ECONOMIC THEORY AND THE WELFARE STATE: A SURVEY AND INTERPRETATION

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'I propose here the view that, when the market fails to achieve an optimal state, society will, to some extent at least, recognize the gap, and nonmarket social institutions will arise attempting to bridge it....' (Kenneth Arrow 1963, p. 947).

'Economic theorists traditionally banish discussions of information to footnotes. Serious consideration of costs of communication, imperfect knowledge ... would, it is believed, complicate without informing.... [T]his comforting myth is false. Some of the most important conclusions of economic theory are not robust to considerations of imperfect information' (Michael Rothschild and Joseph Stiglitz 1976, p. 629).

'That any sane nation, having observed that you could provide for the supply of bread by giving bakers a pecuniary interest in baking for you, should go on to give a surgeon a pecuniary interest in cutting off your leg, is enough to make one despair of political humanity' (George Bernard Shaw, The Doctor's Dilemma, 1911).

I. INTRODUCTION

A. The Questions

This is an essay about incentive structures and information. Their joint effect is to give the welfare state an efficiency function which is largely separate from redistributive aims. The welfare state is not a subject apart, but part of mainstream economics: much of its efficiency justification derives from its properties as a device for ameliorating what, in effect, is a series of principal-agent problems.

The paper is not a conventional survey, but presents a particular viewpoint. It addresses two sets of questions.

(1) What is the subset of institutional structures which economic theory suggests is likely to achieve stated welfare policy objectives?

(2) Are the theoretical conclusions supported by empirical evidence?

Section II discusses different objectives which welfare states might have. The theoretical heart of the paper is section III: a central theme is the importance of the literature on imperfect information in

establishing an efficiency case for various types of state intervention.[1] There have, of course, been many insights into and justifications of the welfare state from non-economists and from outside the confines of utilitarianism; this paper argues that justification is possible also in conventional economic efficiency terms.

The economic theory sheds light on the historical development of welfare states in different countries and on the shape of current institutions. Both are surveyed briefly in section IV and in the Appendix (though the paper is neither an institutional survey nor about comparative systems). Sections V and VI develop the theoretical arguments in section III to assess the efficiency and equity of cash benefits and systems of medical care in different countries. The final section discusses the main conclusions and lessons for policy design.

Both the need for and the possibility of a theory of the welfare state in efficiency terms are new. The need is new, in that the end of the postwar consensus about the welfare state has brought the topic on to the agenda of economists (see the opening remarks by Anthony Atkinson 1987a). Its possibility is also relatively recent in that (as argued below) it derives from the growing literature on information problems.

B. Definitions and Terminology

Defining the welfare state continues to baffle writers and, as with poverty, much high-grade effort has been wasted in the search.[2] The term is used as a shorthand for the state's activities in four broad areas: cash benefits; health care; education; and food, housing and other welfare services (Robert Lampman 1984, Ch. 1). Three areas of complication stand out, however: sources of welfare transcend the limits of state activity; modes of delivery are diverse; and the boundaries of the welfare state are far from settled.

Individual welfare derives not only, nor necessarily primarily, from state institutions, but from at least four sources. Arguably the most important is the labour market in the form, first, of wage income: full employment is a major component of welfare broadly defined. In addition, firms (individually or on an industry basis, voluntarily or under legal compulsion) provide various forms of occupational welfare. A second source

of welfare is private provision, including voluntary private insurance and individual saving. Third is voluntary welfare, both within the family and outside. The state intervenes by providing the different types of benefit described above. In addition, it contributes through tax expenditures[3] to the finance of occupational and private provision.

Modes of delivery are also diverse. Though a service may be funded by the state, it does not follow that it must necessarily be publicly produced. The state can produce a service itself and supply it to recipients at no charge (most medical care in Sweden and the UK); or it can pay for individuals to consume goods produced in the private sector (US Medicare, health care in Canada); or it can give individuals money (either explicitly or in the form of tax relief) to make their own purchases (e.g. tax relief for private medical insurance premiums).

The third area of complication is where to draw the boundary of the welfare state. Though the state's role should not be exaggerated, neither should it be understated. Some typically excluded expenditure (e.g. public health and environmental policies) is very similar in purpose to activities which are included.

Harold Wilensky and Charles Lebeaux's (1965) distinction between a residual and a universal welfare state has been widely used. A residual welfare state, intended mainly as a safety net for the poor, is characterised by income testing of publicly provided services and by mainly private provision for the non-poor. The USA is frequently placed in this category. In a universal welfare state,[4] in contrast, services are intended for all socioeconomic groups, for example Germany. The usefulness of the distinction, though considerable as a shorthand, should not be overstated. Where, for instance, does one place a country (New Zealand is a case in point) with a wide range of benefits (which sounds like a universal welfare state), most of which are income tested?

Insurance, as discussed shortly, is one of the important functions of the welfare state. The term is used with various meanings, of which two above all should be distinguished. Insurance can be defined (a) as a device which offers individuals protection against risk, and/or (b) as an actuarial mechanism (as defined in III (B)). The first defines insurance

in terms of its objective, the second as a method by which that objective might be pursued. Even where institutions are not insurance in the sense of (b), they might still be regarded as insurance in that they offer protection against risk.

Types of intervention. Government intervention in this (or any other) area is usefully divided into four generic types.

Regulation can apply to quality (hygiene laws for food), quantity (compulsory membership of social insurance), or price (minimum wages).

Price subsidy can be partial (food stamps) or total (free medication for low-income groups); similarly, prices can be increased through taxes on specific commodities. Both regulation and subsidy/tax leave markets intact, but alter the constraints agents face.

With public production the state takes over the supply side: in the case of most pre-university education the state owns the capital (e.g. school buildings) and employs the labour; alternatively, the state can commission and direct private-sector activity (e.g. weapons procurement).

Income transfers can at least notionally be tied to specific types of expenditure (food stamps) or can be untied (social insurance benefits). First-best transfers take the form of a lump sum, and therefore affect economic activity only by changing the incomes of agents, with no extra-market effect on product or factor prices. Since taxation in practice is related to endogenous factors, policy design needs to take account of incentive effects.

C. Boundaries of Coverage

Geographical coverage. The paper focuses on ten countries whose choice was constrained by the available literature and by language difficulties. The USA is included inter alia because of the extent to which it is an outlier. The British welfare state has a long history and is based on a fairly explicit blueprint. Sweden represents a somewhat different approach to a fully articulated welfare state. Germany, the Netherlands and Switzerland, are chosen because their medical care systems differ in important respects from those of the UK and Sweden. Australia and New Zealand have no explicit social insurance contributions; benefits are tax-funded and

mostly income-tested;[5] and New Zealand is an 'old' welfare state, having introduced a tax-funded retirement pension in 1898. Canada combines tax funding of medical care (like Sweden and the UK) with mainly private provision (like the USA). Japan shows how institutions converge across widely different cultures and because, like Switzerland, it illustrates how even countries with 'small' governments have substantial social spending.

Discussion, of necessity, is broad brush: there is no discussion of federal/provincial relations in non-unitary states like Australia, Canada, Germany, Switzerland and the USA; and important countries have been omitted. To readers who disagree with the selection, there are two main defences: there is a close match between the ten countries chosen and those covered by the Luxembourg Income Study, which makes possible at least some cross-country comparison of poverty and inequality; and the theoretical framework applies to all developed economies, and in large measure also to developing economies (Ehtisham Ahmad 1991).

The coverage of social institutions focuses on cash benefits[6] and health care. Such a choice omits many important sources of welfare. Voluntary welfare (charities, voluntary organisations, unpaid care within the family) receives little mention, as does child day care. Education is also omitted: the topic is well served by surveys (Mark Blaug 1976), and the theoretical arguments are somewhat different to those in section III. Food, housing and other welfare services are not discussed, not least because in most countries they comprise a relatively small fraction of welfare-state spending. To limit discussion only to direct state expenditure would, however, be unduly restrictive: where possible tax expenditures are included; so too are the major types of private welfare, such as employer health benefits and pension schemes.

Limiting discussion to public and major private expenditure on cash benefits and health care follows a well-worn convention (e.g. Margaret Gordon 1988; ILO 1988). A major criterion has been to choose areas about which economics has things to say (e.g. medical insurance) rather than those to which it is less directly relevant (e.g. the loosening ties of the nuclear family). Thus there is little discussion of gender issues or of lone parents <u>per se</u>. An additional criterion has been the choice of topics

which offer lessons for policy design.

Data problems time and again blur attempts to make empirical judgements. They are of four well-known sorts.

Problems of definition: problems arise in defining poverty (Sheldon Danziger and Michael Taussig 1979; Atkinson 1987b, 1989, Ch. 1); and the conceptual problems faced by measures of aggregate inequality are equally well known (Atkinson 1970, 1983a, Ch. 1; Amartya Sen, 1973).

Measurement problems: some components of individual income are clear in concept but difficult to measure, e.g. non-money income or health status. A similar problem at an aggregate level is the difficulty of measuring and attributing tax expenditures.

Causality: well-known in the education literature (Blaug 1976) is the unmeasurable extent to which individual productivity is causally related to the level of the individual's education. An analogous problem arises with many sorts of health care: an individual receives treatment and gets better; but to what extent is the improvement causally related to the treatment? Cash benefits raise even greater problems, in that, except for marginal changes, it is not possible to establish the counterfactual, i.e. the income distribution which would prevail if there were no transfers. The absence of a convincing counterfactual opens up the possibility of arguing that cash benefits are not a cure for poverty, but its cause (Charles Murray 1984; for counterviews see William Wilson 1987; Frank Levy 1988, Ch. 8).

Incidence: the problems of measuring the incidence of benefits and of the taxes/contributions which finance them require no repetition (for a survey, see Laurence Kotlikoff and Lawrence Summers 1987).

II. OBJECTIVES OF THE WELFARE STATE

The objectives of social institutions, as in any other area of economic policy, are efficiency, equity and administrative feasibility. It is useful, however, to look at matters more closely.

Efficiency has at least three aspects.

Objective 1: Macro efficiency: the efficient fraction of GDP should

be devoted to the totality of welfare-state institutions, e.g. policy should seek to avoid distortions which lead to cost explosions.

Objective 2: Micro efficiency: policy should ensure the efficient division of total welfare-state resources between the different cash benefits and different types of medical treatment.

Objective 3: Incentives: the finance and construction of benefits should minimise adverse effects on labour supply, employment and saving.

Supporting living standards is the second strategic aim.

Objective 4: Poverty relief: no individual/household should fall below a minimum standard of living. Since there is no analytically satisfactory way of defining a poverty line, the choice of minimum standard is largely normative. Once the poverty line has been decided, the effectiveness of the system is measured by statistics relating to how many people are below the poverty line ('headcount' measures), by how much ('poverty gap' measures), and for how long (i.e. life-cycle matters) (Atkinson 1987b; James Foster 1984).

Objective 5: Protection of accustomed living standards: nobody should face an unexpected and unacceptably large drop in their living standard. This is a major objective of unemployment benefits and most health-related benefits. Its success is measured by the replacement rate, which shows a person's income when on benefit in comparison with their previous income.

Objective 6: Income smoothing: institutions should enable individuals to reallocate consumption over their lifetime. Individuals can redistribute from themselves at one stage in the life cycle to themselves at another (an actuarial private pension scheme); or such redistribution could be notional (an unfunded state pension scheme which embodies an inter-generational social contract (Paul Samuelson 1958)). Alternatively, there could be tax-funded provision, with no pretence of individual contributions, to groups whose stage in the life cycle suggests that they are likely to be financially constrained (e.g. benefits for families with young children).

Objectives 5 and 6 are aspects of the broader aim of economic security. Objective 5 concerns unexpected reductions in living standards (i.e. it is mainly an insurance objective); objective 6 concerns

predictable falls in income (i.e. it is more a savings objective). Thus both objectives have efficiency as well as equity dimensions.

Inequality reduction, in contrast, is almost entirely an equity issue.

Objective 7: Vertical equity: the system should redistribute towards individuals/families with lower incomes. This aim is contentious. All income-tested benefits contribute to it; so, second, do non-means-tested benefits whose recipients disproportionately have lower incomes (e.g. the flat-rate pension in countries like Britain and Canada). A third form of redistribution arises where more benefit per dollar of contribution is paid at lower incomes, which can occur in a number of ways: any flat-rate benefit financed by a proportional contribution redistributes progressively; so does the redistributive formula built into the US social security retirement pension;[7] so does 'free' provision of a tax-funded service (e.g. health care in Britain, Canada and Sweden), so long as it is not used even more progressively than the contributions which finance it.[8]

Objective 8: Horizontal equity: differences in benefits should take account of age, family size, etc., and differences in medical treatment should reflect only factors which are regarded as relevant (e.g. whether or not the patient has dependants), but not irrelevant factors like race.

Social integration. So far the objectives have been conventional economic ones. Some commentators include broader goals.

Objective 9: Dignity: cash benefits and health care should be delivered so as to preserve individual dignity and without unnecessary stigma (James Meade 1978, p. 269). Beveridge argued in this context that by paying a contribution, the individual 'can feel that he is getting security not as a charity but as a right' (UK 1942, para. 296).

Objective 10: Social solidarity: cash benefits and health care should foster social solidarity, a frequently-stated goal in mainland Europe. So far as possible, benefits should depend on criteria which are unrelated to socioeconomic status. Retirement pensions are an example; so is medical care in many countries. Additionally, benefits should be high enough and health care good enough to allow recipients to participate fully in the life of the society in which they live -- an aim which relates closely to

the objective of poverty relief.

Administrative feasibility has two aspects.

Objective 11: Intelligibility: the system should be simple, easy to understand, and as cheap to administer as possible.

Objective 12: Absence of abuse: benefits should be as little open to abuse as possible.

Problems of definition and measurement abound. Efficiency objectives 1-3 have precise analytical definitions, but measurement problems such as the incidence of taxes, contributions and benefits, make it difficult to assess how far they are achieved. How do we define a poverty line in objective 4; and how large a drop in living standard is 'unacceptable' (objective 5)? The appropriate extent of vertical redistribution and a workable definition of horizontal equity are continuing problems for economists, philosophers and political theorists. Even 'equality' is difficult to define unambiguously (Arthur Okun 1975, Ch. 3), especially in the context of benefits in kind like health care (Julian Le Grand 1982, Ch. 2).

Concepts like 'dignity', 'stigma' and 'social solidarity' (objectives 9 and 10) are hard to define and raise major measurement problems. Writers like Friederich Hayek (1976) argue in addition that the term 'social solidarity' is devoid of meaning, and that its pursuit is both pointless and dangerous.

Even were these problems assumed away, a second set of difficulties arises, in that some objectives are inherently in conflict and others may be. The tradeoff between efficiency and distributional objectives, and between horizontal equity and administrative simplicity are no less intractable for their familiarity. Other objectives are inherently in conflict. Income smoothing implies that an individual with higher earnings should receive higher benefits, which sits uneasily with redistribution towards those with lower incomes. On one interpretation of equity everyone should receive benefits proportional to their past contributions, but that, again, conflicts with redistribution towards lower incomes. The choice of objectives and of priorities between them is a fundamental normative issue.

III. ECONOMIC THEORY

A. Traditional Market Failures

Types of market failure. It useful to survey the relevant economic theory in terms of its historical development (see Gervas Huxley, forthcoming). The traditional failures, for the most part, require little discussion.

(1) Imperfect competition.

(2) External effects.

(3) Increasing returns to scale.

(4) Public goods.

(5) Non-clearing markets, e.g. the view of unemployment as involuntary, might be an argument for counter-cyclical policies, but the problem does not per se justify publicly-organised unemployment benefit. As argued later, the main efficiency justification for publicly organised unemployment compensation arises out of insurance-market failures which make private unemployment insurance incomplete or impossible.

