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Incapacity benefits versus benefit transfers

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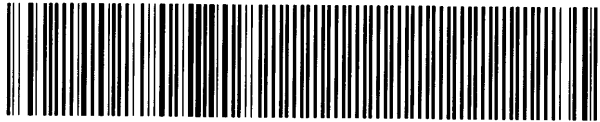
**INCAPACITY BENEFITS VERSUS
BENEFIT TRANSFERS**

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ABSTRACT

Incapacity Benefits versus Benefit Transfers*

The paper explores the employment implications of allowing people the opportunity of using a portion of their incapacity benefits to provide employment vouchers for employers that hire them. The analysis indicates that such a policy could increase employment, raise the incomes of incapacity benefit recipients, and reduce employers' labour costs.

JEL Classification: J23, J24, J31, J32, J64

Keywords: incapacity benefits, employment policy, labour-force participation

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Submitted 21 May 1996

NON-TECHNICAL SUMMARY

This paper explores a new policy approach to the problem of the rising number of incapacity benefit recipients. The approach is to give people on incapacity benefits the option to use a portion of their benefits to provide employment vouchers for employers that hire them. This policy is an extension of the Benefit Transfer Programme (BTP) to incapacity recipients.

This policy has an obvious strength *vis-à-vis* the BTP applied to unemployed people. Whereas the effectiveness of employment vouchers to the unemployed is limited by 'deadweight' (vouchers granted to people who would have found jobs anyway), recipients of incapacity benefits characteristically are not part of the labour-force and consequently would not receive job offers in the absence of a new policy initiative. The absence of deadweight for incapacity benefit recipients means that self-financing employment vouchers to these people can be more generous than the corresponding vouchers to unemployed people with otherwise identical characteristics. This paper presents some simple arithmetic on the optimal size of employment vouchers to incapacity benefit recipients. The results are striking. We show that, when there is no deadweight and the elasticity of labour demand for these recipients is greater than zero, it is *always* possible to stimulate employment through self-financing employment vouchers. Moreover, we indicate that not only are the optimal self-financing employment vouchers always positive, but – for plausible values of the autonomous firing rate and the rate of displacement – they constitute a large fraction of the existing incapacity benefits.

There is a straightforward case for allowing people to use a fraction of their incapacity benefits to provide employment vouchers for employers that hire them. It is, quite simply, that it expands the choices available to the incapacity benefit recipients and their potential employers. In the absence of this programme, the current system leaves a large number of recipients unwilling to work at wages that firms would be willing to offer them. What the programme does is to reduce the minimum wages at which the recipients are willing to work and raise the maximum wages at which firms are willing to employ them. Thus, those recipients who avail themselves of the programme will experience a rise in their incomes (from their incapacity benefit to their newly offered wages) and the employers who join will experience a fall in their labour costs. If the voucher is set appropriately these gains can be achieved without extra budgetary cost to the government.

In order for these new opportunities to be maximally available, it is clearly undesirable to impose restrictions on the wages negotiated by the previously incapacitated recruits and their employers, such as setting the minimum wage as an upper bound. Nor is it desirable to cap the size of the employment vouchers on the basis of factors unrelated to the size of the incapacity benefits. Nor is it wise to limit the duration of the incapacity benefits. Such restrictions would severely limit the gains the incapacitated people could achieve from the policy and thus seriously impede its take-up.

In any case, it is unwise for the government to bear the cost of incapacity benefits all on its own if it is possible to share some of this cost voluntarily with the private sector and thereby raise aggregate employment and production.

1. Introduction

Alongside high unemployment rates, low rates of labor force participation are a particularly troublesome problem in many European countries. Low participation rates mean not only that the number of people generating goods and services is low; it also means that those who are productively employed need to support a large number of unproductive people. Thus tax rates on productive individuals need to be high; these tax rates, in turn, discourage the productive individuals from working as hard as they otherwise would and also induce some to leave the labor force. Consequently, labor force participation rates fall even further, and so on. It has been argued that many European countries have slid into this trap - which may be called the “tax-participation multiplier” - over the past two decades.

