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Is income security possible in a capitalist economy?

An agency-theoretic analysis of an unconditional income grant

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This paper is an assessment of the economic effects of the replacement of means-tested or employment-status-related state redistributive programs by a basic income grant paid unconditionally to all adults without regard to their employment status or pretransfer incomes. A microeconomic model is developed to identify the effects of such a grant on the institutional mechanisms governing the supply of work by those employed and the implied effects on the level of wages, profitability and investment. Two questions are posed. First, taking account of the implied effects on wages, labor discipline and taxes, is it possible to introduce a basic income grant without reducing the level of economy wide profitability and investment? And second, if so, what is the largest grant consistent with maintainance of the level of profitability and investment? The answer to the first question is affirmative. The answer to the second is that for an economy such as the United States, the profitability and investment maintaining grant is small but hardly insignificant; its implementation would effect a major redistribution of income from the employed and the unemployed to the non-employed.

1. Introduction

The challenge of the modern welfare state is to reconcile the objective of economic security with the effective functioning of incentive structures capable of inducing high levels of both investment and work, given two prominent structural characteristics of the capitalist economy: The international mobility of capital and the alienation of labor. Any redistributive proposal which seeks to evade this challenge is bound to fail.

Because in a capitalist economy investment by wealthholders and diligent work by workers are the result of choices made by large numbers of autonomous individuals, the economic viability of the welfare state requires

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that its redistributive policies be consistent with investment-promoting and work-inducing decision environments facing these individuals. But the promise of income security works at cross purposes with a prominent mechanism inducing high levels of work effort at wage levels consistent with positive profits, namely, the dependence of the worker on the wage as the main source of livelihood coupled with the lack of employment security. If redistributive policies undermine the economic insecurity essential to this labor discipline mechanism, unit labor costs are likely to rise, placing downward pressure on the profit rate, and thereby dampening investment incentives. If the fiscal burden of redistributive policies falls on capital, or if government borrowing raises the cost of borrowing, investment is likely to be further reduced.

The challenge is obviously not insurmountable; many modern capitalist societies have granted a significant degree of income security and nonetheless maintained high levels of investment and productivity growth. Indeed the expansion of redistributive policies in most of the advanced capitalist countries coincided with and may have contributed to an historically unparalleled period of capitalist growth – the general economic expansion extending from the late 1940s through the early 1970s.

Moreover cross national comparisons of economic performance over the post World War II era indicate high levels of productivity growth and investment in economies with relatively high levels of income security – West Germany and Norway, for example – and less successful economic performance in economies with less well developed social insurance institutions – the U.S., Canada, and the U.K. for example. Relatedly, cross national comparisons have generally revealed positive or insignificant statistical associations between measures of income equality and measures of economic performance [Persson and Tabellini (1991) and Bowles et al. (1990)].

Three contributions of redistributive policies to the capitalist growth process may be identified. First, it seems likely that under some conditions, redistribution from capital to labor and from higher to lower income recipients supports a higher level of aggregate demand, generating higher levels of both employment and capacity utilization.[1] There are empirical reasons to doubt the relevance of this egalitarian model of demand-led growth, however, as it presumes that aggregate demand constraints are the primary obstacle to employment and growth. Further, while the conditions for so called wage-led employment are empirically reasonable for a largely closed economy, they are unlikely to obtain in highly open economies where net export demand constitutes a major component of aggregate demand.

Second, income redistribution may constitute a necessary condition for

[1]These macroeconomic conditions are explored theoretically and econometrically in Bowles and Boyer (1988, 1990a, 1990b, and 1993).

address what many see as the key normative objection to the basic income grant, namely that it establishes a claim on income independently both of the recipient's need and of his or her level of work or other social contribution. Questions of political feasibility are likewise skirted.

In order to assess the likely effects on labor discipline and wages of a basic income grant I will present, in section 2, a model of the regulation of work activity which, while highly simplified, focuses attention on the relationship between income security and work effort, a relationship which I consider to be critical to the determination of wages, labor productivity and profitability in many capitalist economies.[3] In section 3 I analyse the effects of variations in the level of income-replacing transfers on the wage rate and the level of work intensity.

In section 4 I introduce a radically simplified version of the basic income grant and seek answers to the following two questions: Is it possible to introduce a basic income grant without reducing the level of economy wide profitability? And if so, what is the largest basic income grant consistent with the pre-grant level of profitability? The answer to the first question, perhaps surprisingly, is affirmative. The answer to the second is that for an economy like the U.S., the profitability-maintaining grant is small but hardly insignificant.

We thus have the following conundrum: Though a basic income grant is feasible in the sense that it could be implemented in a capitalist economy even assuming a high degree of profit-responsiveness of investment, the required level of the grant would be so small as to compromise its income security objective. Despite the stringency of the profitability-maintaining feasibility condition, however, the maximum feasible grant would effect a radical equalization in the distribution of non-property incomes.

I consider the larger macroeconomic effects of the basic income grant in section 5, concluding that taking account of the other aspect of labor supply – the supply of labor to, rather than in, employment – might significantly reduce the maximal feasible grant. In the final section I explore what changes in the regulation of work and investment might allow the implementation of a larger grant without compromising the future growth of productivity.

2. Labor discipline, wages, and profits

The labor discipline model underlying the analysis of the basic income grant focuses attention on the conflict between employer and worker concerning the level of labor effort performed per hour, which I define as e. I assume that production is by a team of homogeneous workers whose work

[3]This model is presented in considerably greater detail in Bowles (1985), and Bowles and Gintis (1990b, 1993).

securing the kinds of labor-capital cooperation necessary to find efficient solutions to the coordination failures associated with both the employment relationship and the macroeconomic management of the economy. It is perhaps not surprising in this respect that in the more advanced welfare states – Sweden, Netherlands, Denmark, and West Germany, for example – the fraction of all workdays lost to strikes over the post World War II period averaged less than a third of the level in countries with less well developed welfare states – the U.S., Canada, Australia, and Italy [U.S. Bureau of Labor Statistics (1984)].

Third, the human resource augmenting form taken by many redistributive programs may attenuate the ubiquitous market failures surrounding the private provision of schooling, medical care, and other human resource investments.

