Costing the job compact
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Costing the Job Compact*

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The budgetary cost of any government program should be measured by its impact on the public sector budget balance, over its effective time frame. Typically, official cost estimates focus on the value of outlays only, and thus create a misleading impression of the opportunity cost of some policy initiatives.

This paper offers estimates of the budgetary cost of the Job Compact, using a simple labour force transition flows model of unemployment. Deadweight, displacement and effectiveness impacts are explicitly addressed. We find that, depending on the values chosen for displacement and effectiveness parameters, budgetary cost can be greater or less than outlay estimates. However, for plausible values of these parameters, the budgetary cost is calculated to be substantially lower than official estimates, and may even be negative.

I Introduction

The essence of any targeted employment plan is that otherwise unemployed workers are involved in a subsidized employment experience, to improve their future employment prospects. Two main types of schemes can be identified. The first comprises targeted employment policies from the public sector, in which public employment is tilted towards the unemployed. The second subsidizes private sector firms which offer jobs to the targeted population. In both cases, public funds are outlaid in the hope that the subsidized employment experience will alter the employment characteristics, real and/or perceived, of the target, increasing the probability of subsequent employment.

Policies of these kinds have become more prominent as long-term unemployment has increased in significance.[1] In Australia, the Job Compact recently announced in the Government's White Paper, 'Working Nation', contains both public sector targeting and wage subsidies, along with other features designed to improve a target's chances of employment following Compact involvement. Kenyon (1994) analyzes the conceptual basis and the likely overall impact of the Compact, using international and domestic estimates of the consequences of different types of labour market policies for targeted groups of the unemployed.[2]

Although the Compact has had a generally positive reception, its high perceived cost has caused

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[1]See OECD (1989).

[2]For early policy discussion of the importance of long-term unemployment to the workings of the labour market, see the special issue of the *Australian Economic Review* (May 1993) on the topic.

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concern. The actual budgetary costs (that is, the net impact on the government budget balance) will differ from the value of the subsidies and associated outlays on real services, however, because of the indirect impacts on the budget of the induced changes in labour force transition flows, and their implications for tax revenues and unemployment benefit outlays.[3] This is the more relevant cost estimate, since it more accurately reflects the true opportunity cost of the program.

At first sight, calculating budgetary cost may appear a trivial modification, involving nothing more than a correction for tax paid and benefits forgone for each targeted worker. But this ignores the interaction of the scheme with existing flows between employment and unemployment. Two complications are especially noteworthy. First, a proportion of the targeted group would have become employed without the program, but since these individuals cannot be identified, they still receive the subsidy. Second, to some extent the program jobs would have been offered to other workers if the scheme had not been implemented. Following the literature on targeted employment programs (for example, Snower, 1994), we label these deadweight and displacement, respectively. An accessible discussion of deadweight and displacement is available in Kenyon (1994).

Further, the various components of budgetary cost will impact at different points in time. Period by period cost estimates of long-term policy initiatives can therefore be very misleading.[4] This should be taken into account in estimating the budgetary cost of the program. To assess budgetary cost over time, expectations must be formed about the future employment prospects of the targeted workers. The extent to which a program is successful in changing employment prospects of the targeted group is its effectiveness. To arrive at a figure, however rough, of the program's budgetary cost, it is necessary to gain some sense of the magnitudes of deadweight and displacement, and of the effectiveness of the scheme.

This paper offers illustrative calculations of the budgetary costs of the Job Compact. To address the issues raised above, we develop a simple transition flows model of Australian unemployment, into which we incorporate the Compact. While not the primary focus of the paper, this exercise yields insights of its own. For example, it is possible for wage subsidy schemes not only to do no good, but to actually cause harm, in the sense of increasing unemployment. This can occur when subsidized but relatively unproductive targeted workers displace more productive workers, who then lose their labour skills from higher unemployment duration as a consequence of Compact-induced unemployment.

Our calculations suggest that the budgetary cost of the program could be greater or less than the value of the subsidy and related increases in government expenditure, depending on the program's effectiveness, and deadweight and displacement effects. However, for plausible estimates of the relevant parameters, the budgetary cost is likely to be quite modest, and may even be negative. This occurs because of reduced unemployment benefit payments and higher tax revenues from the employment-generating effects of the program.

We make no attempt to evaluate the Job Compact from a broad policy perspective – that is, we do not conduct a full cost-benefit analysis of the program. To do so would entail estimating the distortionary costs of raising additional taxes to pay for the Compact, and measuring these against the likely economy-wide benefits of higher output from a long-run leftward shift in the non-accelerating inflation rate of unemployment.[5] Our relatively narrow focus is on budgetary cost.

The paper proceeds as follows. Section II outlines the essential features of targeted employment schemes of the type envisaged, and briefly describes the Compact. In Section III we present our labour force flows model, while Section IV offers calculations of the Compact's budgetary cost. Section V concludes.

II The Compact in Context

The Job Compact is a somewhat special example of the family of targeted employment programs now operating in one form or another in many developed economies.[6] Programs of this

[3]Chapman (1993) provides a simple numerical example.

[4]For further examples, see Bateman and Piggott (1992) and Brown (1993). Annual cost estimates of long-term policies have been criticized, at least implicitly, in the literature on generational accounting (for example, Auerbach *et al.* 1994).

[5]Nor is any attempt made to assess the psychological and sociological impacts, although it would seem to many that these would be positive.

[6]The first example can be dated as far back as the sixteenth century when the town of Lyons, France, subsidized manufacturing employers who provided training to pauper children (Betson, 1982).

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type work by changing the real or perceived labour productivity of the targeted group. They are not aimed at changing the stock of job vacancies, but at improving the matching process between the available jobs and the supply of labour potentially able to fill them. That is, they are designed to increase the rate at which certain categories of labour flow out of unemployment and into jobs, reducing unemployment.

