SOME MACROECONOMIC CONSEQUENCES OF BASIC INCOME AND EMPLOYMENT SUBSIDIES

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Abstract

Two macro models – one for a closed economy and the other for a small open economy – are used to examine the scope for income redistribution and employment creation. In particular, the introduction of both a guaranteed annual income (basic income) and an employment subsidy are examined, and these policies are compared to a straightforward tax cut for (unskilled) labour. All initiatives are financed by a tax on capital. In the open-economy setting, capital is perfectly mobile, so there is a trade-off between the direct benefits of each policy, and the costs that follow from the out-migration of capital. The model is used to assess the relative importance of these competing effects.

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1. Introduction

Recent years have witnessed both growing income inequality and persistently high unemployment. In the United States and in the United Kingdom, the worsening prospects have taken the form of decreases in the real earnings of lower-skilled workers – the real hourly wages of young males with 12 or fewer years of schooling has dropped by more than 20 percent in the last two decades. In continental Europe, real wages at the bottom of the skill distribution have risen, but at the cost of significant increases in unemployment – especially for this group (Freeman (1995), Machin and Van Reenen (1998)). Although there have been competing explanations concerning the primary reasons behind these phenomena, for some authors the increased pace of global economic integration (popularly referred to as globalization) has had a major role to play (see, for example, Wood (1995) and Rodrik (1997)).[1] Moreover, in conjunction with the need for more social insurance programs – which the increased exposure to globalization generates – many authors fear that globalization (of capital markets in particular) erodes the ability of the nation state to satisfy these needs. According to this view, governments will find it increasingly difficult to raise revenue from the taxation of mobile factors of production. As a result, redistribution and employment creation are viewed as initiatives that may be increasingly difficult to pursue.

These developments have stimulated renewed interest in policies that may redistribute income in ways that minimize undesirable indirect effects. This is particularly so since one of the usual charges made against the social welfare system is that in many countries it nourishes a collectively sub-optimal incentive structure, ranging from excessive early retirement to "poverty traps" for unemployed workers (especially single mothers) who

return to low-wage employment. In many countries, the implicit tax rate at the low end of the earnings distribution is often very large because of the phasing out of transfer programs as income rises. For example, Atkinson and Sutherland (1990) report that in Britain in 1989 almost half a million families faced marginal tax rates of 70 per cent or higher, as a result of means-tested social assistance benefits. Blundell and MaCurdy (1999) also provide an extensive analysis of marginal tax rates faced by low-income households in the US and in the UK, and show that the implicit tax rate may sometimes exceed 100% when two or more transfer programs are phased-out simultaneously. Despite these costs, the welfare state can still have a net positive (efficiency enlarging) effect in modern industrialized economies. Indeed, as Sinn (1995) and Atkinson (1999) have persuasively argued, the welfare state should not be viewed as something that only disturbs the market process. Especially in a second-best setting, it is something that can encourage risk-taking, foster efficiency and facilitate the growth process.

In this paper, we argue that the fears regarding globalization may be exaggerated. We show that, in a second-best setting, even when taxing perfectly mobile factors, governments can acquire the necessary revenue to facilitate policies that can both reduce unemployment and increase the incomes of those already working. As a base for comparison, we first examine a closed economy in which the source of the second best lies in the labour market. The payment of efficiency wages by firms intent on maximizing profits results in involuntary unemployment. Then, we focus our attention on small open-economy framework.

Three policies are considered. The first involves the unconditional payment of a guaranteed income to all citizens. The features that distinguish the Basic Income (BI)

proposal – variously called "guaranteed annual income", "universal basic income", or "demogrant" (see, Meade (1948, 1972), Tobin et al. (1967), Atkinson (1995), Van Parijs (1995, 2000)) – from other social security proposals, are that it is paid irrespective of any other income, it does not require any present or past work performance, it is not conditional on the willingness to accept a job, and it is paid to individuals rather than households (Van Parijs, 1992). Some proponents argue that a BI system should be accompanied by widespread social security reform, including deregulation of the labour market. For Atkinson (1995), the BI proposal, in its pure form, would replace all social security benefits and it would be accompanied by a flat comprehensive income tax rate that would replace the existing income taxes and social security contributions.[2] In this way, proponents of BI hope to provide a solution to the "impossible trinity" of welfare reform objectives: to raise the living standards of low-income families, to encourage employment, and to keep budget costs low.

The second policy proposal involves the government paying employment subsidies to firms (as advocated by Phelps (1997) and Solow (1998)). The direct aim of this policy is not so much to increase worker's income but to reduce the unemployment rate. It could, nevertheless, indirectly help those remaining unemployed after the enactment of the policy if it results in higher wage rates and unemployment benefits (if the replacement ratio stays constant).

The third policy we examine is more straightforward, in the sense that it does not involve the government setting up an entirely new program. Instead, it involves simply the lowering of the tax rate applied to labour income.

Throughout our analysis, we assume that all initiatives – basic income, employment subsidies and household wage-income tax cuts – are financed by raising the tax on capital – which is a perfectly mobile factor in the open-economy case. We make this financing assumption, despite the fact that some proponents of BI expect this initiative to be financed by cuts in existing social programs. We do so for two reasons. First, we want to examine the possibility of redistribution – especially in an open economy setting. All previous analyses of the effects of introducing BI have assumed that it will be "financed" by cutting down on existing social security programs in a closed economy setting (see, Bowles (1992), Atkinson (1995), Groot and Peters (1997), Van der Linden (1999, 2000)).

