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## **Meaning and Measurement of National Economic Success: UK Relative Economic Performance in the 1980s**

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### **Abstract**

*Overall assessments of national economic performance involve a set of well rehearsed 'technical' problems. They are also always mediated by the ideological stance and the committed analytical or policy position of the observer. In this paper we introduce a framework for such overall assessments which both takes account of the major problems and, by making these subjective dimensions explicit, demonstrates their significance. Drawing on the approach of the UN Human Development Index, a composite index of national economic performance is developed. Using a set of conventional macroeconomic indicators we calculate composite indices of UK economic performance, relative to the G7 as a whole, in the 1980s compared to the 1970s from four different analytical or ideological standpoints. The results illustrate, inter alia, the extent to which assessments of relative economic performance can vary with the position of the observer.*

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### ***1. Assessing national economic performance: the issues***

The performance of national economies has significance for politicians and national economic policy communities, for academic students of economic institutions and policy, and, of course for citizens in general. The conceptualisation and measurement of economic performance, however, is not a

straightforward task. The main problems involved in defining, quantifying and comparing outcomes are well known.<sup>2</sup> There can be no 'absolute' standard of economic performance. National economic performance in any period is only meaningfully measured in relative terms. In principle, actual outcomes might be judged against some idea of potential or possible performance. Probably the most common approaches in practice involve the comparison of a single outcome in one national economy either with performance in the same economy in another period or with the performance of other national economies, or both.<sup>3</sup> The adequacy of such comparisons increases with the closeness of the time periods, or of the stages of development of the national economies, which are compared.

No matter how it is conceptualised, national economic performance is multi-dimensional: economic activity results in a number of separable (though interrelated) outcomes. Although difficulties arise in the matching of statistical indicators to any one of the several outcomes, these much debated problems<sup>4</sup> are, up to a point, 'technical' ones. Whilst, given satisfactory indicators, the comparison of performance in terms of any one of these outcomes is quite feasible, the kind of comprehensive measure which would facilitate an overall comparative assessment is very elusive in both conceptual and practical terms.

Any economist's conceptualisation of an

outcome, however, will arise within a general theoretical framework. Since general theoretical frameworks, or paradigms, involve a 'vision' of the world which must be value based, a further fundamental source of difficulty follows. In any evaluation of national economic performance an economist's choice of criteria, far from being a merely 'technical' matter, will be mediated by an ideological stance and/or a committed analytical or policy position.<sup>5</sup> Economists holding to different paradigms within the discipline will, in consequence, choose different sets of outcomes (or, where they use the same outcomes, allocate different relative weightings) on which to base their assessment.

In what follows we develop a new approach to the assessment of the aggregate performance of national economies which has the merit of treating some of the main problems which arise in a self-conscious manner. An illustrative application of this approach allows us to demonstrate the possible impacts of theoretical/ideological based judgements on the assessment of performance as well as suggesting some of its problems and limitations. For that illustration we have taken the much debated issue of UK economic performance in the 1980s.

In 1979 the new Conservative administration shared with many across a wide political spectrum the view that Britain's economic condition constituted a 'crisis'. The viability of the economy was in doubt and fundamental change appeared necessary (Smith, 1989). From the early 1980s the government set out on a radical redirection of the operation of the economy with the goal of regenerating economic performance. Over the last few years the nature and results of that strategy have been the subject of much debate.<sup>6</sup> One notable feature of that debate has been a significant diversity of view over

the evaluation of British economic performance in the 1980s. The assessments range from 'economic miracle', through 'partial improvement', to 'a weakening of macroeconomic performance'.<sup>7</sup>

In the light of the issues outlined above, such differing assessments are not unexpected. In attempting to clarify answers to the apparently simple question of how well the UK economy performed during the decade of the 1980s a number of difficulties must be faced. Our approach is founded on a recognition of the essentially comparative, multidimensional, and value-relative nature of assessments of national economic performance and is designed to handle some of the main problems in the aggregation of different indicators. Before applying it to the case of Britain in the 1980s, the basis of that approach is introduced.

## *2. A composite indicator of national economic performance*

In what follows we describe a composite indicator of national economic performance, calculated on an international comparative basis, which can flexibly incorporate as many economic outcomes as required and be readily adjusted to reflect the value judgments of its users.