In some countries, such as the Netherlands and the UK, incapacity (or disability) benefits play an important role in creating this trap. This paper explores a new policy approach to this problem, namely, giving people on incapacity benefits the option to use a portion of their benefits to provide employment vouchers for employers that hire them. This policy is an extension of the Benefit Transfer Program (BTP) to incapacity recipients.¹

This policy has an obvious strength vis-a-vis the BTP applied to unemployed people. Whereas the effectiveness of employment vouchers to the unemployed is limited by “deadweight” (vouchers granted to people who would have found jobs anyway), recipients of incapacity benefits characteristically are not part of the labor

¹ See Snower (1994, 1996).

force and consequently would not receive job offers in the absence of a new policy initiative. The absence of deadweight for incapacity benefit recipients means that self-financing employment vouchers to these people can be more generous than the corresponding vouchers to unemployed people with otherwise identical characteristics. This paper presents some simple arithmetic on the optimal size of employment vouchers to incapacity benefit recipients. The results are striking. We show that, when there is no deadweight and the elasticity labor demand for these recipients is greater than zero, it is *always* possible to stimulate employment through self-financing employment vouchers. Moreover, we indicate that not only are the optimal self-financing employment vouchers always positive, but - for plausible values of the autonomous firing rate and the rate of displacement - they are surprising large.

The paper is organized as follows. Section 2 surveys some evidence on labor force participation rates and incapacity benefits and discusses how the latter contribute to the former. Section 3 summarizes our policy proposal and presents a model of how the policy may work in the absence of displacement (i.e. when the implementation of the policy does not increase the rate at which incumbent employees are fired). Section 4 investigates the implications of displacement for the effectiveness of the policy. Section 5 concludes.

2. Incapacity Benefits and Labor Force Participation

Low labor force participation rates appear to be endemic to the institutional structures of various European countries. For example, Belgium, France, Germany, Italy, Ireland, and the Netherlands have all had labor force participation rates below

70% for the past decade and a half.² On the other hand, Denmark, Sweden and the UK all have participation rates well above 70%.³

One practical implication of a low labor force participation rate is a high “inactivity ratio”, i.e. the ratio of the number of people receiving benefits to the number of active workers. For example, in Belgium the inactivity ratio is 1.061, whereas it is 0.736 in Denmark, 0.835 in France, 0.884 in Germany, 0.829 in the Netherlands, and 0.808 in the UK. In several EC countries, the volume of social security beneficiaries has risen dramatically: in the Netherlands the volume has doubled (in terms of benefit years) since 1970; in the UK it has doubled since 1980.

One reason for the high inactivity ratios in many EC countries is that these countries spend large percentages of their GDP on social protection.⁴ In 1993, social protection expenditures as percentage of GDP was 28% in Belgium, 33% in Denmark,

² For example, the OECD (1995) shows labor force participation rates in 1994 to have been as follows: Belgium: 64%, France: 67%, Germany: 69%, Italy: 59%, Ireland: 64%, and the Netherlands: 61%. Note that these are only a rough estimates of participation rates, since the OECD measures participation in terms of number of people rather than full-time equivalents. This is important since European countries differ markedly in terms of their part-time employment rates. For example, in Germany 2.2% of men and 30.7% of women work part-time, whereas the ratios is 14% and 63% in the Netherlands, and 6.3% and 45% in the UK.

³ The OECD (1995) figures for 1994 are: Denmark: 81%, Sweden 76%, and UK 74%.

⁴ Social protection expenditures are defined here by the Eurostat definition, which includes housing, invalidity, disability, family, maternity, occupational accidents and disease, old age, placement, vocational guidance, resettlement, sickness, survivors, and unemployment. Another important reason for high inactivity ratios is of course the receipt of old age pensions.

31% in France, 28% in Germany, 21% in Ireland, 26% in the Netherlands, 34% in Sweden, and 29% in the UK.⁵

Aside from the sheer magnitudes of these percentages, another surprising feature of these figures is their breakdown. In most EC countries expenditures on sickness benefits are more than twice as high as expenditures on unemployment benefits, and disability benefit expenditures are of the same order of magnitude as unemployment benefit expenditures.⁶

The steep increases in expenditures on incapacity benefits in some EC countries, without any corresponding evidence of a marked deterioration in national health, suggests that financial incentives may have a role to play in determining the number of incapacity benefit recipients. Viewed in this light, the effects of incapacity benefits on the labor market may to some extent be understood as analogous to the effects of unemployment benefits. Just as unemployment benefits augment the problem whose effects they are meant to mitigate, so incapacity benefits do so as well.

