

THE *FINANCIAL TIMES*—ACTUARIES FIXED INTEREST INDICES UP TO 1984

BY A. D. WILKIE, M.A., F.F.A., F.I.A.

INTRODUCTION

THE new series of *Financial Times*—Actuaries fixed interest indices commenced in 1977 with the first publication in the *Financial Times* of the British Government Securities Indices. These were described on behalf of the Joint Index and Classification Committee of the Institute and the Faculty in the paper by G. M. Dobbie and A. D. Wilkie, "The F.T.—Actuaries Fixed Interest Indices", *J.I.A.* **105**, 15 and *T.F.A.* **36**, 203. Subsequent notes in *J.I.A.* and *T.F.A.* have given annual reviews, the last, for 1980, appearing in *T.F.A.* **37**, 327. Part 1 of the present note continues the history of the B.G.S. Indices up to the end of 1984.

The Indices for Debentures and Unsecured Loan Stocks and for Preference Shares commenced publication in the *Financial Times* in 1981. The principles on which they were constructed were described in the original paper by Dobbie and Wilkie, but no historical note has yet appeared. Part 2 of the present note gives the history of these indices up to the end of 1984.

The British Government first issued Index-Linked Stocks in 1981. The Joint Index and Classification Committee decided to construct an index for these Stocks when a sufficient number had been issued, and the *Financial Times* agreed to publish this index. It commenced publication in 1984. Part 3 of the present note describes the principles on which this index has been constructed, and gives its history up to the end of 1984.

1. THE BRITISH GOVERNMENT SECURITIES INDICES

1.1. *The BGS Portfolio Indices*

Previous notes have listed every change in the constituents of the indices and have given a full list of the constituents at the end of the year, with market values. Since this information about British Government Securities is published officially and is also readily available elsewhere it is not felt necessary to continue to give such full information here.

Table 1.1 notes the numbers of changes of each type that occurred during each of the years 1980 to 1984. From 1979 onwards partly paid stocks have only entered the indices when they become fully paid; these are distinguished therefore from new issues that are fully paid from commencement, which enter immediately. A (or in one case B) stocks are further tranches of existing stocks which have a first interest payment that may differ from that of the main issue, and are amalgamated at their first ex-dividend date.

Table 1.1. *BGS Portfolio Indices: numbers of changes of constituents in each year*

	1980	1981	1982	1983	1984
New issues fully paid (including A stocks)	4 (2)	1	1	2	—
New issues partly paid, entering when fully paid (including A stocks)	13 (4)	8 (3)	6 (2)	11 (2)	8 (1)
Amalgamations of A stocks	4	6	2	2	1
'Minitaps'	3	15	18	8	39
Redemptions	6	7	5	6	4
Partial Conversions	—	—	1	—	—
Total Conversions	—	—	—	—	1

'Minitaps' describe additional smaller issues of stocks that are issued directly to the Bank of England and sold directly in the market; they are identical in terms to the main stock. It is impossible for the index to be updated on the same day as they are issued to the Bank, and they necessarily have to be dealt with by adding to the nominal amount in issue of the stock a day or two later, at the market price at the time.

Stocks nearing redemption are taken out of the indices one week after their last ex-dividend date, roughly four weeks before redemption. Stocks also transfer from one sector index to another as they 'shorten'; these are not noted in the table, since they are entirely mechanical.

During the period the Government issued a number of Convertible stocks, convertible at specified dates into other stocks, sometimes called 'Conversion' stocks. Convertible stocks are included in the portfolio indices (but excluded from the yield indices). They cause some difficulty in keeping the indices exactly matched to the market, since it is not known how much, if any, is converted at any date until sometime later. In practice it has been necessary to use one's judgement, on the basis of knowledge of the market, and decide whether or not a significant amount was likely to be converted, and if the amount was likely to be significant what proportion of the outstanding stock it might be. This amount was then assumed to be taken out of the Convertible stock, with a corresponding addition to the Conversion stock, at market prices (which do not necessarily exactly match the actual conversion terms). This is not a perfect adjustment, but it is the best that can be done with the knowledge and programmes available. During 1982 it was assumed that about three-quarters of 12% Exchequer Convertible 1985 was converted into 13½% Exchequer 1992, and during 1984 it was assumed that all of 12¼% Treasury Convertible 1986 was converted into 13% Treasury 2000.

Table 1.2 shows the numbers of stocks and their total market values included in each of the sector indices and in the All Stocks index at 31 December in each of the years 1980 to 1984.

Tables 1.3A to 1.3E show the values of the indices (P) and the cumulative ex-dividend adjustment (C) at the end of each month for each of the years 1980 to 1984.

In §§ 5.1 to 5.6 of the 1976 note it was shown how one could use the published values of the indices and of the ex-dividend adjustment to calculate cumulative rates of return on two different assumptions and at two different tax rates. Table 1.4 shows the results for each sector for each year from 1980 to 1984 at two different tax bases—gross and net at $37\frac{1}{2}\%$ —on the ‘first assumption’ in which it is assumed that interest is reinvested in the index at the end of the month in which it has gone ex-dividend.