Whatever its causal connection to the welfare state, the post World War II golden age of capitalism is now behind us; and in the less sanguine environment of the 1990s attention has shifted to the apparent contradiction between the objective of granting economic security at a decent level of living and the viability of the peculiarly capitalist mechanism promoting the growth of productivity. Prominent among the concerns expressed by students of the welfare state is its effects on labor supply. Two issues arise here: the supply of labor hours to employment, and the supply of work by those employed, or to use the apt Marxian terms, the supply of labor power and the extraction of labor from labor power. The first has been extensively studied.[2] The second has been for the most part ignored by economists, though it has not escaped notice by ideologues of the right, who seem at least as concerned about loafers on the job as loafers on the dole.

In the pages which follow I will assess some of the consequences of the adoption of an unconditional basic income grant for the mechanisms governing the supply of work by those employed and the implied effects on the levels of wages, profitability and investment. The grant to be analysed is similar to that proposed by Van der Veen and Van Parijs (1986) in that it substitutes a grant to all members of society regardless of income or employment status for the income-replacing or means-tested transfers common to many social insurance systems. Following their usage, I term it a basic income grant.

I will abstract almost entirely from the important macroeconomic issues just raised: the supply of labor to employment and the aggregate demand for labor. Space also precludes an analysis of what I consider to be one of the most important likely benefits of a basic income grant, namely the change in the intra-family distribution of income and the resulting transformation of patterns of women's economic dependency on men. Finally, I will not

[2]See Moffitt (1992) for a survey of evidence concerning the U.S.

activities are observable only at a cost to the employer; thus while output is costlessly observable, individual work contributions to output can only be determined by costly direct observation of inputs. A single commodity is produced, the production process being jointly described by a production function and what may be termed a labor extraction function, the latter representing a dismissal threat system of labor relations governing the pace of work. For simplicity I assume that the production function and labor extraction function are separable: the choice of technique and levels of other production inputs does do not affect the regulation of labor intensity.

These assumptions imply that the competitive equilibrium wage is identical for all workers. Workers are assumed to derive utility from income (positively) and from work (positively or negatively). The utility or disutility derived from work in a given time period, u, depends on both hours worked and work intensity. Because I will abstract from variations in labor hours I will arbitrarily set hours of work at unity and write the utility of labor effort as $u=u(e)$. (Effectively this assumption focuses the analysis on the per-hour levels of income and effort.) Using the upper case U to denote the worker's total utility, and y to represent income from both labor and other sources, and further assuming that utility is linear in income and additively separable in income and effort we thus have $U=y+u(e)$. I assume effort is costly for the employee to provide above some minimal level $\tilde{e}$, or $u'(\tilde{e})=0$ and $u'<0$ for $e>\tilde{e}$, where the u' denotes the derivative of u with respect to e. At high levels of work intensity, increases in the level of effort are particularly onerous, or $u''<0$. Both U and u obviously depend on prevailing work norms, the perceived degree of fairness of the distributive system, relative prices and availabilities of commodities, and other possible influences on the subjective value of work and income.[4]

The employer is assumed to know that the employee will choose e in response to both the cost of supplying effort and the penalty which the employer imposes if dissatisfied with the employee's performance. For simplicity I assume the penalty the employer will impose is the non-renewal of the employment relationship – i.e., dismissing the worker. Because dismissed workers are immediately replaced from the pool of unemployed workers, the rate of unemployment is not directly affected by variations in the level of dismissals.

I define the value of employment, $V(w,e)$, as the discounted present value of the worker's future utility taking account of the probability that the worker will be dismissed; for obvious reasons it is an increasing function of the current wage rate w. (For the moment I assume a zero tax rate so that the wage received by the worker and that paid by the employer are identical.) I define the employee's fallback position Z as the present value of

[4]As the hours of work are invariant, I do not consider the utility of leisure off the job.

future utility for a person not now holding a job – perhaps the present value of a future stream of unemployment benefits, or the present value of some other job, or more likely a sequence of the two. Then the employer's threat of dismissal is costly to the employer only if $V(w)>Z$. I call the difference between the value of employment and the fallback position, $V(w,e)-Z=R$, the employment rent, or the cost of job loss.[5] We denominate R, V, and Z in common units (say, dollar equivalents).

Let $\tilde{w}$ be the wage which equates $V(w,e)$ and Z at a level of effort such that the marginal utility of effort is zero. This wage rate implies a zero employment rent, and hence makes the worker indifferent between keeping or losing his or her job. The wage $\tilde{w}$ thus induces the worker's freely-chosen (or 'whistle while you work') effort level $\tilde{e}$. I term $\tilde{w}$ the reservation wage corresponding to the fallback position Z, or $\tilde{w}=\tilde{w}(Z)$.

The employer has a monitoring system such that the employee's performance will be found inadequate with a probability t, which varies with the level of monitoring resources deployed per hour of employment, m, and inversely with the employee's level of effort: $t=t(e,m)$ with $t_e<0$ and $t_m>0$. If the effort level is found to be inadequate, the employee is dismissed. It is the link between effort and the likelihood of job retention that induces the employee to provide effort above $\tilde{e}$.

Of course workers may bargain over the monitoring and dismissal function, seeking to limit the conditions under which they may be dismissed. Workers may also choose to cooperate with their employers to enhance the effectiveness of the monitoring system, or they may sabotage it. A more complete model would take account of this conflict over the monitoring structure and the collective action problem among workers concerning the extent of collaboration with the employer, perhaps by allowing the endogenous selection by the employer of an optimal set of incentives for workers to contribute to their own mutual monitoring, an optimal schedule $t(e,m)$, an optimal choice of the level of surveillance [Bowles (1985); Gintis and Ishikawa (1987)], and the choice of production technologies as an aspect of endogenous enforcement [Bowles (1985)]. We lose little, however, by assuming that the worker detected providing substandard effort is dismissed, and that the production technology is exogenously determined. I will assume for the moment that the probability of detection is exogenously given as a function of effort, but will consider alterations in the monitoring function presently.