There is a considerable literature which tries to assess the likely impact of targeted employment programs.[7] General conclusions, however, are scarce. Few propositions concerning these schemes survive intense empirical pressure unscathed. One finding that does emerge from a number of studies is that if the wage subsidy part of the Compact is targeted closely to the longer term unemployed and is set to operate in an economy with legally enforced downward wage inflexibility, overall employment increases and the policy can benefit taxpayers.[8]

This accords with intuition. If the demand and supply of labour are at all sensitive to wages, then a wage subsidy will increase employment. If the subsidy is less than the unemployment benefit, then (depending on deadweight, displacement and effectiveness) there may be a benefit to taxpayers. More importantly, prevailing wages may be too high for firms to profit from hiring some target group in the labour force, perhaps because of labour monopoly power, or because of an effective floor resulting from unemployment benefits. If this is the case, a wage subsidy directed at the targeted group may improve economic efficiency.

Past Australian Experience

Before 1973 targeted employment programs did not exist in Australia. The first scheme, the Regional Economic Development Scheme (REDS), was introduced at that time in response to perceived geographic unemployment disparities. It entailed large outlays on community enhancement projects in the public sector for short-term job creation. The REDS scheme was controversial from its inception and was finally abandoned, after considerable debate, in 1975.

The first targeted wage subsidy scheme, the Special Youth Employment and Training Program, was introduced in 1976 in response to high youth unemployment, and was maintained until 1984. Since then, the government has implemented a range of both direct job creation and wage subsidy initiatives.[9] Jobstart, the wage subsidy program which forms the basis of the Compact, was introduced in 1989 and expanded considerably in response to the burgeoning unemployment of the recent recession (DEET, 1993a). It is more sophisticated than its predecessors in that the level and duration of the subsidy vary with unemployment duration.

The Job Compact

The Job Compact, which includes new Jobstart provisions for the longer term unemployed, is summarized in Chart 1. Unlike previous Australian employment programs the Compact offers comprehensive intervention in the provision of employment assistance once an individual has experienced continuous unemployment and has been receiving benefits for 18 months. This comprises unconditional access to Jobstart, increased availability of counselling services and case management – including from private sector job agencies – and the possibility of gaining on-the-job accredited training through a decrease in award wages paid by firms providing this. The targeted unemployed unable to benefit from these arrangements are to be provided with 'New Work Opportunities'. These are publicly funded short-term jobs organized at a community level and designed particularly to offer labour market experience to individuals in locationally disadvantaged areas. The Compact also provides that members of the targeted group unwilling to participate in the scheme be ineligible for unemployment benefits for a short period. Formal penalties for the non-active unemployed were introduced in the Active Employment Strategy in 1990, but have now been increased. Further, non-participation is more readily identified when a job offer is guaranteed.

Official estimates put the Compact cost at around $3 billion over four years, less than half the total value of outlays (of $6.5 billion) pro-

[7]See Forslund and Krueger (1994) and Kenyon (1994) for surveys of this literature. Related 'Workfare' programs are discussed by Gueron (1990), who surveys recent US experience. Besley and Coate (1995) focus on the screening and deterrent effects of workfare, in the context of a broader theoretical paper on income maintenance programs.

[8]See Burdett and Howl (1981), Johnson (1982) and Snower (1994).

[9]For description and analysis see Chapman (1985), Sloan and Wooden (1987), Stretton and Chapman (1990), Kenyon (1994) and the White Paper (1994).

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CHART 1

Main Features of Australia's New Labour Market Assistance for the Longer Term Unemployed

Administrative Base:	Expanded (unemployment duration dependent) wage subsidy program (Jobstart), supplemented by a publicly funded job guarantee, wage reductions for training, and counselling support.
Start Date:	July 1994 (new wage subsidy rates)—1995 (jobs guarantee).
Program Timing:	July 1994–June 1998.
Eligibility:	Some benefits available after 6 months continuous unemployment; the major focus of new initiatives is on those unemployed for more than 18 months.
Cost:	Announced at about $3 billion over 4 years.
Benefit Duration:	Wage subsidies run 6–12 months; training benefits run 12 months; job guarantee lasts 6–12 months.
Wage Subsidy: (to employer)	For 18 month unemployed, $200 pw for first 13 weeks, $100 pw for next 26 weeks plus $500 lump sum after 12 months continuous employment.
Training Wage Deductions:	For 18 month unemployed, a maximum of $230 pw for 13 weeks, then $115 pw for next 26 weeks.
Other Features:	Case management by public or private provider, including training and counselling support prior to employment, and job search assistance following subsidized employment.
	Unemployment benefit suspension for individuals who do not meet obligations (e.g., refusing work).

posed in the White Paper. Other major items include income support ($900 million), non Compact employment entry level training ($520 million), and industry assistance ($390 million).

III A Simple Transition Flows Model of Australian Unemployment and the Compact

Model Structure

Analysis of the Compact can be formalized by constructing a flows model of unemployment, in which targeted categories are differentiated. This approach is in the spirit of Clark and Summers (1979). The model presented is the simplest compatible with capturing the salient features of the Compact's operation, and is intended to be stylized, not definitive. For instance, it abstracts completely from the business cycle: the model has a steady state solution: eventually the number of unemployed in each category is constant through time. Further, we ignore flows into and out of the labour force itself: the workers represented in the model are 'permanently attached' to the labour force, an approach justified in part by eligibility for the Compact being contingent on active on-going search by the unemployed. But while the model is simple it nevertheless provides a number of insights into the effects of the Compact on transitional flows and consequently budgetary cost.

The No-Compact Model

It is convenient to begin by presenting the model without the Compact. We distinguish four possible labour force states: unemployment entry (E), short-term unemployed (S), medium-term unemployed (M), and longer term unemployed (L). Chart 2 summarizes its main features; it is represented diagrammatically in Figure 1.

Workers who become unemployed at the beginning of time period t enter first into S. At $t+1$ they are either re-employed, with probability p^s (the exit probability from S), or recategorized as M (with probability $(1-p^s)$). Similarly, at $t+2$, they face an exit probability of p^m, or are re-categorized as L. Thereafter, they face a period-by-period exit probability of p^l, otherwise remaining in L.

We assume that $p^s > p^m > p^l$. That is, the longer workers are unemployed, the less likely they are to be offered a job in the next period. This is consistent with the data on exit probabilities reported in the next section. Indeed, it is the low perceived value of p^l which has provided much of the political motivation for the program. We note in passing that the lower the exit probability of the targeted group, the smaller is the deadweight effect. This may help to explain the proliferation of programs of this type which are targeted at those with high unemployment duration.

