

**Two Cheers for the Earned Income Tax Credit**

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The Earned Income Tax Credit (EITC) has received considerable attention as a possible model for European policy-making. While most contributions focus on the primary effects of an EITC on employment and the well-being of the “working poor”, we know of no study that points at some market failure that an EITC might correct, thereby providing a traditional welfare-economic rationale for the plan. We introduce two such arguments: First, if future productivity and, therefore, wages are risky, an EITC might bring about a (second order) statistically dominant distribution of net wages, which makes risk-averse workers better off and may – in the presence of a minimum income guarantee and sunk costs of entering the labour market – even be necessary to make them take up work at all. Second, employers are typically unable to recoup an investment in their employee’s general human capital by reducing wages, as employees can always find work elsewhere that pays the full marginal product. If some capital market imperfections prevent low-skilled employees from financing human capital investment themselves and an outside option – such as social security payments – makes the low-skilled refuse employment at an initially very low (“apprenticeship”) wage rate, an EITC can enhance welfare by reducing employers’ wage cost for untrained entrants, while forcing trained employees to finance this initial rebate.

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### **Introduction: a popular idea and a lacuna**

Since its inception in 1975, the Earned Income Tax Credit (EITC) programme has gained considerable momentum in the USA (Ozawa 1995: 563–564), to the point of being the largest federal cash programme geared towards low-income households in 1998 (van Oers and de Mooji 1998: 14). Moreover, the idea has been adopted by several US states (see Lobrera and Zahradnik 2004, who provide some recent summary data on the programme) as well as by third countries, for example by Denmark (OECD 2003). There has also been considerable discussion whether it could serve as a model for social security reform in other countries.<sup>1</sup> And the basic feature of the EITC, *a marginal subsidy augmenting low labour income*, is indeed part of many recent blueprints for social security reform, *e.g.* Ifo's proposal for Germany (Sinn *et al.* 2006). A vigorous debate has sprung up in Germany, with a fair number of proposals competing for attention (for one such alternative to Ifo's blueprint, see Schöb and Weimann 2007), and there now appears to be a good chance of some EITC features being introduced in Germany.

However, this discussion has not been couched in terms of a potential market or government failure rationale for the EITC, that is economists have not tried to demonstrate how, by (partially) correcting such failures, the introduction of an EITC can bring about a Pareto-improvement relative to the *status quo*. An interesting exception from the non-welfaristic bent of the literature is the work by Saez (2002), who shows that an optimal nonlinear income tax schedule entails negative tax rates at the bottom of the income distribution if low-wage workers face a *binary choice* between taking up work and being unemployed instead of the “usual” marginal one.<sup>2</sup> For the most part, however, analyses and policies take it as granted that it is desirable to increase labour market participation among the unskilled and to boost the family income of the “working poor”.

These two goals are often combined in a paternalistic fashion, for instance by demanding that if the poor receive grants, it will be fair for them to work as taxpayers do.<sup>3</sup> Another related argument would be that it is better to subsidise work

<sup>1</sup> Cf. Haveman and Wolf (2000). Also see Walker and Wiseman (1997) for recommendations concerning the United Kingdom as well as Graafland and de Mooji (1999) for the Netherlands. Peter (2004) discusses an application to Germany.

<sup>2</sup> See also sub-section 1.2.

<sup>3</sup> This argument could be put on a welfaristic footing by stipulating that taxpayers' utility depends on whether or not the recipients of their tax dollars are made to work.

than leisure because workfare instills, or preserves, “correct” social values, fosters cohesion, and reduces (perceived) dependence while enlarging people's scope for self-determination. We have little to say on these points in the present paper. Also, we eschew distributional analysis proper, focussing instead on efficiency aspects.

In keeping with the normative thrust of discussion, the bulk of economic research on the EITC has focussed on the primary effects of an EITC – including, but not limited to, labour supply responses (Eissa and Liebman 1996; Blank, Card, and Robins 1999; Meyer 2002) and fiscal effects (Bell, Blundell, and van Reenen 1999). There is little discussion of welfare effects.