To elicit effort greater than $\tilde{e}$, the employer is obliged to offer a wage greater than $\tilde{w}$, balancing the cost of paying the larger wage against profits associated with the employee's greater effort induced by a higher cost of job

[5]This is a 'rent' as it represents a level of utility above and beyond the utility of an identical employee without the job.

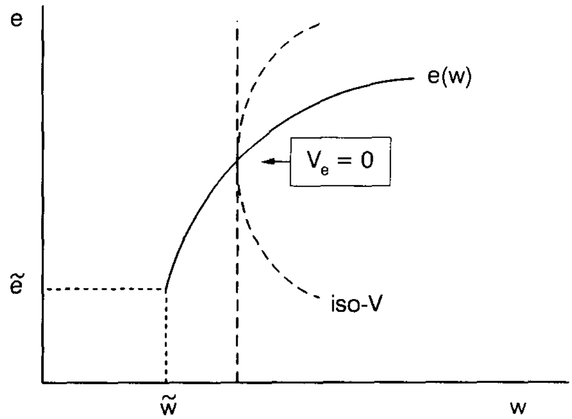

Fig. 1. The labor extraction function.

loss. Noting that the fallback position Z is exogenous to the exchange, we may write the employee's best response to w, which we call the labor extraction function, simply as $e=e(w)$. Such a labor extraction function can be derived as follows.

The worker seeks to maximize the present value of his or her utility, V. This present value also depends on the worker's rate of time preference, i, the likelihood that the worker will be dismissed, t, and the worker's fallback position, Z if dismissed or, $V=V(w,e,t(e,m),Z,i)$. For any given wage offer and monitoring function adopted by the employer, the worker maximizes V by varying e so that

$$V_e=0, \tag{1}$$

or

$$U_e-t_e(V-Z)=0, \tag{2}$$

which simply requires that in selecting the level of work effort, the worker balances the disutility of labor on the margin with the beneficial effect of greater labor effort on avoiding dismissal and thus retaining the employment rent $(V-Z)$.[6]

In the neighborhood of a competitive equilibrium e increases with w, though at a diminishing rate, or $e'>0$, $e''<0$. A representative labor extraction function is presented in fig. 1. The iso-V function (one of a family of such contours) describes combinations of effort and the wage yielding

[6]The derivation of the labor extraction function is developed in more detail in Bowles and Gintis (1990b).

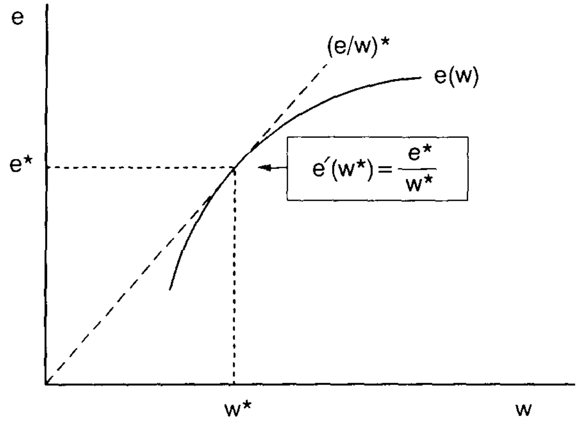

Fig. 2. Equilibrium wage and labor intensity.

identical values of V. The labor extraction function is the locus of points at which these iso-V functions are vertical, fulfilling eq. (1). An improvement in the monitoring system – say through greater worker cooperation in monitoring fellow workers – will shift the labor extraction function upwards, as the same wage rate will now induce a higher level of work effort given the greater probability of job termination for those working below management's expectations.

The firm's optimal wage and effort level is determined as follows. The employer is assumed to know the employee's best response schedule $e(w)$. Once the employer selects the wage, the level of effort which will be performed is therefore known. The profit-maximizing employer thus chooses the wage w to maximize the objective function e/w (i.e., work done per unit of wage expected), subject to the worker's best response schedule $e = e(w)$.[7] The solution to the employer's optimum problem is to set w such that

$$e' = e/w, \tag{3}$$

or the marginal effect of a wage increase on effort equals the average effort provided per unit of wage cost. This solution yields the equilibrium effort level e^* and wage w^*, shown in fig. 2. The ray $(e/w)^*$ is one of the employer's iso-labor-cost loci; its slope is e^*/w^*. Steeper rays are obviously preferred, while the employer is indifferent to any point on a given ray, as each entails an identical labor cost. For given levels of output per unit of effort and capital stock per unit of output, the profit share and the profit rate both vary

[7]Profit maximization requires the maximization of e/w in this case.

with the ratio e/w.[8] I will refer to changes in e/w as changes in the profit share.

3. Employment rents, the reservation wage, and labor costs

While the worker's fallback position is exogenous to the firm, it is not constant, but varies with the level of employment, wages in alternative jobs, and the availability of income-replacing payments from the state and perhaps from others. Variations in the fallback position will generate variations in the firm's optimal wage, as will variations in the disutility of labor.[9] In this section I develop an extension of the above model to elucidate these effects. Because in equilibrium wages are identical for homogeneous workers, and because we are interested only in equilibrium levels of our variables, I assume the wage in alternative employment is the same as the current wage. Thus the results below reflect comparisons among equilibria in the labor market and labor regulation system, the differences arising from differing levels of exogenously determined income-replacing payments and disutilities of labor.

To do this, we will have to define V and Z more precisely. I assume that the employee works for a period at the end of which wages are paid and the job is either terminated with probability t, or continued. Thus, using the notation above, I write the employed worker's present value V, as the first year's income and utility of labor, plus the discounted value of $\hat{V}$, the expected present value of utility for an employed worker at the end of a period of employment which is simply the weighted sum of the value of employment and the fallback position, the weights being the probabilities of starting the next period employed or out of work, or $(1-t)V+tZ$. Thus

$$V=\{w+u(e)\}+\hat{V}/(1+i) \tag{4}$$

The term $(1+i)$ in the denominator of the second term simply discounts the future at the rate i.