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CHART 2

Model Representation of Unemployment Duration and Unemployment Assistance Impacts on Employment Status

Real Time Unit:	9 months
Short-Term Unemployment (S):	1 period (9 months).
Medium-Term Unemployment (M):	2 periods (18 months).
Longer Term Unemployment (L):	More than 2 periods (> 18 months).
Compact Policy Impact:	Impacts represented by reclassifying entrants to L as employed for one period, with some chance of staying employed.

Formally, the values of S, M, and L at time t are given by:

$$S_t = E_t \tag{1}$$
$$M_t = (1 - p^s)S_{t-1} \tag{2}$$
$$L_t = (1 - p^l)L_{t-1} + (1 - p^m)M_{t-1} \tag{3}$$

where E_t is the number entering unemployment at the beginning of t.

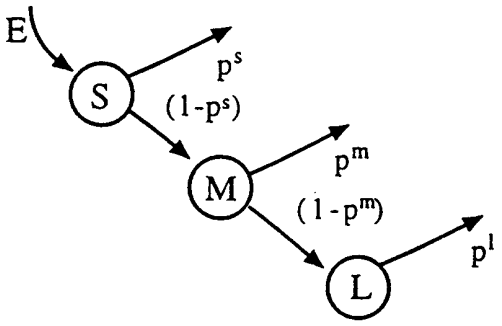
The steady state values of S, M, and L, assuming $E_t = E^*$ for all t, are given by:

$$\left.\begin{aligned} S^* &= E^* \\ M^* &= (1 - p^s)E^* \\ L^* &= \frac{(1 - p^m)(1 - p^s)}{p^l}E^* \end{aligned}\right\} \tag{4}$$

As noted, in this formulation there are no transitional flows into or out of the labour force. It follows that in the numerical simulations reported later, the values of S, M, and L are lower than the aggregates reported from unemployment statistics.

FIGURE 1

The No-Compact Transition Flows Model



Incorporating the Compact in the Model

The key device that we use to represent the Compact is the reclassification of Compact participants into different labour force states.[10]

Figure 2 depicts the pattern of transitional flows with the Compact. While the Compact is in place, steady-state pre-Compact flows are disturbed through the transfer of entrants to longer term unemployment at t into Compact employment (C_t), which is assumed to last for one period. For some of these the program is effective—they either remain in (unsubsidized) employment following their Compact participation, or flow clockwise to join new entrants to unemployment in S. The interpretation is that members of these groups have acquired sufficient skills from the Compact experience to have a higher than pre-Compact probability of exiting into employment after the end of the Compact experience.

On the other hand, those for whom the Compact experience has been ineffective become unemployed again, with their pre-Compact exit probability. They flow anticlockwise: after two further periods of unemployment, they are eligible to join the Compact once more. The degree of effectiveness of the program is determined in the model by the value assigned to the effectiveness index, e.

Displacement is modelled by a further regrouping. All the displaced at $t+1$ are assumed to be in S at t, and therefore the flow out of S_t into employment at $t+1$, $p^s S_t$, is reduced by an amount denoted by D_{t+1}. These workers flow into M_{t+1} instead. The degree of displacement is determined in the model by the value assigned to the displacement index, d.

[10]This is in the spirit of the useful analysis of the effect of long-term unemployment on job mismatch offered by Fahrer and Pease (1993).

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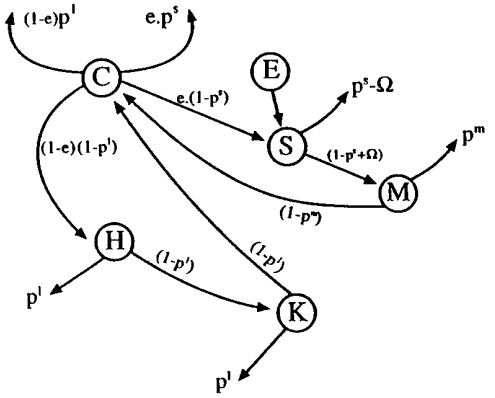
FIGURE 2

The Transition Flows Model with the Compact



Ω is the change in the probability of exit to employment generated by displacement.
Arrows without decal targets represent channels of exit into employment.

Formally, to include the Compact, equations 1–3 must now be modified as follows:

$$S_t = E_t + (1-p^s)eC_{t-1} \tag{5}$$

$$M_t = (1 - p^s)S_{t-1} + D_t \tag{6}$$

$$C_t = (1-p^l)L_{t-1} + (1-p^m)M_{t-1} + K_{t-1} \tag{7}$$

where D is the number of displaced, and K the number of workers who have previously experienced Compact employment, found it ineffective, have since been unemployed, and who are now eligible for another spell of Compact employment. With the Compact in operation, there are by definition no longer term unemployed, so the first term on the right-hand side of equation 7 is equal to zero except for the first period of Compact implementation. C represents entrants to Compact employment.

Equation 5 augments S_t by the number of workers with Compact jobs at $t-1$ for whom the Compact was effective, but who were not immediately employed at the end of the Compact period. Equation 6 reflects the flow of the short-term unemployed who did not start jobs at t, including those who are displaced by the Compact jobs at t. Equation 7 augments the flow of entrants to Compact jobs, C_t, by those becoming eligible for compact employment once again after spending an ineffective period in a Compact job at $t-3$, K_{t-1}.

As noted, for those who do not experience the Compact as effective, and who do not find employment, there is a two-period ineligibility before the Compact can be rejoined. These workers experience unchanged exit probabilities over this time. For each period, the numbers at t are given by

$$H_t = (1 - e)(1 - p^l)C_{t-1} \tag{8}$$

$$K_t = (1 - p^l)H_{t-1} \tag{9}$$

for the first and second periods respectively.

Finally, the number of workers displaced by the Compact is given by the displacement proportion of longer term entrants receiving Compact jobs who would not otherwise have been employed at t:

$$D_t = d\{C_t - p^l C_{t-1}\} \tag{10}$$

It should be noted in equation 10 that those potentially longer term unemployed at $t-1$ who would have received a job at t, $p^l C_{t-1}$, are subtracted from the Compact job total. These represent the deadweight effect of the policy.

