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A MODEL OF JOB CHOICE FOR THE ANALYSIS OF GOVERNMENT INTERVENTION IN STRUCTURAL ADJUSTMENT*

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The paper presents a model of choice between alternative available jobs in which each job has an uncertain multi-period income prospect. Imperfectly informed expectations as well as job preferences and attitudes to risk determine the choice. The model is used to locate and discuss some problems of designing government programs which are intended to increase job mobility. The main conclusion is that government interventions may impose costs on the economy which are greater than the benefits because the information needed to assess costs and benefits is not generally available and political pressures may distort the expenditures.

Australia is in the early stages of developing a comprehensive economy-wide program for adjusting to structural change. The first major structural adjustment programs operated by the Commonwealth Government were the Rural Reconstruction Scheme and the Marginal Dairy Farms Reconstruction Scheme, both of which began operation in 1971, and the first program for the manufacturing sector was the Structural Adjustment Assistance Scheme which began in 1974. Other limited programs have operated mainly in the areas of labour retraining and manpower planning.

This limited experience suggests that most individuals whose present jobs have been adversely affected by structural change opt for income supplements to stay in their present jobs rather than move to jobs in other occupations or locations. (See IAC 1976 and Study Group on Structural Adjustment 1979*b*.) This reluctance to change jobs is one of the central problems in dealing with structural adjustment, especially in industries with declining aggregate employment. As an example, in discussing the problem of New South Wales farmers whose applications for funds from the Rural Assistance Board have been rejected and who do not appear to have satisfactory prospects for long-term occupation of their farms, Kennedy (1977) offers at least four independent aspects of the farmers' situation which might severally account for their reluctance to move—it may be that no alternative jobs are available, or the farmers have a dislike of cities, or they are insolvent and are trying to protect their net asset position, or they are overly optimistic about their present situation ('Micawbers of the land'). There are other possibilities too — they may be unaware of jobs which are available, or the costs of moving may be too great, or the riskiness of the income stream from alternative job prospects may be too great. Why do many individuals ad-

* I am greatly indebted to Peter Morgan and Glenn Withers for acquainting me with labour market literature of which I was unaware and to them, Bob Gregory and Lynne Williams and referees for suggesting numerous improvements.

versely affected by structural change not change jobs? Should governments intervene, and if so, how can government interventions best facilitate labour job mobility? This set of problems is central to a comprehensive structural adjustment assistance program.

The focus in this paper is on locating and examining some problems of the design of individual government structural adjustment assistance programs which are intended to increase job mobility. To analyse situations of job choice and the ways in which individual income earners may be affected by alternative government policies, one must have reference to a model of job choice. Clearly, this will have to take account at least of the multi-period income stream for each job prospect, the uncertainties of each prospect, the imperfect information which may be available to the individual making the choice and occupational/location preferences. A model which contains these features is outlined first. Individual government job mobility programs are then discussed. Finally, a discussion is presented of further complications which arise when causes and/or effects of individual adjustment problems are related to questions of choice between alternative instruments of adjustment assistance.

A Model of Job Choice

The model developed here incorporates the main elements determining the choice of job.¹ It will be set up in a general way.² In particular, it may apply to an individual member of the labour force in any sector of the economy, engaged in any occupation. He (/she) may be employed or self-employed. He may be either dissatisfied with the present job for any reason or threatened with termination of employment through insolvency, sacking or whatever reason. A job may comprise more than one employment, say running a farm and part-time off-farm employment. The present job could include the state of unemployment but this paper is concerned primarily with individuals who have an income-paying job and are reluctant to leave it.

Consider one individual making a job choice. It is assumed that he has information of a fixed finite number of mutually exclusive job prospects, $\{X_1, X_2, \dots, X_n\}$. These include information concerning his present 'job' which for convenience is denoted as X_1 . Each job prospect has an associated income prospect. Thus the n job prospects give rise to the set of income prospects, $\{Y_1, Y_2, \dots, Y_n\}$. More particularly, income for

¹ This model has several affinities with the models of job search which have been developed recently, especially those of Pissarides (1976) and Salop (1973), and with the models of urban-rural migration. Job search models assume that the individual samples sequentially, and usually randomly, among prospective job prospects. The problem is then posed as one of finding an optimal stopping rule which will terminate the search. Moreover, these models, and those of migration behaviour, are concerned mainly with unemployed individuals searching for wage employment.

For the population of job choosers who are already employed, it is simpler and probably more realistic to assume that the worker examines all known job prospects than that he samples selectively. Knowledge of these prospects can come from a government or private agency or any other source. Any costs of obtaining this knowledge are treated as sunk costs. In addition, the model includes costs arising from geographic change in job location and the nonincome preferences between jobs.

