ECONOMIC INFLUENCES ON BIRTH RATES

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The idea that economic developments can affect births is an old one, going back to Malthus' *Essay on Population* in the early 19th century. In more recent times, the economic analysis of fertility was resurrected by Becker (1960) and developed by Easterlin (1980), Willis (1973), Becker (1981) and others. This article reports on an application of this economic approach to the analysis of fluctuations in births in Britain during the post-war period, building on previous work by De Cooman, Ermisch and Joshi (1987).

There have been large fluctuations in the annual number of births over the past 40 years. In particular, at the peak, in 1964, of the 1960s 'baby boom', births were 30 per cent above their 1955 level, but during the subsequent 13-year decline births fell by 35 per cent. After a recovery during 1978–80, there was another decline which was reversed during 1984. These fluctuations have a profound effect on the age distribution well into the next century. A better understanding of the reasons for these would help in forming views about prospective fertility developments.

Economics of reproduction

In economic theories of fertility, the couple is viewed as solving an inter-temporal optimisation problem which entails an optimal time path for child-bearing and an optimal number of children that vary with elements of the lifetime budget constraint (see, for example, Cigno and Ermisch, forthcoming). In the background is a relationship between women's work experience and earnings and a relationship between the satisfaction a child provides to his parents, or 'quality' of a child, and the inputs of parental time and purchased goods and services in rearing a child. These theories suggest a number of links between economic variables and child-bearing, which can be briefly summarised.

First consider the implications of higher real wages. They mean higher real income, thus a couple can afford more children and have them sooner. The latter would be particularly important if there were constraints on borrowing against future income. But they also mean more income lost by those caring for additional children. Since most child-rearing is done by the mother, higher women's wages raise the cost of an additional child by increasing earnings foregone. Thirdly, the higher income that they entail means that more can be spent in raising each child (higher 'child quality'), but this means that an additional child costs more.

Thus, with mothers doing most of the child-rearing, higher men's wages mainly affect child-bearing through their effect on a couple's income, while higher women's wages have their main effect through their impact on the opportunity cost of children. The econometric analysis uses the real net (after tax) hourly earnings of female manual workers to measure women's net wage, and men's net weekly earnings in manual jobs for that of men. The measurement of these and other variables is discussed in the Appendix.

In addition to the impact of taxes on net earnings other fiscal policies affect child-bearing incentives. The most important of these are child tax allowances and child benefit payments. 'Child allowances' are defined as the sum of the value of child tax allowances (for a couple paying the standard rate of income tax) and family allowances or child benefit, and in the analysis the variable of interest is the additional allowances for each child. A higher value would encourage child-bearing.

Changes in the chances of getting a job could also have income and cost effects. A higher rate of unemployment could reduce income prospects, but it could also make it a less costly time to have a child.

There are reasons to suppose that the rate of price inflation may have an effect on birth rates independent of its effect on real earnings. A higher rate of inflation destroys the real value of accumulated wealth not held in real assets or claims to real assets, and this may be be an inducement to save more. There is a conflict between having another child and saving. Indeed, the arrival of a child tends to depress savings, and Smith and Ward (1980) found that the principal channel through which a birth reduces savings is the decline in a wife's earnings associated with her withdrawal from the labour force. A higher rate of inflation may, therefore, reduce the probability of having the first or additional child.

Secondly, a higher rate of inflation is associated with higher nominal interest rates. If there are constraints on borrowing against future income, then higher nominal interest rates increase the real burden of debt servicing on present cash flow, and this additional burden may deter couples from having another child.

When housing demand is strong relative to supply, couples find it more costly to purchase the housing they want for their family in the market, and queues for social housing will be longer. The competition between purchasing a house of the desired quality and size and child-bearing may deter couples from having a child when housing demand pressures are strong. The average price of a new house deflated by the retail price index, or 'real house price', is taken to

be an index of pressures in the housing market. It is likely that the trade-off between housing and child-bearing is strongest for recent housing market entrants, who generally are contemplating starting a family. In contrast, the wealth of established homeowners is enhanced by higher house prices, and couples established in public sector housing generally find it relatively easy and cheap to adapt to changing family size by transferring to other housing within the sector.

These variables change over time. When they do so, they not only affect current resources and resources foregone, but also expectations about the future values of these variables. Two other labour market factors associated with a birth cohort, or generation of women, which can influence their child-bearing pattern, are also considered.

The first generation-specific variable is women's attachment to paid employment. Women with a stronger attachment may wish to compress their child-bearing into fewer years to minimise their absence from paid employment. On the other hand, they may wish to space their births farther apart to fit employment in between births. The measure of attachment is a lifetime employment rate for a cohort of women, adjusted for their child-bearing, and it is expressed as a proportion of the rate for men (see Appendix).

Richard Easterlin (1980) has suggested, with considerable support from American experience, that people born into large generations may have dimmer economic prospects, particularly when they are young, because of extra competition in the labour market. He argues that these dimmer prospects lead to postponement of child-bearing and smaller families. Relative generation size is measured by the size of the birth cohort at age 14 relative to the largest cohort (1948).

Model specification

The basic assumption underlying the model is that couples decide whether or not to have a child in the coming year. Economic theory based on this sort of sequential decision making suggests that responses to economic variables may differ by birth order (see Newman, 1988). From this perspective, it is natural to model *conditional* birth rates by birth order; that is, births of a given order relative to the population who could have a birth of that order (for example first birth rates among childless women or second birth rates for mothers of one child).

Economic theories of fertility have primarily focused on optimal family size, but recently more attention has been paid to the optimal timing of child-bearing over a woman's life. Even in the latter however, these theories tell us little about how responses

to economic variables may vary at different stages of the life cycle (leading to changes in the timing of child-bearing), nor how they are distributed over time. The dynamics of fertility must, therefore, be inferred from the data. Economic theory only suggests which variables may be important in a steady-state environment, and these were discussed in the previous section.

Thus, the foundation of the analysis is a set of equilibrium relationships relating the levels of conditional birth rates at different stages of the life cycle (that is at each birth order j and each woman's age a) to the levels of the economic variables. To ensure that birth rates remain between zero and one, the conditional birth rates are transformed by taking the natural logarithm of the rate divided by its complement (its 'logit'):

$$(1)\ y_{jka} = A_{ja} + \beta_{1ja}K_k + \beta_{2ja}RGS_k + B_{ja}X_t + \beta_{3ja}S_{jka}$$

where j, k, a and t designate birth order, birth cohort of the women, age and year respectively (a=t−k), and

 y is the 'logit' of the conditional birth rate;

 K is the 'permanent lifetime employment propensity' of the cohort of women born in k relative to that of men;

 RGS is relative generation size of the cohort born in k (relative to the 1948 cohort);

 X is a vector of time-varying economic variables, log(RW), log(NME), log(UN), INFL, log(RHP) and log($CHDAL_j$),

where

 RW is the ratio of net (after tax) women's hourly earnings, NWHE, to men's net earnings, NME;

 NME is men's real net earnings (hourly or weekly, depending on specification);

 UN is the male unemployment rate;

 INFL is the annual rate of price inflation;

 RHP is real house price;

 $CHDAL_j$ is the additional child allowance received from a jth birth;

 S_{jka} is the proportion of cohort k at risk for a jth birth at age a.

The B_{ja} vectors, the β_{ija} and A_{ja} are parameters to be estimated. They vary with birth order and age, reflecting different responses at different stages of the life cycle. In the estimation, women are grouped into age groups defined over five years, with responses assumed constant within the group. Thus, an age group is designated by a, and all variables subscripted by k are simple averages over the cohorts in the particular age group in year t.

The last variable in equation (1), S_{jka}, has been included to reflect important aspects of heterogeneity in the population at risk for a given order birth that is likely to be related to S_{jka}. If an unusually large or small proportion of a cohort is at risk for a given order

birth at a particular age, it may not be representative of women who normally are at this stage of family formation; thus the probability of progressing to another birth would tend to vary with the proportion of the cohort at risk for that birth. For instance, all else equal, among cohorts of women who have access to better contraception, or, for whatever reason, are less likely to conceive (for example preferences for smaller families), fewer women would have another birth. This would tend to be reflected in a higher proportion at risk for another birth, causing conditional birth rates to be negatively correlated with the proportion of a cohort at risk at a particular age. On the other hand, unfavourable conditions for childbearing in the past may result in 'catching up' behaviour, inducing a positive correlation between the proportion at risk and the birth rate. In order to estimate better the effects of the economic variables on birth rates, it is desirable to control for such 'unobserved heterogeneity' by birth cohort.

Estimation of the model

If there is an equilibrium relationship such as (1), then the combination of variables on the right hand side of (1) should 'move together' with y 'in the long run'. That is, the right and left hand sides of the equation should not diverge, or, in other words, their difference should be a stationary time series. In recent terminology, the set of variables in equation (1) should be 'cointegrated' (Granger, 1986).

A two-step estimation procedure for 'error correction' models, suggested by Engle and Granger (1987), is used to estimate the model. In the first step, a relationship between the levels of fertility and economic variables is estimated, and tests of whether the variables in this relationship 'cointegrate' are performed. Provided that they do, the second step includes the recent deviation of a birth rate from that predicted by the equilibrium relationship (estimated in the first step) in a dynamic equation for changes in fertility rates.

One bit of dynamic information is available. Allowing for biological lags, it takes at least one year for the time-varying economic variables to affect the birth rate. Furthermore, if any distributed lags in response are to refer to roughly the same women, then any lags of y and S should be taken within a cohort of women. Similarly, the recent deviation of the birth rate from its equilibrium value, or 'error correction component' of the dynamic equation, should refer to the same cohort. Thus, it is convenient to estimate the error correction component as the residual from least squares estimation of the following variant of equation (1):

$$(2) \quad Y_{jkt-1} = A_{ja-1} + \beta_{1ja-1}K_k + \beta_{2ja-1}RGS_k + B_{ja-1}X_{t-2} + \beta_{3ja-1}S_{jkt-1}$$

(recall that $a = t - k$ is the age of women in year t). Denoting the residual from this regression as $RESID_{jkt-1}$, the dynamic error correction equation is

Table 1. Tests for cointegration in equation (2)[a]

Women aged:	First births			Second births			
	20–24	25–29	30–34	20–24	25–29	30–34	35–39
R-sq	0.975	0.969	0.838	0.814	0.961	0.945	0.946
DW	1.65	1.17	1.17	0.97	0.82	1.01	2.09
DF	−4.97	−3.41	−3.08	−3.01	−3.10	−3.18	−4.93
ADF	−6.00	−4.61	−3.84	−3.62	−3.48	−4.35	−4.40
Sample period:	1952–83	1952–83	1954–83	1952–83	1952–83	1954–83	1959–83
Sample size:	32	32	30	32	32	30	25

Women aged:	Third births			Fourth births	
	25–29	30–34	35–39	30–34	35–39
R-sq	0.974	0.913	0.981	0.967	0.993
DW	0.77	1.09	1.42	0.92	1.42
DF	−2.80	−3.52	−3.57	−3.13	−3.97
ADF	−3.58	−3.76	−4.60	−3.97	−3.28
Sample period:	1952–83	1954–83	1959–83	1954–83	1959–83
Sample size:	32	30	25	30	25

(a) DW is the conventional Durbin–Watson statistic, but the null hypothesis is that the error term follows a random walk rather than exhibiting no serial correlation. Lower and upper bound critical values are presented by Sargan and Bhargava (1983), table 1; for a 5 per cent significance level, 31 observations and five (7) regressors, the lower bound critical value is 0.651 (0.601). Exact critical values depend on the regressors. DF and ADF are the Dickey–Fuller (1979, 1981) statistic and its augmented version respectively. The DF statistic is the 't-value' associated with the coefficient b in the regression:
$\Delta RESID_{kt} = c + b\,RESID_{kt-1}$, where $RESID_{kt}$ is the residual from the least squares estimation of equation (2) and $\Delta RESID_{kt}$ is $RESID_{kt} - RESID_{kt-1}$;
The ADF statistic is the t-value associated with b in the regression:
$\Delta RESID_{kt} = c + b\,RESID_{kt-1} + a1\Delta RESID_{kt-1} + \ldots + aq\Delta\,RESID_{kt-q}$
where q is chosen large enough to ensure that the residual in this regression is white noise. The exact critical values depend on the underlying data-generating process, the number of regressors and sample size; at the 5 per cent level, they tend to be less than −3.

(3) $\Delta y_{jkt} = \gamma_{ja0} + C_{ja}\Delta X_{t-1} + \gamma_{1ja}\Delta y_{jkt-1}$
$\qquad + \alpha_{ja}RESID_{jkt-1} + u_{jkt}$

where $\Delta X_t = X_t - X_{t-1}$ and $\Delta y_{jkt} = y_{jkt-1}$ and u_{jkt} is a random disturbance term.

Note that because lags are taken *within a cohort* k, changes in K_k and RGS_k are zero. While S_{jkt} does change within a cohort, ΔS_{jkt} is the difference between the unconditional (j−1)th and jth birth rates in the previous year, and these are an order of integration higher (see next paragraph) than the other variables in (3); thus the expected value of the coefficient of ΔS_{jkt} is zero. The distributed lag formulation implicit in the combination of equations (2) and (3) could be related to the formation of expectations about economic variables in an uncertain world, to behavioural inertia, or to biological factors delaying conception.

