WAS THE THATCHER EXPERIMENT WORTH IT? BRITISH ECONOMIC GROWTH IN A EUROPEAN CONTEXT

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ABSTRACT

Was the Thatcher Experiment Worth it?
British Economic Growth in a European Context*

The changes in economic policy introduced in the UK after 1979 had a substantial impact on income distribution, unemployment and productivity growth. This paper brings together available evidence in an attempt to evaluate the welfare effects of the Thatcher reforms. The estimated impact turns out to be sensitive to the degree of 'inequality aversion' of the investigator and to the method chosen to estimate the counterfactual productivity path. The overall welfare effect may have been either negative or positive but is probably smaller than partisan assessments have claimed.

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NON-TECHNICAL SUMMARY

Economic policy in the UK underwent a substantial change after 1979. Greater emphasis was placed on supply-side reform, the priority given to efficiency rather than equality was increased, the commitment to full employment was dropped and a policy to reverse relative economic decline was promoted. This programme of radical reforms has, of course, been highly controversial. This paper considers four questions: (i) What happened to the standard of living? (ii) How good was the UK's growth performance in the 1980s? (iii) What were the reasons for any improvement in UK growth? (iv) What was the overall effect of the Thatcher Experiment on economic welfare?

Evidence from a variety of empirical studies is surveyed concentrating especially on the distribution of income, unemployment and productivity growth. Assessments of the policy's outcome are certain to differ, and the paper stresses some of the reasons for this, including the importance of value judgments and the difficulties of specifying a counterfactual policy mix. In so far as quantification is possible, it seems that under reasonable assumptions an annual gain of as much as 5% of GDP or a loss of as much as 3% could result.

Recent changes in living standards across countries are compared using a concept of 'measurable economic welfare' pioneered by Beckerman (1980). This takes account of changes in leisure and income inequality as well as GDP growth. In the past twenty years imputations of this kind are shown to have a much larger effect on rank orders of growth performance than in the 1950s and 1960s, and particularly so for the UK in the 1980s, where both imputations are potentially large. Such information as is readily available on the quality of life does not indicate particularly poor outcomes for the UK, however, contrary to the fears of some critics.

A review of the evidence on productivity performance suggests that the new policy stance had positive effects, but initially through changes in bargaining power rather than through enhanced factor accumulation. A regression allowing for 'catch-up' effects in growth along the lines proposed by Dowrick and Nguyen (1989) supports the assessment that the UK growth rate under performed in the 1960s and was better than could have been expected in the 1980s. The sources of the improvement probably had relatively powerful once-and-for-all components and it is unclear that there will be powerful long-term impacts.

A conventional approach to evaluating the main effects of the Thatcher Experiment is likely to take higher unemployment and greater inequality as negative impacts to set against any productivity growth gains. Any overall assessment at this stage can only be provisional and, in any case, is contingent on the relative weight put on these factors in the social welfare function. In the

world of a traditional neoclassical growth model it is quite possible for evaluations to be either positive or negative, as noted earlier. If an endogenous growth model is assumed, the chances of an overall positive judgment are potentially much enhanced since permanent growth rate effects are then possible. Nevertheless, the nature of faster productivity growth in the UK in the 1980s does not suggest particularly powerful effects along the lines of a Lucas (1988) or Romer (1990) model and it remains quite possible that the growth effects of the Thatcher Experiment are mainly transient. If so, assessments of its welfare effects are not likely to reach an early consensus.

I.   Introduction

The British Conservative Government was elected in 1979 against the background of an economic performance in the 1970s widely perceived as deeply disappointing. The decade had seen a marked slowdown in economic growth, rising unemployment and record peacetime inflation; the overtaking of British income and productivity levels by other European countries had become apparent. The Conservatives under Mrs Thatcher promised institutional reform on the microeconomic front and for the macro-economy a disinflation through monetarist policies.

Among the key elements of this new policy stance were the following.

a)   Supply-side policy moved towards increasing pressure for cost reductions and away from the pursuit of allocative efficiency. Government regulatory failures rather than market failures were targeted for policy action, subsidies were reduced, and eventually privatization was given a high priority. This amounted to a rejection of the central thrust of postwar industrial policies.

b)   The government finally abandoned counter-cyclical policy in the form of demand management as practiced by the Keynesian policy-makers of the 1950s and 1960s. The Thatcherites, if not the Wets, accepted rapidly rising unemployment as the immediate consequence both of seeking to establish a credible anti-inflationary policy and of reducing the productivity gap between the UK and competitor countries.

c)   There was a heightened emphasis on efficiency relative to

equity in the resolution of policy conflicts. Thus, priority was given to cutting personal taxes rather than to expanding welfare spending and to faster growth and restructuring industry rather than income redistribution or support for lame ducks.

The government saw itself as escaping from "the trade unions' veto" on economic reform (Holmes, 1985), and many of the changes of the 1980s would have been regarded as inconceivable by informed opinion in the 1960s and 1970s - for example, the reduction of the top marginal income tax rate to 40%, the privatization of the major utilities, the decimation of the NUM and the indexing of benefits to prices rather than wages. Similarly, the government's re-election in 1983 and 1987 notwithstanding the very high levels of unemployment in those years flew in the face of the hitherto conventional wisdom.

The policy stance of the British Conservatives also contrasted sharply with the line taken by other major European governments. In France, the 1980s opened with the Mitterand government committed to Keynesian expansion and further nationalization. In Germany, despite the initial rhetoric, structural and political constraints prevented Chancellor Kohl "from enacting more than a half-hearted imitation of the Thatcherite model" (Humphreys, 1989, p.128).

As Table 1 shows, the 1980s were a period of relatively poor British performance in terms of inflation and unemployment. The Misery Index rose slightly compared with the 1970s on Layard et al's (1991) estimates and the UK remained in seventeenth position in the league table. There was virtually no improvement relative to Germany, although the UK avoided the spectacular deterioration of the Misery Index experienced in France. In fact, when the data are made comparable, the

