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COMMENTARY

This Section is designed for the discussion and debate of current economic problems. Contributions which raise new issues or comment on issues already raised are welcome.

The fiscal and distributional implications of job generation

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This article estimates the cost of a public investment-led job creation programme for the United Kingdom. A programme creating an additional one million jobs at the current average wage would involve a net cost to the Treasury dramatically lower than the gross cost; £17 billion worth of spending would result in a net cost of around £7 billion. Given that even a partial restoration of progressive taxation would bring in more than half this net amount, improved living standards could be brought about relatively easily, provided dogmatic objections to public sector initiatives can be overcome.

1. Introduction[1]

Unemployment is both an immense social evil and a colossal economic waste. There is strong evidence that rising unemployment increases ill-health (Burchell, 1992) and rising crime, especially domestic burglary (Dickinson, 1995; Wells, 1995). It is unjust *and* inefficient. Unemployment has been a major cause of the alarming growth of inequality and poverty in Britain (and indeed in many other countries); in Britain, while the richest

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[1] An earlier version of this article was presented at the May 1996 conference on 'Full Employment Without Inflation' held at Robinson College, Cambridge. We are grateful to a number of the participants for suggestions which we have attempted to incorporate in the current article. However, some of the suggestions have been responded to elsewhere, namely in our chapter in the forthcoming book from that conference (Michie and Grieve Smith, eds, 1997); that chapter in particular includes more detail and discussion of the proposed public investment-led programme for improving public services and generating high-quality jobs, and the political issues around the need to raise taxation revenues to fund the welfare state. This last topic is one which is tackled explicitly by Glyn (1997); in Kitson, Michie and Sutherland (1997) we argue that the public investment-led programme we describe would not only lead to additional public revenues in the future but would also, by providing enhanced public services, thereby create the sort of favourable political conditions in which the case for public provision and hence taxation could best be made.

tenth of households have become 60% better off since 1979, the poorest tenth are 20% worse off. Wage inequality is greater than at any time since records began in 1886. Such inequality and poverty have detrimental effects on the balance of payments constraint, with a transfer of resources to the better-off who import more (see Borooah, 1988); on the real economy as consumer spending is depressed and the pressure on firms to upgrade their production processes is weakened (Michie and Wilkinson, 1993); and on the government's own fiscal deficit (the Public Sector Borrowing Requirement or PSBR)(Michie and Wilkinson, 1994). Rising poverty means that the cost to the state of benefits and income support increases. A growing share of the income of the working poor is met not by their employers but by the taxpayers. This not only increases both the spread and the grip of the poverty trap (whereby any increase in pay by employers is matched by an equivalent loss of benefits from government), it also increases the burden on public expenditure. And if total government spending is constrained—for example, by the requirement of the Maastricht Treaty on European Union that government fiscal deficits be less that 3% of GDP—then this burden has to be met by public-spending cuts imposed elsewhere, cuts which may well exacerbate unemployment.

In the face of these deeply entrenched problems, many doubt the ability of governments to generate jobs and tackle inequality. We take a more optimistic view. Governments can create jobs; moreover, these can be high-quality jobs that not only meet social need but also contribute to national economic prosperity. Furthermore, the cost of such a programme would be relatively modest.

This article is organised as follows. In Section 2 we argue that there is no convincing theoretical or empirical support for the idea that at any one time there is just a single rate of unemployment at which inflation will be non-accelerating; on the contrary, government policy can effect the level of employment, and there is no necessary reason why a lower rate of unemployment should lead to higher rates of inflation. We then outline, in Section 3, a public investment-led strategy for the UK that would create a million jobs. Section 4 considers the fiscal and distributional implications of such a strategy. How the net costs of such a programme would be paid for is discussed in a separate paper (Kitson, Michie and Sutherland, 1997) but we do, in Section 5, show the distributional impact of raising top-rate taxation. Section 6 concludes. The simulations reported in the article are from the Microsimulation Unit's tax–benefit model POLIMOD; this model is discussed, as is the specific use we have made of it in the work here reported, in an Appendix.

2. Is mass unemployment inevitable?

The suggestion that fiscal and monetary policies should be used to combat unemployment raises the spectre of inflation in the minds of policy-makers. This threat, and the idea that higher core unemployment is indeed an inevitable fact of modern life, receives its support in the economics literature from the theory that there is a unique 'Non-Accelerating Inflation Rate of Unemployment' (the NAIRU): in other words, the assertion that there is one particular level of equilibrium unemployment at which inflation stabilises.[1]

[1] The NAIRU differs from Friedman's natural rate of unemployment (NRU) hypothesis: first, the NRU is constructed within the framework of Walrasian equilibrium, whereas the NAIRU is based on imperfectly competitive markets along the lines of Rowthorn (1977). where it was argued that inflation would result from the combined claims of labour and capital summing to more than the total resources available for distribution. And, second, unemployment in the NRU is voluntary, whereas—to the extent that the distinction is useful—in the NAIRU framework it can also be involuntary.