The analogy is worth taking seriously. Unemployment benefits discourage job search; they also lengthen the duration of job search for those who have not been entirely discouraged, since they raise the returns from not finding a job. Beyond that, they put upward pressure on wages, induce incumbent workers to take greater risks of dismissal, and induce firms to increase their rate of labor turnover. Insofar as financial

⁵ Source: Eurostat (1995).

⁶ For example, sickness, disability, and unemployment benefit expenditures as percentage of total social protection expenditures in 1993 were: 23%, 9%, and 10% in Belgium; 19%, 8% and 13% in Denmark; 26%, 6%, and 9% in France; 28%, 9%, and 6% in Germany; 30%, 7%, and 15% in Ireland; 22%, 7%, and 2% in Italy; 22%, 22%, and 9% in the Netherlands; and 19%, 12%, and 6% in the UK. Observe that the UK and particularly the Netherlands are extreme outliers in this respect.

considerations are relevant in determining the number of incapacity recipients, these problems are present for incapacity benefits as well.

First of all, incapacity benefit recipients are discouraged from searching for jobs because, once they find work, the benefits - along with a variety of other welfare state benefits - are withdrawn and taxes are imposed. This "incapacity trap" is particularly severe for people whose main chance of escaping from unemployment is to take on temporary and part-time employment. In that event, the private return from employment tends to be particularly small relative to the opportunity cost of giving up the incapacity and related benefits. In many European countries the effective tax rate on entering the workforce under these circumstances is often close to, and sometimes exceeds, 100%. This trap is certainly worse than the analogous "unemployment trap" in that most unemployed people remain unemployed only temporarily, whereas most people who become recipients of incapacity benefits retire permanently from the labor force. The incapacity trap is especially serious for unskilled workers, who earn comparatively low wages, on average, and thus have little to gain from relinquishing their incapacity benefits. In this manner, the incapacity benefit system serves to concentrate the incapacity problem among unskilled workers.

Second, the incapacity benefit system can lengthen the process of adjustment whereby workers move from declining to expanding sectors through interim periods of unemployment. This problem is likely to be particularly severe with regard to workers in declining industries, such as ship-building and coal-mining, in a number of EC countries. Since these workers may be unable to find or jobs similar to the ones they have lost, they may need to go through a financially and psychologically costly period of retraining. They therefore have an especially strong incentive to consider their

3. A Model of Benefit Transfers and the Incapacity Problem

The benefit transfer proposal for incapacity benefit recipients has the following salient features:⁷

- It is voluntary. Only those potential employers and incapacity benefit recipients who wish to take advantage of the benefit transfer option need do so.
- The greater is a person's incapacity (measured in terms of the person's likelihood of leaving the state of incapacity), the larger is the stream of employment vouchers to which he or she is entitled.
- Once a person has found a job through this program, the employment vouchers to a particular employer remain in place for a number of years. Thereafter, the incapacitated person continues to qualify for such vouchers, but not at their original place of employment.⁸
- Incumbent employees who believe that they have been displaced by previously incapacitated recruits have a right to complaint. If the complaint is shown to be justified in court, the firm responsible is fined.

⁷In 1992 the UK introduced the "Disability Working Allowance" (DWA) that is superficially similar to the proposed policy. The DWAs are awarded for a period of only six months. They have strict upper limits unrelated to the size of incapacity benefits. Recipients of DWAs must have low incomes. These various provisions all reduce the effectiveness of the allowance and limit the number of eligible recipients. By contrast, the policy proposed here makes the employment vouchers depend solely on the size of the incapacity benefits.

⁸The reason for this provision is that, as shown in the next section, some employers may have an incentive to retain their incapacitated employees after their employment vouchers have run out. The resulting saving to the government, which pays neither incapacity benefits nor employment vouchers to these people, enables the government to provide more generous vouchers to those people remaining on the employment voucher scheme.

- The recipients of the employment vouchers have the option of using a fraction of these vouchers to induce employers to pay continue making incapacity benefit payments out of any existing private insurance funds.⁹
- The amount spent on employment vouchers for each incapacity benefit recipient, on a year by year basis, must not exceed the amount that would have been spent on incapacity benefits.

The program is meant to raise the take-home pay of the newly recruited workers, while at the same time reducing their cost to the employers. The difference between what the employees receive and what the employers pay is the fraction of the incapacity benefit that has been transferred to employment vouchers.