In order to describe concisely the time series properties of the variables, define a series as being 'integrated of order d', denoted as I(d), if it needs to

be differenced d times in order to produce a stationary series (see Granger, 1986). Thus, a stationary series is I(0). Application of the DW, DF and ADF tests explained in table 1 to the individual series suggests that, with one exception, none of the variables entering the analysis are stationary (see bottom of table 2).

Tests similar to those reported in table 1 were carried out to ascertain whether some combination of the I(2) variables relevant to a particular age/birth order group is an I(1) variable. In each group there is evidence that y_{jkt-1}, S_{jkt-1}, K_k and RGS_k, or, where appropriate, a subset of these, cointegrate to produce an I(1) series. Thus, when this set of variables is included in equation (2) with the economic variables in X, all of the variables in (2), either individually, or in combination, are I(1) variables.

It is clear from equations (2) and (3) that the estimated steady-state equilibrium equation for y_{jka-1} is given by the estimated equation (2). Because the

Table 2. Equilibrium birth rate equations

Absolute 't-value' in parentheses

Women aged:[b]	First births			Second births				Third births			Fourth births	
	20–24	25–29	30–34	20–24	25–29	30–34	35–39	25–29	30–34	35–39	30–34	35–39
Constant	0.70	0.08	−5.65	0.51	1.48	−5.83	−8.91	5.86	−0.73	−4.09	−3.68	0.80
	(2.05)	(0.43)	(9.35)	(2.16)	(10.29)	(10.63)	(17.10)	(3.45)	(0.55)	(4.59)	(2.85)	(1.11)
Variable log(RW)	−0.89[a]	−0.63	−0.27	−1.11	−0.29	−0.71	—	−0.52	−2.53	−2.55	−2.42	−0.44
	(4.05)	(4.11)	(1.56)	(5.17)	(1.77)	(4.12)		(1.43)	(2.83)	(3.80)	(5.69)	(1.57)
log(NMWE)	−0.46[a]	0.65	0.30	0.70	1.13	−0.28	−0.34	0.97	−0.88	−1.59	−1.89	−0.38
	(2.36)	(4.34)	(1.51)	(3.47)	(13.90)	(1.82)	(2.42)	(2.09)	(1.01)	(4.91)	(3.92)	(1.29)
log(CHDAL$_j$)	0.37	—	−0.25	—	—	−0.12	—	—	0.54	0.51	0.28	0.39
	(4.84)		(2.43)			(1.26)			(2.23)	(2.48)	(1.66)	(2.31)
INFL	−0.67	—	—	—	—	−0.42	−0.62	—	−0.95	−0.99	−1.36	−0.96
	(2.20)					(1.52)	(4.04)		(1.06)	(1.58)	(1.91)	(2.39)
log(RHP)	−0.20	−0.32	−0.42	−0.29	—	—	—	—	0.38	—	—	—
	(1.47)	(3.06)	(3.64)	(2.01)					(0.95)			
log(UN)	—	—	−0.14	0.09	0.11	—	−0.07	0.12	0.22	−0.14	—	—
			(3.51)	(2.60)	(3.60)		(3.41)	(2.05)	(2.08)	(1.74)		
RGS	−0.75	−0.40	—	—	−1.66	—	—	−2.86	1.19	—	—	−1.66
	(4.30)	(2.84)			(9.95)			(8.20)	(1.64)			(4.37)
K	—	—	4.18	—	—	4.72	5.56	−3.99	—	—	2.97	—
			(6.27)			(11.19)	(11.56)	(2.90)			(2.68)	
S(j,k,t−1)	−3.50	−1.54	—	—	—	—	5.34	−2.66	−2.81	4.69	−5.29	−16.42
	(11.06)	(7.43)					(8.95)	(3.62)	(1.15)	(3.71)	(3.85)	(9.58)

Definitions of variables:
The dependent variable is the logit of the conditional birth rate for the particular group of women; NWHE is women's net marginal hourly earnings; NMWE is men's net weekly earnings; RW is NWHE/NMWE; CHDAL$_j$ is the additional child allowance received from a jth birth; all of these variables are defined in real terms using the retail price index. INFL is the annual rate of price inflation; RHP is the average real price of new houses; UN is the male unemployment rate; the above comprise the variables in X; with regard to the cohort-specific variables, RGS is the size of the women's birth cohort at age 14 relative to the largest cohort (1948); K is the 'permanent employment propensity' of the cohort of women; and S(j,k,t−1) is the proportion of cohort of women k 'at risk' to have a jth order birth.

Time series properties of the variables:
I(2) variables: S(j,k,t−1) for all j and all age groups; RGS and K; the logits of the conditional third and fourth birth rates in each age group and that of the first birth rate to women aged 20–24; and perhaps the logits of the first birth rate to women aged 25–29 and the second birth rate to women aged 35–39, although these may be I(1).

I(1) variables: the logits of all other birth rates and all of the time varying economic variables (i.e. those in X) other than log(CHADL2), which is I(0).

(a) Men's net marginal hourly earnings rather than NMWE.
(b) Strictly speaking, because they are based on equation (2), the steady-state parameters refer to the age groups 19–23, 24–28, 29–33 and 34–38, but to make the connection with table 3 clear, they have been labelled according to the same, conventional age groups.

variables in this equation are not stationary, traditional econometric theory does not apply. If, however, there is a linear combination of the non-stationary variables which is stationary (that is the variables *cointegrate*), then the least squares estimates of (2) are consistent, but they are subject to bias in small samples and have a non-normal limiting distribution (see Stock, 1987).

The test statistics DW, DF and ADF described in table 1 provide some evidence in favour of the hypothesis that, for each age group and birth order, the variables in equation (2) are cointegrated; but the evidence is not conclusive. For instance, while the DW statistic is always above the appropriate lower critical value (for the sample size and the number of regressors) tabulated by Sargan and Bhargava (1983, table 1) for a 5 per cent test of the hypothesis that the error term in (2) is a random walk, it is always in the inconclusive range. Also, the ADF statistics in table 1 exceed in size the critical values suggested as a rough guide in applied work by Engle and Granger (1987, tables I and II), but in only five cases do they exceed the 5 per cent critical values for a sample size of 50 and four or five regressors tabulated by Engle and Yoo (1987, table 3) for a particular data-generating process using simulation methods.

Table 3. Estimates of dynamic equation (3)

Dependant variable: $\triangle y_{jkt}$

Woman aged:	First births			Second births				Third births			Fourth births	
	20–24	25–29	30–34	20–24	25–29	30–34	35–39	25–29	30–34	35–39	30–34	35–39
Constant	0.034	−0.029	−0.071	−0.007	−0.033	−0.093	−0.123	−0.033	−0.051	−0.124	−0.044	−0.144
	(2.90)	(5.18)	(2.84)	(1.28)	(4.26)	(4.13)	(3.13)	(1.86)	(3.15)	(3.70)	(2.65)	(7.35)
Variable												
$\triangle y_{jkt-1}$	0.587	0.672	0.548	0.609	0.604	0.530	0.618	0.702	0.714	0.508	0.634	0.472
	(12.65)	(5.15)	(3.72)	(5.79)	(4.04)	(3.93)	(4.26)	(5.97)	(7.65)	(3.59)	(6.74)	(5.36)
$\triangle Log(RW)_{t-1}$	−0.249	−0.356	−0.372	−0.651	−0.252	−0.545	−0.306	−0.328	−0.621	−1.001	−0.605	−
	(1.37)	(2.19)	(2.52)	(4.06)	(1.52)	(4.00)	(1.27)	(1.65)	(3.46)	(2.05)	(2.95)	
$\triangle log(NMW)_{t-1}$	−0.335	0.206	−	−	0.301	−	−0.287	−	−0.222	−0.783	−0.610	−
	(2.12)	(1.01)			(1.41)		(1.57)		(1.00)	(2.22)	(2.92)	
$\triangle log(CHDAL_j)_{t-1}$	−	−	−0.097	−0.094	−0.115	−0.079	−	−0.116	−	0.176	−	0.305
			(1.52)	(1.95)	(2.32)	(1.44)		(1.99)		(1.33)		(3.52)
$\triangle INFL_{t-1}$	−0.449	−	−0.282	−	−	−0.203	−0.512	−0.400	−0.510	−0.462	−0.494	−0.523
	(3.17)		(1.85)			(1.48)	(2.99)	(2.08)	(2.83)	(1.49)	(2.54)	(2.76)
$\triangle log(RHP)_{t-1}$	−0.127	−0.152	−0.127	−	−0.107	−	−	−0.123	−	−	−	−0.135
	(1.50)	(1.61)	(1.63)		(1.11)			(1.34)				(1.31)
$\triangle log(UN)_{t-1}$	−0.074	−	−0.050	0.044	0.037	−	−	−	0.055	−0.056	−	0.064
	(2.86)		(1.84)	(1.89)	(1.40)				(1.58)	(1.08)		(1.67)
$\triangle RESID_{jkt-1}$	−0.431	−0.594	−0.296	−0.296	−0.213	−0.497	−0.903	−0.325	−0.357	−0.494	−0.134	−1.182
	(3.14)	(3.57)	(1.71)	(2.45)	(1.43)	(3.91)	(2.75)	(2.76)	(5.21)	(2.61)	(4.21)	(6.53)
Standard error	0.026	0.028	0.0257	0.0282	0.0278	0.0247	0.0271	0.0347	0.0307	0.0474	0.0348	0.0314
R-sq	0.908	0.621	0.628	0.644	0.540	0.710	0.665	0.715	0.818	0.712	0.808	0.857
DW	1.84	1.43	2.16	2.40	1.60	1.95	1.86	1.84	1.95	2.28	2.37	1.70
Q(3)	1.33	3.77	6.10	2.75	2.43	0.11	1.19	0.59	1.04	0.76	1.90	1.90
Forecast chi-sq.(2)	4.42	5.24	2.48	3.63	0.53	1.75	0.44	2.56	0.37	0.64	1.11	2.69
Residual correlogram												
r1	0.02	0.22	−0.09	−0.21	0.19	0.02	−0.05	0.08	0.00	−0.16	−0.24	0.04
r2	0.16	0.13	−0.40	0.13	0.12	−0.03	−0.21	0.10	0.19	0.07	0.07	0.18
r3	−0.12	0.23	0.18	−0.16	0.16	−0.05	−0.03	−0.05	−0.01	0.01	−0.05	−0.21
LM-test: f(i,j)		1.73	6.33	1.13	1.60	0.06	1.51	0.22	0.74	0.93	1.62	1.44
(i,j)		(3,20)	(1,20)	(3,20)	(3,18)	(3,18)	(1,16)	(3,19)	(1,19)	(1,15)	(1,22)	(2,13)

Notes: Box–Pierce's Q-statistic (over the first three autocorrelations) has asymptotic chi-square distribution (with three degrees of freedom) under the hypothesis of white noise disturbances. It is not strictly appropriate in a model with a lagged dependent variable. Thus, the result of the Lagrange multiplier test for white noise residuals is also reported. This test amounts to an F-test with degrees of freedom shown below the statistic. It has been calculated for the first three autocorrelations, but where some autocorrelations in the residual correlogram stand out as particularly large, a more powerful LM test for the joint significance of only these autocorrelations is reported. The forecast test compares the forecast error (FE) to the standard error of the equation (SE); the sum of the squared values of the ratio FE/SE is approximately chi-square with two degress of freedom (this is an approximation because the forecast also uses forecasts of the RESID variable from equation (2) estimated up to 1983, the coefficients of which are shown in table 2).

A major difficulty in applying these tests is that the exact critical values are strongly affected by unknown features of the process generating the data, particularly in small samples. Furthermore, in cases where the error term in (2) is stationary, but is highly correlated over time, the ability of these tests to reject non-stationarity is poor (that is they lack power). Thus, they should only be taken as pieces of evidence. Fortunately, the correlogram for $RESID_{jkt-1}$ supports its stationarity in most cases. It is, however, less clear that its correlogram 'dies out' in the cases of second births to women aged 20–24 and third and fourth births to women aged 30–34, even though the test statistics suggest stationarity. As is true for most econometric models, this one is tentative and must be tested against new data as they emerge.

The estimates of equation (2) are given in table 2. The exclusion of some variables in particular birth order/age groups generally was made on the basis of their small impact on the calculated $RESID_{jkt-1}$. Drobny and Hall (1987) have developed a valid statistical test (based on the residuals $RESID_{jkt-1}$) for the exclusion of variables in cointegrating regression equations (see Hall and Henry, 1987, for an application). The exclusions made in table 2 cannot be rejected by their test. For a few groups, evidence of parameter instability in equation (3) led to a reformulation of equation (2).

In estimating the dynamics of fertility rates it should be noted that even when Δy_{jkt} is an I(1) series, it was found that $\Delta y_{jkt}-\delta_0-\delta_1\Delta y_{jkt-1}$ is a stationary series, where δ_0 and δ_1 are coefficients in an auto-regressive regression. Thus, either individually, or as a pair, all of the variables entering equation (3) are stationary series. Tests concerning the estimated parameters of (3) are well approximated by the usual tests in least squares regression (Stock, 1987), and conventional specification search resulted in the estimated equations shown in table 3.