Layard, Nickell and Jackman base their NAIRU theory on the argument that as unemployment falls the 'bargaining wage' demanded by workers rises, while the 'feasible wage' which employers can afford to pay does not. But in economic expansions output per head generally rises as capital is operated at higher levels of utilisation and more modern equipment is introduced. If increased capacity utilisation and, over the longer term, an increased and more technologically advanced capacity allows a growth of the feasible wage, then there may be no unique 'equilibrium' point (NAIRU) with only that one level of unemployment associated with non-accelerating inflation. Thus, even if the bargaining and feasible wages happened to coincide at a given level of unemployment, if unemployment falls, with the feasible wage increasing (owing to increased productivity) more than the increase in the bargaining wage, then such a model would actually predict that the reduction in unemployment would result in inflation falling rather than rising.[1]

It is often suggested that the benefits paid to the unemployed are a significant cause of unemployment, with 'over-generous' benefits increasing the NAIRU (see Layard, Nickell and Jackman, 1991). The *Economist* (1994) has reiterated the received wisdom that, 'if the unemployed get almost as much on the dole as they could get in work, they will be discouraged from seeking jobs'. This basic intuition is elaborated in the 'search theory of unemployment' by orthodox economists who treat the market for labour as the same as the market for any other commodity. Thus benefits act as a disincentive to leaving unemployment for employment, encouraging workers to search longer or less intensively for new jobs as well as encouraging those in work to quit employment to enter unemployment.

So how 'over-generous' are benefits paid to the unemployed? An OECD study reported in the same *Economist* article indicates that the replacement rate of a typical worker (the ratio of income out of work to income in work) fell from 43% in 1972 to 28% in 1980 and to 16% in 1990. This hardly fits the 'workers receive as much on the dole' argument. And the disincentive effect of benefits shown from modelling labour market behaviour has severe limitations. Firstly, such modelling has tended to assume that the only incentive to work (the labour supply) is the income received; there is no room in this modelling work for social recognition or satisfaction from work. Secondly, unemployment benefits are modelled according to a 'hypothetical' form which bears little resemblance to the actual system (see Atkinson and Micklewright, 1991). Thirdly, and despite the restrictive assumptions above, the estimates from the modelling procedures regularly provide coefficients which are not statistically significant (see Layard, Nickell and Jackman, 1991).

We therefore do not accept that the high unemployment levels witnessed (across the world, to varying degrees) over the past 25 years or so are an inevitable fact of economic life. Nor that they are due to 'over-generous' benefits (or labour market 'rigidities'). Rather, high unemployment is due to accepting the 'logic of the market', instead of intervening with active macroeconomic and industrial policies to achieve a better outcome.[2]

[1] Some formulations of the NAIRU do allow for productivity to be higher for higher levels of output (over some range) and this can be readily incorporated into the Layard and Nickell framework through their pricing equation. It does reinforce, though, the possibilities for multiple equilibria, on which see Sawyer (1982). Other weaknesses in the case for a NAIRU are the instability of the NAIRU and the tendency for it to track actual unemployment (see, for example, Ormerod, 1994). In any case, the NAIRU is a supply-side phenomenon and does not take account of aggregate demand considerations; thus the NAIRU framework does not address the issue raised in this article.

[2] See Sawyer (1995) for a discussion of the necessity for interventionist government policies to underpin full employment in a capitalist economy.

The evidence shows that most unemployment is involuntary (for example, when demand expands rapidly, as in the late 1980s, unemployment falls) and there is no reason to believe that an expansion of output and employment in current circumstances would be under immediate threat from accelerating inflation (see, for example, Robinson, 1997).[1]

3. A job generation strategy

Any strategy for job generation in Britain at the present time must be based on two essential components. First, there needs to be a substantial increase in investment in the tradable goods sector, and in manufacturing industry in particular, in order to boost economic growth and net exports (on which see Kitson and Michie, 1996A and 1996B). This is essential if we are to prevent full employment from resulting in a surge in imports that cannot be financed. It will also create orders for related service activities, as well as generating increased tax revenues to fund expanding public services. However, since manufacturing needs to achieve high levels of productivity to compete internationally, the potential for immediate job generation in this sector alone is limited. Second, therefore, any strategy to cut the dole queues requires increased investment, suitably targeted, in public services and infrastructure. It is not difficult to identify areas of enormous unmet social need, where there is work to be done and where jobs can be generated quickly: record housing waiting-lists; investment in education and training lagging behind that of our competitors; hospital waiting-lists at unacceptable levels; and an environment under increasing threat.[2]

An increase in public sector employment is therefore necessary both as an essential step towards full employment and to satisfy unmet social need. It also has other advantages. First, when private spending is sluggish an increase in public sector demand can give a welcome boost to the economy. Second, targeted public spending is less import-intensive and more labour-intensive than private sector spending; thus, a given increase in expenditure generates more jobs and has less adverse effects on the balance of payments if it comes through public spending (see Glyn and Rowthorn, 1994). Third, the UK lags behind the other major industrialised countries in terms of skills and capital investment—key factors in determining the future performance of the economy—and the necessary investment in education and infrastructure is only likely to come via the public sector. And, fourth, economic growth must be environmentally sustainable, but the pursuit of private profit is unlikely to ensure adequate environmental protection; improved public sector initiatives are therefore required.

[1] Of course, there is also the long-term issue of securing sustained high employment without inflation, but that raises matters (such as the structure of wage bargaining) not discussed in this article; see, for example, Deakin, Michie and Wilkinson (1992). Other, more general objections to the sort of policies proposed in this article would include some form of crowding out or Ricardian equivalence and the reactions of international financial markets; the first set of issues is tackled by various of the authors in Michie and Grieve Smith (eds, 1994) and the second set of issues by several of the authors in Michie and Grieve Smith (eds, 1995). So, while we believe that these sort of objections can be answered, our task in the present article is to counter the specific charge that job creation would be prohibitively expensive.