(6) Income externalities can justify 'Pareto optimal' income transfers. Harold Hochman and James Rodgers (1969, 1970) explain voluntary transfers in a two-person world with representative 'rich' and 'poor' individuals, R and P. R is concerned with P's utility as well as his own; thus a gift from R to P may raise the utility of both. Where redistribution makes some people better-off and nobody worse-off, transfers may be justified on quasi-efficiency grounds.

This, however, is not a market failure, but a market expression of charity: state intervention arises only if there is reason to believe that voluntarism will be sub-optimal. The main such argument, when the model is extended to the n-person case, concerns free-riders. If it is not the income of specific individual poor people which affects the utility of the rich, but the overall distribution, then,

> 'private charity is insufficient because the benefits from it accrue to people other than those who make the gifts .... [W]e might ... be willing to contribute to the relief of poverty, provided everyone else did' (Milton Friedman 1962, p. 191, his emphasis).

Though some writers argue that this free-rider problem is exaggerated (Robert Sugden 1982, 1983; see also David Collard 1983), none has shown that voluntarism will be optimal. Thus there are quasi-efficiency

arguments for compulsory cash transfers through the tax system.

Merit goods are commodities in respect of which policy makers override individual preferences, e.g. mandatory social insurance. They can be viewed in three ways.

(7)(a) Merit goods as a response to a conventional externality: policy makers might see a social benefit in making sure that the water supply is pure, and that your children are well fed and educated. This is the old 'national efficiency' argument.

> 'The future of the Empire, the triumph of social progress and the freedom of the British race depend not so much upon the strengthening of the Army as upon fortifying the children of the state for the battle of life' (Hansard (Commons), 18 April 1905, col. 539, quoted by Maurice Bruce 1972, pp. 152-3).

A modern interpretation sets the argument in an efficiency wage context (George Akerlof and Janet Yellen 1986): from this perspective, the welfare state is a rational way of improving labour-market efficiency.

(7)(b) Merit goods as a response to a consumption externality: this is a variant of the Hochman and Rodgers argument. Suppose that the rich person's utility is affected not by the poor person's income, but by his consumption. However, not all increases in P's consumption raise R's utility: it is necessary to distinguish 'good' consumption (basic food, school books), and 'bad' consumption (whisky, welfare Cadillacs), 'good' and 'bad' being defined by R. Thus R's utility (a) increases with his own income, (b) increases with P's 'good' consumption, but (c) decreases with P's 'bad' consumption. Where (b) is large and positive and/or (c) large and negative, R might prefer to make a compulsory in-kind transfer of 'good' consumption; P might also prefer the in-kind transfer if it is larger than the cash offer which R might otherwise make. Thus social welfare might be higher with transfers tied to 'good' consumption.

(7)(c) Merit goods as a response to mistaken preferences: policy makers might regard individual preferences as 'wrong', e.g. myopia.

Implications for state intervention. What forms of intervention are justified by these market failures? Imperfect competition, externalities and increasing returns to scale may justify regulation or particular types

of subsidy. Income externalities may justify compulsory redistributive taxation, at least to a guarantee of subsistence. Only public goods offer a strong efficiency case for public production.

At least in utilitarian terms, merit goods make little difference. Though cited as an efficiency justification for intervention, they are often no more than an empty box used to explain intervention wherever we observe it. Cases 7a and b add nothing new: 'national efficiency' is a simple externality, and the consumption externality argument an extension of income externalities. They can justify three forms of intervention: regulation (e.g. compulsory schooling); income transfers (family support was often justified on the grounds of national efficiency); or transfers in kind of 'good' consumption (e.g. the provision of free milk to children at school).

Do mistaken preferences (7c) make any difference? To the extent that the argument has meaning for an economist, it rests on one of two pillars. It could refer to simple paternalism, based either on non-utilitarian foundations or on the view that policy makers 'know better': both arguments conflict with the assumption that individuals are the best judge of their own welfare. Alternatively, policy makers could be better-informed than citizens; but this is an argument based on information problems, under whose head it is properly discussed (see (8), below).

The main conclusion is how thin, at least in utilitarian terms, is the traditional justification for large-scale, publicly-organised welfare-state services.[9] To the extent that the traditional market failures support welfare-state institutions at all, they justify only a residual welfare state. Apart from paternalism, the only argument for universal provision is if the 'national efficiency' externality is so strong that it justifies compulsory and/or subsidised consumption of a good by the entire population, e.g. publicly organised sewerage in response to nineteenth-century British cholera epidemics; here the externality is so large that the public goods analysis applies.

How then might economics explain pervasive public involvement in all countries in social insurance, medical care and other areas? One route is through information failures (section B); the other is through public choice (section C).

B. Information Problems

The analytical key is the twofold literature on imperfect information. One strand analyses the effects of imperfect information about quality: consumers might be badly-informed (e.g. about the quality of an automobile); so might producers (e.g. about the degree of riskiness of an applicant for insurance). The second strand, imperfect information about price, covers topics like search theory and reservation wages.[10] The following discussion, drawing on the quality literature, looks at the impact of imperfect information on demand (mainly the effect on consumers) and on supply (mainly the effect on insurers).

Information problems 1: consumers. Rational choice requires well-defined preferences and a well-defined budget constraint. Imperfect consumer information can thus arise in two generic ways.

(8)(a) Imperfect consumer information about the quality of the product: patients may have insufficient information to make rational choices of medical treatment; and Akerlof's (1970) 'lemons' arise more widely than in the automobile market; both are problems of asymmetric information.[11] Regulation (e.g. hygiene laws in the case of food) may improve matters.

Where information is seriously deficient, market outcomes may be less satisfactory than some sort of administrative solution. Markets are generally more efficient (a) the better is consumer information, (b) the more cheaply and effectively it can be improved (e.g. computer magazines, hygiene laws for food), (c) the easier it is for consumers to understand available information, (d) the lower are the costs of choosing badly, and (e) the more diverse are consumer tastes. Commodities which conform well with these criteria are food and such consumer durables as hi-fi, personal computers and automobiles. As discussed later, health care conforms less well: consumer information is often poor; people generally require individual information, so that the process will not be cheap (violating (b)); much of the information is highly technical (violating (c)); and the costs of mistaken choice can be high.

(8)(b) Imperfect consumer information about prices, i.e. an ill-defined budget constraint): the solution here is regulation, e.g. through

mandatory publication of prices.[12]

Information problems 2: insurance. Firms also face information problems: employers may be badly-informed about the quality of labour, so might lending institutions about the riskiness of prospective borrowers. A particular class of information problem concerns insurance markets.[13]

The competitive insurance premium for an individual facing a probability p_i of an insured loss L is

$$B_i = p_iL + T \qquad (1)$$

where T covers the insurance company's transactions costs and normal profit. The existence and efficiency of insurance markets depends on the expected loss, p_iL, fulfilling a number of conditions.

(9) Adverse selection is an insurance-market manifestation of 'lemons' (Akerlof 1970). The individual knows he is a 'lemon' (i.e. a bad risk), but is able to conceal the fact from the insurer. Akerlof's competitive analysis was extended by Rothschild and Stiglitz (1976) to cover strategic behaviour by firms.[14] Assume the simplest case: risk-averse individuals, constant marginal utility of income, actuarial insurance and no administrative costs. Point A in Figure 1 shows the income of an uninsured individual when working and when unable to work because of illness. Under the stated assumptions, a rational individual will choose to insure fully. With full insurance, income (net of the insurance premium) will be the same when ill as when working, i.e. at a point on the 45-degree line.

Suppose that low-risk individuals have a probability of illness p_L, and high-risk a probability p_H. Where the insurance company can assess risk, low-risk individuals can trade from A on favourable terms; they give up relatively little income in premiums when working and receive generous benefits when ill. They will be able to buy any insurance contract along the line A-C_L and, under the stated assumptions, will choose the contract shown by point C_L. High-risk individuals face the less-favourable terms shown by A-C_H, and will choose point C_H.

[FIGURE 1 ABOUT HERE]

Where the insurance company cannot distinguish high- from low-risk individuals, it must charge a premium based on average risk:

$$B = [\pi p_H + (1-\pi)p_L] L + T \qquad (2)$$

where p_H and p_L are the (now unobserved) probabilities of high- and low-risk individuals, respectively, and π and $(1-\pi)$ the proportions of high- and low-risk individuals buying insurance. The locus of potential insurance contracts is shown by the line A-D in Figure 1.

The problems caused by adverse selection are illustrated by the contract shown by B. Any contract in the shaded area above B would (a) be preferred by the low-risk group, and (b) would still be profitable. Thus the pooling equilibrium (i.e. a common premium for all applicants) at B is not stable; if a company offered such a contract, another company could bid away the low-risk group by offering a policy in the shaded area above B. The same argument applies for any other contract along A-D.

Suppose instead that the insurance company tried to have separate policies for the two groups. It cannot verify the riskiness of each individual, but it might be able to offer policies such that customers, through their market behaviour, revealed their true probability.[15] Thus the policy offered to the low-risk group along A-D must lie to the left of point E (anywhere to the right would attract high-risk applicants). However, as Figure 1 is drawn, low-risk individuals would prefer the pooling contract shown by B to any contract between A and E. Thus no separating equilibrium exists. Even if it did, it would be inefficient because it would not allow low-risk individuals to buy complete cover.

Adverse selection thus causes two sets of problems: a pooling equilibrium is unstable because low risks drop out or because of competitive behaviour by insurers; and a separating equilibrium, if it exists, is inefficient. In the face of adverse selection the market is inefficient or fails entirely, the ultimate outcome depending on the precise behaviour of insurer and insured (Martin Hellwig 1987). A partial solution is to restrict consumer choice by making membership compulsory, thus preventing low-risks from opting out of a pooling equilibrium. If preferences are sufficiently similar, the welfare loss from compulsion may be minimal (see discussion in a different context by Martin Weitzman 1977).

Moral hazard raises a different set of efficiency problems. It arises where the insured person can influence the expected loss, $p_i L$, at a cost lower than the expected gain, and without the insurer's knowledge (another

example of asymmetric information). Pauly (1974) considers the case of individual expenditure on a preventive activity, z, which can reduce the probability of the insured event. From a social point of view, the efficient level of z is that at which its marginal cost is equal to the marginal reduction in insured losses. But if losses are fully insured and the insurance company cannot monitor individual preventive activity, my extra spending on z reduces my premium by only an infinitely small amount: the main beneficiaries are other insured people who now pay slightly lower premiums. As a result of this type of externality individuals face private incentives to underinvest in preventive activities. Moral hazard thus causes inefficiency in the form of excessive purchase of insurance cover.

Pauly's analysis is sensitive to one strong assumption, namely that all losses, including non-material losses, are insurable. If that assumption is relaxed, different results are possible. It is useful to distinguish different cases.

(10)(a) Endogenous p_i, but only at substantial psychic cost: an example is suicide. Individuals cannot insure against the psychic cost to themselves of death. Insurance is thus incomplete, and there is little or no overinsurance. Moral hazard in this case is not a problem.[16]

(10)(b) Endogenous p_i, with no substantial psychic cost: people might drive less carefully or buy fewer fire extinguishers, since insurance reduces the cost to the insured individual of any unwelcome consequences. In this case, the Pauly result holds: moral hazard does not make insurance impossible but causes inefficiency, in that people take less care than if they had to bear the full loss themselves.

(10)(c) Endogenous p_i, with substantial psychic gains: an example is elective health care (e.g. a hair transplant). Here the insured outcome is not an undesired exogenous event but a deliberate act of consumer choice. This is a far cry from an insurable risk; such activities are generally uninsurable.[17]

(10)(d) Endogenous L at zero or low cost (the so-called third-party payment problem): here it is not the probability, p_i, which is endogenous but the size of the insured loss. If medical insurance pays bills in full, the private costs facing both doctor and patient are zero, even though the social cost is positive and usually substantial. The result is

inefficiency in the form of overconsumption of medical care.[18]

Moral hazard thus causes a fundamental problem: the more complete the cover and the lower the psychic loss from the insured event, the less individuals have to bear the consequences of their actions and the less, therefore, the incentive to behave as they would if they had to bear the loss themselves. Various devices try to reduce the problem by imposing some of the cost on the individual (Steven Shavell 1979): frequent claimants pay higher premiums; deductibles make the insured pay the first $X of any claim; with coinsurance, the insured pays x per cent of any claim.[19] None of these, however, faces the individual with the full marginal financial cost of making good the loss.

Adverse selection and moral hazard, at their core, are information problems. Neither would arise if the insurer could 'get inside the head' of the insured, and so could (a) verify his true risk status and (b) monitor whether he was behaving differently from the way he would in the absence of insurance.

There is a clear link between such asymmetric information and the principal-agent problem (Laffont 1989, Ch. 11). If the principal (the insurer) is risk-neutral and the agent (the insured) risk-averse, it is Pareto efficient if the agent receives a constant return (i.e. is fully insured by the principal). But the agent then has no incentive to exert effort (in this case, to take risk avoiding measures), since his income no longer depends on that effort. The incentive can be partially restored if the agent's income is linked to the final outcome, but only at the price of deviating from Pareto optimality. The problem is solved if the principal has sufficient information to monitor the agent's behaviour.

(11) Unpredictable probabilities: in addition to problems of asymmetric information there is some relevant information which nobody has. If p_i in equation (1) cannot be predicted, the insurer cannot calculate a premium. Thus insurance is possible only against risk but not against uncertainty (in the Frank Knight (1921) use of the terms). An example of the problem is the probability distribution of different rates of long-term future inflation -- a probability of considerable relevance for the indexation of private pensions.

Other problems can also make insurance impossible.

(12) Interdependent probabilities: insurance requires a predictable number of winners and losers. This is true where uncertainty is an individual but not an aggregate problem (e.g. life expectancy). In the case of aggregate uncertainty, however, there is a common shock: if one person suffers an insured loss so does everyone else. An important example is inflation which, if it affects any one member of a pension scheme, will affect all. Where the problem is extreme, insurance is impossible.

(13) Probabilities close to unity: if the insured probability approaches unity, the actuarial premium in equation (1) approaches or exceeds the insured loss. Insurance will not be offered because there is no demand for it. There is no possibility of spreading risk, and hence no gains from trade from joining a risk pool. The problem can arise for the chronicly or congenitally ill, where the probability of requiring treatment is equal to one unless insurance is taken out before the condition is diagnosed. Insurance in such cases is generally impossible.

Implications for state intervention. Arrow (1963) argues that where markets fail, other institutions may arise to mitigate the resulting problems, either through public production or through private institutions using non-competitive allocation mechanisms: '[T]he failure of the market to insure against uncertainties has created many social institutions in which the usual assumptions of the market are to some extent contradicted' (Arrow 1963, p. 967). Thus institutions (public or private) may arise which are insurance in the sense of protecting against risk, even if they are not insurance in a strict actuarial sense.

The Arrow arguments and their subsequent elaboration contrast with writers like Robert Nozick (1974), who argue that what matters is not the outcome, or end-state, but the process by which it is reached; even if compulsory public provision could be shown to make everyone better off it should, according to such a view, be rejected. The conclusions of the Arrow arguments are also in strongest possible contrast with Hayek (1945). Both writers start from the assumption of asymmetric information. To Hayek the fact that different people know different things is an argument in favour of markets: the market makes beneficial use of such differences

(analogous to the existence of skill differences) by allowing gains from trade to be exploited. Arrow showed that the market is an inefficient device for mediating important classes of differences in knowledge between people. Nor is that view idiosyncratic. The Rothschild and Stiglitz (1976) and similar arguments have already been discussed. Robert Lucas, in discussing unemployment, reached the same conclusion:

> 'Since, ... with private information, competitively determined arrangements will fall short of complete pooling, this class of models also raises the issue of social insurance: pooling arrangements that are not actuarially sound, and hence require support from compulsory taxation. The main elements of Kenneth Arrow's analysis of medical insurance are readily transferable to this employment context' (1987, p. 62, his emphasis).

Information failures provide both a theoretical justification of and an explanation for a welfare state which is much more than a safety net. Such a welfare state is justified not simply by redistributive aims one may (or may not) have, but because it does things which private markets for technical reasons would either do inefficiently, or would not do at all. A key argument in sections V and VI is that private insurance cannot cover contingencies such as unemployment, inflation and important medical risks. It is useful to anticipate that discussion by considering one response, social insurance.