Second, we are concerned about political feasibility. In this respect we note that even within the European Union, there are significant differences across countries in the relative importance attached to redistributive social policy goals, in the instruments used, and in the extent to which social policy achieves its intended effects.[3] The evolution of the social welfare system in each country has created constituencies that strongly resist any reductions in the benefits to which they have become "entitled." Even more importantly, for many supporters of advanced European welfare states, the fully developed welfare state deserves priority over BI because it is considered to accomplish what BI can not: it guarantees that certain specific human needs will be met. It is argued that although both the current advanced welfare states and BI can reduce inequality of "condition," the welfare state does so with greater efficiency because it takes better account of inequalities due to differences in needs. For example, if person A needs expensive medical treatment and person B does not, giving both of them a BI grant will not go far to make their situations more equal; only the public provision of health

services has the chance of accomplishing that (see, Bergmann (2001)). Thus, both to respect this political feasibility constraint, and to address some of the concerns raised about globalization, we consider financing all initiatives by taxing the "rich."

The remainder of the paper is organized as follows. In section 2, we introduce the macro model that underlies the paper's conclusions. It is quite standard and highly simplified. There are two factors of production: labour (which we think of as unskilled, since the government wishes to raise workers' incomes), and "capital" (which we think of as standing for both physical capital and skilled labour – the source of the human capital that is also to be taxed). It is assumed that the owners of capital are the "rich". To the extent that "capital" involves skilled workers, we make the assumption that these individuals find their employment so rewarding that the possibility of reduced efficiency and effort on the job does not arise. But with the less skilled who do not have "good" jobs, it is assumed that these individuals are dissatisfied with their work. It is, therefore, in firms' interest to pay efficiency wages to generate the profit-maximizing level of labour productivity. We use Summers' (1988) compact exposition of efficiency wages to specify this set up for the "labour" input in our model. All initiatives that are designed to help labour are financed by taxing the owners of capital. In the closed-economy setting, these "rich" individuals cannot migrate to escape this taxation; in the small open-economy setting they can.

In sections 3 and 4, the results for the closed-economy and small open-economy versions of the model are explained. In sections 5 and 6, we consider a sensitivity test (allowing unemployment to follow from unions instead of efficiency wages), we discuss several possible extensions of the analysis, and we offer concluding remarks.

2. The Model

There are two factors of production: labour (L) and capital (K). Since we think of "labour" as unskilled and deserving of some government attention, and since it is more difficult for such individuals to move great distances, we assume that labour is immobile internationally. (We set L=1.) In contrast, in the open-economy setting, we assume that capital can move in and out of the country without cost.

Firms (correctly) believe that wages exert an influence on the productivity (effort) of their workforce. Firms have an incentive to manipulate the wage offered to the unskilled so that costs per efficiency unit of unskilled labour are minimized. As a result, the wage rate exceeds the level that would clear the market, and this determines the equilibrium unemployment rate for labour. Firms have no incentive to pay a similar premium for capital. Thus, capital is paid its marginal product, and in the open-economy case, capital mobility insures that the after-tax return is determined exogenously in the rest of the world.

We view the unemployment that emerges in an efficiency-wage setting as "involuntary". This is why it is appropriate for the government to consider intervening with a policy initiative. Efficiency wage theories are based on market failure – the premise that employers cannot acquire full information about the productivity of their workers (see, for example, Akerlof and Yellen (1986)). This proposition is reflected in most employment contracts, since they do not involve precise specifications of productivity. A higher wage offer by the firm may increase the average productivity of its workforce for several reasons. First, a high-wage firm may (on average) attract workers of higher quality. Second, a higher wage increases the magnitude of punishment incurred

by a worker who is fired after being found offering a sub-standard amount of effort. Third, high wages may lead workers to believe that they are treated "fairly", and they may reciprocate to this "gift" by offering higher effort. The implication of this dependence of worker productivity on wages is that the firm will want to choose a wage rate such that the marginal benefit from a wage increase is equated with the associated increase in costs. Thus, the profit-maximizing wage rate chosen by firms is compatible with involuntary unemployment. The unemployed may be willing to work at lower wages, yet if firms employ them, marginal revenue would decline more than marginal cost.

The firms' production function is:

$$Y = K^{1-\gamma}(bL)^{\gamma}. \qquad (1)$$

γ is a positive fractions, and *b* is the index of work effort. We rely on a particularly compact version of efficiency wages (due to Summers (1988) and highlighted by Romer (2001)), which is compatible with any of the motivations mentioned above (and which is more readily calibrated than the Shapiro and Stiglitz (1984) specification - see Pissarides (1998)). Following Summers, we specify *b* as:

$$b = [(w(1-t) + pw) - x]^{\alpha}. \qquad (2)$$

The term in round brackets defines what individuals receive if they are working; *x* denotes their alternative option that is available should they leave their current job. *t* is the income tax rate applied to labour earnings, and *p* is a parameter that defines BI. This parameter measures the generosity of an unconditional (and tax-free) transfer of income from the government to all (unskilled) individuals – independent of employment status. We assume that this BI (which is the same for all individuals) is proportional to the wage

rate. α is a positive fraction; as a result, a higher wage in the current job raises each worker's return relative to her alternative, and thereby induces higher productivity. The worker's alternative option is defined as

$$x = (1-u)(1-t)w + ufw + pw, \qquad (3)$$

where f is a parameter measuring the generosity of the unemployment-insurance system. That is, benefits paid to the unemployed are a proportion (f) of the wage, and these benefits are untaxed. The worker's alternative option is a weighted average of the wage offered at other firms (which equals w in full equilibrium) and what is received if the individual cannot find work. The weights are the employment rate, (1-u), and the unemployment rate, u, respectively. When firms optimize, they regard x as independent of their individual wage and employment decisions.