[2] Glyn and Rowthorn (1994) point out that there is a third route to increased employment levels (in terms of numbers in work): namely, having the total amount of paid work available in the economy shared out among more people through cuts in working time. They make the case, however, for the importance of also pursuing a programme of greater government expenditure on public services and infrastructure, and show how such a programme can increase employment in a situation where conventional Keynesian measures are inappropriate for balance of payments reasons, which, they argue, represent the immediate constraint in many economies such as the UK.

Table 1. *A proposal to create one million jobs*

Sector	Jobs generated (000s)	Cost per job (£000s)	Total cost (£ million)
Housing	150	25	3,750
Education and training	150	19	2,850
Health	150	23	3,450
Care in the community	100	26	2,600
Environmental projects	100	24	2,400
Energy conservation	100	18	1,800
Total direct jobs created	**750**	**22·5**	**16,850**
Additional indirect jobs created	250	0	0
TOTAL NEW JOBS	**1000**	**16·85**	**16,850**

Source: Berry, Kitson and Michie (1995).

As our starting-point we use the public sector strategy outlined by Berry, Kitson and Michie (1995, 1996) to create a million new jobs.[1] This strategy is concerned with generating full-time jobs at standard rates of pay. Table 1 outlines the job-generating impact, and the gross cost, of programmes to improve housing, education, the health service, care in the community, the environment and energy conservation. The direct impact would be to create 750,000 jobs. In addition, further jobs would be created owing to the linkages between the above sectors and the rest of the economy. The income spent by those workers directly employed would create additional jobs throughout the rest of the economy and increased purchases would expand employment among suppliers. The size of these multiplier effects will depend on the way the expansionary programme is targeted and financed (as discussed in Berry, Kitson and Michie, 1995), but would create perhaps an additional 250,000 jobs, making a million jobs in total.[2]

The costings in terms of pay levels which go to make up the Table 1 figures are used as the basis for all the subsequent calculations below. More detail of the sources of the numbers in Table 1 are given in Berry, Kitson and Michie (1995, 1996), and are discussed explicitly in relation to the modelling of the savings to the Treasury via reduced benefit payments and increased tax revenues in Kitson, Michie and Sutherland (1997). The assumptions regarding pay levels and so on, which go to make up the figures given in Table 1, cannot of course be known with complete accuracy; the subsequent calculations were therefore repeated on the assumption that our Table 1 costings were either too high or too low. As indicated below (see Table 3 and discussion in the text), the overall results were little changed.

[1] A range of other proposals have also been suggested; see, for example, Coutts and Rowthorn 1995) and Holtham and Mayhew (1996). and in the European context, Glyn and Rowthorn 1994).

[2] If the multiplier turned out lower than this, then a net increase of one million jobs would require a slightly larger programme, but the difference in overall cost would be small: even if the programme were to be increased by 10%, the additional net cost would be well under £1bn a year. As indicated in the text, we have at a number of stages of the analysis chosen deliberately cautious assumptions (for example, by ignoring the savings in administration costs which other estimates of the savings brought about by reducing unemployment have included), so it may well be that the net cost of a slightly larger programme would still be less than the overall figure we arrive at.

4. The fiscal and distributional impacts

The cost to the Exchequer of the public sector-led strategy referred to above, leading to the creation of a million new jobs, would be in the order of £17 billion. This would, though, be offset by savings to the Treasury from a reduced pay-out of unemployment-related benefits.[1] Those taking jobs who were previously unemployed would no longer receive Unemployment Benefit nor, with full-time wages at standard rates of pay, would they any longer be likely to qualify for means-tested assistance. In addition, some benefit payments, such as Family Credit, being paid to those in work may also fall as additional members of the family become employed. Tax revenues would also increase. All this would lead to a far lower net than gross cost for such a programme. To quantify these impacts we use the Microsimulation Unit's tax-benefit model POLIMOD, which simulates the impact of tax and benefit regulations on the household income distribution (see Appendix; and for further details, Redmond, Sutherland and Wilson, 1996). Estimates of the savings in benefits and increased revenue from income tax, employer and employee National Insurance contributions, VAT and excise duties are provided. The results we obtain from such a modelling exercise will be influenced by the assumptions made on various sets of questions, and in particular those concerning the following two issues.

First, who of those currently not working, take up the new jobs? Using the Family Expenditure Survey sample on which POLIMOD is based, we can break down the 'unemployed' into groups—those in current receipt of Unemployment Benefit (UB); those self-reported unemployed or sick, and seeking work (not on UB); and those that are 'unoccupied' (that is, not necessarily seeking work).[2] Alternative rates of job take-up from the different groups are modelled. Throughout, we assume that the following are *not* available for work: people aged under 16 or over 59 (in the case of women) or 64 (for men); those in full-time education; people already in employment or self-employment; people on training benefits; parents of young children where there is no other non-working[3] parent (i.e. single parents and 'second earners'); and those in receipt of benefits which indicate that the person is not available for work (Severe Disability Allowance, maternity pay, and so on).

