE AGE OF RETIREMENT

#### 3.4.1 Facts and implications

Britain is unusual, though not alone, in having a lower mandatory retirement age for women; it is five years younger than for men also in Australia, and three years younger in Japan. That fact, combined with women's greater longevity, has major implications.

The standard retirement age for men in the UK is 65, at which age male life expectancy is 77 years. For women, the standard retirement age is 60, with a life expectancy of 80 years. The typical man is thus retired for twelve years, the typical woman for twenty; put another way, on average it costs 20/12 times as much to pay a given pension to a woman as to a man. Thus if men and women pay the same contributions and receive the same benefits, women receive 20/12 times as much pension as men per pound of contribution. The problem is not a result only of the retirement age differential. If the age of retirement were equalised (a topic to which we return below), the typical British woman would be retired for fifteen years, and the cost differential would be reduced, but not eliminated.

It should be noted that there is a genuine ambiguity over how to define equality in the context of pensions.

- Equality could be defined in terms of the *weekly pension*. In that case, a man and a woman with an identical earnings stream would pay identical contributions and receive an identical weekly pension; but the woman, on average, would receive her pension for longer. Thus the man pays more than the woman per pound of weekly pension.
- Alternatively, equality could be defined in terms of the *present value* of the pension stream: a man and woman with an identical earnings record would accumulate identical lump sums, which would finance identical pension streams over their expected lifetime; under this arrangement, however, the woman would receive a lower weekly pension.

#### 3.4.2 Arguments for equalisation of pensions and normal retirement ages

Three issues require discussion: (i) whether equality for pensions should be defined in terms of the weekly pension or the lifetime pension stream; (ii) whether the age of retirement should be the same for men and women; (iii) and, if so, whether the equalised retirement age should be 60 or 65.

One argument is favour of the equal-weekly-pension definition is a simple equity one. The case can be strengthened by observing that such a rule has only minimal efficiency costs. The standard argument for charging actuarial premiums (i.e. premiums related to individual risk) is that to do otherwise would cause inefficiency. Thus, to avoid adverse labour supply incentives, it is correctly argued that individuals should be allowed to retire early only on the basis of an actuarially reduced pension. But incentive issues arise only where individuals have choice. In the present context, however, people cannot choose whether to be a man or a woman, nor to choose their longevity. Thus there is no efficiency loss in making it mandatory for pension schemes to put men and women into a common risk pool.

Such a policy, however, must be mandatory. Otherwise pension schemes consisting mainly of men would be able to pay higher pensions, and there would be an incentive to try to exclude women. A strict regulatory regime is therefore necessary to avoid discrimination. Overt discrimination is covered under existing legislation. Implicit discrimination, however, is more difficult to police (e.g. a pension scheme open only to current and former rugby players).

A separate issue is whether there should be a common retirement age for men and women. Here the argument for equalisation is even stronger. The present arrangement is discriminatory in two ways. It discriminates against those women who want to work longer than 60. There have already been several cases brought against the UK government in the European Courts on precisely this issue. Second, it can discriminate against men. Under the present system, if a man and a woman have an identical lifetime earnings profile and both retire at 65,<sup>2</sup> the woman will have a pension 37.5 per cent higher than the man's, because the national insurance pension is raised by 7.5 per cent for each year by which



retirement is deferred beyond normal retirement age. On both grounds, the differential retirement age is indefensible.

Finally, should the retirement age be equalised at 60 or 65? Here, again, the answer is unambiguous. Given the demographic prospects, the common retirement age should be 65, or perhaps even older.

### 3.5 POST-WAR PENSIONS POLICY IN THE UNITED KINGDOM

#### 3.5.1 The past

In the light of previous discussion it is possible to shed some light on the shape of post-war pensions policy.

*The original Beveridge scheme* embodied in the 1946 National Insurance Act was in many ways actuarial. Individuals bought a weekly stamp, that is a flat-rate contribution, for which they received flat-rate benefits. The premium did not reflect differences in individual risk; but since membership was compulsory it did reflect the *average* risk. In contrast with later arrangements, the weekly stamp can be regarded not as a lump sum (and hence regressive) tax, but as a compulsory insurance premium.

*The introduction of graduated pensions:* the flat-rate contribution in the 1946 Act was a heavier imposition for individuals with lower incomes, leading to political pressures to keep it small. It followed that benefits had to be small, a source of increasing dissatisfaction over the 1950s. From 1961, therefore, a compulsory additional earnings-related contribution was levied above a certain level of earnings, which gave entitlement to an earnings-related pension in addition to the flat-rate pension. The additional pension bore a strict actuarial relation to additional contributions. Each £7.50 of graduated contribution entitled a man to an extra 2½ pence of weekly pension; for women, because of their greater average longevity, the extra 2½ pence per week cost an additional £9 of contributions.

Clearly the major aim was income smoothing. A subsidiary objective was horizontal equity: there had always been state assistance for earnings-related pensions through tax relief for occupational pensions; but these went mainly to salary earners. One view

of graduated pensions is that they reduced inequality between salary earners and wage earners.

*The 1974 Labour government* pursued the objective of poverty relief by increasing the basic pension as soon as it gained office. Later that year, it published a White Paper (UK, 1974), which kept the previous flat-rate arrangements, on which was superimposed a state earnings-related pension scheme (SERPS). The explicit aims of the White Paper were:

- to avoid means testing (*inter alia* to avoid its stigmatising effect);
- to pay benefits which were indexed to changes in prices or earnings (income smoothing);
- to pay earnings-related benefits (income smoothing);
- to redistribute towards the less well off (vertical equity);
- to offer equality for women (horizontal equity).

Since most of these objectives are hard to achieve in a private scheme, it was almost inevitable that the White Paper should advocate the state earnings-related scheme implemented in the 1975 Social Security Pensions Act.

There was an increase in the basic pension in 1974, which reflected greater weight on poverty relief; on the face of it, so too did the emphasis on indexation, which ensured that the poverty line was not eroded by inflation. In many ways, however, the change was more form than substance. The 1946 National Insurance Act made no mention of uprating benefits in line with inflation, and benefits in the early years were uprated only infrequently.<sup>3</sup> Under the 1975 Social Security Act and Social Security Pensions Act, the level of SERPS and various other benefits was to be reviewed annually and uprated in line with prices or, in the case of the basic pension, with earnings or prices, whichever was the larger.<sup>4</sup> The requirement to review benefits annually, it can be argued, made little difference. Benefits between 1948 and 1975 had in practice remained a constant fraction of average pre-tax earnings so exactly that it is clear that successive governments had an unwritten behavioural rule to maintain the relativity (Barr, 1981).<sup>5</sup>

*The 1985 review:* the results of 'the most fundamental examination of our social security system since the Second World War'

(UK, 1985a, Preface) were published as a Green Paper and in a White Paper later in the same year (UK, 1985b). Notwithstanding the claim to be a fundamental review, the bulk of the proposed changes were little more than housekeeping improvements (e.g. measures to reduce the likelihood of poor families losing more in benefit than they gained in extra earnings).

Nevertheless, the Green and White Papers gave a valuable insight into the government's objectives:

- '[T]he social security system must be capable of meeting genuine need' (UK, 1985a, para. 1.12), i.e. the objective of poverty relief.
- '[T]he social security system must be consistent with the Government's overall objectives for the economy' (ibid.) (the macroeconomic efficiency objective).
- '[T]he social security system must be simple to understand and easy to administer' (ibid.).

These objectives are consistent with private, non-redistributive, actuarial provision of the earnings-related pension. It is therefore not surprising that the Green Paper (UK, 1985a) proposed the abolition of SERPS and its replacement, for the most part, by occupational (i.e. private, funded) pensions. The proposal was hotly opposed, not least by the pensions industry, worried that it might be expected to offer pensions not only to salaried professionals in stable jobs but also to the less well off. The White Paper (UK, 1985b) was more circumspect, retaining SERPS but reducing benefits in later years. Specifically, under the 1975 Social Security Pensions Act, the state earnings-related pension scheme (SERPS) pays a pension of one-quarter of the excess of an individual's average earnings above a threshold. Thus an individual with twice the earnings – and hence twice the contributions – will receive less than twice the total pension (basic pension plus SERPS). These arrangements, which still apply at present, will be changed in three major ways, starting in 2000. From 2010 the pension will be one-fifth rather than one-quarter of the relevant amount, the reduction having been phased in over the previous ten years. Second, average earnings will be measured not over an individual's best twenty years, as hitherto, but over his/her full working life. Third, the surviving spouse will inherit up to half, rather

than all, of his/her spouse's earnings-related pension. These changes increase the importance of the basic, flat-rate pension, and hence increase the redistributive tilt in the state pension scheme.

Alongside the 1985 reforms, further incentives were given to individuals to contract out of SERPS to join defined benefit occupational schemes. Another key part of the legislation allowed individuals, subject to certain regulations, to opt out of both SERPS and occupational provision and make their own pension arrangements either through an insurance company or, even more individually, by building up a portfolio of assets of their own choosing. Such individual pensions have two effects: because they are defined contribution schemes, they face the individual with the risk of unanticipated inflation during contributions years; and, because they are based strictly on individual contributions, they also imply that a woman will receive a lower weekly pension than a man with an identical contributions record. Individual pensions thus greatly extend the actuarial element in earnings-related pensions.)

The Green Paper proposal to abolish SERPS was an attempt to shift earnings-related pensions from the non-actuarial stance of the 1975 legislation back to stricter actuarial principles. In the end, because of widespread concern at the proposed abolition of SERPS, the White Paper represented a much smaller move in an actuarial direction. The changes after 2000 reduce the weight put on equity objectives. For instance, the calculation of benefits over a whole working life rather than over the best twenty years works to the disadvantage of individuals with fluctuating incomes, particularly those individuals (mainly women) who have spells in and out of the labour force.

However, though the redistributive element in the state scheme was reduced, the move towards actuarial principles was only partial. Whether such a move is good or bad depends on the answers to two questions: first, and ideological, is whether one believes that pensions should be redistributive; second, and largely technical, is whether or not a move towards funding is an effective response to demographic prospects. On the latter issue, earlier discussion focused on two issues: whether or not the demographic problem is serious; and what policies might improve matters. The Green Paper's response was largely to duck the problem by advo-

cating that earnings-related provision should be mainly a private sector activity, the White Paper, as we have seen, retained SERPS but reduced benefits in later years.

It can be argued that the White Paper policy is the right one. Either the SERPS promise of 1975, with hindsight, was too generous or it was not. If output grows sufficiently to allow the original promise to be kept, pensions can be raised in future years (with PAYG it is easy to increase pensions, but politically difficult to lower them). If, on the other hand, the original promise was too generous, then the strategy of making the promise less generous has much to commend it in comparison with the Green Paper alternative of scrapping SERPS. The 1975 Social Security Pensions Act was based on nearly two decades of debate, with considerable all party support for the final outcome. Little has changed since 1975, save that the scheme has perhaps turned out to be unrealistically generous, given likely demographic trends and their effect on output. The proposed changes should reduce the most acute cost (i.e. demand-side pressures), particularly if buttressed by the supply-side policies discussed in section 3.4. In the USA similar changes, in the form of future increases in contribution rates and in the retirement age, have already been announced.)

### 3.5.2 The future

Policies in the face of demographic change discussed earlier imply the following trends over the next one to two decades. There will be increased mechanisation to raise the productivity of individual workers. At risk of indulging in wishful thinking, there might also be increased investment in labour, through raised staying-on rates at school, higher age participation rates in higher education and greater emphasis on training both prior to entering the labour force, and on a continuing basis.

A second set of policies would increase labour-force participation. Child-care facilities, often run by firms to attract married women, will improve dramatically. Even if immigration policies remain tight, the European Community will relax entry conditions for 'guestworkers'. The age of retirement for women will be raised to that for men; and both men and women will be offered incentives to defer retirement even further.

## 4 The Poverty Trap

DAVID WHYNES

### 4.1 INTRODUCTION

The economy of the United Kingdom is, and for a long time has been, market capitalist. The principal allocation and distribution mechanism in the market economy is the exchange of commodities owned privately by individual economic agents. The incomes received by these agents are therefore functions of their relative successes in making exchanges with others. The poor in such an economy – those in receipt of the lowest incomes – are either those who happen to possess few exchangeable assets or those whose available assets command little exchange value. Unless one can make particularly strong assumptions about the distribution of assets amongst agents, the existence of income inequality within any market economy at any given time must be taken as axiomatic.

The existence of a class of persons with non-existent or low market incomes has long been recognised in the United Kingdom. Significantly, it has also been recognised as constituting a social problem, requiring a statutory response. The earliest remedies involved income redistribution from rich to poor, initially at the parish level but coming to lie eventually within the orbit of local government. The principal contribution of the twentieth century was to parallel income redistribution between individuals with an intertemporal transfer system of social insurance, with the responsibility for the administration of the bulk of poverty relief falling on central government. The change in policy structure over time was accompanied by a change in scale. In the mid-1880s, the statutory allocation of national resources to the relief of the poor was approximately £8 million, amounting to perhaps one-

hundredth of 1 per cent of gross national product (Mitchell and Deane, 1962). In the mid-1980s, the government's annual social security budget for the UK amounted to approximately £45 billion, approaching 12 per cent of national product, and this figure does not include additional welfare benefits to the poor paid in kind e.g. health care, public housing and education (Barr, 1987).

The fundamental question to be asked of any policies directed against poverty is – do they result in the poor becoming less poor? Attempting to answer this question, an empirical study by Beckerman and Clark (1982) concluded that the number of people living in conditions of poverty in the UK would have been seven times higher had not a social security system of the type then prevailing been in operation. O'Higgins (1985a) estimated that the poorest 20 per cent of UK households earned only 0.6 per cent of market income in 1982, yet received 11.3 per cent of national disposable income, as a result of income redistribution. Survey data for 1986 reveal that the average annual final income of the poorest 20 per cent of UK households was raised from £130 to £4130 (from 1 to 47 per cent of the national average) as a result of the receipt of state welfare benefits, both in cash and in kind. This increase was financed, in part, from net transfers from richer households. The final income of the average household amongst the richest 20 per cent amounted to 70 per cent of its market income (CSO, 1990, p. 94). (It is therefore impossible to escape the conclusions that a considerable quantity of resources is being redistributed, and that the lower income groups are the net recipients.)

An apparently minor rewording of the original question, however, prevents us from drawing such straightforward conclusions. In asking whether poverty policy enables a poor household to become less poor we enter an area of contemporary debate which forms the principal subject of the present chapter. The proposition to be considered is that, whilst the prevailing system grants poor households more net income than they would otherwise receive as a result of market forces, it does not enable them to escape from the circumstances which created their poverty in the first place; indeed, it might well serve to perpetuate it. Poor households might become trapped in their poverty.

## 4.2 THE POVERTY PLATEAU

The broad structure of income redistribution instruments in the United Kingdom can be outlined very simply. There are four components:

1. For earned incomes above a statutory tax payment threshold, a proportion of the difference between the earned income and the tax threshold is paid into the Consolidated Fund, the government's main revenue and expenditure account. For example, were the tax rate to be 0.25, the tax threshold £3000 and the individual's income £7000, then £1000 would be payable to the fund as income tax.
2. All employees and employers make obligatory contributions to the National Insurance Fund. This fund then makes disbursements to employees in the event of their withdrawal from the labour market, arising from unemployment, long-term sickness or old age (most sick pay in the short-term is the responsibility of the employer). Contributions are earnings related, up to a maximum contribution level, and all the benefits are liable for taxation.
3. The Consolidated Fund finances a class of non-contributory, means-tested benefits. Principal amongst such benefits are, first, *Income Support*, paid to any individual whose nominal income falls below a statutorily defined level. The level of benefit available is the difference between the individual's nominal income and the defined level. Second, *Family Credit* is available to low-income families with breadwinners in full-time employment. Again, an income threshold level for eligibility is defined, and the maximum credit available to a given family is determined by family size. If family income is less than the threshold level the maximum credit is paid. If family income exceeds the defined level, the family receives the maximum reduced by a proportion of the excess of income over the threshold. Assume, for example, that the defined eligibility level is £50 per week and the maximum credit available is £40. A family with a weekly income of £30 would thus receive the maximum, giving a gross income of £70 per week. Assuming that the proportionate reduction, or 'taper', for incomes in excess of the threshold is 50 per cent, a family earning £60 per

week would be entitled to  $£[40-0.5(60-50)]$ , i.e. £35 in Family Credit, giving a gross weekly income of £95. Finally, *Housing Benefit*, administered by local authorities to assist those on low incomes to meet accommodation expenses, has broadly similar operational characteristics (including a taper) to Family Credit.