Each firm's profit function is:

$$\pi = Y - (w - Q)L - rK.$$

r is the interest rate (the wage or rent paid to each unit of capital); as above, w is the wage rate; and Q is a per-employee subsidy paid to the firm. We assume that Q is proportional to the economy-wide wage rate, that is: $Q = qw$. Nevertheless, when individual firms optimize, they do not think of this equation holding at the individual level. That is, when choosing w, firms do not think that the subsidy rate that they will receive depends on their individual wage policy.

Setting the derivatives of the profit function with respect to w, L and K equal to zero, manipulating the first-order conditions, and using the definition of x, we derive the following relationships:

$$u = \alpha(1-q)(1-t)/(1-t-f) \qquad (4)$$

$$(1-\gamma)Y/K = r \qquad (5)$$

$$\gamma Y/L = (1-q)w\,. \qquad (6)$$

Equation (4) states that the unemployment rate depends positively on the generosity of unemployment insurance and the wage-income tax rate paid by workers, and negatively on the subsidy rate paid to firms for employing individuals. Equation (5) states that the marginal product of capital should be set equal to the rental cost of capital. In similar fashion, equation (6) states that the marginal product of labour should be equal to its (net of subsidy) rental rate (the pre-tax wage).

In the open-economy setting, the assumption that capital is perfectly mobile internationally implies that its after-tax reward is equal to what prevails in the rest of the world. This implies that

$$r(1-\tau) = \bar{r} \qquad (7)$$

where τ and $\bar{r}$ are the tax rate applied to capital rents, and the after-tax reward that can be had by the owners of capital in the rest of the world. Equation (7) constrains the government's ability to redistribute income, since it implies that the "rich" stand ready to withdraw their services to whichever degree is required to insulate their net returns from any taxes imposed.

There is one additional limitation on the government's use of fiscal incentives and transfers – the fact that it must respect its budget constraint. A balanced budget is stipulated in equation (8):

$$G + fwu + pw + qw(1-u) = tw(1-u) + \tau rK. \qquad (8)$$

It states that spending on goods (G), unemployment insurance, unconditional income transfers (the BI), and employment subsidies must equal the sum of the two forms of

income tax revenue. Equation (8) involves the definition that individuals must be either employed or unemployed:

$$L = 1 - u. \tag{9}$$

The open-economy version of the model involves equations (1) through (9) solving for Y, L, K, u, w, r, b, x and one government policy variable (which is p in the case of BI, q in the case of employment subsidies, and t with the wage-income tax cut). In each case, we impose an increase in the tax rate on capital, τ. In the closed-economy case, equation (7) is dropped, and K becomes an exogenous variable. Proceeding with the solution of the model, we first divide both sides of equation (8) by Y, define $g = G/Y$, $k = K/Y$ and use equation (6) to substitute out w/Y. Equation (8) becomes:

$$\gamma[fu + p - (t - q)(1 - u)] = (1 - u)(1 - q)[\tau(1 - \gamma) - g)]. \tag{8a}$$

To derive policy effects, we take the total differential of the system, and then simplify the coefficients of the resulting system (that relates the changes in all variables) in two ways. First, we evaluate the coefficients subject to the restrictions implied by the initial full equilibrium. Second, we set the initial values of BI (p) and the employment subsidy (q) equal to zero, and the initial value of Y to unity. We focus on four effects that follow from each policy initiative – the effects on: the unemployment rate (u), the level of productivity (b), the expected income of each individual (who undergoes periods of employment and unemployment, x), and (in the closed economy only) the income of capitalists (v). The percentage change in expected labour income is given by:

$$(dx/x) = (dw/w) - ((1 - u)/\psi)dt - ((1 - t - f)/\psi)du + (u/\psi)df + (1/\psi)dp$$

where $\psi = (1 - t)(1 - u) + uf + p$,

and the percentage change of the income of capitalists (in a closed economy) is given by:

$$(dv/v) = (dY/Y) - (1/(1-\tau))d\tau.$$

Recall that the incomes of the owners of capital are unaffected in the small open economy (given equation (7)).

The formal results are summarized in the appendix. The discussion in the following sections of the text is limited to verbal and graphic analyses.

3. A Closed Economy

The most convenient way of appreciating the results in the closed-economy case is by considering Figure 1. This diagram shows the perfectly inelastic supply curve for capital, and the downward sloping marginal product of (demand for) capital curve. The position of the demand curve is affected by the quantity of effective labour, *bL*. For example, an increase in *bL* increases the marginal product schedule for capital (as shown by the dashed demand curve in Figure 1). Initially, before any such shift, the economy's outcome is given by the intersection of the solid demand and supply curves. Total output (*Y*) is given by the sum of three areas (numbered 1 through 3). Capital owners receive a total income equal to the area of regions 1 and 2, while labour receives a pre-tax-and-transfer level of income equal to region 3.

Now consider the introduction in BI. Since this policy is independent of each individual's employment status, there are no incentive effects. As a result, labour productivity, the unemployment rate, and the wage rate are all unaffected. There is a zero-sum outcome since capital owners are captive. They pay more taxes, and exactly this total is transferred to workers and the unemployed. All that happens in Figure 1 is that an amount of income equal to region 2 is transferred to the workers/unemployed.

This policy cannot be recommended on the basis of the hypothetical compensation principle, since – if the winners compensated the losers – there would be precisely nothing left over.