² The model is of sufficient generality to include situations which are beyond those job changes which arise from some change in the demand and/or supply of products and factors, that is, from structural change. It could be applied to decisions to enter the labour force or to migrate internationally.

each job prospect, Y_i , is the estimate by the individual of the present discounted value of his worth if this job were selected. It is the sum of two components,

$$(1) \quad Y_i = a_i + Z_i \quad i = 1, 2, \dots, n$$

where a_i is the net value of his capital assets and nonlabour income and Z_i is the present value of income derived from the job. It will be referred to as 'job income', to distinguish it from 'income', Y_i . Job income is the discounted sum of a finite series of period incomes associated with the job:

$$(2) \quad Z_i = \sum_{t=0}^T \delta_t z_{it}$$

The income in each period, z_{it} , is net of any current expenditure entailed in moving from the present job to the i th job and of taxes on income. Each future income has been discounted by a period factor, δ_t . This factor does not include a risk factor. T is the planning horizon of the job chosen. If a prospective job may not last until the end of this planning period, the income stream associated with the job includes any income from subsequent jobs or from unemployment or social security benefits. The job income stream from each job may take any profile over time, depending on the searcher's expectations concerning the life of the job prospect and the prospects for growth of income in the job. There may be substantial variation in these expectations among alternative jobs for the one searcher.

Clearly, Y_i is a random variable. Both a_i and Z_i are uncertain. Assuming that the joint probability distributions of the z_{it} are known, the probability distribution of the Y_i are known. The assumption of a known (subjective) probability distribution for each Y_i is a strong one but it does permit the individual to build into his calculations any differences among jobs in his expectations concerning the variability of period incomes.

To choose among alternative prospects, the individual must have a choice criterion. (Implicitly this assumes that the individual's choice is a free choice which is made in a rational way so as to maximise some objective function. For a justification of this rationality assumption among farmers making choices between risky alternatives, see Johnson and Quance 1972, ch. 2.) In the presence of uncertainty, it is customary to take the criterion of maximising the expected value of the utility derived from income from all sources. If individuals were indifferent to the nonpecuniary attributes of the various job prospects, the criterion for determining choice among jobs is

$$(3) \quad C_i = \max\{E[U(Y_i)]\}.$$

Here the argument of the utility function is the present value of income. This is the indirect form of the von Neumann-Morgenstern utility function. The prices of all consumable commodities, except housing, are assumed to be (approximately) the same for all prospects and hence the price arguments of the indirect utility function can be omitted. The treatment of housing is discussed below.

However, individuals may not be indifferent between jobs with equal

income prospects because of occupational, locational or any preference associated with the jobs.³ To allow for this explicitly, the concept of 'total income', Y_i^* , is introduced.⁴ Total income is defined as monetary income derived from the job plus psychic income:

$$(4) \quad Y_i^* = Y_i + F_i.$$

This psychic income, F_i , is the positive or negative income supplement which would make an income from the job X_i held with certainty equally as attractive as the present job with the same pecuniary income: that is, $U(Y_i^*) = U(Y_i)$. It is in general a function of income $F_i(Y_i)$, though it may be constant. Taking psychic income into account, then gives the criterion

$$(5) \quad C_2 = \max\{E[U(Y_i^*)]\}.$$

This allows direct comparisons of the utility derived from jobs with different incomes and attractiveness to the individual.

Under these assumptions the individual will move from his present 'job' to another of the n prospects, j , if and only if

$$(6) \quad E[U(Y_j^*)] > E[U(Y_i^*)] \quad j \neq i = 1, 2, \dots, j-1, j+1, \dots, n.$$

If there are no job prospects which yield a higher expected utility than the present job, that is, if

$$(7) \quad E[U(Y_j^*)] \leq E[U(Y_1)] \quad j \neq 1,$$

the individual decides not to leave his present job.

The question of housing costs requires further examination. Expenditure on housing is the most important item in the budget of most families and differences in the costs of housing between locations when the family must move in order to take up a particular job are in many cases too great to be ignored by potential job changers. On the assumption that the family would buy a house supplying equivalent services, this problem can be handled simply by treating the difference between the price of housing in the two locations as equivalent to a capital loss/gain ($a_i - a_1$). If the cost of these services is greater in the new job prospect, this additional expense is regarded as being paid for by liquidating some assets or by incurring new liabilities.⁵

There is a similar problem with farmers. Agricultural economists in the U.S.A. have drawn attention to the problem associated with jointness

³ Since job prospects may differ in terms of the tenure and the work week during tenures, these preferences can include work/leisure preferences.