Social insurance. A key aspect of social insurance is that membership is compulsory. Inadequate provision against income loss due to unemployment, sickness or old age generally imposes costs on others: the cost of cash assistance falls upon taxpayers generally; alternatively, if people with inadequate cover were allowed to starve there would be other costs (public health hazards, burial costs, increased crime). Non-insurance thus creates external costs. One solution is to make insurance compulsory, at least up to a minimum level (though the efficiency argument for making higher benefits mandatory is less clear).[20]

Compulsion addresses at least two of the issues discussed earlier: it deals with the externality and, because low risks cannot opt out, it makes possible a pooling solution, thus avoiding the worst of the problems

caused by adverse selection. The resulting institutions take three generic forms, all of which are insurance in the sense of offering protection but which diverge increasingly from insurance in conventional actuarial terms.

Social insurance is awarded without any test of income or wealth on the basis of (a) a contributions test and (b) the occurrence of a specified contingency, such as unemployment or being above a specified age.[21] Contributions take two broad forms. Quasi-actuarial contributions are related to the average risk (e.g. the flat-rate weekly UK contribution between 1948 and 1975); this is a pure pooling equilibrium. Income-related contributions break the link with individual risk; the contribution in this case looks like an earmarked tax. Mixed arrangements are possible, with employees paying income-related contributions, and employers paying contributions related to the risk experience of the particular industry.

'Universal' benefits, which abandon the attempt to mimic private insurance, are awarded on the basis of a specified contingency, without either a contributions or an income test. There is no convenient shorthand for this type of benefit: they are often referred to (Gordon 1988, p. 37) as 'universal' and, reluctantly, I shall follow that usage. Examples include the flat-rate component of the retirement pension in Canada, New Zealand and Sweden, health care in Canada, Sweden and the UK, and family support in many countries.[22]

Social assistance is awarded on the basis of (a) an income test, and (b) the occurrence of a specified contingency, without a contributions test. Though generally a benefit of last resort (e.g. US Medicaid) it can be the main form of organisation, e.g. most cash benefits in Australia and New Zealand.

These are the pure cases. In reality the categories can become blurred: both social insurance and 'universal' benefits may be partly income tested, e.g. by being included in taxable income.

Administration can be by the state at central or lower level. Alternatively, it can be hived off to private-sector institutions such as friendly societies or trades unions (unemployment compensation in Sweden, medical care in Germany); in such cases the private sector is acting, in effect, as an agent of the state.

Though social insurance in some ways follows private institutions, it

differs in two important respects. First, because membership is compulsory, it is possible (though not essential) to break the link between premium and individual risk. Second, the contract is usually less specific than private insurance: protection can be offered against risks which the private market cannot insure; and the risks can change over time.

C. Public Choice and Government Failure

The arguments are surveyed by Robert Inman (1987) and Dennis Mueller (1989). Four explanations are offered of the extent of and growth in government activity: government's role in dealing with market failures; its role as redistributor of income and wealth; its response to the electorate in the form of coalitions of voters or through pressure groups; and the role of bureaucrats. The government failure arguments point to the latter two as important distorting influences.

The influence of the electorate operates in various ways. The coercion-via-the-ballot-box argument (Anthony Downs 1957) is that the (many) poor, on their own or in coalition with others, outvote the (fewer) rich to impose redistributive tax and benefit regimes. Writers like James Buchanan and Gordon Tullock (1962) and Tullock (1970, 1971) argue that most transfers from the rich are captured by the middle class through their electoral power as median voters or acting as interest groups. Other arguments stress the broader role of interest groups on redistributive transfers (e.g. the poverty lobby). Interest groups are also argued to use their lobbying power to bring about redistribution through regulation, especially where the regulators are 'captured' by those whom they are supposed to regulate (George Stigler 1971; Richard Posner 1975; Samuel Pelzmann 1976). According to this view, regulation (e.g. of the medical profession) is an entry barrier which allows the extraction of monopoly rent.

Distortions can arise also within government, in that public-sector institutions may in part be run for the benefit of the bureaucrats themselves (William Niskanen 1971). This occurs because of organisational slack, since politicians are not able fully to monitor the actions of their utility-maximising officials.

For one or more of these reasons, it is argued, the size of the public

sector may be inefficiently large; or its composition may be distorted to meet the needs of the bureaucracy, powerful interest groups, or voters in marginal constituencies.

These insights, however, should not be pressed too far. Even within a strict utilitarian framework, writers like Friedman (1962) and Hochman and Rodgers (1969) offer an explanation of tax-financed redistribution which does not rely on electoral coercion. Interest groups may enhance efficiency (Gary Becker 1983, 1985). Regulation may result in monopoly rents (e.g. doctors in some countries); but, as discussed in section VI, it also offers protection to imperfectly-informed consumers (e.g. regulation of medical training).

The power of bureaucrats can be overstated and their motivation misunderstood (Patrick Dunleavy 1985). Organisational slack should not be exaggerated: pay increases or enlarged departments can be monitored; voters may be able to vote with their feet against high local taxation (Charles Tiebout 1956); and bureaucratic utility maximisation can just as easily lead to less government (Treasury officials in Margaret Thatcher's Britain won favour by cutting expenditure). In addition, organisational slack may be more pronounced where the state regulates private activity than with public production: in the case of social insurance, for instance, the state has information (e.g. about tax and social insurance contributions) and powers which would be regarded as draconian in the private sector; and (section VI) countries where private, fee-for-service medical care is publicly funded find it more difficult to contain costs than those with public production.

Nor are the various government failure arguments necessarily equally applicable everywhere. Tullock's (1971) claim that benefits go disproportionately to the middle class may be more true of the USA than elsewhere: as discussed in V (D), in Germany and Sweden the lowest income quintile receives net transfers of about 10 per cent of GDP.

More generally, recent political applications of the principal-agent analysis have re-evaluated the pessimistic tone of earlier literature and stressed by contrast that, given the right contract, voters can control political leaders and legislators exercise oversight of bureaucracies (see Jonathan Bendor (1988) for a survey).

D. Drawing the Borderlines between Government and Markets

The most important contribution of the public choice literature is the idea that analysis of government should treat its activities as endogenous. It does not, however, follow that the social-welfare outcome of the political market place is necessarily inferior to that of conventional markets. Just as markets can be efficient or inefficient, so can governments. Were it otherwise, we would advocate anarchism, a conclusion from which the government failure literature pointedly refrains. An important counterpoint to government failure is market failure and, in the welfare-state context, particularly information failures.

Inman's (1987) survey concluded:

> 'Markets fail. They fail for the fundamental reason that the institution of market trading cannot enforce cooperative behavior on self-seeking, utility-maximising agents, and cooperative behavior between agents is often required for beneficial trading. In each instance of market failure ...agents were asked to reveal information about their benefits or costs from trades with no guarantee that that information would not be used against them. Without that guarantee, information is concealed, trades collapse, and the market institution fails' (p. 672).

> 'While democratic processes do not generally guarantee an efficient allocation of social resources, <u>we cannot go the next step and conclude that collectively-decided allocations ... are inferior to individually-decided market allocations</u>' (p. 727, my emphasis).

> '[N]either the institution of markets, or voluntary trading, nor the institution of government, or collectively decided and enforced trading, stands as <u>the</u> unarguably preferred means for allocating societal resources. Each institution has its strengths and its weaknesses' (p. 753, his emphasis).

The 'New Right' properly criticises a naive predisposition towards state intervention at the slightest sign of problems in private markets; but to argue that public-sector inefficiency <u>automatically</u> implies that private markets are welfare improving is to make the same mistake. Given

the present state of knowledge, decisions about the proper borderline between market and state involve judgement, so that different interpretations are possible. Le Grand (1987a), with echoes of Tullock (1971) (though from a very different perspective), argues that the UK welfare state has been 'captured' by the middle class. He goes on to suggest that this is a matter for ambivalence: it is 'bad' because the welfare state's major benefits, should go to the poor; but it is 'good' because it keeps the articulate middle class as consumers of the welfare state thus creating pressure to maintain standards. The arguments above suggest that we should not be ambivalent: many parts of the welfare state are a response to pervasive market failure, and therefore serve not only distributional and other objectives (poverty relief, vertical and horizontal equity, dignity and social solidarity), but also efficiency objectives such as income smoothing and the protection of accustomed living standards in the face of uninsurable risks and capital market imperfections. As such, the welfare state exists quite properly both for lower income groups and for the middle class. In the Wilensky and Lebeaux sense discussed in I (B) there is an efficiency case for a universal welfare state.

IV. THE HISTORICAL AND INSTITUTIONAL BACKDROP

A. Historical Overview[23]

An early example of public poor relief was the response to the fear of social unrest and chronic labour shortages in the years after the Black Death of 1348-9 when the English authorities attempted to control wages and labour mobility in the Statute of Labourers 1351 and the Poor Law Act 1388. The latter was liberalised by the Poor Relief Act 1576, which was the foundation of the 1601 Poor Law Act. The 1601 Act was the basis of poor relief until well into the twentieth century in Britain and the USA, and also in much of the British Commonwealth: the poor were a local responsibility, and different treatment was prescribed for different types of pauper. By the nineteenth century at the latest the potential adverse labour-supply effects of poor relief became an explicit worry (Lionel Robbins 1977, p. 128 et sequ.).

Intervention other than locally-financed poor relief began in the

early nineteenth century with subsidies for education and increasing public health activities. One interpretation of such intervention is as an efficient response to externality-generating activities (see the earlier discussion of merit goods, especially case 7a).

Despite wide differences in timing, a similar increase in intervention occurred in all industrialised countries. Historians argue about whether the main motive force was ideology or the nature of the industrial process. The theory of convergence points out that all countries, whatever their dominant ideology, have developed similar industrial structures, and argues that a welfare state in one form or another is an inevitable concomitant of that process. Other historians stress the role of ideology, if only in determining whether a country adopts a residual or a universal model of welfare. A 'capitalist' country like the USA has and (with the exception of wide-ranging public provision of education) has always had a system of income support and social services which is small relative to its income. A 'socialist' country like Sweden has a highly articulated welfare state; and Denmark and New Zealand (which were not highly industrialised) were among the first with a public system of old age pensions. A third set of forces is country-specific. In New Zealand, for instance, the relatively even income distribution made reliance on voluntarism problematic, giving the state an early funding role for income support and social services.[24]

There is an alternative explanation: private provision of the components of the welfare state faced intractable efficiency problems, as discussed more fully in sections V and VI. These problems both explain and justify the growth of large-scale welfare-state institutions. Though country experiences vary widely for ideological and other country-specific reasons, public spending on the welfare state in all OECD countries is at least 12-15 per cent of GDP, and public medical spending at least 40 per cent of total medical spending.

B. Expenditure on the Welfare State

Table 1 shows public spending on the welfare state (cash benefits plus health care) and total government spending as percentages of GDP from 1960. Spending is disaggregated into its major components in Figure 2. Various caveats should be noted (ILO 1988, pp. 1 - 10). The variety of detailed

institutions makes it inevitable that comparative data contain arbitrary elements and are incomplete. There are no data which systematically include privately-funded cash benefits and implicit public spending in the form of tax relief for privately-organised benefits.

Notwithstanding these limitations, Table 1 and Figure 2 reveal clear patterns. Public welfare-state spending is substantial, from around 12 per cent of GDP in 1980 in Australia and Japan to 25 per cent or more in Germany, the Netherlands and Sweden. Spending rose as a proportion of GDP in all countries, more slowly in Australia (73 per cent between 1960 and 1980), more rapidly in the Netherlands and Sweden, where spending more than doubled as a proportion of GDP. In Switzerland, starting from a smaller base, spending as a percentage of GDP nearly tripled.

Retirement pensions were a major component of additional spending, particularly in Germany, the Netherlands and Sweden (see Figure 2), both because eligibility was extended and because real pensions per recipient rose. Swedish pensions are particularly generous, giving workers with average earnings a replacement rate of 60 per cent of their previous net earnings, to which is added an employer pension, typically bringing the total to 70 per cent. Workers receive a full pension after thirty years.[25]

[TABLE 1 ABOUT HERE]

[FIGURE 2 ABOUT HERE]

Table 2 shows the composition of revenue and expenditure. Again, the data are not ideal: public medical spending cannot always be separated from the other categories, and is therefore included as part of social insurance in column (4); and the Australian and New Zealand social insurance figures include income-tested benefits.

Germany and the Netherlands repeatedly emerge alongside Sweden as high-spending countries, in part because of substantial spending in the 'Other' category in Figure 2 (mainly sickness benefits, family support and, in the Netherlands, generous disability benefits). Australia is an outlier: total spending is low: so are contributions from insured persons (column (1)) since virtually all cash benefits are tax-funded.[26] A strong result is the extent to which the USA is unusual: it is one of the lowest spenders; it is almost unique in having no statutory short-term sickness benefit, nor a system of family allowances;[27] and it stands out in the low

level of its public medical spending and in the form of its health-care institutions.

[TABLE 2 ABOUT HERE]

Trends in aggregate health spending, public and private, are summarised in Table 3.[28] Total medical spending rose inexorably as a proportion of GDP: between 1960 and 1980 spending in Canada and the UK rose by only 34 per cent and 48 per cent, respectively (though Canadian expenditure growth rose in the 1980s); in contrast, between 1960 and the early 1980s total medical spending in many countries, including the Netherlands, Japan, Sweden, Switzerland and the USA, doubled as a fraction of GDP.

[TABLE 3 ABOUT HERE]

The reasons for increased expenditure vary from country to country, but several stand out. Advances in medical technology, though sometimes making existing procedures cheaper, generally increase the range of what is possible, thus increasing demand and, usually, also supply. Medical inflation is faster than general price rises because medical productivity rises more slowly than productivity generally (the so-called relative price effect); and, latterly, an ageing population in many countries imposes increasing demands on the system. The trend in most countries has been towards more systematic coverage of people and types of medical service. Decomposition of these factors between 1975 and 1987 (George Schieber and Jean Pierre Poullier 1989b, Table 4) shows that across the seven major OECD countries excess medical inflation and demographic change together required an annual real spending increase of 1.5 per cent just to stand still. A less benign explanation of increased spending, discussed in section VI, is the existence in many countries of an incentive structure which encourages inefficiently high medical spending.

A second regularity is the high proportion of public spending in total medical expenditure. By 1987 between two-thirds and nine-tenths of medical spending was publicly funded; the OECD average was 75 per cent.

There were also contrasts. In 1987, total medical spending in the UK was 6 per cent of GDP; in the USA it was 11.2 per cent. There were sharp differences in the increase in public medical spending as a fraction of the total: in the UK it remained a constant fraction; in Canada it rose by

nearly 75 per cent and in the Netherlands more than doubled in relation to total medical spending.

V ASSESSMENT 1: CASH BENEFITS

Three issues stand out: the efficiency arguments about the proper role of the state (sections A and B); the incentive effects of income transfers (section C); and their redistributive effects (section D).

A. Unemployment Compensation

Insurance issues. Unemployment insurance faces at least three of the problems discussed in III (B).

(1) Adverse selection: one way of preventing applicants concealing their risk status is through inspection of past employment records. This is not a complete solution, however: the process is costly; verification is not always possible; not everyone has a past employment record; and the past is not always a good predictor of the future.

(2) Moral hazard: to what extent can individuals influence the probability of entering unemployment and, particularly, that of leaving it? The key question is how costly (financial and psychic) it is for an individual to remain unemployed. Since psychic costs are unobservable, it is not possible to distinguish two cases: the psychic cost to the individual is high (case 10a in III (B)), and unemployment is due to a lack of jobs; or the cost is low (10c), and the individual remains unemployed to some extent by choice. The former is an insurable risk; the latter is not -- the insurer is imperfectly informed and, as discussed shortly, the problem is worse for unemployment than for most other risks.