Technically, the system of equations 5–10 can be summarized as a third-order difference equation:[11]

$$\begin{aligned} C_t = {} & (1-p^m)(1-p^s)E_{t-2} + (1-p^m)d.C_{t-1} \\ & - (1-p^m)p^l d.C_{t-2} + \left[(1-p^m)(1-p^s)^2 e \right. \\ & \left. + (1-p^l)^2(1-e)\right]C_{t-3} \end{aligned} \tag{11}$$

In this system, E_{t-2} is an exogenous variable, and the values of C_{-1}, C_{-2} and C_{-3} are given. Simulation indicates that for the values of p^s, p^m and p^l that we use, and for d, e varying from 0 to 1, the system is stable. The steady-state solution in the presence of the Compact is given by

$$\left.\begin{aligned} S^* &= E^* + \lambda(1-p^s)eE^* \\ M^* &= (1-p^s)E^* + \lambda\{(1-p^s)^2 e + d(1-p^l)\}E^* \\ C^* &= \lambda E^* \\ H^* &= \lambda(1-e)(1-p^l)E^* \\ K^* &= \lambda(1-e)(1-p^l)^2 E^* \\ D^* &= \lambda d(1-p^l)E^* \end{aligned}\right\} \tag{12}$$

where

$$\lambda = \frac{(1-p^m)(1-p^s)}{1-(1-p^m)(1-p^s)^2 e-(1-p^m)(1-p^l)d-(1-p^l)^2(1-e)} \tag{13}$$

[11]This is obtained by substituting 8 into 9, 9 into 7, 10 into 6, 5 into 6, and 6 into 7.

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Model Parameterization

The model is a stylized representation of labour force flows designed to readily accommodate the most important features of the Compact. In line with this approach, we choose parameter values which match the data as closely as possible, while meeting the model's consistency requirements. We do not attempt any econometric estimation.

We first explain our choice of E, S, M, and L, and their associated exit probabilities, in the absence of the Compact. We then consider the values chosen for the Compact parameters for effectiveness and displacement, *e* and *d*.

The No-Compact Model

Consider a steady state in the absence of the Compact. If the values of S, M, and L are to remain constant between periods, inflows into each of these categories must be equal to outflows. That is, $(1-p^s)S^*=M^*$, and $(1-p^m)M^*=p^lL^*$. The proportions of unemployed in S, M and L must therefore be consistent with the values chosen for the exit probabilities:

$$M/S=(1-p^s) \quad (14)$$

and

$$L/M=(1-p^m)/p^l \quad (15)$$

The actual magnitudes of S, M and L will then be given by E, the number of workers entering unemployment each period, since from equation 1, $S = E$.

The totals in all unemployment duration categories refer only to those who are 'permanently attached', defined as not leaving the labour force in the ensuing nine-month period. This is consistent with the model. These data come from published Department of Social Security sources.[12]

New entrants (E)

E was estimated from averages[13] of those observed in the shortest unemployment duration category.[14] Some adjustment[15] was made for those who entered and left unemployment in a very short period and who would therefore have been unobserved in the available surveys. These adjustments yielded a range of about 420 000 to 684 000 for E and S, with a midpoint thus of around 550 000.

Medium term unemployed (M) and longer term unemployed (L)

For E of 550 000 and given the exit probabilities discussed below, model consistency (see equations 14 and 15) requires M and L to be set respectively at 138 000 and 230 000. As a simple check on whether or not these are sensible values we examined different time periods[16] and categories of the available DSS data, which suggested orders of magnitude of around 145 000 and 235 000.[17] Thus the numbers seem sensible.

Exit Probabilities (p^s, p^m and p^l)

These parameters relate to the probabilities that individuals exit to jobs in the next nine months given that they have been unemployed less than nine months, between nine and 18 months, and greater than 18 months, respectively. Panel data following the same individuals over time would be ideal for this part of the exercise, but these are generally not available.[18] However, very useful unemployment flows data were provided to us by the Australian Bureau of Statistics.[19]

[12]The DSS data are more suitable for this exercise than is the ABS survey information, since the former are more likely to include only those who are unlikely to leave the labour force. That is, to be included in the DSS numbers individuals need to be in receipt of social security, meaning that they would be unlikely to leave the labour force even if they believed that job prospects were poor, since this would mean loss of benefits.

[13]Quarterly averages were used for two different annual periods, May 1988 to May 1989, and August 1992 to August 1993.

[14]Which was 'less than 7 weeks unemployed'.

[15]This entailed applying the same exit probabilities for those entering and leaving before 7 weeks elapsed as were estimated for those who were unemployed for less than 7 weeks but who did not enter the '7 weeks to 3 months' unemployment duration category.

[16]For both August 1992 and August 1993.

[17]This was quite a complicated procedure because the time period categories available in the data typically did not match the nine-month breakdown required, and were instead in six-month durations up to two years. To convert the data we used estimates of exit probabilities consistent with declines in the levels between these categories.

[18]Chapman and Smith (1993) used the panel from the very young sample of the Australian Longitudinal Survey, and their estimates were used as a rough check on the orders of magnitude derived from the ABS information.

[19]Individuals were followed in each of two six-month periods, November 1986 to May 1987, and November 1988 to May 1989. We used an average of the two periods.

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Two matters of interpretation had to be addressed, both of which required adjustment of the information. The first is that some of the unemployed are not measured in the data.[20] As well, the time period available was six, not nine, months. We tried to correct for this in deriving p^s and p^m.[21] The observed six-monthly exit probabilities to jobs for p^m and p^l respectively were around 56–58 and 38–44 per cent. We estimated the corresponding nine-month ranges to be 76–78 and 56–66 per cent. The ABS flows data revealed an exit probability of around 32 per cent for p^l. However, the Employment Opportunities Committee (1993) offered a range for long-term unemployment exit probabilities of between 18 and 31 per cent.[22] For those unemployed longer than two years, however, the figure fell. The value of p^l used in the model is the midpoint of this range.

Table 1 summarizes the value ranges for each parameter, and reports the value used in the model. Model parameter values satisfy equations 14 and 15.

[20]As far as p^s was concerned, some of those who experience short-term unemployment will not have been observed before they leave the less than three months category. We therefore assume that half of these who enter unemployment exit before being observed in the zero to three-months category, which is roughly consistent with DSS data which suggest that at least 40 per cent of those unemployed exit to jobs before the third month (see, for example, Table 14.1 in DSS Quarterly Survey of Unemployment Benefit Recipients, August 1989).