TABLE 1 : Inflation and Unemployment Rates (%) : A Comparative Picture

	Inflation Rate	Standardized Unemployment Rate	UR*	Misery Index
(a) 1980-88				
Australia	8.42	7.67	6.10	16.09
Austria	4.17	3.14	2.95	7.31
Belgium	4.48	11.07	7.04	15.55
Canada	5.99	9.48	8.14	15.47
Denmark	6.92	8.56	6.30	15.48
Finland	7.57	5.01	4.65	12.58
France	7.82	8.98	7.81	16.80
Germany	2.99	6.07	4.04	9.06
Ireland	9.26	14.12	13.09	23.38
Italy	12.31	6.87	5.42	19.18
Japan	1.42	2.51	2.14	3.93
Netherlands	2.64	9.89	7.27	12.53
New Zealand	11.71	4.18	3.91	15.89
Norway	6.67	2.51	2.50	9.18
Spain	10.33	17.74	14.95	28.07
Sweden	8.12	2.21	2.36	10.33
Switzerland	3.89	1.87	1.44	5.76
UK	7.62	10.32	7.92	17.94
USA	5.00	7.38	6.36	12.38
(b) 1969-79				
Australia	10.13	3.66	4.01	13.79
Austria	5.96	1.32	0.48	7.28
Belgium	7.21	4.53	4.82	11.74
Canada	7.85	6.44	7.01	14.29
Denmark	9.40	3.64	4.64	13.04
Finland	10.35	3.48	2.61	13.83
France	8.66	3.65	3.88	12.31
Germany	5.42	2.13	1.87	7.55
Ireland	12.22	6.72	9.13	18.94
Italy	11.73	4.37	4.94	16.10
Japan	7.46	1.61	1.82	9.07
Netherlands	7.58	3.67	4.28	11.25
New Zealand	11.88	0.58	1.96	12.46
Norway	7.91	1.75	2.22	9.66
Spain	13.58	4.12	9.73	17.70
Sweden	8.58	1.65	1.93	10.23
Switzerland	5.09	0.52	0.83	5.61
UK	12.18	4.30	5.15	16.48
USA	6.48	5.85	5.97	12.33

Sources: Based on Layard et al. (1991). UR* is the equilibrium unemployment rate. Misery Index is the sum of the inflation and unemployment rates.

1980s witnessed the worst British unemployment of any period on record, including the 1930s (Crafts, 1991). The 1970s stand out as a period of exceptionally high inflation but 1980s inflation was high by the standards of the early postwar period. The much used, though arbitrarily weighted, Misery Index shows only a marginal gain for the Conservatives in 1980-8 over the much derided Labour years of 1974-9.

If the Thatcher government is to be favourably regarded, it would seem that such an evaluation must be based on success in improving growth performance and, in particular, in raising productivity growth. Here, there is a prima facie case, as Table 2 shows. Moreover, as section IV suggests, the high Misery Index may in part be a corollary of policies which raised the growth rate.

Critics of the Thatcher government's achievements on growth and productivity point to a number of problems and weaknesses. These would include the failure to regain the productivity growth rate of the 1960s and the suggestion that, even though there was some improvement in productivity performance relative to sluggish European economies generally, the price paid for this growth revival was unacceptably high. In particular, it has been suggested that any improvement in growth was only temporary and involved large increases in inequality while failing to raise the quality of life for most people (Costello et all., 1989).

This suggests four questions which the remainder of the paper will attempt to answer.

(i)   What happened to the standard of living in the UK compared both with earlier and with Europe?

TABLE 2 : Productivity Growth in the Business Sector of OECD Countries
(% per year)

	Labour Productivity			Total Factor Productivity		
	1960-73	1973-9	1979-88	1960-73	1973-9	1979-88
Australia	3.2	2.0	1.1	2.9	1.2	1.0
Austria	5.8	3.3	1.8	3.4	1.4	0.7
Belgium	5.0	2.8	2.1	3.7	1.5	1.1
Canada	2.8	1.5	1.5	2.0	0.7	0.3
Denmark	4.3	2.6	1.5	2.8	1.2	0.8
Finland	5.0	3.4	3.2	3.4	1.7	2.3
France	5.4	3.0	2.4	3.9	1.7	1.5
Germany	4.6	3.4	1.9	2.7	2.0	0.7
Greece	8.8	3.4	0.2	5.8	1.5	-0.7
Italy	6.3	3.0	1.6	4.6	2.2	1.8
Japan	9.4	3.2	3.1	6.4	1.8	1.8
Netherlands	4.9	3.3	1.5	3.1	2.0	0.6
New Zealand	1.8	-1.5	1.4	1.0	-2.2	0.6
Norway	4.1	0.1	2.0	3.6	-0.4	1.4
Spain	6.1	3.8	3.4	4.2	1.7	2.1
Sweden	3.9	1.4	1.6	2.5	0.3	0.9
Switzerland	3.2	0.7	0.9	1.6	-0.9	0.2
UK	3.5	1.5	2.6	2.2	0.5	1.9
USA	2.8	0.6	1.6	1.8	0.1	0.7

Source: Kendrick (1990)

(ii)   How good was British growth performance in the 1980s
        relatively speaking?

(iii)   Insofar as there was an improvement in relative growth
        performance, what were the reasons for this?

(iv)   What was the overall effect of the Thatcher Experiment on
        economic welfare?

        Four preliminary remarks are called for before proceeding to
this agenda in order to avoid misunderstandings.

a)   Evaluation of the Thatcher Experiment depends in a number of

respects on the economic model which is thought applicable. Thus, the underlying growth model (Solow or Romer) matters as does the interpretation of unemployment (demand deficiency or higher natural rate) and the framework for explaining productivity change (bargaining model or growth accounting).

b)   The outcome of the Thatcher experiment was obviously not a Pareto Improvement. Attempts to measure the impact on economic welfare depend heavily on value judgements. Moreover, there is no consensus on how or whether the quality of life can be measured. Nevertheless, some quantification can be provided following well known procedures along the lines of Beckerman (1980) and Dasgupta and Weale (1992). It must be accepted, however, that there will always be scope for disagreement, as with the rather similar debate on the workers' standard of living during the British industrial revolution.

c)   There is no way of specifying the counterfactual policy mix in ways which will satisfy everyone. For the purposes of this paper I have in mind a "mainstream European" model but the British Conservatives would no doubt prefer a Bennite model as their anti-monde.

d)   Even if it is claimed that the Thatcher Experiment was worth it, it does not necessarily follow that other European countries should have done the same. Differing institutions and/or initial conditions at the start of the 1980s need to be taken into account.

II.   <u>Relative Economic Decline in Britain before 1979</u>

        From the 1870s to the 1970s the growth of output and

productivity in the UK was slow by the standards of other advanced
countries (Matthews et al., 1982, p.31). The growth gap was
particularly pronounced in the Golden Age from 1950-73 when the British
growth rate was only about half the OECD average, although total factor
productivity growth was higher than in any previous period of British
economic history.

Moreover, in the post World War II period British
manufacturing productivity levels were overtaken by France and Germany,
as Table 3 reports. Up to 1939 Britain's productivity lag was relative
to the United States and, at least in terms of manufacturing, should be
seen as a failure, in common with other leading European countries, to
catch up the leader of the second industrial revolution. In the 1950s
through the 1970s there was a falling behind European rivals,
particularly in manufacturing.

TABLE 3 : Manufacturing Output/Person Employed (UK = 100)

	France	Germany	USA
1913	79.3	119.0	212.9
1937	76.3	99.9	208.3
1950	83.9	96.0	262.6
1958	91.1	111.1	250.0
1975	124.0	132.9	207.5
1980	138.8	140.2	192.8
1989	112.2	105.1	177.0

Source: Broadberry (1992, Table 1); comparisons are
based on an industry of origin approach

There are some persistent themes in the literature on relative
economic decline in Britain which recur in all periods. These include
low levels of investment, inadequate management, inappropriate education

and training standards and industrial relations systems. In general, the problems can be regarded as coming from institutional arrangements which were not particularly conducive to long term investments or effective in promoting good managerial performance and from bargaining equilibria between firms and their workers which led to poor productivity performance (Crafts, 1992b).