Second, what rate of pay do they receive and how many hours do they work? The policy package referred to in section 3 above, which we are modelling here, is intended to generate quality, full-time jobs. We could have kept the gross cost down by assuming that many of the new jobs would be part-time or low-paid jobs (or both). We have not done this; instead, we assume that all the new jobs are reasonably paid and

[1] The benefits paid to an unemployed person may include Unemployment Benefit, which is a social insurance benefit and depends on the unemployed person's National Insurance contribution history and their duration of unemployment. Depending on the income and circumstances of the whole family of the unemployed person, means-tested benefits such as Income Support, Council Tax Benefit and Housing Benefit may also be payable. In the remainder of this paper the term 'unemployment benefits' refers to the package of social security that may be available to an unemployed person and their family.

[2] The modelling assumes the tax and benefit system as it existed in April 1996. Since October 1996, Unemployment Benefit and Income Support for the unemployed have been replaced by the Jobseeker's Allowance. The new regime shortens the period over which benefit is paid without a means test from a year to six months, and involves more stringent requirements to seek work with greater penalties for not doing so. It is likely that these changes will have some effect on the composition of the groups considered here. Sensitivity of our results to the groups of unemployed who are assumed to take up new jobs is considered below.

[3] Where working is defined as at least 8 hours a week.

full-time.[1] So, we assume that the average new job pays average national earnings, consistent with the strategy outlined above.[2] But to capture the varieties of job opportunities the earnings distribution is allocated across the middle 50% of the earnings distribution (between £215 and £398 per week—see Appendix).[3] The earnings levels generated are allocated at random to those taking up jobs and it is assumed that they all work 38 hours a week.

The new jobs that are generated are superior in terms of pay and hours to the jobs already being done by many of the lower paid in the sample. The simulation is based on the assumption that some of the new jobs will be taken by those currently employed, with others in turn moving into the posts being vacated; those taking up the newly vacated posts will also come not just from the unemployed and otherwise unoccupied, but also from others who, again, are already employed. This process will continue, as workers move up the earnings hierarchy, until all the net increase in employment is taken-up by the previously unemployed (or otherwise unoccupied, as categorised above).[4]

Table 2 summarises the results of modelling the impact on government revenue of the job generation policies, under various assumptions.[5] For the creation of one million jobs, four alternatives are shown—based on different rates of job take-up from different unemployed groups and alternative assumptions concerning working parents (see Table 2 and Appendix). In addition, option C_a shows the impact of two million jobs being created.

[1] The effects of making some of the jobs part-time are modelled in Kitson, Michie and Sutherland (1997).

[2] The average national weekly wage is £290·50 (see Table A2). The weighted average weekly (FTE) wage, taking the largest three sectors in Table 1 combined—housing, education and training, and health—comes out at £312. It is not possible to calculate average wages in all sectors, nor for the additional jobs created through multiplier effects, but these latter jobs would most probably start at below the national average. Thus, while the assumption of average weekly earnings may if anything slightly underestimate the level of wages and hence the positive revenue impact of the job generation programme, the net effect would be marginal; even were the average wage to turn out to be much different from average earnings, which is most unlikely, the additional simulations reported in the text, which were run with both higher and lower average earnings, suggested little net effect.

[3] Since there is no way of actually knowing in advance exactly what the pay will be for all the new jobs, and since some of these are generated through multiplier effects and so will depend on what people happen to decide to spend their increased incomes on, and the distribution of earnings in these sectors, we did re-run our simulations with different assumptions regarding the actual pay levels for the new jobs, as reported below. Our initial results proved rather robust in face of such changes.

[4] Our costings therefore assume that the characteristics of the unemployed, such as family composition or housing tenure, are similar to those of the low paid.

[5] For the results reported in Table 2 the proportions of each group taken, as a percentage of people in that group, under each of the three scenarios is reported in the notes to that table. However, it may be helpful to report these as follows:

	Scenario (A, B or C)		
Group	A	B	C
Group 1	75%	100%	100%
Group 2	35%	residual	80%
Group 3	residual	0%	residual

where, as discussed in the Appendix, 'Group 1' are those in current receipt of Unemployment Benefit (UB); 'Group 2' are those self-reported unemployed or sick, and seeking work (not on UB); and 'Group 3' are those that are 'unoccupied' (that is, not necessarily seeking work). Thus, combining these percentages with the number actually in each group, and running each of the A and B scenarios twice, once for each of

(*continued*)

Table 2. *The revenue impact of job generation under various assumptions (£bn per annum)*

		Creating one million jobs (alternative job take-up assumptions)				Creating two million jobs
		A_a	A_b	B_a	B_b	C_a
(i)	Non-means tested benefits	0·76	0·76	1·04	1·01	1·05
(ii)	Means tested benefits	2·16	2·16	2·16	2·20	4·47
(iii)	**Total benefits**	**2·92**	**2·92**	**3·20**	**3·21**	**5·52**
(iv)	Income tax	2·68	2·61	2·65	2·62	5·21
(v)	Employee NICs	1·30	1·26	1·29	1·27	2·52
(vi)	Employer NICs	1·58	1·54	1·58	1·55	3·07
(vii)	**Total direct tax**	**5·56**	**5·41**	**5·52**	**5·44**	**10·80**
(viii)	**Total direct revenue**	**8·48**	**8·34**	**8·72**	**8·65**	**16·32**
(ix)	Indirect tax	1·42	1·38	1·39	1·37	2·81
(x)	**Total revenue**	**9·90**	**9·72**	**10·11**	**10·02**	**19·12**
(xi)	Number of households (thousands)	976	953	971	958	1774
(xii)	Mean revenue per household (£ thousand)	10·14	10·20	10·41	10·46	10·78

Note that rounding errors cause some columns to not sum precisely
Total number of households: 23 million
Assumptions for creating *one* million jobs (for further detail see note 1):

A_a - The jobs are taken by 75% of the group currently in receipt of Unemployment Benefit plus 35% of the group self reported unemployed or sick and seeking work (but not receiving Unemployment Benefit), with the remainder coming from the unoccupied group. There are a number of excluded groups (see text); here it is assumed that parents with children aged under 5 and where there is no other non-working parent are excluded.