[21]Because of data limitations, we assume that the exit probabilities p^s and p^m were 50 per cent higher than they were for the observed respective six- and twelve-month periods available from the DSS, which imposes on the data a linear exit probability over the ensuing three months. Because exit probabilities fall with duration this would lead to over-estimations, so we used slightly lower figures than those calculated. Similarly, our use of different time periods with respect to the ABS data is not ideal, but because the periods tend to reflect an average over the cycle there are no empirical reasons to be concerned about their use in a steady-state model.

[22]Again, these data are not ideal because the appropriate unemployment duration sample for our model is 18, not 12 months. Other labour market program data covering those unemployed for more than 24 months confirm that these probabilities are probably too high when applied to the whole group.

TABLE 1
Values of Model Parameters

	Value suggested by data	Value used in model
E	420 000–680 000	552 000
p^s	.78	.75
p^m	.56 to .66	.60
p^l	.18 to .32	.24
S	420 000–680 000	552 000
M	145 000	138 000
L	235 000	230 000

Compact Parameters

The Job Compact is represented in the model by recategorizing entrants to longer term unemployment into Compact employment for one period. These workers are then rechannelled through a somewhat elaborated model structure. To the extent that the Compact is effective, Compact workers experience increased probabilities of exit into unsubsidized employment. The two types of programs, wage subsidy and job creation, apparently have quite different consequences on exit probabilities into employment, and this becomes clear in ensuing discussion. Impacts on pre-existing flows are captured through a displacement effect.

The resulting pattern of rechannelling is determined in the model by introducing two policy parameters: an effectiveness index, e, and a displacement index, d. We use literature estimates of each for the two types of program identified above, and use weighted averages in model calculations. Their impact on transition flows can be seen by inspecting equations 5, 8 and 10.

The effectiveness index (e)

Compact effectiveness will depend partly on the individual characteristics of the longer term unemployed. Analysts distinguish between two observationally equivalent groups: those who have suffered skill atrophy from a long period of unemployment, and those who remain unemployed for long periods because they were low quality workers in the first place. It might be expected that programs such as the Compact will be more effective for the first of these groups. The relative size of the two groups among the longer term unemployed remains an open question,

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however, and may vary significantly over time.

In the model, e is the proportion of the longer term unemployed who have their exit probabilities into employment increased from p^i to p^s in the period after the Compact experience. No available data match this definition of effectiveness. There is, however, information on the proportion of those in targeted employment programs who are in jobs several months after assistance ends, which we will denote by e^o.

In the model, e^o is determined through two channels. A proportion p^s of the effective group and a proportion p^i of the ineffective group will remain in employment, following Compact exposure. That is,

$$e^o = e.p^s+(1-e)p^i$$

or, rearranging,

$$e = (e^o-p^i)/(p^s-p^i).$$

Perhaps the best guide to choosing e is research on Jobstart noted in *Restoring Full Employment* (1993) which suggested that 50–60 per cent of the targeted group were still in employment three months after the completion of the subsidy. Of those originally unemployed for over 24 months, the figure was 51 per cent. Other analyses of wage subsidy schemes come to very similar conclusions,[23] with the most recent analysis of Jobstart suggesting the figure is about the same 6–8 months after the subsidy is withdrawn (DEET 1995).

All else equal, the Job Compact's focus on case management might be expected to improve effectiveness, especially because job counselling is available at the end of the Compact employment experience as well as at the beginning. To our knowledge there are no Australian data on the effect of counselling and case management on exit probabilities. However, a recent experiment in Sweden (Bjorklund, 1993) found that intense case management increased exit probabilities by about ten percentage points. As well, those involved in the training subsidy part of the Compact could expect somewhat enhanced employment probabilities, although the payoff, while it may be worthwhile, is likely to be modest. Forslund and Krueger (1994), and Kenyon (1994) provide overviews of the relevant literature, with the latter finding that the best results from both case management and training programs have been achieved when the schemes have been targeted to the most disadvantaged.

On the other hand, effectiveness is probably inversely related to the wage subsidy rate. The higher the subsidy, the less productive workers need to be to make their employment worthwhile to a firm. While generous subsidies will increase the number of Compact jobs offered by firms, effectiveness is likely to be reduced.

These various considerations have led us to choose a range of values for e, as it relates to the wage subsidy component of the Compact, of between 0.41 and 0.7. These values correspond to a range of .45 to .6 for e^o, values within the range of estimates available from Jobstart and other studies. The Compact offers training and case management which are likely to increase these values. On the other hand, they probably apply to the best of the potential wage subsidy group since they were selected by employers for the scheme. Their use will likely exaggerate the efficacy of the program when applied to much larger groups, or when run for a long period of time.

Effectiveness is much less researched under public sector job creation policies. Perhaps the best Australian study is a Bureau of Labour Market Research evaluation of the Commonwealth Employment Program (CEP), a large public sector job creation project targeted on those with high unemployment duration and other labour market disadvantages in 1984–85. The data suggest that over half the program participants surveyed on average nine months after the completion of their placement were in employment (Stretton and Chapman, 1990). This converts into a measure of e^o of around 0.6. This figure seems high, perhaps because the labour market in 1984–85 was expanding rapidly. Allowing for the potential for increased counselling, intensive case management and accredited training to affect exit probabilities of those involved in New Work Opportunities, however, the number may not greatly exaggerate Compact effectiveness. We have conservatively set e^o as varying between 0.3 and 0.4; e, for New Work Opportunities, would then lie between 0.118 and 0.314.

The displacement index (d)

Displacement, as incorporated in the model, means the proportion of Compact jobs which

[23]Rao and Jones (1986) examined SYETP (the initial Australian wage subsidy scheme) and found about 75 per cent were in employment three months after the subsidy finished, compared to 20 per cent of the control group. See also Stretton and Chapman (1990).

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would have gone to non-targeted individuals in the absence of the policy change. As noted, those displaced are assumed to come exclusively from the ranks of the short-term unemployed, who then have their exit probabilities decreased from p^s to p^m (see equation 10).

As with effectiveness, quantitative research on the extent of displacement is scarce. The OECD (1989) reports that studies from a number of countries indicate that about 20 per cent of positions funded by wage subsidies represent net job creation (Stretton and Chapman, 1990), and we have used this as our best guess figure.[24] We have therefore chosen a range for displacement for the wage subsidy component of the Compact of 0.75 to .90. This is consistent with estimates reported in Kenyon (1994).