At the same time it would be a mistake to exaggerate the elements of continuity in the explanations for relatively slow growth over the century to the 1970s (Crafts, 1988). Thus natural resource endowments and market size probably played a much more important role in the Anglo-American productivity gap in the 1910s than the 1970s (Nelson and Wright, 1992), while government interventions and distortions loomed large as a source of relatively poor performance only after World War II (Crafts, 1991).

The weaknesses listed above were well-known to policymakers by at least the 1950s. Their persistence over time reflected the inability of market forces and/or governments to eliminate them. At bottom then, there must have been market failures and/or political constraints inhibiting British growth performance. In the 1980s, however, there was a rapid narrowing of the manufacturing productivity gap between Britain and Europe, as Table 3 shows. This is discussed in Section IV in the light of the historical background.

III.   Recent Changes in Living Standards

In the 1970s it was a popular pastime to seek to modify estimates of the growth of real GDP to include other aspects of living

standards in a broader measure of economic welfare. In this Section I
shall initially repeat an exercise of that kind for the more recent
period before considering other aspects of the quality of life. I have
adopted the approach of Beckerman (1980) for two reasons; his
methodological position is as reasonable as that of anyone else in an
area where there is no consensus and this will allow straightforward
comparisons with the earlier postwar period using his results. The
elements added to GNP for Beckerman's "measurable economic welfare" were
allowances for changing income distributions and for the growth of
leisure time; in the end his overall conclusion was essentially that GNP
is a fairly good indicator of relative growth rates of measurable
economic welfare, i.e. when other quantifiable items are added relative
performance is largely unchanged (1980, p.59).

Table 4 reflects the sharp increase in inequality in the UK in
the 1980s much stressed by critics of the government. Data on income
distribution in OECD countries are not yet generally available for the
1980s but the estimates on poverty compiled by O'Higgins and Jenkins
(1990) and also reported in Table 4 suggest that the British experience
was not repeated elsewhere in the EC.

Depending how average income and an inequality measure are
combined to form a social welfare index, it is quite possible to
conclude that social welfare fell in the UK in the early 1980s. Most
exercises of this kind have made use of the Atkinson index of inequality

TABLE 4 : Changes in Poverty and Inequality of Incomes

(a) Poverty in the EC (% persons)

	Mid 1970s	c.1980	1985
Belgium	7.9	7.6	7.2
Denmark	12.4	13.0	14.7
France	19.9	17.7	17.5
Germany	8.8	6.7	8.5
Greece	26.6	24.2	24.0
Ireland	16.4	16.9	22.0
Italy	10.6	9.4	11.7
Luxembourg	7.9	7.9	7.9
Netherlands	6.6	7.0	7.4
Portugal	23.4	27.8	28.0
Spain	20.0	20.5	20.0
UK	6.7	9.2	12.0
EUR12	12.8	12.6	13.9

(b) Average Equivalent Gross Incomes of UK Households by Decile (£1986 per week) and Atkinson Indices

1971	30.82	42.15	51.73	60.74	69.56	0.073	0.138
	79.41	90.51	105.24	127.07	204.68		
1976	35.00	48.51	59.06	69.31	79.93	0.067	0.129
	91.54	104.47	121.06	146.58	217.89		
1981	35.00	49.38	60.79	72.63	85.44	0.078	0.148
	98.53	113.41	132.92	161.13	249.39		
1986	35.64	49.86	63.15	77.61	92.86	0.094	0.178
	109.82	128.88	151.93	185.22	305.61		

$\varepsilon = 0.5$ $\varepsilon = 1.0$

Sources: Part (a) Taken from O'Higgins and Jenkins (1990); poverty is defined as less than 50% of average equivalent income.

Part (b) from Jenkins (1991, Table 2).

which allows the investigator an explicit redistribution preference.[1]
Given the data of table 4(b), Jenkins (1991) takes social welfare to be
mean income x $(1 - \text{Atkinson}, \varepsilon = 1)^{\alpha}$ and considers $\alpha = 0.25$ and $\alpha = 4$.
In the latter case where the greater weight goes to inequality
reduction, the distributional trends between 1976 and 1986 imply a
slight reduction in total welfare despite an increase of about a quarter
in mean real income whereas, with $\alpha = 0.25$, social welfare rises by
about 20 percent.

Beckerman (1980) also used the Atkinson index to adjust real
GNP for changes in income distribution. He used the index directly to
compute "equally distributed equivalent income" for several values of ε,
the Atkinson inequality aversion parameter, including $\varepsilon = 0.5$ and $\varepsilon = 1.0$, which he regarded as about as far as people would accept in trading
off equality against efficiency (1980, p.56). For the countries for
which he could obtain data he found this made generally small
differences in the 1950s and 1960s with the notable exception of France.
Adopting Beckerman's procedure for the UK in the 1980s, taking the 1976

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[1]/Atkinson's approach to the measurement of inequality is based on
evaluating how much total income society is prepared to lose in order
to carry out a given re-distribution of income; this depends on the
marginal utility of income at different income levels. Atkinson
assumes that marginal utility of income = $y-\varepsilon$. Then a transfer is
acceptable if $dy_1/dy_2 = (y_1/y_2)^{\varepsilon}$. Thus, if $y_1 = 2y_2$, if person 2
receives only half of any income taken from person 1, i.e. dy_1/dy_2
= 2, this will be alright if $\varepsilon = 1$. Higher values of ε imply a
greater degree of inequality aversion and thus a greater willingness
to sacrifice total income for the sake of equality. This parameter is
chosen by the investigator and can then be used with data on the whole
income distribution to estimate the total income which if equally
distributed would provide the same utility as the actual unequally
distributed income. Thus in Table 4(b) for $\varepsilon = 1.0$ the figure for
the Atkinson index of 0.129 (0.178) in 1976 (1986) means that, with
this degree of inequality aversion and the Atkinson utility function,
an equally distributed total income amounting to 87.1% (82.2%) of
actual total income would have yielded as much utility. Beckerman's
adjustment to measured growth uses the Atkinson index in each year to
calculate the growth of equally distributed income - a rise in the
Atkinson index over time lowers this growth rate.

distribution of income as applicable to 1979 and 1986 distribution for 1989, would significantly impact on measured growth. If $\varepsilon = 1.0$, a 2.1% growth rate is reduced to 1.5% or to 1.8% if $\varepsilon = 0.5$.

This adjustment is entered in Table 5 together with Beckerman's imputations where available for 1950-73. Until new data becomes available it is not possible to adjust other countries growth for changing income distribution in the recent past but the evidence in Table 4(a) suggests that any adjustment would either be much smaller than for the UK or even, as with France, tend to raise the estimated growth rate.