(3) Probabilities close to unity: the overall probability of being unemployed is less than one. For sections of the labour force, however, it might be too high for private insurance to be viable. For similar reasons private schemes could not cope with unemployed school leavers with no contribution record or with individuals returning to the labour force as their children grow older.

Moral hazard, incentives and the feasibility of private insurance. Some of these problems can be finessed. The worst effects of adverse selection

can be avoided if insurance is compulsory, making a pooling solution possible. Moral hazard, however, is insurmountable, and explains why no private unemployment insurance offers cover remotely comparable to state schemes. There are three issues: estimating the relevant probabilities; the incentives facing insurance companies; and individual incentives.

Measurement problems: exogenous events are insurable; those resulting from choice are not. A key question, therefore, is the extent to which the relevant probabilities can be estimated and their exogeneity monitored. A house burning down is (a) a once-and-for all event, and (b) monitoring (that the house has burned down accidentally) relatively easy. Illness is (a) a continuing event, but monitoring is feasible (b) because in most cases there are measurable medical symptoms, and (c) because monitoring does not have to be continuous. Unemployment (a) can be prolonged; monitoring that continuing unemployment is the result of job shortage not job shyness is (b) difficult because of the absence of easily-measurable symptoms, and (c) has to be fairly continuous. Moral hazard thus makes it difficult, if not impossible, to estimate the relevant probability (i.e. the probability with which unemployment would occur if individuals had to finance their own unemployment out of saving or by borrowing on a perfect capital market).

The incentives facing insurers are to seek the best risks. There would be cheap, high-benefit schemes for the best risks, and expensive, low-benefit schemes for the worst (C_L and C_H in Figure 1). The poorest risks (typically the least well off) must pay a high price for insurance or (because the probability approaches one) cannot get cover at all.

A similar problem arose in some countries which originally had private medical insurance. Governments responded by making it obligatory for insurers to offer policies to all applicants, with premiums related to risk groups (categorised by age, sex etc.) but not to individual risk, thus imposing a pooling equilibrium. The result was to compromise the financial viability of companies with a high-risk client mix, necessitating equalising transfers from government (e.g. decentralised social insurance for health care in Japan (Margaret Powell and Masahira Anesaki 1990, pp 124-5)).

Thus government ends up imposing (and funding) a large measure of

standardisation on schemes, and may also have to organise a state scheme for the worst risks. The result is private insurance only in name. Something so heavily regulated and subsidised is more a de facto state scheme with administration delegated to the private sector. Thus unemployment benefit in Sweden is organised by trades unions (Anders Bjorklund and Bertil Holmlund 1989); but the system (a) is heavily regulated, and is buttressed (b) by a complementary public insurance scheme and (c) by income-tested unemployment assistance.

The theory does not rule out private unemployment insurance for the best risks. But it does suggest that the private sector on its own cannot cover more than a minority of the working population, and that the intervention necessary to make broader coverage possible leads, in effect, to a state scheme.[29] The theoretical arguments are supported by empirical evidence. Notwithstanding the theoretical possibility of private insurance for the best risks, there are no private policies I can buy to top up the (low, flat-rate) UK state unemployment benefit (the analogue for sick pay appears regularly in my junk mail). Nor, for such white-collar schemes, is it possible to argue that private schemes have been driven out by the existence of a state scheme.

A second source of support for the impossibility of general private unemployment insurance arises from Michael Beenstock and Valerie Brasse's (1986) attempt to show the opposite. They discuss a number of private-sector examples. Mortgage protection policies, offered inter alia in Britain and the USA, which make mortgage repayments during unemployment, illustrate the point. Such policies have three salient characteristics. They are open, by and large, only to the best risks: owner-occupiers tend to be in more secure jobs, and so have a lower-than-average probability of entering unemployment; they are also more mobile (since owner-occupiers are generally less affected than renters by housing market rigidities), reducing the probability of remaining unemployed. Second, such policies can typically be started only at the time the mortgage is taken out, on the grounds that few people will seek to buy a house if they know their job is at risk; this reduces adverse selection. Third, owner-occupiers tend to have higher-than-average earnings, and so face lower replacement rates, thus minimising moral hazard. Mortgage protection policies are therefore

limited to the best risks, impose restrictions which minimise adverse selection, and sidestep the worst problems of moral hazard. Such policies are genuinely private insurance, but they offer no basis whatever on which to generalise.

Incentives facing individuals are discussed here, rather than in section (C) because they are an integral part of the problems just discussed. The potential labour-supply disincentive arising out of moral hazard faces any system of unemployment compensation. With high replacement rates, the low paid may be scarcely worse-off (and in the short run possibly better-off) when out of work. This creates an 'unemployment trap' whereby, because policing against moral hazard is incomplete, individuals remain unemployed voluntarily. The logic of the disincentive argument is appealingly straightforward. However, other factors, such as non-financial work motives, may have offsetting effects; and behaviour can be influenced by other aspects of the benefit structure.

The empirical literature is surveyed, inter alia, by George Johnson and Richard Layard (1986) and Atkinson (1987c). Despite continuing contro-versy, the general conclusion is that though the duration of unemployment is likely to be slightly longer at higher replacement rates, the magnitude of the effect is not large (for a counter-view, see Patrick Minford 1985). Recent work emphasises cross-country data (Atkinson and John Micklewright, forthcoming; Richard Jackman, Layard and Stephen Nickell, forthcoming), which make it possible to include the effect of institutional differences in explaining why unemployment was more persistent over the 1980s in most European countries than in the USA and Japan. Particular emphasis is placed on three aspects of the labour market. First, are aspects of the benefit structure additional to the replacement rate: the maximum duration of ben-efit, the proportion of the unemployed receiving benefit, and the stringency with which the 'actively seeking work' condition is enforced. Second, are active labour market policies, such as placement and counselling services, training and job creation. Third is the structure of the labour market, including the power of trade unions and the extent of centralised wage bargaining. The conclusion is that though the replacement rate has an affect labour supply is influenced more by other aspects of the benefit structure, in particular the maximum duration for

which benefit can be received.

The resulting institutions. The theoretical conclusion, supported by empirical evidence, is twofold. First, if income support is to exist for the unemployed, it will de facto have to be publicly provided; this outcome can be justified in efficiency terms by information problems in insurance markets. Second, the resulting institutions do not look actuarial. The argument of the 'new' market failures is that no other result is possible.

Schemes in practice have two overriding similarities. They all guard against moral hazard through devices like contribution conditions, availability-for-work requirements, and limited benefit duration. All are publicly-organised and publicly-funded (though administration and minor variations may be delegated to private-sector institutions). They differ along two structural dimensions in the extent to which they try to mimic private insurance: they may or may not have explicit contributions; and they may or may not have major redistributive aims.

The quasi-actuarial approach to contributory social insurance is an outlier. An example is the UK system between 1948 and 1975, in which flat-rate contributions, implicitly based on the average risk, gave title to flat-rate benefits, thereby minimising redistribution. Another example is experience-based employer contributions, as in the USA.

Earnings-related social insurance contributions: where benefits and contributions are both related to previous earnings, the scheme is non-actuarial in that contributions are unrelated to individual risk, but at least partly actuarial in that benefits are partly related to past contributions. This is the most common type of scheme, operating in most of the European Community, Sweden, Switzerland, the USA and Japan. In contrast, where earnings-related contributions finance flat-rate benefits, the result is highly redistributive. This model (another outlier) describes the UK after 1982.

Social assistance relaxes the attempt to mimic private institutions, paying tax-financed benefits on the basis of employment status and an income test. This is the only form of unemployment compensation in Australia and New Zealand; elsewhere it is available for individuals with

no benefit entitlement, or whose entitlement has been exhausted.

B. Retirement Pensions

Insurance issues. Retirement pensions also involve risks which the private market cannot insure. The probability distribution of age at death conforms with the necessary conditions, so actuarial life assurance is possible and so, too, are actuarially calculated annuities. Private, funded pensions are therefore possible and, in the absence of inflation, efficient. They can also generally cope with inflation during the contributor's working years and with anticipated inflation after retirement.

Unanticipated inflation during retirement, however, is a problem. The objective of income smoothing requires that individuals can allocate consumption efficiently over time, which requires protection against inflation. Indexed pensions are possible without government intervention only if private institutions can offer protection against unanticipated price changes. Actuarial insurance cannot do this: the probability distribution of future levels of inflation cannot be predicted (problem (11) in III (B)); in addition, because inflation is a common shock, pensioners all face broadly the same rate of inflation, i.e. the probabilities are highly interdependent (problem (12)). Inflation over an extended period is not a risk against which private insurance qua insurance is possible.

If pensioners cannot insure each other, could they obtain protection through some other mechanism? That would be possible without intervention if real rates of return 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. Zvi Bodie (1989) argues that short-term deposit accounts are the best (albeit incomplete) hedge since short-term interest rates are revised frequently; Zeckhauser and Jayendu 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 there are no private-sector financial instruments offering a risk-free real return, the empirical conclusion is clear. Bodie's survey points out (1990, p. 36) that 'virtually no private pension plans in the US offer automatic inflation protection after retirement'. Gordon's cross-national conclusion is that 'indexing of pension benefits after retirement ... presents serious difficulties in funded employer pension plans....' (1988, p. 169).

The conclusion is that if pensions are to be protected against inflation, such protection must come from government. There are two broad strategies: the state could index private pensions, or it could organise the entire pension itself. Private pensions could be protected by indexed government bonds or by direct budgetary transfers (in either case the indexation component would be pay-as-you-go). Such pensions are actuarial in the sense that they embody no systematic redistribution. Alternatively, the state could organise pensions on a social insurance or similar basis.

The choice between the two strategies is partly a matter of which offers better protection against inflation; but it also concerns a parallel set of issues: the appropriate role of the state in the face of demographic change (an efficiency question); and whether or not redistibution is an objective. These latter issues raise the question of whether pensions should be organised on a funded or a pay-as-you-go (PAYG) basis.

Funding versus pay-as-you-go.[30] The impact of demographic factors on pension finance is well known (Aaron 1982; Barr 1979 and 1987, Ch. 9; Jane Falkingham 1989). 'Bulges' in the birthrate in the late 1940s and mid 1960s will produce a wave of retirements after 2005, and another after 2025; and because of lower birthrates since 1965 there will be few workers. The effect is widespread and, as Table 4 shows, 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 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.[31] Figure 3 shows the resulting sharp change in the level and composition of social expenditure across major OECD countries.

[TABLE 4 ABOUT HERE]

[FIGURE 3 ABOUT HERE]

With PAYG finance, other things being equal, an increase in the ratio of pensioners to workers requires a larger tax on each worker to finance a given real pension. It is a matter of considerable controversy whether funding ameliorates the problem (see Aaron (1982) for a survey).

To start with what is non-controversial, the only complete solution is to increase output 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:

(1) increased investment;

(2) increased research and development expenditure;[32]

(3) better education/training of the workforce.

Policies to increase the number of workers include:

(4) reducing the rate of unemployment;

(5) encouraging married women to rejoin the labour force (e.g. more child care facilities);

(6) raising the age at which retirement pensions are paid;

(7) importing labour (generous immigration policies, 'guestworkers'): 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, Robert Holzmann 1988). What <u>is</u> controversial is whether or not funding leads to higher output growth than PAYG. Funding has no bearing on policies (3) - (7).[33] Any effect must be through the first two policies. The pro-funding argument has three links: (a) if a large generation of workers contributes

to a funded scheme, aggregate savings will increase; (b) the increase in saving will lead to an increase in investment; (c) the increased investment will lead to an increase in output.

So far as (a) is concerned, Aaron's (1982) survey argues that conclusive empirical evidence is unlikely, a topic discussed in the next section. On (b), 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' (Jean-Jacques Rosa 1982, p. 212).

The choice between PAYG state pensions and compulsory membership of private schemes backed by indexed government bonds thus depends on the answers to two sets of questions. First, there are efficiency issues of the need for state PAYG activity to assist with indexation, and of the contrib-ution if any of funding to economic growth. Second, is the ideological question of the weight attached to redistributive and social solidarity objectives. Note that redistribution is not an inherent part of PAYG. If PAYG can more easily cope with inflation and demographic change, but re-distribution is not on the agenda, it is possible to have a state-organised PAYG scheme with benefits strictly proportional to individual contributions.

The resulting institutions follow the forms already discussed.[34]

The quasi-actuarial approach: prior to 1975 the UK flat-rate pension was financed largely out of flat-rate contributions, with only limited redistributive consequences.

Earnings-related social insurance contributions can finance benefits which are partly or wholly earnings-related (this is the most common model) or, with stronger redistributive effects, can finance benefits which are

flat-rate or based on criteria like the number of contribution years: an example of the latter is the Netherlands, where benefits depend on the number of contribution years but not on past earnings.

'Universal' pensions were introduced in New Zealand in 1938;[35] Sweden introduced a similar scheme in 1946 (an earnings-related pension was added in 1959). In both countries the pension is financed in part by an earmarked tax, payment of which is not a condition of eligibility. Canada introduced a non-means-tested state pension in 1951 (an earnings-related pension was added in 1965), financed in recent years out of general taxation.

Social assistance: all countries have some sort of means-tested old age assistance for those whose social insurance entitlement leaves them below a specified level. Australia is unusual, in that the award of its state pension is dependent only on an income test.

In virtually all countries employer pension schemes (often referred to as occupational schemes) coexist with the state scheme. All state schemes, apart from the Swedish and Japanese earnings-related systems, are PAYG.[36] One explanation is the tyranny of the ballot box, whereby lower-income individuals (the majority) impose redistributive pension regimes on the better-off. PAYG pensions, on this view, are the malign result of government attempts to avoid the discipline of funding.

Earlier arguments offer an alternative explanation: if inflation is uninsurable, and/or if funding makes little contribution to output growth, PAYG pensions have an efficiency role, and can, if desired, be constructed with minimal redistribution. In addition, PAYG enables the award of pensions more quickly than the 40 years typical of funded schemes (would it really have been advantageous if pensions under the 1935 US Social Security Act or the 1946 UK National Insurance Act had not been fully in place until 1975 and 1986, respectively?). PAYG, from this perspective, is an example of 'government success'.

Where redistribution is an additional aim, it is possible to argue (Aaron 1982) that there is no evidence that funding makes a major efficiency contribution, whereas PAYG makes it possible to redistribute towards the pensioner generation. From such a viewpoint, PAYG has no (or little) efficiency cost and major equity gains.

C. Incentive Issues

The literature on the incentive effects of cash benefits is vast and controversial. Discussion here is very selective.[37] Two sets of issues relate directly to previous sections: the effect of benefits on labour supply (which ties in with earlier discussion of moral hazard); and the effect of PAYG pensions on the rate of saving and capital accumulation. The literature relates mostly to the US and UK. But worries about incentives are broader. In the Netherlands,

> '[t]he determined efforts of the authorities to lower social security benefits are necessary both to reduce public expenditure and improve the flexibility of the labour market and the prospects for investment....' (OECD 1984, p. 49).

Labour supply. The labour supply effects of unemployment compensation were discussed in section (A). The consensus, to the extent that it exists, is that the replacement rate affects the labour-supply of the unemployed less than other aspects of the benefit structure.

Pensions also cause controversy. If workers discount future benefits entirely, contributions are equivalent to an income tax; but where future benefits are perceived as actuarial, contributions are not a tax but simply the price of insurance which, like any other price, has few distortionary effects. The impact of future benefits is harder to analyse. They are payable only in certain contingencies, can be changed by legislation, and depend on such factors as marital status; nor, generally, is it possible to borrow against future benefits, which must therefore be weighted by the probability that each type of benefit will be received at some future date. The weighted benefits must then be discounted using the market rate of interest or, for individuals whose borrowing is constrained, at a personal rate of time preference.