Public sector job creation programs are probably associated with a lower displacement effect. There is an extensive literature on this topic, focused especially on the US and Sweden, beginning with Johnson (1977). Findings are inconclusive. In a recent study on Swedish labour market programs, for example, Forslund and Krueger (1994) found public sector job creation displacement of between 39 per cent and 69 per cent for construction workers, but were unable to draw any firm conclusions concerning health and welfare workers. They also provide a brief but illuminating discussion of this literature. In an earlier study, Johnson (1978) estimated that the Comprehensive Employment and Training Act (CETA), a public sector job creation scheme in the US, resulted in displacement of less than 0.1, assuming no fiscal substitution. We have settled on a range of displacement for New Work Opportunities of 0.1 to 0.3, with a best guess of 0.2.

Table 2 summarizes the range of the estimates for d and e used in the simulations.

Given the relative costs ascribed to Jobstart and New Work Opportunities it is possible to determine very approximately the assumed distribution of Compact jobs between these two parts of the program through the use of White Paper total outlays data. Using this as a guide, we have assumed that 75 per cent of the longer term unemployed will be employed under the Jobstart program. These weights allow us to derive the composite values of d and e used in the simulations reported in Section IV.

[24]In other research, BLMR (1984) and DEET (1990) evaluations of SYETP and Jobstart respectively found orders to magnitude of displacement to be similar, about 80 to 85 per cent.

TABLE 2

Effectiveness and Displacement Parameters

	Jobstart			New Work Opportunities		
	e^o	e	d	e^o	e	d
Maximum	.6	.7	.9	.4	.314	.3
Minimum	.45	.41	.75	.3	.118	.1

TABLE 3

Settings for d and e under alternative Job Compact Scenarios

Scenario	Jobstart			New Work Opportunities		
	d	e	(e^o)	d	e	(e^o)
Optimistic	.75	.706	(.6)	.1	.314	(.4)
Neutral	.8	.608	(.55)	.2	.216	(.35)
Conservative	.85	.510	(.5)	.25	.167	(.325)
Pessimistic	.9	.412	(.45)	.3	.118	(.3)

IV The Cost of the Compact

To explore the budgetary cost and labour force flow implications of the Compact under alternative assumptions, we have developed four scenarios in which the assumed values for d and e vary. Table 3 reports the combinations of values which we use for the four alternatives, labelled 'optimistic', 'neutral', 'conservative' and 'pessimistic'. We are most inclined to the neutral specification, but the conservative version is also plausible. The optimistic and pessimistic specifications are designed to provide reasonable bounds to our results.

In each case, the values of d and e actually used in the simulations are weighted averages of the Jobstart and New Work Opportunities estimates for each scenario, with the 75 per cent Jobstart takeup assumption giving the weights. Unless otherwise specified, the Compact policy is implemented for six periods, or 4.5 years in real time, and is then removed. This is consistent with the time frame assumed in official cost estimates.

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Per Capita Cost, Tax and Benefit Estimates

There are five additional pieces of information necessary to cost our stylized version of the Compact. They are the assumed direct outlays per person for Jobstart and New Work Opportunities, the associated tax revenue from each, and the nine-month associated savings on unemployment benefit payouts.

Jobstart outlays are assumed to be the cost of the subsidy, of $5200 for a nine-month period, plus $1000 for case management. The case management figure comes from data provided in DEET (1993b), which reported that annual placements per Swedish staff member involved in case management in its public sector employment service were 39 on average in 1991-92. Our figure further assumes that the wage and on-costs per worker are about $40 000 annually per staff member.

To calculate tax revenue for Jobstart Compact individuals we assumed an average annual wage of $20 000, which is about what entry-level awards pay. Over nine months, this delivers tax revenue of $2190.

For New Work Opportunity positions data available from Employment Opportunities Committee (1993) suggests that if employment runs for nine months (rather than the minimum six months assumed for the actual Compact), the costs would be around $15 200 in total, including a 'broker fee' and project payouts (essentially materials costs) of $3500; to this we added $1000 for case management, giving a total of $16 200. Of this the direct wage cost is $11 700, or an average of $300 for 39 weeks.[25] This implies tax revenue of $1845 for nine months. Calculations made from DSS data on unemployment beneficiaries suggest that the average weekly unemployment benefit is $164. For a nine-month period the total outlay per person is $6396.

Throughout we assume that inflation is zero, that real wage growth is zero, and that the tax and social security regime is constant, except for Compact implementation.

Cost Estimates

The budgetary cost of the Compact depends on the employment effects of the Compact, since it is this that determines the potential saving in outlays and increases in tax revenue. Increases in employment come from improvements in job matching as a result of the reskilling of the longer term unemployed, but are reduced by those who experience displacement as a result of the program. The relative size of the different parameters is thus fundamental to our assessment of the net effect on the budget.

Table 4 reports details of employment creation and the direct and indirect costs of the Compact under the conservative scenario. Initially, as reported in Column 1, employment is significantly improved, with some 69 000 new positions in the first period, resulting from 252 000 Compact jobs offered. The difference is due to displacement. This improvement is maintained throughout the period of implementation of the Compact, but falls off sharply once the Compact is terminated.

As the labour market re-adjusts to a no-Compact policy environment, unemployment is higher than it would have been for the corresponding periods in the absence of the Compact. These negative employment creation values are small when compared with the positive impact over the Compact period, but nevertheless indicate that the long-term effects of Compact type policies are not straightforward. Caution in their design and implementation is necessary if negative long-term effects are to be avoided.

Columns 2 to 4 report the values of gross compact cost, new income tax collections, and unemployment benefits resulting from the Compact's implementation.[26] The budgetary cost is given by the gross Compact cost, less the income tax, less the unemployment benefit that would otherwise be paid. These values cannot be immediately derived from the data reported, because aggregate gross Compact cost depends on the number of Compact jobs, while income tax and unemployment benefit savings depend on the job creation impacts.

A further complication in the calculation of budgetary cost relates to public sector job displacement. New Work Opportunities are generated in the public sector, and workers displaced as a consequence of this part of the program will result in reduced outlays. This adjustment is reported in column 5.[27]

[25]This is a bit lower than might have been expected because of two factors: the assumption of the use of the training wage, and average hours worked being set at 30 per week.