⁴ There is one very special area of occupational choice which has incorporated job preferences in the same way. This is the analysis of military draft which includes the cost to the draftees of involuntary occupational choice for a fixed term of years (Fisher 1969).

⁵ More generally, one should allow for the possibility that a moving family may choose to change the level of services it derives from the house it occupies. If this is done it complicates the analysis. First one must include the price of these housing services in the indirect utility function. Then one must consider the price of these services in each job prospect, while including in the assets a_1 the estimated value of the present house. Changes in location which would change the price of items which are a significant part of the consumption budget, such as education, could if desired be handled in the same manner.

of supply of land and other capital assets on the one hand and of farm labour on the other, which arises because many farms are family owned and operated enterprises (Johnson and Quance 1972). Hence, exit from a farm means the withdrawal of family capital as well as family labour. Therefore, exit involves not only the decision to move and work elsewhere but the sale of the farm. The decision to move can be expressed in terms of selling the farm assets. A farmer will move only if the offer or acquisition price which he receives from a potential buyer is at least equal to his sale or supply price. Such reluctance to move is termed 'asset fixity'.⁶ Any factor which raises his sale price or lowers the potential buyer's offer price may prevent the sale and associated movement of resources. Kingma and Samuel (1977) have drawn attention to 'asset fixity' as part of rural adjustment problems in Australia.

How does this relate to the presentation above? In the case of joint family input supply, a_i should include the farmer's estimate of the market value of his farm, net of debt repayments, and Z_i should be that part of the farm income stream which is attributable to the labour input. These two are separable if the inputs are not jointly supplied in strictly fixed proportions. If the farmer's labour could earn only a low wage because he has no skills which are highly rewarded off-farm, this is reflected in low alternative earnings from $\{X_2, \dots, X_n\}$. If the two inputs were not separable, the present value of the farm to the farmer is the present value of the return to both the capital invested and the labour. The lower the alternative labour earnings the lower the opportunity cost and the higher the net value of the farm to him, that is, the sale price. The value of the approach through the asset market is that it draws attention to the possibility that labour resources may not move because of problems in selling locationally nontransferable assets.

The components of the model can now be collected to obtain one expression which combines the various factors determining job choice. For each job prospect, from equations (1), (4) and (5) we have

$$(8) \quad E[U(Y_i^*)] = E[U(a_i + Z_i + F_i)] \quad i = 1, 2, \dots, n.$$

The evaluation of each job prospect and the choice of jobs depend on the job preferences, discount rates, the probability distribution of income streams for the job and the attitude to risk of the decision maker. Clearly the expected utility of a job prospect increases with a positive preference attached to the job. However, the effects of an increase in the discount factors will in general be ambiguous in deciding the relative attractiveness of one prospect because it will simultaneously affect all prospects.

In all job choice decisions, the role of expectations of income from each job is crucial. The expected utility of a job prospect increases with the mean asset and job income of the prospect, provided only that utility increases with income. The effect of the riskiness of the total income from each prospect will depend on the attitude to risk. From Jensen's Inequality, we have immediately

$$(9) \quad E[U(Y_i^*)] \{>, =, <\} U(Y_i^*) \text{ as } U \text{ is } \{\text{convex, linear, concave}\},$$

⁶ This is a regrettable choice of term. It is easily confused with fixed assets in the usual sense of durable producer goods whose supply cannot be varied in the short term.

where \bar{Y}_i^* is the mean of the probability distribution of Y_i^* for the i th prospect. Thus the effect of the riskiness of one project, project i , on the choice will depend on the attitudes to risk since an individual is risk averse (risk preferring) as U is concave (convex). If, as is frequently assumed, the decision maker is risk averse, an *increase* in the riskiness of the total income in the Rothschild-Stiglitz sense of an arithmetic-mean-preserving spread of the distribution of Y_i^* would reduce the expected utility of income of the prospect. Such a spread would also increase the variance of the distribution (though the converse is not in general true). The more familiar concept of the variance of (total) income can in turn be broken down into the variance and covariance components. Assuming that F can, for convenience, be approximated as a proportional function of income,

$$(10) \quad F_i = \phi_i Y_i,$$

the variance of total income, Y_i^* , is

$$(11) \quad \sigma_{Y_i^*}^2 = (1 + \phi_i)^2 (\sigma_a^2 + \sigma_z^2 + 2 \text{cov}[a_i, Z_i]).$$

It may be more meaningful to consider the coefficient of variation of Y_i^* rather than its variance because the former is normalised, so for the i th prospect,

$$(12) \quad V_{Y_i^*}^2 = (w_a^2 V_a^2 + w_z^2 V_z^2 + 2(\bar{a} + \bar{Z})^{-1} \text{cov}[a, Z]) (1 + \phi)^2$$

where V_x is the coefficient of variation of X and w_a and w_z are the shares of asset-plus-job income which are accounted for by asset and job income, respectively. Thus, a given variability about the mean as measured by the coefficient of variation of the income associated with a job prospect will have a smaller effect on the variability of total income the smaller the share of asset-plus-job income which is due to the job income alone, other things remaining constant.