4. There exists a class of tax-financed, non-means-tested benefits, the receipt of which are contingent solely upon applicant circumstances. Examples include the flat-rate Child Benefit (available to all those responsible for the upkeep of children) and mobility allowances (for the severely disabled).

In addition, certain of these benefits, such as Income Support, are 'passport' benefits. Being in receipt of such benefits entitles the individual or household to receive additional services free of charge, for example, medical prescriptions, dental treatment and school meals for children. It is important to appreciate that, despite frequent changes in nomenclature and operating criteria, 'the system we have today is essentially the same as that introduced in 1934' (Atkinson, 1989, p. 91).

Beyond the simplicity of the broad structure, however, matters become mind-bogglingly complex, especially with respect to the precise specification of tax liability, benefit eligibility rules (estimation of household nominal incomes) and payment levels. The Child Poverty Action Group publish annual claimants' guides to obtaining benefits, and their volumes for 1988/9 contain 630 densely packed pages which deal only with the major benefits (CPAG, 1988; 1989). It is only by consulting compendia of this nature that one can fully understand the system's operation, assuming that one possesses the necessary legalistic mind. Income tax rates have gradually fallen over the past decade and benefit levels are reviewed regularly, the majority being revised each year. Amendments to social welfare legislation have been enacted on almost an annual basis. Most importantly, the rate of flow of the supplementary regulations issued by government to agencies responsible for the day-to-day administration of the system has been even higher.

As explained earlier, a household's disposable income after redistribution depends both upon taxes and insurance contributions paid and upon benefits received. Both, moreover, depend in some degree upon the level of 'nominal' household income. In

general, as nominal income rises, tax and contribution liabilities increase whilst benefit entitlements decline. Depending upon the regulations in force and upon precise family circumstances, it is possible for a household to discover that its net disposable does not vary substantially over a range of nominal incomes. Piachaud (1971) was one of the first to examine this phenomenon, and he provided the following example. In 1971, a four-child family earning £20 per week had a tax/insurance liability of £2.20. At this income school meals would be provided free of charge. Including benefits from Family Allowance (a forerunner of Family Credit), net disposable income for the household amounted to £19.70. However, a nominal earned income of £23 per week incurred a tax/insurance liability of £3.25, and this higher income disqualified the family from receiving free school meals (weekly cost £1.75). In consequence, net disposable income amounted to £19.90, from which it can be concluded that a 15 per cent increase in nominal income generated only a 1 per cent increase in disposable income. As Piachaud noted, the effect is equivalent to the payment of a 93 per cent 'marginal tax rate' on the extra earned income. Bradshaw and Wakeman (1972) were able to provide similar instances – a two-child family, for example, received only a 14 per cent increase in disposable income from a nominal income rise of 71 per cent (£14 to £24 per week), implying a 'marginal tax rate' of 80 per cent.

The phenomenon which these examples are illustrating is termed the 'poverty plateau'. Its manifestation is a flat distribution of disposable incomes over a range of increasing nominal incomes, and it occurs as a result of gains in nominal income made by a household being substantially eroded by increases in liabilities or losses of benefit. A general model of the effect is impossible to construct owing to the regular revisions which have been made to the social security system. The following idealised example, however, illustrates the essential points.

Assume that the household's nominal weekly income is  $Y$ , the combined income tax/national insurance contribution threshold is  $Y_T$ , and the combined tax/insurance contribution rate is  $r$ . Additional household income is available under a system of income support analogous to Family Credit. The weekly income threshold for eligibility for the maximum amount of income support ( $C$ ) is  $Y_T$  (assumed  $> Y_T$ ), and the taper on amounts above the threshold is  $t$ . Family support is a passport to additional benefits of value  $P$ , and



the family also receives non-means-tested benefits to the value  $N$ . It accordingly follows that, for nominal incomes between zero and  $Y_I$ , household disposable income ( $Y_D$ ) may be represented as:

$$Y_D = Y + C + P + N$$

and  $dY_D/dY = 1$ . For incomes greater than  $Y_I$  but less than  $Y_F$ :

$$Y_D = Y - r(Y - Y_I) + C + P + N$$

implying a rate of change of disposable income with respect to nominal income of  $(1 - r)$ . Beyond  $Y_F$ , the taper on income support operates, with the result that:

$$Y_D = Y - r(Y - Y_I) + C - t(Y - Y_F) + P + N$$

up to the nominal income,  $Y_S$ , where benefits tend to zero ( $Y_S = Y_F + C/t$ ). In this range,  $dY_D/dY = (1 - r - t)$ , which must be smaller than  $(1 - r)$  as long as the taper is positive. Indeed, a combined tax rate and support taper approaching unity will necessarily produce a very low rate of increase of disposable income for increases in nominal income within the range ( $Y_F < Y < Y_S$ ). At  $Y_S$ , the taper ceases to operate but benefits of the absolute value  $P$  are thereafter lost. Beyond  $Y_S$  no further benefits are available and  $dY_D/dY$  reverts to  $(1 - r)$ . These effects are represented diagrammatically in Figure 4.1 and the 'plateau' effect is immediately evident. Also evident is the significant consequence of the loss of benefits  $P$  when the household is no longer eligible for the 'passport' family support. As may be seen, the effective marginal tax rate on income levels immediately above  $Y_S$  exceeds 100 per cent owing to the loss of this benefit.

Since the identification of the poverty plateau, a considerable amount of effort has been directed towards estimating its precise magnitude. For the early 1980s, Parker (1982) notes that, in the case of a single person, a full-time job at £1.75 per hour could generate approximately the same disposable weekly income as a half-time job, owing to tax increase and benefit decrease effects. The net disposable income for a lone mother with two children varied only between £48 and £56 per week for nominal earned incomes in the range zero to £100 per week. CPAG (1982) estimated the implications of nominal income changes for the net disposable income of a family containing three children as follows. At £50 per week, an earner was responsible for income tax and

insurance contributions of approximately 39 pence in the pound, although assistance with rent, rates and the Family Income Supplement (FIS - analogous to the modern Family Credit) brought disposable income to approximately £90 per week. As nominal income increased, however, all such assistance decreased, FIS at a taper of 50 pence for every extra pound of nominal income, and rent and rate allowances by smaller rates. In consequence, disposable income for a nominal income of £100 was actually £2 per week lower than for £50. At a nominal income of £101 eligibility for FIS ceased and, with it, eligibility for free school meals. In consequence, disposable income at £101 was estimated to be £6 lower than for £100, implying a marginal tax rate well in excess of 100 per cent. In fact, disposable income did not exceed that obtained from a nominal income of £50 until weekly earnings of £123 were exceeded. These calculations mirror closely the theoretical portrayal in Figure 4.1.

The 1986 Social Security Act was instrumental in ameliorating some of the extremes of the poverty plateau by requiring that family credit and housing benefit eligibility be assessed with respect to post-tax, as opposed to pre-tax, income. The effect was to ensure that benefit gains were less likely to be more than offset by tax losses. This having been said, the issue of the poverty plateau remains, and our original model can easily be modified to demonstrate the point. Revising the earlier equation for the relevant range,  $Y_F < Y < Y_S$ , we obtain:

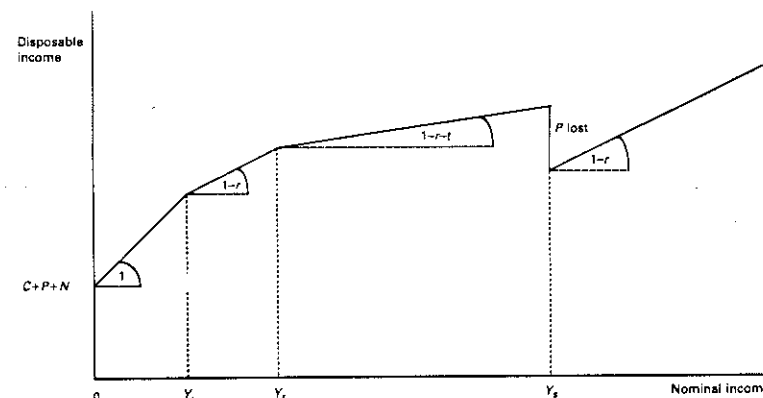


FIGURE 4.1 The poverty plateau



$Y_D = Y - r(Y - Y_D) + C - t[Y - r(Y - Y_D) - Y_D] + P + N$   
 and  $dY_D/dY = (1 - r - t + rt) = (1 - r)(1 - t)$ . The plateau in this range accordingly becomes less flat than the one portrayed in Figure 4.1; for example, with  $r = 0.25$  and  $t = 0.7$ , the marginal increase in disposable income with respect to changes in nominal income is 0.05 according to the original formulation, but 0.23 in the revised version. However, this should be compared to the situation of richer households well above the plateau who can expect a marginal increase of £0.75 from every pound of earned income. Hill (1990) elegantly expresses the practical implications of the present system as follows:

Consider the example of a low-paid worker who is entitled to both family credit and housing benefit. What happens when that worker receives a pay rise of £1 per week? First, that additional pound may be reduced by 25 pence income tax and by social security contributions which may be as much as nine pence in the pound. If these are taken into account, therefore, the actual gain from that pound increase in income will already have been reduced by 34 pence. Then, the remaining 66 per cent affects the individual's entitlement to family credit which has a 70 per cent taper. That means that family credit will be reduced by 70 per cent of that 66 pence, leaving the individual with no more than a 20 pence gain. However, that is not the end of the story. Even this small residual gain will affect the individual's claim to housing benefit. The housing benefit taper, if the individual is entitled to both rent and community charge rebate, is 80 pence in the pound. Thus, the remaining 20 pence will be reduced by 80 per cent of it, giving an eventual net gain from that pound increase in gross income of only 4 pence. (Ibid., p. 106)

From Hill's figures, it would still appear possible for a poor individual to face a 96 per cent marginal tax rate. It should be added that working pensioners at present face a 100 per cent taper on the National Insurance pension, for earned incomes above a certain amount.

The significance of the poverty plateau lies in its implications for the question raised at the end of the previous section of this chapter – does poverty policy enable the poor to become richer? It

is quite clear, given the existence of the plateau, that households within the relevant income range will find that attempts to increase their nominal incomes result, at best, in only minor improvements in their disposable incomes. In this sense they can be truly said to be trapped in poverty. It is also possible to argue, on intuitive grounds, that higher marginal tax rates for the poor hardly constitutes a fair criterion for income redistribution. Atkinson (1989) has estimated that, for 1980, the majority of UK households (approximately 75 per cent) faced marginal tax rates of 37 per cent, which represented at that time the standard income tax and National Insurance contributions. However, 8 per cent faced the higher effective marginal tax rates of the poverty plateau, brought about by the tax/benefit interaction described above. Parker (1989) suggests that 40 per cent of the UK population were eligible for withdrawable benefits in 1986 – pensioners, families in which the earner was unemployed or sick, large families with low earned incomes. The incomes of all these families would thus be vulnerable to the plateau effect in some degree.

### 4.3 ELIMINATING THE POVERTY PLATEAU

The poverty plateau described in section 4.2 results from the interaction of the income tax liabilities, National Insurance contributions and means-tested benefits. The specific problem is relatively recent in origin, arising because of changes in the constituent elements.

Since the Second World War, 'fiscal drag' has persisted, arising from the reluctance of successive Chancellors of the Exchequer to increase the tax threshold in line with increases in earnings. The tax base – that amount of income available to the government for taxation – has been gradually eroded by the increasing generosity of tax relief on such outgoings as mortgage interest and private pension contributions. In an attempt to generate sufficient revenue over time, therefore, the government has required more and more lower-income families to pay income tax. In the case of a childless couple, the tax break-even point (the income at which tax liability begins after deduction of allowances) shifted from two-thirds to one-third of average earnings between 1950 and 1983. For a married couple with two children the point was approximately one-

third *above* average male manual earnings in 1950, but one-third *below* in 1985 (Parker, 1989).

Between 1975 and 1984, National Insurance contributions rose from 6 to 9 per cent of nominal income, partly because of reduced government transfers to the fund and partly because of increased demands (higher unemployment and the reform of the state pension scheme). The final contribution to the creation of the poverty plateau was the range of means-tested benefits – Family Income Supplement, rent allowances and rate rebates – introduced by the Conservative government between 1970 and 1974. These were intended to reflect the party's commitment to greater selectivity in the scope of welfare provision and have passed unchanged in principle into the present social security structure (Deacon and Bradshaw, 1983).

One further, and longer-term, change in economic structure has also contributed to the creation of the modern poverty plateau. The relief of poverty in the nineteenth century was founded upon a very fundamental principle relating to conditions of entitlement, the 1834 Poor Law Commissioners asserting that: 'The first and most essential of all conditions is that the situation of the individual relieved should not be made really or apparently so eligible as the situation of the independent labourer of the lowest class' (quoted by Brown, 1990, p. 3) The incomes of those on state benefits, in other words, ought to be less than the lowest incomes prevailing in the labour market. Nowadays this principle can be observed not to hold – it is quite possible for households to receive weekly benefits well in excess of that which could be earned as a result of the sale of labour. Two factors account for this, the first being the institution of National Insurance. Whilst labour market incomes may be within the theoretical range zero to infinity, depending upon conditions of supply and demand, insurance benefits will be positive, as determined by the household's contribution record and the weekly level of pay-out as set by the government. Second, the gradual political enfranchisement of the bulk of the population, which occurred between the 1832 Reform Act and the 1969 lowering of the voting age to 18 years, required government actions to reflect more accurately matters of popular concern. Given that modern UK electorates include pensioners, the unemployed, the sick, and families on low incomes, it is hardly surprising that increases in benefits over the past century have

occurred. The poor command a great many votes, which will be used, one assumes, to further their own interests. Modern market incomes, however, are determined as they always have been, with reference to impersonal forces as opposed to political will.

Compressing the range of nominal incomes along the poverty plateau, or increasing its gradient, by statutory means, necessitates reversing the trends mentioned above. Returning to the equations derived earlier, it is evident that raising the tax threshold ( $Y_1$ ), lowering the rate of income tax/insurance contributions ( $r$ ) and the taper ( $t$ ) on means-tested benefits, changing the eligibility criteria for additional benefits ( $P$ ) obtained via 'passport', and increasing non-means-tested benefits ( $N$ ) will all have the effect of increasing the amount of disposable income for any given nominal income. Lowering the taper ( $t$ ) on means-tested benefits would make far more households eligible for means-tested benefits ( $Y_s$  increases). The 'passport' problem, which produces the abrupt fall in disposable income after eligibility for means-tested benefits ceases, would be resolved only by a change in the way in which these benefits were operated. The introduction of some degree of taper into these benefits, or the provision of the relevant services to all at zero price (e.g. abolishing prescription charges), represent two such possibilities. Of all the non-means-tested benefits which ease the situations of households along the poverty plateau, Child Benefit appears to be the most significant. This is because the arrival of children in a low-income household can be an important contributor towards pushing the family into poverty, as a result of the combination of additional costs of child care and the loss of income owing to one parent ceasing paid employment. The incomes of the poorest 25 per cent of households with children is presently very much lower than the incomes of childless households. Oppenheim (1990) suggests that the average income in a childless household amongst the poorest 25 per cent is 25 per cent higher than the income of a two-child household, and more than double the income of a four-child household. As Deacon and Bradshaw (1983, p. 172) note: 'Child benefit increases are a better focussed method of reducing the poverty trap because virtually only families with children are caught in it.'