### **The case against the EITC re-visited**

The American EITC is targeted at low-wage earners who, despite working, would fall below the poverty line if they did not receive transfers. What is peculiar about the EITC when compared to other income support programmes is that it *actively subsidises wage earnings* at a constant rate, with total benefits increasing in wages earned over a considerable range of low wages (Keen 1997; Ochel 2003). During the twenty years of its existence, the programme has grown into one of the largest social security items, but the original focus still remains today. In Europe, however, the problem does not seem to be that some low-skilled workers are poor, but that the low-skilled do not work, mainly because they do not *find* work.

It has, therefore, been argued that supply-side instruments such as the EITC are entirely misguided because one needs to tackle the relevant constraint, which appears to be that there is no demand for low-skilled labour at the high price fixed by European-style social security institutions (Ochel 2003). Boosting labour supply by the unskilled would, on that count, only swell the ranks of the low-skilled who are out of work. This kind of argument, however, misses the mark because it does not acknowledge explicitly the manner in which a lack of supply-side flexibility contributes to the problem.

It also seems deceptively easy to dismiss the EITC on efficiency grounds. While most scholars would agree that high marginal tax rates for the poor, created by reducing transfers almost Euro for Euro as recipients start to earn some labour income, engender a “poverty gap” phenomenon and lead to a mis-allocation of resources, the obvious remedy seems to be to reduce these tax rates at the margin,

and not to subsidise low-income workers. After all, such a subsidy would provide “too much” of an incentive, distorting labour supply choices away from the first-best optimum, and it would *ceteris paribus* create an additional need to expand the government budget, thereby increasing the total excess burden of taxation. On the other hand, of course, the New Public Economics has taught us to step lightly when applying first-best insights to policy problems.

In favour of the EITC, it has sometimes been argued that by reducing the replacement rate, one diminishes the bargaining power of trade unions as workers’ fallback positions become less attractive (Keen 1997). Using a wage-setting model, it can indeed be shown that this will lead to lower wages and a lower level of unemployment. This, however, is a feature of *any* reform that lowers the replacement rate, and does not set the EITC apart.

### **The road ahead**

The basic challenge is to explain why, from a pure efficiency perspective, *some workers should be paid more than their marginal product of labour* – if only under certain circumstances, or during certain phases of their working life. We introduce two such explanations: The first explanation focuses on the wage risk associated with a binary labour supply decision, while the second builds on the non-availability of credit for human capital investments that are not firm-specific.<sup>4</sup>

Before doing so, let us review two important traits of the problem at hand, concerning (a) the kind of labour supply decisions that the low-skilled have to make and (b) the combination of instruments used to finance the marginal subsidy of low wage incomes.

In conventional analyses of labour supply, much attention is being paid to marginal choices, addressing the question of whether it is worthwhile to work one additional hour. This mode of thinking seems to be out of place in a discussion of (un)employment in the low-skill sector, since many of the low-skilled reject the more fundamental option to take up work at all. Given that they accept employment, they typically have little choice as to the conditions of their official jobs, in-

<sup>4</sup> The second argument related to the literature on financing vocational training by setting up a credit fund (Lüdeke 1984).

cluding working hours. Rather, they will decide whether to take up an *additional* job, and it is only in the black market that they can actually vary their labour supply in small increments. Consequently, the appropriate model for our problem entails either binary or stepwise choices by workers.<sup>5</sup>

Second, financing the marginal subsidy that is the defining characteristic of an EITC will require an increase in marginal tax rates elsewhere in the income distribution, a cut in government expenditure, additional deficits, or (obviously) a combination of the above. Most proposals rely on a combination of increased marginal tax rates over some range and a reduction of support payments (made possible by people's taking up work) to finance negative marginal tax rates over a considerable range of gross incomes.

Our first argument, developed in section 2, relies on the risk productivity rationale for social security that has grown to enjoy quite some popularity over the last decade (Konrad 1992; Sinn 1996). Assume that the unemployed are faced with uncertain wage prospects arising from random future "on-the job" productivity increases. In the presence of productivity and, hence, wage risk, an EITC might bring about a distribution of net wages that statistically dominates the *status quo* in the second order, making all risk-averse workers better off. This may – if there exists a sizeable minimum income guarantee – even be necessary to make workers take up work at all.