Table 1.2. *BGS Portfolio Indices: numbers of stocks and market value in each sector at 31 December in each year*

Market value (£m) (Number of stocks)	1980	1981	1982	1983	1984
Up to 5 years	21,411.0 (27)	21,612.6 (24)	25,947.0 (26)	32,533.6 (32)	37,601.7 (33)
5 to 15 years	20,471.7 (29)	23,600.7 (33)	36,771.9 (35)	43,677.5 (37)	50,882.9 (42)
Over 15 years	24,909.4 (28)	22,332.0 (23)	26,220.5 (19)	22,213.9 (16)	16,621.0 (12)
Irredeemables	980.9 (6)	825.0 (6)	1,076.8 (6)	1,135.7 (6)	1,114.3 (6)
All stocks	67,773.0 (90)	68,370.3 (86)	90,016.2 (86)	99,560.7 (91)	106,219.9 (93)

(A and B stocks are included in the count of numbers as well as in the market values).

1.2. *The BGS Yield Indices*

The constituents of the yield indices differ from those of the portfolio indices in that stocks are excluded from the indices when they reach one year from redemption, and convertible stocks and some of those with sinking funds are excluded. A stocks are included in the calculation of the yield indices, but do not count in the allocation of roughly equal numbers of stocks to each of the three coupon bands.

Table 1.5 shows the numbers of changes in the constituents in each year from 1980 to 1984. Table 1.6 shows the ranges of coupon bands and the numbers of stocks in each band at 31 December each year and at each date when the bands were changed. Tables 1.7A to 1.7E show the values of the gross redemption yields, convertible half yearly, for the ten indices at the end of each month from December 1979 to December 1984, together with the highest and lowest values recorded for each index during each calendar year.

Table 1.3A. BGS Portfolio Indices: 1980 Values of index (P) and cumulative interest received in the year to date (C)

	Up to 5 years		5 to 15 years		Over 15 years		Irredeemables		All stocks	
	P	C	P	C	P	C	P	C	P	C
31 December 1979	100.33	—	103.31	—	106.82	—	119.85	—	103.18	—
31 January 1980	101.00	.68	105.16	1.88	111.75	.42	131.69	.00	105.85	.86
29 February	99.76	2.30	103.35	2.00	107.57	1.99	124.54	1.45	103.34	2.06
31 March	101.17	2.30	103.86	2.68	107.58	2.82	120.10	1.78	103.94	2.53
30 April	103.00	3.45	107.50	3.97	111.34	4.51	125.69	6.08	106.95	3.95
30 May	104.00	4.02	109.05	4.27	112.97	4.81	129.05	6.08	108.35	4.34
30 June	105.28	5.18	110.38	6.77	113.82	7.39	129.88	7.24	109.45	6.37
31 July	106.11	6.05	112.52	8.31	119.82	7.78	132.70	7.24	112.60	7.21
29 August	104.15	7.62	108.45	8.64	113.00	9.45	125.10	8.69	108.24	8.46
30 September	106.90	7.62	112.29	9.59	118.04	10.19	131.36	9.02	112.16	9.00
31 October	106.60	8.78	113.07	10.68	118.93	11.97	131.18	13.32	112.61	10.39
28 November	107.45	9.26	113.13	10.90	118.52	12.24	130.32	13.32	112.76	10.71
31 December	107.10	10.38	109.25	13.18	113.75	14.84	126.18	14.48	109.75	12.70

Table 1.3B. BGS Portfolio Indices: 1981 Values of index (P) and cumulative interest received in the year to date (C)

	Up to 5 years		5 to 15 years		Over 15 years		Irredeemables		All stocks	
	P	C	P	C	P	C	P	C	P	C
31 December 1980	107.10	—	109.25	—	113.75	—	126.18	—	109.75	—
30 January 1981	107.79	.89	109.68	1.45	114.26	.39	128.78	—	110.32	.86
27 February	108.06	2.48	110.95	1.89	113.19	2.05	126.16	1.45	110.42	2.10
31 March	109.00	2.48	112.14	2.97	117.26	2.77	129.00	1.78	112.56	2.69
30 April	108.46	3.75	110.88	3.86	114.19	4.65	123.74	6.23	110.87	4.07
29 May	108.19	4.24	109.57	4.18	112.48	4.93	122.61	6.23	109.77	4.43
30 June	108.23	5.18	105.72	6.38	107.35	7.78	119.04	7.43	106.79	6.39
31 July	106.83	6.24	103.24	7.89	105.34	8.20	115.16	7.43	104.81	7.39
28 August	106.70	7.82	103.04	8.60	103.61	10.22	113.11	8.71	104.13	8.80
30 September	104.35	7.82	97.58	10.61	98.80	10.50	105.82	9.05	99.90	9.38
30 October	104.38	9.10	98.21	11.03	99.22	12.32	104.55	13.50	100.24	10.76
30 November	106.66	9.74	103.85	11.21	105.94	12.60	115.32	13.50	105.20	11.12
31 December	105.80	10.97	99.14	13.45	100.24	15.25	109.80	14.70	101.36	13.18