Table 5 also includes imputations for changing leisure time. As is well-known, the method used to deal with this aspect of economic growth has potentially very large effects on measured economic welfare and can seriously impinge on apparent relative performance. Key decisions required concern whether to value the whole of leisure or just the change between base and current years and what to assume about the productivity of leisure time. Since a substantial part of the changes in work years per member of the labour force in the recent past has come from unemployment, a decision must also be made as to whether this time implies an increase in utility to be valued at the wage rate. My assumptions are listed in the notes to the table and follow in essence Beckerman (1980) Method A. Maddison (1991) reports large changes in working hours in the past 20 years and simply ignoring these does not seem good enough.

Several points come from Table 5. First, in the recent period rankings of growth performance are much more sensitive to imputations

TABLE 5 : Growth of Measurable Economic Welfare/Head (% per year)

	Real GDP/ Head	Leisure Imputed	Inequality Adjustment	MEW/ Head
(a) 1950-73				
Belgium	3.6	-0.1	na	3.5
Denmark	3.5	0.2	na	3.7
France	4.3	-0.2	1.1	5.2
Germany	4.6	0.1	0.1	4.8
Italy	4.6	2.7	na	7.3
Netherlands	na	na	na	na
UK	2.4	-0.6	-0.1	1.7
(b) 1973-89				
Belgium	2.0	1.0	na	3.0
Denmark	1.7	-0.4	na	1.3
France	1.9	0.9	na	2.8
Germany	2.0	0.7	na	2.7
Italy	2.6	0.3	na	2.9
Netherlands	1.3	1.1	na	2.4
UK	1.9	0.5	-0.3	2.1
(c) 1979-89				
Belgium	1.9	1.2	na	3.1
Denmark	1.8	-0.2	na	1.6
France	1.6	1.1	na	2.7
Germany	1.7	0.3	na	2.0
Italy	2.3	0.3	na	2.6
Netherlands	1.0	0.9	na	1.9
UK	2.1	0.5	-0.6	2.0

Sources: 1950-73 derived from Beckerman (1980). The leisure imputation excludes pensioners' leisure, assumes no productivity increase in leisure time and allows only for marginal increases in leisure. The inequality adjustment embodies an Atkinson adjustment with $\varepsilon = 1.0$.
1973-79 and 1979-89 are new calculations. The leisure imputation uses data on hours and participation rates from Maddison (1982) (1991), excludes leisure of pensioners and unemployed persons and assumes no productivity increase in leisure. Changes in leisure are valued using wage data from Eurostat (1991). The inequality adjustment for the UK uses data from Jenkins (1991) and Beckerman's method with $\varepsilon = 1.0$. Real GDP/Head growth is from OECD (1991c).

than in the 1950s and 1960s. Second, although in general with these assumptions the estimated slowdown in growth since the 1960s is similar to that in GDP, the UK actually does better in 1973-89 than in 1950-73.

TABLE 6 : Survey Evidence on Dissatisfaction with the Environment
(Rank Order, 1 = least dissatisfied)

	Water Quality	Noise	Air Pollution	Waste Disposal
Belgium	6	7	6	3
Denmark	1	1	1=	1
France	7	5	5	2
Germany	9	11	11	6
Greece	10=	12	12	12
Ireland	5	2	3	9
Italy	12	8	10	10=
Luxembourg	4	6	9	4
Netherlands	2	4	4	7
Portugal	8	9	7	10=
Spain	10=	10	8	8
UK	3	3	1=	5

	Access to Open Space	Landscape Damage	Borda Ranking
Belgium	7	5	7
Denmark	1	1	1
France	6	4	4
Germany	8	7=	9
Greece	12	12	12
Ireland	3=	2	3
Italy	9	11	11
Luxembourg	2	7=	6
Netherlands	5	9	5
Portugal	10	6	8
Spain	11	10	10
UK	3=	3	2

Source: Based on Eurobarometer 1988 survey reported in Eurostat (1991, p.106). The Borda Rule ranking is an ordinal aggregator and simply ranks on the basis of the sum of the individual components' rankings.

Third, in the Thatcher period there are two generally offsetting and large imputations for the UK... the positive leisure component and the negative inequality one. With current assumptions they virtually cancel out but with different assumptions about leisure productivity or a different degree of inequality aversion this need not be the case. Fourth, it seems probable, however, that most economists compiling an index of measurable economic welfare would conclude that the UK's

improvement relative to other European countries since the 1960s is appreciable.

Radical critics of the UK government stress that Conservative policy relied too much on markets and was driven too much by profits (Costello et al., 1989). Such suggestions would seem to imply that taking environmental damage/standards into account could also affect our perceptions of relative economic performance. GDP does not take account of the output of pollutants as a bad and in principle an adjustment would be required if welfare measures are desired, as has been recognised in the classic standard of living debate (Williamson, 1990) and by pioneers of adjusted national accounts (Nordhaus and Tobin, 1972). At present the data does not exist to perform this kind of calculation adequately. Table 6 suggests, however, that the outcome of the Thatcher Experiment left British citizens relatively satisfied with environmental conditions and tends to question the desirability of making large reductions in relative British growth performance due to environmental problems.

Discussions of the quality of life generally consider mortality conditions to be important and these are reflected in Table 7. Table 7(a) suggests that taken as a whole mortality experience by the mid 1980s was very similar in major European countries. The first half of the 1980s shows virtually identical outcomes for France, Germany and the UK, for instance. Nevertheless, the Thatcher Experiment involved a weakening of trade unions and it has been convincingly argued that in manufacturing, given the ineffective policing of safety standards, such a change in bargaining power led to an increase in accidents, including fatal accidents (Nichols, 1990). A precise evaluation of this argument

TABLE 7 : Some Aspects of Mortality

(a) Life Expectancy at Birth

	1950	1970	1980	1986
Belgium	62.0	67.8	70.0	na
Denmark	69.8	70.7	71.1	71.8
France	62.9	68.4	70.2	71.8
Germany	64.6	67.4	70.2	71.8
Greece	63.4	70.1	72.2	72.6 (1985)
Ireland	64.5	68.8	70.1	71.0
Italy	63.7	69.0	70.6	72.6
Luxembourg	63.4	67.1	69.1	70.6
Netherlands	70.6	70.7	72.7	72.2
Portugal	56.4	64.2	67.7	70.6 (1988)
Spain	59.8	69.2	72.5	73.1
UK	66.2	68.7	70.2	71.7 (1985)

(b) Fatal Accidents at Work/1000 Employed

	Manufacturing			All Sectors
	1965-69	1975-9	1985-9	1985-9
Belgium	0.111	0.098	0.065	0.070
Denmark	na	na	0.035	0.030
France	0.117	0.088	0.059	0.079
Germany	0.152	0.117	0.075	0.090
Greece	0.115	na	na	0.058
Ireland	0.074	0.070	0.162	na
Italy	0.093	0.080	0.033	0.084
Luxembourg	na	na	na	na
Netherlands	0.033	0.029	0.021	0.016
Portugal	na	na	na	na
Spain	0.063	0.112	0.131	0.138
UK	0.040	0.033	0.019	0.019

Sources: Part (a) from Eurostat (1990); part (b) from ILO (various years).

is left to Section V; as far as levels of fatal accidents are concerned, Table 7(b) compiles the available evidence. International comparisons of these statistics are surely not very reliable but, as far as these data show, reductions in fatal accident rates were achieved in the UK during the 1980s and both at the beginning and end of the period the UK compares favourably with most other European countries.