One important caveat must be applied to the whole of the preceding analysis. The assumption has been made throughout that households will be claiming their full benefit entitlement, yet

evidence suggests that this is not the case. Because of the recent reforms of the social security system an accurate assessment of take-up of present benefits is impossible, although official estimates for the mid-1980s suggested that the take-up for Supplementary Benefit (Income Support) was 76 per cent and for Family Income Supplement (Family Credit) 54 per cent (Hill, 1990). Research into the reasons for non-take-up of benefits suggest that a number of factors are relevant. First, households may be ignorant of the benefits to which they are entitled. Second, they may find the administrative procedures too complex and too difficult to handle. Third, claiming benefits – ‘living off the state’ – has always had associated with it a degree of social stigma. Fourth, claimants may be deterred if they are reluctant to allow officials to probe into their personal circumstances (means-tested benefits are granted only after detailed enquiries into household means). Finally, for some households, the amount of benefit available will be insignificant and thus not worth claiming. It is officially recognised that ‘take-up tends to be higher as the amount of entitlement increases’ (Hansard, in Atkinson, 1989, p. 192). The clear implication is that there exists a sizeable minority of households who, strictly speaking, are poorer than they need to be. One of the virtues claimed for Child Benefit is that its take-up rate is particularly high, on the grounds that (i) it is well understood and easy to obtain, (ii) no means-test enquiries are involved, (iii) for poor households, the value of the benefit is substantial, and (iv) being available to all, no negative social stigma is attached to its receipt.

Over the past two decades, a number of modifications to the prevailing structure of social security have been suggested, with the intention of eliminating the worst effects of the poverty plateau. During the late 1960s and early 1970s, the United States, which had been encountering very similar problems to those of the United Kingdom, was the scene of a number of practical experiments involving ‘Negative Income Taxes’ (NIT). Comprehensive trials were conducted in New Jersey (Pechman and Timane, 1975) and in Denver and Seattle (Robins *et al.*, 1980). Households in this latter experiment were guaranteed a minimum disposable income or support level, determined by household size. Increases in nominal income resulting from earnings were reduced by a taper ( $t$ ) up to a threshold point; thereafter, household incomes were reduced by the income tax rate ( $r$ ). Figure 4.2 illustrates the

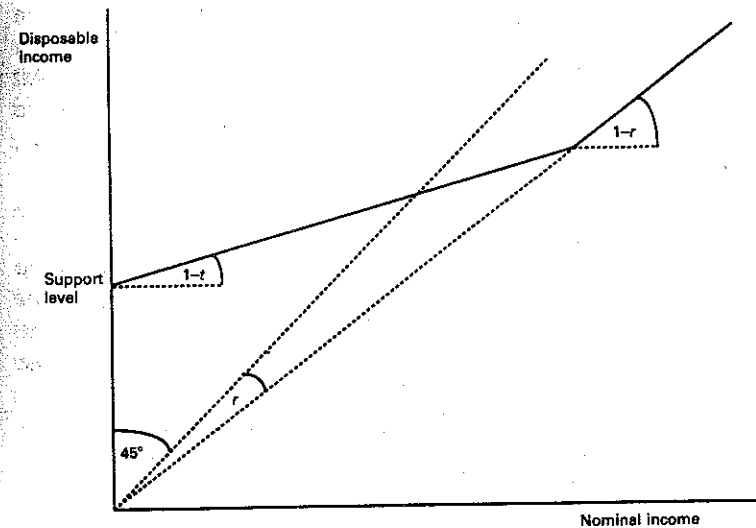


FIGURE 4.2 Negative income tax

system. As is evident, the poverty plateau of the form portrayed in Figure 4.1 does not exist and, in this respect, the system succeeds in defeating the problem posed. However, the Denver/Seattle experiment produced an additional and very significant conclusion, namely, that the rates of marital dissolution and family breakdown tend to increase dramatically as a result of guaranteed support. Indeed, this result was predicted by the experimenters, on the grounds that the benefit penalties incurred as a result from leaving the family fall considerably under the NIT model. Single persons simply become households in their own right and are therefore eligible for their own support income.

More recently, Parker (1989) has advocated a range of ‘Basic Income Guarantee’ (BIG) schemes as a solution to the poverty plateau. The precise details of these schemes are complex, although the broad principles are extremely simple. Substantial administrative reform is envisaged, including the abolition of tax reliefs and virtually all of the present welfare benefits, plus the integration of income tax payments and insurance contributions into the ‘basic income contribution’ (BIC). All individuals are

entitled to a statutorily defined 'partial basic income' (PBI), which can be supplemented in specific circumstances, e.g. expectant mothers, children, pensioners, disabled persons, lone parents. All incomes derived from, for example, earnings or savings ( $Y$ ) are subject to tax, or BIC, at a standard rate ( $r$ ). In consequence, disposable income,  $Y_D$ , equals  $[PBI + (1 - r)Y]$ . A linear relationship between nominal and disposable incomes accordingly exists, and the poverty plateau disappears.

There is, of course, one other very obvious method of increasing the gradient of the poverty plateau, namely, reducing support for those on the lowest incomes. For the moment, we shall presume that making the very poor even poorer is not seen as a desirable policy option. However, all the alternatives above (excluding this one) entail some net cost to the Exchequer. The simple raising of Child Benefit by £1, for example, means total costs of several hundred million pounds per year. The US negative tax experiment, a more extreme case, was estimated to imply additional costs of \$30 billion (1974 prices!) for national implementation. Assuming the government's budgetary stance is to be maintained, these costs will have to be recouped from revenues gained elsewhere in the tax system, for example, via the introduction of higher rates of tax for richer households (the BIG schemes are self-financing under the assumption of higher rates of income tax than those presently prevailing). The implications of funding poverty relief will concern us in a later section.

#### 4.4 POVERTY AS A CLOSED SYSTEM

Judged in the theoretical terms of Figure 4.1, a household is confined to the poverty plateau unless it is capable of obtaining a nominal weekly income of a level beyond that at which the benefit tapers operate. This approach to the problem of poverty entrapment is not invalid but, being concerned solely with present income, it is clearly unidimensional. Moreover, it does not address the fundamental question of how the household becomes poor in the first place.

A reasonably clear causal explanation of poverty exists in the case of the elderly. Provision for old age takes the form of deductions from current earned income, as contributions to National

Insurance and private pensions or savings schemes. Individuals sufficiently well paid during their period of employment will be in a position, other things being equal, to transfer sizeable sums to finance their future retirements. Individuals in low-wage employment, however, will have proportionately less current income available for forward transfer. Historically, reliance on the state pension alone has made such households amongst the poorest in the country, for the state pension has yielded a weekly income of between 16 and 20 per cent of average earnings for the past two decades (Oppenheim, 1990). As the household's income position having ceased work is completely determined by its consumption and savings decisions during work, low-earnings households are constrained to become low-pension households. Put the other way around, a presently poor pensioner household is either one which had insufficient resources or opportunities in the past to supplement its state pension, or one in which resources and opportunities or resources were used to gratify current as opposed to future needs. In either case, resources from the past are unavailable to ameliorate conditions in the present.

2. 'Lone parenting' is another circumstance where the explanation of poverty is relatively straightforward. Unless the circumstances of the household prior to marital breakdown are such that the child-carer can be adequately supported by the ex-partner, divorce or separation obliges the carer to choose between the labour market and state benefits in order to obtain a livelihood. The labour market option, however, even assuming that employment is available, requires the generation of a sufficiently high income to cover the costs of child care whilst the parent is working. In 1985, more than half of lone parents were dependent upon state benefits (Parker, 1989).

Turning to more complex cases, the socio-economic characteristics of the poor have been the subject of detailed research in the recent past. The important 'Black Report' (Townsend and Davidson, 1982), for example, identified a strong association between occupational class (i.e. household income levels) and the incidence of poor health. The prevalence of long-standing illness amongst unskilled manual workers has been found to be around three times that amongst professionals. A contemporary reappraisal of the report (Davy-Smith *et al.*, 1990) concludes that, not only do the associations still hold, but the health imbalance between rich and

poor has increased. Brown and Madge (1982) observed a correlation between the probability of unemployment and the occupational class of the employee (workers with lower levels of skill were more likely to become unemployed), and an association between low income and poor housing conditions. Most significantly, they also identified the possibility of 'multiple deprivation'. Several manifestations of poverty, in other words, such as job instability, disability, poor health and substandard housing might well all coexist within a single household. 'All the evidence suggests that although many deprived families suffer only from a single form of adversity, there is, at the same time, a tendency for a variety of problems to become concentrated in certain families' (ibid., p. 150). Deprivation 'is quite commonly compounded by overlap to become multiple deprivation, and it may sometimes be followed by similar patterns in the next generation' (ibid., p. 178).

By way of illustration of the implications of such findings, consider the following scenario, based on a model developed by Jackson (1972). Assume a household in which the principal earner has a low level of educational attainment (a low stock of human capital). This will constrain him or her to holding an unskilled manual job, which will typically generate below-average earnings. Low income will oblige the family to seek accommodation at low rent, and the quality of such accommodation is correspondingly likely to be poor. Poor housing conditions - damp, inadequate heating and overcrowding - exercise detrimental effects upon health status. As technical change in the economy advances, the unskilled worker's position in the competitive labour market deteriorates, a process exacerbated by declining health. The likelihood of unemployment for this worker therefore increases and, with it, the likelihood of the family becoming dependent upon state welfare benefits. With unemployment, this household reaches the poverty plateau, at which point further forces may come into play. An even lower household income might require the search for even cheaper housing, with increased health risks. A prolonged period of unemployment may further weaken the worker's competitive position in the labour market, and reduce the likelihood of a job in the future. Long-term unemployment will, moreover, tend to erode any accumulated savings which the family may possess, owing to the requirements of daily living. The poverty of the present generation might well have implications for

that of the future, because the children of this family would face a strong financial incentive to seek remunerative employment as soon as possible, in order either to support the family or to escape from it. However, this short-term income is purchased at the expense of obtaining educational qualifications which would have secured more favourable earning opportunities in the future. Indeed, poverty may constrain the children to follow exactly in their parents' footsteps. (An interesting test of this latter hypothesis is provided by the follow-up of Rowntree's 1901 study of York - Atkinson, Maynard and Trinder, 1983.)

The household in the above scenario has clearly become trapped in poverty. Both the psychological and the economic consequences of such a trap can be profound, as Oppenheim (1990) notes. These consequences include the sense of the family continually 'going short', spending less on foodstuffs, clothing and essential services than the average. They also include a sense of isolation from social activities owing to lack of finance, the creation of a sense of dependency on others, stress and anxiety, and the feeling of being involved in a constant battle with the authorities in order to claim benefits. Empirical sociological studies, such as those included in Allen *et al.* (1986), further highlight the adverse effects of poverty on family and race relations, including crime and homelessness. Poverty also induces debt, as families struggle to cope with household expenses. Berthoud and Kempson (1990) have demonstrated a strong negative association between household income and the likelihood of a household having outstanding debt - 28 per cent of households with weekly incomes below £100 appear to have outstanding debts, compared with 15 per cent of 'average income' households and 3 per cent of the richest households. The majority of the debt problems of low income families appear to be associated with the purchase of housing, heating and other essential services. Debt has an immediate short-term consequence on poverty, because the state is empowered to enforce deductions from benefits to cover arrears in tax, power and public sector rent. However, the long-term effect of debt accumulation is to further the entrapment of the household into poverty, owing to escalating debt service requirements.

As was discussed in the previous section of this chapter, increasing welfare benefits can do much to alleviate the predicament of individuals and households trapped in these forms of structural



poverty. Indeed, in the case of pensioners, an increase in the statutory level of benefit probably represents the only solution. For many other poor people, however, alternative means of escape may be available. One possible solution to poverty induced by low wages, for example, is the institution of a national minimum wage within the labour market, although such an institution has little to commend it. From the theoretical point of view, raising wages entails raising firms' costs, with the predicted effects of (i) price inflation, (ii) reduced competitiveness, and (iii) reduced demand for labour, i.e. unemployment. Another possibility appears more attractive.

Unemployment is a major cause of poverty, and the unemployment level in the United Kingdom has been of the order of 10 per cent for the past decade. A reduction in the rate of unemployment would clearly have beneficial effects in terms of poverty reduction, as the following simple model demonstrates. Suppose the economy consists of ninety employed persons, each receiving a weekly wage of £1000. These people pay a 1 per cent income tax to support ten unemployed persons, and each of the latter therefore receives £90 per week. Now suppose that five of these unemployed obtain work, also at £1000 per week. With ninety-five earners each paying a 1 per cent tax, this economy can afford a more than doubled unemployment benefit of £190 per person. Alternatively, a benefit of £133 per unemployed person (still almost 50 per cent higher than in the original position) can be afforded with a reduced tax rate of 0.7 per cent. Were unemployment in this model economy to increase to 15 per cent, however, a 1 per cent tax rate would only produce an unemployment benefit of £57 per unemployed person, making the unemployed very much poorer than before. In fact, a tax rate of approximately 1.5 per cent on each employed person would be necessary to maintain the benefit at £90. By these calculations, transforming welfare claimants into taxpayers produces potential gains for all concerned.

Increases in employment within the economy should therefore improve the fortunes of both the formerly unemployed and those remaining unemployed. Economic theory suggests that employment increases result from the stimulation of aggregate demand, although there has been considerable debate throughout the 1980s over where the responsibility for such stimulation lies. Traditional Keynesians see the responsibility lying with the government, and

would recommend expansionary fiscal and monetary policies to generate employment increases. The governments of the 1980s, in contrast, have been much more sceptical of their own powers to control events and have expressed more faith in the expansionary potential of private economic agents. For their part, their macroeconomic management over the past decade has been, in the main, contractionary (high interest rates and net reductions in public spending).

Given an expansion of aggregate demand, the acquisition of skills offers an unemployed person an increased probability of obtaining a job and thereby moving out of poverty. Indeed, the Denver-Seattle NIT experiments included training incentives as an element of their support packages, and it was concluded that 'subsidies clearly induced people to take additional schooling' (Robins *et al.*, 1980, p. 278). It has, nevertheless, become commonplace to remark that the United Kingdom has a very poor record in this respect, with far fewer young people 'staying on' after school than in comparable industrial economies. Ainley and Corney (1990) argue that this is because training has never been seen as a principal force in economic development in the United Kingdom, despite attempts by the now-downgraded Manpower Services Commission to signal its significance during the 1970s and 1980s. Reliance has always been placed on the capacity of industry to train labour very much on a *laissez-faire* basis; the German system, by contrast, is employer-led and employer-financed but is highly organised.

#### 4.5 HOW MUCH IS POVERTY RELIEF WORTH?

In the preceding sections we have examined a variety of ways in which households can become trapped in poverty and suggested a variety of remedies to facilitate their escape. All these remedies, however, have one thing in common – they all require net income transfers from relatively rich taxpayers in the short term. This is true whether one conceives of poverty relief as the eradication of the poverty plateau or as investment in the poor, enabling them to escape by improving their earning opportunities. Poverty, it seems, is the one social problem which *can* be resolved by 'throwing money at it', but the question remains – how much should be



thrown? The answer to this question depends crucially on the assumptions one makes with respect to the motivations of taxpayers in a market capitalist economy, and there are three alternatives. Unfortunately, as we shall see, it is quite possible to deduce that, from the point of view of the taxpayer, the poverty plateau is *not* a problem.