This effect may have important implications. For example, for workers who are older and have relatively few years of possible employment, the share of job income will be lower in general than for younger workers. This is partly because they will, on average, have accumulated more net assets and partly because, other things being equal, the present value of their future income earnings will be less.⁷ Measures which reduce the variance of this income stream alone may have a slight effect on their expected utility because this reduction is damped by the supplementary variance of the asset income, and the covariance if this is significant and negative. Similarly, the variation of the asset income is damped by that of the work income. It is the variance of the combined asset and income which matters.

When a job other than the present job is being considered, a change in the perceived income stream or in the discount factors or job preferences might induce the individual to move. Governments can influence job choice through the income streams. In examining how various factors

⁷ Some information on the ratio of income to wealth for Australian farmers is given and discussed in Sexton and Duffus (1977, pp.120-22).

affect income and expectations and thereby the rate of exiting from one job, it will be convenient to group together those which operate by affecting $E[U(Y_1)]$ and those which operate by affecting $\{E[U(Y_2^*)], \dots, E[U(Y_n^*)]\}$. For short, we might call these 'push' and 'pull' factors, respectively. Anything which increases $E[U(Y_1^*)]$ will retard the rate of exiting and anything which increase any other $E[U(Y_i^*)]$ will accelerate the rate of exiting.

Costs and Benefits of Government Intervention to Increase Job Mobility

The usual approach to labour market analysis is to consider the set of individuals who may be induced to enter a particular occupation or job and to construct an aggregate labour supply function for this occupation or job. However, in the area of structural adjustment policies, the focus is on the *exit* from jobs in which the demand for labour is declining. (Much of what is said can be applied, with appropriate changes in the signs of variables, to the problems of attracting labour into expanding labour markets.)

First, it is apparent that various government policies other than industry-specific structural adjustment policies affect individuals' job choice. Some of these will be 'push' and some 'pull' factors. Both push and pull factors may be negative as well as positive. Any government scheme which provides income maintenance in the present job to individuals will retard the rate of exiting. These are 'anti-push' factors as it were. Direct income maintenance and unemployment benefits clearly retard the 'push' effect. Similarly, drought or flood relief which is available to all farmers in a particular area may have the undesirable side effect of maintaining high-cost farmers.

Consider now that the Government wishes to alleviate the structural adjustment problems of an 'industry' from which workers are exiting. This appears to be the way in which the Government sees the problems of industries such as clothing and textile, and dairying. There are many ways in which the Government may subsidise or assist labour movements but the costs of one intervention will differ from those of another which achieves the same aggregate movement. Suppose the problem were conceived as one of persuading a fixed number of workers to move at the minimum cost to the Government. What instruments should the Government employ in this instance?

To illustrate the problem of least-cost intervention, a hypothetical example of a particular individual potential mover is given. This individual is assumed to have information concerning three job prospects, X_1 , X_2 , and X_3 . There is a fourth job prospect, of which he is unaware, X_4 . The individual is assumed to have a utility function $U = Y^\alpha$ which is evaluated to a second-order approximation. Hence, only the mean and variance of income from each job prospect are required. The value of his assets, the means and coefficients of variation of the income streams of each of these prospects are set out in the first three columns of Table 1. The value of α has been set at 0.8. Hence, the coefficient of relative risk aversion, $r = 1 - \alpha = 0.2$. For simplicity, it has been assumed that the individual has no preference between jobs ($\phi_i = 0$) and the value of asset income is known for certain ($a_i = \bar{a}_i$).

In this example it has been assumed that any move from the present

TABLE 1
Hypothetical Data for a Job Choice

Job prospect	a_i	\bar{Z}_i	V_{zi}	$E[U(Y_i^*)]$
X_1	\$40 000	\$80 000	0.3	11 533
X_2	\$20 000	\$80 000	0.2	9 980
X_3	\$20 000	\$60 000	0.2	8 350
(X_4)	\$20 000	\$120 000	0.2	13 057

job would involve the individual in the purchase of a house in the new location which would cost \$20 000 more than the price he would realise for his present house.