Attempts by economists to assess economic performance on the basis of a composite set of weighted criteria are not unknown. Shone (1984 pp.138-9) notes the problem of judging policy success where goals involve more than one dimension, and points the way with an index combining indicators of inflation and unemployment in assessing the performance of UK macroeconomic policy between 1974 and 1982 - a forerunner of the 'misery index'. At the level of productive units, data envelopment analysis (DEA) has been used to provide a comparative assessment of multidimensional performance.<sup>8</sup> The aim of

this article, however, is to develop an approach which can show how the composite assessment of relative national economic performance will vary according to the pre-established theoretical/ideological position of the observer which determines the weighting of the different dimensions of performance in the overall measure. DEA can establish, for a multidimensional set of outcomes, the set of weights which will maximise the overall performance indicator.<sup>9</sup> Thus it offers the interesting and complementary possibility of specifying the standpoint from which the relative performance of a national economy would be assessed most favourably - a kind of 'reverse engineering'.

More directly relevant to our objective are two recent exercises in the development of composite indicators of national economic performance: those of van der Hoek and the UN Human Development Index. Van der Hoek (1992) has developed a wide-ranging consolidated index of economic performance which he uses to assess the performance of the Dutch economy during different government regimes in the 1970s and 1980s from three different political standpoints. Beginning with a set of six macroeconomic outcomes, he calculates for each outcome, for each year, an index of Dutch performance relative to the aggregate performance of the other EU countries (whose scores on each outcome are weighted according to their relative importance as trading partners with the Netherlands). These indices are then combined in the calculation of three composite indices of performance, each incorporating a choice of outcomes, and of relative weightings of outcomes, which is said to reflect the judgements of a particular political position - left, right and centre. The resulting yearly values for each position are graphed as time series which, by inspection,

indicate the differing assessments of success which might follow from different ideological starting positions.

Van der Hoek's method is effective in dealing with some of the important problems involved in assessing overall economic performance. However, some significant difficulties remain. In particular the method used in the calculation of an index for each outcome, involving a ratio between the Dutch score and the weighted score for the other EU economies is unsatisfactory in two respects. Firstly, it seems to exclude the possibility of using indicators (eg growth rates) which may have a negative value; and, secondly, the combination of these individual indices into an overall index involves the addition of ratios calculated in relation to quite different, and non-comparable, scales of measurement.

We believe that these particular problems can be accommodated through the adoption of a rather different basis for calculating a composite index which draws on the approach of the United Nations Human Development Index recently developed by Meghnad Desai<sup>10</sup> and others (United Nations, 1992, 1993). This composite index is based on indicators of national output, education and health status. For each indicator for each country an index is determined by the placing of that country's score within the range of national scores. Thus, for example, each country's deficiency in life expectancy is measured by its shortfall below the highest national life expectancy score expressed as a ratio to the range between the highest and lowest scores amongst all countries. Deficiency scores on each dimension, all calculated on the same basis and having values between 0 and 1 are then compounded in the form of an average score to give an overall 'human development index' (HDI). The resulting score is a rating relative to the other countries in the group. In

this approach the potential problems of negative values and differing scales are both overcome.

We have noted above that assessments of national economic performance will vary according to the position from which performance is viewed. The economic worldviews of individuals are usually shared with others - they overlap sufficiently to be grouped into what we call 'standpoints'. Our own index, therefore, adopts the HDI method in the context of comparisons of national economic performance in macroeconomic terms, but adds to the value dimension through the incorporation of differing sets of outcomes, differently weighted, to represent judgements from differing analytical or ideological standpoints.

The calculation of a composite indicator based on a particular standpoint is thus a three-stage process. First the 'standpoint' must be specified. Which set of indicators with what degree of relative importance would observers from that standpoint use to evaluate national economic performance? Second, an index of relative performance on each of these individual indicators is calculated. To be comparable these indices must all operate so that a higher score represents a better performance. For some outcomes (eg unemployment) a higher score means a poorer performance and for others (eg rate of growth of GDP) a better performance. We therefore need two alternative formulae. Thus, for indicators negatively related to performance, take unemployment, the index is expressed as follows:

$$\text{UK Unemployment Index} = \frac{\text{Max} - \text{Uuk}}{\text{Max} - \text{Min}}$$

and, for indicators positively related to

performance, such as  $\Delta\text{GDP}/\text{hd}$ , the index is expressed as follows:

$$\text{UK GDP/hd growth index} = \frac{\Delta\text{GDPuk} - \text{Min}}{\text{Max} - \text{Min}}$$

where Min and Max represent the lowest and highest scores amongst the comparator economies in any one year.