When people draw incapacity benefits, the government bears the cost of supporting them single-handedly. But when they transfer their incapacity benefits to employment vouchers, the government shares this cost with the firms that hire them. Since the amount that the government spends on the employment vouchers is set so as not to exceed what would have spent anyway on incapacity benefits, the reduction in incapacity and consequent increase in employment can be achieved at no extra budgetary cost.

Let us now consider the effects of this policy in the context of a transparently simple model. Suppose that workers can be in one of two states, employment or

⁹ In countries where private incapacity insurance is significant, the recipients of private-sector incapacity benefits tend to be skilled and comparatively well-paid. This provision is an attempt to counteract the danger that these people may have no incentive to convert their government-provided incapacity benefits into employment vouchers since they would thereby lose their entitlements to their private-insurance incapacity benefits.

inactivity.¹⁰ Let h be the probability that a worker is hired, and f be the probability of a separation (e.g. the probability that the worker gets fired). The population P is assumed constant through time. Let N_t be the level of employment in period t and I_t be the level of incapacity (i.e. the number of people classified as having an incapacity). Then $N_t + I_t = P$. The change in employment is the difference between the number of people hired and the number of people fired:

$$\Delta N_t = N_t - N_{t-1} = hI_{t-1} - fN_{t-1} \quad (1)$$

We assume that in the absence of incapacity benefits, no incapacitated people would be hired. In other words, there is no “deadweight”. Furthermore, we assume that the hiring rate is a linear function of the employment voucher v , which is measured in units of national income. For analytical simplicity, we assume that all incapacity benefit recipients have access to vouchers of the same magnitude, and that the voucher is paid in each period of analysis. Thus

$$h(v) = av \quad (2)$$

where a is a positive constant. We assume the firing rate to be a constant:

$$f = b \quad (3)$$

where b is a positive constant. The underlying assumption is that the anti-displacement provision specified above (that displaced incumbents and that firms that are found guilty of displacement are fined) effectively prevents displacement.¹¹

In the long run, where N_t and I_t are constant, the level of employment is

¹⁰ It is not necessary to consider the state of unemployment in this context, since incapacity benefits tend to be more generous than unemployment benefits and the incapacity benefit recipients generally have no incentive to join the unemployment pool.

¹¹ The next section examines the formulation of voucher policy in the presence of displacement.

$$N(v) = \frac{av}{av+b} P \quad (4)$$

and the corresponding long-run level of incapacity is

$$I(V) = \frac{b}{b+av} P \quad (5)$$

by the hiring function (2) and the firing function (3).

For simplicity, suppose that the government's policy problem is to find the magnitude of the employment voucher that maximizes the level of employment, subject to a government budget constraint, which may be specified as follows.

Since the number of incapacitated people hired in each period is $h(v)I(v)$, the total cost of the employment vouchers to the government is $v h(v)I(v)$. This cost must be set against the "voucher revenue", which is the total amount that the government saves on incapacity benefits due to the voucher-induced rise in the employment level.

In particular, let $I(v)$ and $I(0)$ be the long-run incapacity levels in the presence and absence of the voucher v ($v > 0$), respectively. Let the incapacity benefit β be a positive constant, measured in units of national income. Then the amount the government is able to save on incapacity benefits due to the employment vouchers is $\beta(I(0) - I(v))$.

Then the government budget constraint is

$$vh(v)I(v) \leq \beta(I(0) - I(v)) \quad (6)$$

In other words, the cost of the employment vouchers (the left-hand side expression of the constraint (6)) must not exceed the voucher revenue from reduced incapacity (the right-hand side expression).

To find the employment voucher that maximizes long-term employment (4) subject to the government budget constraint, it is convenient to rewrite the voucher cost and voucher revenue in the following terms. The voucher cost is

$$vh(v)I(v) = v^2 \alpha \frac{b}{b+av} P \quad (7)$$

and the voucher revenue is

$$\beta(I(0) - I(v)) = \beta \frac{av}{b+av} P \quad (8)$$

This restatement of the cost and revenue will provide, as we shall see, an intuitive understanding of the optimal employment voucher policy. By equations (7) and (8), the government budget constraint may be written as

$$v^2 \alpha \frac{b}{b+av} P \leq \beta \frac{av}{b+av} P \quad (9)$$

Expressing these terms as magnitudes per incapacitated person (i.e. dividing both sides of equation (9) by $(b/(b+av))P$), the government budget constraint becomes