Studies conflict about whether pensions reduce labour supply (Peter Diamond and Jerry Hausman 1984) or not (Burtless and Moffitt 1984). Up to a point the conflicting results can be explained by differences in model specification, different treatment of benefits and taxes, and different choices of sample. The issue is not only unresolved, but may remain so: Gary Fields and Olivia Mitchell (1982), using the same data in four

plausible ways, found that the US social security scheme induced workers to retire earlier, or later, or had no effect.

Though pensions may not affect overall labour supply, employer pension schemes can affect individual decisions: pension design may reduce shirking (Lazear 1986b); vesting rules (which specify the length of service before a worker gains title to any pension benefits) reduce labour turnover (David Wise 1986); and benefit provisions can encourage older workers to retire early (James Stock and Wise 1988).

Moffitt's (forthcoming) survey of income tested benefits concludes that though the major US welfare benefits reduce labour supply, the effect is not strong enough to explain the long-term increase in the number of recipients. Recent policy developments (see Gramlich 1989) seek to reduce the effects of moral hazard either through countervailing incentives or by policing individual behaviour. The categorical approach seeks to minimise distortions by paying more generous benefits to groups (e.g. pensioners) with less elastic labour supplies.[38] The tax implicit in benefit withdrawal could be replaced by wage subsidies. Income support can be conditioned on work or job training, as in the Swedish active labour market policy (Robert Flanagan 1987). Child support from absent fathers can be pursued more vigorously.[39]

Capital formation. The literature on whether PAYG pensions reduce the rate of capital accumulation is concerned mainly with state schemes (though see Gordon (1988) on employer pensions). It is often regarded as self-evident that saving and output growth will be higher with funding than under PAYG. But the assertion requires at least three qualifications. First, it is only while a fund is building up that saving might be higher; in steady state, saving by workers is matched by dissaving by pensioners.

Second, opinion is divided as to whether funding increases saving even during the build-up phase. The debate is both theoretical and empirical and, ultimately, concerns the broader determinants of saving (Kotlikoff 1989b) and the effect on pension savings of its tax-preferred status (Alicia Munnell 1982). Aaron's conclusion (1982, p. 28) is 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'.

Subsequent work (Alan 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.

The third qualification (as Kotlikoff points out in the context of health insurance) is that any costs may be offset by benefits: '[T]he welfare-improving provision of insurance by the government (in cases where private insurance is unavailable) may have deleterious savings implications that need to be offset by additional government policies' (1989a, p 189).

There are two overarching conclusions about pensions: private institutions cannot protect pensions against inflation; and the evidence that funding will lead to a greater increase in output than PAYG (and its analogue, that PAYG state schemes reduce output growth) is inconclusive.

D. Distributional Effects

The stress on the welfare state's efficiency role in no way detracts from its distributional objectives, in particular income support (especially poverty relief), and the reduction of inequality. These goals were discussed in section II; many are controversial and some are mutually exclusive. For reasons of space, this section, again, is highly selective.[40] Discussion of poverty focuses mainly on the number of poor people, since the extent of their poverty and its duration are less studied (but see Smeeding, Michael O'Higgins and Lee Rainwater 1990, Ch. 3).

The methodological problems of measuring redistributive effects require little repetition (Le Grand 1987b). The formidable data problems were discussed in I (C): poverty and inequality are hard to define and measure, not least as regards the choice of income unit and time scale;

there is the intractable problem of the counterfactual (i.e. of what the income distribution would be in the absence of any cash transfers); and the incidence of benefits raise further difficulties. The emphasis on technical problems should not be taken as a cry of despair, merely as an indication that empirical results should be interpreted with caution.

Poverty relief and the reduction of inequality. Statements which transcend individual countries face further problems: poverty lines differ; so do definitions of money income and of income units; and comparisons of money income take no account of the differing significance of benefits in kind. In addition, the fact that country A has less measured poverty than country B could be due to A's more generous benefits or to differences in the level and distribution of pre-transfer income.

Given the difficulties it is not surprising that there have been few systematic cross-country studies. Recently, however, data from the Luxembourg Income Study (LIS) have become available. The LIS database covers the countries in Table 5, plus Israel and Norway, with other countries being added all the time. Microdata have the two overriding advantages of comparability and completeness: it is possible to choose income units, income definitions and equivalence scales, facilitating systematic comparison; and the data include income from all sources, including private pensions and savings. The disadvantage is that such data are available only with a lag.

Table 5 shows poverty rates, i.e. the percent of individuals in families with income below 50 per cent of median income in each country. The broad conclusion from column (2) is that the incidence of post-transfer poverty was much the highest in the USA, and was also relatively high in Australia[41] and Canada; income poverty was least in Sweden and Germany. These figures can be compared with pre-transfer poverty. Column (3) shows that the Swedish system removes from poverty over 80 per cent of the pre-transfer poor; the comparable figure for the USA is 22.6 per cent.

[TABLE 5 ABOUT HERE]

Smeeding, O'Higgins and Rainwater (1990, Table 3.5) disaggregate the figures in Table 5: pre-transfer poverty is generally highest amongst the elderly and single-parent families. The Swedish pension system is spec-

tacularly successful in pulling almost all elderly people out of poverty. In the USA, 20 per cent of elderly people and half of all individuals in single-parent families remained poor after all transfers, in part because there is no automatic relation between the poverty line (which is federal) and benefits levels (which are usually set by states). No country deals very successfully with single-parent families.

Poverty has also been extensively studied in individual countries, particularly the USA (Haveman 1987; Levy 1988; Isabel Sawhill 1988), the UK (Wilfred Beckerman 1979; Barr and Fiona Coulter 1990), and various OECD countries (Atkinson 1991).

There are two regularities. State pensions have a major impact. According to Gordon (1988, p. 189) a universal flat-rate pension topped up by an earnings-related supplement has two major advantages: it reduces poverty among the elderly, as in Sweden; and because its receipt is independent of an income test it does not discourage savings. She also stresses the importance of social assistance to protect those who fall through the net of the social insurance pension system. A second regularity is the composition of the poor, who are disproportionately people who are elderly, unemployed or with health problems, or in single-parent families, large families and nonwhite racial minorities.

Column (1) of Table 6, based on LIS data, shows the Gini coefficient for different countries: the greatest equality is in Sweden and Germany, the greatest inequality in Australia and the USA.[42] Different assumptions and different inequality measures sometimes give different results, but one result was invariant: Sweden had the most equal post-tax-and-transfer distribution, and the USA the least equal. That result owes more to the redistributive nature of the Swedish tax/transfer system than to the distribution of pre-transfer earnings: cols (3) and (4) show the share in total factor income of the lowest quintile before and after all taxes and transfers. In Sweden and Germany the lowest quintile receives net transfers equal to some 10 per cent of GDP.

[TABLE 6 ABOUT HERE]

Factors contributing to redistribution. Three sets of factors influence the results in Tables 5 and 6: the formula for contributions and benefits;

other influences on contributions and benefits; and the size of the programmes. So far as formulae are concerned, benefits in ascending order of redistributive power can be (1) related (partly or fully) to past earnings, (2) flat rate, or (3) income tested; contributions can be (A) regressive, (B) proportional, or (C) progressive. There is general agreement (Joseph Pechman 1989, p. 23) that benefits have a larger redistributive effect than taxes. Table 7 categorises programmes very roughly in these terms. The most redistributive systems comprise income-tested benefits financed out of progressive contributions, (3, C), an example being Australia; the next most redistributive are flat-rate benefits financed out of general taxation (2, C), such as the flat-rate pension in Canada, New Zealand and Sweden. The least redistributive are earnings-related benefits financed out of regressive or proportional social insurance contributions (1, A/B), such as unemployment benefit in the USA.

[TABLE 7 ABOUT HERE]

The redistributive effect of a given formula is influenced by related factors. Better-off people tend to stay in education longer (thus paying contributions for fewer years) or may live longer (thus collecting pension for longer). Working in the opposite direction, the incidence of unemployment is generally higher among the lower-paid. It also necessary to take account of the extent to which people receive all the benefit to which they are entitled (discussed shortly). A third influence, size, is often overlooked: a programme with a highly redistributive formula has little redistributive effect if expenditure is small.

The three sets of factors illuminate earlier results. Australia's system has a redistributive formula, and is generous in that benefits do not depend on a contributions record: however, the impact on poverty and inequality is limited because benefit levels are low by international standards, making Australia a low spender (Table 1), a fact only partially offset by substantial private pension provision (Saunders, Hobbes and Stott 1989). The USA is a parsimonious spender with a formula which is not very redistributive, so that it is not surprising that the USA, whichever definition of income or inequality measure is used, always emerges as the most unequal country of those discussed here. In contrast, Sweden has a redistributive formula and high spending and, partly in consequence, has

the least inequality.

Factors limiting redistribution. Attempts to increase redistribution by raising the poverty line face two fundamental constraints: the size distrib-ution of pre-transfer income and the wage elasticity of labour supply. If the distribution of pre-transfer income has a dense lower tail, poverty relief is expensive. The relationship between the poverty standard and cost is non-linear: raising the poverty line by ten per cent increases benefit for existing recipients and increases the numbers eligible, thus raising costs by more than ten per cent. Matters are aggravated by the deadweight costs of the taxation which finances benefits, which is a greater problem where labour supply is highly elastic with respect to the post-tax wage.

Existing schemes of poverty relief might not be fully effective for three reasons. Benefits might be less than 100 per cent of the poverty line (as in the USA). There might be incomplete cover for some groups: once entitlement to US unemployment insurance is exhausted, there is little benefit for non-aged, able-bodied adults without children; and income support for the working poor is limited in most countries.

The third problem is take-up, which is incomplete either, on the demand side, because people do not apply for benefit or, on the supply side, because they apply for benefit and are wrongly refused. People may not apply for benefit, first, because they may not be aware of their entitlement. Second, there may be transactions costs such as queuing and completing forms (which is one explanation why, cet. par., take-up is lowest when benefit entitlement is small). Third is the influence of stigma, surveyed by Atkinson (1987c). Empirical studies, almost all in a US context, are inconclusive, not least because of serious statistical problems in separating the effects of ignorance and stigma, both of which are hard to measure (Jennifer Warlick 1982; Moffitt 1983).

People who do apply for benefit may be wrongly refused. Benefit officers may interpret regulations strictly or may be unaware of certain entitlements; the problem is compounded when eligibility criteria are not easily measured, e.g. the difficulty in establishing the facts of cohabitation. There may be discrimination, either in the rules (e.g. the

mandatory retirement age for women is five years younger than for men in Australia and the UK, and three years younger in Japan), or in their implementation (Barr and Robert Hall (1975) found evidence of some racial discrimination in awarding US welfare benefits in the late 1960s).

It is hard to separate these factors; nor is it easy to estimate their combined effect.[43] Two regularities are that take-up is lower for income-tested benefits than for those awarded on non-income criteria; and take-up is higher for larger benefit entitlement.

One proposed solution to these problems is a negative income tax which pays everyone a guaranteed income equal to the poverty line, recouped through the tax system from those who do not need it. Again, however, the fundamental constraints on redistribution apply: the heavy lower tail of the pre-transfer income distribution necessitates high tax rates to pay for the benefit; and such tax rates are unsustainable given the wage elasticity of labour supply.[44] For these reasons, no negative income tax has been introduced on anything other than a small scale.

VI. ASSESSMENT 2: MEDICAL CARE

A. Overview

Consumer information. Patients face uncertainty about whether their doctor will choose appropriate treatment, and about the quality with which that treatment will be administered. Doctors face uncertainty because of the stochastic component in medical outcomes, which is exacerbated by measurement problems. In addition, most medical expenditure concerns a relatively small number of fairly ill individuals. A key question (which is ultimately an empirical matter) is the extent to which consumers can choose rationally (III (B), especially point 8a). Imperfect consumer information, the high cost of improving it and the potential high cost of mistaken choice together give a justification for regulation of quality very different from the argument (see III (C)) that its main purpose is as an entry barrier to boost doctors' incomes.[45]

Ignorance is not necessarily inefficient. Information may be costly, and its acquisition inefficient if the resulting gain is small. Some degree of ignorance may be optimal. This is not an attack on consumerism in medical care (many women have strong and well-informed views about their

preferred child-birth regime), merely a caution against uncritical reliance on the ability of individual purchasers to make medical choices.

Insurance issues. Health care also faces many of the insurance problems discussed earlier. As a result, medical insurance cannot cover all health risks for all individuals; gaps in coverage and inappropriate incentive structures make undue reliance on competitive markets problematic.

(1) Adverse selection can cause equilibrium to be inefficient, unstable or non-existent. Akerlof (1970) applied the argument to medical insurance for the elderly.[46] There is discussion about the magnitude of the problem. Pauly (1986) attributes the lack of quantitative evidence to the difficulty of defining a strong test. There is, however, evidence about the instability of pooling equilibria in the face of competitive pressures: Blue Cross/Blue Shield, the main US non-profit insurer, originally practised community rating (charging everyone in a locality the same premium), but was forced by competitive pressures from commercial insurers to adopt experience rating (related to the risk experience of individual subscribers). As discussed in III (B), a partial solution is to make membership (e.g. of an employer scheme) compulsory to prevent low risks opting out. Compulsory membership of national/provincial systems in Australia, Canada, Germany, Japan and the Netherlands, has a similar effect.[47]

(2) Moral hazard arises, first, because individuals with full insurance might take fewer health precautions; this is the problem (10b in section III (B)) addressed by Pauly (1974, 1986). Second, conventional insurance (i.e. retrospective reimbursement of fee-for-service costs) creates third-party incentives to overconsumption (case 10d), in that the private incentives facing doctor and patient are to act as though medical care were free. Third, medical care connected with acts of choice, such as visits to family doctors and elective procedures, are not well covered by voluntary policies (case 10c).

There is no market solution to the last problem: some risks are uninsurable in private markets, at least for voluntary individual policies. Insurance companies have adopted various devices to contain benefits in the face of the first two problems. Pauly (1986) distinguishes two broad

strategies. Insurers can limit coverage: premiums can rise disproportionately with the degree of cover sought; and there can be less-than-full cover through deductibles (where the insured person pays the first $X of any claim) and coinsurance (where the insured person pays x per cent of any claim). Such devices reduce the demand for treatment. Alternatively, insurers can seek to influence the supply side by restricting treatment to certain providers, who then face competitive pressures to retain the insurance company's approved status.

There is no complete solution to moral hazard for two reasons: as discussed in III (B), the root problem is the imperfect information of insurers about the behaviour of the insured (hence the link with the principal-agent literature);[48] in addition, 'health' is hard both to define and measure, hampering contractual specification of individual loss as measured by the severity of illness.

(3) Probabilities close to unity arise for pre-existing and congenital health problems, which are therefore uninsurable. Unless insurance starts before birth, voluntary policies fail to cover such cases.

The theory thus predicts that conventional medical insurance will face two sets of problems: gaps in coverage arise for risks like chronic and congenital illness, the medical needs of the elderly, and primary health care; and inefficiency occurs in various forms, particularly overprescription of medical care as a result of third-party incentives.

Though measurement problems (discussed shortly) hamper empirical investigation, the USA, whose health-care system comes closest to the private-market model, displays all the problems predicted by the theory.

High and rising costs: as shown in Table 3, the USA spends the largest fraction of GDP on health care of any country; and an unexplained residual remains even after accounting for high per capita real income and the age-structure of the population.

Gaps in coverage: despite its reliance on the private sector, and ignoring all tax expenditures, 42 per cent of US medical spending in 1987 was direct government expenditure, most of it in precisely those areas where the theory predicts private insurance would have gaps: Medicare (for the elderly), Medicaid (for the poor), veterans benefits (in part for chronic health problems), and maternity and child welfare.

Unequal access: in the late 1980s up to 35 million people, some 17.5 per cent of the population under 65 years old, lacked adequate insurance, of whom many had no cover at all (Karen Davis 1989). In addition, the quality of care is far from uniform:

> 'Somewhere in America might be found the world's best medical care. But the merits of that claim might not be apparent to the families of hundreds of Californians who have died of inappropriate or equivocal open-heart operations..., especially if their widows are being hounded for payment because their deceased husbands did not have insurance (Alain Enthoven 1989a, p. 49).