A more discouraging result emerges with employment subsidies. This policy does involve incentive effects, so – at first glance – it would seem to be recommended. Firms respond by increasing employment and paying higher wages, and – together – these developments raise the expected income of each individual (variable x). But there are competing effects on the level of labour productivity. Worker effort is increased by the higher wage rate, but it is decreased by the increased probability that the unemployed can find a job. As proved in the appendix, the latter effect *must* dominate, so productivity falls. There are competing effects on the overall level of GDP as well, and the value of the formal model is that it allows us to evaluate which effect is stronger. Total output is pushed up by the fact more people are working, but total output is pulled down by the reduction in productivity. Again, as proved in the appendix, the lower productivity effect must dominate. In terms of Figure 1, this means that the marginal product of capital curve shifts down, so that total output (represented by the area under that marginal product schedule) falls. In other words, this initiative generates a negative-sum outcome. The winners (labour) cannot compensate the losers (capital) even if they transfer their entire winnings. By the hypothetical compensation criterion, then, this policy is not recommended.

Finally, consider a cut in the wage-income tax rate financed by a higher tax on capital. Since this policy raises the relative return individuals receive from employment, its direct effect is to push up productivity. This makes it sensible for firms to cut the wage

premium they had been offering to stimulate productivity, and with lower wages, the unemployment rate falls. It is proved in the appendix that productivity *must* increase – despite the fact that lower pre-tax wages and lower unemployment both push productivity in the opposite direction. The dominant influence is the fact that the lower tax rate makes the *after-tax* wage *higher*. In terms of Figure 1, the marginal product curve for capital shifts up since both b and L are higher. Total output is now the sum of areas 1, 2, 3 and 4. With this increase in overall product, the winners can compensate the losers and still have something left over. So, according to the hypothetical compensation principle, this policy is recommended. However, this criterion is unappealing since there is no way for the government to perform this transfer back to capitalists without simply reversing the original initiative.

We conclude that none of the policies represent a Paretian improvement. Thus, according to this model, we should expect resistance to all these policies on the part of the owners of capital. One might expect that the support for these initiatives could be even more limited in the open-economy case, since – in this case – capitalists can protect themselves by migrating away from the higher tax, leaving workers to operate with a lower quantity of capital. We see in the next section, however, that the analysis does not support this conjecture concerning decreased support.

4. The Open Economy

The open-economy results are illustrated in Figure 2. In this case, the supply curve for capital is perfectly elastic. There is no change on the demand side of the model, so the downward sloping marginal product relationship appears as in Figure 1, and (as

before) its position is affected by bL. Before any of the policy initiatives, the economy's outcome is given by the intersection of the solid demand and supply curves, and total output (Y) is given by the sum of seven areas (numbered 1 through 7). Capital owners get regions 1, 2 and 3, while labour gets regions 4 through 7.

Before focusing on the model's results, let us use Figure 2 to review the standard analysis of why taxing elastically supplied capital is not recommended. That standard setting involves a competitive labour market (so parameter b is unity), and a fixed labour supply (so L is unity). As a result, there is no mechanism that permits a shift in the position of the capital demand function. When the government raises the tax on capital, the higher (dashed) supply curve becomes relevant. Domestically produced output falls by the sum of regions 1, 2, 4 and 5. Capital owners do not lose regions 1 and 2, since they now earn this income in the rest of the world. Labour loses regions 4, 5 and 6, but if the revenue is used to make a transfer to labour, their net loss is just the sum of regions 4 and 5. But this is a loss, so capital is a bad thing to tax.

But if there is a pre-existing distortion, capital *can* be a good thing to tax. Before illustrating this proposition in Figure 2, we review the original article on the second best (see, Lipsey and Lancaster (1956)). One example discussed in that seminal paper concerned sales taxes in a two-good world. With perfect competition, a tax on just good 2 is not recommended, since this levy makes that price exceed marginal cost, and there is no similar wedge in the other market. But if there is market failure in the first place (say in the form of a monopolist producing good 1), the tax on good 2 can make sense. Now a sales tax on the competitive sector can raise that good's price-to-marginal-cost ratio to what prevails in the monopoly sector, and a selective excise tax is optimal after all. The

tax in the second sector fixes the initial problem – that the output of good 1 is too small. Figure 2 illustrates a similar situation involving two factors, instead of two goods.

With asymmetric information, the employment of factor 1 (labour) is too small in the second best starting point. A tax on capital induces firms to shift more toward employing labour and that helps lessen the initial distortion. But can this desirable effect of the tax outweigh the traditional excess-burden cost (the loss of income represented by regions 4 and 5 in Figure 2). It appears that this possible. For instance, if the government uses the tax revenue in a way that induces higher labour productivity and/or lower unemployment, the higher b and L values would shift up the marginal product of capital curve in Figure 2. The new outcome is given by the intersection of the dashed demand and supply curves. Total income available to labour is affected in two ways. It is reduced by region 4 (as usual) and it is increased by region 8. The two questions of interest are: Can we identify a use of the tax revenue that leads to the marginal product curve shifting up, not down? and Can we identify a circumstance in which region 8 can be bigger than region 4?

With this intuitive background in place, let us now consider each policy in turn. We begin with BI. As is evident from Figure 2, the financing of BI raises the cost of capital to firms, and it induces them to set a lower wage rate. In this efficiency-wage setting, lower wages lead to lower productivity, so this policy lowers b, and the demand for capital curve shifts down, not up. As a result, the total income available for labour shrinks, and this is why average labour income (x) falls. So, with capitalists unaffected and labour losing, BI is not supported by this analysis.