Third, an overall index<sup>11</sup> is arrived at as a weighted average of these indices using weights which are designed to represent the relative importance of each individual economic outcome from that standpoint. Thus:

$$\begin{aligned} \text{UK Index X} &= aI1 + bI2 + cI3 + \dots + wIn \\ 0 &< a, b, c, \dots w < 1 \\ a + b + c \dots + w &= 1 \end{aligned}$$

where the 'Is' represent indices of individual outcomes and a, b, etc represent the weightings given to them from standpoint 'X', expressed as a fraction.

### 3. *The specification of an index of UK aggregate economic performance*

Our composite index method is merely a shell. We now give it content by applying it in the context of an assessment of British economic performance in the 1980s. That requires the specification of its main elements:

- the relevant dimensions of economic performance;
- the appropriate indicators for each dimension;
- the appropriate comparator economies/time periods;
- the selection and weighting of the dimensions which would make up the basis of assessment from each different value/analytical standpoint.

Determining these specifications is a matter of judgement. Below we briefly explain the judgements we have made. To disagree with the judgements that give content to our use of the index does not, of course, in itself invalidate the method. Rather, a positive feature of this method is that it highlights how, and to what extent, alternative judgements about the relative importance of different economic variables and indicators may lead to different judgements about economic performance.

For practical reasons we looked for a set of conventional national 'macroeconomic' outcomes for which relatively unproblematic indicators were available for the whole of our chosen period.<sup>12</sup> It was also important that the set included a range of outcomes sufficiently diverse to represent the interests of a variety of analytical/value standpoints. The outcomes and indicators selected are listed in Table 1. Data sources are specified in Appendix 1.

The chosen outcomes are, in the main, those that might be conventionally used in international economic comparisons: standard of living; economic growth; changes in price level; unemployment; and trade performance. In addition we include those aspects of the outcome of societies' resource allocation decisions - including relative levels of investment, and the size of government - which seem to have relevance to the standpoints which we use. Whilst there will be important interrelationships amongst these outcomes they can all be conceptually separated: thus, for example, levels of GDP/head and the rate of growth of GDP/head are not closely correlated for our seven countries in the 1970s and 1980s.

Our choice of indicators for these outputs is also, in the main, conventional and uncontentious. In the case of the international

trade outcome we chose to use 'export/import ratio as %' in preference to other possibilities such as the 'current account/GDP ratio' both because it directly reflects relative national competitive performance in goods and services markets and because it is more likely to avoid any bias which may arise from the varying degrees of 'openness' amongst our set of national economies.

By historical standards it is generally recognised that UK post-war economic performance has been good, at least until the 1970s.<sup>13</sup> In our view, however, a sensible comparison of national economic performance in one period with performance in another, requires that performance in each case be measured relative to outcomes in appropriately comparable economies. Since many recent assessments of British economic performance in the 1980s make explicit comparisons with the 1970s we decided to adopt the same practice. In terms of stage of development, size and interrelationships the G7 economies seem to offer the best international comparative standard.<sup>14</sup>

Much more contentious is the choice and specification of positions. For this illustrative exercise we decided on a set of broadly defined positions in economics to indicate the potential influence of analytical and/or value premises on an observer's judgement of economic success. We label our chosen standpoints: 'monetarist', 'utilitarian', 'Keynesian' and 'neomercantilist'. In defining and specifying these standpoints we rely on our own intuitive judgements. The results of any such exercise will be open to dispute and it is important to remember that our standpoints are not merely analytical positions but also take account of what we judge - in the context of the debates of the 1980s in Britain in particular - to be their ideological associations. Many of those who

Table 1: National economic performance: outcomes and indicators

<i>Outcome</i>	<i>Indicator*</i>
Unemployment	ILO standardised unemployment rates as % of total labour force
Inflation	Annual % rate of change of consumer prices (all items)
Trade balance	Export/import ratio (%)
Government debt	Net government debt as % of GDP
Collective burden	General government current receipts as % of GDP
Investment	Gross fixed capital formation as % of GDP
GNP/head	GNP/head at market prices (US\$)
Growth of output	Annual % change in real GDP/head

\* For fuller specification and data sources, see Appendix 1

would label themselves as ‘monetarist’, for example, may disagree with some aspects of our specification of the monetarist position. Such categories are, nevertheless, part of the currency of discussions on economic performance, and we believe our proposals have sufficient plausibility for illustrative purposes.