Given the known prospects of Table 1, this individual would not change his job. One can calculate the effects of various government policies on this individual's job choice. Suppose, for example, that the present value of the cost of moving from X_1 to any of the set $\{X_2, X_3, X_4\}$ was \$4000. If the Government, as part of some structural adjustment program, offered to bear 100 per cent of these removal costs, calculation shows that this subsidy would be insufficient to induce the individual to take job 2 or 3. Or, suppose that the Government undertook to bear part of the \$20 000 net cost to the individual of buying an equivalent house in the new location associated with either job 2 or 3. The Government would have to bear almost 100 per cent of this cost in order to induce the individual to take job 2 or 3. (The figure is slightly less than \$20 000 because $V_{zi}^2 w_{zi}^2 > V_{z2}^2 w_{z2}^2$.) Similarly, if the Government were to offer a lump-sum inducement to move, the same sum would be necessary.

The minimum cost of moving each individual may differ substantially among the individuals. Each may have different market opportunities outside their present jobs because of training or past education or locational factors and each may have different attitudes to risk and job and time preferences. However, there is one general theorem regarding the minimum cost for each individual. Consider the cost of the lump-sum supplement that will just persuade him to take the most attractive of the jobs $\{X_2, \dots, X_n\}$. Of course, payment of this sum must be conditional on his leaving the present job. With no uncertainty there is a basic theorem of welfare economics which states that an individual consumer always prefers a lump-sum income supplement to a subsidy on any consumer commodity whose costs to the Government are the same.⁸ This has the important corollary that such a lump-sum subsidy always exists

⁸ This proposition is better known in its converse form: an individual taxpayer would prefer to make a certain taxation payment in the form of a tax on income rather than a tax on a consumable commodity which yielded the same revenue to government (Friedman 1967, pp.57-9). The theorem rests on the price substitution effect. An income tax allows the individual to allocate his expenditure as he wishes whereas a commodity tax (subsidy) distorts consumer choice. Implicitly the theorem assumes that the work-leisure choice is not altered by taxation or grant. The only other restrictions on the utility function are that there is some substitutability among commodities and the consumer is not satiated.

The proposition applies to choice under certainty but it carries over to situations of uncertainty by weighting the utility of each income level by its probability, as in the criterion of expected utility.

for a normal utility function⁹ whereas there may not exist a subsidy on individual consumer goods, or on other items such as the costs of moving, which will raise the utility of the best alternative to that of the present job. With uncertain situations, one can extend this proposition to state that there may not be any commodity subsidy scheme which would persuade the individual to move.

While these figures are purely illustrative, it becomes clear on reflection that large grants may be required to induce some individuals to change jobs. The sums will be still larger if the individual has any occupational or locational preference for his present job, which is often the case.

Given knowledge of each individual's job choice situation, in principle it is possible to calculate the minimum cost to the Government of persuading a fixed number of workers to exit from their jobs. If this number is taken to be N , then the cost is $C(N)$. The minimum cost is

$$(13) \quad \min C(N) = \sum_{i=1}^N \min C_i = D(N)$$

where all individuals who might be persuaded to move have been arranged in increasing order of the minimum payment in the present period that it would take to persuade them to move, given their present asset and job income and attitudes to risk and job preferences. Thus, there are two stages to the cost minimisation. First, the minimum cost must be assessed for each individual. Second, these must be ordered and the payments made to those individuals who can be moved at least cost.

But there is a fundamental objection to this exercise. The objective of moving a fixed number of workers is not a sensible economic objective. Any government intervention must be justified by the presence of some divergence between private and social values of incomes involved in the job choices. Furthermore, it would be justified only if the economic costs of intervention were less than the benefit of the intervention. The case which comes closest to the objective chosen above is the presence of some benefit which is associated with the exiting of workers from the present job or industry $B(N)$. Even in this case a necessary part of the decision is the prior calculation of the minimum cost of persuading a number of workers to move, that is, the estimation of the function $D(N)$. The optimal number of workers who should be assisted would depend on these cost and benefit functions. It might be zero if the costs are too great, in spite of positive benefits. Any arbitrarily chosen number may have a negative net benefit.

It is not easy to find an economic argument which would make the benefits of government intervention some function simply of the number of workers moved. Consider, for example, the possible argument that the exportable output of the industry is too great because of the presence of a terms of trade effect. The first-best intervention in this instance is an export tax fixed at the optimum level. This is not equivalent to the movement of labour input from the industry because there is no one-to-one correspondence between the change in output and the change in the labour input. Although a reduction in labour input may reduce output and bring some benefits as the foreign price rose, it is inferior as an instrument to the tax on exports which does not discriminate between in-

⁹ That is, the consumer is not satiated.

puts and would ensure that the reduction in exports occurs in the least-cost manner.