The analysis is a little more complicated with employment subsidies, since there are two reasons for the marginal product of capital schedule to shift – both b and L adjust. The reduction in unemployment has both favourable and unfavourable effects. The direct (favourable) outcome is that it increases the marginal product of capital, but the indirect (unfavourable) outcome is that (other things equal) increased job prospects and lower wages (as explained above) lead to lower labour productivity (a lower value for b). It is proved in the appendix that this downward pressure on b must be the dominant consideration, so that both wages (w) and the average labour income (x) must fall. As with BI, then, the demand for capital curve (in Figure 2) shifts down, and the total income available for labour falls. Employment subsidies are not supported by the analysis.

Finally, we consider the balanced budget tax substitution – increasing the tax on capital to finance a tax cut for labour. As with the employment subsidy, unemployment falls, but in this case there are competing effects on labour productivity. As before, increased job prospects lead to decreased work effort, but in this case, the lower tax on employment earnings stimulates increased work effort. It is proved in the appendix that this favourable effect must dominate, so that the work effort index, parameter b, rises. With both b and L rising, we finally have an initiative that shifts the marginal product of capital schedule up, as shown in Figure 2.

As noted above, for it to be possible for this tax substitution to represent a Paretian improvement, we must establish that region 8 in Figure 2 can be larger than region 4. As explained in the appendix, an appeal to illustrative parameter values is required to make this case. Up to this point, there have been some ambiguities in some of

the formal multipliers that are reported in the appendix, but in all cases these uncertainties are resolved by appealing to three simple conditions. A sufficient – though not necessary – set of conditions for all results reported thus far is that the initial unemployment rate be smaller than the replacement rate parameter in the unemployment insurance system, and that this, in turn, be smaller than one minus the initial tax rates:

$$u < f < (1-t) = (1-\tau).$$

Since these restrictions are not remotely controversial, we are confident of all results that have been reported. However, to establish the effect on average labour income in this open-economy tax-substitution case, we need to consult illustrative parameter values in a more detailed fashion.

We have considered many sets of representative parameter values, and the results are unaffected by this sensitivity testing. Our baseline parameter assumptions are as follows: $u = .12$ and $f = t = \tau = \gamma = 0.33$. These values are based on the assumption that broadly defined capital (which we think of as including skilled labour) receives an income share of 2/3 (as in Mankiw, Romer and Weil (1992)). Since the model involves the assumption that skilled individuals are fully employed, the $u = .12$ assumption implies that the nation's overall unemployment rate is 6 percent if (initially) there are equal numbers of skilled and unskilled individuals. Readers can readily verify that this is one set of parameter values that involves both average labour income, x, and work effort, b, rising with this balanced budget tax substitution (despite the fact that wages, w, fall). Since capitalists are unaffected by this initiative, and since labour is helped – both in terms of lower unemployment and in terms of higher average income – we conclude that

the analysis supports this policy. It permits income redistribution in a globalized setting, and it requires no new government administration.

To allow readers to have some feel for the possible magnitudes involved with all policies, we note the following implications of the baseline parameter values. If the tax on capital rises by 10% (by 0.033), x falls by 1.3% with BI; x falls by 1.2% with employment subsidies; and x rises by 0.9% with the tax cut for labour. The unemployment rate is unaffected by BI; it falls from 12.0% to 10.8% with the employment subsidy; and it falls to 10.7% with the tax cut for labour.

Finally, it is useful to summarize the differences between the closed and open-economy analyses. There is some support for those concerned about the proposition that globalization may make low-income support more difficult. As we move to the global case, both BI and employment subsidies shift from being policies that help labour to ones that hurt labour. Also, in the case of BI, the effect of the policy on overall output shifts from one that involves no change to one that reduces the size of the overall economic "pie". But the outcome is different for the wage-income tax cut. Labour wins in both settings, and the overall economic "pie" grows in both cases. But, since there is no political economy problem (no compensation required) in the open-economy case, this policy receives *stronger* support in the global setting. We conclude that the analysis provides at least a partial response to anti-globalization protesters, since it shows that the scope for at least one low income support policy can be increased by globalization.

As noted in the paper's introduction, we have been heavily influenced by the challenge posed by globalization – does a small open economy have sufficient degrees of freedom to perform meaningful income redistribution? We are drawn to this focus

because, over time, the assumption of perfect mobility for both capital and skilled labour may become ever more relevant. Since no studies of BI and employment subsidies have focused on the small open-economy constraint, we felt that it was important to start filling at least part of this gap. We conclude that globalization does pose a threat to the efficacy of these policies, but that there is a substitute initiative that appears to be less limited by these constraints.

We close this section by reiterating the intuition that lies behind the support we have found for the tax substitution policy. With an asymmetric information problem and market failure in the labour market (and only one other factor – capital), the optimal tax on capital is no longer zero. Even though capital is supplied elastically, and (therefore) this tax distorts, it permits a lower tax to be paid by labour. This decreases the difference between the net wages of the employed and the income received by those out of work, and this reduces unemployment and increases overall consumption possibilities. This conclusion – that it may make sense to tax internationally mobile capital – is similar to the one derived by Koskela and Schob (2000) in the context of optimal factor income taxation. They note that, in the presence of involuntary unemployment, labour supply is locally infinitely elastic. Thus, the inverse elasticity rule suggests that labour should not be taxed at a higher rate than capital (whose supply is also infinitely elastic at the world rate of interest). Moreover, the presence of unemployment due to the wage rate being higher than the competitive one implies that the private marginal cost of labour is higher than its social marginal cost. Thus, welfare can be increased by taxing the labour input less heavily relative to the capital input (whose social marginal cost equals the world interest rate).[4]

It must be admitted that our model does not address the concern that fiscal competition among countries in a world of mobile capital might eliminate the tax on capital as an option (see, for example, Edwards and Keen (1996) and Sinn (1994)). A similar point – applied to mobile skilled labour – is made by Wildasin (1991). But Kessler, Lulfesmann and Myers (2000) have considered mobile capital and labour together. In this setting, fiscal competition is lessened. When redistribution is pursued in one country, the immigration of labour raises the tax base and decreases the incentive to attract capital. Kessler, Lulfesmann and Myers identify circumstances in which increased redistribution in one country makes the majority of the population in both countries (in their two-county model) strictly better off. We conclude that fiscal competition may not undermine the applicability of analyses such as ours after all.