Economic effects on births and family size

It is difficult to see from the estimated impacts of these economic variables on conditional birth rates of different orders at different women's ages how economic variables affect more familiar fertility concepts like the annual number of births and family size. It is particularly difficult because changes in birth rates subsequently affect populations at risk for births of each order. In order to express the economic influences on fertility in more familiar terms, the estimated equations in tables 2 and 3 are used to account for what happened to births during 1973–85. This was a period during which the fertility rate was below the level that ensures replacement of the population (2.1 children per woman) for the first time since 1945 and the number of births fluctuated substantially

Chart 1. Dynamic simulation of total births
Comparison of simulation with actual
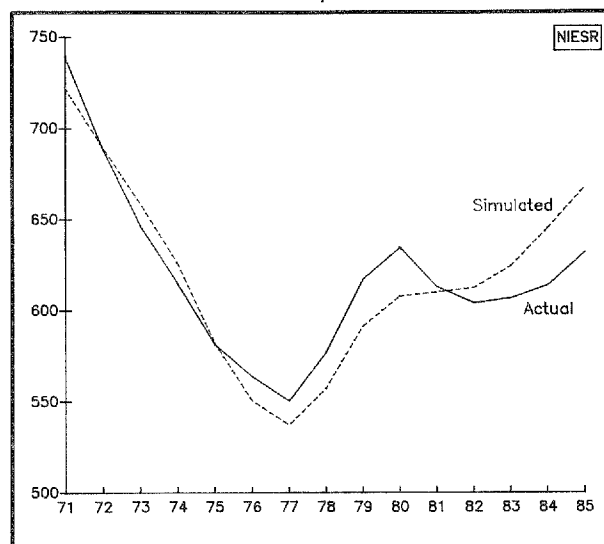
as chart 1 illustrates (for births of order four or lower). In addition to the actual number of births, the figure shows the number of births predicted by the model from the actual values of the economic variables in a fully dynamic simulation starting in 1971. While the simulation of the impact of actual economic developments does not capture the decline in fertility during 1980–2 (showing only a levelling), it tracks actual births fairly well, considering the length of the period and the fact that the simulation is fully dynamic.

The accounting exercise was carried out by first using the model to predict the number of births that would have occurred in each year if all of the explanatory variables (that is those in X and RGS and K) had remained constant at their 1971 values. A relatively constant number of births during 1974–85 is predicted under this assumption. The difference between this number and the number of births predicted by the dynamic simulation of actual economic developments is the 'shortfall in births' for which we wish to account. One variable at a time is allowed to take on its actual values during 1972–85; its contribution to the shortfall in each year is taken to be the difference between the births predicted by the model with all explanatory variables constant and those predicted when this variable changes. Three variables, relative generation size (RGS), women's net wages relative to men's net weekly earnings (RW) and real house prices (RHP) together account for a large proportion of the shortfall in births. The discussion focuses on the effects of these variables (see Ermisch, 1987, for further discussion). Their contributions are shown separately in chart 2 along with a category of residual influences of the other explanatory variables; a negative contribution means that a variable was acting to increase births during that year.

Chart 2.   Accounting for the shortfall in births
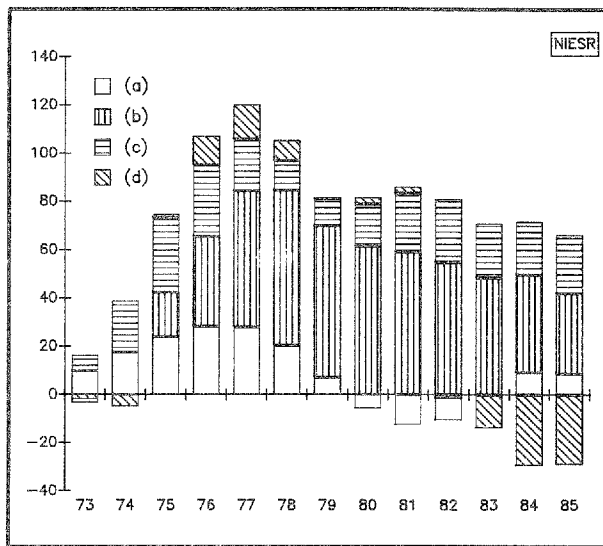
(a) Contribution of relative generation size.
(b) Contribution of women's relative wage.
(c) Contribution of real house prices.
(d) Residual influences.

The estimated parameters are also used to simulate the distribution of family size that would be produced by cohorts of women who experience different levels of particular economic variables throughout their reproductive period. The economic environment of 1971 is taken as a base case; the economic variables prevailing then are assumed to apply to women throughout their child-bearing years. Comparisons are made with cases in which individual variables are changed to those corresponding to the economic environment of 1986. With regard to the two cohort variables, women's generation size and their permanent employment propensity, the cohort aged 25 (the mean age of child-bearing) in that year is the cohort for whom the child-bearing history is simulated. Thus, table 4 compares different steady-state equilibria relative to the base case.

Chart 2 shows that the major contributor to the shortfall in births, particularly after 1974, was higher (relative to 1971) women's net wages relative to men's net earnings. At almost every age and birth order, higher *net women's hourly earnings* reduce the likelihood of a birth, while (holding women's net wage constant) higher *men's net real weekly earnings* increase it. Thus, there is strong evidence that higher women's wages raise the cost of an additional child by increasing earnings foregone, and the higher opportunity cost reduces the likelihood of another birth, but couples respond to higher men's earnings by having more children and having them sooner. Analysis of the variation in family size after 15 years of marriage among British women (in a sample of 2,000 continuously married women from the *Women and Employment Survey*) shows a strong negative association between a woman's hourly earnings at marriage and her family size and it also indicates that women whose husbands earned more had more children (see Ermisch, 1988), thereby providing cross-sectional evidence that supports that from the time series analysis.

The ratio of women's net hourly earnings relative to men's net weekly earnings (RW) rose from 1965 to a peak in 1976, after which it declined somewhat, remaining about 14 per cent above its 1971 level in

Table 4.   Simulated steady-state changes in family size: comparison of 1986 and 1971 economic environments

Per cent

	Family size					Average[a] family size
	Childless	1	2	3	4+	
Base case (1971)	15.3	15.2	37.6	18.2	13.7	2.00
CHDAL change (1)	−1.2	−0.7	1.1	0.8	0.0	0.04
+60% RHP (2)	4.9	0.5	−4.4	−0.4	−0.7	−0.12
+14% RW (3)	2.0	1.1	2.7	−4.5	−1.3	−0.12
+20% NMWE (4)	−0.4	0.2	0.7	0.7	−1.1	−0.01
−5.6% INFL (5)	−0.7	−0.5	0.0	0.7	0.5	0.03
+260% UN (6)	1.1	−0.6	−3.9	3.7	−0.2	0.02
+14% RGS (7)	1.9	1.1	−0.5	−1.2	−1.3	−0.09

Note: All of the following represent changes in the economic environment between 1971 and 1986:

(1) Change in child allowances, primarily an increase in the allowance for the first child due to replacement of child tax allowances and family allowances by child benefit.
(2) 60 per cent increase in the level of real house prices.
(3) A 14 per cent higher ratio of women's net hourly earnings to men's net weekly earnings (RW).
(4) Men's net weekly earnings 20 per cent higher, holding the women's net wage ratio, RW, constant; thus women's net real hourly earnings are also 20 per cent higher.
(5) An inflation rate 5.6 percentage points lower.
(6) A 260 per cent increase in the male unemployment rate.
(7) 14 per cent higher relative generation size (cohort of 25-year-olds in 1986 compared with cohort in 1971).
(a) The average makes the assumption that no woman has more than four children.

1986. As table 4 shows, average family size would be significantly lower with the 1986 women's relative wage than with the 1971 one, with a particularly large fall in the proportion of women with three children and a rise in childlessness. Note, however, that secular earnings growth with women's relative wage constant has little effect on family size. Thus, there is no indication that family size would either increase without bound or fall to zero as a consequence of economic advance.

Higher *real house prices* (house price deflated by the RPI) primarily deter women from starting a family, although they also reduce the probability of a second birth among mothers aged 20–24. As chart 2 illustrates, higher house prices also contributed to the shortfall in births during 1973–85. Real house prices were about 60 per cent higher in 1986 than in 1971. Table 4 shows that at the higher level, the incidence of childlessness is higher and completed average family size is lower, the impact on family size being similar to that arising from a 14 per cent higher value of women's net relative wage. Thus, competition between purchasing a house of the desired quality and size and child-bearing appears to deter the onset of child-bearing when real house prices are higher.

All else equal, British *women from larger generations* appear to be less likely to begin child-bearing in their 20s, and they end up producing smaller families. Women aged 25 in 1986 came from a 14 per cent larger generation than those born 15 years earlier (the difference between the largest and smallest birth cohorts of women observed during the post-war period was about 40 per cent), and table 4 shows that women from this larger generation would produce moderately fewer children on average, with a larger proportion having only one child or remaining childless. These results support Easterlin's hypotheses concerning generation size and child-bearing patterns.

It is clear from chart 2 that during the early part of the period (1973–8), lower fertility among women from larger generations was also acting to depress births. The moderate contribution of residual influences during the trough years of 1976–8 can be accounted for by high inflation, which was found to discourage child-bearing. Conversely, the negative contribution of residual influences during 1983–5 is partly accounted for by low inflation, but also by higher unemployment, which on balance tends to encourage child-bearing. Inflation and unemployment mainly affect the timing of child-bearing; as table 4 shows, they have virtually no influence on completed family size.

The influx of smaller generations into the age group 25–29 played the main role in the major recovery in births during 1978-80. Declines in inflation and in women's relative net wages during 1977 and 1978 also contributed to the recovery, and a growing number of women of child-bearing age (16–44) magnified the increase in births during 1978-80.

Impact of higher child benefit

The estimates in table 2 indicate that more generous child allowances encourage early motherhood and increase the likelihood that women in their 30s with two or three children have another birth, suggesting that changes in child allowances influence completed family size. This is born out by a simulation that doubles the child benefit paid in 1986 throughout a woman's reproductive period. As table 5 shows, this would raise the proportion of women having families of more than two children (particularly three), thereby moderately raising average family size.

Economic models suggest that the impact of a change in the allowance paid per child on family size would be proportionately larger for couples with low income and with more existing children. This may explain the restriction of stimulative child allowance effects to mothers of two or three children, and also to childless women aged under 25, because young couples (and families with three children) are more likely to have low incomes.

Concern about below-replacement fertility in industrialised countries has been expressed in a number of quarters. Some observers (for example, Wattenberg, 1987) have suggested paying larger child allowances to bring fertility back to the replacement level of 2.1 children per woman. The extent to which the fertility of a cohort of women is below replacement depends on the cohort's size because of the generation size effects discussed earlier. Taking the economic environment prevailing in 1986 as a

Table 5.   Impact of changes in child benefit 1986: economic environment

Per cent

	Family size					Average[a] family size
	Childless	1	2	3	4+	
Base case (1)	18.4	12.5	40.0	17.2	12.0	1.92
Double CB (2)	14.3	10.7	39.2	23.0	12.9	2.09

Notes:
(1) Relative generation size (RGS) is taken to be 0.75.
(2) Double child benefit from its 1986 level.
(a) The average makes the assumption that no woman has more than four children.

base, British women born in 1966 (one of the largest post-war cohorts) would produce 1.74 children on average, while women from the smallest cohort (1977) would produce an average of two children.

The child-bearing population is comprised of a mixture of cohort sizes, with new entrants to it coming from successively smaller cohorts until 1993, after which the cohort size of entrants stabilises until at least the turn of the century. The average size of these relatively similar cohorts born during the 1980s (about 75 per cent of the largest cohort) is taken as a base case, along with the 1986 economic environment. These cohorts would produce 1.9 children on average (see table 5). While caution should be exercised in using the model to predict the effect of child benefit changes outside its sample range, the model suggests that in order to raise their fertility to 2.1 children through higher child allowances, child benefit would need to be doubled from its 1986 level to £14.20 per week for each child (these simulations assume that the higher benefit is financed through indirect taxes). Initially, this would cost about £5 billion per annum, or about 1.5 per cent of GDP.

Forecasting births

The model can also be used to forecast births. As an illustration, births during 1986–90 have been forecast on the basis of actual economic data through 1987 and NIESR forecasts of some of the economic variables for 1988–9. In particular, it has been assumed that the ratio of women's net hourly wages to men's net weekly earnings remains constant after 1987; that real house prices remain constant; that the cash value of child benefit is frozen at its 1987 level; that the income tax system does not change after 1987; and that inflation, unemployment and average earnings are as forecast by the Institute *(National Institute Economic Review, no. 125, August 1988).* The cohort-specific variables, relative generation size and women's permanent employment propensity, are known for this period, and the population of women by age is projected by the Government Actuary with a good degree of accuracy. Conditional birth rates for which there is no estimated equation (primarily women aged under 20 and over 39) are assumed to remain constant at their 1985 value.