Our first three labels are widely used. Monetarism and Keynesianism are seen to differ radically in the emphasis they give respectively to inflation and unemployment outcomes. The *laissez faire*, ‘new right’, associations of monetarism in the 1980s seem to us - in contrast with the ‘misery index’ - to lead in practice to a significant de-emphasising of unemployment as an outcome and to a stress on the importance of ‘rolling back the frontiers of the state’. We specify the monetarist position accordingly. Keynesians retain a belief in the need for active government economic policy to improve competitiveness, economic growth

and the level of employment. Whilst a utilitarian position, in which the welfare of society is the sum of individuals’ utilities (approximated crudely by GNP) is implicit in much of twentieth century economics, it is particularly influential in the neoclassical core.

The inclusion of a neo-mercantilist position, which embodies forms of state-led economic nationalism, may appear strange to an Anglo-American readership. It has, in recent times, been represented in Britain in the Department of Applied Economics at Cambridge and, in a different form, in the USA by the work of Lester Thurow and others<sup>15</sup> but can be justified because it is a view much more readily recognised in Germany, France and Japan amongst the main G7 economies.<sup>16</sup> Table 2 gives our specification of the four positions in terms of relevant outcomes and weightings.

Table 2: Composite indices weightings for different standpoints

	<i>Monetarist</i>	<i>Utilitarian</i>	<i>Keynesian</i>	<i>Neomercantilist</i>
Unemployment	-	-	0.40	0.20
Inflation	0.30	-	-	-
Trade balance	-	-	0.20	0.30
Government debt	0.30	-	-	-
Collective burden	0.30	-	-	-
Investment	-	-	0.20	0.20
GNP/head	-	-	0.20	0.15
Growth of output	0.10	-	-	0.15
	1.00	1.00	1.00	1.00

A 'monetarist' index of national economic performance (NCI) will be calculated as follows:

$$NCI = 0.3I_{Inf} + 0.3I_{NGD} + 0.3I_{CB} + 0.1 I_{GDP}$$

where  $I_{Inf}$  is the inflation index,  $I_{NGD}$  is the index of net government debt,  $I_{CB}$  is the collective burden index, and  $I_{GNP}$  is the GDP/Hd growth index.

#### **4. A comparison of the 1970s and 1980s: single outcomes**

To illustrate the operation of our approach to assessing relative economic performance we now apply it to a comparison of relative aggregate economic outcomes for the UK in the 1970s and 1980s.<sup>17</sup> This involves the further step of averaging annual indices in each case to give a figure which represents performance in each decade. We begin with a brief examination of relative outcomes amongst the G7 countries for our eight chosen indicators.<sup>18</sup> Throughout, a score of 1.0

represents the best performance and a score of 0.0 the worst.

From the results summarised in Table 3 a few aspects of Britain's relative performance may be highlighted. Whilst in the 1970s the UK had an unemployment record which was in the middle of the range of G7 countries, throughout the 1980s the UK performance on unemployment was the worst amongst G7 countries.

The balance of trade index shows that, compared with the rest of the G7, British performance deteriorated. On the other hand, relative to the other G7 countries, the UK experienced in the 1980s a fall in collective burden and net government debt, both, perhaps, attributable to some degree to the extensive privatisation programme.

Relative investment performance remained remarkably stable—the UK occupied the bottom position amongst the G7 from 1977 through to 1986—and during the 1970s, together with the USA, the UK experienced the slowest average growth rate of GDP/hd in