5. Specification Issues

In this section, we address two questions – an alternative rationale for unemployment, and issues surrounding the specification for labour supply.

Since there is controversy concerning how best to model unemployment, we consider an alternative to efficiency-wage theory. In particular, in Europe, the role of unions in pushing the wage above market clearing levels is often stressed. Pissarides (1998, p. 162) outlines a compact specification of the interaction between unions and firms. It involves firms choosing employment after the wage is set as a result of a Nash bargaining process. If individuals are risk neutral, and the production process is Cobb-Douglas, Pissarides shows that the closed-form solution for the unemployment rate is precisely our equation (4) above. In this case, parameter α is defined differently:

$\alpha = (\varepsilon(1-\gamma))/(\gamma(1-\varepsilon))$, where, as above, γ is labour's exponent in the production function, and ε is labour's bargaining power parameter in the Nash-product involved in the theory of wage setting. (This parameter determines the share of the surplus resulting from the employment relationship that goes to workers.) The only other changes in the model are that, with unions instead of efficiency wages, parameter b is unity and the exponent for capital in the Cobb-Douglas production function is specified as β, where $\gamma + \beta < 1$, since there must be a surplus to be bargained over.

With the structure of the model almost identical, it is not surprising that many of the results (and the intuition provided by Figures 1 and 2) are the same as what have been explained above. The major difference is that there is an implicit third factor – which we can think of as the entrepreneurs – receiving income equal to $(1-\gamma-\beta)Y$. For the surplus that is bargained over to remain in full equilibrium, we have to assume that the entrepreneurs are not mobile internationally. Thus, we are forced to treat the entrepreneurs in a group along with the (unskilled) workers. This is unappealing since there is not the same public concern about entrepreneurs. Thus, while our results are very similar with unions replacing the efficiency-wage specification (and our analysis therefore passes this sensitivity test), we prefer the efficiency-wage model on motivation grounds.

We now discuss our specification of labour supply. In effect, we assume that labour force participation is independent of the policy changes that are examined. This may seem especially controversial in the case of basic income, since some proponents stress possible differences between BI and other forms of income support on this front.

As a result, we provide a brief review of the empirical literature concerning the impact of income taxation on work incentives.

The empirical literature on labour supply has identified two margins in which labour supply can respond. First, there is the response along the intensive margin. That is, individuals can vary their hours or effort intensity on the job. If leisure is a normal good, the income and substitution effects of tax changes work in opposite directions. The empirical literature has been at pains to establish the size of the net effect. Killingsworth (1983), Burtless (1986) and Blundell (1992) conclude that the evidence suggests a labour supply elasticity far closer to 0 than to 1.

Second, individuals may respond along the extensive margin; that is, they decide whether or not to enter the labour force. With respect to the extensive margin, the Negative Income Tax (NIT) experiments and Earned Income Tax Credit (EITC) policies in the United States have provided most of the evidence. It is well established that, relative to a NIT program, incentives to work are enhanced with an EITC because the implicit tax rate inherent in the latter program is smaller. Nevertheless, some authors (for example, Browning (1995) and Eissa and Hoynes (1998)) have still pointed to some problems regarding the incentive structure of the EITC. A major concern in this respect is that the EITC is effectively subsidizing married mothers to stay at home (while it has only a small positive effect on married men's labour supply). Eissa and Hoynes (1998) suggest that a possible reform of the EITC (that it be based on individual earnings as opposed to family earnings) would offset the incentives for secondary earners to leave the labour force. Since the BI proposal provides support to working age individuals (rather than families), it should be less prone to causing reductions in participation rates. This

consideration, when taken together with the small effects identified by Eissa and Hoynes, lead us to regard the assumption of no effect of BI on aggregate labour force participation as a reasonable approximation of reality.

6. Conclusions

Our analysis of basic income and employment subsidies has drawn attention to some of the complications that follow from the financing of these initiatives. Even in a closed-economy setting, the analysis identifies political economy questions concerning how such policies can achieve support when segments of the population suffer income losses. The analysis indicates that these concerns are increased in the open-economy setting, where those who are taxed have an increased ability to avoid any loss in income. Nevertheless, we have stressed that in a second-best initial situation, Paretian improvements are possible. Further, a balanced budget tax substitution was identified as one initiative that could thereby avoid any political economy support problem – even in a global setting. We think that the identification of this possibility should allay some of the fears of those who think that globalization may weaken our ability to effect low-income support policy in a small economy. The analysis suggests that more research on tax substitutions of this sort may bring at least as big a return as will further analysis of basic income and employment subsidies.