TABLE 8 : Rank Order of 'Quality of Life' (1 = best)

	Poverty	Environment	Misery Index	Productivity	Mortality	Fatal Accs.
(a) Rankings in the Late 1980s						
Belgium	1	5	4	3	6=	4
Denmark	6	1	3	8	4=	3
France	7	3	5	2	6=	5
Germany	3	6	1	4	6=	7
Italy	4	8	7	5	2=	6
Netherlands	2	4	2	1	2=	1
Spain	8	7	8	6	1	8
UK	5	2	6	7	4=	2
(b) Rankings in the Late 1970s						
Belgium	4	[5]	3	2	7	6
Denmark	6	[1]	5	7	3	[3]
France	7	[3]	4	3	5=	5
Germany	2	[6]	1	4	8	8
Italy	5	[8]	6	5	4	4
Netherlands	1	[4]	2	1	1=	1
Spain	8	[7]	8	6	1=	7
UK	3	[2]	7	8	5=	2

(c) Borda Index

	Late 1980s		Late 1970s	
	All	Without Col 3,4	All	Without Col 3,4
Belgium	2	4	3	5
Denmark	3	3	2	3
France	6	6	6	6
Germany	5	7	5	8
Italy	7	5	7	4
Netherlands	1	1	1	1
Spain	8	8	8	7
UK	4	2	4	2

Sources: Basic procedure follows that of Dasgupta and Weale (1992). Data derived from Tables 1, 4, 6, 7 and for output per person employed (col.4) from Eurostat (1991). Environment is the Borda index of Table 6 and has been assumed to be the same for the late 1970s in the absence of any specific information.

Dasgupta and Weale (1992) use the Borda rule to compute an overall ranking of the quality of life. Their concern is with developing countries and different categories are required to assess

European countries effectively. Nevertheless, their method provides one way of comparing countries by aggregating ordinal rankings and I have used it in Table 8 as a way of summarizing and assessing the earlier tables in the paper. Table 8 suggests three observations. First, it would be wrong to be unduly pessimistic about the British quality of life compared with other countries either at the start or the end of the Thatcher period. Second, the UK tends to come out better in non-macroeconomic aspects of the quality of life. Third, for this group of advanced countries the rank order of relative productivity is not all that closely correlated with the rank order of the overall quality of life.

It must be stressed that these are only preliminary findings. In particular, a research programme to widen the list of attributes in Table 8 (to cover, for example, crime and health care) is highly desirable and might well change the results.

IV.   Recent Changes in Productivity Performance

This section turns to questions (ii) and (iii) posed in the introduction, namely how good was British growth performance in the 1980s relatively speaking and what were the reasons for any improvement. Both are essential ingredients in any attempt to evaluate the overall results of the Thatcher Experiment. I now return to considering the conventional estimates of real GDP growth rather than "measurable economic welfare". It will be recalled from Table 2 that there is prima facie support for an improvement in British productivity growth from the Thatcher Experiment.

In order to assess this in its historical context, it is important to allow for differential scope for productivity growth between countries and also over time, as suggested by the influential literature on "catch-up" in OECD countries (Abramovitz, 1986; Dowrick and Nguyen, 1989). I experimented with a number of variants of Dowrick and Nguyen's econometric approach to obtain estimates of productivity performance normalized for "catch-up effects".[2]/ The results of a typical regression are shown in Table 9 where positive residuals indicate relatively good performance after allowing for the included variables. The UK seems to have improved in the recent past, a finding which is stronger if the equation's results are applied to sub-periods. Thus, the UK residual is -0.63 in 1960-73 but +0.84 in 1979-88 whereas Germany was 1.97 in 1950-60 but only 0.09 in 1979-88.[3]/

Obviously, the rise of the UK up the relative growth league in the 1980s is aided by the exhaustion of catch-up elsewhere but neither the relatively slow UK growth in the early postwar years nor the recovery of the Thatcher period is fully explained by the catch-up model in its 'naive form'. This should not be surprising because writers like Abramovitz have always stressed that catch-up is not an automatic process and that potential is sometimes not fully realized; thus Abramovitz argued that "Social capability [for catch-up] depends on more

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[2]/The inclusion of the Loglag variable allows this. The regression's prediction thus takes account of the effect of the initial productivity gap on growth performance. This can be thought of an normalizing for 'catch-up' potential – the negative coefficient on Loglag indicates that the bigger was the initial productivity gap, the higher was the growth rate ceteris paribus.

[3]/It should be noted that this better UK growth in the 1980s does not appear to be the result of North Sea oil. North Sea oil output measured in 1985 prices was about 4.5% of GDP in both 1979 and 1988. The large arithmetic impact of oil on measured growth was a phenomenon of the 1970s.

TABLE 9 : Regression Estimates of Catch-up Effects and Residuals
from the Equation

	1950-1973		1973-1987	
	Catch-Up	Residual	Catch-Up	Residual
France	1.5	0.4	0.5	0.5
Germany	1.8	0.7	0.6	0.4
Japan	3.0	1.4	1.1	-0.4
Netherlands	1.3	-0.3	0.3	0.5
UK	1.2	-0.7	0.5	0.4
USA	0.0	0.3	0.0	1.1

Sources: The equation estimated for a sample of 16 advanced
countries for pooled data on the periods 1900-13 (only 11
observations), 1923-38 (only 12 observations), 1950-60, 1960-73
and 1973-87 is

$$\Delta Y/Y = 6.054 + 0.090 \ I/Y + 0.861 \ Emptgr - 1.350 \ Loglag$$
$$\qquad (5.231) \quad (4.686) \qquad (7.751) \qquad (-4.941)$$

$$\qquad + 1.218 \ RELYPW \qquad - 1.282 \ RELYPWSQ$$
$$\qquad (1.722) \qquad\qquad (-2.509)$$

$$\qquad + (1.450) \ Dummy50s \quad + 2.280 \ Dummy60s \quad \bar{R}^2 = 0.827$$

where I/Y is the investment ratio, Emptgr is the growth
rate of labour inputs measured in hours, Loglag is the logarithm
of the ratio of GDP per hour worked relative to that in the USA in
the initial year of each period measured at purchasing power
parity, RELYPW is income postwar relative to prewar multiplied by
a dummy variable = 1 for 1923-38 and 1950-60 to capture
reconstruction effects and the dummy variables are for 1950-60
and 1960-73. Data are taken from Maddison (1989), t-statistics in
parentheses. Catch-up is estimated from the impact of loglag on
the growth rate compared to the United States. The
justification for this basic approach can be found in Dowrick and
Nguyen (1989). Growth of human capital effects are not modelled
explicitly.

than the content of education and the organization of firms... it is a
question of the obstacles to change raised by vested interests,
established positions and customary relations among firms and between
employers and employees" (1986, p.389).