[26]For simplicity, we ignore all taxes other than the personal income tax.

[27]We are grateful to John Quiggin for pointing out this effect.

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TABLE 4
'Conservative' Scenario Employment Creation and Cost Results

Period	Employment Creation ('000)	Gross Compact Cost	Income Tax	Unemployment Benefit	Public Sector Displacement Adjustment	Net Budgetary Cost
			($ million 1994)			
1	69 000	1944	407	441	29	1066
2	59 885	1011	353	383	8	266
3	51 226	619	302	328	6	−17
4	56 931	1239	336	364	17	522
5	55 982	1119	330	358	12	418
6	52 362	909	309	335	10	255
7	15 353	0	91	98	−3	−185
8	1 680	0	10	11	0	−21
9	−6 280	0	−37	−40	0	77
10	−4 773	0	−28	−31	0	59
11	−3 627	0	−21	−23	0	45
12	−2 757	0	−16	−18	0	34

Column 6 reports the overall net budgetary cost. After the first period, cost declines markedly, because there are fewer unemployed eligible for Compact support in period 2 than at the start of the Compact's operation; the pre-existing stock of longer term unemployed has been removed. In period 4, the cost climbs once more, because period 1 Compact participants who did not continue in employment, and did not become employed in periods 2 or 3, are eligible for a Compact job again. After this period, costs gradually decline, reflecting first the impact of the Compact on employment, and then the termination of the policy.

Table 5 reports the net present values of budgetary costs under the four scenarios set out in Table 3. The discount rate is assumed to be 5 per cent. NPVs range from −$2.9 billion to $5.3 billion. However, we emphasize the neutral and conservative results. The neutral result is negative, indicating a saving to the fisc in present value terms, while the conservative estimate, at $2.1 billion, is only two thirds of our estimated 'official' cost of the Compact reported in Section 2.[28]

Often, official estimates ignore income tax and public sector displacement adjustment effects, allowing only for the gross cost and saving from reduced unemployment benefits. Following this procedure, the NPV implied by the model for the conservative scenario is $3.8 billion, nearly twice our true opportunity cost estimate.

Chart 3 depicts the time path of employment and budgetary cost effects of a six-period Compact under each of the scenarios we use. It is clear that the values of both series are sensitive to the values of d and e. Both costs and employment fall sharply when the Compact is terminated, but in the two more optimistic cases employment creation remains positive after this point. A natural interpretation of this result is that the Compact has its desired impact—the labour market is working more effectively as a result of the reskilling of Compact participants.

The conservative and pessimistic timepaths, however, suggest the opposite. The interpretation of model results under these scenarios is that the productive workers who are displaced lose their marketability as a result of longer unemployment duration, while those Compact participants who replace them are not able to gain enough marketability to balance the negative displaced worker impact.

To keep results tractable we have not varied, across the scenarios identified in Table 3, the proportion of the longer term unemployed who become employed under the Jobstart program. This is set at .75 throughout. When it is set to 0.5

[28]The 'official' cost estimate of $3 billion reported above is not converted to present value. Such a conversion yields an 'official' cost of $2.8 billion.

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TABLE 5
Net Budgetary Cost Estimates under Alternative Job Compact Scenarios (A$ million 1994)

	Scenario			
	Optimistic	Neutral	Conservative	Pessimistic
Net Present Value (r = 0.05)	−2894	−342	2071	5315

instead, the net budgetary cost increases to $2.9 billion for the conservative scenario, and the post-Compact employment impact becomes more negative. These changes reflect both differences in gross Compact cost for Jobstart and New Work Opportunities, and differences in the average values of d and e used in the simulations.

All four time paths converge over time to pre-Compact values. In a steady state, as equations 4 show, the flow volumes are fully determined by the values of E and the exit probabilities, which are held constant in our model. Similarly, the model will converge to a steady state, given by equations 12, in the presence of a continuing Compact policy. For the conservative scenario, after about 20 periods the new steady state is approached, with a continuing positive employment impact of 52 000 jobs, at a net per period budgetary cost of $413 million. This implies an annual budgetary cost of about $10 000 for each net Compact job.

We have serious reservations about the interpretation of such an experiment with our model, however. While the effectiveness and displacement values we use are plausible for short-run Compact type policy implementation, in the long run effectiveness is likely to diminish, and displacement increase. The Compact progressively reskills the longer term unemployed, and they progressively exit into employment. Over time, the probability that the remaining Compact population in any period will be reskilled will decline, and effectiveness will be reduced. Displacement will increase because, over time, the potential for employment creation resulting from private sector jobs with a given subsidy, or new public sector programs, will be exhausted. It therefore seems likely that continued operation in the long run will significantly reduce the efficacy of the Compact in improving labour market efficiency.

The Importance of Effectiveness

Model simulations, both those reported here and otherwise, suggest that model results may be especially sensitive to the extent of effectiveness. In Table 6 we report budgetary cost results for a range of values for Jobstart effectiveness, with all other parameters set to be consistent with the neutral scenario. Varying e^o from .45 to .6 changes the estimated net budgetary cost from $2.6 billion to −$1.7 billion. We also report the NPV of gross outlays less unemployment benefits; these are significantly higher, ranging from $4.1 billion to $1.6 billion.

These findings strongly suggest that measures designed to improve effectiveness may well be worthwhile. Some policy features directed towards enhancing effectiveness, such as case management and training subsidies, exist already in the Compact, and these and other innovations may be critical to its success.

V Concluding Remarks

In this paper we have derived a stylized budgetary cost of the Job Compact, and have developed a methodology for the costing of similar programs. Our procedures recognize explicitly the interaction of these programs with forces in the existing labour market, and we identify deadweight, displacement and effectiveness as important phenomena which render inadequate simple accounting approaches to costing. We have incorporated these various effects into our cost estimates by developing a simple dynamic flows model of the Australian labour market.