A_b - As A_a except that it is assumed that parents with children aged under 11 and where there is no other non-working parent are excluded.

B_a - The jobs are taken by 100% of the group currently in receipt of Unemployment Benefit with the remainder coming from the group self reported unemployed or sick and seeking work. Parents with children aged under 5 and where there is no other non-working parent are excluded.

B_b - As B_a except that it is assumed that parents with children aged under 11 and where there is no other non-working parent are excluded.

Assumptions for creating *two* million jobs:

C_a - The jobs are taken by 100% of the group currently in receipt of Unemployment Benefit plus 80% of the group self reported unemployed or sick and seeking work, with the remainder coming from the unoccupied group. Parents with children aged under 5 and where there is no other non-working parent are excluded.

Source: Calculated using POLIMOD.

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the two different child definitions—denoted by subscripts a and b (with scenario C being run with the former child definition only)—and with the model generating the number from each group coming from the residual, we get the following numbers of people (in thousands):

	Scenario (A_a, A_b, B_a, B_b or C_a)				
Group	A_a	A_b	B_a	B_b	C_a
Group 1	0·75 × 406	0·75 × 397	1·0 × 406	1·0 × 397	1·0 × 406
Group 2	0·35 × 1519	0·35 × 1468	0·39 × 1519	0·41 × 1468	0·8 × 1519
Group 3	0·057 × 2866	0·073 × 2592	none	none	0·13 × 2866
Target total	1 million	1 million	1 million	1 million	2 million

This is all discussed in greater detail in the Appendix and reported in Table A1, although that table does not actually include the values for the residual coefficients which the model generates and which are reported above (namely 0·057, 0·073, 0·39, 0·41 and 0·13).

The first two rows of Table 2 show the effect of the expansion of employment on benefit payments (means tested and non-means tested), with the third row giving the sum of these. With a net increase of one million jobs, the expenditure saving on benefits is found to vary between £2.92 billion and £3·21 billion.[1] Rows (iv)–(vi) show the impact on direct taxation (and the seventh gives the sum of these), with this revenue increasing by between £5·44 billion and £5·56 billion. Row (ix) gives the indirect revenue arising from indirect taxes on assumed increased spending; this ranges between £1·37 billion and £1·42 billion. Indirect taxes can only be computed at the household level, so row (xi) shows the number of households affected (that is, households including one or more person entering work) and row (xii) shows the average revenue generated by these households.

The total revenue impact of a net increase in employment of one million turns out to be rather robust in the face of varying the assumptions concerning job take-up and working parents. The total revenue generated varies between £9.72 billion (assumption A_b) and £10·11 billion (assumption B_a), indicating that the average cost to the Exchequer of having someone unemployed or unoccupied is around £10,000 a year. This significantly exceeds 'official' (and other) estimates which put the annual cost, in terms of benefits and forgone taxes, of an unemployed claimant at £9,000.[2] The explanation appears to be that the previous estimates, including those from the Treasury, have failed to include all the various benefit and tax impacts on households which our disaggregated modelling is able to pick up as a result of being based on data on actual households.[3]

Table 2 also shows the revenue impact of creating two million jobs (assumption C_a). The overall revenue effect is £19·12 billion or £9,550 per job. This suggests that our results are fairly robust even over large variations in the scale of the expansion in employment.

[1] Results are given to the nearest £10 million; this is not intended to imply that they are necessarily statistically significant to this degree of precision.

[2] The estimate of £9,000 per claimant was given by Gillian Shepherd, then Education Minister, to the House of Commons Select Committee on Employment in October 1992 and a similar figure has been estimated by Piachaud (1994). Recent figures produced by the Unemployment Unit (Convery, 1996) estimate the revenue cost per claimant at only £7,420 in 1994/95 and £7,960 in 1995–96.

[3] While the various previous estimates differ in their assumptions, a common difference from our scenario is to assume that the new jobs will be lower paid than would be the case with the public investment-led strategy outlined in section 3 above. (For example, the figures from the Employment Policy Institute are calculated on the assumption that the new jobs will pay only 80% of average earnings.) However, the biggest difference between our (larger) estimates of the cost of keeping someone unemployed from previous estimates is found for non-claimants; previous work has tended to assume that the big saving is when the new job is taken by someone who was previously being paid Unemployment Benefit which is therefore saved, whereas our database, by picking up all the various benefits received, demonstrates that there is almost as great a saving to the Exchequer when the individual concerned was not in receipt of Unemployment Benefit. Thus while, as reported in the previous footnote, the Unemployment Unit estimate the revenue cost to the Exchequer of having someone not working and receiving Unemployment Benefit to be £7,420 in 1994–95 and £7,960 in 1995–95, they report that for non-claimants the cost was only £3,840 in 1994–5 and £4,000 in 1995–96. We find this assumption to be totally unfounded: as discussed below (and reported in Table 4) the cost to the Exchequer of someone not working turns out to be rather similar whether the individual is in receipt of Unemployment Benefit or not—this factor tends to be swamped, and even counteracted, by other factors; this is discussed in greater detail in Kitson, Michie and Sutherland (1997). Finally, our estimates show that unemployment is a greater cost to the economy than previous work had suggested, despite the fact that some previous estimates had included savings in administration costs as unemployment falls which we have not done; were these to be added to our estimates, the savings from a reduction in unemployment would be even greater than we have here suggested, and the corresponding net cost of a job-creation programme that much lower.