Human capital and stock of knowledge variables are not
included in the regression so it is appropriate to ask if these could be

TABLE 10 : Comparisons Relating to Long Term Investments

(a) R+D Expenditure as a Share of GDP (%)

	1970	1980	1989
France	1.91	1.84	2.32
Germany	2.06	2.41	2.88
Japan	1.85	2.18	3.04
UK	2.18	2.24	2.20
USA	2.65	2.39	2.82

(b) Share of Patents Granted in the USA (%)

	1958	1973	1979	1988
France	10.4	9.4	7.9	6.8
Germany	25.6	24.2	22.7	17.4
Japan	1.9	22.1	27.8	41.3
UK	23.4	12.6	10.8	8.1

(c) Labour Force with Intermediate Vocational Qualifications (%)

	1979	1988
France	32	40
Germany	61	64
UK	23	26

(d) Years of Formal Schooling of Population, 15-64

	1950	1973	1989
France	8.2	9.6	11.6
Germany	8.5	9.3	9.6
Japan	8.1	10.2	11.7
UK	9.4	10.2	11.3
USA	9.5	11.3	13.4

Sources: R+D data from Englander and Mittelstadt (1988, Table 14) and OECD (1991a, Table 5). Patenting derived from Pavitt and Soete (1982) and OECD (1991b, Table 21). Vocational qualifications from Steedman (1990). Schooling from Maddison (1987, Table A12) and Maddison (1991, Table 3.8).

responsible for the relative improvement in British productivity growth. The literature is fairly unanimous in rejecting this possibility, although there would be a small effect of longer years of schooling in a conventional growth accounting framework such as Maddison (1991).

Elsewhere in Table 10 the evidence stubbornly fails to give any sign of relative British improvement. O'Mahony (1992) using a production function framework for manufacturing found that for 1987 human capital (approximated by measuring the skill structure of the labour force and weighting by relative wage levels) accounted for 12 percentage points of the gap between British and German labour productivity; in an attempt to replicate her estimate for 1979, I found it accounted for 14 percentage points whereas between the two dates the total fall was 28 percentage points.

Similarly, it seems unlikely that growth discrepancies between Britain and Germany before 1979 are readily accounted for simply by the accumulation of factors of production emphasized by the new growth theory. Thus, Crafts (1992a) finds that an allowance for a Lucas-type human capital externality has no role at all in Anglo-German growth differences over 1950-73 while Crafts (1992b) looks at econometric estimates of the impact of R+D stock growth and equipment investment shares and concludes that they leave about half of the Anglo-German growth rate difference in 1960-73 unexplained.

At the same time there is evidence of a 'behavioural' productivity gap between Britain and Germany resulting from structures of industrial relations and from the political economy of the postwar period (Crafts, 1992b). This appears to have affected both levels (Pratten, 1976) and rates of growth of productivity (Prais, 1981). Indeed the consensus in the literature now appears to be that the British productivity surge of the 1980s – concentrated in manufacturing where output per worker rose by 50% between 1979 and 1988 – owed little to greater investment in plant, people or research but came rather from

more efficient use of existing factors of production and a shake-out of the inefficiencies which had accumulated in earlier decades.

Econometric studies have suggested that this productivity advance in manufacturing can be quite well explained along the lines of a model in which adverse employment shocks and declining product market power of firms lead to new bargaining equilibria in which overmanning is reduced and/or work effort is increased (Bean and Symons, 1989; Machin and Wadhwani, 1989; Metcalf, 1989). It may well be that this stems from the idiosyncrasy of British industrial relations as both Crafts (1992c) and Weiskopf (1987) found that rises in unemployment have a strong productivity effect in the UK but not in France or Germany. Thus a trade-off existed for the Conservatives under Mrs Thatcher between unemployment and productivity improvement which does not seem to have existed in the same way for the Christian Democrats under Herr Kohl.

Indeed, it might be more generally argued that the policy stance of the Conservatives on growth had some beneficial effects there while at the same time having an adverse impact on the Misery Index. By adopting the style of subjecting British industry to a 'cold bath' demand deficient and mismatch unemployment were raised (Layard et al., 1991) and de-regulating capital markets in pursuit of greater efficiency resulted in the excess demand and inflation of the late 1980s in the absence of other offsetting demand management strategies (Allsopp, Jenkinson and Morris, 1991).

The poor performance of the 1970s and fortuitous political circumstances gave a radical British government an extended 'window of opportunity to reform British productivity performance. The new

policies led to changed bargaining equilibria with weaker trade unions and a major shakeout of inefficiencies. Other longstanding weaknesses and unfavourable institutions remained, notably in education and training and in short termism in investment decisions. The changes were, initially at least, more in conduct than in structure. Nevertheless, obstacles to 'catch-up' in Britain were reduced and relative economic decline was ended for the time being. It is much harder to be confident that relative decline has permanently ended (Crafts, 1991).

V.   Was the Thatcher Experiment Worth It?

In the light of the preceding sections, I shall interpret this question as follows. Were any gains in productivity attributable to the new policy stance post 1979 sufficient to outweigh the costs accruing through higher unemployment, reduced industrial safety and increased inequality of incomes? As noted in the introduction, the answer to this question depends on what social welfare function is adopted and assumptions about the counterfactual path of both the economy and economic policy.

Of the three negative effects identified, I shall argue that industrial safety can be regarded as unlikely to be a serious issue. Nichols (1990, p.328) gives regression evidence to suggest that declining bargaining power of workers raised industrial accidents in manufacturing by about 16% per year in the first half of the 1980s, i.e. about an additional 32 deaths per year. His argument implies that non-fatal accidents in manufacturing would also have increased but data problems prevent effective measurement of this. Recent evidence on

workers' valuations of safety (Marin and Psacharopoulos, 1982; Gegax et al., 1991) suggests that £100mn. (0.02% of 1989 GDP) might willingly be paid to avoid these increased safety risks. However, any such costs are surely more than offset for workers as a whole by the de-industrialization of employment resulting from the Thatcher Experiment. Manufacturing employment fell by about a third while expansions of employment were in the much safer services sector.

The unemployment cost is potentially a serious one. I shall regard it as having two components and shall seek to establish an upper bound estimate. The Thatcher policy package can be thought of as producing more severe deflation and more structural change than that of the average European government. Consider the extra demand deficient component to be the value of UR − UR* for 1980-88 shown in Table 1 compared with the average for other North European EC countries. Consider the extra structural unemployment element of UR* in the UK to be the 1.54 percentage point rise in mismatch estimated by Layard et al (1991, p.446). Together these would add up to an average Thatcher Experiment effect on unemployment of about an extra 2.5% of the labour force relative to a 'mainstream European' policy counterfactual. Evaluating the cost of this at average labour productivity implies an annual loss of the same fraction of GDP per person. This is likely to be an overestimate of the costs of unemployment because it values leisure of the unemployed at zero, because the unskilled disproportionately became unemployed, and because it assumes no rise in mismatch absent the Thatcher government.