First, allocating resources to a poverty relief policy might be seen as reflecting private concern for one's own immediate circumstances. It is not irrational for a presently rich individual, fearing poverty in the future, to contribute towards the collective provision of a safety net to cushion a possible fall from affluence, so long as the expected benefits exceed the expected costs. Such a safety net, whilst preserving the given individual from destitution, would also preserve others in similar situations. Suppose, for example, society consists of 100 individuals, ninety of whom will be working at any one time (at an income of £1000 per month), and ten of whom will be unemployed (zero income). Assuming that each individual faces the same chances of unemployment, he or she is faced with a 90 per cent chance of receiving £1000 and a 10 per cent chance of total destitution. Providing welfare benefits to each of the ten paupers of £200 per month would entail deducting £22.2 per month from each income-earner, confronting each with a 90 per cent chance of earning £978.8 and a 10 per cent chance of receiving £200. Although each individual's expected income under the two scenarios is identical (£900), the welfare benefit alternative offers a guarantee of income even under adverse circumstances. Sacrificing income at the top end for security at the bottom might well be interpreted as the prudent strategy. It is this insurance logic, of course, which underlay the Beveridge welfare proposals of the 1940s.

The evidence considered earlier, however, suggests that individuals do not face equal probabilities of unemployment, the jobs of more skilled individuals being both more remunerative and more secure. Accordingly, consider a society comprising sixty rich individuals earning £1000, each facing a probability of unemployment of 0.1, and forty poor individuals earning £500, each facing a probability of unemployment of 0.5. Again, the proposed level of unemployment benefit is £200 per week. As there will be twenty-six individuals unemployed at any one time (six rich and twenty poor), the required total benefit is £5200. Total earned income is

£(54 000 + 10 000), as generated by rich and poor, implying a necessary contribution rate of 8.12 per cent. This contribution rate is quite acceptable to the poor; without the unemployment benefit system they face an expected income of  $0.5(500) + 0.5(0) = £250$ , whilst, with it, they face an expected income of  $0.5(459.4) + 0.5(200) = £329.7$ . The rich, on the other hand, will find this rate quite unacceptable. With no benefit guarantee for unemployment they face an expected income of  $0.9(1000) + 0.1(0) = £900$  whilst, with it, their expected income will be  $0.9(918.8) + 0.1(200) = £846.9$ . Assuming that this society is democratically constructed, the poverty relief proposal will be defeated by fifty-four votes to forty-six (the latter comprising the forty poor who would have gained, plus the six formerly rich but now unemployed). No provision for the poor will be made in this society, because the majority are not willing to pay for it. On the basis of empirical studies of income distribution during the 1980s, for example, O'Higgins (1985b) and Hills (1990), this model might well be appropriate to the prevailing situation in the United Kingdom.

Second, poverty policy might be seen as a response to an externality effect within the market economy. Although conducting their affairs in the market, individuals might express a concern over the equity of outcome as it applies to other people. Richer people might therefore be concerned about the welfare of the poor and would thus be willing to transfer resources towards them. James Buchanan (1968) has argued that the existence of poverty within a community does not, in itself, pose any external diseconomy on remaining members, although its manifestations do. It is the fact that a family 'lives in a dilapidated house and dresses its children in rags that imposes on our sensibilities' (*ibid.*, p. 189). Economists such as Culyer (1980) have gone on to argue that caring for others in specific areas related to poverty is an empirical fact:

Were caring not in large part specific, we would be hard put to explain the existence of the Welfare State, and familiar arguments for subsidies, vouchers, etc., would have no economic rationale . . . The very *existence* of the Welfare State is evidence for the proposition that specific caring exists, for if individuals did not care for one another then no externality would exist and there would be little reason for collectivist action. (*Ibid.*, p. 65).

According to this motivational assumption, poverty relief in the market economy is essentially charity, and it is up to the donors to determine the form in which charity is given.

Finally, poverty policy might be interpreted as an instrument of social control. This issue of control arises from the evident capacity of the market economy to generate extremes in both income and wealth, and thus to produce a class of gainers – the rich – and a class of losers – the poor. The appreciation of this state of affairs leads directly to the Hobbesian question, namely, why should those evidently disadvantaged by a social system continue to permit its existence? Adam Smith, in his *Lectures on Jurisprudence* delivered in the 1760s, found the following answer: 'Laws and government may be considered in . . . every case, as a combination of the rich to oppress the poor, and preserve to themselves the inequality of goods, which would otherwise be soon destroyed by the attacks of the poor, who, if not hindered by government, would soon reduce the others to an equality with themselves by open violence' (quoted by Winch, 1978, p. 58). This theme was taken up again in the *Wealth of Nations*: 'For one very rich man, there must be at least five hundred poor . . . The affluence of the rich excites the indignation of the poor, who are often both driven by want, and prompted by envy to invade his possessions . . . It is only under the shelter of the civil magistrate, that the owner of that valuable property . . . can sleep a single night in security' (Smith, 1873, p. 297).

In Smith's world, where poverty relief was rudimentary, political and legal repression appeared the only answers to the control of the poor, although the institution of collectivised social security opens up new possibilities. First, the escalation of the level of poverty relief such as has occurred during the twentieth century should have the effect, *ceteris paribus*, of diminishing the revolutionary or criminal tendencies of the poor, as the perceived benefits accruing to the losers in the system increase. Indeed, it is rational for the richer members of society to be willing to transfer some of their incomes to the poor if, as a result of so doing, the risks of the expropriation of the remainder are more than proportionately reduced. Contrary to Buchanan's assertion cited above, there can exist additional externalities from poverty, namely, the risks of the rich losing their properties by theft or violence. Second, the modern contributory mechanism of poverty relief,

financed by virtually all adult workers and a substantial number of the unemployed, incorporates all such individuals into a 'club'. In that all pay membership fees, all have an incentive to ensure the retention of the integrity of the club in order to obtain benefits. Finally, the provision of a very comprehensive range of benefits such as presently exists in the UK implies that the more one's position in the market economy's income distribution deteriorates then the more one becomes reliant upon state welfare benefits which are themselves generated by the market economy. Put crudely, the worse the system treats you then the more you come to rely on it. Taken together, these factors act as a powerful adjunct to Smith's political and legal repression as the mechanism for the retention of the integrity of market capitalism. The prevailing mechanism of poverty relief will require reform only when it proves destructive to the social fabric.

In answering the question – how much is poverty relief worth? – we conclude (i) possibly very little, if the self-interested taxpayer does not consider future poverty a likely state of the world for him or her to occupy, (ii) as much as the individual in capitalist society is willing to pay for the gratification of the relief of distress in others, or (iii) the minimum necessary to maintain the social fabric from which the taxpayer benefits. Moreover, with respect to this last point, there is no reason to expect the taxpayers to interpret the solution as assisting the poor in obtaining economic independence. They might well find it cheaper simply to maintain the poor on welfare benefits.

#### 4.6 SUMMARY

This chapter has considered the notion of the poverty trap, in the sense of households being disabled from alleviating their own poverty. The poverty plateau represents such a trap, and comes about due to the interaction of the benefits and the tax/contributions systems. The consequence is to generate high effective marginal tax rates for an extended range of low nominal incomes. However, households can also be trapped in poverty due to the coincidence of a number of factors, such as unemployment, poor health, large families, and so forth. A variety of measures to eliminate these poverty traps have been discussed, ranging from

'negative income taxes' and 'guaranteed basic incomes' to demand management and the provision of training. All such measures, however, require a redistribution of income and there exist good economic reasons to believe that, in a democratic market capitalist economy, such redistribution has a low likelihood of occurring.

## 5 <sup>podpora (podpora)</sup> <sup>podnity</sup> <sup>nejstare</sup> Benefits, Incentives and Uncertainty

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### 5.1 INTRODUCTION

The effects of cash benefit programmes on individual behaviour in market economies has been the subject of enormous – and continuing – attention in the literature. This alone provides sufficient motivation for periodic reviews. At the present time, a most important additional motivation is the economic transformation of Eastern European economies – a 'current issue' not just in welfare economics but in every other aspect of economic analysis. What will be the effect of existing benefit programmes in Eastern Europe in the changed economic climate, for example the relatively generous family allowance programmes? What will be the effect of new programmes, most notably unemployment compensation schemes (not previously present due to the official absence of open unemployment in command economies and the incentives for enterprise managers to hoard labour)?

We do not attempt answers to these questions. Nor do we provide a comprehensive review of the huge body of theoretical and empirical evidence from Western market economies on the incentive effects of cash benefits. This would take far more space than we have and, moreover, there are available extensive recent reviews, for example, Atkinson (1987), Hurd (1990), Atkinson

\* John Micklewright would like to acknowledge the debt to joint work with A. B. Atkinson, who is thanked for his comments.

and Micklewright (1990), Moffit (1992) and Barr (1992). Important current issues in the literature identified by these reviews cover a variety of areas. These include (i) the need to consider the impact of the full set of institutional details of a particular benefit programme (there is much more to be considered than simply the level of benefit), (ii) the implication for behaviour of the difference in operation between social insurance benefit and means-tested assistance benefit, and (iii) the difficulties involved in practice in separating the pure effect of benefit schemes on behaviour from unobserved characteristics which both affect behaviour and benefit entitlement.<sup>1</sup>

In this chapter we highlight one aspect of the literature which we feel deserves more analysis: the treatment of uncertainty. Uncertainty with respect to benefit entitlements and labour market prospects can be expected to be present in both established market economies and the transitional former command economies. In section 5.2 we consider the impact of uncertainty surrounding entitlement to benefit. This is not allowed for in the great majority of analyses of disincentive effects of benefits. Although uncertainty is at the root of several models of the labour market that have been used to consider benefit effects – for example the job search model – the benefits themselves are typically viewed as certain. In reality, entitlement to benefit may not be known in advance with any precision, as anyone who has claimed any but the most simple cash benefit knows. The details of real world benefit schemes are typically very complex and it is often the case that the potential claimant cannot be sure about his or her entitlement. There may be uncertainty about the rules and/or uncertainty about the way the rules are applied by the authorities responsible for the administration of benefits. This can be expected to affect individuals' behaviour. Section 5.2 draws on the small literature in this area to show that the picture of disincentive effects obtained from standard textbook analysis with certain benefit entitlements can be quite misleading.

In section 5.3 we consider the situation where benefit entitlement is certain but labour market prospects are uncertain; this also contrasts with the standard labour-leisure choice analysis. In this section we consider the impact of a given benefit system on the behaviour of the individual attempting to optimise in the presence of labour market uncertainty. This behaviour contrasts with that which one would find under certainty. In section 5.4 we present an

analysis in which uncertainty is again about labour market prospects rather than the operation of benefit schemes, but where we focus on *family* decisions. We consider the impact of benefit schemes where entitlement depends on the income of a claimant's family, that is a 'means-tested' benefit. This is an important institutional feature of many benefit schemes but the implications of this means test for the labour supply of other family members has received relatively little attention. Our analysis extends a recent small literature on this issue which has been based on a static analysis. We show how the picture changes when intertemporal aspects in the presence of uncertainty are considered.

*(corral judgment)*  
*personnel*

## 5.2 UNCERTAINTY OF ENTITLEMENT AND INDIVIDUAL BEHAVIOUR

The absence of uncertainty about benefit entitlement in much analysis of the impact of benefits on work incentives may be illustrated considering the job search model.<sup>2</sup> In the standard model an unemployed individual is seen as searching for work across a known distribution of wage offers. Uncertainty is at the root of the model. The distribution of wages is assumed to be known but the searcher is assumed not to know *a priori* the level of the wage in any given offer from this distribution; it is uncertain (hence the 'search'). Furthermore, the model allows for the receipt of a job offer (at any wage level) in a given period to be uncertain. In some extensions of the basic model the duration of a job which is accepted is additionally assumed to be uncertain (e.g. Hey and Mavromaras, 1981). The model defines a 'reservation wage', the wage at which the individual is indifferent between accepting a job and continuing search. The level of the reservation wage determines whether the individual accepts a particular job offer and this level is influenced by all the uncertainty just described.

However, the uncertainty applies only to *jobs and wages* and, in contrast, the entitlement to the unemployment benefits in the model (which also determine the reservation wage) is almost invariably considered to be known. The searcher is assumed to know with certainty the future stream of unemployment benefits.

The treatment of unemployment benefits in the job search model is representative in that the vast bulk of literature on the

disincentive effects of cash-benefit schemes assumes that claimants know their benefit entitlements with certainty. There is good reason to believe that in practice some considerable uncertainty may surround benefit income.

As far as unemployment benefit is concerned this uncertainty may arise for a number of reasons. First, when an individual makes an initial claim for benefit it may take some time to assess entitlement; about one in ten of all persons in the registered unemployed stock in Britain in 1988 were waiting for their unemployment insurance entitlement to be determined, with the figure very much higher in short durations (Micklewright, 1990). Secondly, in most unemployment compensation schemes there exists the possibility that refusal of a job offer may result in disqualification from benefit; the individual will be uncertain whether this sanction will apply in his particular case or not. Thirdly, the duration of benefit entitlement is finite in the typical unemployment insurance programme and in some countries' schemes the entitlement cannot be predicted with certainty at the start of the unemployment spell. For example, the period of entitlement to unemployment insurance in the US is extended if the state unemployment rate rises above a certain threshold. This extension applies both to new claimants and to those whose spell of unemployment is already in progress; the latter group could not be expected to have foreseen such an extension with certainty. Even in countries where the entitlement period is fixed, and where claimants are fully informed about this period, there may be considerable uncertainty surrounding the entitlement to any means-tested benefits which may follow unemployment insurance (means-tested benefit being more complex).

The evidence just given on uncertainty of unemployment benefit entitlement related to Western economies. Nagy (1991) provides an example of uncertainty surrounding this type of benefit in transitional economies. He finds that there was a considerable lack of information and an existence of administrative error in the operation of a new Hungarian unemployment benefit scheme during 1989. Evidence of uncertainty surrounding entitlement to other types of benefit may be seen. The divergence between actual and anticipated state pension benefits in the United States is described by Bernheim (1987). (Mitchell, 1988, finds ignorance of private pension entitlement to be widespread.) The receipt of

means-tested benefit is particularly subject to uncertainty. This may arise for a number of reasons. Claimants may be uncertain of getting an accurate assessment according to the rules of what may be a complex benefit; in the United Kingdom in 1975, an investigation showed that 17 per cent of a sample of Supplementary Benefit claims contained some kind of administrative error (Supplementary Benefits Commission, 1976, p. 184). Furthermore, entitlement to means-tested benefits may be strongly influenced by the decisions of officials administering benefit programmes who can have considerable discretion over awards made.

All this suggests the need for the introduction of entitlement uncertainty into models of the disincentive effects of benefits. We illustrate the impact of benefit uncertainty on the analysis of incentives in a static model. This will show how the standard labour-leisure choice analysis can be very misleading. We take two examples from the small literature which has relaxed the assumption of certain entitlement.