A number of themes emerge from our results. First, the real opportunity cost of Compact type programs are very sensitive to assumptions about displacement and effectiveness, and it is possible to generate a wide range of cost estimates. On the

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CHART 3

Time Paths of Employment Creation and Budgetary Costs under Alternative Job Compact Scenarios

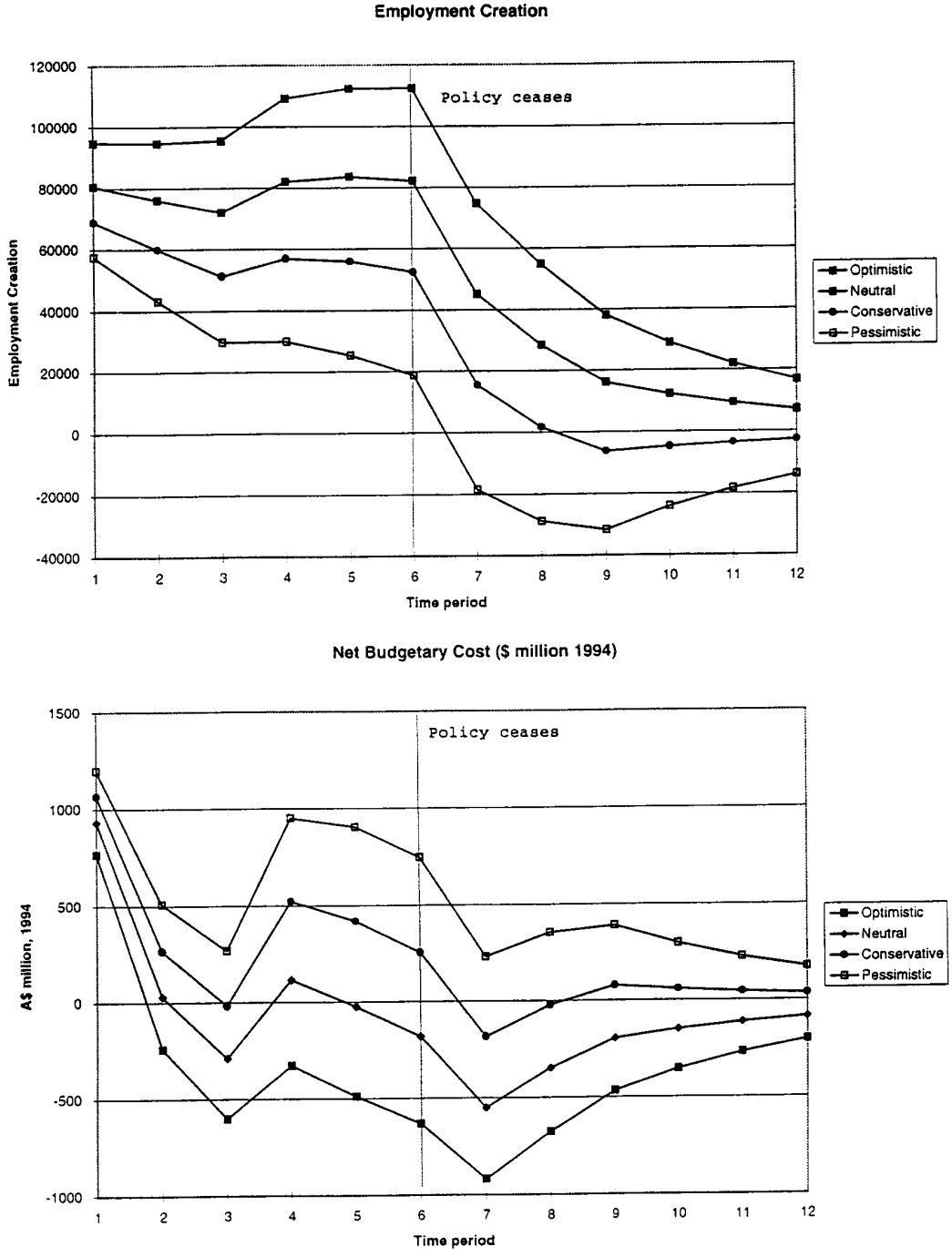

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TABLE 6
Jobstart Effectiveness Sensitivity (A$ million 1994)*

e^o	e	Net Budgetary Cost+	Compact Cost+ measured as Gross Outlays less Unemployed Benefits
.6	.706	−1710	1629
.55	.608	−342	2405
.5	.510	1093	3215
.45	.412	2595	4060

* Except for Jobstart effectiveness, parameters are set to 'Neutral' scenario values.
+ Net present values, $r = 0.05$

whole, however, our simulations indicate that for plausible values of displacement and program effectiveness, the opportunity cost of the program is modest, and may even be negative. That is, the present value of projected fiscal savings can exceed the present value of program outlays.

Second, if the Compact is thought of as a policy which will operate for a given time, post Compact impacts on employment can be negative, in the sense that unemployment will be higher through some post Compact period than it would have been had no such policy been implemented. This can occur for plausible ranges of Compact parameter values, and suggests the need for particular attention to be paid to the design and implementation of Compact-type policies.

Third, if the Compact is thought of as being in place permanently, then plausible values of Compact parameters yield a reduction in unemployment of about 50 000, at an annual cost of about $10 000 for each job. However, it is likely that the program will become less effective over time, as the worst labour market inefficiencies are corrected, and after this the cost per job is likely to be significantly higher.

Finally, costs and employment creation effects are particularly sensitive to the degree of effectiveness assumed for the program. This was illustrated by reference to cost estimate variation. Increasing observed program effectiveness from 0.45 to 0.6 yields budgetary cost estimates ranging from $4.1 billion to negative $1.7 billion. This strongly suggests that measures designed to improve program effectiveness will prove worthwhile: it is, however, less clear what these measures might be.

NOTATION

S_t No. of short-term unemployed at time t
M_t No. of medium-term unemployed at time t
L_t No. long-term unemployed at time t
p^s Probability of exit into employment by the short-term unemployed
p^m Probability of exit into employment by the medium-term unemployed
p^l Probability of exit into employment by the long-term unemployed
E_t Entries to short-term unemployment at time t
d Displacement index
e Effectiveness index
C_t Number entering long-term unemployment at time t
D_t Number of workers displaced by Compact jobs offered at time t
H_t Number of workers with Compact jobs at $t-1$ for whom the Compact was ineffective, and who are unemployed at t
K_t Number of workers with Compact jobs at $t-2$ for whom the Compact was ineffective, and who are unemployed at t

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