$$av^2 \leq \frac{\beta av}{b} \quad (10)$$

Furthermore, rewriting these terms in units of the voucher (i.e. dividing both sides by v), we obtain

$$av \leq \frac{\beta \alpha}{b} \quad (11)$$

which states that the voucher cost per incapacitated person, in voucher units, is less than or equal to the voucher revenue measured in the same terms. Thus the optimal voucher must satisfy the condition

$$v \leq \frac{\beta}{b} \quad (11')$$

There are of course two further constraints on the size of the voucher, namely, a non-negativity constraint:

$$v \geq 0 \quad (12a)$$

and a constraint that specifies that the hiring rate cannot exceed unity, so that

$$v \leq \frac{1}{a} \quad (12b)$$

by the hiring function (2).

Recall that the relation between the voucher and aggregate long-term employment is given by equation (4), and differentiating we find that the voucher stimulates this employment level:

$$\frac{\partial N}{\partial v} = \frac{ab}{(b+av)^2} P > 0 \quad (13)$$

Consequently the government's problem of maximizing employment through a balanced budget voucher policy reduces to the problem of finding the highest voucher that satisfies the constraints (11'), (12a) and (12b). Thus the optimal voucher is

$$v^* = \min \left[\max \left(\frac{\beta}{b}, 0 \right), \frac{1}{a} \right] \quad (14)$$

and since $\beta b > 0$, this solution reduces to

$$v^* = \min \left[\frac{\beta}{b}, \frac{1}{a} \right] \quad (14')$$

Ignoring the corner-point solution,¹² we are left with the interior solution for the optimal voucher:

$$v^* = \frac{\beta}{b} \quad (15)$$

¹²This is quite unlikely to occur in practice, since it would imply full employment of all incapacitated people.

i.e. the value of the optimal employment voucher must be equal to the ratio of the incapacity benefit to the firing rate.

Since estimates of the relevant incapacity benefits and firing rates are straightforward to obtain, this policy is easy to implement in practice.

Equation (15) is a striking result. To see this, note that when the firing rate is unity, the optimal voucher is exactly equal to the incapacity benefit. On the other hand, if some of the incapacitated people who are employed on account of the voucher are *not* fired when the voucher payments to a particular employer run out - on account of the human capital that these incapacitated people acquire during their subsidized job tenure - then the firing rate is less than unity, and equation (15) then implies that the optimal voucher payment, per period of time, must *exceed* the existing incapacity payment. For example, if the firing rate is 90%, then the optimal voucher must exceed the incapacity benefit by about 11%;¹³ and if the firing rate is 80%, then the optimal voucher is 25% higher than the incapacity benefit. The reason of course is that when the firing rate is less than unity, the government not only saves the current incapacity benefit when it induces the private sector to employ the disadvantaged people, but it also saves future incapacity benefits for those employers who do not dismiss their incapacitated employees once the subsidy runs out.

4. Dealing with Displacement

The analysis of the previous section assumed that displacement could be avoided entirely by giving displaced employees the right of complaint, investigating the complaints through an independent body, and imposing penalties on firms found guilty of displacing their incumbents by subsidized new recruits. In practice, of course, anti-

¹³ If the firing rate is 9/10, then the optimal voucher is approximately 1.11β .

displacement provisions of this sort can set tight limits on displacement, but cannot eliminate it entirely. The reason of course is that (i) such provisions are unlikely to function as a complete deterrent to displacement and (ii) they obviously cannot prevent firms that hire subsidized new recruits from competing with firms that don't and thereby leading to layoffs at the latter firms.

This section outlines how the optimal employment voucher policy is to be formulated when the model of the previous section is extended to take account of the possibility of displacement. This means that instead of taking the firing rate to be a constant, we assume that there is a positive linear relation between the firing rate and the size of the voucher:

$$f = b + cv \quad (3')$$

where c is a positive constant.