### 5.2.1 <sup>Wiercher!</sup> Transition from unemployment

The uncertainty surrounding benefits which may be received by unemployed family men forms the focus of the analysis by Jenkins and Millar (1989). The uncertainty considered does not relate to the benefit receipt when unemployed which Jenkins and Millar argue 'in the near future is relatively certain' (*ibid.*, p. 138). Rather, there is assumed to be uncertainty about the means-tested benefits which may be received on return to work. In Britain, the country motivating their analysis, employed family heads on low income may apply for means-tested benefits and

on return to work, total family income can come from earnings, child benefit, family credit, and housing benefit, and at the time of the participation decision, the amount to be received from these various sources is relatively uncertain, primarily because the transition into work implies reassessment for means-tested benefits. (*Ibid.*)

The authors go on to point out that although the out-of-work benefits may be just as complex, the change in status by moving into work implies that in-work income is more uncertain.



The implications of this source of uncertainty is analysed by Jenkins and Millar in a static model. Individuals choose between certain income when unemployed and an uncertain in-work income. The latter is made up of three parts: (i) earnings which are assumed to be known, (ii) benefits received with certainty, and (iii) means-tested benefits received with uncertainty. Uncertainty surrounding means-tested in-work benefits is simplified so that there are only two possibilities, a relatively high benefit,  $F_1$ , and a relatively low one,  $F_2 (= F_1 - d)$ , where  $d$  is simply the difference between benefits received in the favourable and unfavourable cases. The relatively lower benefit  $F_2$  is received with probability  $p$  and  $F_1$  with probability  $1 - p$ , these being the probabilities which the individual perceives (i.e. subjective probabilities). Gross earned income in work is given by  $W$  times  $H$  where these refer to the wage and hours of work, respectively. When this form of income exceeds a tax-free allowance,  $A$ , it is assumed to be subject to a single marginal tax rate,  $t$ . A universal child benefit of  $B$  per child is paid in work and not included in the means test for the in-work benefit described above, but is assumed to be means tested away when out of work. Income when out of work is given by  $C_0$ . Assuming  $W \cdot H > A$ , income in work for a person with  $n$  children is given by

$$C_1 = (1 - t)W \cdot H + t \cdot A + n \cdot B + F_1, \quad \text{with} \\ \text{probability } 1 - p \quad (5.1)$$

and by

$$C_2 = C_1 - d \quad \text{with probability } p. \quad (5.2)$$

If individuals maximise expected utility, the individual will work if

$$(1 - p) \cdot U[C_1, L_e] + p \cdot U[C_2, L_e] > U[C_0, L_u] \quad (5.3)$$

where  $L_e$  and  $L_u$  are leisure when employed and unemployed respectively and where the utility function  $U[.]$  is assumed to display risk aversion.

This framework is used to derive a number of results concerning the effects of different policy parameters on the decision to work. For example, the authors compare the effect on the participation decision of measures designed to reduce the degree of uncertainty surrounding means testing via a reduction in  $d$ , with those measures increasing certain income out of work via Child Benefit,  $B$ , or subsidies to the wage,  $W$ . Jenkins and Millar stress that their

analysis of policy options is 'speculative rather than conclusive'. However, their model does show the richer view of disincentive effects that can be obtained by considering income risk related to benefit entitlement.

### 5.2.2 Disability insurance and leaving the labour force

When an individual with a disability applies for a disability pension the receipt of that pension is not certain: it depends on a medical assessment of the degree of disability. Why should this uncertainty be of any behavioural significance? One possibility is the stigma or 'hassle' associated with the process of application, this resulting in a failure to apply for benefit. In the model presented by Halpern and Hausman (1984, 1986), the impact of uncertainty surrounding entitlement stems from the fact that workers must quit work before they can apply for benefit. This requirement is present in the disability insurance system in the United States which motivated Halpern and Hausman's model. In 1980, only 22 per cent of applications for disability benefit were immediately granted (although the figure rose as a result of appeals against the initial decision), indicating a substantial degree of uncertainty concerning the outcome of an application (Halpern and Hausman, 1986, table 14.1).

Halpern and Hausman assume that if the claim is unsuccessful the wage that the individual may then command in the labour market is less than if no application for benefit had taken place. In other words, the applicant cannot return to a job at the previous wage. The authors argue that this assumption may be justified on a number of grounds: human capital may erode during the wait for the application to be processed; the employer may believe that the disability that led to the benefit claim will result in a further quit in the near future.

The problem for the claimant in a single period framework is illustrated in Figure 5.1. Let  $Y$  equal non-labour income and  $D$  a means-tested disability benefit;  $W$  is the wage in the job occupied at the time the decision to apply is taken and  $W^*$  the wage that will be on offer if a claim for benefit is made and is rejected. The probability of a claim being accepted is  $p$ . The individual must therefore choose between facing on the one hand budget constraint  $OYA$  at wage  $W$  with certainty, and on the other  $ODB$  with probability  $p$  and  $OYC$  at wage  $W^*$  with probability  $(1 - p)$ .



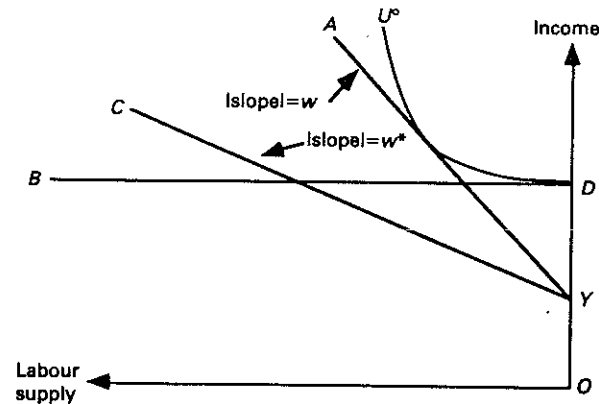


FIGURE 5.1 Labour supply and disability benefit

In order to illustrate the argument we have represented preferences in the diagram (indifference curve  $U^0$ ) such that the individual would be indifferent between continuing in work and applying for benefit if the latter were certain. The individual has, however, to take into account the possibility that a claim for benefit will be rejected which would result in him facing a lower wage rate than before. If the individual in the diagram believes that there is any uncertainty about the outcome of his application ( $p < 1$ ) then no claim will be made.

In general, an individual will chose to apply for disability benefit if

$$p \cdot U[D] + (1 - p) \cdot V[W^*, Y] > V[W, Y]. \quad (5.4)$$

$U[D]$  is the value of the direct utility function at zero hours of work in the event of a successful claim and  $V[.]$  is the indirect utility function evaluated at the relevant wages and unearned income if the individual does not claim, or claims and is refused. Uncertainty implies that an individual cannot make a simple choice between two certain alternatives and the standard labour-leisure analysis would be misleading, as we have described above.

### 5.2.3 Empirical analysis

So far we have considered the disincentive effects of benefits when entitlement uncertainty is introduced into theoretical analysis. However, this type of uncertainty should also be considered in empirical analysis. Again, in general this is not done. For example, empirical analysis of unemployment duration which specifies the probabilities of leaving unemployment in a given week typically defines this probability as a function of the ratio of current out-of-work income to that which would be received in work; the latter includes entitlement to means-tested benefits assumed to be received with certainty, see for example Nickell (1979), Atkinson *et al.* (1984).

That uncertainty about benefit entitlement *does* appear to effect behaviour in practice is suggested by the empirical work on unemployment duration by Katz and Meyer (1990). This research used microdata from administrative records on individual spells of unemployment from the USA. The authors model the individual's probability of leaving unemployment in a given week as a function of not only his current unemployment insurance (UI) benefit level but also the remaining weeks of a finite entitlement period to UI. The sample was drawn during a time of rising unemployment and under federal law this led to an extension of UI entitlement being triggered for some individuals present in the data, this happening after they had entered unemployment. The impact of real-world uncertainty is suggested by the coefficient of a dummy variable taking the value one in the week when UI entitlement would have ended were it not to have been extended. The probability of leaving unemployment is estimated to be sharply higher in this week suggesting that the subjective probability attached to an extension of entitlement was low; the extension was not seen as certain by the individuals (or by their former employers).<sup>3</sup>

Halpern and Hausman (1984; 1986) empiricise their theoretical model of uncertainty and disability benefit entitlement which was outlined above by assuming an explicit functional form for the labour supply equation. They then recover the corresponding indirect and then direct utility functions ( $V[.]$  and  $U[.]$ ) in equation (5.4) via Roy's Identity (see Hausman, 1981). The sample survey used to estimate the model includes both claimants and non-claimants for disability benefit and contains information on

the outcome of claims and on wages ( $W$ , and  $W^*$  in the case of an unsuccessful claim). A binary model of the probability of a claim being successful is used to calculate predicted values of  $p$ ; the information on post-claim wages for unsuccessful applicants provides the basis for predicting  $W^*$  for all individuals. These predictions are then used in the estimation of the empirical version of equation (5.4) above explaining the probability of applying for benefit.

The results of Halpern and Hausman's empirical model enable them to assess the effect of a change in  $p$  on the decision to apply for benefit. This effect varies with the degree of risk aversion assumed in the utility function; the greater the risk aversity the greater is the effect of changes in the probability of claim acceptance. The authors conclude that changes in this probability do have an important effect but note that since the data do not appear consistent with much risk aversion, the effect of changes in disability benefit level ( $D$  in equation (5.4)) are probably more important.

### 5.3 UNCERTAIN LABOUR MARKET PROSPECTS

The type of uncertainty considered in the last section was exclusively related to benefit prospects, but not to wages or employment opportunities. We now turn to an analysis of the problem from another viewpoint: how do incentive effects of a given benefit scheme change if wages and employment prospects are uncertain? We restrict our attention to a static model of labour-leisure choice.

The issue was investigated in detail by Cowell (1981). He distinguishes between two types of wage uncertainty. First, uncertainty with respect to the wage rate itself. For a given supply of labour  $H$ , the individual will obtain an uncertain return  $W$ , but he will be employed with certainty. Secondly, for a given wage of level  $W$  and desired hours  $H$ , it is uncertain whether he will be employed. Cowell investigates the impact of different tax and benefit schemes on the optimal supply of labour.

In his basic model the combined tax and income maintenance system has the following form:

$$T = (t \cdot W \cdot H) - B; \quad (5.5)$$

$t$  is a uniform marginal tax rate levied on all earned income,  $W$  is the wage rate,  $H$  is the amount of time offered to the market.  $B$  are benefits which in the basic model are assumed to be universal, depending neither on the individual's choices nor on the outcome of any uncertain event (an example of such a benefit would be Child Benefit in the UK).  $T$  may be positive or negative, depending on whether the individual pays more tax than he receives in benefit or vice versa. In contrast to the standard labour-leisure choice analysis, the wage  $W$  is a stochastic variable, depending on the state of nature. To keep the model simple, there are only two states of the world: a favourable one in which  $W = W^1$ , with probability  $(1 - p)$ , and an unfavourable one, in which  $W = W^2$ , with probability  $p$ . If  $W^2 = 0$  this generalises the analysis to the second type of uncertainty mentioned above. Disposable income is then given by  $W \cdot H - T$ .

The individual maximises a specific form of utility function with leisure and consumption as its arguments; this function exhibits decreasing absolute risk aversion. Maximisation is subject to the stochastic budget constraint described above. Cowell now investigates separately the impact of changes in the transfer  $B$  or the marginal tax rate  $t$  on the supply of labour under the assumption that the disutility of work is equal to the disutility of involuntary unemployment. He first confirms that if there is no uncertainty ( $p = 0$ ), both an increase in  $B$  for constant  $t$  and an increase in  $t$  for constant  $B$  will decrease the supply of labour (assuming leisure is a normal good). These are the conventional results: both policies are found to provide a disincentive effect.

However, in the case of uncertainty, the impact of both policies on labour supply is ambiguous. An increase in the lump sum transfer  $B$  or the marginal tax rate  $t$  may increase labour supply for certain values of  $p$  and of the elasticity of utility with respect to consumption. These effects are due to the uncertainty reducing role of the tax and income maintenance scheme. An increase in the tax rate  $t$  reduces the dispersion of possible returns from the supply of labour to the market. An increase in the transfer  $B$  increases the guaranteed income of the individual. Cowell points out that standard portfolio theory would suggest that either policy would encourage risk-taking, in this case supplying labour in return for the uncertain  $W$ .

When undertaking policy reform, governments may change

both taxes and benefits at the same time. They are also interested in defining particular target groups. Thus for policy purposes, two questions arise: first, is it possible to increase the progressivity of the tax and income maintenance scheme and to raise work incentives without changing expected *ex-post* consumption or expected tax liabilities? Secondly, is it possible to identify the segment of the population for which the positive incentive effect is likely to occur? Cowell confirms that the first of these questions can be answered in the affirmative, the occurrence of the incentive-increasing effect depending on the degree of risk aversity, probabilities of the state of the world  $p$ , and on the ratio of transfer income to net earnings. Regarding the second question, he identifies the segment of the population for which the incentive-increasing effects are most likely to occur as being characterised 'by relatively high risk aversion, significant but not enormous wage risk, and not too high a ratio of non-employment income to earnings' (ibid., p. 702). People with these characteristics may be fairly poor with little income other than earnings, high income variability and with quite strong risk aversion. Cowell's analysis shows that the introduction of uncertainty with respect to labour market prospects may change the perception of an optimal tax and benefit scheme.

#### 5.4 MEANS-TESTED BENEFIT AND INTERTEMPORAL UNCERTAINTY

To this point we have considered the decisions of *individuals* in the presence of uncertainty. In this section we introduce uncertainty into the analysis of the effect of benefits on *family* labour supply. We do this by considering the impact of a benefit in which entitlement depends on family income, in other words, there is a family means test. We look at the impact of the means test not on the benefit claimant's behaviour but on the labour supply of other members of the claimant's family.<sup>4</sup> This serves two purposes. First, we highlight an area of the literature on disincentives which we believe deserves more attention; there has been surprisingly little recognition of the need to look at the effect of means testing the benefit of one person in the family on the labour supply of other members whose income is included in this means test. Secondly, we show how the presence of uncertainty can rationalise empirical

facts that are inconsistent with the predictions of the few studies of this issue to date; these are based on a static model with no uncertainty. The uncertainty we are concerned with in this section relates to job prospects, as in section 5.3; we assume that the operation of the means test and the administration of benefit is itself certain.

Discussion of the distinction between the impact on the labour market of insurance and means-tested unemployment benefit often neglects the fact that the latter imposes a high marginal rate of tax on family income. Consider the situation of an unemployed man receiving means-tested benefit with maximum entitlement (if no other family income is present) of  $b$ . If his wife works, her earnings reduce her husband's benefit pound for pound, once they exceed a disregarded level  $k$ . In other words, family income is subjected to an implicit 100 per cent marginal rate of tax when her earnings are in the range  $[k, b + k]$ ; the upper threshold applies since the husband's benefit entitlement expires at this point. This system is essentially that which applies in the UK benefit Income Support, received by some two-thirds of men in the registered unemployed stock; the system also describes the essentials of the German Unemployment Assistance benefit (Arbeitslosenhilfe).

The resulting budget constraint in a static labour-leisure choice diagram is shown in Figure 5.2. We assume that the family has no sources of income other than the means-tested unemployment benefit and the wife's earnings, earned at the wage rate  $W^w$  (we ignore explicit income taxes). The budget constraint in Figure 5.2 is flat along the segment  $AB$ . With conventional preferences, no woman should locate along this part of the budget constraint in a simple labour-leisure choice model.

The impact of the means test in practice has been investigated in Britain by Garcia (1985; 1989) and Kell and Wright (1990). Both estimate econometric models of female labour supply in which the current period labour supply of women married to unemployed men is related to their current period budget constraint of the type shown in Figure 5.2. The results of both studies suggest that the Income Support means test has a significant impact on the behaviour of married women.