If the worker is without a job he or she will spend a fraction d of the period unemployed receiving $\hat{w}$ in income-replacing transfers (unemployment

[8]The profit rate r depends on the level of output per unit of effort, q, the ratio of effort to the wage, e/w, and the level of capital stock per hour of labor employed, k: $r=(eq-w)/k$ or $(1-w/eq)eq/k$. The second expression is the profit share of output multiplied by the output–capital ratio. Throughout I assume that q is constant; k depends both on the technology of production and on the level of employment, and hence may vary, though its effects are mentioned only in passing in what follows.

[9]I refer to the disutility (rather than the utility) of labor for ease in exposition. We do not know if $u(e)$ is positive or negative, of course; we know only that $u'<0$ for wages above $\tilde{w}$ because wages above the reservation wage induce levels of effort greater than that freely chosen by the worker.

insurance and other means tested transfers).[10] The remainder of the period the worker will be employed, and at the beginning of the next year will face the same prospects as the employee without a spell of unemployment, or $\hat{V}$. Thus, adopting the convention (for computational convenience) of not discounting the current period:

$$Z=[d\hat{w}+(1-d)(w+u(e))]+\hat{V}/(1+i). \tag{5}$$

The first term is the utility derived during the first year, a weighted sum of income-replacing payments (and no utility from labor) and the utility of both wage income and labor, the weights being the fraction of the year unemployed and employed.[11]

Subtracting (5) from (4), the cost of job loss (or employment rent) is thus comprised of the loss in income $(w-\hat{w})$ partially compensated by the relief from the (negative) utility of labor $u(e)$, extending over the duration of the spell of unemployment:

$$R=d(w-\hat{w}+u(e)) \tag{6}$$

from which it is clear that the reservation wage $\tilde{w}$ (that which drives the employment rent to zero) is just $\hat{w}-u(e)$, the sum of the income-replacing transfers and the disutility of labor.

The effect of a change in the level or availability of unemployment insurance is now readily determined. The underlying logic is as follows. The firm's optimal wage offer rises with the level of income-replacing payments, because income-replacing payments constitute part of the reservation wage. As a result the best the employer can do following an increase in income-replacing payments is to pay workers more, offsetting the workers' improved fallback position by increasing the hourly wage and thus preventing the reduction in the cost of job loss which would otherwise occur. Fig. 3 illustrates the effect of an increase in $\hat{w}$ on the equilibrium wage: The increased availability of income-replacing transfers displaces the reservation wage and the entire labor extraction function to the right, leading to a new higher equilibrium real wage.[12]

Associated with the increase in the equilibrium wage is a fall in the level of

[10]This formulation requires, of course, the definition of a period sufficiently long so that d does not exceed unity. For average unemployment durations in most capitalist economies, a period may be defined as a year without violating this requirement.

[11]I assume that the employee following a spell of unemployment has the same probability of job termination at the end of the first year as the worker without unemployment. If the spell of unemployment is a small fraction of the time period or if the probability of termination is small this assumption is of little empirical importance.

[12]This result may be confirmed by totally differentiating the firm's first order condition for the optimal wage: The total derivative of the equilibrium wage with respect to $\hat{w}$ is: $(we''-e')/we''$ which is unambiguously positive by the second order conditions for the firm's cost minimization.

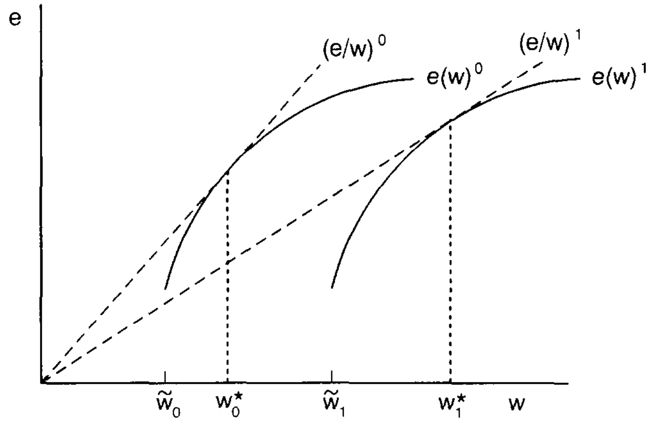

Fig. 3. The effects of an increase in the unemployment insurance benefit.

effort per wage dollar (the new ray e/w is 'flatter') and hence an increase in the unit labor cost which ceteris paribus results in a decline in the profit share and the profit rate. An increase in the disutility of labor will yield the same effect for it will raise the reservation wage.

Before using this model to analyse the effects of a hypothetical basic income grant, it may be useful to ask if the model bears any empirical resemblance to the determination of work and pay in a capitalist economy. Three empirical implications of the model may be identified. First, the real after-tax wage should vary directly with the level and availability of the unemployment insurance benefit and other income-replacing transfers and inversely with the duration of unemployment. While estimation of the unemployment/real-wage relation has proved elusive in many econometric studies, both the expected unemployment benefit and the expected duration of unemployment have been found to be robust predictors of the level of the real after-tax wage in the U.S. over the period 1954–1987. Further, estimation of a wage equation based on the first order condition (3) over the same period yielded a coefficient on a variable measuring the predicted wage (namely e/e') of almost exactly unity.[13]

Second, the model predicts positive levels of employment rents. Schor and Bowles (1987), Gordon (1989) and Bowles and Gintis (1990a) estimate employment rents for the U.S. during the post World War II period, finding

[13]These results are presented in Bowles (1991). From eq. (3) the optimal (after-tax) wage offer is e/e'. Using an econometric estimate of the labor extraction function I derived a time-series measure of e/e', which in turn was used to predict the real after-tax wage. If firms fulfill the first order conditions (3) the coefficient of e/e' in a wage equation should be unity.

that on reasonable assumptions the employment rent received by a representative production worker is a significant fraction of the after-tax wage even in periods of relatively high employment.

Third, the labor extraction function would lead one to expect a positive relationship between the level of the employment rent and the level of output per hour of labor employed. This relationship has been strongly confirmed in studies of the U.S. economy by Weisskopf et al. (1983), Rebitzer (1987) and Green and Weisskopf (1990). Additionally Schor (1988), using direct measures of labor input collected at the plant level in the U.K., found a statistically significant relationship between labor intensity and the cost of job loss. Weisskopf (1987), however, found little evidence of the expected inverse relationship between output per hour and employment security in a number of European economies.