Table 3: Indices of relative outcomes

		UK	Canada	France	Germany	Italy	Japan	USA
3.1 Unemployment	1970s	0.44	0.06	0.55	0.86	0.11	0.98	0.15
	1980s	0.12	0.21	0.20	0.58	0.15	1.00	0.48
3.2 Inflation	1970s	0.18	0.69	0.53	0.89	0.19	0.58	0.74
	1980s	0.35	0.48	0.50	0.93	0.07	0.98	0.60
3.3 Balance of Trade	1970s	0.60	0.33	0.42	0.73	0.14	0.64	0.51
	1980s	0.43	0.62	0.41	0.78	0.28	0.89	0.05
3.4 Net Govt. Debt	1970s	0.09	0.91	0.86	0.97	0.07	0.97	0.55
	1980s	0.60	0.82	0.95	0.94	0.00	0.93	0.55
3.5 Collective Burden	1970s	0.26	0.39	0.11	0.01	0.64	1.00	0.70
	1980s	0.44	0.49	0.00	0.19	0.53	0.93	0.98
3.6 Investment	1970s	0.05	0.34	0.33	0.28	0.12	1.00	0.04
	1980s	0.06	0.37	0.29	0.28	0.34	1.00	0.06
3.7 GNP/head	1970s	0.08	0.81	0.56	0.38	0.00	0.23	0.98
	1980s	0.13	0.61	0.41	0.38	0.02	0.62	0.91
3.8 Growth of GDP/head	1970s	0.33	0.69	0.59	0.37	0.48	0.69	0.33
	1980s	0.54	0.41	0.26	0.38	0.37	0.77	0.38

the G7. In the 1980s, however, Britain emerged from the deepest recession amongst the G7 into a period of high growth rates from 1983 to 1988. Only Japan had a higher overall average rate of growth in the 1980s.

##### **5. UK economic performance in the 1980s: overall assessment**

Was UK economic performance better in the 1980s than the 1970s? Did this pattern of relative outcomes add up to success or failure for Britain? It all depends on what one means by success. We believe that observers select their own outcomes and, implicitly, allocate their own weightings when assessing success or failure in economic performance and that these chosen outcomes and weightings reflect ideological and professional

positions. Such influences are inescapable and our approach to the calculation of a single overall index of national economic performance makes that explicit. By way of illustration we assess overall UK performance on the basis of the four different standpoints specified in Table 2 above. The resulting indices for the 1970s and the 1980s are shown in Table 4.<sup>19</sup>

Viewed from most standpoints in both decades UK performance appears to be poor. Our results suggest that, relative to the other G7 economies, economic performance in the UK improved in the 1980s from the standpoint of the utilitarian and monetarist positions and deteriorated when viewed through Keynesian or neomercantilist eyes. The highest score - 0.47 for the 1980s when



Table 4: Composite indices of economic performance: UK

	<i>Monetarist</i>	<i>Utilitarian</i>	<i>Keynesian</i>	<i>Neomercantilist</i>
1970s	0.19	0.08	0.32	0.34
1980s	0.47	0.13	0.17	0.27

Table 5: Composite indices of economic performance: USA

	<i>Monetarist</i>	<i>Utilitarian</i>	<i>Keynesian</i>	<i>Neomercantilist</i>
1970s	0.63	0.98	0.36	0.61
1980s	0.65	0.58	0.56	0.55

Table 6: Composite indices of economic performance: West Germany

	<i>Monetarist</i>	<i>Utilitarian</i>	<i>Keynesian</i>	<i>Neomercantilist</i>
1970s	0.59	0.73	0.69	0.61
1980s	0.65	0.58	0.56	0.55

Table 7: Composite indices of economic performance: Japan

	<i>Monetarist</i>	<i>Utilitarian</i>	<i>Keynesian</i>	<i>Neomercantilist</i>
1970s	0.84	0.23	0.77	0.73
	0.93	0.62	0.90	0.88

looked at from a monetarist position - puts Britain in the middle range of relative performance. The dramatic advance in performance from this standpoint when compared with the 1970s stems from the importance which our monetarist index gives to collective burden and net government debt. In the 1980s UK relative performance on both of these, and especially on the latter, improved markedly.

The Keynesian index, heavily influenced by the unemployment outcome, is brought down

significantly in the 1980s. From a neomercantilist standpoint the relatively good growth rate of GDP/head for the middle part of the decade resulted in a rather smaller falling off of the index of overall UK performance. The utilitarian index, depending solely on GNP/head as an indicator of economic welfare, gives the lowest assessment of UK relative performance throughout, although showing some improvement in the 1980s.

Tables 5, 6, and 7 allow a comparison of

British performance across the two periods with that of three major competitor economies, chosen both because they are the three most significant national economies and because in the periods covered they exhibit a variety of different economic outcomes. Japan is the only economy to show a relative improvement in performance from all standpoints in the 1980s. It also scores highest in the 1980s from all but the utilitarian positions - the USA has the highest GNP/head. From all standpoints Britain's relative performance in the 1980s is the poorest of the four.