On the basis of this information and assumptions, the total number of births (birth orders one through four) is forecast to rise to a peak in 1988 (7 per cent higher than in 1985), with the number falling slightly in 1989 and 1990. The general fertility rate (births relative to the population of women aged 16–44) is forecast to follow the same pattern as total births over the period 1985–90. This pattern conceals different time profiles forecast for births of different order. First births peak in 1987 and then decline; second births increase throughout 1985–90; and higher order births peak in 1986 and then decline.

Births actually did increase in 1986 and 1987, although slightly less than the model forecast. They were 4 per cent higher in 1987 than in 1985, while they were forecast by the model to be 6 per cent higher. Figures for the first quarter of 1988 suggest that there will be more births during 1988, consistent with the model's forecast.

Conclusion

Econometric analysis of post-war movements in order and age-specific conditional birth rates indicates that higher net real wages for women discourage child-bearing, while higher net real earnings for men have the opposite effect. These contrasting effects presumably reflect their impacts on the cost of children and income respectively, and they are consistent with econometric analysis of cross-sectional variation in family size among British women. They are also consistent with recent analysis of post-war changes in age-specific fertility rates in Britain by Sprague (1988), although her model has a curious dynamic feature: earnings affect births in the same year, despite the gestation lag.

More generous child allowances increase the chances of third and fourth births and also encourage early motherhood, while higher house prices deter the start of child-bearing, but have little effect on higher order births. A doubling of the current level of child benefit would be needed to raise fertility back to the level that would replace the population over the longer term, costing about £5 billion per annum, or 1.5 per cent of GDP. There is also evidence that, other things equal, women from larger generations start child-bearing later and have smaller families, as suggested by Richard Easterlin. The successively smaller cohorts entering the child-bearing population until 1993 provide an upward impetus to birth rate over the remainder of the century.

DATA APPENDIX

Women's net wage is defined as the product of women's real hourly earnings (in manual occupations, from the Department of Employment October Enquiry) and the complement of their marginal tax rate (including national insurance (NI) contributions). It was assumed that married women paid no earnings-related NI contributions before 1974; and that women born before 1955 paid reduced rate contributions after 1974; and that women born in 1955 (marrying on average in 1977) or later paid full

NI contributions. Experimentation with different assumptions fortunately indicated that the estimated impacts of women's net earnings on birth rates were not sensitive to a range of plausible assumptions about their marginal tax rates. Tax rates and allowances and national insurance contribution rates for each year are reported in the *Annual Asbtract of Statistics.*

Men's average net weekly earnings are defined as the weekly earnings after tax (including NI) of married men with average gross weekly earnings (in manual occupations, from the October Enquiry) and no children (because the tax advantages of children are considered separately). This approach implicitly adjusts gross weekly earnings by the average tax rate, producing a measure consistent with the assumption that men's allocation of their time among different market and home activities is exogenous. A measure of men's net earnings in accord with the assumption that their working hours are endogenous was also employed in the analysis and called men's net marginal earnings. It adjusts men's real hourly earnings by their marginal tax rate (including NI contributions) in a manner analagous to that used for women's earnings above, although the marginal rates were different because of different NI contributions. Only in the case of first births to women aged 20–24 did the use of men's net hourly earnings produce a lower standard error.

Child allowances are the sum of family allowances or child benefit and the value of child tax allowances evaluated for a standard rate taxpayer for families of different sizes. The additional allowance received from having another child, or marginal allowance, is the relevant variable for this analysis of birth rates according to birth order. Because family allowances and, in some years, child tax allowances did not

increase linearly with the number of children, the marginal allowance varies with birth order. The primary source of data on the value of child allowances is the *Abstract of Statistics for Index of Retail Prices, Average Earnings, Social Security Benefits and Contributions* (DHSS, 1984).

The male unemployment rate (Department of Employment *Historical Abstract* and *Gazette)* is used as an indicator of the likelihood of getting a job because of the inaccuracy of the official measure of female unemployment. The inflation rate is the annual logarithmic difference in the retail price index (*Economic Trends*).

Real house price is the average price of new houses (*Economic Trends*) deflated by the retail price index.

A permanent lifetime employment propensity of a cohort of women is based on the 'lifetime employment rate' estimated by Joshi, Layard and Owen (1985). A cohort's lifetime employment rate is defined as the cohort's average proportion of time in paid employment over the ages 20–59 (equivalently, its average annual rate of participation in paid employment over the ages 20–59). Instead of using the actual average employment rate of a cohort however, the estimated effects of dependent children on employment are 'removed' to obtain an underlying permanent propensity which can be thought of as what the activity rate of mothers would be if they had no responsibility for children. A relationship between a cohort's participation in education at age 17 and its permanent employment propensity is used to estimate the permanent rates for cohorts born after 1942, as explained in De Cooman et al. (1987). These are expressed as a proportion of the employment propensity of males.

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STATISTICAL APPENDIX TABLES

STATISTICAL APPENDIX: DEFINITIONS AND EXPLANATIONS

GENERAL NOTES

Many official British statistics have been rebased on 1985 prices and weights and there have been other changes as well. In so far as possible these have been taken into account. In some cases earlier data, usually prior to 1980, have been estimated by 'linking' the previously published (1980-based) figures to the new ones. Our estimates will be replaced by the official ones as soon as the latter become available.

In tables 14–20 indices will continue to be shown with 1980 = 100 (unless otherwise stated) so long as this is the practice of the international organisations from whose publications the figures are taken.

Country groups

Unless otherwise stated, country groups are constituted as follows:

OECD: Canada, France, Germany, Italy, Japan, United Kingdom, United States and other OECD.

Other OECD: Australia, Austria, Belgium-Luxembourg, Denmark, Finland, Greece, Iceland, Irish Republic, The Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland and Turkey.

(Note: Germany refers to West Germany throughout.)

OPEC: Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela.

Centrally planned: Albania, Bulgaria, China, Czechoslovakia, East Germany, Hungary, Mongolia, North Korea, North Vietnam, Poland, Romania and the Union of Soviet Socialist Republics.

UK=United Kingdom; *GB*=Great Britain.

LDC's: All non-OECD countries excluding OPEC and centrally planned.

Valuation of imports and exports

Imports are valued c.i.f. and exports and re-exports f.o.b., unless otherwise stated.

Seasonal adjustments

A number of monthly and quarterly series have been adjusted to eliminate the estimated normal seasonal variations. All seasonally adjusted series must be regarded as containing a margin of uncertainty, depending on the extent to which seasonal variations can be shown to have been regular in the past.

Sources:

The main sources and abbreviations in the following tables are:

BB:	*British Business* (Dept of Industry)
BEQB:	*Bank of England Quarterly Bulletin*
BP:	*United Kingdom Balance of Payments* (HMSO, annually)
BSA:	*Building Societies Association Bulletin* (quarterly)
CBI:	Confederation of British Industry
CSO:	UK Central Statistical Office
DEG:	*Department of Employment Gazette* (HMSO, monthly)
DOE:	*Department of the Environment press release*
EO:	*Economic Outlook* (OECD, semi-annually).
ET:	*Economic Trends* (HMSO, monthly)
FS:	*Financial Statistics* (HMSO, monthly)
IFS:	*International Financial Statistics* (International Monetary Fund, monthly)
MDS:	*Monthly Digest of Statistics* (HMSO)
MEI:	*Main Economic Indicators* (OECD, monthly)
MRETS:	*Monthly Review of External Trade Statistics* (Departments of Industry and Trade—common services)
NIEA:	*National Income and Expenditure Accounts* (Statistics Canada)
OECD:	Organisation for Economic Co-operation and Development
QLFS:	Quarterly Labour Force Statistics (OECD)
QNA:	*Quarterly National Accounts* (OECD)
SBR:	*Statistische Beihefte, Reihe 4* (Deutsche Bundesbank)
SCB:	*Survey of Current Business* (US Dept of Commerce, monthly)
UNMBS:	*UN Monthly Bulletin of Statistics*

Statistics derived from these publications are not described in detail. For more information, reference should be made either to these publications or to their explanatory supplements. Publications are referred to by their current titles.

The statistical appendix contains information available to NIESR up to November 16, 1988.

Statistical Appendix

Italics are used where NIESR has added estimates to figures published elsewhere—for instance, when an estimated later figure is added.

Table 1. Gross domestic product

Seasonally adjusted

	Final expenditure at market prices						Less imports of goods and services	Less adjustment to factor cost (b)	Gross domestic product (from expenditure) (d)	Indices of gross domestic product				
	Con-sumers' expendi-ture	Public authori-ties current spending	Gross fixed invest-ment (a)	Value of physical stock change	Exports of goods and services	Total final expendi-ture (d)				From output	From expenditure	From income	Average estimate Total	Average estimate Excluding N. Sea oil
£ mn. 1987 (c)	258,431	85,772	70,767	627	107,506	523,103	112,030	62,218	348,855					
	£ million, 1985 prices									*Index numbers, 1985 = 100*				
1978	185,950	68,468	54,914	2,882	85,554	398,336	76,582	45,203	276,531	90.2	90.9	89.7	90.3	..
1979	193,794	69,944	56,450	3,325	88,789	412,902	84,019	46,610	282,322	92.9	92.8	92.3	92.7	..
1980	193,806	71,050	53,416	−3,357	88,963	403,713	81,185	45,305	277,238	90.2	91.1	90.3	90.5	91.8
1981	193,832	71,269	48,296	−3,191	88,205	397,812	78,922	44,246	274,614	89.0	90.3	89.5	89.6	90.1
1982	195,561	71,826	50,915	−1,289	89,000	405,733	82,847	44,895	277,989	90.9	91.4	91.5	91.3	91.4
1983	204,318	73,282	53,476	1,306	91,092	423,474	88,119	46,390	288,965	94.0	95.0	95.0	94.7	94.2
1984	207,927	73,974	58,075	1,072	97,066	438,114	96,674	48,717	292,723	96.6	96.2	96.1	96.3	96.5
1985	215,267	73,995	60,283	569	102,782	452,896	99,166	49,522	304,208	100.0	100.0	100.0	100.0	100.0
1986	226,839	75,379	60,834	572	106,637	470,261	105,602	51,784	312,875	102.9	102.8	103.4	103.0	103.0
1987	238,460	76,042	64,196	557	112,541	491,796	113,312	54,488	323,996	107.7	106.5	107.9	107.4	108.3
1987 I	58,019	18,806	15,455	− 221	27,842	119,901	26,314	13,228	80,359	105.0	105.7	106.1	105.6	105.3
II	59,022	18,976	15,794	61	27,633	121,486	27,622	13,481	80,383	106.7	105.7	107.1	106.5	107.4
III	60,170	19,169	16,175	1,065	28,490	125,069	29,436	13,852	81,781	108.9	107.5	109.1	108.5	109.5
IV	61,249	19,091	16,772	− 348	28,576	125,340	29,940	13,927	81,473	110.0	107.1	109.2	108.8	110.8
1988 I	61,963	19,030	16,804	64	27,525	125,386	29,418	13,728	82,240	111.6	108.1	111.5	110.4	112.6
II	62,205	18,999	17,445	475	28,516	127,640	31,434	14,023	82,183	112.8	108.1	111.5	110.8	114.0

Source: Cols. 1-13: ET; Col. 14: MDS.
(a) For details see table 10. (b) Net indirect taxes at 1985 rates. (c) Current prices. (d) For years up to and including 1982, totals differ from the sum of the components because of the method used to rebase on 1985 prices.

Table 2. Production in industry

Index numbers, 1985 = 100, seasonally adjusted

	Energy (a)	Manufac-turing	Metals	Building materials (b)	Chemi-cals (c)	Engineer-ing and allied	Food, drink, tobacco	Textiles, clothing (d)	Other manufac-turing	Con-sumer goods	Invest-ment goods	Inter-mediate goods	Construc-tion	Services
Weights (e)	106/309	238/691	26	35	71	295	91	47	126	242	195	563	59	578
1978	70.8	105.7	112.1	118.3	91.1	105.9	98.2	117.1	110.6	104.6	103.1	88.1	105.3	87.1
1979	83.7	105.5	116.8	117.3	93.4	103.6	99.7	115.7	113.0	104.5	101.6	95.8	106.0	89.6
1980	83.3	96.3	88.7	105.7	84.0	96.2	99.0	98.1	101.0	96.5	97.0	88.8	100.2	89.2
1981	86.4	90.6	94.1	94.2	83.5	88.3	97.3	91.0	94.1	93.1	88.6	88.1	90.1	89.5
1982	91.6	90.8	91.5	96.1	83.7	89.3	98.8	89.6	91.7	92.6	89.6	90.0	91.8	90.8
1983	96.8	93.8	93.9	96.6	91.5	92.4	100.0	92.6	93.5	95.7	91.8	95.2	95.5	93.7
1984	88.8	97.7	93.6	100.3	96.9	96.9	100.8	96.0	98.5	98.3	95.8	93.2	98.9	97.1
1985	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1986	105.4	100.9	99.6	101.3	102.0	99.3	100.8	100.8	104.6	101.6	99.0	103.7	103.3	103.5
1987	105.0	106.8	108.2	106.6	109.0	104.1	103.4	103.2	115.4	106.9	103.6	106.9	111.4	108.8
1987 I	106.1	102.9	102.8	101.8	105.8	99.6	101.8	101.4	110.6	103.4	99.0	105.8	110.0	105.8
II	103.3	106.3	108.3	106.2	107.1	103.7	103.4	104.0	114.3	106.5	103.2	105.6	108.4	108.0
III	104.8	108.3	110.0	108.9	111.2	105.3	103.9	104.3	117.6	108.1	104.5	107.7	111.7	110.1
IV	105.8	109.8	111.5	109.4	111.9	108.0	104.4	103.2	118.9	109.5	107.8	108.4	115.5	111.3
1988 I	102.5	110.7	117.9	118.0	111.2	106.9	103.7	103.9	123.1	109.4	105.8	108.4	121.2	113.2
II	103.6	112.8	120.6	114.9	113.1	110.3	106.3	102.0	124.9	111.7	110.2	109.1	121.0	114.7
July	99.6	115.4	125	119	116	114	106	104	127	113.0	115.3	107.8		
Aug.	100.7	116.9	125	118	118	117	107	103	127	113.0	118.7	109.0		

Source: Cols. 1–13: MDS; Col. 14: ET. The headings are those of the SIC 1985.
(a) For coal and oil output, see table 3.
(b) Including other mineral products.
(c) Including man-made fibres.
(d) Including leather and footwear.
(e) Roman figures indicate parts per thousand of GDP; agriculture is omitted, (weight 22), those in *italics* are parts per thousand of the total production industries.