While these studies are hardly conclusive, some of the tests are quite demanding (the wage function based on (3) and Schor's analysis of directly observed work intensity data in particular). The fact that the expectations of the labor extraction model are strongly confirmed suggests that it may capture some of the important dimensions of the determination of work and pay, at least in some capitalist economies.

4. A feasible basic income grant in a capitalist economy

I define a feasible basic income grant as one which does not lower the after-tax profit share of output, or what is the same thing in this model, does not lower the ratio of labor effort to the wage. This definition of feasibility is based on the well documented responsiveness of private investment to the after-tax profit, and the key role played by private investment in the health of a capitalist economy.[14] Notwithstanding the empirical support for these effects, the definition is too stringent economically, and not stringent enough politically. Most obviously, a grant might pass the economic test, and yet fail to garner sufficient political support to secure implementation. Less transparently, constancy of the profit share is not a necessary condition for constancy of investment. For example, a grant financed in such a way that it lowered the profit share but raised the level of aggregate demand would support a higher level of capacity utilization which in turn could well support a higher profit *rate* and a higher level of investment, even with a lower profit share.[15]

[14]Evidence for the importance of profitability as a determinant of private investment may be found in Bowles et al. (1989), Catinat et al. (1988), Bowles and Boyer (1993) and Bhaskar and Glyn (1993).

[15]Increases in the level of capacity utilization lower the capital stock per hour of employed worker and thus raise the profit rate for a constant profit share. Even a lower profit rate combined with a higher level of capacity utilization might well result in higher levels of investment, as the level of capacity utilization is a powerful influence on investment independently of the profit rate. See Bowles et al. (1989).

It may be noted that quite apart from its effects on investment, any change in the labor market determined equilibrium profit share induced by a grant program would generally be inconsistent with the product market determined profit maximizing markup rate and hence would induce equilibrating changes in the price level, degree of international competitiveness and the like, unless the basic income grant were accompanied by accommodating changes in market structures and the exchange rate. Thus despite its shortcomings, the constant profit share feasibility criterion provides a useful benchmark against which to evaluate the grant proposal.

To consider the effect of a basic income grant, we will assume that the only transfers currently being made are the income replacing payments measured by $\hat{w}$, and that these (but not the grant) are financed in such a way that the wage paid by the employer and that received by the worker are identical. This is of course unrealistic, but it will allow a simple analysis of the effect of shifting from an income-replacing to a universal grant approach to redistribution. The first question I will ask is: Does there exist a feasible grant?

To see that the answer is affirmative, consider the following grant proposal: Eliminate all income-replacing payments and redistribute the expenditures in the form of an unconditional universal grant in amount g to all members of the society. I will assume that the society is composed solely of adults so as to avoid complicated issues concerning the size of the grant to children. As the level of public expenditure is unchanged, there is no need, yet, to consider taxation.

The employed worker's and the unemployed worker's present value of utility after the implementation of the grant (denoted in lower case letters to distinguish it from the pre-grant terms) are now

$$v = \{g + w + u(e)\} + \hat{v}/(1+i), \tag{7}$$

and

$$z = \{g + (1-d)(w + u(e)) + \hat{v}/(1+i), \tag{8}$$

so that the employment rent or cost of job loss is

$$r = d(w + u(e)), \tag{9}$$

and the reservation wage is

$$\tilde{w} = -u(e). \tag{10}$$

As the effect of the grant is to lower the reservation wage (by the amount $\hat{w}$), its effects are simply the converse of those analysed in the previous section.

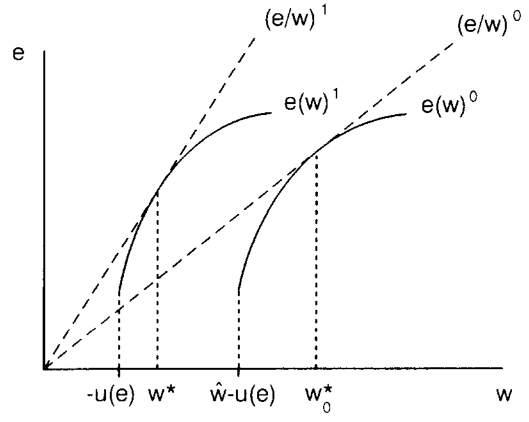

Fig. 4. A feasible basic income grant.

The equilibrium wage will fall, though not as is sometimes suggested because the grant is a wage subsidy (it is not) but because its introduction has been accompanied by the elimination of the income-replacing payment $\hat{w}$, thus reducing the worker's fallback position, z. Fig. 4 illustrates the effect of the elimination of income-replacing transfers and the use of the freed up expenditures to finance a grant. The effort/wage ratio rises, and with it the profit share. This demonstrates the feasibility of the grant.

How large a grant might this proposal entail? If the expected unemployment benefit and other income-replacing transfers (taking account both of the benefit levels and likelihood of obtaining benefits) were half the wage rate, and if the unemployed constituted four percent of the adult population, the grant would equal 2% of the pre-grant wage rate, or for the U.S. in 1987, about $255 per year.[16]

The existence of a feasible basic income grant, and the miniscule size of the particular feasible grant identified, suggest a second question: What is the largest feasible grant?

One way to answer this question is to determine the size of the tax to be paid by businesses which would just offset the increase in the profit share associated with the elimination of income-replacing transfers. The revenues

[16]For production or non-supervisory workers on non-agricultural payrolls in the U.S. in 1987, average hourly earnings after taxes were $7.28 [Weisskopf (1984) updated by Gordon (1989)], average weekly hours were 35, so for a 50 week year annual earnings were $12,751, which times 2% gives the figure in the text. The hypothetical level of $\hat{w}/w$ (i.e., 0.5) is amost exactly equal to the level of expected weekly unemployment benefits, food stamps and other means tested transfers available to an unemployed worker divided by the after tax weekly wage earnings. See Schor and Bowles (1987) and Gordon (1989).

collected from this tax would then represent the maximum addition to the grant identified above consistent with feasibility. The tax need not be levied on the employer, however; and it will be considerably simpler if we consider an equivalent means of financing based on taxing employees per hour of work.