In related work, we have begun some of this additional investigation. We are considering a specification of technology that allows for an explicit difference between skilled labour and physical capital (with the former being essential in the production process). Also, we allow the skilled individuals to save (so that their consumption and

income are not identical, and so that the analysis allows for the effects of each policy initiative on long-run wealth accumulation). Preliminary results suggest that some of these changes in model specification can increase the support for basic income and/or employment subsidies. We hope that the present paper stimulates others to work on extensions such as this one.

Of course, even with extensions, it may not be possible to incorporate within the analysis all aspects of the debate concerning basic income and employment subsidies. For example, proponents of BI stress issues such as its beneficial effects on the level of real freedom for disadvantaged groups, while some opponents stress self-sufficiency and the value people derive from making a contribution through employment. These wider philosophical issues are well summarized in the debate between Phelps (2000) and Van Parijs (2000) in the *Boston Review*. Some of these wider issues can be included in an extended version of our analysis. One relates to the encouragement of work sharing, and a second to reductions in administrative costs. (BI would do away with complicated means-tested benefits.) Another issue stressed by proponents of the BI is that – when it replaces unemployment insurance – it offers incentives for skill acquisition. It remains to be explored how BI may affect behaviour if it also replaces a public pension system. Nevertheless, our work in progress involving a formal skilled-unskilled distinction and long-run wealth accumulation are designed to allow theses issues to be explored. In the meantime, it is hoped that the present paper has clarified some of the basic macroeconomic trade-offs involved with the provision of basic income and employment subsidies.

Appendix

For the closed economy, the policy results are as follows.

With BI, $du/d\tau = (dw/w)/d\tau = (db/b)/d\tau = (dY/Y/d\tau) = 0.$

Also, $(dv/v)/d\tau = -1/(1-\tau)) < 0$, and $(dx/x)d\tau = [(1-u)(1-\gamma)]/(\gamma\psi) > 0.$

With the employment subsidy,

$$du/d\tau = -(u(1-\gamma)(1-u))/\gamma\lambda < 0$$

$$(dw/w)/d\tau = [(1-u)(1-\gamma)(1-\alpha\gamma-(u(1-\gamma))/(1-u))]/[\gamma\lambda(1-\alpha\gamma)] > 0$$

$$\lambda = \psi - (uf/(1-u) > 0$$

$$(db/b)/d\tau = -[\alpha u(1-\gamma)(1+\gamma)]/[\gamma(1-\alpha\gamma)\lambda] < 0$$

$$(dY/Y)/d\tau = -[\alpha\gamma u(1-u)(1-\gamma)]/[\gamma\lambda(1-\alpha\gamma)] < 0\,.$$

With the wage-income tax cut,

$$du/d\tau = -((1-\gamma)(1-u)(u-\alpha))/\gamma\Omega\phi < 0$$

$$\Omega = 1-t-f > 0$$

$$\phi = 1-u-[(f(u-\alpha))/(\Omega(1-u))] > 0$$

$$(dx/x)/d\tau = [(1-u)(1-\gamma)\theta]/[\gamma\phi(1-\alpha\gamma)] > 0$$

$$\theta = [(u-\alpha)(1-\alpha\gamma)[(\Omega/\psi)-(1/(\Omega(1-u))]]+[(1-u)(1-\alpha\gamma)/\psi]+[\alpha\gamma^2/u\Omega] > 0$$

$$(dY/Y)/d\tau = (1-u)(1-\gamma)[(\alpha^2/u)+((1-\alpha)(u-\alpha)/(1-u))]/[\Omega\phi(1-\alpha\gamma)] > 0$$

$$(dv/v)/d\tau < 0$$

Not all the signs reported are certain *a priori*. Nevertheless, as noted in the text, sufficient - though not necessary - conditions for all but the very last result are:

$$u < f < (1-t) = (1-\tau).$$

Since these restrictions are not at all controversial, we can be confident of the signs that are reported.

For the small open economy, the policy results are as follows (a ^ over a variable denotes proportional change).

With BI,

$du / d\tau = 0$

$\hat{w} / d\tau = -(1-\gamma) / (\gamma(1-\tau)(1-\alpha)) < 0$

$\hat{b} / d\tau = -(\alpha(1-\gamma)) / ((1-\tau)(1-\alpha)\gamma) < 0$

$\hat{x} / d\tau = ((1-\gamma)\delta) / \gamma < 0$

$$\delta = (1/[(1-t) + (uf/(1-u))]) - (1/[(1-\tau)(1-\alpha)]) < 0$$

With the employment subsidy,

$du / d\tau = -(u(1-\gamma)(1-u)) / \gamma\lambda < 0$

$\hat{w} / d\tau = (1-\gamma)[(1-u)(1-\alpha) - (\lambda/(1-\tau))] / (\gamma(1-\alpha)\lambda) < 0$

The *x* response is calculated from these component multipliers (as in earlier cases). The result is unsigned. Nevertheless, we have experimented with many parameter values, and the results are unaffected. Readers may wish to use our baseline parameter assumptions: (noted in the text) to verify that, for representative parameter assumptions, *x* falls with the introduction of employment subsidies.