Table 3. *Revenue effect of increased employment: sensitivity to earnings assumptions (£bn per annum)*

		Base simulation (A_s)	Earnings reduced by 10%	Earnings increased by 10%	Percentage variation
(i)	Non-means tested benefits	0·76	0·76	0·76	0·0
(ii)	Means tested benefits	2·16	2·13	2·17	1·1
(iii)	**Total benefits**	**2·92**	**2·89**	**2·93**	**0·0**
(iv)	Income tax	2·68	2·30	3·06	14·1
(v)	Employee NICs	1·30	1·14	1·45	12·0
(vi)	Employer NICs	1·58	1·35	1·74	12·2
(vii)	**Total direct tax**	**5·56**	**4·79**	**6·25**	**13·1**
(viii)	**Total direct revenue**	**8·48**	**7·68**	**9·19**	**8·9**
(ix)	Indirect tax	1·42	1·26	1·58	11·6
(x)	**Total revenue**	**9·90**	**8·94**	**10·77**	**9·3**
(xi)	Number of households (thousands)	976	975	979	0·2
(xii)	Mean revenue per household (£ thousand)	10·14	9·17	11·00	9·0

Source: Calculated using POLIMOD.

Table 3 shows the effect on revenue of assuming that the earnings of the newly employed turn out to be either higher or lower than we have assumed above, by an order of 10% (with the previously bottom level of weekly earnings of £215 either falling to £193·50 or turning out to be a higher £236·50). Table 3 also reports the average percentage shift either way in each element of the calculation. Not surprisingly, income tax and indirect taxes are the most sensitive to the precise levels of earnings chosen. If average earnings turned out to be higher than had been assumed then this would cause the public sector pay bill to rise accordingly, but this would be offset by the additional savings in benefit payments and also increased tax revenues received, and conversely if average earnings turned out lower than we assume. So even with quite wide variations in actual out-turn of earnings levels, the net fiscal effect turns out to be small. In other words, the results in Table 2 are rather robust in the face of such variations.

Table 4 decomposes the changes in A_s into those affecting people on Unemployment Benefit, people who are unemployed but not on Unemployment Benefit, and people not currently seeking work.

Here we can see that the mean revenue per household does not vary greatly with these groups. The main factors affecting the revenue saved per person is whether they are receiving Income Support (or other means-tested benefits) before becoming employed, or whether they or their partner have other income. If they were on Income Support then their circumstances will determine the amount they received, and hence the amount saved. Factors such as large numbers of dependent children and high housing costs will be key elements in these calculations. If the unemployed person is not in receipt of means-tested support but does receive Unemployment Benefit, then this will clearly be the main saving. In all these cases and also in those cases where no benefit is received by the unemployed person, the extra revenue that is collected in the

Table 4. *Revenue effect of increased employment: decomposition by claimant status (£bn per annum)*

		Base simulation (Aa)	Unemployed on UB	Unemployed not on UB	Unoccupied/ not currently seeking work
(i)	Non-means tested benefits	0·76	0·74	0·02	0·00
(ii)	Means tested benefits	2·16	0·20	1·66	0·30
(iii)	**Total benefits**	**2·92**	**0·94**	**1·68**	**0·30**
(iv)	Income tax	2·68	0·76	1·46	0·46
(v)	Employee NICs	1·30	0·37	0·71	0·21
(vi)	Employer NICs	1·58	0·46	0·87	0·26
(vii)	**Total direct tax**	**5·56**	**1·59**	**3·04**	**0·93**
(viii)	**Total direct revenue**	**8·48**	**2·53**	**4·72**	**1·22**
(ix)	Indirect tax	1·42	0·42	0·75	0·25
(x)	**Total revenue**	**9·90**	**3·00**	**5·47**	**1·47**
(xi)	Number of households (thousands)	976	300	540	136
(xii)	Mean revenue per household (£ thousand)	10·14	9·85	10·13	10·79
(xiii)	Reduction in households receiving IS (thousands)	347	63	244	40

Source: Calculated using POLIMOD.

form of contributions and tax will be largely independent of characteristics and will only depend on the earnings level assumed for them.[1]

The impact of the job creation strategy on income distribution is shown in Table 5. The gains are found to be greatest for the poorest households (in both absolute and percentage terms). For instance, the households in the lowest (pre-reform) decile receive an average weekly gain of £20·65 compared to an average for all households of £5·95. Additionally, a greater percentage of poorer households benefit compared to those at the richer end of the distribution.

5. A minimum wage and top-rate tax rates

We have seen that increasing employment can significantly reduce income inequality. Other measures could be added to provide a package of reforms that, on the one hand, further offset the cost of job creation and, on the other, lowered inequality. Here we consider two such measures: the introduction of a minimum wage and an increase in top rates of income tax.