This example serves to illustrate that the approach of the economist to problems of structural adjustment is quite different from that of government which sees an industry as a problem industry suffering from some structural adjustment problems and, because of that, warranting assistance. The economist, in contrast, asserts that there are two possible economic justifications for intervention, one of which must be established before intervention is warranted. These are commonly called the 'efficiency' and the 'equity' grounds.

As an example of a genuine efficiency argument, consider the numerical example above in which the individual lacked information of one job prospect. By contrast with paying him financial incentives, the cost to government of obtaining and making the information available to the prospective job seeker may be quite small when information concerning the number of job prospects is incomplete. As the probability distributions of the incomes from each job are subjective, false or incomplete information concerning the job prospects which are known to the worker may be a major source of job immobility. False or incomplete information will have this effect if it either systematically overstates the income prospects of the present job or understates those of alternative jobs. Both of these biases seem quite possible. Economists commonly think of lack of information as generating uncertainty in the sense of increasing the variance of period incomes and, hence, the variances of Z_1 and Y_i . However, in the context of job search, it seems plausible that lack of information may also lower the estimate of some \bar{Z}_i . In particular, it may give the individual overly pessimistic estimates of the number of periods for which the job will be available and thus truncate the income streams for these job prospects. Conversely, in an occupation or job where the demand for labour is declining, it may be that the workers either are unaware of the trend or refuse to accept that the problem is one of long-term decline rather than a short-term fluctuation due to cyclical or nonrepeatable circumstances. As one example, in counselling N.S.W. farmers who had been refused Rural Assistance Board loans, the N.S.W. Department of Agriculture visited the properties and estimated assets, liabilities and net incomes of the farms. 'It is invariably the first time they have had their financial position "sorted out" and a competent opinion given as to whether or not it is worthwhile for them to persevere with the farm from an economic point of view (Kennedy 1977, p.208).

It is still necessary to ensure that the benefits of making this information available exceed the costs. This applies equally to any other intervention. Specification of benefits is more difficult than that of the costs. The efficiency benefit of any intervention lies in the increase in the aggregate real consumption expenditure in the economy¹⁰ but the way in which a particular intervention realises this benefit may be complex and differ

¹⁰ This concept can be defined in a precise way which has the desired welfare interpretation (Chipman and Moore 1976). Adjustment assistance on equity grounds is a means of shifting the costs of adjustment from losers in the industry to taxpayers in general who roughly represent the gainers. If potential losers are not compensated it may be necessary to weight the consumption gains and losses going to individual groups instead of simply summing them as in an index of aggregate consumption.

from one form of intervention to another. For example, in the case of lack of information, the supposed benefit would lie in the belief that the social productivity of an individual in one job is less than in another job of which he is unaware. Clearly, this gain will depend on other things in addition to his own productivity in the two jobs. Thus, if there is some other person who would be displaced by his taking the job, the benefit is reduced or, conversely, if his taking the job would remove a supply bottleneck and allow the increased use of other labour, his social productivity may be greater than his direct marginal product.

The computation of first-best interventions on efficiency grounds is not easy. The computations are informationally very demanding. Unfortunately, one does not have information concerning workers' job prospects and the ways in which they are formed and the costs of changing them. Nor does one, in most instances, have any estimates of the economic benefits to the economy.

Intervention on equity grounds poses similar problems. In the first place, a decline in real incomes is not sufficient grounds for intervention. Suppose that the real incomes of some group of workers or farmers declined because of a decline in the price for the output of the industry at home or abroad. The individuals may prefer to stay in the job despite the fall in real incomes relative to those from other jobs which are available because of a strong occupational or locational preference, that is, the total (pecuniary plus nonpecuniary) income of the present job exceeds that of the alternative(s).¹¹ If the available alternative provides a level of real income which does not justify government supplementation but the present job does not provide such an income, the equity ground for supplementing the present low income is very questionable since this action would allow the individual to have both the job he prefers and a higher real income. (In the same way, the payment of unemployment benefit is made conditional on the applicant not having refused a reasonable job offer.) Even if it is desired to increase real income of some households, it may not be easy to calculate the payments required to bring the individual up to some specified level of real income. One aspect of this calculation is that many households with low annual incomes have substantial assets. As in the model above, it is the total net worth of the household, including assets, which determines expenditure possibilities.