Table 3. Production and orders

	Coal(a)		Oil(b)	Engineering(c)(d)		Construction(c)		
	Production		Consump-tion	Net new orders(e)		Non-housing orders	Housing(g)	
							Starts	Completions
	Million tonnes			Total	For export	£mn(f)	Thousands	
1978	123.6	54.0	84.1	112	112	9,087	264.7	279.8
1979	122.4	77.9	84.6	105	101	8,598	225.1	244.5
1980	130.1	80.5	71.2	94	96	7,828	155.2	235.2
1981	127.5	89.5	66.3	97	98	8,946	154.1	199.8
1982	124.7	103.2	67.2	91	85	8,340	193.7	175.0
1983	119.3	115.0	64.5	95	94	9,287	219.9	196.9
1984	51.2	126.0	81.4	106	110	10,397	196.7	207.9
1985	94.0	127.2	69.8	105	108	10,054	197.0	192.1
1986	108.1	127.2	69.2	106	98	10,951	209.0	198.0
1987	104.4	123.4	67.7			13,749	223.1	202.8
1987 I	27.1	31.9	16.9	103	101	2,909	55.7	50.1
II	26.0	29.1	15.8			3,058	53.9	51.3
III	23.3	30.7	17.0			4,858	55.7	51.4
IV	28.0	31.7	18.0			2,924	57.8	50.2
1988 I	25.0	31.7	17.9			3,865	63.0	56.1
II	26.0	29.4	17.2			3,440	60.3	52.5
III							57.2	54.1
July	8.2	9.0				1,169	19.4	19.5
Aug.	6.1	9.3				1,109	20.3	18.0
Sept.							17.5	16.6

Source: Coal, oil, engineering: MDS; construction: DoE
(a) Including slurry.
(b) Gross production including natural gas liquids.
(c) Seasonally adjusted. Quarters do not necessarily add to years.
(d) SIC orders VII VIII and IX only.
(e) 1980 average monthly sales=100. Information on new orders is temporarily unavailable.
(f) 1985 constant prices.
(g) Permanent dwellings (houses and flats) G.B.

Table 4. D.T.I. survey of investment intentions

Percentage increase in investment expenditure

Survey date(a)	Manufacturing	Other(b)
Nov. 1978	4 to 8	3 to 7
Nov. 1979	− 6 to −10	+ 5
Dec. 1980	−15 to −20	+ 5
Dec. 1981	−11 to −14	+ 4
Dec. 1982	0 to − 5	+ 5
Dec. 1983	+ 9	+ 6
Dec. 1984	+ 7	+ 9
Dec. 1985	− 2	+ 2
Dec. 1986	+ 2	+ 8
May 1986	+ 3	+ 4
Dec. 1986	+ 2	+ 8
May 1987	+ 6	+10
Dec. 1987	+11	+ 6
May 1988	+16	+10

(a) December survey is for forthcoming year over current year, May survey for current year over previous year.
(b) Distributive trades, construction and other selected services.

Table 5. CBI Industrial Trends Survey: manufacturing

| Survey date | Investment(a) | | Business optimism (b) | Capacity (c) | Export optimism (b) | Output (b) | Prices (b) | Numbers employed (b) | Stocks (d) | Export orders (b) | Limiting factors(e) | |
	Buildings	Plant and machinery									Skilled labour	Other labour
Oct. 1978	−11	+10	+ 6	60	+ 7	+22	+54	−12	+ 8	+19	27	5
Oct. 1979	−20	− 9	−40	61	−32	+ 4	+60	−25	+ 7	− 6	20	3
Oct. 1980	−49	−46	−54	84	−34	−31	+20	−65	+33	−17	4	1
Oct. 1981	−33	−13	− 9	77	+12	0	+42	−48	+17	+11	3	1
Oct. 1982	−33	−20	−28	76	−27	− 4	+19	−43	+19	− 7	3	0
Apr. 1983	−15	+ 6	+31	72	+25	+22	+31	−29	+12	+12	4	1
Oct. 1983	− 8	+12	+ 7	65	+ 9	+16	+27	−24	+ 9	+ 6	6	1
Apr. 1984	− 4	+21	+25	60	+21	+20	+35	−14	+ 9	+15	7	1
Oct. 1984	− 4	+18	− 5	55	+19	+13	+34	−15	+ 7	+16	8	1
Apr. 1985	− 1	+14	+20	56	+19	+26	+28	− 4	+ 7	+21	12	1
Oct. 1985	−21	+ 4	− 6	49	− 7	+17	+17	−10	+12	+ 6	15	1
Apr. 1986	−14	+10	+ 8	56	+13	+13	+15	−16	+15	+18	13	1
Oct. 1986	−13	+ 8	0	49	+11	+13	+14	−19	+10	+15	12	1
Jan. 1987	−10	+10	+12	50	+20	+15	+30	− 9	+10	+21	9	1
Apr. 1987	− 3	+13	+29	49	+24	+25	+26	− 4	+ 5	+20	12	2
July 1987	+ 1	+20	+25	45	+24	+23	+19	− 3	+ 1	+17	18	3
Oct. 1987	− 3	+17	+23	41	+14	+25	+23	+ 2	− 7	+17	19	5
Jan. 1988	+ 1	+20	+11	35	− 7	+26	+39	+ 8	− 1	+ 7	20	4
Apr. 1988	+ 6	+32	+19	32	− 5	+29	+31	+ 7	+ 2	+ 9	19	3
July 1988	− 6	+19	+ 8	31	+ 8	+27	+23	+ 9	+ 1	+12	22	6
Oct. 1988	− 4	+21	+ 6	31	+ 7	+24	+32	+ 4	+ 1	+17	28	4

(a) The difference between the percentage of respondents expecting to authorise more expenditure over the next 12 months and those expecting to authorise less.
(b) Balance between those more optimistic about the business situation than 4 months previously and those less optimistic.
(c) Figures indicate percentage of respondents working below capacity.
(d) Balance between those with more than adequate stocks of finished goods and those with less than adequate stocks.
(e) Percentage of respondents who expected output to be limited by labour shortages.

Table 6. The labour market: productivity

Seasonally adjusted

	Employment(a)			Demand for labour			Average weekly hours in manu-facturing (d)	Output per person employed in				Output per person-hour in manu-facturing
	Total civil employ-ees(f)	Total industrial produc-tion(f)	Total manu-facturing	Unemployment (b)		Unfilled vacancies(c)		whole economy	total pro-duction industries	manu-facturing industries (e)	con-struction	
				Percent-age of labour force	Thousands							
Thousands in Mar. 1988	21,464	6,463	5,004									
	Index numbers, 1985=100							*Index numbers, 1985=100*				
1978	106.1	131.7	135.4	5.1	1,225.0	210.3	100.2	87.8	72.1	79.3	103.6	78.9
1979	107.8	131.9	134.8	4.7	1,140.5	241.3	99.9	89.5	75.4	79.7	100.4	79.2
1980	107.0	127.5	129.0	6.0	1,451.7	134.2	96.9	87.6	73.7	76.6	93.8	78.1
1981	101.9	115.5	115.7	9.4	2,269.8	91.1	95.6	89.2	77.8	79.2	89.2	81.8
1982	99.6	109.2	109.1	10.9(g)	2,626.1	113.9	97.4	92.6	84.1	84.5	93.8	86.2
1983	98.0	103.5	102.8	10.8	2,866.5	137.3	98.3	97.0	92.2	92.0	97.5	93.4
1984	98.7	101.3	100.6	11.0	2,998.7	150.2	99.5	98.0	94.2	97.3	98.2	97.8
1985	100.0	99.9	99.7	11.2	3,113.5	162.1	100.0	100.0	100.0	100.0	100.0	100.0
1986	100.4	97.0	97.6	11.4	3,180.4	188.8	99.9	102.3	105.1	103.0	102.9	103.3
1987	101.5	95.3	95.9	10.2	2,880.0	235.0	100.5	105.3	111.2	110.5	107.2	110.2
1987 I	101.0	95.5	96.1	10.9	3,072.0	211.1	99.9	103.5	108.4	106.2	107.9	106.4
II	101.5	95.6	96.2	10.5	2,964.8	227.3	100.3	104.5	110.1	109.9	103.7	109.7
III	101.7	95.3	95.7	10.0	2,823.6	239.6	100.6	106.3	112.3	112.3	106.8	111.9
IV	102.3	95.1	95.6	9.4	2,659.4	262.1	101.1	106.7	114.0	113.5	110.6	112.7
1988 I	102.8	95.0	95.6	9.0	2,533.8	247.6	101.3	107.7	113.8	115.1	114.5	114.0
II	102.8	94.5	95.2	8.6	2,413.2	254.8	101.0	108.5	116.1	116.9		116.1
III				8.1	2,283.9	244.2						
July			95.2	8.2	2,312.3	249.4	101.2					
Aug.			95.1	8.1	2,272.6	241.1	101.1					
Sept.				8.0	2,266.9	242.2						

Source: DEG. Horizontal lines indicate break in series.
(a) GB, HM Forces and self-employed persons excluded. Annual figures refer to June each year and are not seasonally adjusted.
(b) Wholly unemployed, excluding school leavers, UK, new basis (claimants).
(c) Vacancies notified to employment offices, UK.   (d) By operatives, GB.   (e) Heading refers to SIC 1980.
(f) Quarterly figures for cols. 1 and 2 are those given for March, June, Sept. and Dec., and not quarterly averages.
(g) After 1982, the labour force includes self-employed and HM Forces.

Table 7. Prices[a]

Index numbers, 1985=100

	Retail prices					House prices (b)	Producer prices		National accounts deflators				Infla-tion rate(g)
	All items	Food	Housing	National-ised indus-tries, goods and services	Other		Mate-rials and fuels used in manufac-turing	Manu-factured pro-ducts (c)	GDP(d)	Invest-ment(e)	Con-sumers' expendi-ture(f)	Imports of goods and services	
1978	52.9	60.6	38.3	47.5	55.0	49.2	59.3	56.7	54.0	56.6	53.8	59.5	8.6
1979	59.9	67.9	46.2	51.5	61.2	63.2	67.0	62.9	61.0	65.4	61.1	64.7	13.4
1980	70.6	76.1	59.6	64.3	72.2	73.8	72.6	71.7	72.3	77.8	71.1	71.0	17.8
1981	79.1	82.5	70.3	76.8	80.7	76.9	79.3	78.6	79.7	85.5	79.2	76.6	12.0
1982	85.8	88.9	79.2	87.2	86.4	77.1	85.1	84.6	85.2	88.0	86.2	82.1	8.6
1983	89.7	91.8	81.2	92.0	90.9	85.3	91.0	89.2	90.0	90.9	90.3	88.4	4.5
1984	94.3	97.0	88.7	95.0	95.1	93.0	98.9	95.0	95.1	94.7	95.0	96.2	5.0
1985	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	6.1
1986	103.4	103.3	105.8	103.7	103.1	115.7	92.4	104.3	102.6	104.9	104.3	96.2	3.4
1987	107.7	106.4	114.8	105.8	106.7	133.5	95.3	108.3	107.7	110.2	108.3	98.9	4.2
1987 I	106.0	105.6	111.4	104.8	105.1	121.8	95.2	106.9	105.4	106.4	107.2	99.3	3.9
II	107.7	107.3	115.6	105.6	106.3	127.6	94.3	108.0	106.8	109.8	107.4	98.9	4.2
III	107.9	105.8	115.7	106.1	106.9	137.6	95.3	108.6	108.4	111.6	108.7	99.3	4.2
IV	109.1	107.1	116.4	106.7	108.3	143.6	96.4	109.8	110.0	112.8	110.1	98.1	4.1
1988 I	109.6	108.8	115.9	108.0	108.6	149.9	96.9	111.0	111.0	113.7	111.0	98.5	3.4
II	112.3	110.1	121.9	111.2	110.7	161.7	97.8	112.6	112.6	117.5	112.6	97.9	4.3
III	113.8	108.9	126.8	113.7	111.8		98.7						6.8
July	112.8	109.5	122.4	113.4	111.4	171.5	99.4	113.5					
Aug.	114.1	109.9	128.7	113.5	111.8	175.2	98.6	113.9					
Sept.	114.6	109.3	129.4	113.7	112.2		98.1						

Source: Cols. 1-5: DEG; Col. 6: BSA; Cols. 7, 8: MDS; Cols. 9-12: ET.
(a) All columns refer to UK and are not seasonally adjusted except where indicated.
(b) Average price, all houses, at mortgage completion stage.
(c) Home sales only.
(d) Seasonally adjusted. GDP at factor cost.
(e) Plant, machinery, vehicles and new buildings.
(f) Expenditure at market prices.
(g) Percentage change in the retail price index over the same period the previous year.