However, it remains the case that, in defiance of the prediction of the simplest theoretical model, some women married to unemployed men in Britain are observed to be supplying hours at a level

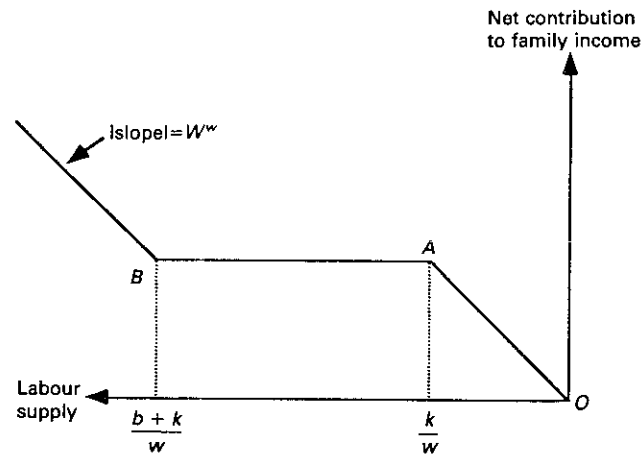


FIGURE 5.2 Budget constraint for wife with husband unemployed

which suggest that they are located along the flat segment in Figure 5.2 (Dilnot and Kell, 1987). This may be because work itself yields utility or because constraints placed by employers on hours worked rule out location at the kink point A. But in our view an important possible explanation involves the introduction of uncertainty into the analysis as we show in the rest of this section.

A static framework in which wife's current labour supply is modelled as a function of the current budget constraint neglects the fact that the disincentive from means testing is only *temporary*, lasting just as long as the husband is unemployed. What difference should the recognition of the temporary nature of the budget constraint make to the analysis? If the wife was not working prior to the husband's unemployment then no changes are needed. But if the wife does have a job when her husband enters unemployment then she needs to consider whether quitting to avoid a temporary disincentive is the right long-run strategy – she may want her job back when the husband leaves unemployment and the disincentive from means testing is removed.)

In what follows we set up a simple two-period model assuming that the husband is unemployed in the first period but may or may not be in the second period. The wife has to decide whether to quit in the first period in the face of the means test applied to her

earnings as part of her husband's unemployment benefit assessment. (If she does quit we assume that her job prospects in the second period are uncertain; if she stays in her job in the first period we assume that she can retain it with certainty in the second period.) This is the key assumption of the model; uncertainty about her future job prospects reduce the wife's propensity to quit in the first period (the uncertainty about the husband's employment prospects is not in fact important to the main result).

This feature is similar to an important aspect of the Halpern and Hausman model of disability benefit and participation which was discussed in section 5.2. Just as we assume that quitting reduces future employment prospects, Halpern and Hausman assumed that quitting and making an application for disability benefit would reduce the wage the individual could command in the labour market if the application were to be rejected. (Note that Halpern and Hausman collapse their model onto one period but the same intertemporal considerations are implicitly present.)

In period one the husband is unemployed with *potential* benefit entitlement  $b$ ; the actual benefit amount received depends on the operation of the means test. In the second period the husband will be offered with probability,  $p$ , a job paying  $E^H$ , where  $E^H > b$ . The wife, who prior to the husband's unemployment has been working, must decide in the first period whether to quit or to carry on in her job. Her working results in a level of earnings,  $E^w$ ; if she works in the second period she also receives this level of earnings since we assume that the wage rate is the same in both periods and that constraints on the demand side of the labour market are such that hours are not variable (a single hours–wage package is all that is available). She cannot make marginal changes to her hours in period one (or period two) – she simply has to decide whether to work, and receive  $E^w$ , or to quit, in which case we assume she receives  $c$ , the equivalent of the opportunity costs of her employment; these may comprise travel-to-work costs and child-care expenses, and where  $c < E^w$ . (We assume that she receives no unemployment benefit herself, being disqualified from receipt for voluntarily leaving her job). If she quits in the first period she receives a job offer in the second period with probability  $q$ .

The wife's earnings are disregarded for the purpose of the benefit means test up to a level  $k$ . We assume that if she works her earnings exceed this disregarded level ( $E^w > k$ ). Between  $k$  and

$[k + b]$  her earnings result in an implicit 100 per cent marginal rate of tax on her husband's benefit. Accordingly, if the husband is unemployed and the wife employed, the net contribution of her work to family income in that period is equal to  $s$ , where

$$\begin{aligned} s &= k && \text{if } E^w < b + k \\ &= k + E^w - (b + k) && \text{otherwise.} \end{aligned} \quad (5.6)$$

The opportunity costs of the wife working are assumed to exceed the income she can contribute if the husband is unemployed ( $c > s$ ).

To derive results we need to specify how the couple takes decisions and what yields them utility. We assume that neither husband nor wife derives utility from leisure; if the wife quits work in the first period it is because she wishes to gain  $c$  and not because she enjoys leisure. For simplicity we assume that the couple operate as a unit and are risk-neutral. This implies that their aim is simply to maximise their total joint two-period income (we ignore discounting).<sup>5</sup> Given those assumptions we have made already, this specific optimising behaviour has two implications for the couple's labour supply decisions. First, the husband will always accept a job offer in period two. Secondly, if her husband is employed in period two, the wife will work if she can in that period but she will not if he is still unemployed.

The only decision variable in the model is the wife's decision as to whether to quit or not in the first period. If she does, total two-period income is given by the following expression:

$$\begin{aligned} I^1 &= b + c + E^h + E^w && \text{with probability } p \cdot q, \\ I^2 &= b + 2 \cdot c + E^h && \text{with probability } p \cdot (1 - q) \\ I^3 &= 2 \cdot [b + c] && \text{with probability } (1 - p); \end{aligned}$$

and by the following if she does not quit:

$$\begin{aligned} I^4 &= b + s + E^h + E^w && \text{with probability } p \\ I^5 &= 2 \cdot b + s + c && \text{with probability } (1 - p). \end{aligned}$$

The wife will quit in period one if expected two-period income stemming from this decision exceeds that if she continues to work despite the means test. She will quit if:

$$[p \cdot q \cdot I^1 + p \cdot (1 - q) \cdot I^2 + (1 - p) \cdot I^3] > [p \cdot I^4 + (1 - p) \cdot I^5] \quad (5.7)$$

Equation (5.7) can be used to show that the decision to quit in the first period depends positively on the opportunity cost of her

working,  $c$ , her second period probability of a job offer if she quits in the first period,  $q$ , and her husband's benefit,  $b$ . The decision depends negatively on her earning power  $E^w$ , the lower threshold for the means test,  $k$  (in the case that  $E^w > [b + k]$ ), and on the husband's second period probability of a job,  $p$ .

This simple model has several undesirable features, including the absence of any utility derived from leisure. Nevertheless, we feel that even the risk-neutral version described above offers useful insights into the potential effect of a common form of benefit system and gives a richer view of its implications for incentives to work in the family-decision-making context than would be obtained from a static model. The richer view stems from the (introduction of uncertainty about the wife's future job prospects.) As with the introduction of entitlement uncertainty in the models reviewed in section 5.2, we believe that this adds a realism to the analysis of the disincentive effects of benefit systems which has been too often missing in much of the literature.

## 5.5 SUMMARY

In this chapter we have argued for more attention to be paid to certain forms of uncertainty in the analysis of the disincentive effects of benefits. In section 5.2 we reviewed research which has allowed for the important real world feature of uncertainty surrounding entitlement to benefits. As the awareness of the complexity of benefit schemes increases among those doing research on incentives, so should the need to consider entitlement uncertainty. This uncertainty is present in well-established benefit programmes in Western economies; it seems not unreasonable to suppose that it is even more prevalent in certain benefit programmes in the transition economies of Eastern Europe, notably those which are entirely new such as unemployment benefit. Uncertainty of this form implies that the standard analysis of incentive effects which assumes certain benefit entitlement may lead to misleading results. It may also imply that incentives could be improved in some cases by simply reducing uncertainty, although in others the opposite may be true.

In section 5.3 we considered the impact of a given benefit system if uncertainty about labour market prospects is introduced in a

simple static model. The paper which we reviewed showed that conclusions under uncertainty could be rather different from those when labour market prospects are certain. Section 5.4 also focused on uncertainty of labour market prospects but in the context of family rather than individual labour supply. Looking at couples where the husband is unemployed, we analysed the effect on the wife's labour supply of including her income in a means test for her husband's benefit. We used a simple two-period model of family behaviour. When the future probability of a job is considered, we showed how a static model's prediction that a married woman would quit in the face of a 100 per cent implicit marginal tax rate on her earnings is too simple a representation of the situation. This again shows how consideration of uncertainty modifies one's conclusions about benefit effects. We hope that research of the type we have considered in this chapter will feature prominently in the literature on incentives in the future.

## 6 The Definition and Measurement of Poverty and Inequality

DAVID PIACHAUD

### 6.1 INTRODUCTION

Economics has conventionally been concerned with efficiency and equity, with far more attention to the former. Yet economics is not just about the aggregate level of production, it is also about how resources are shared and how widely prosperity is distributed – with the degree of inequity. The ultimate test of equity is the extent of poverty. This is a crucial test of an economy and is obvious when comparing, for example, India and Europe; it is also true when considering the distribution of welfare within any one country.

In the next section some evidence on poverty and inequality is presented. In part this is to set the scene in a British context but also it serves as a reference point for the subsequent discussion. Then the measure of income is discussed in section 6.3, followed by consideration of concepts of poverty in section 6.4. Finally, issues of measurement are considered in section 6.5. Most attention is given here to the definition of poverty about which there have been considerable controversies. The reason for this is worth considering at the outset. Poverty is not a politically neutral concept: it is a bad thing. In most people's minds there is a moral imperative attached to poverty in that, while it may be a description of the situation, it also implies that something ought to be done about it. By contrast other descriptions of the economy – for



TABLE 6.1 Distribution of incomes, 1977 and 1988

	Percentage shares of quintile groups				
	Bottom	2nd	3rd	4th	Top
Equivalised original income					
1977	3.6	10	18	26	43
1988	1.9	7	16	25	50
Equivalised disposable income					
1977	9.7	14	18	23	36
1987	7.6	11	16	23	42

Source: 'The Effects of Taxes and Benefits on Household Income, 1988', *Economic Trends*, March 1991, table N.

example the proportion of workers employed in the service sector – carry no obvious policy imperatives. The political sensitivity of poverty has inevitably meant that there have been controversies about its extent, and whether it is increasing or decreasing. These controversies have been fuelled by academic disagreements which this chapter will attempt to elucidate rather than resolve.

## 6.2 EVIDENCE ON INEQUALITY AND POVERTY

The distribution of incomes is shown in Table 6.1. Two concepts of income are used. First, original income which comprises earnings from employment and self-employment, occupational pensions and income from capital. Second, disposable income which is original income plus cash benefits less direct taxes. In each case income is equivalised or adjusted for household size, as discussed in section 6.3.2 below. The table shows the degree of inequality that exists and how it increased between 1977 and 1988.

The extent of poverty is illustrated in Table 6.2, taking half average income level as the poverty line. As can be seen, the extent of poverty differs greatly between different family types and depending on economic status. In total, poverty more than doubled between 1979 and 1987.

These, then, are some of the facts about Britain. Yet these facts are all based on particular definitions, measures and services; it is these with which this chapter is primarily concerned. It should not be forgotten, however, than concern about poverty and inequality does not arise primarily because it raises interesting academic issues, but because of their social and personal consequences and the political and moral challenge they raise.

## 6.3 INCOME

On questions of tackling poverty and inequality the most common conceptual framework is that laid down by Robin Hood – taking from the rich and giving to the poor. This has the virtue of simplicity and it is a widely shared framework but it is somewhat lacking in sophistication. If we are to define who is rich and who is poor some method of defining income levels is necessary. No doubt at the extremes income levels may be self evident – the Sheriff was rich and Friar Tuck was poor. Yet if economic analysis is to clarify policy choices concerning poverty and inequality, appropriate measures of income are essential. The concept of income is rarely given much attention in economic literature. Income is defined as command over resources over time or as the level of consumption that can be afforded while retaining capital intact. Yet in relation to the measurement of income inequality and poverty the concept of income is extremely important and raises many problems.

In this section the focus will be on four aspects of measuring income: the income unit to be used; the adjustment for size of income unit; the measurement of income; and the time period over which income is measured.

### 6.3.1 The income unit

The analysis of income levels is greatly complicated by the fact that people have always, and will no doubt continue to be, congregated in 'clumps' – usually known as family or income units. Yet these clumps are not clear cut. For example, is a student on a meagre grant with affluent parents part of an impoverished term-time unit or a prosperous vacation unit?

TABLE 6.2 Extent of poverty, 1979 and 1987

	Percentage of individuals with income below half of the average	
	1979	1987
<i>Family type</i>		
Married pensioners	18	27
Single pensioners	9	23
Married with children	9	20
Married without children	4	20
Single with children	29	47
Single without children	6	15
<i>Economic status</i>		
Pensioners	14	25
Full-time workers	3	8
Sick or disabled	32	32
Lone parents	44	58
Unemployed	47	59
All	9.4	19.4
Number ('000s)	4930	10 500

*Note:* Income is equivalised household disposable income after housing costs.  
*Source:* *Households Below Average Income*, Department of Social Security, 1990.

These clumps vary over time and may be related to income level. For example, take an elderly woman living apart from her prosperous daughter; this constitutes two income units. If the income of the elderly person falls drastically, for example due to a stock market crash, then one of the units has moved down the income distribution. If, then, the prosperous daughter asks her pauperised mother to live with her there is now only one income unit which now has a satisfactory overall income. Similarly, young people returning to the parental home may reduce the number of low-income units, even though young people may feel that their overall welfare has worsened by not having an independent existence.

The appropriate income unit is usually assumed to be a unit in which economic decisions about paid and unpaid work and about consumption are made jointly and in which resources are pooled. In reality, of course, families vary from those in which there is

total harmony and, perhaps, a total loss of identity to those in which individuals while sharing the same roof have virtually no economic relationships with each other. For purposes of measuring income levels, this diversity is highly problematical.

Beveridge in his report on social security assumed, and the means-tested elements of the social security system continue to this day to assume, that in households comprising a man and woman who are married or 'living as man and wife' there is pooling of resources and that each is to be expected to take financial responsibility for the other. Yet such an approach conflicts with any notion of independent treatment, such as many people wish to see for the income tax system, and it conflicts with the reality of many households. To enforce this notion of joint responsibility and to avoid treating unmarried couples more favourably than married couples, the income support system has developed elaborate and often intrusive cohabitation rules. These rules may arouse hostility in part because of the nature of the investigations used to apply them (so called 'sex snoopers') but the more fundamental issue is about the definition of the appropriate income unit. Many individuals assert that they have a right to certain minimum income for themselves, regardless of other individuals with whom they choose to associate or live.

A related policy question is whether benefits for children should be payable to mothers or fathers? This was hotly contested following the government recommendation in the 1980s (subsequently abandoned) that Family Credits should be paid through the pay packet to fathers. This would have had no apparent 'differential' effect if the income unit considered is the family; however, if the income unit considered is the individual switching benefits to the father from the mother has very different results.

Clearly there are a great many problems in analysing the individual distribution of incomes since the command over resources of many individuals is directly affected by the resources of whoever they live with. Nevertheless, the Beveridge framework based on the family unit is liable in important respects to reinforce the dependence of women and conflicts with the goal of individual treatment.

It is hard to see that there can be absolutely right or wrong definition of the appropriate unit but it must be recognised that the definition determines how much inequality of income is revealed

and it determines the impact of particular policies on that distribution. Broadly speaking, the larger the units considered the less is the apparent low income. For example, the government figures on households below average income indicate less relative poverty than similar figures based on families. The assumption that there is generally income pooling across households remains untested.