This section concentrates on these three problems and attempted solutions (sections B, C and D, respectively) and the reform agenda (section E). For reasons of space many important topics are omitted, including public health, safety at work and the role of preventive care.

The resulting institutions.[49] Both theory and the performance of systems in practice overwhelmingly support the view that a hypothetical pure private market for medical care and medical insurance would be highly inefficient and also inequitable. That view is hardly controversial; what is less clear is the specification of the least bad alternative.

The problem is compounded by data problems. It is hard to measure the quality of health care (OECD 1987, pp. 33-5). Moreover, health care is only an input, and the output, improved health, also faces problems of definition and measurement: there is no completely satisfactory definition of 'good health' (but see Anthony Culyer 1983); and health care is only one factor in the production of good health, others being nutrition, environment and lifestyle. Thus it is hard both to measure outcomes and the causal contribution made by health care to their achievement.

Cost containment is not, per se, a sensible objective; it has become one only because a priori arguments supported by empirical evidence suggest that the incentive structure of many health-care systems creates an upward bias in expenditure. In practice major performance indicators for health-care systems are their ability to contain costs and to give broad-ranging access to medical care. Other indicators, such as patient satisfaction and consumer choice are also discussed briefly.

Systems of medical care are more divergent than cash benefits. Though in reality they merge into each other like the colours of the rainbow, a simple categorisation is helpful.

The quasi-actuarial approach is characterised by employer-based or individual purchase of private insurance and by private ownership of medical factors of production. The closest approximation is the USA.

Earnings-related social insurance contributions are characterised by compulsory coverage financed by earnings-related employee contributions and/or an employer payroll tax, perhaps supplemented by tax funding. Such regimes are compatible with relatively less regulated systems (Japan) or more constrained regimes (Canada, Germany); and they can embrace a larger role for the private sector (Canada) or a smaller (Germany).[50]

'Universal' medical care is characterised by tax funding and public ownership and/or control of the factors of production. Examples are New Zealand, the UK and Sweden.

Social assistance: most countries impose cost-sharing at least on pharmaceuticals, though all waive charges for the poor.

B. Incentives and Cost Containment

The problem of rapidly rising expenditure, as shown in Table 3, affected virtually all health-care systems, particularly in the decade or so after the first oil shock (Gordon McLachlan and Alan Maynard 1982). The USA has the most expensive system and the disparity is growing. Though key variables cannot be measured, some conclusions are possible about the reasons for the level and rate of change of US spending. The explanation in the next paragraph is brief but instructive (see Weisbrod, forthcoming, for fuller discussion), and serves as a benchmark for later discussion.

A key cause is higher real income, coupled with technological advance, excess medical inflation and demographic factors. Other explanations are less benign. First, is the system of third-party payments and substantial fee-for-service provision, reinforced by strong lobbying and weak regulation. Second is the open-ended tax concession for private medical insurance (Enthoven 1985a; Pauly 1986), which creates distortions and is widely regarded as inequitable (the concession exceeds federal contributions to Medicaid for the poor, yet 80 per cent of it goes to

better-off households). Though quantitative evidence is scant, the legal environment and its impact on malpractice also adds to costs. Finally, administrative costs absorb some 22 per cent of US health expenditure (David Himmelstein and Steffie Woolhandler 1986), largely because hospital and physician charges must be attributed to individual patients. If administrative spending were the same as in countries with social insurance, the savings in 1987 would have been around $50 billion.

Spending can be reduced in two broad ways: providers can be given incentives to economise; or expenditure can be explicitly regulated. An important distinction is whether public medical spending is open-ended (Japan, the USA) or closed-ended (Canada, Germany). Open-ended systems, by and large, must rely on incentive-based cost containment.

Cost containment through incentives: prospective payment. The basic idea is simple. Open-ended, retrospective reimbursement, like any cost-plus contract, imposes the entire risk on the payer, giving suppliers no incentive to economise. In a prospective payment system (e.g. $X for dealing with a fractured femur) reimbursement is ex ante, imposing the risk on the supplier. Hospital reimbursement under such a system takes the form of prepaid capitation per inpatient case. It is well, at the outset, not to be over-optimistic: prospective payments are, in effect, a form of price control; but expenditure depends on price and quantity, so that price fixing per se is no guarantee of controlled expenditure.

Prospective budgets for hospitals are widespread in Europe. In the Netherlands since 1984 each hospital has received a prospective global budget which it can spend as it wishes; the result has been to reduce medical spending as a fraction of GDP from its 1982 peak. In Australia, New Zealand, Sweden, and the UK, similarly, each public hospital has, in effect, an annual prospective budget.

Diagnosis-related groups (DRGs) are a more refined form of prospective payment used by US Medicare since 1985. Hospital inpatient cases are classified into over 470 types (Robert Fetter at al. 1980) and hospitals are paid a fixed prospective price per case, depending primarily on its DRG. DRGs are also used in the US private sector for comparing costs in different hospitals; and in Australia, some areas are proposing to use DRG

data to adjust hospital budgets at the margin. DRGs, however, are no panacea. Like any classification system, costs vary within each category, giving hospitals an incentive to select cheaper cases of each type. Pressures have therefore grown for more refined DRGs. That, however, gives incentives to 'DRG creep', where hospitals classify as 'severe' as many cases as possible (Louise Russell 1989).

Health Maintenance Organisations (HMOs) are another form of prospective payment. Individuals pay an annual sum to a 'firm' of doctors (the HMO), in return for which the doctors provide medical care and/or buy in specialist care. The HMO's income is the contributions of its members, which is a prospective payment to cover all their medical-care costs.[51] There is nothing new about the idea. Early European health insurance had all the characteristics of HMOs, and by the mid 1930s covered between a third and half the population in some countries (Brian Abel Smith 1988). This type of organisation has grown rapidly in the USA, from 5.7 million members in 1975 to 19 million in 1985. There has been interest in HMOs in other countries, notably the Netherlands.

Uncontrolled third-party payments drive up costs. The costs of my profligate consumption fall mainly on other people's premiums: the third-party payment problem is thus a type of externality. One way of dealing with an externality is to internalise it, in this case by merging the activities of doctor and insurer (cf Meade's (1952) apple grower and bee keeper), thereby forcing doctors to face the cost of the treatment they prescribe. An HMO does exactly that.

Evidence (Willard Manning et al. 1984; Harold Luft 1987) suggests that HMOs reduce medical costs by between 10 and 40 per cent compared with fee-for-service medicine, largely because of fewer hospital admissions, though some studies indicate that the reduction is a once-and-for-all effect. The form of HMO may also influence medical behaviour (Alan Hillman, Pauly and Joseph Kerstein 1989). Notwithstanding Enthoven's (1989a) enthusiasm, it is well not to be too optimistic. HMOs may ameliorate one insurance problem -- exploding costs; but they do nothing to deal with the other -- uninsurable risks. Anecdotal evidence suggests that, as with any prepayment system, attempts are made to restrict membership to the best risks, an effect which is becoming stronger as the

US population ages.[52]

Other incentive-based cost containment. Three issues stand out: cost sharing, privatisation, and competition.

Cost sharing, i.e. copayments by patients, is intended to induce efficiency by restraining the demand for medical care; but copayments large enough to produce efficiency gains can conflict with equity objectives. On the efficiency side, the key question is whether cost sharing (a) moderates medical spending and/or (b) has deleterious medical effects. The largest systematic study, by the RAND Corporation, (Joseph Newhouse et al. 1981; Robert Brook et al. 1983), concluded that cost sharing reduced some types of medical spending, but with virtually no adverse effects on outcomes.

Though all OECD countries require cost sharing for drugs, other charges are usually small. Most European countries make a small charge for hospital beds; in Australia, patients pay 15 per cent of standard fees for ambulatory care (subject to a maximum). In countries like Japan, where patients pay up to 30 per cent of costs, there are fairly low limits on total out-of-pocket expenses. In Canada extra billing (i.e. charges in excess of statutory copayments) is illegal for publicly-funded treatment. The minor role of copayments in Europe is shown in Table 8.

Cost sharing can also take place between levels of government. Both Australia and Canada have replaced open-ended federal transfers to lower levels of government by block grants, thus facing lower levels of government with the full cost of additional spending.

Privatisation: studies of hospital costs do not support the proposition that public provision is X-inefficient compared with the private sector. Greg Stoddart and Roberta Labelle (1985) reviewed the Canadian system; Ulf Gerdtham et al. (1988) looked at pooled OECD data. Private ownership per se does not appear to be cost-reducing. This should not be surprising. Large enterprises raise complex management problems which are broadly independent of the sector in which they are located.[53]

Competition: increasingly, insurers (whether private or public) are restricting patients' choice of medical establishment, and inviting institutions to tender competitively to be a Preferred Provider

Organisation (PPO). This, it is argued, exerts competitive downward pressure on price. The PPO approach is increasingly used in the USA; and (see section E) the Netherlands has recently used the idea in reform proposals. Again, this is a resurrection of an old idea, something very similar having existed in the UK in the early twentieth century.

Not least because of measurement problems, it is hard to test the proposition that competition exerts downward pressure on costs. Most countries have private and public hospitals competing against each other, but with no obvious relation between competition and the level of medical spending. Competition has not prevented the US cost explosion; on the other hand, a high-spending country like Sweden has little medical competition. For these and other reasons, doubts are expressed (Victor Fuchs 1988; Weisbrod, 1983) about uncritical adherence to competition in the US context. However, regulated competition along Dutch or German lines may have other advantages, particularly increased responsiveness to patients, a topic discussed in section E.

Regulation. The logic is simple. Expenditure = price x quantity. Successful cost containment must (a) control total spending directly, or (b) control price and quantity, or (c) use price control to reinforce an overall spending constraint. There are successful practical examples of (a) and (c). Control of medical fees (i.e. price control) with open-ended budgets only partially contains costs because of the incentive for doctors to increase output to compensate for lost income, as shown by US and earlier Canadian experience (Robert Evans, Jonathan Lomas, Morris Barer et al 1989). Direct expenditure control takes the form of a global budget constraint. In countries with publicly-produced medical care (Sweden, the UK and, for hospital care, New Zealand) there is a closed-ended annual appropriation. Canada, Germany, the Netherlands and Switzerland have fee for service at least for ambulatory care, but budgets are no longer open ended.

The Canadian strategy of tax-funded fee-for-service production looks very similar to US Medicare, yet it has escaped the worst of the Medicare cost explosion.[54] The reason, in sharpest contrast with the USA, is that the Canadian system is closed-ended. Most medical care is tax funded at

a provincial level, supported by federal block grants. Each hospital has an annual global budget negotiated with the provincial government. Physicians' fees are negotiated between government and medical associations at provincial level. Charges above these standard fees ('extra billing') have been de facto forbidden since 1984 under federal law.[55] Total spending on physicians is controlled in two ways: the six largest provinces have introduced contracts which reduce fees when utilisation rates exceed a predetermined level; and Quebec specifies personal income ceilings for doctors and an overall spending limit on doctors' fees. Canada thus combines price control with expenditure control.

The Australian system, in principle, is similar. Most medical care is fee-for-service, funded through taxation and social insurance. There is price control and tight control of hospital expenditure (as in Canada), but not the same tight control of doctors' incomes.

European countries, too, have developed systems of expenditure control over the 1980s (Abel Smith 1984, 1985). Germany used to have many of the features of the US system, notably about 1200 private, statutory sick funds from which fee-for-service providers received retrospective third-party reimbursement. Largely as a result, medical spending rose from 6.4 per cent of GDP in 1970 to 9.4 per cent in 1975 (Figure 2). There were two responses. First, government imposed a de facto ceiling on the payroll tax from which the sick funds derive their revenue, reinforced by voluntary target incomes for hospitals. Second, since the mid 1980s, hospitals have received a prospective, hospital-specific per diem, negotiated between the hospital and the regional association of sick funds under supervision of the regional government.[56]

Ambulatory health care in Germany is also regulated. Physicians are paid a fee for service, subject (a) to a schedule of agreed fees, and (b) to a global budget constraint for all physicians in a region. The fee schedule comprises a tariff of 'points' (determined at federal level) for each of about 2500 items, and a price per point determined at regional level, with retrospective reduction if the regional budget is exceeded.

The sick funds are subject to central regulation and act, in effect, as agents of the state. The system is therefore best thought of as decentralised social insurance. The degree of regulation exceeds what is

possible in the US system, which is why Germany is able to combine cost containment with decentralised funding (Ham, Robinson and Benzeval 1990; Mathias Schulenburg 1990).

The Netherlands has a system of 45 regulated statutory sick funds covering most people; the remainder (the higher income groups) take out private insurance with risk-related premiums. Since 1984 each hospital has had a global budget constraint for total income from social and private insurance; income in excess of the limit is repaid at the end of the year pro rata to the various insurers. There is also an income ceiling for some types of doctor. As in Germany, the result has been to contain costs as a broadly constant fraction of GDP over the 1980s.

Japan looks like an outlier: it combines fee for service with little regulation, yet appears to be a low spending country. This conclusion is a statistical artefact: medical spending is a low proportion of GDP partly because of the rapid growth of GDP; and official data leave out much private spending (Powell and Anesaki 1989, pp. 119 and 228).

In addition to these types of regulation, most OECD countries restrict medical school enrolments,[57] and there is increasing control over hospital building and the overall number of hospital beds.

Conclusion. Canada, it is argued, manages to contain costs because funding is centrally determined ('sole-source' funding), giving an element of monopsony power. Germany, however, shows that decentralised funding is compatible with expenditure control provided that there are agreed and enforced budget limits (in Germany through bilateral monopolistic negotiation, subject to government approval, between the sick funds and medical associations at regional level). The key ingredient is not sole-source funding, but a coherent funding regime with at least reserve powers for government. A second conclusion is that budget constraints of this sort control physician incomes not physician actions, leaving doctors largely autonomous in treating their patients, in contrast with the 'managed care' increasingly seen in the USA. Thus clinical freedom remains largely intact.

C. Covering Uninsurable Risks

The theory in III (B) predicted that private insurance would fail to cover important medical risks. These problems can at least partly be resolved by a pooling solution if that is sustainable. As discussed earlier, community rating in the USA was driven out by competition. Though European private insurers have not sought hitherto to impose experience-rated premiums on a large scale, there are signs of change. Pressure for reform in the Netherlands arose largely because competition made private insurers more selective (Ham, Robinson and Benzeval 1990, p 38). Earlier argument suggests that competition, though desirable in (say) the automobile industry, which experiences no substantial market failures, is double-edged in the context of medical insurance. To illustrate, company A (non-profit) is concerned that company B (a general insurance company with little experience of medical policies) will undercut A and draw away its clients by setting aside inadequate reserves for the ageing of its risk pool. Ten years later, however, finding an older clientele less profitable than expected, company B withdraws from medical insurance: its clients try to return to company A, but by then have ten years' accumulated pre-existing conditions which company A is now unable to cover.

It is precisely this problem which is directly addressed by social insurance, which enforces a pooling solution. Because low risks cannot opt out, it is possible to break the link between premium and individual risk, and thereby to cover all medical risks. In countries like the Netherlands and Germany social solidarity is an explicit goal of social insurance. Another way in which the USA is an an outlier is the comprehensiveness of systems elsewhere. Even in countries like Switzerland with significant private insurance, potential coverage is close to 100 per cent for hospital care (those not covered are mainly the better-off). Table 8 shows the extent to which social insurance makes complete coverage possible.

As discussed earlier, Germany, Switzerland and Japan have a range of heavily regulated funds which are best regarded as state-mandated decentralised social insurance. Australia's system of tax funding/social insurance is controlled by central government; in Canada a similar system is organised at a provincial level.