Table 8.   Incomes

Seasonally adjusted

	Employees 1985 = 100		Industrial and financial companies, £m.			Personal incomes, £m.							Savings ratio
			Gross trading profits *(c)*						Rent &			Real	
	Weekly earnings *(a)*	Hourly earnings in manu-facturing *(b)*	Total	N. Sea oil	Other	Total *(d)*	Current grants	Wages and salaries *(e)*	self-employ-ment	Interest and dividends	Personal disposable income *(d)(f)*	personal disposable income *(g)*	*per cent (h)*
1978	46.5	45.1	21,010	2,614	18,396	143,737	17,871	85,646	25,208	1,815	113,124	209,894	11.4
1979	53.8	52.1	23,817	5,255	18,562	170,011	20,917	100,444	29,464	3,764	135,721	221,673	12.6
1980	64.9	62.6	25,712	8,056	17,656	200,939	25,524	119,005	33,836	3,940	160,009	224,885	13.8
1981	73.3	71.6	28,010	10,864	17,146	222,203	31,242	127,884	38,109	3,268	176,084	222,254	12.8
1982	80.1	78.6	34,029	12,726	21,303	241,959	36,584	136,245	42,171	4,583	191,081	221,709	11.8
1983	86.9	85.6	40,379	15,683	24,696	261,366	39,843	145,469	45,771	6,172	205,955	227,931	10.4
1984	92.2	92.1	47,328	19,009	28,319	279,166	43,029	155,117	49,592	6,449	220,764	232,426	10.5
1985	100.0	100.0	56,336	18,365	37,971	301,217	46,757	168,568	52,729	7,158	237,802	237,802	9.5
1986	107.9	107.9	54,364	8,421	45,943	324,327	50,729	182,614	56,813	7,243	255,499	244,797	7.3
1987	116.4	116.0	64,694	9,524	55,170	347,928	52,478	198,191	60,992	8,115	273,306	252,185	5.4
1987 I	112.8	113.0	15,165	2,476	12,689	85,208	13,048	47,657	14,880	2,749	67,307	62,754	7.6
II	115.2	114.7	15,642	2,370	13,272	85,885	13,123	48,950	15,074	1,781	67,490	62,832	6.1
III	117.3	116.9	17,055	2,504	14,551	87,317	13,121	50,057	15,403	1,637	68,362	62,872	4.3
IV	120.1	119.2	16,832	2,174	14,658	89,518	13,186	51,527	15,635	1,948	70,147	63,727	3.9
1988 I	122.7	120.8	18,075	1,978	16,097	92,102	13,470	52,773	15,964	2,644	72,372	65,177	4.9
II	124.6	124.1	18,065	1,911	16,154	92,574	13,370	53,792	16,269	1,808	72,532	64,432	3.5

Source: Cols 1, 2: DEG; Cols. 3–12: ET.
(a) Monthly index of average earnings (new series); whole economy, GB.
(b) Hourly earnings for manual and non-manual workers in manufacturing industries.
(c) Net of stock appreciation, but before provision for depreciation.
(d) Before providing for stock appreciation and depreciation.
(e) Includes forces' pay.
(f) Total income less payments of taxes on income, national insurance contributions and net transfers abroad.
(g) The previous column revalued, at 1985 prices, by the implied consumers' expenditure deflator.
(h) Ratio of savings to personal disposable income.

Table 9.   Consumers' expenditure and credit

Seasonally adjusted

	Consumers' expenditure		Passenger cars New registra-tions *(b)*	£ million, current prices						Total retail sales
	Durable goods	Non-durable goods		Consumer credit	Bank lending		Building societies			
£mn. 1987 (a)	26,000	232,431					Shares and deposits net *(f)*	Mort-gages		
	£ million, 1985 prices		*Thousands*	Total *(c)*	Companies *(d)*	Personal *(e)*				*Volume, 1985 = 100*
1978	14,338	171,612	1,561	6,167	+ 2,880	+1,503	4,822	8,734		82
1979	16,171	177,623	1,676	7,351	+ 3,969	+2,718	5,769	9,103		86
1980	15,417	178,389	1,520	7,819	+ 5,937	+2,965	7,159	9,614		86
1981	15,707	178,125	1,490	7,861	+ 3,288	+3,990	7,196	11,991		86
1982	16,504	179,057	1,580	9,087	+ 1,848	+4,989	10,515	15,339		88
1983	19,579	184,739	1,810	10,538	+ 2,343	+4,893	10,564	19,263		92
1984	19,442	188,485	1,760	11,526	+ 4,013	+4,174	13,217	24,034		96
1985	20,370	194,897	1,840	13,019	+ 6,449	+6,655	13,428	26,491		100
1986	22,016	204,823	1,880	18,630	+ 8,566	+5,301	12,684	36,937		105
1987	23,521	214,939	2,020	22,473	+15,244	+8,675	14,409	35,529		112
1987 I	5,619	52,400	474	4,993	+ 3,662	+2,348	3,422	8,113		108
II	5,758	53,264	485	5,547	+ 3,573	+2,081	3,786	8,509		110
III	6,042	54,128	532	5,866	+ 4,033	+1,818	2,968	8,999		113
IV	6,102	55,147	530	6,067	+ 3,670	+2,431	4,233	9,908		115
1988 I	6,183	55,780	528	6,348	+ 6,559	+1,970	4,345	11,326		116
II	6,242	55,963	534	6,820	+ 8,871	+3,619	5,459	12,720		117

Source: ET, BB, FS, BEQB.
(a) Current prices.
(b) Quarters do not necessarily add to years.
(c) Including other instalment credit and charges, but excluding bank credit cards.
(d) Industrial and commercial companies only.
(e) Excluding loans for house purchase.
(f) Receipts and accrued interest, net of withdrawal of principal.

Table 10.   Fixed investment and stocks

Seasonally adjusted

		By asset						By industry		Changes in volume of stocks						Stock/output ratio	
	Total	Dwellings		Plant and mach-inery	Vehicles, ships, aircraft	Non-resi-dential buildings and works	Public sector (a)	Manu-facturing incl. leasing	Distri-bution and services (b)	Manufacturing			Distribution		In manu-fac-turing (e)	In whole economy (f)
		Public	Private							Mater-ials and fuel	Work in progress	Finished goods	Whole-sale	Retail		
£mn. 1987 (c)	70,767	2,834	12,363	26,978	7,229	17,342	8,682	10,945	17,550	12.6(d)	16.8(d)	13.3(d)	13.7(d)	11.0(d)		
£ million, 1985 prices																
1978	54,914	3,891	8,864	18,313	7,150	..	12,479	..	..	230	235	156	691	560	107	112
1979	56,450	3,615	9,865	19,736	7,514	16,171	12,411	11,164	..	21	−348	651	1,280	547	108	113
1980	53,416	3,198	9,134	19,660	6,296	15,334	11,583	9,920	9,314	−1,657	−946	−445	−392	−429	119	114
1981	48,296	2,155	8,149	18,269	4,895	14,859	10,252	7,735	9,407	−1,311	− 66	−595	−218	182	111	111
1982	50,915	2,282	8,680	18,478	5,028	16,377	9,937	7,603	10,295	− 640	−629	−193	− 5	12	111	110
1983	53,476	2,924	9,323	19,401	5,177	16,651	11,467	7,541	10,565	− 293	424	3	163	− 47	105	105
1984	58,075	2,825	9,746	21,262	6,107	18,135	11,405	8,922	12,582	− 323	381	354	36	491	102	108
1985	60,283	2,536	9,392	23,744	6,433	18,178	9,704	10,259	14,263	138	−676	72	− 85	246	100	100
1986	60,834	2,631	10,198	24,013	5,627	18,365	9,730	9,576	14,620	− 106	−123	−174	265	731	98	103
1987	64,196	2,669	10,737	25,599	6.099	19,092	8,558	10,050	17,056	44	−205	−186	481	729	92	98
1987 I	15,455	682	2,647	6,042	1,402	4,682	2,316	2,330	3,919	− 19	− 92	− 92	96	75	95	101
II	15,794	664	2,622	6,422	1,537	4,549	1,895	2,554	4,156	− 18	− 40	−120	69	243	93	98
III	16,175	631	2,824	6,417	1,574	4,729	2,164	2,592	4,182	112	296	1	215	357	92	97
IV	16,772	692	2,644	6,718	1,586	5,132	2,183	2,574	4,800	− 31	−369	25	101	54	89	95
1988 I	16,804	637	2,819	6,728	1,498	5,122	2,051	2,638	4,525	15	32	12	−112	66	91	96
II	17,445	644	3,313	7,075	1,576	4,837	1,973	2,888	4,782	51	− 7	151	147	149		

Source: Cols. 1–7, 10–16: ET; Cols. 8, 9: MDS.
(a) Including purchases less sales of land and existing buildings.
(b) Excludes leasing.
(c) Current prices.
(d) Current prices, seasonally unadjusted stock levels, value at end of 1987.
(e) Volume index based on end-1979=100.
(f) Total stocks to GDP, end 1979=100.

Table 11.   Financial indicators

	Bank rate (a)(f) p.c.	UK Treasury Bills (b)(f) discount rate p.c.	Mortgage rate (c) p.c.	Interest on			Interest rate differentials (f)(g)(h) p.c.	PSBR £mn	Money stock £bn (g)		
				local authority deposits (d)(f) p.c.	US $ deposits in London (d)(f) p.c.	US Treasury Bills (d)(e)(f) p.c.			M1 (f)(i)	M3 (f)(j)	M0 (k)
1978	12.50	11.56	9.29	12.44	11.69	9.54	..	8,335	26.9	50.0	9.8
1979	17.00	15.84	12.10	17.22	14.50	12.48	+0.32	12,670	29.3	56.3	11.0
1980	14.00	13.13	14.95	14.75	17.75	14.81	+0.34	11,822	30.5	67.1	11.6
1981	14.50	14.62	13.65	15.75	13.75	12.27	+0.60	10,590	35.8	84.0	11.8
1982	10.25	9.72	12.91	10.62	9.25	8.52	+0.13	4,954	39.9	90.8	12.3
1983	9.00	8.84	10.62	9.31	9.87	9.66	+0.10	11,607	44.4	100.8	13.1
1984	9.62	9.12	11.38	10.13	8.62	8.00	+0.29	10,284	51.3	109.9	13.5
1985	11.50	11.17	12.64	11.94	7.97	7.11	+0.08	7,468	60.2	124.5	14.1
1986	11.00	10.65	11.91	11.31	6.31	5.85	+0.25	2,421	73.6	150.1	14.7
1987	8.50	8.21	11.56	8.88	7.25	5.91	+0.33	−1,477	90.6	184.5	15.4
1987 I	10.00	9.32	12.32	9.87	6.56	5.80	−0.03	− 869	79.4	159.1	15.0
II	9.00	8.76	11.69	9.13	7.12	5.83	+0.07	1,445	84.2	167.3	15.2
III	10.00	9.77	11.27	10.06	8.31	6.88	−0.08	420	88.1	175.7	15.6
IV	8.50	8.21	10.96	8.88	7.25	5.91	+0.33	−2,473	90.6	184.5	15.8
1988 I	8.50	8.30	10.26	8.63	6.81	5.82	+0.25	−3,045	95.8	192.2	15.9
II	9.50	9.03	9.96	8.88	7.88	6.77	+0.01	−1,491	99.7	201.2	16.3
III		11.39		11.88	8.63	7.49	−0.02	−2,254			
July	10.50	10.26	9.78	10.75	8.31	7.18	−0.03	−1,664	100.7	206.6	16.5
Aug.	12.00	11.49	11.45	11.88	8.50	7.53	−0.11	−1,579	100.4	208.4	16.6
Sept.	12.00	11.39		11.88	8.63	7.49	−0.02	989	103.4	215.0	16.6

Source: CSO, FS, BEQB.
(a) Bank of England minimum lending rate to 20 August 1981, after which London clearing banks' base rate.
(b) 91-day bills.
(c) New mortgages to owner occupiers; recommended/advised by the Building Societies Ass. to 1985 III, subsequently average rates.
(d) Minimum 3 months.
(e) New York rate: 3 months
(f) End of period
(g) Seasonally adjusted.
(h) Local authority temporary loans on Euro-dollar deposits, figures prior to 1979 are unavailable.
(i) Notes and coins in circulation plus private £ sight deposits, less 60 per cent of transit items.
(j) M1 plus £ private time deposits.
(k) Wide monetary base, average over period.