Over the period 1980-88 even this upper-bound estimate of unemployment cost is, however, probably outweighed by the induced

productivity gain in manufacturing from Thatcher Shock effects. The
evidence for this includes improvements in 'residual growth' shown by
the cross-section regressions of Table 9. Also, there are the positive
effects of employment falls and competition increases generally noted in
the literature (Crafts, 1991) and the regression results in Crafts
(1992c) which indicate productivity gains induced by the new willingness
to let unemployment rise. These all suggest a fairly substantial short-
run impact on productivity. Other explanations for productivity
increase are unpersuasive.

If the 15% improvement in productivity in manufacturing
relative to the average of France and Germany shown in Van Ark (1990) is
regarded as a plausible lower bound guess, then the productivity gains
from the Thatcher Experiment are worth at least 4.5% of annual GDP by
1988 with more than half occurring by 1984. A more generous
interpretation of changes in relative productivity growth, assuming a
continuation of the 1960s negative residual in the Table 9 regression –
(i.e. below normal productivity growth after allowing for catch-up and
factor accumulation) – as the counterfactual, could quite possibly
triple this figure.

Whether such gains outweigh losses from a greater inequality
of income depends, of course, on the investigator's degree of
"inequality aversion" and the extent to which the greater inequality
stemmed from the new policy stance. Table 4 suggests that welfare may
have been reduced by about 5.6% of GDP by rising inequality not
experienced elsewhere in Europe if the Atkinson/Beckerman approach is
adopted with $\varepsilon = 1.0$ or about 2.9% if $\varepsilon = 0.5$.

It should be noted that there were big changes in inequality of original income and that the tax and transfer system operated somewhat to mitigate the impact on final income: the Gini coefficient for original income rose from 0.45 to 0.52 between 1979 and 1986 and for final income from 0.32 to 0.36 (Crafts, 1991, Table 5). Moreover, it has been argued forcefully that the welfare state survived little changed through at least 1987, the main difference from earlier being that its increase relative to other areas of the economy stopped (Le Grand, 1990). There may, therefore, be some doubt as to the extent of the responsibility of the new policy stance for rising inequality of incomes.

Nevertheless, the Conservatives' willingness to promote reductions in personal income taxation, their tightening up of aspects of the benefit system, their acceptance of a return to a greater role for market forces in wage/salary determination and their tolerance of high unemployment make it likely that changes in economic policy relative to a "mainstream European" stance played a large role in the move to greater inequality of income in the 1980s. A provisional analysis by Johnson and Webb (1992) attributes about 80 percent to the rise in inequality of incomes in 1980s Britain to these factors, with tax and benefit changes having by far the largest impact.

The implication of these various considerations is that evaluations of the Thatcher Experiment will differ; it would seem likely, however, that the majority of estimates based on these types of effect would fall in a range of plus 5% to minus 3% of GDP for the average annual effect in the mid 1980s. The pessimistic estimate would take a reduction of 5% for greater inequality plus 2.5% for greater

unemployment offset by 4.5% for productivity. The optimistic calculation would have the inequality loss equal to about 3% of GDP, the unemployment loss at perhaps 2% and the productivity gain at, say, 10% of GDP.

Such calculations might need amendment, however, if a new growth theory view of these developments were taken rather than the implicitly Solow-type view which I have adopted thus far. If the changes of the early 1980s were to lead to permanently faster trend growth, then virtually everyone is likely to conclude that the present value of this welfare improvement would be worth the short run unemployment and inequality costs. It is exactly such possibilities that are contemplated by endogenous growth theory.

Two well-known variants of this approach are proposed in Lucas (1988) and Romer (1990). In these models a permanent re-allocation towards higher human capital formation and research and development respectively will permanently raise the growth rate. Neither of these eventualities appears to have been the result of adopting British rather than German style economic management during the 1980s and I am not optimistic that the Thatcher Experiment can be vindicated in this way. A third argument based on Romer (1986) would simply be that externalities to physical capital formation are large enough to obviate diminishing marginal productivity. If so, a positive productivity shock, which lowers the capital to output ratio and raises the growth rate of capital as a result, has a permanent growth rate effect. The available evidence seems, however, to refute this hypothesis (Crafts, 1992b). Overall then, it may be better at this point to accept the ambiguous result of the Thatcher Experiment on welfare implied by a Solow-type world.

VI.   Summary and Conclusions

In sum, the overriding impression is that both the claims of Thatcher enthusiasts like Matthews and Minford (1987) and critics like Costello et al (1989) are greatly overstated.

More specifically, the findings of the paper are as follows.

(i)   UK productivity growth improved relative to comparator countries in the 1980s compared with the period of the long postwar boom. This improvement carries over into the growth of measurable economic welfare on a Beckerman-type approach.

(ii)   British economic performance in the 1980s included better growth but also higher unemployment and rising inequality of incomes. These latter may be regarded as costs of the Thatcher approach to faster growth.   On the other hand, the 'quality of life' in Britain still compared reasonably well with that elsewhere in the EC.

(iii)   There were positive impacts of the new policy stance on productivity performance in the UK which were largely unavailable for other European countries. It seems unlikely that these would have had a large permanent effect on the growth rate persisting into the 1990s and beyond.

(iv)   Assessment of the welfare effects of the Thatcher Experiment depends critically on the degree of "inequality aversion" of the investigator. Unless permanent growth rate effects can be established, most estimates are likely to be in an annual range of plus 5 to minus 3% of GDP.

References

Abramovitz, M. (1986), "Catching Up, Forging Ahead, and Falling Behind", Journal of Economic History, Vol.46, No.2, pp.385-406.

Allsopp, C., Jenkinson, T. and Morris, D. (1991), "The Assessment : Macroeconomic Policy in the 1980s", Oxford Review of Economic Policy, Vol.7, No.3, pp.68-80.

Bean, C. and Symons, J. (1989), "Ten Years of Mrs T", CEPR Discussion Paper no.316.

Beckerman, W. (1980), "Comparative Growth Rates of 'Measurable Economic Welfare' : Some Experimental Calculations", in R.C.O. Matthews (ed.), Economic Growth and Resources, Vol.2, Macmillan, London, pp.36-59.

Broadberry, S.N. (1992), "Comparative Productivity Performance in Manufacturing since the Early Nineteenth Century : Europe and the United States", mimeo, University of Warwick.

Costello, N., Michie, J. and Milne, S. (1989), Beyond the Casino Economy, Verso, London.

Crafts, N.F.R. (1988), "The Assessment : British Economic Growth Over the Long Run", Oxford Review of Economic Policy, Vol.4, No.1, pp.i-xxi.

Crafts, N.F.R. (1991), "Reversing Relative Economic Decline? The 1980s in Historical Perspective", Oxford Review of Economic Policy, Vol.7, No.3, pp.81-98.

Crafts, N.F.R. (1992a), "Human Capital and Productivity in Advanced Economies", in J. James and M. Thomas (eds.), Capitalism in Context, University of Chicago Press, Chicago, forthcoming.