In the Netherlands the Dekker reform proposals include a health insurance package covering all major health risks for the entire population

(Netherlands Ministry of Welfare, Health and Cultural Affairs 1988; OECD 1989a, pp. 43-50; Wynand van de Ven 1989). Under the proposal insurers must provide the basic package to any applicant (thus dealing with uninsurable risks, high-risk clients and adverse selection). Everyone covered by the same insurer pays the same premium for given coverage irrespective of risk. The extent to which the proposals will be implemented remains undecided.

Coverage is one aspect of comprehensiveness; another is the price of medical care at the point of use. The second part of Table 8 shows the relative insignificance of cost sharing in European systems.

[TABLE 8 ABOUT HERE]

D. Improving Access

Measuring access is hampered by serious conceptual problems and because normative judgements are involved. Despite near-universal access to largely free hospital care in OECD countries other than the USA, inequality remains in the distribution both of inputs and of measurable health outcomes.

The distribution of health care by income level remains unsettled territory. Le Grand (1978) compared the distribution of illness and public medical spending across socioeconomic groups in the UK, and concluded that the top group received 40 per cent more public medical expenditure per person reporting illness than the bottom group. Owen O'Donnell and Carol Propper (1989), using 1985 microdata, dispute the Le Grand result and also its methodology, concluding tentatively that the distribution of public medical care in the UK does not vary systematically with income. Robert Leu and Rene Frey (1985) find that the joint incidence of medical expenditure and its finance in Switzerland is pro poor. A start has been made on a European Community project using microdata to compare health-care systems in ten countries, with particular emphasis on distributional issues (Adam Wagstaff, Eddy van Dooslaer and Pierella Paci 1989).

A separate question concerns the geographical distribution of medical care. An official study (UK Department of Health and Social Security 1976) concluded that UK health-care resources were unequally distributed

geographically, and devised a formula for per-capita regional funding based on indicators of need, which substantially reduced the gap between the best-and least-funded region (Nicholas Mays and Gwyn Bevan 1987). New Zealand also uses a population-based formula to allocate hospital resources. Jeremy Hurst (1985, Ch. 7) found that variations in per capita health spending were greater between US states in the late 1970s than between Canadian provinces and English regions.

The distribution of health is conventionally analysed by comparing the health experience (usually proxied by longevity) of different social classes (Douglas Black 1980). Any attempt to base international comparisons on this method, however, founders on differences in definitions of social class. Le Grand avoids the need to put people into categories by applying aggregate inequality measures such as the Gini coefficient to individual data on age-at-death. Having taken account of the age-structure of different countries, Le Grand (1987c, Table 1) estimated mortality inequality across all ages and classified countries into three groups: in the most-equal group were the Netherlands, Sweden and the UK; in the middle group were Australia, Canada, Germany, Japan and Switzerland; in the least-equal group were New Zealand and the USA. These rankings, by and large, were the same for all inequality measures. Measuring mortality inequality in terms of the Gini coefficient, the only country which is consistently less equal than the USA is Romania.

E. The Reform Agenda

The problems are apparent; and the absence of any complete solution generates a continuing stream of reform proposals.[58] The agenda falls naturally into two parts, each a pervasive theme throughout the paper: information, and the ill-effects of its absence; and the role of incentives.

Information. The need for better information is attested by <u>a priori</u> evidence of inefficiency. An OECD study found '[s]ignificant differences, not only across but also within countries, in ... hospital stays and surgical rates, which do not appear to be related to health outcomes'

(1987, p. 13). Klim McPherson (1989, p. 17) notes that where the incidence of procedures has a high variance, there is an association between high frequency and fee-for-service delivery, especially in systems with open-ended funding. Hurst (1985, p. 190) concludes that the UK system is efficient compared with the USA and Canada: though it is cheaper, measured outcomes are broadly similar. That does not imply the absence of inefficiency in the UK (or any other centrally-organised) system (Aaron and William Schwartz 1984; Enthoven 1985b).

Cost data: in many countries (Enthoven (1989a) cites the Netherlands, Sweden and the UK) it is not possible systematically to compare costs across hospitals. Nor is there much information about costs (as opposed to charges) in the US private health care sector.

Quality of treatment: in one US study, panels of doctors reviewed the appropriateness of treatment across a large sample of cases and found an alarming incidence of inappropriate or equivocal heart operations (Enthoven 1989a). Another aspect of quality concerns non-technical aspects of medical care such as time waiting for an appointment and availability of treatment outside working hours. Here the problem is not collecting data, but agreeing and policing service and access standards.

Outcome data: a missing element in public debate is any idea of the marginal health outcome per increment in spending. Measuring outcomes, however, is difficult because 'health' is hard to define, improvements in health hard to value and causality problematic. One approach is through a system of hospital discharge reports which include medical outcomes. In the longer term there should be longitudinal data on individuals.

In an ambitious project, Alan Williams (1985) attempts to evaluate outcomes in terms of the quality-adjusted life years (QALYs) added by different treatments. The approach recognises that the outcome of medical care is not only the quantity of life added, but also its quality. Though such measurement inevitably involves subjective judgements (e.g. of how much a restriction of mobility reduces the quality of life), the calculation of QALYs has the merit of incorporating subjective values explicitly. The approach looks at the extra QALYs resulting from treatment and divides them by its cost. Some treatments represent an inefficient use of resources, e.g. the process is unpleasant and does not extend life by

much. Others are underused: hip replacements are cheap and, though not prolonging life, improve its quality enormously.

Incentives on the funding side, such as prospective payment, have already been discussed. On the delivery side, the incentive effects of competition are a major topic. The inefficiency of free markets for health care and medical insurance has been a major theme. But public monopolies, though excellent at containing costs, also have problems: while avoiding the incentives to inefficiency of the free-market model, they contain no direct financial incentives toward efficiency; they may be unresponsive to consumer preferences, being guided more by provider preferences; they may be underfunded; they may lack accountability.

A good trick would be to devise a system which reaps the general efficiency gains of competition without opening the door to its specific inefficiencies in the context of health care. All reform proposals along these lines have two key characteristics. First, the funding of medical care is separated from its provision (i.e. demand and supply are separated), making it possible to break up the public-sector monopoly, and forcing suppliers to compete. Second, the demand side is divided into two stages: a high-level purchaser, usually the entity which pays for medical care, acts as the consumers' agent by monitoring quality, agreeing prices, and probably also controlling quantity. As a second stage, consumers choose between competing suppliers, as monitored and validated by the high-level purchaser.

Several countries are currently discussing or implementing reforms along these lines. Under proposals in the Netherlands, part of the premium is paid by the insured person, so that insurers have to be competitive. In addition (a key recommendation), though insurance policies must cover all medical risks, they need not cover all providers (i.e. the reforms allow for preferred providers), so that providers also have to be competitive. The insurer is the high-level purchaser, but the insured person retains some consumer choice (van de Ven 1989).

British proposals (UK 1988) seek to introduce competition between suppliers. Previously, the District Health Authority (DHA) was the monopoly supplier. Two major reforms are proposed on the demand side: DHAs

change role from major provider to high-level purchaser of competitively-provided services; and large group practices may become the high-level purchaser for certain types of medical care and, like an HMO, are then responsible for buying hospital care for its patients. On the supply side, hospitals can 'opt out' of DHA control and become self-governing trusts, competing for patients with hospitals run by DHAs and with the private sector (Barr, Howard Glennerster and Le Grand 1989).

Sweden, another country with health care supplied mainly by a tax-funded monopoly, is also contemplating the use of competition, less as a cost containing device, than to counter criticism that the system is unresponsive to consumers (Richard Saltman and Casten von Otter 1987).

Such reform should not be surprising. Competition, according to the textbooks, reduces costs (the main motivation of the Netherlands reform), increases efficiency and flexibility (the main UK motive) and enhances consumer choice (the Swedish motive). The success of regulated competition (Canada and Germany are examples) depends crucially on the effectiveness of the high-level purchaser in controlling total spending (particularly in a fee-for-service environment) and in monitoring and enforcing quality. It should not be thought that competition in medical care automatically leads to efficiency.

VII. CONCLUSIONS

A. Implications for Policy Design

Conclusions are possible about the major objectives discussed in section II, in particular macroeconomic efficiency, microeconomic efficiency, incentives, poverty relief and access and redistribution (i.e. horizontal and vertical equity).

Macro efficiency and cost control are particularly impaired where neither side of the market faces the costs of its actions. This is the case with third-party payments for medical care, particularly in open-ended funding systems; by causing a divergence between private and social costs and benefits, they create a type of externality. Two solutions are particularly relevant. Output could be restricted to its efficient level by regulation, for instance through a budget constraint. This approach has

the advantage of certainty; the disadvantage is that it leaves government with the decision about the proper level of medical spending and, to some extent, its division between different types of medical care and types of provider. Alternatively, one could internalise the externality by merging the activities of doctor and insurance company, thereby forcing doctors to face the cost of the treatment they prescribe. This is the essence of health maintenance organisations.

Most countries experienced a cost explosion in medical care in the 1970s. Control was largely reimposed over the 1980s, though worries remain. The main conclusions are:

(a) Cost containment requires considerable regulation (i) of price and (ii) of total expenditure. The achievement of (ii) requires controls on the incomes of hospitals and doctors, which are most effectively imposed on the funder-provider link.

(b) With an appropriate regulatory regime, cost containment is compatible with centralised (Canada) and decentralised (Germany) funding, and with mainly public (UK) or mainly private production (Canada).

Micro efficiency involves funding regimes, particularly in the face of insurance problems, and the production of health care.

Insurance issues: private insurance has major gaps, particularly over unemployment compensation, the indexation of pensions and important medical risks. Primary reliance on private insurance with residual public funding faces various problems, notably uninsurable risks and the poor. The state could tackle the former by subsidising private insurance premiums, or by paying for benefits itself through a residual public insurance scheme or out of taxation (US Medicare). The poor could be assisted similarly (Medicaid). This approach has problems: it is difficult to define borderlines, both as between the types of contingency which qualify for state assistance and over the income level below which the poor are subsidised (e.g. the many uninsured individuals who are ineligible for Medicaid); policing is necessary to prevent oversupply (true of both Medicare and Medicaid); and income testing could create labour-supply disincentives (social assistance, Medicaid). Such systems are characterised by gaps in coverage and unequal access.

The social insurance/tax approach largely resolves these problems. Compulsory membership makes a pooling solution possible: this reduces the inefficiency caused by breaking the link between premium and individual risk; and, by dealing with the gaps inherent in private insurance, it makes universal coverage possible. None of the countries attempted to relate social insurance contributions to individual risk, though employer contributions may be risk rated by industry, i.e. related to group risk.[59] Pensions are the only cash benefit in which the private sector has a major role, though buttressed by regulation and subsidy. Health care finance is through a mixture of taxation and social insurance (Australia, Canada); via tax revenues (New Zealand, Sweden, the UK); or through mandatory membership of regulated, decentralised, quasi-governmental social insurance institutions (Germany, the Netherlands, Switzerland).

Production can be private, buttressed by substantial regulation, notably to boost quality and contain quantity, (Australia, Canada, the Netherlands, Switzerland). Alternatively, most medical care can be publicly produced (New Zealand, Sweden, the UK), or production can be hived off to decentralised publicly-funded institutions (public hospitals in Germany, self-governing hospital trusts in the UK).

The absence of any complete solution makes tradeoffs inevitable. There is, however, consensus in two areas. First, efficiency on the delivery side depends less on the ownership of medical facilities than on the funding and regulatory regimes, which determine access and the incentives faced by providers. Second, the deficiencies of the US system are widely recognised. The analytical arguments are supported by American public opinion. In a nationwide survey, over 60 per cent stated a preference for the Canadian system (Robert Blendon and Humphrey Taylor 1989).[60]

Incentive effects. it is important to separate the arguments about public organisation from those about incentives: (a) cash benefits and much health care are publicly organised; (b) cash benefits may have adverse incentives (though the evidence is not definitive); similarly, (c) third-party reimbursement of fee-for-service medical care, whether publicly or privately organised, creates incentives to excessive spending. It does not, however, follow that (a) causes (b) and (c). The real problem is

moral hazard: thus it is necessary to police individual behaviour, e.g. to ensure active job search, or that doctors are not over-prescribing. If insurers could read people's thoughts, they could guard against the problem; the resulting solution would simultaneously avert incentive problems and make possible private insurance against income loss and medical risks. In short, incentive problems are the result less of public provision than of asymmetric information.

Poverty relief, access and redistribution. It is possible to design social insurance arrangements which embody little redistribution. Thus public provision is largely separable from redistributive goals: such separability reinforces the argument that state activity, whatever its other motivations, has an important efficiency function. The specific form of cash benefits will depend on what other objectives obtain. Poverty relief implies a flat-rate subsistence benefit; if solidarity is also an objective the benefit might be pitched above subsistence and might, in addition, not be conditioned on a contributions record, e.g. the flat-rate pension in Canada and New Zealand. If the protection of living standards and/or income smoothing are also aims, benefits will at least partly be earnings-related. If redistribution is also a goal, the benefit formula will be slanted towards the lower paid.

The major conclusions about cash benefits are:

(a) Countries which substantially relieve poverty have redistributive formulae and spend a significant fraction of GDP on cash benefits.

(b) Poverty and inequality were most pronounced in Australia and the USA, and least pronounced in Germany and Sweden (in the latter countries some 10 per cent of GDP was transferred to the lowest income quintile).

With medical care a major goal is that access should not depend primarily on income. The major conclusions are:

(a) Access is high in all countries which fund health care through taxation or social insurance. Using longevity as a proxy for health, there is greatest equality in the Netherlands and the UK and least in the USA.

(b) The experience of private insurance in the USA and the Netherlands highlights the problems if private insurers act competitively.

(c) Access need not be at the expense of cost containment.

The unfinished agenda. Problems remain. First, poverty persists. In part the problem is political: there is least poverty in countries (Germany, the Netherlands, Sweden) which are prepared to spend the most. But the problem is also technical, given incentive problems (the second unfinished agendum) which will be exacerbated by demographic trends. Work is needed on the design of transfer systems in which incentives work with rather than against the redistributive grain.

Third, most medical systems still lack incentives to use resources efficiently, most particularly the lack of liaison between the hospital services, primary health care and social care. The result, for this and other reasons, is an over-emphasis on hospital care.

Fourth, more information is needed: the Luxembourg Income Study is breaking the path so far as living standards are concerned. Considerable improvement is needed in information on the costs of different types of medical treatment and in techniques for evaluating outcomes.

Strategic lessons.

1) Taking a global view: the range of technical problems, due largely to information problems, in the markets for major cash benefits, health care and medical insurance requires an intervention strategy, not just a collection of ad hoc policies. Successful strategies embrace two key elements: social insurance, and a regulatory regime which includes stringent financial control. There are many paths towards efficiency, which can be more centralised or less; what successful strategies have in common is a recognition of the incentive structures faced by individuals and institutions and a willingness to use government power if that is the most effective way of counteracting adverse incentives.

2) Social insurance, by dealing with the gaps inherent in private insurance, makes universal coverage possible. It is important to be clear that adverse incentives are due more to the underlying problem (asymmetric information) than to the policy adopted to cope with it (government intervention). The fact that cash benefits and most medical insurance are compulsory and largely public-sector is not solely the outcome of redistributive predilections nor of government failure.

3) The role of regulation: controls over medical fees, budgets and

capital spending is essential. If well-designed, they succeed in making universal coverage compatible with cost containment. The German example suggests that it is possible, at least to some extent, to decentralise funding. A key element is the imposition of a budget constraint at the level of the total medical system (Canada, Sweden, UK) or at the level of the individual hospital (Germany, Netherlands) and/or upon physicians (Canada, Germany, Netherlands). If well-designed, such regulation constrains medical incomes, not medical practice.

Decentralised decision making by health-care providers in a regulated competitive environment can be compatible with budgetary control, as shown by the experience of Canada, Germany and the Netherlands. A government-mandated framework does not require public provision.

4) Demographic factors: the scope for substitution of private for public provision as a solution to demographic pressures is limited. The real solutions all involve enlarging the labour force and/or raising labour productivity to increase output growth. Policies include greater investment in capital and labour, encouraging higher labour force participation rates and raising the age of retirement.