The second argument is based on the well-known theorem that employers cannot recoup an investment in their employee's general human capital by reducing wages, as employees can always find work elsewhere that pays the full marginal product. If some capital market imperfections prevent low-skilled employees from financing human capital investment themselves<sup>6</sup> and an outside option – such as social security payments – makes the low-skilled refuse employment at an initially very low ("apprenticeship") wage rate, an EITC can enhance welfare by reducing employers' wage cost for untrained entrants, while forcing trained employees to finance this initial rebate (which, in turn, covers employer's training costs). In effect, the EITC serves as an intrapersonal but intertemporal transfer

<sup>5</sup> See Meyer (2002) for empirical evidence that labour supply choices occur at the extensive and not at the intensive margin, at least among target groups.

<sup>6</sup> Palacios Lleras (2004) provides an extensive discussion of this problem in the context of the funding of higher education. Formally, the problem he considers is similar to the issue we are addressing here.

mechanism whereby government loans take the place of the (unavailable) credit market. We present this argument formally in section 3. Section 4 concludes.

### **EITC and wage risk**

To begin with, let us point out that starting work from unemployment is risky for the unemployed and their potential employers alike. Whether the entrant in a typical fast food job can progress from sweeping the floor to cleaning the salad, and eventually become an assistant manager,<sup>7</sup> depends on a variety of factors including both features of the job accepted<sup>8</sup> and the worker himself<sup>9</sup>, and may also require pure luck. Likewise, the employer cannot determine an applicant's actual productivity *ex ante*. We will assume the relevant uncertainty to be symmetric, which we can do with impunity here since workers would, if anything, be better informed about their ability than their prospective employers, and the more able ones should face higher incentives to take up work.<sup>10</sup>

Furthermore, a worker faces various costs of labour market entry, most of which will be sunk *ex post*, i.e. which a worker cannot recoup when dropping out of the job later because he finds himself to be of low productivity and only enjoys meagre prospects in the workplace. The most obvious examples for these costs are the disutility and out-of-pocket expenditure associated with applying for the job, possible costs of moving, and the cost of re-organising one's life (such as arranging day-care for children).

Using a very simple formal argument, we now proceed to demonstrate that if the combination of wage risk and sunk costs of entering employment prevents labour market entry, an EITC may make everybody better off by providing implicit insurance against the wage risk. Note that although similar insurance-type justifications for the welfare state abound (*cf.* Sinn 1996), the present argument differs in more than just degree: typically, one points to some risk that is uninsurable on the market because an appropriate contractual arrangement would need to be

<sup>7</sup> An example we owe to Eddy Murphy's *Prince of Zamunda*.

<sup>8</sup> Such as specific skill requirements, work environment, interaction with managers and co-workers.

<sup>9</sup> Including motivation, capacity to acquire and to develop job-specific skills, a capability to blend in with the workplace.

<sup>10</sup> We are indebted to an anonymous referee for offering this point in justification of our assumptions.

made before birth, which is impossible. In our case, however, the EITC promises a Pareto improvement when evaluated *in status quo*, and therefore fulfils Buchanan's (1975) criterion of consensual change (see also Pies 2003, with an application to the labour market).<sup>11</sup>

Consider a large group of low-skilled workers, each of whom inelastically supplies a single unit of labour whenever the utility derived from the wage rate exceeds the sum of the utility of the unemployment benefit  $b$  and the disutility of work  $d$ .<sup>12</sup> (For simplicity, we have assumed that preferences are additively separable between income and leisure.) Upon accepting work, workers can either turn out to be high-productivity workers with productivity (wage rate)  $w_h$  or low-productivity workers with a wage rate of  $w_l$  (where  $w_l < w_h$ ). We assume that the exogenous probability of being a “good” worker is  $p$ , and that neither employers nor the prospective employees can observe the productivity *ex ante*. Also, workers incur a fixed cost  $c$  upon entering the labour market.

While it is reasonable to assume that employers cannot fire “bad” workers because labour market regulations preclude them doing so, workers always have the opportunity to quit if they discover that they are of type  $l$ . Consequently, we need to distinguish three cases:<sup>13</sup>

1. If the worker chooses to remain unemployed, she enjoys a certain utility

$$u_{un} = u(b)$$

2. If the worker takes up work, but only stays in the high productivity case, her expected utility is  $u_{yn} = pu(w_h - c) - pd + (1 - p)u(b - c)$ .