Without knowledge of reasons why job holders do not move to prospective jobs and the costs and benefits of changing jobs, it may be difficult for government to increase labour mobility. It may achieve an increase in mobility at a higher cost than necessary and possibly a cost in excess of the benefits. When the individual is paid more than the minimum amount required to persuade him to move, such excess payments are wholly transfer payments. In other cases there are direct efficiency costs. Such costs arise in cases in which the governmental costs of achieving a given intervention are minimised but the total costs of the job change to the individual and government exceed the benefits, and in cases in which government intervenes in the wrong way; for example, labour retraining schemes may provide trainees with skills for which

¹¹ In a survey of farmers in the Shelford district of Victoria, Hawkins and Watson (1972) found that a large proportion of farm operators preferred to accept low incomes in farming rather than move to higher income jobs in cities.

there is no demand. In any of these events, the intervention represents a misallocation of government expenditures.

Further Difficulties for Government Intervention

In the previous section the assumption was made that there was an identifiable group of households subject to a single adjustment problem which justified intervention if the benefits exceeded the costs. Analysis of this problem is difficult enough but, unfortunately, it is complicated by the existence of a number of interdependencies between various causes and effects of adjustment problems.

One such possibility is that some workers may be affected simultaneously by more than one market failure. They may, for example, through no fault of their own be uninformed of other job prospects and have no access to capital to finance a move to another location and/or lack job skills required in jobs which are available. In the event of two or more simultaneous market failures, it is apparent that any scheme which sought to remedy only one may not realise any of the potential benefit. It would be necessary to evaluate jointly the (minimum) costs and the benefits of intervening in all areas and the intervention should be made if, and only if, the joint costs are less than the benefits. As an example, in some instances it may be necessary to combine job information services with retraining, or relocation with retraining.

A similar complication is the relationship between assistance to individual workers or to firms which increases input productivity in an industry or occupation on the one hand and on the other an intervention which assists potential movers of labour to leave the industry. Even if one assumes that intervention in both areas is separately justified by some demonstrable market failure, the granting of assistance in one area may change the benefits and/or costs of intervention in the other area. Thus a government-assisted increase in input productivity via such instruments as consultancy or research and development grants to firms may increase their competitiveness. This may increase their number of employees and/or the real wages of employees. Other things being equal, this will, in turn, reduce the number of exits occurring autonomously, the number warranting exist assistance, and possibly also the number warranting income assistance on equity grounds.

A third complication is the possibility of a conflict between assistance given on efficiency and on equity grounds. It was noted above that assistance to maintain or increase real incomes may reduce the incentive to move. This is particularly harmful if the worker is in an industry whose product is in oversupply or is noncompetitive with imported or domestically produced substitutes. In such cases the immobility of submarginal and less efficient workers or producers exacerbates the adjustment problems of more efficient producers and workers. This increases the demand for assistance to all producers in industry and may thereby impose substantial costs on the economy. As a general principle, *income* assistance should not be tied to continued production, as it is in granting assistance to industries in the forms of subsidies based on output or on inputs which increase the market share of domestic producers.

Failure to co-ordinate different government interventions affecting the one group of individuals which are related to these ways increases errors in government judgments.

One final aspect of structural adjustment problems can be examined with the aid of the model. A distinction is commonly made between structural adjustment assistance instruments which are 'specifically available' and those which are 'generally available' (Australian Interdepartmental Mission 1974). Some economists have a preference for 'generally available' instruments whose availability is not restricted to particular individuals or locations or by other criteria (Priorities Review Staff 1975). This preference can be derived from the above analysis of market failures. If there is some market failure, then all individuals who have been adversely affected by it should be eligible on an equal basis for the government assistance which is designed to remedy it. It is both inefficient and inequitable to restrict the eligibility among the set of individuals affected.

General availability may not be the best procedure in instances where the individual's difficulties are multiple or when the nature of the failure or reason for the individual's reluctance to move is not known by the Government. In such instances it may be less costly and/or more effective to establish a flexible program for the group of individuals which allows a choice of the form of assistance granted to different individuals. This presumably is the justification behind such multi-option programs in Australia as the Rural Adjustment Assistance Scheme and the Structural Adjustment Assistance Scheme, though we have no evidence as yet as to whether they have been effective or have achieved their effects at minimum cost. In particular, hard-core adjustment problems in secularly declining industries and problems which are concentrated in some geographic areas call for packages of measures which will be different from the measures to assist individual movers who have a single adjustment problem.

The general model of job choice behaviour proposed here could be used to analyse any actual or proposed adjustment assistance to workers.¹² Errors in the design of these schemes may increase the cost of resource movements or they may not increase resource movements or they may move resources into the wrong jobs. Evidently the model of analysis could be applied to movements of capital resources by firms¹³, although it is likely that the causes which reduce autonomous movement and the justifications for government intervention will differ from those in labour markets.