Table 12. UK balance of payments and measures of competitiveness

	Balance of payments basis, *seasonally adjusted*								Competitiveness *(a)*					
	Exports	Imports	Visible balance	Services Balance	Interest, profits, dividends Balance	Transfers Balance	of which balance of general govt. with EC	Current balance	Relative export prices *(b)*	UK unit labour costs in manuf. *(c)*	Average unit labour costs *(d)*	Relative unit labour costs	Relative profitability of exports	Import price competitiveness
	£ million								Index numbers, 1985= 100					
1978	35,063	36,605	−1,542	+3,542	+ 806	−1,791	− 925	+ 964	..	..	85	..	..	..
1979	40,686	44,135	−3,449	+3,907	+1,205	−2,210	−1,076	− 496	..	..	86	..	..	..
1980	47,147	45,794	+1,353	+3,949	− 196	−1,984	− 825	+3,122	109.1	80.1	92	122.4	87.6	113.8
1981	50,668	47,318	+3,350	+3,923	+1,210	−1,547	− 513	+6,936	108.3	87.5	96	124.6	88.7	113.7
1982	55,330	53,112	+2,218	+2,762	+1,446	−1,741	− 724	+4,685	102.5	91.2	103	115.5	90.6	110.5
1983	60,698	61,773	−1,076	+3,721	+2,847	−1,661	− 759	+3,832	99.4	91.6	102	104.0	94.3	104.8
1984	70,263	74,843	−4,580	+3,941	+4,433	−1,772	− 821	+2,022	97.2	94.2	98	100.2	97.5	101.6
1985	77,988	80,334	−2,345	+5,962	+2,800	−3,079	−1,934	+3,337	100.0	100.0	100	100.0	100.0	100.0
1986	72,678	81,394	−8,715	+5,618	+5,079	−2,180	− 674	− 199	96.5	104.5	103	93.6	102.3	99.2
1987	79,422	89,584	−10,162	+5,638	+5,523	−3,503	−1,795	−2,504	99.9	105.3	102	93.3	102.3	101.5
1987 I	19,529	20,821	−1,291	+1,433	+1,552	− 849	− 416	+ 844	95.3	106.2	104	89.2	103.3	98.3
II	19,357	21,747	−2,300	+1,455	+1,350	− 770	− 356	− 355	100.8	104.6	103	93.3	102.4	102.1
III	20,234	23,436	−3,201	+1,652	+1,424	− 978	− 550	−1,104	100.0	104.5	102	93.3	101.9	102.5
IV	20,300	23,581	−3,280	+1,098	+1,197	− 906	− 473	−1,889	103.6	105.8	101	97.4	101.7	103.2
1988 I	19,019	22,972	−3,952	+ 931	+1,246	−1,067	− 503	−2,843	105.3	106.0		100.1	102.1	103.7
II	20,238	24,671	−4,433	+ 907	+1,509	− 897	− 395	−2,914		106.9		102.9	102.3	105.3
III													103.9	105.0
July	6,775	9,427	−2,651							106.0				
Aug.	6,748	8,561	−1,813											
Sept.	7,561	8,621	−1,060											

Source: ET, MRETS; Col. 10: DEG; Col. 11: MEI.
(a) Not seasonally adjusted.
(b) Unit value of UK exports divided by weighted average of unit value of competitors' exports.
(c) Wages and salaries per unit of output.
(d) Mean of unit costs in US, Japan and Germany.

Table 13. UK exports and imports *(a)*

Seasonally adjusted

	Exports							Imports							
		Non-manufactures		Manufactures					Non-manufactures			Manufactures			
	Total	Total (0 to 4)	Fuels (3)	Total (5 to 8)	Semis *(b)* (5 + 6)	Finished *(b)* (7 + 8)	UK share of world exports	Total	Food, Bever-ages, tobacco (0 + 1)	Basic materials (2 + 4)	Fuels (3)	Total (5 to 8)	Semis (5 + 6)	Finished (7 + 8)	UK imports as % of total final expenditure
	£ million, current prices														
1985	78,263	23,935	16,776	52,474	19,712	32,762		84,905	9,275	5,496	10,648	58,286	21,126	37,161	
1987	79,852	16,590	8,747	61,009	22,294	38,714		94,016	10,132	5,688	6,099	70,955	25,177	45,778	
	Volume index numbers, 1985=100														
1980	83.7	68	58	91	84	90	105	78.9	87	98	115	71	82	65	10.8
1981	82.6	76	70	85	82	86	96	75.8	90	92	94	70	75	67	10.1
1982	85.4	81	78	87	83	87	102	80.3	94	91	86	76	80	75	10.7
1983	87.2	88	86	86	86	83	99	87.2	94	102	77	87	90	85	11.8
1984	94.6	95	93	94	94	92	98	96.5	98	100	100	95	97	94	12.7
1985	100.0	100	100	100	100	100	100	100.0	100	100	100	100	100	100	12.9
1986	103.4	104	102	103	103	100	102	106.5	108	106	108	106	108	104	13.1
1987	109.1	104	101	111	110	109	104	114.1	109	118	110	116	117	115	13.6
1987 I	108.4	110	107	108	106	106	105	105.9	106	121	107	105	110	102	12.9
II	105.4	101	98	107	106	105	103	110.5	106	120	104	112	113	112	13.3
III	108.9	99	94	114	113	111	106	119.0	110	118	118	121	120	122	13.9
IV	113.8	106	105	117	115	114	106	120.9	115	112	112	125	124	125	14.1
1988 I	106.1	101	100	108	109	107	97	117.5	112	114	104	122	123	121	13.6
II	111.5	97	90	118	115	114		126.8	110	116	111	134	132	135	14.5
July	108.7	89	75	118	118	117		144.8	120	132	131	153	142	159	
Aug.	105.7	81	73	118	116	118		129.8	111	119	109	138	129	143	

Source: MRETS; ET.
(a) On overseas trade statistics basis. Figures in brackets indicate SITC (Rev. 2) categories.
(b) Less erratic items (ie, ships, North Sea oil production installations, aircraft, precious stones and silver).

Table 14. Gross product and productivity in industrial countries and OECD

Seasonally adjusted

	Gross product								Gross product per person employed						
	US GNP	Canada GDP	Japan GNP	France GDP	Germany GNP	Italy GDP	UK GDP	OECD GDP	US	Canada	Japan	France	Germany	Italy	UK
	Constant prices (a)														
1980	2,732	309,891	240,098	2,808	1,485	390,432	230,602	7,825							
	Index numbers, 1980=100														
1978	97.7	94.9	91.1	95.3	94.8	91.7	100.0	95.6	101.0	101.8	93.3	95.0	97.2	92.9	100.9
1979	100.2	98.5	95.9	98.4	98.6	96.2	102.1	98.7	100.6	101.5	96.9	98.1	99.7	96.9	101.3
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	101.9	103.7	103.7	101.2	100.0	101.1	98.8	101.5	100.8	100.9	102.8	101.6	100.6	100.9	103.8
1982	99.3	100.3	106.9	103.8	99.1	101.4	99.9	101.3	99.1	100.9	105.0	104.3	101.5	101.4	107.3
1983	102.9	103.5	110.4	104.5	100.9	102.4	103.5	103.9	101.3	103.3	106.6	105.8	105.0	102.2	112.9
1984	109.9	110.0	116.0	105.8	104.2	105.7	105.8	108.7	103.9	107.1	111.3	107.8	108.3	105.1	114.6
1985	113.2	114.7	121.6	107.6	106.4	108.7	110.0	112.2	104.9	108.6	115.9	109.9	109.7	107.7	117.6
1986	116.5	118.5	124.6	109.8	109.0	111.9	113.2	115.4	105.6	109.1	117.8	112.0	111.3	110.2	120.5
1987	120.7	123.5	129.9	112.3	110.8	115.4	117.2	119.1	106.6	110.7	121.6	114.6	112.4	113.8	123.4
1987 I	118.5	121.0	128.0	110.9	109.3	113.9	116.2	117.2	105.8	113.4	120.6	113.1	111.0	112.0	123.1
II	119.9	122.5	128.0	111.9	110.0	115.0	115.2	118.3	106.2	109.4	120.2	114.2	111.6	113.5	121.5
III	121.3	124.3	130.6	112.9	111.6	116.0	117.9	119.7	106.7	108.0	122.1	115.2	113.1	114.5	124.0
IV	123.1	126.3	133.0	113.6	112.4	116.4	119.5	121.1	107.7	112.0	123.7	115.8	113.8	115.2	125.0
1988 I	124.1	127.3	136.4	114.7	113.8	117.4	119.6	122.4	107.9	114.3	126.5	116.7	115.3	115.2	124.5
II	125.1	128.5	135.1	115.5	113.6		120.3		108.4	114.8	124.6		115.0		

Source: Gross Product: US: SCB; Germany: SBR; UK: ET; rest: QNA. Employment; UK: DEG; rest: QLFS. Quarterly figures for France are interpolated.
(a) Own currencies; US: $bn, Canada: C$m., Japan: Yen bn., France: F. Franc bn., Germany: DM bn., Italy: Lira bn., UK: £mn; OECD: US$bn.

Table 15. Unemployment in industrial countries and OECD

Seasonally adjusted

	Per cent of total labour force														
	By national definitions							Standardised (a)							
	US	Canada	Japan	France	Germany	Italy	UK (b)	US	Canada	Japan	France	Germany (c)	Italy	UK (c)	OECD total
1978	6.1	8.3	2.2	5.4	4.3	7.2	5.1	6.0	8.3	2.2	5.2	3.5	7.1	5.9	5.1
1979	5.9	7.4	2.1	6.0	3.8	7.7	4.7	5.8	7.4	2.1	5.9	3.2	7.6	5.0	5.0
1980	7.2	7.5	2.0	6.4	3.9	5.9	6.0	7.0	7.4	2.0	6.3	3.0	7.5	6.4	5.7
1981	7.6	7.5	2.2	7.6	5.6	8.4	9.4	7.5	7.5	2.2	7.4	4.4	8.3	9.8	6.6
1982	9.7	11.1	2.4	8.2	7.7	9.1	10.9	9.5	10.9	2.4	8.1	6.1	9.0	11.3	8.0
1983	9.6	11.8	2.7	8.4	9.2	9.9	10.8	9.5	11.8	2.6	8.3	8.0	9.8	12.5	8.5
1984	7.5	11.3	2.7	9.9	9.1	10.1	11.0	7.4	11.2	2.7	9.7	7.0	10.2	11.7	8.0
1985	7.2	10.5	2.6	10.2	9.3	10.1	11.2	7.1	10.4	2.6	10.2	7.2	10.1	11.2	7.8
1986	7.0	9.6	2.8	10.4	8.9	11.1	11.4	6.9	9.5	2.8	10.4	6.5	11.0	11.2	7.7
1987	6.2	8.9	2.9	10.5	8.9	12.0	10.2	6.1	8.8	2.8	10.6	6.5		10.3	7.4
1987 I	6.6	9.6	3.0	10.7	8.8	11.5	10.9	6.5	9.5	2.9	10.7	6.4		11.0	7.7
II	6.2	9.0	3.0	10.6	8.9	11.8	10.5	6.2	9.0	3.0	10.7	6.5		10.6	7.5
III	6.0	8.7	2.8	10.4	8.9	12.4	10.0	5.9	8.7	2.8	10.6	6.5		10.0	7.3
IV	5.9	8.2	2.7	10.3	8.9	12.4	9.4	5.8	8.2	2.7	10.4	6.5		9.5	7.1
1988 I	5.7	7.9	2.7	10.1	8.7	12.0	9.0	5.6	7.8	2.7	10.4	6.5		9.0	7.0
II	5.4	7.7	2.5	10.2	8.9	12.1	8.6	5.4	7.6	2.5	10.3	6.6		8.6	6.8
July	5.4	7.9	2.5	10.4	8.9		8.2	5.4	7.8	2.5	10.5	6.6		8.2	6.8
Aug.	5.6	8.0		10.4	8.8		8.0	5.5	7.9		10.6			8.0	

Source: ME.
(a) Standardised according to international definitions, by the OECD.
(b) After 1982, the labour force includes self-employed and H.M. Forces.
(c) Series revised from April 1984.