3. A worker who enters the labour market and does not quit in either state of the world enjoys utility  $u_{yy} = pu(w_h - c) + (1 - p)u(w_l - c) - d$ . If we have  $u_{un} > u_{yy}$  and  $u_{un} > u_{yn}$ , the unemployed will fail to take up work. What we need to show is that, under an EITC, (a) workers' utility can exceed  $u_{un}$  even though they

<sup>11</sup> This prompts the question why private insurers cannot step in and insure the wage risk. While they could in our example, in which we do not model disincentive effects at the intensive margin, pervasive moral hazard problems are likely to prevent such a solution from materialising.

<sup>12</sup> Alternatively, one might interpret  $d$  as the black market earnings foregone by entering “official” employment.

<sup>13</sup> Taking up work would never make sense if even “good” workers had an incentive to quit, and so we can neglect the fourth possible case.

do work in both states of the world, while (b) recipients of the marginal subsidy have no incentive to “opt out” in the bad state. Implementing an EITC in our simple model basically involves taxing high-productivity individuals at a rate  $t$  while subsidising low-wage income at a rate  $z$ ; furthermore, a working individual will not receive the fallback transfer  $b$ . Let us leave aside the minimum transfer for the moment and assume that the EITC budget balances in a narrow sense, so that we have the per capita budget constraint

$$ptw_h = (1-p)zw_l \quad (1)$$

Solving the budget constraint this for  $z$  yields

$$z = \frac{ptw_h}{(1-p)w_l} \quad (2)$$

**Reducing the spread.** The condition for work under the EITC to be better than leisure at a subsistence level reads

$$u_{yy}(t, z) = pu((1-t)w_h - c) + (1-p)u((1+z)w_l - c) - d > u_m \quad (3)$$

Plugging in our expression for  $z$  from the budget constraint and simplifying, we find

$$pu((1-t)w_h - c) + (1-p)u(w_l + \frac{ptw_h}{1-p} - c) > d + u(b) \quad (4)$$

It is very easy to see that inequality (4) will in fact hold for some  $t$  as long as the expected wage income net of entry costs exceeds the fallback transfer plus the money metric for the disutility of work. By assumption, without an EITC this is insufficient to overcompensate the risk of taking up work for a large number of low-skilled workers (although some who are only slightly risk-averse or risk neutral may already participate in the official labour market).

Starting from this scenario, consider what will happen if we introduce an EITC with an initial tax rate of zero and gradually increase  $t$ . As neither the wage tax nor the wage subsidy part of the EITC distort people’s labour-leisure choices at the margin (in our model, that is), an increase in the EITC amounts to a mean-preserving reduction of the spread. It is well known that this will increase the attractiveness of the risky asset if utility is concave in the random variable ( $w$ ), which is indeed the case under standard assumptions. It follows that introducing an EITC will make work a more attractive option for all risk-averse workers in our

simple framework, and increasingly risk-averse individuals will find it to their advantage to get a (n official) job as  $t$  grows.

Finally, in our simple model there is scope for a *complete* elimination of the risk inherent in taking up work. If we set

$$t = (1 - p)\left(1 - \frac{w_l}{w_h}\right)$$

all members of the target group will end up with a safe wage income that, by assumption, they prefer to the foregone leisure plus the minimum transfer.

But not only will the low-skilled be better off, the social security system as a whole will now run a budget surplus, so that the reforms lead to a genuine Pareto improvement, with the surplus either being used to offer taxpayers a rebate (possibly including the segment of the low-skilled workforce who turn out to be of relatively high ability, *i.e.* reducing  $t$ ) or increase other government spending.

**No incentive to quit.** We still need to tackle the second requirement that people have no incentive to quit *ex post* in the bad state of the world. Obviously, for  $u_m > u_y$  we must have  $w_l - c < b - c$ . Therefore, the EITC must increase the net wage in the bad state sufficiently to prevent labour market dropout. This entails the constraint

$$w_l + \frac{ptw_h}{1 - p} > b$$

By substituting the expression for the tax rate that removes all net wage risk into this inequality, we conclude immediately that the inequality will hold for some  $t$  as long as the expected gross income for low-skilled workers – net of  $c$  – exceeds  $u(b) + d$ . This concludes our demonstration.