I define this tax as s per hour of labor hired, and the resulting grant is comprised of the part financed by the eliminated income-replacing payments plus the part financed by the tax, s. Writing G/N as the total level of grant payments (G) per member of the labor force (N) and h as the employment rate, and assuming that pre-grant the unemployed received $\hat{w}$ in income-replacing payments gives

$$G/N = \hat{w}(1-h) + sh, \tag{11}$$

and taking account of the labor force participation rate ($n = N/P$)

$$g = G/P = n\{\hat{w}(1-h) + sh\}. \tag{12}$$

The maximum feasible grant will be denoted g^*, and the associated tax rate s^*.

To determine s^*, consider its effects on the labor extraction process. The effect of a tax on employment is a simple hourly reduction in the after-tax wage rate, such that when the before-tax wage is w, the after-tax wage is $w-s$. As it is this after-tax rate to which the worker responds in selecting his or her level of effort, we can rewrite the labor extraction function as $e(w-s)$. The effect of the tax is thus simply to shift the labor extraction function to the right (higher before-tax wages are now necessary to enforce a given level of work intensity, ceteris paribus.)

The maximum feasible tax, s^*, is that which, starting with the extraction function which obtained following the elimination of income-replacing transfers (fig. 4), shifts the extraction function sufficiently far to the right to reduce the maximum effort/wage ratio to that obtaining in the pre-grant situation. The determination of this level of taxation is remarkably simple. As the elimination of the income-replacing transfers shifted the extraction function to the left by the amount $\hat{w}$, it is clear that the implied maximum feasible tax must simply shift the extraction function back to the right by an equivalent amount, or $s^* = \hat{w}$. Put somewhat differently, simultaneously imposing a tax equal to $\hat{w}$ and eliminating the income-replacing payment to the unemployed of $\hat{w}$ will leave unaltered the extraction function and hence the equilibrium level of e/w.

Fig. 5 illustrates the determination of the maximal feasible tax rate, s^*. As can be seen the pre- and post-grant levels of before-tax wages and labor intensity are identical, thus by construction reproducing the pre-grant profit

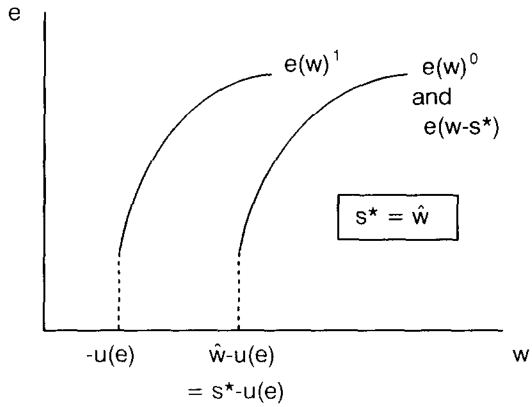

Fig. 5. The maximal basic income grant tax.

share. As the pre-grant level of effort e^* is also reproduced in the maximal grant equilibrium, output per hour is unaffected and thus a given level of aggregate demand generates the pre-grant level of employment demand.[17] Thus the level of employment will be affected only if the restribution of non-property income entailed by the grant alters the level of aggregate demand.

Using (12), the maximal feasible grant is thus

$$g^* = n\hat{w}. \tag{13}$$

How large a grant does this imply? Using the illustrative U.S. data introduced above: $\hat{w}$ is $0.5w$, and if the labor force participation rate is 0.66, $g^* = 0.33w$, or for an after-tax annual wage income of $12,751, a maximum feasible grant of $4,208. This is a substantial overestimate of the maximal feasible grant, because it ignores 60 million persons under the age of 16. If for the sake of illustration children were given a grant of $0.5g$, the maximal grant would be $3,583 for adults (the poverty level for a single individual under 65 years of age in 1987 was $5,909, or 65% greater than the maximal grant.)[18] Thus a couple with two children would receive a total of $10,749

[17]Because the tax implied by the maximal grant will simply reproduce the pre-grant equilibrium, the level of effort and hence the level of dismissals will be unaffected. This being the case, the duration of unemployment will be unaffected by the maximal grant, thus obviating the need to consider effects of endogenously generated variations in the duration of unemployment on the labor extraction function.

[18]Taking account of the whole population and counting children under 16 years of age as half adult equivalents, $n = 0.562$, which when multiplied by the estimate of $\hat{w}/w$ above (0.5) and the annual wage ($12,751) yields this figure.

per year, or about $900 below the poverty level for a family of four for that year.[19]

5. The macroeconomic effects of a feasible basic income grant

The maximal feasible basic income grant has been designed to redistribute income from the employed population to the non-employed population without altering the share of total income received by capital. The employment tax represents a fraction of the before-tax wage equal to $\hat{w}/w$, or using illustrative data from the U.S., about 0.5. The after-tax income of an employed worker is now $g^* + w - s^*$, which is just $n\hat{w} + w - \hat{w}$, or $w + \hat{w}(n-1)$. Using the above data from the U.S. the grant constitutes 40% of the after-tax income of workers; the remaining 60% is derived from employment.[20] The main beneficiaries of the basic income grant are those currently not in the labor force, while the losers are the employed and the unemployed (each received $(1-n)\hat{w}$ less after the implementation of the grant, representing (for the U.S.) about 16% and 33% of their pre-grant incomes, respectively).

To what extent have the simplifying macroeconomic assumptions adopted here biased the estimate of the maximal feasible grant? It is of course impossible to know with any precision, but the following considerations may suggest some important biases. The most unrealistic assumption is that the supply of labor to employment is unaffected by the grant. The effect of the grant is to reduce the after-tax wage (by an amount equal to the pre-grant expected unemployment benefit) and, as we have seen, raise the income of the non-employed by g^*. Thus, while the employment rent measuring the advantages of holding a job as opposed to being unemployed would be unaffected in equilibrium by the maximal feasible grant, the advantages of employment over non-employment (that is not being in the labor force) would be greatly reduced (by the amount s^*). It seems likely that a reduction in labor force participation would therefore result, though I will not speculate on the magnitude of this effect. Indeed while the logic suggesting a strong negative effect on labor force participation rates seems impeccable, it may be misleading. Participation rates in some countries which have substantially delinked work and access to goods and services (notably Denmark, Sweden and Norway) are considerably higher than in the U.S. (Germany, Belgium, and France, by contrast have lower labor force participation rates than the U.S.)