### 6.3.2 Adjustment for size of income unit

Any useful comparison between nations of income levels must take account of the size of nations. Similarly, an income of, say, £100 per week can imply very different standards of living: for a single person it may be adequate whereas for a couple with three children it may represent dire poverty. There is, therefore, good reason to adjust income according to the size of income unit. One method of doing this is to treat all members equally and calculate income per capita. On this basis the three-child family on £100 has an income of only £20 per capita – one-fifth of that of the single person.

There are reasons why income per capita is not a good indicator of income level. The three-child family on £500 per week has the same per capita income as the single person on £100 yet most would think that the family was substantially better off. Two factors are relevant to the comparison. First, there are economies of scale. Most obviously, in relation to housing, two people in the same household need one dwelling, not two. Similarly, heating, a washing machine, a motor car, a television and a telephone can all be shared. Food and clothing cannot be shared at the time of use but in different ways there can be economies of scale: food purchased in bulk often costs less per helping than single helpings; clothing three children does not cost three times as much as clothing one child since many clothes can be passed on. Second, individual needs differ. This is the most obvious in relation to small children; their consumption of food is less than that of adults and their consumption of many items such as alcohol and tobacco should be zero.

In order to take account of economies of scale and variations in needs, attempts have been made to construct equivalence scales with which to adjust – or in the new, less than felicitous, terminology to ‘equivalise’ – incomes. The scale in use by the government

in producing figures such as those in Table 6.1 treats a couple with no dependents as the reference point with a value of 1.00; other households have values as follows (for income after housing costs):

1st adult	0.55
2nd or 3rd adult	0.45
Each subsequent adult	0.40
Each dependent aged 0–1	0.07
Each dependent aged 2–4	0.18
Each dependent aged 5–7	0.21
Each dependent aged 8–10	0.23
Each dependent aged 11–12	0.26
Each dependent aged 13–15	0.28
Each dependent aged 16 or over	0.38

A couple with three children aged 4, 6 and 8 would therefore have an equivalence scale of 1.62 – that is  $0.55 + 0.45 + 0.18 + 0.21 + 0.23$  – or three-fifths more than a couple alone. This contrasts with a per capita basis which implies 150 per cent more for the five person over the two-person household. The adjusted or ‘equivalised’ income is obtained by dividing the household income by its equivalence scale. The implication is that a three-child family on £162 is at the same equivalised income as a couple on £100, or a single person on £55.

The question of how the equivalence scale should be constructed is a controversial matter. Several approaches have been used. One is to start from an assessment of needs; this is discussed in section 6.4.2 below. Second, expenditure may be analysed in relation to income for different sizes of household in order to determine income levels at which the same proportion (or same absolute amount) is spent on certain necessities (e.g. food) or on certain luxuries (e.g. beer or entertainment). Such analyses become highly complex and their interpretation is contentious. It is very doubtful if any objective, non-judgemental scale can ever exist. For example, some may argue that the decision to have a child with consequent increased food expenditure and decreased beer expenditure is purely a matter of choice so that a child should count for zero. Yet it is evident that levels of living do depend on the size of the income unit so that using some equivalence scale is necessary.

**6.3.3 The measure of income**

In studies of personal income distribution, the usual basis for comparing incomes of families or individuals is net money income. This measure is convenient for many purposes and fairly readily accessible. But such a measure does leave a number of problems which have important policy implications.

There may be substantial costs associated with employment – for travel to work, for clothing or other special equipment for work – and it is even possible to argue that certain types of employment such as coal mining necessitate substantial expenditure on special nutrients such as beer. For many the largest costs of employment are for child care. The returns from employment in gross and net post-expenses terms are very different. Comparisons of those in employment with those who are retired or unemployed can be problematic. To treat an employed individual with £100 net income as being at the same point in the income distribution as a retired person with £100 net income may represent a serious distortion. On the other hand, there may be important benefits of employment such as providing a heated work place, thereby saving on heating of the home, and a variety of fringe benefits, mainly enjoyed by the better paid workers, such as the use of a telephone, a car or medical insurance.

The net money income measure takes no account of the value of home production. The most common form of home production is preparation of unprepared foods, which are far cheaper than factory prepared or take away foods. Thus again those in employment may be disadvantaged in that they lack the time to engage in these home production activities. On the other hand, the assumption that the unemployed are able to boost their command over resources through extensive home production – working on an allotment, home decorating and repairing cars – may in many cases be misconceived since the psychological debilitation of unemployment may be severe.

Another problem with the use of net money income is that it fails to discriminate between those who may choose to take a low income and enjoy more leisure (either for sleeping or for home production) from those who may get more income but enjoy less leisure. For example, someone with £50 per week for twenty hours work may be judged at the bottom of the income distribution and

below the poverty level, whereas somebody receiving £100 for sixty hours work might not be regarded as poor. If these two people were engaged in the same type of employment and could choose their hours of work, then clearly this measure of net money income is an inadequate indication of their relative economic circumstances. What this points to is the need to treat both money and time in an integrated way and to consider not only those who are 'money poor' but also those who are 'time poor'. We would like to know opportunities – we only know outcomes. Those who are really poor are those whose opportunities, or choice-sets, are most severely constrained.

The concept of income is of a flow over time. Clearly command over resources over a time period needs to take account of the returns from capital assets but simply looking at the returns to capital may for some purposes be inadequate. For example, the imputed income of owner-occupied housing may be included in the measure of income, but this does not take account of the capital asset. Elderly people who own their own houses could in theory remortgage them and purchase annuities which would give them substantially increased incomes. Not many elderly people do this in part because of the practical problems and fears of inflation but more fundamentally because they choose to retain their capital intact and bequeath it to their heirs. It may be argued that they regard the benefit to them of making such a bequest as at least equivalent to the potential extra income from an annuity. The fact that a capital sum is potentially available to many elderly people which could be converted into income again poses a problem in comparing the circumstances of the elderly with those of other groups in society – and in turn is important in considering the priority to be given to the provision of social security to elderly owner occupiers.

**6.3.4 The time period**

Should incomes be assessed on a weekly, monthly, annual or lifetime basis? Many live on a week-to-week, even daily, basis, more and more are paid monthly, the tax system operates on an annual basis, and economists would ideally like to know lifetime incomes – although this is hard to measure until someone has died. Again, there is no right answer; different periods are relevant for

different questions. The social security system has for the most part been based on a weekly form of assessment and payment. In the past this reflected the payment system to the great majority of those in employment and it also accorded with the budgeting period over which most people operated. It is clearly useless to argue to claimants of income support that for most of their life, or even most of the previous year, they have had plenty of income with which to make provision for rainy days if, when they present themselves, they have no money left. Some claimants – as with a few on very high incomes – find it extremely difficult to manage between one weekly payment and the next. In order to cut the costs of administration there is pressure to move social security to a longer time-period and this will mean that fewer people may be assessed as being in need of benefits. But for those who find budgeting over a weekly period a severe problem, a longer time-period will impose even more strains.

One feature of the income support system that has been changed by the recent reforms does relate to the time-period of assessment. In the past Supplementary Benefit recipients were eligible for single payments for clothing or bedding in certain circumstances; these were in effect an 'extra' on top of the scale rates. It was argued by the government that this was arbitrary and unfair since the scale rates were intended in normal circumstances to provide for such items and some claimants managed to put money aside to buy new shoes and replace household goods – others did not. The basis for the single payments was essentially that in the case of those faced with pressing, emergency needs, by-gones should be by-gones. The consequence of treating by-gones as by-gones is, of course, that those who have set money aside in the past find that their thrift is unrewarded. The new system replaces most single payments with a system of loans operated by the Social Fund. This has effectively meant that people are forced to budget over longer time-periods. But it also means that when the loans are being recovered people receive less than the full-scale rates and the problem of managing on very low income is thereby exacerbated.

The longer the time period used to assess income levels, the more transient fluctuations are smoothed out. It may be reassuring for a student to know that his or her lifetime income may be high, and a bank manager knowing this may allow an overdraft so that

consumption can exceed current income. A sick or unemployed person may be less secure and have no alternative but to meet this week's income and bills out of this week's income. The lower the income level and the capital resources which can be drawn on, the more difficult it is to transfer resources over time and the more pressing are present circumstances. Taking a long view is a luxury of the affluent.

## 6.4 CONCEPTS OF POVERTY

### 6.4.1 The definition of needs

At the simplest level people may be said to be poor if their income is less than their needs. To operationalise such a definition it is necessary to measure income and to define needs. What could be simpler? As the previous section showed, measuring income is not as simple as it might seem. What of defining needs?

The first question is whether poverty can be defined in *absolute* terms or must be considered in *relative* terms. An absolute definition of needs implies a standard that is fixed and unchanging over time. If the price level changes then of course the amount of money needed to meet a certain set of needs will increase, but with an absolute standard the set of needs will remain the same in perpetuity. An absolute standard may be extremely low – for example what is necessary to ensure survival – alternatively an absolute standard may be quite high allowing for decent clothing, for transportation and for entertainment. But it is intrinsic in an absolute standard that it does not change over time. This is very important since if, with economic growth, some of the increased prosperity trickles down to the poorest then, over a period of time, absolute poverty is likely to diminish.

Most recent writers on poverty have rejected the idea that there can be an absolute definition of poverty. Instead they have argued that poverty is a relative concept and must be so defined. People's needs are determined by the society in which they live. This is not a new idea; as Adam Smith (1776) put it:

By necessities, I understand not only the commodities which are indispensably necessary for the support of life but whatever



the custom of the country renders it indecent for creditable people, even of the lowest order, to be without. A linen shirt, for example, is strictly speaking not a necessity of life. The Greeks and Romans lived, I suppose, very comfortably though they had no linen. But in the present time . . . a creditable day-labourer would be ashamed to appear in public without a linen shirt, the want of which would be supposed to denote that disgraceful state of poverty.

As standards of living in society have improved then minimum needs have also increased. A century ago nobody had a television; now many would regard a television as a necessity and someone who could not afford a television as being in poverty. A century ago poor people would not have expected to have a newspaper; now a newspaper may be regarded as a necessity (if only to find out what is on the television). A relative standard is essential if the poverty level is to be based on prevailing standards in the society.

Using an absolute standard and applying it uniformly around the world, one might conclude that there were virtually no poor people in Britain if one used a standard appropriate for India. If, however, poverty is seen in relation to standards of the particular society, then it is quite possible for there to be poverty in Britain at the same time that there is poverty in India. As Townsend (1979) wrote in his important work *Poverty in the UK*: 'Individuals . . . can be said to be in poverty when they lack the resources to obtain the types of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged or approved, in the societies to which they belong.'

Both concepts – of absolute and of relative poverty – present considerable problems. In terms of absolute poverty, what is necessary for survival? Is a roof over one's head a requirement or is a cardboard box sufficient? In terms of relative poverty is someone poor if they are below half-average income levels, or one-tenth of the average, or 90 percent of the average? Some suggest relative poverty is merely another term to describe inequality. Yet while there will always be a bottom-tenth of the income distribution, it is not inevitable that any one must fall below, say, half average income levels. Thus, relative poverty can be abolished. What distinguishes relative poverty from inequality is that the focus is on the bottom end of the income distribution and the

distribution of income at the top end is not relevant, except in so far as the behaviour of the rich sets standards that may become customary.

Many researchers have tried to find some objective basis for determining appropriate poverty levels. Whether they have succeeded is open to question. In the next sections the three main types of approaches are described and discussed, drawing heavily on Piachaud (1987).

#### 6.4.2 Budget standard methods

The first approach consists in determining how much needs to be spent on different types of expenditure. Basically, experts make professional judgement as to what needs to be spent for food, for clothing, for housing, for heating and so on.

This is the approach that was adopted by Rowntree's (1901) pioneering study of poverty in York in 1899. Rowntree drew on nutritional studies that had attempted to assess the dietary requirements for the maintenance of physical efficiency and costed the 'necessary nutrients at the lowest cost possible with a certain amount of variety'. This diet, containing large quantities of bread, porridge, dumplings and dripping, was not one that would have been appetising then or now. But it was based on a professional judgement about nutritional adequacy and thus had a certain scientific objectivity. Rowntree's definition of what was needed in terms of clothing, housing and heating relied much more on prevailing custom among the poor of York than on any professional judgement. For example, there were no heating standards laid down in 1899; even now the heating standards that exist reflect judgements about comfort rather than any objective assessment of what is necessary for survival.

Many attempts have been made to define the cost of minimum requirements using a budget standard approach. For example, one study attempted to estimate the cost of a child in modern Britain using the latest nutritional standards, assessments of the durability and cost of clothing, costs of heating and other items and including components for the cost of a holiday and for pocket money (Piachaud, 1979). These last two items are clearly not necessary for the survival of a child, but reflect the fact that for participation in normal social life these have become 'necessary'. The potential

of budget standard methods has been usefully discussed by Bradshaw *et al.* (1987).

The budget standard approach to defining a set of needs and costing them has much to commend it. If it is suggested that a particular poverty level or social security benefit level is adequate to provide the minimum, then it is important to try to assess whether this is the case. There are, however, a number of serious difficulties with this approach.

Budget standard approaches revolve very substantially around the cost of food using nutritional standards to determine an adequate diet. In the United States, for example, the official poverty standard is set at three times the cost of the nutritional requirements for households of different sizes; this reflects the fact that when the standards were set in the 1960s food expenditure represented approximately one-third of the expenditure of poor households. The nutritional foundation of many poverty levels probably reflects a reverence for the natural science of the nutritionist on the part of the mere social scientist. Yet on closer examination the scientific basis for minimum nutritional requirements is, in many cases, rather flimsy. Individual requirements are highly variable, reflecting differences in body weight, physical activity and metabolic efficiency. Thus some average minimum requirement may be inadequate for some and excessive for others. Even the food component in budget standard studies is less than clear cut or objective.

Everybody needs food; what else is necessary is much more problematic. Who is to define what is to be included? For some groups, such as children, there may be a reasonable degree of social consensus; few would argue that children in Britain should have toys, school outings and a holiday. For adults, however, there is much less consensus. Tobacco and alcohol may not be necessary for survival – indeed they may be positive threats to it – but many people regard them as requirements in daily life. Should such items be included in a budget standard and, if so, to what extent?

Some would argue that smoking and tobacco are clearly unnecessary and should not be included as necessities. Such a stern approach does not, however, eliminate the problem. If, for example, the cost of the 'approved necessities' is £50 per week, ensuring that everyone has £50 per week would not be sufficient to ensure

that everyone had all the approved necessities. Many would spend a considerable proportion of their £50 on smoking and drinking, leaving less than £50 for the approved necessities – which would be an inadequate budget for them. Thus judgement and moralising assessments of what people need and how they ought to spend their money are futile if they do not take account of what people actually do. If one poses the question – how much money do people need so that *everyone* spends an adequate amount on food? – then there is probably no answer at all. Some people given an income of £500 or £5000 per week may choose to spend all of it on gambling or dangerous drugs and fail to provide an adequate diet for themselves or their children. Individual variations in behaviour present a major problem in defining a poverty standard which can be applied to the population as a whole.

A final problem with the budget standard approach lies in the costing of particular items. Suppose a certain quantity of potatoes is defined as being a necessary and a relatively cheap component of an adequate diet: how are these potatoes to be costed? Potatoes can be purchased in many forms, ranging from raw potatoes encrusted in mud to oven-ready chips; the unit price of these potatoes varies by a factor of five or more. The higher price of oven-ready chips is in effect a payment for the processing of the potatoes up to the point at which only a minimum of preparation time is necessary. There is a trade off between the consumer's time and the cost of the product. The same consideration could be applied to clothing where one can, with adequate skills and time, make one's own clothes, as used to be much more common in the past, or one can purchase ready made clothes. The problem is that the definition of the physical quantities of food or clothing that are required leaves open the question of the time inputs that the user should be expected to make; yet these time inputs make a crucial difference to the cost and how much needs to be provided in a budget for each item.