5) The absence of any complete solution: if there are no market failures, private markets are immensely efficient. Precisely for that reason, where market failures are serious even the best-designed package of intervention has limitations. Health care regimes face the problems predicted by the theory. Different countries seek to resolve them in different ways: each method involves difficulties which, again, are predictable. Countries with substantial private production of medical care (Canada, Germany, the Netherlands, Switzerland and the USA) have few waiting lists and offer scope for consumer choice, but at the expense of acute expenditure pressures which necessitate a strong regulatory regime. Countries with mainly public systems (Sweden, the UK) have waiting lists, less consumer choice and less accountability, but score well on access and generally face fewer problems containing costs.[61]

Given the inevitable tradeoffs, even if equity issues have been resolved, the problem is to choose the disadvantages which are least burdensome for the society in question. The search for better cash benefit and health care institutions continues; completely efficient institutions,

however, are a Holy Grail.

B. Concluding Issues

Convergence. The great bulk of cash benefits in all countries are publicly organised, though administrative forms can differ greatly; and in most countries government holds the financial reins for medical care, though providers may have considerable freedom within a centrally-mandated framework. Though measurement is difficult, part of the explanation is clearly ideological. Social solidarity is an explicit and important aim in European countries like Germany, the Netherlands and Sweden, resulting in social spending of up to 30 per cent of GDP and transfers to the lowest income quintile of up to 10 per cent of GDP. In low spending countries like Australia and the USA, policy documents rarely mention social solidarity; indeed, there is scepticism about whether the concept has any meaning.

This essay has stressed a different argument, the importance of asymmetric information, as both explanation and justification of welfare-state institutions, which in all the countries studied absorbed a bedrock of 12-15 per cent of GDP. The argument is not diminished by the fact that it can explain only part of the variation across countries.

The power of the argument is emphasised by the Thatcher and Reagan administrations' failure to roll back the boundaries of the welfare state. The reexamination was motivated by ideology and macroeconomic stringency. The only effect, however, was to reduce funding levels slightly, with little impact on modes of organisation.[62]

Nor should it be imagined that the USA has managed to retain a <u>real</u> free market for health care. In practice actuarial medical insurance, if not a mythical beast, is a rare and endangered species. About 80 per cent of private health insurance in the USA is related to employment; in 1980 employers paid more than half the cost for 97 per cent of employees covered, and the entire cost for 84 per cent (Pauly 1986, p 635). The situation for private pensions is little different. The problems of US medical care have resulted in increasing government intervention in the form of funding and substantial regulation. Bengt Johnsson (1989, p. 91) makes the point that the system of reimbursing hospitals via diagnosis-

related groups 'is as close as one can come to what Oscar Lange (1938) called "market socialism"'.

These outcomes are a predictable consequence of pervasive information failures in the relevant markets. The welfare state from this perspective is an efficiency device, quite separate from equity goals. Social insurance may not have been established as a device to cope with information failures, but it has had that effect; it is a Hayekian socially-selected institution. Its existence can be interpreted as a government success -- if not always and everywhere, then at least as a counterpoint to the government failure arguments. As the quote at the head of the paper shows, this is what Arrow was saying nearly thirty years ago, a point echoed more recently by Lucas (see the quote on p. 25)

The nature of the welfare state. A final and fundamental question concerns the nature of social insurance. In contrast with private insurance, premiums bear no short-run relation to individual risk; thus it appears that the system is no longer insurance.[63] There is a very different interpretation (Huxley, forthcoming). The welfare state can be viewed as an insurance contract entered voluntarily by risk-averse individuals behind John Rawls' (1972) Veil of Ignorance. Ex ante the welfare state is actuarial, since behind the Veil of Ignorance no difference in individual risk has yet emerged. Note that insurance can be actuarial only ex ante: my car insurance is roughly actuarial at the time I take out a policy, but ceases to be so at the instant my tyre blows out. It is the function of insurance to offer ex ante cover precisely because pooling is impossible ex post, when the risk has become a certainty.

From this viewpoint, not only social insurance narrowly-defined but also 'universal' benefits and social assistance are a form of insurance. By offering cover prior to birth, the welfare state is acting like ex ante actuarial insurance with a long time horizon. It is no contradiction to observe that it is not actuarial ex post; it could not be, any more than car insurance once the tyre has blown out. From this perspective the nature of the welfare state is determined in part by the choice of time horizon.

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NOTES

1. The word 'state' is used throughout in the sense of central government, not as in 'the State of California'.

2. Even Richard Titmuss (1958) ducked the problem -- that book is called Essays in "The Welfare State" (his quotes) (see also Asa Briggs 1961). As Titmuss later put it, '... I am no more enamoured today of the indefinable abstraction 'The Welfare State' than I was some twenty years ago when ... the term acquired an international as well as a national popularity' (1968, p. 124).

3. Tax expenditures are public expenditures in the form of tax relief for certain activities (e.g. approved private pension contributions).

4. Wilensky and Lebeaux called it an 'institutional' welfare state.

5. Throughout, the term 'income-testing' includes a wealth test.

6. The term 'cash benefits' is used throughout. 'Social security' is ambiguous: in US usage it refers to retirement pensions, in the UK to all cash benefits, and in mainland Europe to all cash benefits plus health care.

7. Though the formula has changed from time to time, it has always been explicitly redistributive (Henry Aaron, Barry Bosworth and Gary Burtless 1989, Table 2.4).

8. If the rich pay twice as much towards 'free', tax-funded medical care but use it five times as much, the overall effect is regressive. This phenomenon can arise with tax-funded higher education (Lee Hansen and Burton Weisbrod 1969, 1978); but, as discussed in VI (D), empirical evidence does not suggest that it occurs with health care.

9. The point emerges clearly from contemporary writing (Francis Bator 1958; William Baumol 1965).

10. The quality literature has its roots in seminal articles by Arrow (1963) and Akerlof (1970) (see Stiglitz (1987) for a recent survey) and is concerned with 'lemons', signalling, and insurance problems. For a survey of the literature on imperfect price information, see Dale Mortensen 1986.

11. In the conventional analysis of the problem, there is a known probability distribution of outcomes, to each of which is attached a known utility. Where consumer ignorance is profound, however, outcomes may be so little understood that preferences are not well-defined. The latter problem has not been formally modelled, though it has a venerable pedigree: 'the proposition that the consumer is a competent judge of the commodity can be admitted only with numerous ... exceptions' (John Stuart Mill 1848, p. 953), which was a reason for interfering with private education ('the uncultivated cannot be competent judges of cultivation', ibid.).

12. For precisely this reason a Paris city bye-law requires the display of a menu (with prices marked) outside the restaurant. The effect is to reduce the costs (time and emotional) of search.

13. The literature again starts from Arrow (1963), followed by Akerlof (1970), Mark Pauly (1974), Rothschild and Stiglitz (1976) and Charles Wilson (1977). For a recent overview, see Jean-Jacques Laffont (1989, Chs 8, 10 and 11) or, less formally, David Kreps (1990, Chs 16 and 17).

14. For a simple exposition, see Atkinson (1989, Ch. 7), for formal analysis Laffont (1989, Ch. 10).

15. See Joanne Salop and Steven Salop (1976) for analysis of such self-selection in a labour-market context.

16. People do not commit suicide only to make their legatees rich. It is true that someone intending to commit suicide for other reasons might do so; but that is a problem of adverse selection, to deal with which most policies have a clause excluding cover during the first year of the policy.

17. In principle voluntary pregnancy faces the same problem: as a practical matter, however, policies often cover the medical costs associated with pregnancy. In part this is because the medical costs are small in comparison with the subsequent costs of bringing up the child. Individuals are therefore less than fully insured against the total cost of having a child, thus avoiding the worst of the moral hazard problem.

18. To see intuitively what is going on, contrast behaviour in a conventional restaurant with that in an 'all you can eat for $9.95' restaurant.

19. The costs imposed on the individual could also be psychic, e.g. the 'ordeals' approach to the award of benefit (Albert Nichols and Richard Zeckhauser 1982).

20. Compulsion can also be applied to employers, e.g. to give notice of mass layoffs, or to offer sickness benefits. The efficiency of such mandated benefits is discussed by Summers (1989).

21. Such conditioning of benefits on non-income characteristics fits naturally with Akerlof's (1978) concept of 'tagging'.

22. Child Benefit in the UK, for instance, consists of a weekly, tax-free cash payment of £X for each child in the family, generally payable to the mother. Most OECD countries (the USA is an exception) give cash support towards the cost of bringing up children. For a survey, see Alfred Kahn and Sheila Kamerman (1983).

23. There is an enormous historical literature. For a brief survey, see Nicholas Barr (1987, Ch. 2) and the references therein.

24. See Francis Castles (1985) and, for an Australian history, Michael Jones (1983, Chs 2 and 3).

25. Though they receive a pension early, many Swedes continue to work, at least part time. For discussion of the definition of retirement in different countries see Timothy Smeeding (1990).

26. For an excellent, though inevitably dated, account, see Aaron (1984).

27. See Note 22.

28. Systematic data on medical spending are gathered in OECD (1985b), updated in US HCFA (1989); the major problems of concept and measurement are discussed in OECD (1985b, pp. 9-11) and by Alain Foulon (1982). Note the caveat in Note a at the end of Table 3.

29. It might be argued that the inability of the worst risks to afford unemployment insurance is not per se inefficient, and that state intervention is thus ultimately for equity reasons; the counterargument is the efficiency costs of non-insurance (see the discussion in III (B) of the external costs caused by non-insurance).

30. With funded schemes, current pensions are paid out of previously-accumulated reserves; under pay-as-you-go they are paid out of current revenues.

31. The German data precede the union with East Germany.

32. Robots, for example enable a smaller workforce to produce more output. An added advantage is that they do not require a pension when they retire.

33. It is true that pensions affect labour supply; but to the extent that that is relevant to married women's participation, what matters is the level of the pension not its source.

34. For detailed discussion, see Gordon 1988, Chs 3 and 4; OECD 1988a; Rosa 1982; and the sources in the Appendix.

35. Since 1984 there has been a de facto income test at higher incomes.

36. The USA is currently (and controversially) building up a surplus as a cushion against demographic pressures, but this is far from putting the US system onto a funded basis; see Aaron, Bosworth and Burtless (1989).

37. Important topics, including the effects of disability benefits on labour supply, and of income support on family formation, are omitted for reasons of space. For surveys, see Aaron (1982); Atkinson (1987c); Atkinson and Micklewright (forthcoming); Danziger, Robert Haveman and Robert Plotnick (1981); Edward Lazear (1986a); and Robert Moffitt (forthcoming). For a useful tour d'horizon see the AEA symposium papers by Edward Gramlich (1989), Kotlikoff (1989a) and Summers (1989).

38. This is another example of 'tagging'(Akerlof 1978); see also Meade 1978, pp. 274 et sequ.

39. Australia has recently introduced a system whereby child support is enforced through the income tax system.

40. Omitted topics include the relative treatment of single-parent families; benefits for disabled people; the relative treatment of men and women; and the equalising effect on the wealth distribution of increased home-ownership and more widespread private pension wealth.

41. The Australian results are sensitive to the equivalence scales used (Brigitte Buhmann et al. 1988), a factor of particular relevance to Australia and New Zealand, which have more children per income unit than most of the LIS countries. In addition, there were significant social security reforms between 1987 and 1989. For fuller discussion, see Peter Saunders, Garry Hobbes and Helen Stott (1989).

42. Unpublished results for later years from LIS broadly confirm these findings. See also John Coder, Rainwater and Smeeding, 1989.

43. For studies of the US, see Dorothy Projector and Ellen Murray (1978) and Warlick (1982); UK experience is discussed by Atkinson (1989, Ch. 1).

44. Atkinson (1983b, p. 275) illustrates the point thus: if the guaranteed income for a typical family is x per cent of average income, and if income tax currently raises y per cent of average income for purposes other than income support, the average income tax rate must be x+y. With plausible values for x and y (say 35 per cent and 15 per cent), the average rate of income tax (i.e. ignoring all indirect taxes) is 50 per cent. For a recent negative income tax proposal, see Hermione Parker (1989).

45. Medical ethics have an important role in reducing the ill-effects of deficient consumer information. However, if neither doctor nor patient faces the costs of treatment, medical ethics reinforce financial incentives to give treatment with any positive benefits, rather than treatment whose marginal benefit exceeds its costs.

46. Similarly, if employees know better than their employers whether they are likely to have high medical bills, employers providing good medical benefits will tend to have employees with health problems, thus discouraging the provision of fringe benefits (see Summers 1989).

47. The systems are compulsory only in the sense that individuals are not able to opt out of the contributions which finance the systems.

48. There is a double problem, since the decisions of doctors (the agent) can be monitored effectively neither by the patient nor the insurer.

49. The institutions of medical care in different countries are immensely complex, and brief institutional overviews are thin on the ground. An excellent survey and assessment of six of the countries covered here (Canada, Germany, Netherlands, Sweden, the UK, USA) is by Chris Ham, Ray Robinson and Michaela Benzeval (1990). For detailed discussion of Japan, see Powell and Anesaki (1990). See also OECD (1987, Ch. 3) and the sources in the Appendix.

50. Though the Canadian system is mandated and partly funded by central government, most medical care is organised by the provinces. Thus description of the Canadian system as a whole is only approximate.

51. As McLachlan and Maynard (1982, p. 507) point out, such organisations approximate labour-managed firms along the lines of the Yugoslav model.

52. It is said that some HMOs have offices on the third floor of buildings with no elevator; if you are fit enough to get to the office, you are fit enough to join the HMO.

53. Much of the argument is clouded by ideology. Note the tendency for proponents of free markets to regard 'managers' as 'good' and 'administrators' as 'bad' ('bureaucrats' being a term of abuse for everyone). In many respects, however, managers, administrators and bureaucrats all do broadly the same job and face similar problems.

54. See Evans, Lomas, Barer et al. (1989) and Schieber and Poullier (1989a) for differing assessments of the success of cost containment.

55. The 1984 Canada Health Act reduced federal contributions to provinces dollar for dollar with direct charges to patients. The Act led to a doctors' strike in Ontario (see Michael Stevenson et al. 1988). Though effective, the controls are not wholly watertight: tips cannot be policed; and doctors may try to increase their incomes by requiring repeat visits by patients.

56. This system has limitations as a cost containing device because per diem payments give incentives to longer hospital stays (since later days, with less intensive care, involve lower hospital costs). The German system has other problems. The basic benefit package is determined nationally, but the contribution rate for each sickness fund depends on its client mix. The substantial variation in contribution rates is causing concern (Ham, Robinson and Benzeval 1990, p. 50).

57. Some countries (e.g. Italy) have no such controls, causing concern within the European Community, given the increasing ease of migration.

58. Enthoven (1985b, 1988, 1989b); New Zealand Health Benefits Review (1986); Netherlands Ministry of Welfare, Health and Cultural Affairs (1988); UK (1988). Various Canadian provinces are establishing reform commissions.

59. As well as employers paying contributions related to group risk, there are circumstances in which individuals might do the same. It is a possibility (though not one, so far as I know, which any country has adopted) to have a higher individual contribution rate for risks which are the result of individual choice. For instance, if one could get round the monitoring problem, smokers could be required to pay a higher social insurance contribution for medical care.

60. This fact should be noted by Eastern European countries, several of which are reported to be considering the US approach (see the symposium in Social Science and Medicine, Autumn 1990).

61. The relatively high level of spending in Sweden is an electoral choice, since most decisions on health spending are determined and largely funded though a local electoral process. The growth of medical spending over the 1970s and 1980s has been low (see Table 3).

62. In the UK, the 'most fundamental examination of our social security system since the Second World War', did little more than make a few housekeeping changes -- see Barr and Coulter (1990).

63. '[W]hen the terminology of social security is stripped away and the structure of the system is examined, it becomes clear that the insurance analogy is no longer applicable' (Pechman, Aaron and Taussig 1968, p. 68).