With the wage-income tax cut,

$du / d\tau = -((1-\gamma)(1-u)(u-\alpha)) / \gamma\Omega\phi < 0$

$\hat{w} / d\tau = -(1-\gamma)[(\phi/(1-\tau)) - (\alpha^2(1-u)/(u\Omega))] / [\gamma\phi(1-\alpha)] < 0$

$\hat{b} / d\tau = -[(\alpha(1-\gamma)) / (\gamma(1-\alpha)\phi)][(\phi/(1-\tau)) - (\alpha(1-u)/(\Omega u))] > 0$

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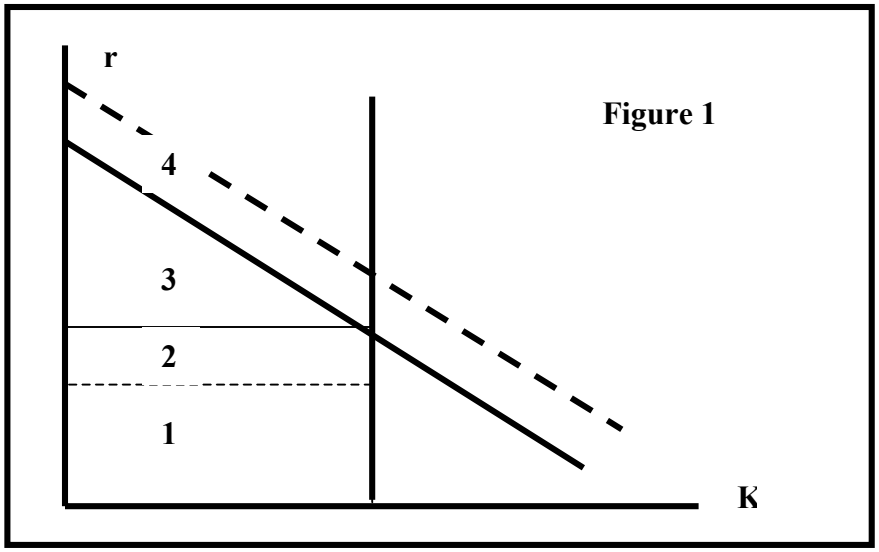

Figure 1

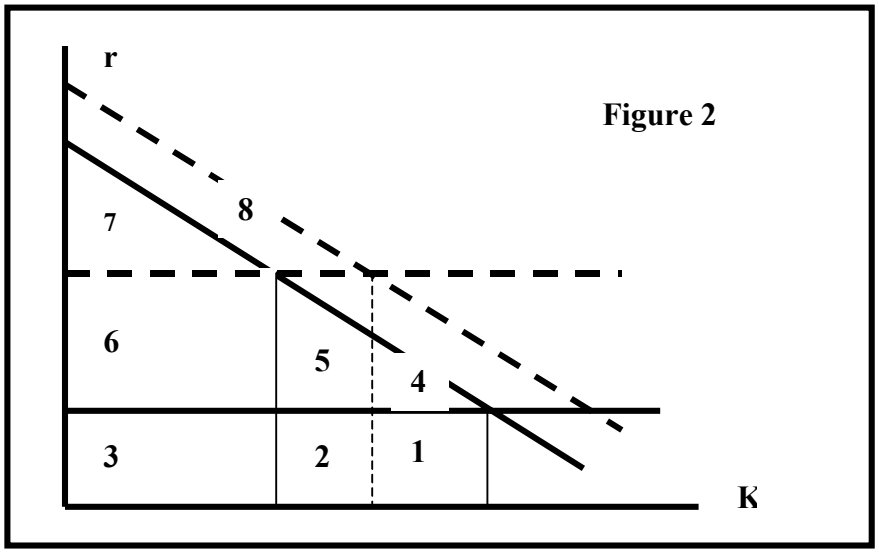

Figure 2

Endnotes

[1] Some economists have pointed to alternative explanations, such as a shift in relative demand in favour of skilled labour. Others, for example, Gordon (1996), has argued that the weakening of labour market institutions and the erosion of the real value of the minimum wage are responsible for the increased inequality in the United States.

[2]The BI proposal, although it can be traced as far back as Augustin Cournot and John Stuart Mill, must be seen in tandem with the current policy trend in many OECD countries to "make work pay". By conferring tax credits and benefits to employees, policy makers in many countries attempt to increase employment and net incomes of low-wage earners without imposing too large a burden on the state's budget (e.g. the Earned Income Tax Credit (EITC) in the US, the Child Tax Benefit in Canada and the Working Families' Tax Credit in the UK). Nevertheless, the measures implemented do not aim at guaranteeing a subsistence level. All these programs are conditional on employment, and the level of the implied subsidy is inversely related to the income (or hours of work) of the recipients. To the proponents of BI, this is the Achilles' heel of these programs, since the implied marginal tax rate for households in the phase-out range of these programs can be as high as 80 percent (see, Brewer and Gregg (2001)).

[3] Following Esping-Andersen (1990) we can identify four "models of welfare capitalism" in the EU: the Scandinavian model of universal social protection as a right of citizenship; the 'Bismarckian' employment-based model of Germany, Austria, France and the Benelux countries; the Anglo-Saxon model of the United Kingdom and Ireland; and the fragmented and highly idiosyncratic arrangements of the remaining southern EU members. Also, Heady, Mitrakos and Tsakloglou (2001) document the very large variance of social transfers in the EU. Social transfers as a percentage of GDP vary between 16.9% (Portugal) to 37.6% (Sweden). Wide differences also exist in the allocation of such transfers by type of benefit (for example, family related benefits account for 0.7% of total social transfers in Spain and for 15.2% in Ireland), by their impact on inequality (the proportional decline in the Gini index of inequality due to social tranfers in cash varies between 46% for Denmark and 22.7% for Portugal), and in poverty (the existence of unemployment benefits reduces poverty by 66.4% in Denmark and by 1.7% in Greece).

[4] Others (such as Manning (1995) and Rebitzer and Taylor (1995)) have shown that – in such a second-best setting – other non-standard results can emerge. For example, in their efficiency-wage models, minimum wage laws can raise employment. We have verified that this is not possible in Summers' version of efficiency wage theory that we rely on in this paper.

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