[19] U.S. Department of Commerce (1989, p. 420).

[20] Thus the maximal feasible grant would transfer a hypothetical U.S. (with only income-replacing transfers) from an economy in which workers depend entirely on their wages to one in which the link between work and pay is substantially loosened. By way of comparison, government financed payments constituted a significant fraction of the after-tax income of workers in the following countries (in 1979): Denmark (0.49), Netherlands (0.44), Sweden (0.41), Belgium (0.40), Germany (0.39), France (0.38), and Norway (0.37). Bowles (1982).

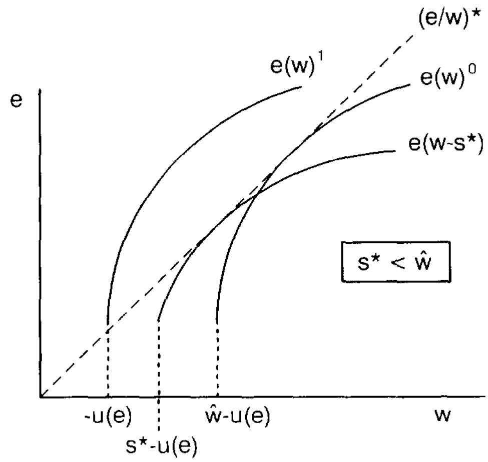

Fig. 6. The maximal grant with endogenous decrease in unemployment duration.

If a reduction in labor force participation did indeed occur, and was accompanied by a reduction in the employment to population ratio, which seems likely, the result (from (13)) would be to lower the maximal feasible grant.

By contrast the effects of a basic grant on the demand for goods and services and hence on the demand for labor are likely to be positive for the following reasons. The maximal feasible grant has been designed to leave unit labor costs and the profit share unaffected. However income has shifted from the employed to the non-employed, and there appear to be substantial differences in savings propensities from wages and from transfers, transfer recipients saving considerably less than wage earners. As a result, the grant's positive effect on aggregate demand and hence on the demand for labor might be quite large.

If employment demand remained unchanged or rose and the supply of labor to employment shrank, the unemployment rate and the duration of unemployment would fall, which from (6) will lower the cost of job loss associated with each wage rate; producing, as we have seen, a flattening of the labor extraction function. To the extent that a reduction of labor supplied to employment occurs as a result of the grant and has these consequences, the maximal feasible grant is less than that determined above, for the flattening of the extraction function clearly lowers the maximal profit possible obtainable given each reservation wage, and hence would preclude a tax as large as $\hat{w}$. The determination of the maximal feasible grant accounting for its effect on the duration of unemployment is illustrated in fig. 6.

Table 1

The effect of the maximal income grant on the size distribution of non-property income among persons.

Income class	Population fraction	Income: Before grant	Income: After grant
Non-employed	$1-n$	0	g^*
Unemployed	$n(1-h)$	$\hat{w}$	g^*
Employed	nh	w^*	$w^*-s^*+g^*=w^*-(1-n)\hat{w}$

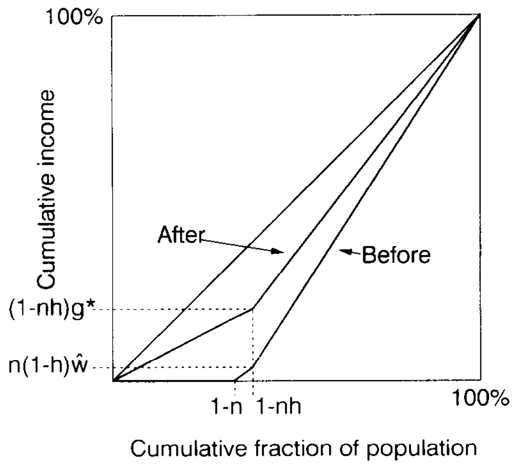

Fig. 7. The effect of the maximal income grant on the size distribution of non-property income among persons.

Though the size of the maximal feasible grant may seem to be disappointingly small, the proposal may nonetheless be attractive, depending on one's assessment of the likely effects on labor force participation. Its main attraction from an egalitarian standpoint is that it might allow a considerable reduction in the degree of income inequality among persons without requiring changes in the structure of control over investment and production which seem politically unlikely at the present.

The extent of the reduction in the degree of inequality is illustrated by the shift in the Lorenz curve indicated in table 1 and fig. 7, on the admittedly unlikely assumption that labor force participation and employment demand are unaffected by the proposal. Using representative data for the U.S., and abstracting from within group income differences, for example, the Gini index of inequality for non-property income derived from the 'before' Lorenz curve in fig. 7 is 0.36; that based on the 'after' Lorenz curve is 0.18. As can be seen, given reasonable values for the relevant parameters, the implied reduction of the Gini inequality index is quite substantial, even for the relatively small maximal feasible grant.

6. Conclusion

The results of this very hypothetical exercise suggest that income security will prove an elusive objective in a society characterized by a strong incentive incompatibility between workers and employers and by a profit-driven private investment process.

Would other institutional arrangements allow a more adequate basic grant? If income security though a basic income grant is to be a major social objective, it must be sought along with structural changes which will either reduce conflict between workers and their employers, or which provide mechanisms for regulating this conflict which are effective under conditions of income security, or which break the link between aggregate profitability and investment. A promising direction in this respect is the relocation of residual claimancy and control in firms from the current owners to workers. While incentive incompatibilities would remain, residual claimancy by workers would attenuate the difficulties encountered in monitoring and motivating labor effort, and might foster approaches to labor discipline less dependent for their effectiveness on workers' economic insecurity and the threat of dismissal.[21]

Institutional innovations of this scope are, of course, a tall order; but they are no less likely from a political standpoint than the implementation of the basic income grant itself.