The above thought experiment is, of course, predicated on a number of radical simplifications, most prominently the absence of any adverse incentive effects of the tax-*cum*-subsidy scheme on work effort and hours worked (except for the binary decision to work at all), the existence of a clearly delimited low-skill segment in the labour market, and our starting assumption concerning the money metric for the disutility from work. It does serve well, however, to illustrate our basic point in this section: that by reducing the risk of taking up work – which arises because the future productivity of the unemployed is uncertain –, an EITC can make labour market entry a more attractive proposition.

### EITC and the funding of human capital investment

The previous section has focussed on the incentives of workers to *embark on a career*, the emphasis being on the low-skilled part of the workforce for whom an uncertain (low) wage may be insufficient to improve on the certain fallback transfer-cum-leisure position. In this section, we turn to a different, albeit related, argument that looks at supply and demand sides together. If on-the-job training is required for making low-skill workers sufficiently productive, and if this kind of human capital is not firm-specific, firms may be reluctant to hire newcomers.

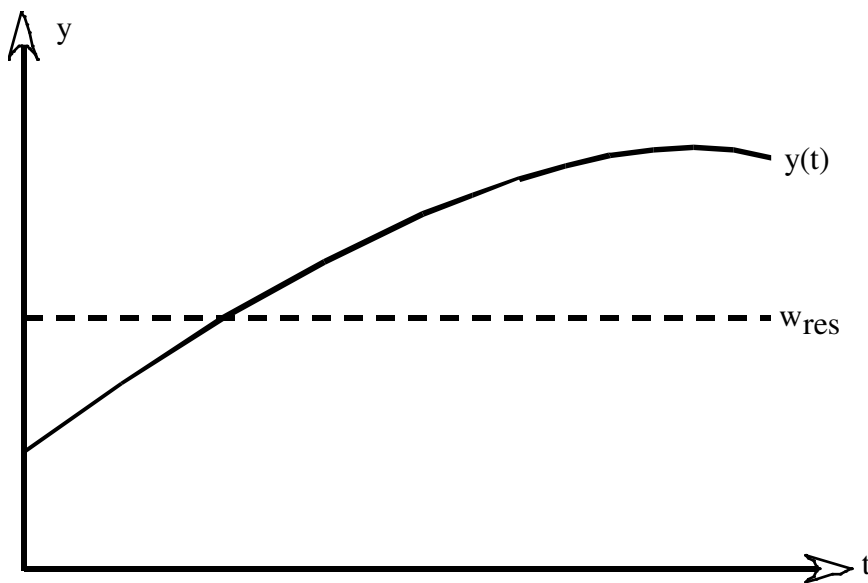


Fig. 1: Earnings profile and reservation wage

Consider a typical earnings profile for an individual as depicted in figure 1. In the empirical literature,  $y(t)$  – or, rather,  $\ln y(t)$  – will be estimated as a function of formal education, other personal characteristics, and time.<sup>14</sup> For the purposes of the present discussion, however, it will suffice to think of  $y(t)$  as the certain income prospects of a low-skilled worker, who has to decide whether or not to accept a job offer at  $t = 0$ .

$w_{res}$  represents the worker's *current* reservation wage, *i.e.* the minimum net labour income that must be offered at time  $t$  to make the worker accept employ-

<sup>14</sup> For a discussion of this standard “Mincer-type” approach, see Lüdeke and Beckmann (2001).

ment, or to prevent her from opting out when employed. (Recall that we still assume that workers cannot be fired, but may leave anytime of their own accord.) This current reservation wage will depend, *inter alia*, on the disutility of work  $d$ , the fallback social transfer  $b$ , the opportunity cost of renouncing work in the black market, the worker's access to credit (both explicit and implied, for instance by contractual relations to the employer), and her rate of time preference.

Our point in this section rests on the contention that the labour productivity of low-skilled workers is likely to be very low in the initial periods of employment, although it will increase through on-the-job training as workers progress from menial tasks to more involved ones, and as they grow accustomed to the workplace.<sup>15</sup> From a life-cycle perspective, working may be a very attractive proposition for workers and society alike, although low early productivity only permits wages that are close to, or even below, the subsistence level.