Substituting equations (2) and (3') into (1), we can obtain the long-run level of employment:

$$N(v) = \frac{av}{b + cv + av} P \quad (4')$$

and the long-run level of incapacity:

$$I(v) = \frac{b}{b + cv + a} P \quad (5')$$

Thus the cost of the voucher policy is

$$vh(v)I(v) = av^2 \frac{b + cv}{b + cv + av} P \quad (16)$$

and the voucher revenue is

$$\beta(I(0) - I(v)) = \beta \left[1 - \frac{b + cv}{b + cv + av} \right] \quad (17)$$

Expressing the voucher cost and voucher revenue as magnitudes per incapacitate person, the government budget constraint becomes

$$av^2 \leq \beta \left(1 - \frac{b + cv}{b + cv + av} \right) \frac{b + cv + av}{b + cv} \quad (18)$$

This condition, together with the boundary conditions (12a) and (12b), implies that the optimal voucher is

$$v^* = \min \left[\max \left(\frac{-b + \sqrt{b^2 + 4c\beta}}{2c}, 0 \right), \frac{1}{a} \right] \quad (19)$$

and since

$$\frac{-b + \sqrt{b^2 + 4c\beta}}{2c} > 0$$

solution (19) reduces to

$$v^* = \min \left[\frac{-b + \sqrt{b^2 + 4c\beta}}{2c}, \frac{1}{a} \right] \quad (19')$$

This, too, is a striking result. First, observe that the optimal voucher is always positive, which means that it is always feasible to increase employment and reduce incapacity payments through the voucher policy. Second, the optimal voucher¹⁴ rises with the square root of the incapacity benefit (rather than in proportion to the incapacity benefit, as in the absence of displacement). Third, the optimal voucher falls as the displacement coefficient c rises.

For example, suppose that the autonomous firing rate is $b = 0.8$ and the displacement coefficient is $c = 0.1$. Then

- if the incapacity benefit (as ratio of the average wage) is $\beta = 0.3$, then the optimal voucher is $v^* \cong 0.359$;
- if the incapacity benefit is $\beta = 0.4$, then the optimal voucher is $v^* \cong 0.472$; and
- if the incapacity benefit is $\beta = 0.5$, then the optimal voucher is $v^* \cong 0.583$.

Now, however, suppose that the autonomous firing rate is $b = 0.95$ and the displacement coefficient is $c = 0.5$. Then

- if the incapacity benefit is $\beta = 0.3$, then the optimal voucher is $v^* \cong 0.276$;
- if the incapacity benefit is $\beta = 0.4$, then the optimal voucher is $v^* \cong 0.355$; and
- if the incapacity benefit is $\beta = 0.5$, then the optimal voucher is $v^* \cong 0.429$.

Finally, suppose that the autonomous firing rate is $b = 1$ (i.e. all incapacitated people are fired as soon as the voucher expires each particular firm) and the displacement coefficient is $c = 0.6$. Then

- if the incapacity benefit is $\beta = 0.3$, then the optimal voucher is $v^* \cong 0.260$;

¹⁴The voucher referred to is the interior solution (the first term of equation (19')), not the constraint on the hiring rate (the second term of equation (19')).

- if the incapacity benefit is $\beta = 0.4$, then the optimal voucher is $v^* \cong 0.333$; and
- if the incapacity benefit is $\beta = 0.5$, then the optimal voucher is $v^* \cong 0.403$.

5. Concluding Remarks

There is a straightforward case for allowing people to use a fraction of their incapacity benefits to provide employment vouchers for employers that hire them. It is, quite simply, that it expands the choices available to the incapacity benefit recipients and their potential employers. In the absence of this program, the current system leaves large number of recipients unwilling to work at wages that firms would be willing to offer them. What the program does is to reduce the minimum wages at which the recipients are willing to work and raise the maximum wages at which firms are willing to employ them. Thus, those recipients who avail themselves of the program will experience a rise in their incomes (from their incapacity benefit to their newly offered wages) and the employers who join will experience a fall in their labor costs. If the voucher is set appropriately these gains can be achieved without extra budgetary cost to the government.

In order for these new opportunities to be maximally available, it is clearly undesirable to impose restrictions on the wages negotiated by the previously incapacitated recruits and their employers, such as setting the minimum wage as an upper bound. Nor is it desirable to cap the size of the employment vouchers on the basis of factors unrelated to the size of the incapacity benefits. Nor is it wise to limit the duration of the incapacity benefits. Such restrictions would severely limit the gains the incapacitated people could achieve from the policy and thus seriously impede its take-up.

In any case, it is unwise for the government to bear the cost of incapacity benefits all on its own if it is possible to share this some of cost voluntarily with the private sector and thereby raise aggregate employment and production.

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