### **6. *Limitations of the approach***

Whilst we believe our index does overcome - or at least renders explicit - some of the obvious problems of international comparison of economic performance any attempt to render such comparisons in terms of a single index will remain unsatisfactory in some respects. Here we discuss some limitations in our approach which relate to the choice of variables, the specification of standpoints and the relevance of the index for the assessment of policy.

First a practical issue concerning the choice of variables. For the illustration that we have used it was necessary to take variables where a comparable time series was available for the two decades and for all seven national economies. This meant that some variables which might be thought important had to be excluded. Perhaps the most notable of these was income distribution, an outcome which might be thought significant from a Keynesian standpoint.

Perhaps the most controversial aspect of our proposal is the choice of variables and weights to represent each chosen standpoint. In our illustration, that process has been subjective and arbitrary - although based on our own reading of economists' work. The

most obvious alternative would have been to undertake a survey of economists which asked those who defined themselves into a particular category (eg. monetarist or Keynesian) to name and weight the outcomes that were important to them. This raises the potential problems that, first, economists may disagree on the categories themselves or be unhappy to be pigeon-holed in that way, and, second, even those who are willing to be defined as, say, 'Keynesian', may have significantly different ideas as to the outcomes associated with that label. Nevertheless, such survey work may offer interesting possibilities.

Finally, it is worth noting that what is being compared here is simply overall national economic performance. The results say nothing directly about the impact of policy regimes.

### **7. *Some concluding comments***

We have argued that all attempts to assess the economic performance of a national economy face a number of important problems. Performance is multidimensional and its assessment must involve the conceptualisation and measurement of a number of separable (though often interrelated) outcomes. We need reliable and valid indicators for each outcome. Any outcome can only be sensibly evaluated in relative terms - relative to performance in other economies and in other periods. And, perhaps most importantly, no evaluation of national economic performance can be a merely technical matter. It will always be mediated by the ideological stance and the committed analytical or policy position of the observer. Clearly this last factor helps to explain the greatly varying judgements amongst the set of economists who have debated the recent 'economic miracle' in the UK. Since in attempting to understand (and to prescribe policy to improve) the operation of economies,

economists must make evaluations of economic performance, we argue that it would be useful to have a framework for such assessments which allowed for, or at least made explicit, these problems.

Drawing on the recent work of van der Hoek and on the method used for UN Human Development Index, we have developed a framework which we believe achieves that objective. It can accommodate any number of potentially relevant outcomes, and enables chosen outcomes to be assessed relatively - both in relation to other economies and to other time periods. To illustrate our approach we applied it to the much contested issue of UK performance in the 1980s relative to the 1970s. Our use of four 'standpoints', specified on the basis of our own judgement, together with the adoption of a set of conventional indicators of commonly used aggregate economic outcomes in making a relative assessment of UK performance amongst the G7 economies, demonstrates how much the assessment of performance can vary with the position of the observer.

All the difficulties of such comparisons remain. Which outcomes, and which indicators should be chosen; which periods and which other economies are appropriate comparators; and how should any composite index be specified. We are not concerned here to defend the particular selections we made in our illustrative example. The significance of our approach is that it avoids the pretence of objectivity and renders transparent the practical and value choices which must be made in any attempt to evaluate national economic performance.

### **Endnotes**

1. Glasgow Caledonian University. We are grateful to the editor and to two anonymous referees for their helpful comments on earlier drafts of this paper. We must also acknowledge the useful suggestions of a number of colleagues, most notably David Donald and Geoff Riddington. The usual disclaimers apply.
2. See, for example, the discussions in Lomax (1964) and Lipton (1968). For a valuable discussion of the use of economic indicators which focuses particularly on the limits of GDP, see the collection of papers in *New Economy* (1996).
3. See Eltis *et al* (1992) for a comparison involving a range of dimensions of performance treated individually.
4. The issues include: the relation of GNP/hd to standard of living or quality of life (see Donald and Hutton, 1993); controversy over the definition and measurement of unemployment; problems surrounding the use of index numbers in the measurement of inflation; and the data problems in making up accounts of national balance of payments.
5. 'Pre-analytical cognitive acts' founded on a 'belief systems'. See eg. Heilbroner (1988) ch 8.
6. See eg. Walters (1986); Maynard (1988), (1990); Coutts and Godley (1989); Johnson (1991); Smith (1992); Michie (1992); Healey *et al* (1993); Crafts (1993).
7. See Walters (1986), Britton (1993), and Wells (1993) respectively.