There is a considerable faith at large among both economists and the general public in Australia presently that government structural adjustment policies may ease the costs of structural adjustments and accelerate the rate of growth of real consumption. There is also a widespread view that expanded structural adjustment assistance policies may increase government ability to reform the present highly differentiated and costly structure of industry assistance. In this paper attention has been drawn

¹² The only detailed attempts to date in Australia to analyse any structural adjustments schemes have been the review by the Priorities Review Staff of some income maintenance schemes and the review of NEAT by Teicher (1978). Lloyd (1978) made general observations on the developing pattern of structural adjustment assistance in Australia. Unfortunately, the Study Group on Structural Adjustment (1979a) did not attempt a detailed analysis of existing programs, although it commented critically on some features of individual programs.

¹³ The BAE has started a project to model the adjustment process in the farm firm (Kingma and Kerridge 1977).

to a number of problems in justifying government expenditures in this area and in devising programs which yield benefits in excess of their costs.

All of these difficulties suggest strongly that governments should be cautious of intervening in the name of assisting structural change. If they are not, they will misallocate government expenditures and, probably more serious in the long run, they may disappoint public expectations concerning the efficacy of these interventions. This conclusion resembles that of Warr (1978) in his examination of the case for tariff compensation. Both his and my paper are examples of the thesis that the presence of a market failure is not sufficient to justify government intervention. Given lack of information and political pressures, it is possible that government intervention may be worse than market failure.

References

- Australian Interdepartmental Mission to Study Overseas Manpower and Industry Policies and Programmes (1974), *Report*, AGPS, Canberra.
- Chipman, J. and Moore, J. C. (1976), 'Why an increase in GNP need not imply an improvement in potential welfare', *Kyklos* 29(3), 391-418.
- Fisher, A. C. (1969), 'The cost of the draft and the cost of ending the draft', *American Economic Review* 59(3), 239-54.
- Friedman, M. (1967), *Price Theory: A Provisional Text*, Aldine, Chicago.
- Hawkins, H. S. and Watson, A. S. (eds) (1972), *Shelford: A Preliminary Report of a Social and Economic Study of a Victorian Soldier Settlement Area*, University of Melbourne.
- IAC (1976), *Report on Rural Reconstruction*, AGPS, Canberra.
- Johnson, G. L. and Quance, C. L. (eds) (1972), *The Overproduction in US Agriculture*, Johns Hopkins University Press, Baltimore.
- Kennedy, J. (1977), 'The process of farmer adjustment', *Review of Marketing and Agricultural Economics* 45(4), 205-12.
- Kingma, O. and Kerridge, K. W. (1977), 'Towards an analytical base for studying farm adjustment problems—a recursive stochastic model for the farm-firm', *Quarterly Review of Agricultural Economics* 30(2), 91-116.
- and Samuel, S. N. (1977), 'An economic perspective on structural adjustment in the rural sector', *Quarterly Review of Agricultural Economics* 30(3), 201-15.
- Kohn, M. G. and Shavell, S. (1974), 'The theory of search', *Journal of Economic Theory* 9(2), 92-123.
- Lippman, S. A. and McCall, J. J. (1976a), 'The economics of job search: a survey, part I', *Economic Inquiry* 14(2), 155-89.
- and ——— (1976b), 'The economics of job search: a survey, part II', *Economic Inquiry* 14(3), 347-68.
- Lloyd, P. J. (1978), 'International pressures and structural change in Australia: an overview', Autumn Forum of the Victorian Branch of the Economic Society of Australia and New Zealand, *Economic Papers* 59, 78-90.
- Pissarides, C. A. (1976), 'Job search and participation', *Economica* 43(169), 33-49.
- Priorities Review Staff (1975), *Assistance for Structural Adjustment Income Maintenance, etc.*, AGPS, Canberra.
- Salop, S. C. (1973), 'Systematic job search and employment', *Review of Economic Studies* 40(122), 191-201.
- Sexton, R. N. and Duffus, G. W. (1977), 'On economic welfare and farmer annuity schemes', *Quarterly Review of Agriculture Economics* 30(2), 117-32.
- Stiglitz, J. E. et al. (1977), 'Symposium on economics of information', *Review of Economic Studies* 44(138), 389-601.
- Study Group on Structural Adjustment (1979a), *Report*, AGPS, Canberra, Vols. 1 and 2.
- (1979b), Evaluation of structural adjustment schemes in Australia and overseas, Report of Working Group 6, Canberra.
- Teicher, J. (1978), 'NEAT—a little more than a acronym', *Journal of Industrial Relations* 20(11), 1-21.
- Threlfall, P. (1977), 'Government reconstruction and adjustment assistance measures in the Australian rural sector', *Quarterly Review of Agricultural Economics* 30(3), 177-200.
- Warr, P. G. (1979), 'Tariff compensation without omniscience', *Economic Record* 55(148), 20-32.