This need not be a problem. If the human capital acquired on the job was firm specific, firms would be happy to pay wages in excess of marginal product early on, only to curtail wages later (the implicit credit arrangement alluded to earlier). Likewise, if human capital could serve as a collateral for a loan (or if the low-skilled had other resources to pledge, or to dissave), workers would run into debt in the first years of employment to finance consumption, and repay those debts later out of the higher wages attainable through human capital accumulation in the workplace. Even if none of these channels were available, workers could still renounce consumption, if they were sufficiently patient or if initial productivity was sufficient to live at the subsistence level.

The thrust of our argument is now clear: We submit that (a) most of the human capital acquired by low-skill workers on the job is not firm-specific, that (b) those workers are credit constrained, and (c) that they are sufficiently myopic or/and face such low wages that they cannot afford to cut current consumption in order to finance human capital acquisition.<sup>16</sup> It is this scenario that figure 1 il-

<sup>15</sup> As far as low-skilled labour is concerned, it seems justifiable to assume that there is very little formal training initially, less than would warrant inclusion in our analysis.

<sup>16</sup> At first blush, these assumptions may appear fairly restrictive. But note that the two "periods" in our model may each represent several years (of qualification and the ensuing higher-paid job, respectively), so that it is not entirely inappropriate to surmise that workers may find it difficult to borrow for first-period consumption on the collateral of far-off second-period earnings, and that they may lack the rationality to wait that long. While myopia has been discounted – pun intended – by many economists as an *ad hoc*

illustrates: the current reservation wage  $w_{res}$ , assumed a constant for simplicity, initially exceeds the marginal product of labour, and the worker does not enter employment, although life-cycle earnings are more than sufficient to cover her opportunity cost in present value terms.

In this model, the role of the EITC is to substitute for the missing credit market. By taxing labour income in the second period and subsidising the low first-period income, the scheme brings about an intrapersonal but intertemporal transfer of resources that is largely equivalent to credit financing of human capital investment, and which also involves issuing additional government debt. If there is no deadweight loss from distorted marginal labour supply decisions, the EITC will unequivocally raise the welfare of low-skilled workers who take up work, while leaving the utility of all others unaffected. It is easy to see that some scope for a Pareto improvement remains even if marginal choices are distorted, as long as this distortion is not too severe. Furthermore, the concomitant reduction of welfare payments to the unemployed presents additional opportunities for welfare improvement.

**A formal restatement.** Let us proceed to flesh out this argument using a very simple two-period model of the market for unskilled labour. Output is produced using capital and effective labour in a well-behaved neoclassical production process

$$x = f(k, l)$$

Firms are price-takers on both the goods and labour markets; we assume constant returns to scale and normalise the producer price of  $x$  to unity. While firms

assumption, recent research in behavioural economics suggests that time inconsistent overweighting of the present (and near future) is in fact a pervasive trait of human behaviour (see, for instance, the discussion in Tirole 2002, Rabin 2002 and Elster 2007). Either time inconsistent preferences or credit constraints will suffice for our argument, although we believe both to be descriptive of reality in the low-skill sector.

If we still are unwilling to go along with the above assumptions, however, it is clear that the problem will vanish in thin air. Workers will always find it to their advantage to demand lower wages in the first period with a view to securing the high second-period payoffs associated with a successful working career. What is more, even introducing asymmetric information won't help: there is always scope for high-productivity individuals to offer their services at very low wages, thus revealing their competence (and confidence in high second-period earnings). The less capable will not follow suit if they can enjoy a minimum income transfer instead, and consequently a single (efficient) separating equilibrium exists, leaving nothing for an EITC to improve upon from a pure efficiency perspective

cannot fire workers, we realistically assume that workers are always free to leave; on a competitive labour market, this implies that workers can always find a job that pays their marginal product so that firms will not finance investment in un-specific human capital.

In the low-skill sector of this labour market, suppliers are endowed with a single unit of effective labour in the first period – in effect, we measure all labour supply in units of unskilled labour – and face a binary choice. We assume that they will accept employment whenever the (net) wage exceeds the reservation wage,  $w_{res}$ . If a low-skilled worker is employed during the first period, her effective labour endowment will increase by a factor  $\delta$ , reflecting human capital accumulation through on-the-job training. Workers have no access to credit, and the real interest rate is exogenously fixed at  $r$ .