A national minimum wage set at £4·15 per hour for employees aged 18–64 would have the immediate effect of raising tax revenue and reducing benefit payments to the tune of £3·7 billion per year. While it can be argued that the net effect on public

[1] These findings suggest that our estimates of the tax and benefit savings from creating one million new jobs are unlikely to be much affected by the introduction of the Jobseeker's Allowance (JSA). However, if the £1,000 inducement to move from part-time to full-time employment which is part of the JSA package were to coexist with a job-creation strategy, the net revenue cost of the new jobs would need to be revised to take this into account.

Table 5. *The distributional impact of creating a million jobs*

Decile of household equivalised net income (pre-reform)	Average £ gain per week	Gain as a % of pre-reform income	% of households benefiting
bottom	20·65	25·9	15·0
2nd	12·20	8·5	8·3
3rd	4·79	3·3	4·0
4th	2·73	1·6	2·5
5th	4·89	1·8	3·3
6th	4·96	1·7	3·2
7th	2·93	0·8	1·6
8th	3·34	0·7	2·1
9th	0·90	0·2	0·6
top	2·11	0·2	1·3
All	5·95		4·2

Note: The job take-up assumption is A_a (see Table 2).
Source: Calculated using POLIMOD.

finances might well not be this large—not least because of the higher wage costs of low-paid public sector employees—it is also clear that these are substantial resources with which to offset such adverse effects. Furthermore, the first round distributional effects are positive, although not as dramatic as the distributional consequences of job creation, shown in Table 5.[1]

We examined several options for increasing tax rates on higher incomes. The revenue effect of raising the top rate of tax to 50% (using current thresholds) would be to raise £3·6 billion extra tax, but 1.8 million households would be net losers.[2] Adding a new band for incomes over £40,000 (less the single personal allowance, namely a threshold of £36,235) concentrates the losses among the 800,000 or so households with the highest incomes. A new 50% band[3] raises £2·1 billion, but setting the rate at 60% doubles this revenue. Table 6 shows the distributional effects of the combined package: one million new jobs, a minimum wage and a 60% tax rate over £40,000 (package G).

Table 7 shows the Gini coefficient and quintile shares of household income under four assumptions.[4] The Gini falls progressively with the employment of one million previously unemployed (by 0.8 percentage points), with the introduction of a minimum wage of £4·15 per hour (another 0·4 percentage points) and with the increase in top-rate income tax (a further 0·7 percentage points). To put these simulated reductions in inequality in context, we can compare them with the CSO's estimates of the Gini for selected years. The measure of income used is not identical, but it is reasonable to believe that changes in the Gini should be comparable using the two sources. Also shown in Table 7 are the shares of income received by each quintile of households,

[1] Sutherland (1995) discusses the distributional effects of a range of levels of minimum wage.
[2] This was our run E, not reported in the current paper, but available from the authors on request.
[3] This was our run F, not reported in this paper, but available from the authors on request.
[4] The inequality measures were calculated using INEQ, a computer package written by Frank Cowell of the London School of Economics.

Table 6. *Distributional effect of full employment plus a minimum wage plus a new higher tax rate of 60% (combination G)*

Decile of household equivalised net income (pre-reform)	Average gain £ per week	Gain as proportion of pre-reform income %	% Gaining	% Losing
Bottom	23·97	30·2	26·5	0·0
2nd	15·15	10·8	20·0	0·0
3rd	8·25	5·4	21·4	0·0
4th	6·35	3·4	21·8	0·0
5th	9·64	3·5	27·1	0·0
6th	8·90	2·9	28·3	0·0
7th	6·76	1·8	25·1	0·0
8th	5·96	1·3	19·2	1·5
9th	1·07	0·3	9·0	5·2
Top	-25·77	-3·3	2·9	28·2
All	6·03		20·0	3·5

Source: Calculated using POLIMOD.

Table 7. *Effects of employment increases, minimum wage and tax increases on inequality*

	POLIMOD estimates				CSO figures		
Income distribution:	1996/7	A_a	A_a + minimum wage	G	1979	1993/4	1994/5
Gini %	35·7	34·9	34·5	33·8	29	38	37
Quintile shares %							
bottom	6·9	7·1	7·2	7·3	9·5	6·8	6·9
2nd	11·6	11·8	11·9	12·0	13	11	11
3rd	16·1	16·3	16·5	16·6	18	16	16
4th	22·8	22·8	22·8	23·1	23	22	22
top	42·7	42·0	41·7	41·0	37	44	43

1996/7 POLIMOD household equivalised post-tax net income distribution.
A_a 1 million new employments (see Table 2).
G 1 million new employments plus a £4·15 minimum wage plus new tax band at £40,000 of 60%.
CSO figures use an income definition that is approximately equivalent but which is different in detail. They are ranked by equivalised disposable income (before the deduction of indirect tax), whereas POLIMOD figures are ranked by an income measure that is after indirect tax (*Economic Trends*, no. 506, January 1995, p. 46).

again in comparison with CSO estimates. The policy-induced changes are small compared with the cumulative changes since 1979 and, in the case of the Gini, are of the order of the year-on-year reduction shown between 1993–94 and 1994–95. This is not surprising since, although we have simulated a set of major redistributive reforms, they only address a small part of the problem. For example, the one million jobs that we simulate are sufficient to put just over a fifth of unemployed or inactive adults into work. Furthermore, there are many factors which contributed to increased inequality

since 1979 that we have not addressed (or not fully). These include the ageing of the population, the massive reduction in the progressivity of the tax system and generosity of some parts of the benefit system (Redmond and Sutherland, 1995), the concentration of work in fewer households and the increase in earnings' inequality. The policy proposals, the effects of which we have simulated, would undoubtedly reverse some aspects of these changes, such as the long tail at the lower end of the earnings distribution, the concentration of work and the lack of progression in the tax system. But these would constitute only small steps in the direction of less overall inequality.