8. See Charnes, Cooper and Rhodes (1978).
9. For a recent application of particular interest to economists see Burton and Phimister (1994), University of Portsmouth.
10. For concise summary of some of the issues of measurement of economic performance together with a discussion of the UN HDI see Desai (1994).
11. We are aware that the HDI has been subject to a number of interrelated criticisms (see Noorbakhsh, 1996:4) which might in principle be made of our own similar approach. In practice, however, two of the three main criticisms do not apply to our approach. First, by focusing on a small number of similar nation states we largely avoid the difficulties that attend the development of an index for the full range of the world's economies, and, second, the impact of the inevitable subjectivity of the weights given to constituent variables in the index is one of the very points we use our index to demonstrate.
12. There are particular difficulties in obtaining a data series for any conventional measure of income distribution covering 20 years for the range of countries which we are looking at. In any case 'income distribution' as an outcome may only have significance for Keynesians amongst the standpoints we have chosen.
13. See eg. Reddaway (1983) and Dow and Howlett (1991).
14. Including a larger set of economies would reduce the risk of skewing the distribution of an index for a particular indicator as a result of one eccentric national score.
15. See eg. Thurow (1986) and its discussion as an instance of economists' storytelling about economic performance in McCloskey (1990).
16. See eg. Nester (1991) on Japanese 'neomercantilism'.
17. Defined as 1971-80 and 1981-90 respectively.
18. All German data relate to the former FDR.
19. A full set of results for the two decades on each of our indicators is given in Dow, Hutton and Deeney (1994) tables 12-19 in Appendix 2.

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World Bank, (1993), *World Tables*, Baltimore; Johns Hopkins U P.

#### Appendix I - Data Sources

##### 1. Unemployment

ILO Standardised unemployment rates as a % of total labour force.

1971-73: OECD *Economic Outlook Historical Statistics, 1960-80*, table 2.15;

1974-79: OECD *Economic Outlook Historical Statistics, 1960-85*, table 2.20;

1980-90: OECD *Economic Outlook Historical Statistics, 1960-90*, table 2.20.

##### 2. Inflation

Annual % rate of change of consumer prices (all items).

1971: OECD *Economic Outlook Historical Statistics, 1960-80*, table 8.11;

1972-76: OECD *Economic Outlook Historical Statistics, 1960-85*, table 8.11;

1977-90: OECD *Economic Outlook Historical Statistics, 1960-90*, table 8.11.

##### 3. Trade balance

Ratio of exports of goods and services to Imports of Goods and Services (as a %).

OECD *Quarterly National Accounts* 1993 (2) pp. 16-17, 198-9;

OECD *Quarterly National Accounts* 1985 (3) pp. 16-17 and 136-7;

G7 figures at constant 1980 prices and PPPs for

1971-80 and at 1985 prices and 1985 PPPs for 1981-90 using national accounting definitions for each country.

##### 4. Government debt

Net government debt as a % of GDP.

Chouraqi J-C *et al* 'Public debt in a medium term perspective' OECD *Economic Studies* 7 (1986) and OECD *Economic Outlook*, Dec. 1990 and June 1993.

##### 5. Collective burden

General government current receipts as a % of GNP.

1975-90: OECD *Economic Outlook*, June 1993;

1971-74: OECD *Economic Outlook*, December 1992.

##### 6. Investment

Gross Fixed Capital Formation as a % of GDP.

1971-73: OECD *Economic Outlook Historical Statistics, 1960-80*, table 6.6;

1974-79: OECD *Economic Outlook Historical Statistics, 1960-85*, table 6.8;

1980-90: OECD *Economic Outlook Historical Statistics, 1960-90*, table 6.8.

##### 7. GNP/head

GNP at market prices/head in US \$ (converted by the World Bank Atlas method (see World Bank, 1993 p. x).

1971-80: World Bank, *World Tables*, 1993 Baltimore: Johns Hopkins UP;

1981-90: World Bank, *World Tables*, 1993; Population: World Bank, *World Tables*, 1992 and 1993 (except Germany)

##### 8. Growth of output

Year to Year % changes in Real GDP per capita.

1971: OECD *Economic Outlook Historical Statistics, 1960-80*, table 3.2;

1972-80: OECD *Economic Outlook Historical Statistics, 1960-85*, table 3.2;

1981-90: OECD *Economic Outlook Historical Statistics, 1960-90* table 3.2.