While income security may be unattainable in a capitalist economy by means of a basic income grant, there may nonetheless be good reasons for its implementation. Most important, it appears capable of achieving a significant reduction in the degree of inequality among persons in the population with no loss in per capita income and hence by any reasonable criteria, an increase in wellbeing. While the proposed maximal grant preserves the income share of wealthholders (by definition) it achieves a considerable redistribution between workers (including the unemployed) and those not in the labor force, or more generally from those who are employed for long hours to those who are employed for fewer or none. Among its major effects would seem to be a redistribution of claims on income from men to women, an objective that might be sought not only on grounds of distributive justice

[21]Labor discipline and monitoring in a worker-owned and democratically managed firm are modeled in Bowles and Gintis (1993).

but of ending the economic dependency of women on men and thus enhancing women's autonomy.[22]

A further likely effect would be to reduce the aggregate hours of work and hence to reduce the importance of the consumption of commodities and enhance the importance of free time as components of individual welfare, thus helping to correct what Juliet Schor has termed the 'output bias of capitalism', namely the structurally determined overvaluation of the things that working for pay can secure. A major casualty of this output bias – the environment – might also be better protected under a basic income grant.

[22]McCrate (1987) has identified a measure of women's economic independence which is the gender analogue of the cost of job loss: It measures the income loss experienced by a woman following the termination of a couple. The basic income grant would considerably reduce this income loss and hence raise women's economic independence.

References

Bhaskar, V. and A. Glyn, 1993, Investment and profitability: The evidence from the advanced capitalist countries, in: Gerald Epstein and Herbert Gintis, eds., The political economy of investment, finance, and savings (forthcoming).

Bowles, S., 1982, The post-Keynesian capital–labor stalemate, Socialist Review 65, 45–72.

Bowles, S., 1985, The production process in a competitive economy: Walrasian, neo-Hobbesian, and Marxian models, American Economic Review 75, 16–36.

Bowles, S., 1991, The reserve army effect on wages in a labor discipline model: U.S., 1954–1987, in: T. Mizoguchi, T. Tsuru et al., eds., Making economies more efficient and more equitable (Oxford University Press, Oxford), 385–406.

Bowles, S. and R. Boyer, 1988, Income distribution, labor discipline, and employment: A macroeconomic model, American Economic Review 78, 395–400.

Bowles, S. and R. Boyer, 1990a, Labor market flexibility and decentralization as barriers to high employment?, notes on employer collusion, centralized wage bargaining, and aggregate employment, in: Renato Brunetta and Carlo Dell'Aringa, eds., Labour relations and economic performance (Macmillan, London), 325–352.

Bowles, S. and R. Boyer, 1990b, A wage-led employment regime: Income distribution, labour discipline, and aggregate demand in welfare capitalism, in: Stephen Marglin and Juliet Schor, eds., The golden age of capitalism: Reinterpreting the postwar experience (Clarendon, Oxford), 187–217.

Bowles, S. and R. Boyer, 1993, Can egalitarian redistribution generate employment? An empirical assessment, in: Gerald Epstein and Herbert Gintis, eds., The political economy of investment, finance, and savings (forthcoming).

Bowles, S. and H. Gintis, 1990a, Contested exchange: New microfoundations for the political economy of capitalism, Politics and Society 18, 165–222.

Bowles, S. and H. Gintis, 1990b, Bonding, dismissals, and labor discipline, Mimeo. (University of Massachusetts, Amherst, MA).

Bowles, S. and H. Gintis, 1993, The democratic firm: An agency-theoretic evaluation, in: Bowles, Gintis and Bo Gustafsson, eds., Markets and democracy: Problems of participation and efficiency (Cambridge University Press, Cambridge).

Bowles, S., D.M. Gordon and T.E. Weisskopf, 1989, Business ascendancy and economic impasse: A structural retrospective on conservative economics, 1979–1987, Journal of Economic Perspectives 3, 107–134.

Bowles, S., D.M. Gordon and T.E. Weisskopf, 1990, After the waste land: A democratic economics for the year 2,000 (M.E. Sharpe, Armonk, NY).

Catinat, M., R. Cawley, F. Ilzkovitz, A. Italianer and M. Mors, 1988, Investment behavior in Europe: A comparative analysis, Recherches Economiques de Louvain 54, 277–324.
Gintis, H. and T. Ishikawa, 1987, Wages, work discipline, and unemployment, Journal of Japanese and International Economics 1, 195–228.
Gordon, D.M., 1989, Documentation for Socvars 010: Cost of job loss, New School for Social Research.
Green, F. and T.E. Weisskopf, 1993, The worker discipline effect: A disaggregative analysis, Review of Economics and Statistics 72, 241–249.
McCrate, E., 1987, Trade, merger and employment: Economic theory on marriage, Review of Radical Political Economics 19, 73–89.
Moffitt, R., 1992, Incentive effects of the U.S. welfare system: A review, J. Economic Literature 30, 1–61.
Persson, T. and G. Tabellini, 1991, Is inequality harmful for growth? Theory and evidence, National Bureau of Economic Research, Working Paper 3599.
Rebitzer, J.B., 1987, Unemployment, long-term employment relations and productivity growth, Review of Economics and Statistics 69, 627–635.
Schor, J., 1988, Does work intensity respond to macroeconomic variables?, Mimeo. (Harvard University, Cambridge, MA).
Schor, J. and S. Bowles, 1987, Employment rents and the incidence of strikes, Review of Economics and Statistics 69, 584–591.
U.S. Bureau of Labor Statistics, 1984, Industrial disputes, workers involved and worktime lost, 14 countries.
U.S. Department of Commerce, 1989, Statistical abstract of the United States: 1989, 109th edition.
Van der Veen, R. and P. Van Parijs, 1986, A capitalist road to communism, Theory and Society 15, 635–655.
Weisskopf, T., 1984, Hourly earnings of U.S. production workers, Monthly Labor Review 107, 38–44.
Weisskopf, T., 1987, The effect of unemployment on labor productivity: An international comparative analysis, International Review of Applied Economics 1, 129–151.
Weisskopf, T. D.M. Gordon and S. Bowles, 1983, Hearts and minds: A social model of U.S. productivity growth, Brookings Papers on Economic Activity 2, 381–450.