Table 16. Earnings and prices in OECD

Index numbers, 1980=100, seasonally adjusted

		Average earnings (whole economy)[a]						Consumer prices							
		US	Canada	Japan (b)	France	Germany	UK	US	Canada	Japan	France	Germany	Italy	UK	OECD total
1978		84.3	84.4	86.9	76.5	87.5	72.6	79.2	83.1	89.4	79.4	91.2	71.9	74.7	80.7
1979		91.7	91.2	92.7	86.7	93.1	83.7	88.1	90.8	92.5	87.9	94.9	82.5	84.8	88.6
1980		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981		108.9	112.3	109.1	114.4	104.7	112.9	110.3	112.5	104.9	113.1	106.3	117.8	111.9	110.5
1982		115.3	124.2	114.1	130.8	108.6	122.9	117.1	124.6	107.7	126.6	112.0	137.2	121.5	119.1
1983		120.3	129.1	118.1	145.4	112.3	133.4	120.8	131.8	109.7	138.6	115.7	157.3	127.1	125.3
1984		126.7	135.6	123.7	156.6	115.9	141.1	126.0	137.6	112.2	149.2	118.4	174.3	133.5	131.7
1985		133.4	142.1	128.7	165.8	119.4	151.4	130.5	143.0	114.4	157.9	121.0	190.4	141.6	137.7
1986		138.3	147.4	135.1	172.4	124.0	163.4	133.0	149.0	114.9	161.9	120.8	201.4	146.4	141.2
1987		144.7	154.6	139.4	178.7	127.9	175.3	137.9	155.5	114.7	167.2	121.1	211.0	152.5	145.8
1987	I	142.0	157.2	116.0	176.0	125.6	169.7	135.7	152.7	114.1	165.5	120.7	207.2	150.2	143.7
	II	143.3	153.0	137.4	177.9	127.9	173.5	137.3	154.8	114.8	166.9	121.0	209.7	152.5	145.4
	III	145.3	151.2	136.2	179.3	128.5	176.9	138.6	156.7	114.8	167.9	121.2	211.8	152.8	146.4
	IV	148.3	156.9	168.0	181.7	129.6	181.2	139.9	157.7	115.1	168.7	121.4	215.3	154.5	147.7
1988	I	149.5	162.0	119.3	182.9	130.9	184.6	141.0	159.0	114.7	169.5	121.7	217.9	155.2	148.7
	II	*152.1*	*163.9*	*141.4*	*184.3*	*132.0*		142.7	161.0	114.7	171.1	122.3	220.2	159.0	150.5

Source: Average earnings: US: SCB; Canada: NIEA; Germany: SBR; Japan and France: EO; UK: MEI. Consumer prices: MEI.
(a) For US, Germany and UK, wages and salaries divided by employment. For the rest, compensation of employees divided by employment.
(b) Not seasonally adjusted.

Table 17. Volume of exports[a]

Seasonally adjusted

		Index numbers, 1980=100								Relative export performance[c]						
		World[b]	US	Canada	Japan	France	Germany	Italy	UK	US	Canada	Japan	France	Germany	Italy	UK
1978		93	81	99	83	89	104	99	96	87	106	89	95	112	106	103
1979		99	91	101	83	97	104	108	99	91	102	83	97	105	109	100
1980		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1981		98	99	104	110	104	107	105	99	101	105	112	106	108	107	101
1982		97	89	104	108	100	110	106	102	91	107	111	103	113	109	105
1983		100	86	111	116	104	109	109	104	86	111	117	104	110	109	104
1984		108	93	132	134	109	120	116	113	86	122	125	101	111	108	105
1985		112	96	137	143	111	128	125	119	86	123	127	99	114	112	106
1986		120	101	144	142	111	129	128	124	84	120	118	92	107	106	103
1987		124	116	148	142	113	132	129	131	93	119	115	91	106	104	105
1987	I	122	107	148	145	110	127	123	130	86	121	118	90	104	100	106
	II	124	112	145	139	110	132	125	126	90	117	113	89	107	101	102
	III	125	121	147	142	114	133	137	131	97	117	113	91	106	110	105
	IV	126	126	153	144	119	136	131	137	100	122	114	95	108	104	108
1988	I	127	137	161	148	120	*129*	123	127	107	127	116	94	101	97	100
	II		140	*166*	*149*	122	*143*	137	134							

Source: World: UNMBS; US: SCB; Germany: SBR; rest derived from price (IFS) and value (MEI) data.
(a) Goods only.
(b) Mean of UN indices for imports and exports, other than those of 'centrally planned' countries.
(c) Export volume relative to World, 1980 = 100.

Table 18. Current balances and interest rates

	Current balance US $ billion								Short term interest rate per cent[a]						
	US	Canada	Japan	France	Germany	Other OECD	OPEC	LDCs	US	Canada	Japan	France	Germany	Italy	UK
1978	− 15	−5	17	7	9	− 8	− 3	−25	8.2	8.7	5.1	8.0	3.7	11.5	11.6
1979	− 1	−4	− 9	5	− 5	−18	56	−39	11.2	11.7	5.9	9.1	6.7	11.9	15.8
1980	2	−1	−11	− 4	−14	−32	103	−63	13.1	12.8	10.7	12.1	9.5	17.3	13.1
1981	6	−5	5	− 5	− 4	−23	46	−85	15.8	17.7	7.4	15.5	12.1	20.2	14.6
1982	− 8	2	8	−12	5	−24	−20	−66	12.2	13.6	6.8	14.7	8.9	20.3	9.7
1983	− 47	2	21	− 5	5	−15	−19	−33	9.1	9.3	6.5	12.5	5.8	18.3	8.8
1984	−113	3	34	− 1	9	− 7	−13	−20	10.4	11.1	6.3	11.7	6.0	17.4	9.1
1985	−122	−2	50	0	17	− 9	− 2	−14	8.1	9.4	6.5	10.1	5.5	15.2	11.2
1986	−144	−7	86	3	40	−14	−34	−11	6.5	9.0	5.0	7.7	4.6	13.4	10.7
1987	−154	−7	87	− 5	45	−14	− 5	12	6.9	8.1	3.9	8.2	4.0	11.5	9.0
1987 I	− 38	−1	21	− 2	12	− 2	− 2	3	6.0	7.1	4.1	8.3	4.2	12.0	9.3
II	− 41	−1	23	0	12	− 3	− 1	3	6.8	8.2	3.8	8.1	3.8	10.8	8.8
III	− 42	−2	21	− 1	11	− 2	− 1	3	6.9	9.1	3.7	7.9	3.9	11.5	9.8
IV	− 34	−3	22	− 2	10	− 6	− 1	3	7.6	8.2	3.9	8.5	4.1	11.7	8.2
1988 I	− 40	−2	18	− 1	9	− 5	− 6	3	6.7	8.4	3.8	7.9	3.4	11.0	8.3
II									7.0	9.0	3.8	7.7	3.5	10.9	9.0

Source: MEI, IFS and national sources.
(a) US: Certificates of Deposit; Canada: 3-month Treasury Bills; Japan: 3-month Gensaki rate; France, Germany and Italy: 3-month Interbank rates.

Table 19. Volume of imports[a]

Seasonally adjusted

	Index numbers, 1980 = 100								Volume relative to domestic demand[c]						
	World[b]	US	Canada	Japan	France	Germany	Italy	UK	US	Canada	Japan	France[d]	Germany[d]	Italy[d]	UK
1978	93	108	98	94	84	92	84	96	108	105	101	89	98	95	97
1979	99	110	107	106	94	98	97	104	108	109	107	96	99	103	102
1980	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1981	98	102	104	97	96	95	89	96	100	98	95	96	98	90	97
1982	97	98	86	97	99	96	89	102	98	84	92	96	101	90	101
1983	100	111	95	97	98	100	89	111	106	89	91	95	102	89	106
1984	108	139	113	108	101	105	96	122	121	101	98	98	106	93	112
1985	112	145	120	104	106	110	110	127	122	102	90	100	110	104	113
1986	120	163	131	120	113	117	116	134	132	107	101	103	112	108	115
1987	124	173	135	131	120	123	127	144	136	105	104	106	114	110	118
1987 I	122	166	130	120	117	118	121	134	133	105	98	104	112	107	112
II	124	168	132	128	119	122	127	140	133	104	103	105	115	111	117
III	125	177	132	135	121	123	129	151	139	102	107	106	114	112	122
IV	126	182	147	140	124	127	131	153	141	111	108	108	116	112	122
1988 I	127	183	152	145	122	120	126	148	141	114	109	106	109	107	119
II		180	158	147	130	128	137	154	137	117	110	109	117	116	

Source: UNMBS, IFS, MEI; as in table 17. Domestic demand; US: SCB; Germany: SBR; UK: ET; rest: QNA.
(a) Goods only.
(b) Mean of UN indices for imports and exports, other than those of 'centrally planned' countries.
(c) Import volume divided by an 1980 = 100 index of domestic demand.
(d) Price and volume trade data for France, Germany and Italy have not been published since December 1987 because of the E.C. changes in documentation.

Table 20. Competitiveness and commodity prices

| | | Export price of manufactures, 1980 = 100 | | | | | | | | Commodity prices | | | | |
| | | World (a) | Relative to world price(b) | | | | | | | Oil(c) OPEC average | Food(d) | | Agricultural non-food (d) | Minerals, ores and metals (e) |
			US	Canada	Japan	France	Germany	Italy	UK		Developed	Developing		
1978		79.2	99.7	99.6	112.3	97.9	103.8	93.1	86.5	13.1	75.0	79.3	78.9	75.5
1979		89.9	101.7	97.3	105.9	99.7	102.8	95.7	92.0	19.0	86.4	83.7	95.5	96.3
1980		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	31.9	100.0	100.0	100.0	109.1
1981		94.6	118.8	112.6	111.9	91.9	90.0	95.4	98.3	35.9	92.1	82.4	92.1	94.2
1982		91.5	130.3	115.9	108.3	90.8	92.1	94.9	93.9	34.4	82.8	69.7	81.7	81.8
1983		88.2	136.4	120.5	110.0	90.0	91.9	94.1	91.8	29.9	79.8	72.0	87.1	85.4
1984		85.2	142.5	128.5	113.8	91.4	86.5	93.4	90.5	28.6	75.0	71.2	92.0	78.7
1985		86.2	145.6	126.4	111.4	93.5	86.5	93.6	92.7	28.0	68.2	63.2	77.7	75.1
1986		103.7	124.2	103.5	112.0	97.6	96.1	95.9	89.5	15.6	73.0	76.7	75.0	70.8
1987		117.2	112.3	89.7	111.5	100.1	100.2	97.9	92.3	17.1	78.7	66.2	86.5	82.2
1987	I	114.0	114.0	92.5	109.6	100.0	101.8	99.1	88.5	16.7	75.0	66.0	81.0	71.7
	II	116.0	113.2	89.9	111.9	101.5	100.0	98.3	93.2	17.3	79.0	65.0	86.0	76.0
	III	116.0	115.3	89.9	112.8	99.4	99.1	95.3	92.6	17.5	77.0	64.0	88.0	84.0
	IV	123.0	106.7	86.6	111.8	99.7	100.0	98.9	95.0	17.1	84.0	70.0	91.0	97.3
1988	I	124.0	106.9	92.0	114.0	100.8	101.3	100.3	98.5	15.5	88.0	73.0	95.0	103.0
	II									13.3	93.0	75.5	100.0	112.0

Source: UNMBS, UNCTAD, oil price: *Petroleum Economist*
(a) In terms of US dollars.
(b) At current average exchange rates.
(c) US $ per barrel, NIESR estimates prior to 1983.
(d) UN indices, 1980=100.
(e) UNCTAD's indices, 1979–81=100.

Table 21. Exchange rates (trade conversion factors)(a)

| | | SDR | ECU | Gold(b) | UK £ | Canada C$ | Japan Yen | France F. Franc | Germany DM | Italy Lira | Effective rate (c) | | |
| | | | | | | | | | | | UK | US | Germany |
		US $ per unit				Units per US $					IMF index		
1978		1.252	1.274	194	1.92	1.14	210	4.51	2.01	849	84.9	102.1	93.3
1979		1.292	1.371	307	2.12	1.17	219	4.25	1.83	831	90.9	99.9	99.0
1980		1.302	1.392	615	2.33	1.17	227	4.23	1.82	856	100.0	100.0	100.0
1981		1.179	1.116	460	2.03	1.20	221	5.43	2.26	1,137	98.9	112.7	92.7
1982		1.104	0.980	376	1.75	1.23	249	6.57	2.43	1,353	94.2	125.9	96.5
1983		1.069	0.890	422	1.52	1.23	237	7.62	2.55	1,519	86.7	133.2	98.8
1984		1.025	0.789	360	1.34	1.29	238	8.74	2.85	1,757	81.9	143.7	96.1
1985		1.015	0.763	317	1.30	1.37	239	8.98	2.94	1,909	81.5	150.2	95.9
1986		1.173	0.984	368	1.47	1.39	169	6.93	2.17	1,491	75.9	122.5	106.4
1987		1.294	1.156	445	1.64	1.33	145	6.01	1.80	1,296	75.6	108.0	114.5
1987	I	1.261	1.125	406	1.54	1.34	153	6.13	1.84	1,306	72.8	111.3	114.4
	II	1.294	1.150	442	1.64	1.33	143	6.03	1.81	1,300	75.8	107.8	113.9
	III	1.277	1.128	457	1.62	1.32	147	6.14	1.84	1,330	75.7	109.4	113.5
	IV	1.342	1.220	473	1.75	1.31	136	5.75	1.71	1,249	78.0	103.5	116.1
1988	I	1.368	1.244	454	1.80	1.27	128	5.67	1.68	1,235	78.5	100.5	116.0
	II	1.368	1.216	453	1.84	1.23	126	5.78	1.71	1,268	80.9	99.7	114.4
	III	1.295	1.113	427	1.70	1.22	134	6.32	1.87	1,383	79.0	105.5	111.7
	Oct.	1.318	1,138	407	1.74	1.22	130	6.23	1.83	1,359	79.4	103.0	112.5

Sources: *Financial Times, The Times, The Wall Street Journal*.
(a) Average of daily spot rates. (b) Average free market closing rate per ounce on London Market. Quarters do not necessarily average to years. (c) As calculated by IMF. Average 1980=100 .