6. Conclusion

The gross cost of creating a million new jobs through a public sector-led strategy, involving an expansion of good-quality jobs in the public services, would be nearly £17 billion. However, our modelling of the impact which this would have on tax receipts from, and benefit payments to households indicates that the net benefit to the Treasury of this increase in revenues and reduction in expenditure would amount to around £10 billion, leaving a net annual cost of around £7 billion. This could easily be financed—it is less than 2·5% of current tax revenues—with various taxation and/or borrowing options set out in Berry, Kitson and Michie (1995); the introduction of a new 60% income tax band at £40,000 would alone cover more than half the net cost (raising £4·2 billion a year). An increase in public sector employment, in addition to helping to counter high and persistent unemployment, would provide other economic and social benefits. First, it would help to reverse the massive shift in the distribution of income towards the rich that took place in Britain throughout the 1980s and 1990s. And, second, particularly in the area of education and training, it would improve the stock of human capital and help to raise the long-term growth rate of the economy (as emphasised in much of the new growth theory literature). Thus, while our modelling results would suggest that the initial costs of a public sector jobs strategy would in any case be rather modest, over the medium to longer term even these costs would fall, as higher economic growth would raise tax revenues still further.

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Appendix: Modelling job generation using the POLIMOD model

1. POLIMOD

The POLIMOD model is based on 1991 Family Expenditure Survey (FES) data, with money values updated to 1996–97 levels and with the 1996–97 tax–benefit system simulated as the default. Earnings and other components of income have been updated as sensitively as possible (for example, using New Earnings Survey distributions for earnings) but employment, hours of work and so on remain as they were in 1991.

Changes in elements of gross income (e.g. earnings) can be simulated if precise assumptions about the nature of these changes are made. Resulting effects on income tax, employee National Insurance Contributions (NICs), Unemployment Benefit and means-tested benefits are automatically calculated to give post-reform net incomes, which can be compared with pre-reform levels. No change in individual behaviour is allowed for. Nor is any consequential or independent change in macro variables assumed: the model is intended to simulate the 'morning after' impact of tax and social security changes. Indirect taxes can also be simulated. Here, the assumption used is that spending adjusts proportionately (i.e. all the new net income is spent on the same goods as when the individual was unemployed).

2. Assumptions

(i) Job take-up

Individuals are divided into three groups:

1. In current receipt of Unemployment Benefit (UB);
2. Self-reported unemployed or sick, and seeking work (not on UB);
3. Unoccupied (i.e. not necessarily seeking work but not identified as being available for work).

Table A1, which shows the number of individuals in each group, is based on FES data grossed-up to population level[1] and excludes parents where there is no other non-working partner—with children under 5 for assumption (a) and children under 11 for assumption (b). Table A1 also shows alternative rates of job take-up from the different groups. Options A and B generate one million jobs and option C generates 2 million jobs. With option A, the jobs are taken by 75% of group 1, 35% of group 2, with the remainder coming from the unoccupied group. With option B, the jobs are taken by 100% of group 1, with the remainder coming from group 2. With option C, the jobs are taken from 100% of group 1, 80% of group 2, with the remainder coming from the unoccupied group. Since the choice of people from each group is carried out using random numbers, the total new employment only hits the target on average.

(ii) Earnings

Using the sample of people who are employed 38 hours or more in the POLIMOD database, the inter-quartile distribution is obtained for 1996–97 average weekly earnings. The mid-point income for the ten 5-percentage ranges of the second and third deciles is shown in Table A2.

[1] N households = 23 million; N people = 56 million; N people with any earnings = 22.3 million.

Table A1. *The composition of job take-up*

Job Take-up Assumptions		Aa		Ba		Ca		Ab		Bb	
Groups	No in *'a'* groups (000s)	% taken up from group	No employed	% taken up from group	No employed	% taken up from group	No employed	No in *'b'* groups (000s)	% taken up from group	No employed	% taken up from group	No employed
1 In current receipt of Unemployment Benefit	406	75	304	100	406	100	406	397	75	298	100	397
2 Self reported unemployed or sick, and seeking work	1519	35	532	residual	594	80	1215	1468	35	514	residual	603
3 Unoccupied	2866	residual	163	0	0	residual	379	2592	residual	189	0	0
Total (000s)	4791	-	1000	-	1000	-	2000	4457	-	1000	-	1000

Note: The residual ensures that the target total is achieved. See also p. 109 n. 5 and the notes to Table 2.
Source: Calculated using POLIMOD.

Table A2. *Assumed weekly earnings distribution*

Percentile range	Mid-point earnings (£)
25–30	215
30–35	231
35–40	246
40–45	262
45–50	280
50–55	301
55–60	323
60–65	345
65–70	369
70–75	398

Source: Derived from POLIMOD, based on 1991 FES data updated to 1996/7.