Crafts, N.F.R. (1992b), "Productivity Growth Reconsidered", Economic Policy, 15, forthcoming.

Crafts, N.F.R. (1992c), "Productivity Growth in West German and the UK, 1950-1990 : A British Perspective", in K. Rohe, G. Schmidt and H. Pogge von Strandmann (eds.), Deutschland-Grossbritannien-Europa, Universitatsverlag dr N. Brockmeyer, Bochum, pp.27-53.

Dasgupta, P. and Weale, M. (1992), "On Measuring the Quality of Life", World Development, Vol.20, No.2, pp.119-131.

Dowrick, S. and Nguyen, D-T. (1989), "OECD Comparative Economic Growth 1950-85 : Catch-up and Convergence", American Economic Review, Vol.79, No.4, pp.1010-1030.

Englander, A. and Mittelstadt, A. (1988), "Total Factor Productivity : Macroeconomic and Structural Aspects of the Slowdown", OECD Economic Studies, Vol.10, pp.7-56.

Eurostat (1990), Demographic Statistics, Luxembourg.

Eurostat (1991), A Social Portrait of Europe, Luxembourg.

Gegax, D., Gerking, S. and Schulze, W. (1991), "Perceived Risk and the Marginal Value of Safety", <u>Review of Economics and Statistics</u>, Vol.73, No.3, pp.589-596.

Holmes, M. (1985), <u>The First Thatcher Government, 1979-1983</u>, Wheatsheaf, Brighton.

Humphreys, P. (1989), "Policies for Technological Innovation and Industrial Change", in S. Bulmer (ed.), <u>The Changing Agenda of West German Public Policy</u>, Dartmouth Publishing, Aldershot, pp.128-154.

ILO (various years), <u>Yearbook of Labour Statistics</u>.

Jenkins, S.P. (1991), "Income Inequality and Living Standards : Changes in the 1970s and 1980s", <u>Fiscal Studies</u>, Vol.12, No.1, pp.1-28.

Johnson, P. and Webb, S. (1992), "Recent Trends in UK Income Inequality : Causes and Policy Responses", mimeo, Institute for Fiscal Studies.

Kendrick, J.W. (1990), "International Comparisons of Productivity Trends and Levels", George Washington University Discussion Paper No.90-02.

Layard, R., Nickell, S. and Jackman, R. (1991), <u>Unemployment</u>, Oxford University Press, Oxford.

Le Grand, J. (1990), "The State of Welfare", in J. Hills (ed.), <u>The State of Welfare</u>, Clarendon Press, Oxford, pp.338-362.

Lucas, R.E. (1988), "On the Mechanics of Economic Development", <u>Journal of Monetary Economics</u>, Vol.22, No.1, pp.3-42.

Machin, S. And Wadhwani, S. (1989), "The Effects of Unions on Organizational Change, Investment and Employment : Evidence from WIRS", Centre for Labour Economics, London School of Economics, Discussion Paper No.355.

Maddison, A. (1982), <u>Phases of Capitalist Development</u>, Oxford University Press, Oxford.

Maddison, A. (1987), "Growth and Slowdown in Advanced Capitalist Countries : Techniques and Quantitative Assessment", <u>Journal of Economic Literature</u>, Vol.24, No.3, pp.649-698.

Maddison, A. (1989), <u>The World Economy in the Twentieth Century</u>, OECD, Paris.

Maddison, A. (1991), <u>Dynamic Forces in Capitalist Development</u>, Oxford University Press, Oxford.

Marin, A. and Psacharopoulos, G. (1982), "The Reward for Risk in the Labor Market : Evidence from the UK and a Reconciliation with Other Studies", <u>Journal of Political Economy</u>, Vol.90, No.5, pp.829-853.

Matthews, R.C.O., Feinstein, C.H. and Odling-Smee, J.C., <u>British Economic Growth 1856-1973</u>, Stanford University Press, Stanford.

Matthews, K.G.P. and Minford, P. (1987), "Mrs Thatcher's Economic Policies 1979-1987", <u>Economic Policy</u>, Vol.5, pp.59-92.

Metcalf, D. (1989), "Water Notes Dry Up : The Impact of the Donovan Reform Proposals and Thatcherism at Work on Labour Productivity in British Manufacturing Industry", <u>British Journal of Industrial Relations</u>, Vol.27, No.1, pp.1-31.

Nichols, T. (1990), "Industrial Safety in Britain and the 1974 Health and Safety at Work Act : The Case of Manufacturing", <u>International Journal of the Sociology of Law</u>, Vol.18, No.3, pp.317-342.

Nelson, R.R. and Wright, G. (1992), "The Rise and Fall of American Technological Leadership : The Postwar Era in Historical Perspective", <u>Journal of Economic Literature</u>, Vol.29, forthcoming.

Nordhaus, W. and Tobin, J. (1972), <u>Is Economic Growth Obsolete</u>? Columbia University Press, New York.

O'Higgins, M. and Jenkins, S.P. (1990), "Poverty in the EC : 1975, 1980, 1985", in Eurostat, <u>Analyzing Poverty in the EC</u>, Luxembourg, pp.187-211.

O'Mahony, M. (1992), "Productivity Levels in British and German Manufacturing Industry", <u>National Institute Economic Review</u>, Vol.139, pp.46-63.

OECD (1991a), <u>Main Science and Technology Indicators</u>, Paris.

OECD (1991b), <u>Basic Science and Technology Statistics</u>, Paris.

OECD (1991c), <u>Historical Statistics, 1960-1989</u>, Paris.

Pavitt, K. and Soete, L. (1982), "International Differences in Economic Growth and the International Location of Innovation", in H. Giersch (ed.), <u>Emerging Technologies</u>, Mohr, Tubingen, pp.105-133.

Prais, S.J. (1981), <u>Productivity and Industrial Structure</u>, Cambridge University Press, Cambridge.

Pratten, C.F. (1976), <u>Labour Productivity Differentials Within International Companies</u>, Cambridge University Press, Cambridge.

Romer, P.M. (1986), "Increasing Returns and Long-Run Growth", <u>Journal of Political Economy</u>, Vol.94, No.6, pp.1002-1037.

Romer, P.M. (1990), "Human Capital and Growth : Theory and Evidence", <u>Carnegie-Rochester Conference Series on Public Policy</u>, Vol.32, pp.251-286.

Steedman, H. (1990), "Improvement in Workplace Qualifications : Britain and France, 1979-88", National Institute Economic Review, Vol.133, pp.50-61.

Van Ark, B. (1990), "Comparative Levels of Manufacturing Productivity in Postwar Europe : Measurement and Comparisons", Oxford Bulletin of Economics and Statistics, Vol.52, No.4, pp.343-374.

Weisskopf, T. (1987), "The Effect of Unemployment on Labour Productivity : An International Comparative Analysis", International Review of Applied Economics, Vol.1, No.1, pp.127-151.

Williamson, J.G. (1990), Coping with City Growth, Cambridge University Press, Cambridge.