These then are all problems associated with using a budget standard approach to define poverty levels. Nevertheless, budget standard studies have illuminated the literature on poverty. It is only by trying to spell out the consequences of particular requirements in financial terms – or alternatively spelling out what a particular amount of money will purchase – that one can get a solid impression of what the particular standard represents.

## 6.4.3 Social consensus approaches

A second approach is to find out what people think should be the poverty level. Perhaps the most attractive feature of the social consensus approach is that it seeks to cast aside self-opinionated experts, and let the people decide. As Mack and Lansley (1985) claimed: 'For the first time ever, the poor in Britain have been identified as those who fall below the minimum standard of living laid down by society.'

A major study, in which large samples from many countries were asked what they thought was the minimum income on which somebody in their circumstances could manage, was carried out by van Praag and associates (1982) funded by the European Community. As an indicator of cross-national variations in perspectives on poverty such research is interesting but there is a number of problems with it. The way 'minimum income' is interpreted by respondents may differ: does it include the income of other household members, secondary earnings, and state benefits and what account was taken of differences in housing costs? There are also inescapable conceptual problems with research of this type. Respondents' answers must inevitably be influenced by their notions of the purpose of the study. The results represent a majority view of what minimum is needed but this is, in effect, a prescription for others which may differ from the views of those living on low incomes or from the level that taxpayers are willing to provide.

Mack and Lansley in their *Breadline Britain* surveys asked their sample which of a long list of items they regarded as necessities, and asked which items they lacked because they could not afford them. Answers for some of the items are shown in Table 6.3. They defined as poor those that lacked three or more of these items that most regarded as necessities; on this basis one-fifth of the population was poor. As a survey both of public opinion about poverty and of numbers lacking certain items this research is extremely interesting. Since it has been repeated in 1983 and 1990 it allows a comparison of how standards have changed; the results make clear that expectations have risen with general living standards and that most people think that the poor should share in rising prosperity.

There are, however, problems in using this type of research to define a poverty level. A general problem with this approach is that the 'experts' and their judgements are not easily disposed of in

TABLE 6.3 'Necessary' items, 1990

	Proportion deeming items to be necessary	Proportion lacking each item because they could not afford it
A damp free home	98	2
Three meals a day for children	90	—
Washing machine	73	4
Presents for friends or family once a year	69	5
New, not secondhand, clothes	65	4
A television	58	1
A car	26	18
A pack of cigarettes every other day	18	5
A video	13	10

Source: J. Mack and S. Lansley, *Breadline Britain, 1990s*, HarperCollins, 1991.

the search for public opinion: in defining what is the minimum standard of living laid down by society, someone must define the questions.

One problem arises in trying to convert the items judged to be necessary into levels of consumption, expenditure, or income. Some of the items, such as three meals a day for children or a damp free home, could cost widely varying amounts; there is no unambiguous way of getting from the necessary items to a poverty level.

A second problem is that many of those who lacked 'necessities' did not lack 'non-necessities'. In Mack and Lansley's (1985) first study only 14 per cent of their sample thought that a packet of cigarettes every other day was a necessity; but 42 per cent of the sample, no doubt including many of those who were poor, had a packet of cigarettes every other day. Is a household poor that cannot afford necessities but affords non-necessities? Ashton (1984), puts this criticism as follows:

The lack of three or more items has to be because the household cannot afford them in order for it to be counted among those in

poverty. But the reason for lacking them is self-assessed. Many people who say they cannot afford an essential may have, or may have had, the resources to purchase it but allocate their resources instead for an apparent non-essential. To give an example, a household might lack the items 'carpets in the living room and bedroom' because they claim they cannot afford them, but may possess, say, an expensive hi-fi stereo unit. We are asked to accept that when someone says they cannot afford a particular item, they have not chosen instead to spend their money on something else that they regard as more essential (or desirable), but which does not appear on LWT's list.

Without some judgement about what margin, if any, is to be allowed for non-necessities, it is hard to see how any social consensus approach can move from a list of necessities to a determination of the income necessary to provide these necessities.

Turning to the level which people are prepared to pay for, or a financeable poverty level, Ashton (*ibid.*) argues:

What the LWT Breadline Britain research has shown, judged by the amount of money people were prepared to be taxed to provide it, is that we are not willing to set the standard much above the current state minima. This suggests that 100 per cent of the basic SB levels is much nearer a 'society-approved' definition of poverty than any other one yet devised.

In short, the social consensus approach still requires expert involvement in defining questions and interpreting answers. It fails to resolve the problem when the practices of the poor do not correspond with priorities prescribed by the majority, and it does not necessarily produce a poverty level which taxpayers will pay for. (Other approaches are just as vulnerable on this last point but the social consensus approach is the only one which seeks to define what has majority support.) Finally, and perhaps most importantly, there may be no real social consensus – the opinions of those who are poor, of the majority, of taxpayers, and of those who are rich may be at odds; which opinions prevail depends on the distribution of power in society.

#### 6.4.4 Behavioural approach

The behavioural approach has been most compellingly proposed by Townsend (1979). He endeavoured to 'define the style of living which is generally shared or approved in each society, and find whether there is . . . a point in the scale of the distribution of resources below which, as resources diminish, families find it particularly difficult to share in the customs, activities and diets comprising their society's style of living'. He attempted 'to provide an estimate of objective poverty on the basis of a level of deprivation disproportionate to resources'. This approach seeks, by examining behaviour in relation to income, to identify a poverty level on the basis of a change in social behaviour. Below a certain poverty level or threshold, it is argued, the loss of each pound of income increases deprivation sharply whereas above this level deprivation declines more slowly.

Townsend compiled a list of sixty indicators of 'style of living' covering diet, clothing, fuel and light, home amenities, housing, recreation, education, health and social relations. These indicators were expressed as indicators of deprivation and a 'score' for different forms of deprivation was added up, based on twelve selected characteristics. Taking the mean deprivation index for different income groups, Townsend found a clear relationship with income.

The indication that a threshold may exist was based by Townsend on the following steps. First, incomes were adjusted for household size by expressing them as proportions of the Supplementary Benefit scale rate for that household. Second, he grouped households by this adjusted income level, and estimated the most common value of the deprivation index for each group, the 'modal value'. Third, he plotted this modal value against the income level (expressed in logarithmic form). From this he concluded: 'As income diminishes from the highest levels, so deprivation steadily increases, but below 150 per cent of the supplementary benefit standard, deprivation begins to increase swiftly.'

What is not in doubt is that the poor have less choice and are more constrained than those better off or that there is genuine and severe poverty. What has been questioned are the choice of indicators used – do they indicate choices or constraints? – second, the

existence of a threshold – is there a marked change in deprivation below a certain level or is there a continuum? – and, third, the attainability of the goal of an objective, scientific measurement of poverty (Piachaud, 1981).

The absence of satisfactory evidence of a poverty threshold should not occasion any surprise since the relative nature of poverty and the fact that there is diversity in styles of living mean that a clear-cut threshold between the poor and the rest of society is extremely improbable. Subsequent attempts to establish a threshold have been unconvincing and it remains unproven that a threshold exists at which a clear shift in behaviour occurs. In behavioural terms, to find a threshold has not, in this writer's judgement, been successful.

This work and other work in this tradition does serve an extremely important function: it identifies those social and personal activities from which those in poverty (however defined) tend generally, but not invariably, to be excluded. Whether they are excluded due to lack of income is another question, but if social scientists can at least measure the extent of exclusion of the poor then they have done something that is worthwhile.

#### 6.4.5 Can needs be defined?

Having discussed three illuminating approaches to defining a poverty level and suggested that each of them has limitations, what conclusion can be drawn? While each approach has been criticised, none has been rejected totally. Each in effect addresses a different question. Each has something important to contribute.

The budget standard approach allows those components which can usefully be defined by experts to be costed. The social consensus approach provides a social definition of necessities. The behavioural approach enables the relationship between income levels and patterns of expenditure and consumption to be analysed. Further, behavioural studies can be used to examine other effects, such as restrictions on participation in social activities, associated with living in or close to poverty.

None of the approaches discussed, nor any combination of them, can provide a unique scientific and objective measure of poverty. As Atkinson (1985) has written: 'It would patently be preferable to specify a single poverty standard and hence obtain a

clearcut measure of the extent of poverty. This would however present an "all or nothing" approach, since those who disagree with the standard are likely to reject the findings out of hand.'

In discussions of poverty many different concepts and definitions are used. Not all can be discussed here but it may be useful to clarify some of the differences.

Poverty has been defined on the basis of income – a flow concept. Many in talking about the poor think primarily in terms of those with very little or no wealth – with no stock of capital. There is no doubt that one might question the poverty of someone with zero income if they were sitting on a million pounds capital reserve in the bank. By contrast, someone with an income a little above the poverty level who lacked any financial reserves might be particularly vulnerable to sickness or unemployment. What is perhaps most crucial is the liquidity of the wealth. Should an elderly person with a very valuable painting on the wall which yields no money income, although it may yield aesthetic pleasure, be expected to realise this asset and convert it into income. This may seem a rather abstract question but it is precisely the issue that arises in determining eligibility for Income Support, where the means test is primarily based on income but also takes account of capital in the form of financial assets, but not of other physical assets.

A second, somewhat related problem is associated with the cost of housing. If housing operated in a manner akin to the market for food, one could say that £25 per week would purchase a certain quality and quantity of housing throughout the country. This sum will, however, purchase very different amounts of housing depending on the type and history of tenancy, the location and the associated amenities. For Income Support purposes, the Department of Social Security in effect adds on actual housing costs (subject to certain limits) rather than allow some average amount. This is in contrast to the provision for all other forms of expenditure for which a total is provided which the recipient can then allocate according to his or her preferences. The underlying assumption that poor individuals have little control over their housing circumstances may reflect the imperfections of the housing market and a desire not to force those fallen on hard times to migrate to cheaper housing areas, losing contact with their community, family and friends, but this treatment of housing costs itself adds to the imperfections of the housing market.



The measurement of income in relation to needs as a means of assessing poverty does provide a measure of command over resources. It is often, however, not the aggregate command over resources that is a matter of concern but the consumption of particular items. An obvious reason for concern about poverty may be inadequate consumption of food. Again, in recent years there has been increasing concern about 'fuel poverty' – those who, because of low incomes or high heating requirements or low efficiency of heating systems, may be unable to keep themselves warm in winter. In the USA there has long been concern about the 'medically indigent' – those who even with quite high incomes may be unable to afford the medical bills that arise as a result of their medical condition. In each of these cases the concern is about inadequate consumption of a particular item rather than about the overall level of income.

Other approaches to poverty may be more concerned with 'outcomes' rather than 'incomes'. Measures of deprivation and disadvantage may focus on rates of unemployment, overcrowding, mortality and other social indicators all of which may be associated with poverty defined in the more limited sense used here. Discussion of such indicators would extend beyond the scope of this chapter.

## 6.5 THE MEASUREMENT OF POVERTY AND INEQUALITY

In this section the statistics used to describe poverty will be discussed, and then the problems of collecting empirical data on poverty will be assessed.

### 6.5.1 Poverty measures

The most obvious measure of poverty is the number of people living below the poverty line – a head count. If this increases poverty has got worse and if it decreases, there is less poverty. Such a conclusion would, however, be hasty and possibly quite wrong. If the poverty line is £50 per week then raising someone from £49 to £51 would take them out of poverty and reduce the number by one. On the other hand, raising somebody from an

income of £40 to £49 would leave them still in poverty and not reduce the total at all. To measure poverty more accurately than a head count allows, it is necessary to look at how far different individuals fell below the poverty line. Individual shortfalls can be aggregated to estimate an overall 'poverty gap' (Beckerman and Clark, 1982). This represents the extra income needed to bring all those below the poverty line just up to it.

A particular problem arises if the poverty level used is associated with or close to the levels of social security that the government provides. When British government estimates of low-income families were based on a benchmark of the Supplementary Benefit scale (the pre-cursor to Income Support), the effect of raising the Supplementary Benefit scale and making most of the poorest better off was to increase the apparent extent of poverty. For obvious reasons the government felt that doing more for the poor should not have the effect of producing more apparent poverty. Even with the new form of statistics that estimate numbers below different proportions of average income levels, it is possible for a fairly small change in social security benefits to produce big changes in numbers below particular levels.

The measurement of income inequality has been the subject of substantial literature (summarised in Atkinson, 1983a). Virtually all statistical measures of inequality have been applied at some time or other to the distribution of incomes – the coefficient of variation, the variance of the logarithm of income, mean deviation, interquartile and interdecile deviation and many more. The most commonly used summary measure is the Gini coefficient which measures the extent to which the distribution of incomes (be it gross or net, actual or equivalised income) differs from a state of total equality. However, as Atkinson points out: 'Measures such as the Gini coefficient are not purely "statistical" and they embody implicit judgements about the weight to be attached to the inequality of different points on the income scale.' Atkinson (1970) has proposed a measure of inequality in which distributional objectives are explicitly built in by in effect weighting the concern with inequality; thus society may be altogether indifferent to who is unequal – inequality at the top being treated on a par with inequality at the bottom – or, at the other extreme, it may only be concerned with the circumstances of the very poorest.

### 6.5.2 Sources of data

The studies mentioned above, of Rowntree, of Townsend, and of Mack and Lansley, were explicit studies designed to investigate poverty. Such studies have been immensely valuable but they were also extremely costly; and only a television company could afford recent data collection specifically on poverty. Now most analyses of poverty rely on secondary analysis of government surveys such as the Family Expenditure Survey and the General Household Survey. These surveys have now become extremely technically sophisticated with questions on income running to twenty or more pages. They have samples of around 7000 and 10 000 households respectively and achieve a response rate of about 70 per cent. Their cost runs into millions of pounds. In many respects they provide a wealth of data which is readily available for reanalysis. Compared to twenty years ago data on poverty and inequality has expanded greatly. There are, however, a number of problems, mostly intractable.

Even with large sample surveys the numbers in the poverty sample or with very high incomes can be quite small, particularly when the sample is broken down by family size or other distinguishing characteristics. Thus the question of whether poverty or inequality is increasing or decreasing among a particular subgroup is often hard to resolve. The coverage of these surveys is also a matter for concern: non-respondents may be disproportionately distributed and those not living in a household at all – for example, homeless people – are excluded.

There is one respect, though, in which little progress has been made, in part because the conceptual and practical problems are very severe. The income of families or households can be measured with some precision. The income, or command over resources, of individuals *within* families is very hard to measure. How much of joint food expenditure does each family member consume? Do all get equal benefits from a washing machine, car or yacht? How far can answers to questions about inequality within households be relied on?

A final problem that warrants mention is that most survey data are snapshots of circumstances. In order to understand changes over time and separate the ephemeral from the longer term it is necessary to obtain longitudinal data. This is time-consuming,

difficult and expensive. Such data has been collected in the USA, in the Michigan Panel Study, but it is only just beginning to be collected in Britain in the Essex Longitudinal Study.

### 6.6 CONCLUSION

Measuring poverty and inequality is not easy. Yet as long as there is concern about equity in society there will be a need to try to measure. Better measures are preferable to worse measures and it is for economists and social statisticians to refine them so that they represent reality as well as possible, while recognising that what is real differs between observers. If the term 'poverty' carries with it the implication and moral imperative that something should be done about it, then the study of poverty is only ultimately justifiable if it influences individual and social attitudes and actions. This must be borne in mind constantly if discussion on the definition of poverty is to avoid becoming an academic debate worthy of Nero – a semantic and statistical squabble that is parasitic, voyeuristic and utterly unconstructive and which treats 'the poor' as passive objects for attention, whether benign or malevolent – a discussion that is part of the problem rather than part of the solution.