Consider a low-skilled individual who fails to enter employment because her potential first-period labour income falls short of the “cultural” subsistence level, taken to be identical with the fallback transfer  $b$ .<sup>17</sup> On the other hand, we assume throughout that employment would be the more attractive alternative if credit constraints were removed. Formally, we have

$$f'(l) < b$$

$$f'(l) + d \frac{f'(l)}{1+r} > b + \frac{b}{1+r} \quad (5)$$

Not surprisingly, this boils down to the requirement that  $\delta$  be sufficiently large, *i.e.* that the low-skilled acquire sufficient additional human capital when working.

Introducing an EITC, we have a tax at rate  $t$  on second-period earnings, and a subsidy  $z$  on first period earnings, with the government’s budget constraint being

$$zf'(l) = td \frac{f'(l)}{1+r} \quad (6)$$

(again neglecting a possible reduction in welfare payments  $b$ ). The conditions for labour market participation now read

$$(1+z)f'(l) > b \quad (7)$$

<sup>17</sup> If myopia was to be at the root of the problem, it would seem more appropriate to let  $w_{res} = d + b$ .

$$(1+z)f'(l) + (1-t)d \frac{f'(l)}{1+r} > b + \frac{b}{1+r}. \quad (8)$$

Plugging the budget constraint (6) into (8), we see immediately that (8) will hold under the EITC regime if our assumption (5) is true. Also, it is clear that we can always increase  $z$  sufficiently for first-period work to be attractive, that is for inequality (7) to hold. Finally, we can check that if  $z$  is increased to make workers just indifferent between work and dole in the first period (or ever so slightly more), there will still be no incentive to quit the job in the second period. To see this, let  $(1+z)f(l) = b$ . Using the budget constraint, subtract this equation from (8) and multiply by  $(1+r)$ . Arguing as before, we see that if (5) holds,  $z$  is just sufficient to induce people to work and the EITC budget balances, we must have  $(1-t) \delta f(l) > b$ . This completes our demonstration.

**Possible extensions.** Again, we owe the simplicity of this demonstration as well as the clear-cut results to the fact that we have restricted our analysis to binary labour supply decisions – obviously, if taxes distorted these decisions at the margin, a deadweight loss would arise that we would need to compare to the welfare gains described in this paper. A straightforward way to incorporate such marginal choices would be to assume that future productivity (and promotions to higher-paying jobs) depends not only on time spent working, but also on effort (or expenditure on training). While the decision regarding effort would be distorted by the EITC in this extended model, the positive effect described in this paper would still be present.

An additional interesting extension concerns agent heterogeneity. Other things being equal, it is reasonable to assume that workers who learn faster have steeper earnings profiles (Lüdeke and Beckmann 2001). This implies that for roughly the same present value of earnings, fast learners face a harder problem of financing their human capital investment. A differentiated subsidy might be called for that entails a larger marginal subsidy for lower wage incomes – and that might engender additional self-selection problems if the workers' types (capacities for learning) cannot be observed perfectly. We leave further discussion of such extensions for subsequent papers.

### Concluding remarks

The purpose of the present paper is to put the discussion about the Earned Income Tax Credit – and related subsidies for labour supply – on a more traditional welfaristic footing. We do hold that the primary point of departure for economic policy advice is a demonstration that a particular institution can make everybody better off than they would be in the *status quo*, or at the very least that it will increase a weighted sum of some indicators of people's well-being (with the weights being a primary bone of contention). Judging from this perspective, existing justifications of the EITC fail to present a case.

A welfaristic approach running shy of actually weighting people's well-being, or settling on a particular social welfare function, must be based on the Pareto criterion. In this vein, we advance two arguments in favour of the EITC: the first point is that an EITC can bring about a mean-preserving reduction of the spread of wages, thereby improving the workers' lot (or making them accept employment in the first place); the second point revolves about employers' inability to appropriate the gains of human capital investment that occurs on the job, yet is not job-specific. We find that in this case, employers may not find it worth their while to hire the jobless provided potential low-skill employees have a minimum income guarantee to fall back upon. The EITC could provide a Pareto-superior alternative in either case.

None of this should be read as a definite endorsement of the EITC. After all, we have quite a lot to flesh out in our theoretical argument, and lots of additional points might be raised both in support of our main contention as well as against it. But we still insist that ours is the way to go for an economic appraisal of the EITC; and although our formal analysis is in its infancy, we have exposed two mechanisms through which an EITC might bring about a welfare improvement.

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