Table 1.3C. BGS Portfolio Indices: 1982 Values of index (P) and cumulative interest received in the year to date (C)

	Up to 5 years		5 to 15 years		Over 15 years		Irredeemables		All stocks	
	P	C	P	C	P	C	P	C	P	C
31 December 1981	105.80	—	99.14	—	100.24	—	109.80	—	101.36	—
29 January 1982	108.05	1.07	103.59	1.40	106.56	.40	115.16	—	105.72	.96
26 February	108.41	2.65	106.35	2.11	108.99	2.40	117.65	1.28	107.63	2.34
31 March	111.06	2.89	110.94	3.43	115.38	3.04	122.45	1.62	112.15	3.11
30 April	110.49	3.99	109.49	4.33	112.54	4.93	115.74	6.07	110.50	4.40
28 May	112.32	4.61	112.50	4.49	115.69	5.22	119.81	6.07	113.19	4.75
30 June	112.47	5.90	112.09	6.91	114.96	7.64	118.07	7.27	112.83	6.80
30 July	115.28	6.92	116.74	8.50	121.12	7.81	124.43	7.27	117.37	7.77
31 August	116.97	8.22	125.02	9.16	131.36	9.86	135.85	8.55	124.15	9.04
30 September	118.67	8.66	127.79	10.47	136.71	10.52	141.45	8.90	127.37	9.89
29 October	120.39	9.79	134.87	11.34	143.38	12.54	151.93	13.34	132.75	11.20
30 November	117.64	10.39	127.70	11.49	133.55	12.85	138.46	13.34	126.24	11.54
31 December	117.70	11.83	129.51	13.73	136.48	15.41	143.32	14.54	127.82	13.60

Table 1.3D. BGS Portfolio Indices: 1983 Values of index (P) and cumulative interest received in the year to date (C)

	Up to 5 years		5 to 15 years		Over 15 years		Irredeemables		All stocks	
	P	C	P	C	P	C	P	C	P	C
31 December 1982	117.70	—	129.51	—	136.48	—	143.32	—	127.82	—
31 January 1983	116.05	.98	123.11	1.62	128.87	—	134.06	—	122.56	.97
28 February	116.91	1.97	127.27	2.41	134.18	2.19	139.80	1.28	126.00	2.20
31 March	116.59	2.92	128.68	3.69	138.40	2.49	148.12	1.62	127.72	3.10
29 April	117.34	3.99	129.82	4.77	139.50	4.61	146.08	6.07	128.70	4.50
31 May	117.35	4.61	131.65	4.91	142.46	4.93	149.85	6.07	130.20	4.84
30 June	117.16	5.86	129.95	6.97	139.48	7.73	150.61	7.27	128.70	6.80
29 July	115.34	6.99	124.90	8.55	134.28	7.73	145.44	7.27	124.68	7.83
31 August	115.59	7.65	125.82	9.30	134.02	10.16	145.27	8.55	125.09	8.97
30 September	117.36	8.44	130.29	10.70	140.44	10.29	152.73	8.90	129.16	9.86
31 October	117.16	9.87	131.20	11.74	140.57	12.19	149.16	13.34	129.47	11.27
30 November	117.98	10.44	133.69	12.04	143.90	12.54	152.10	13.34	131.57	11.68
30 December	118.28	11.39	132.28	14.01	141.82	15.90	151.16	14.54	130.65	13.56

Table 1.3E. BGS Portfolio Indices: 1984 Values of index (P) and cumulative interest received in the year to date (C)

	Up to 5 years		5 to 15 years		Over 15 years		Irredeemables		All stocks	
	P	C	P	C	P	C	P	C	P	C
30 December 1983	118.28	—	132.28	—	141.82	—	151.16	—	130.65	—
31 January 1984	118.04	1.17	131.04	1.49	141.80	—	152.88	—	130.04	1.07
29 February	118.53	1.75	131.94	2.37	140.31	2.37	152.14	1.28	130.31	2.15
30 March	118.71	2.99	133.28	3.42	143.22	2.53	154.59	1.62	131.54	3.12
30 April	117.79	4.10	130.15	4.70	138.80	4.34	147.81	6.07	128.93	4.47
31 May	114.94	5.01	124.96	4.92	132.91	4.82	141.17	6.07	124.36	4.97
29 June	115.58	5.76	124.14	7.32	130.37	8.33	140.64	7.27	123.79	6.98
31 July	112.59	7.08	119.60	8.28	126.92	8.33	137.50	7.27	119.96	7.91
30 August	115.91	7.61	126.80	9.58	134.91	9.83	145.49	8.55	125.94	8.97
28 September	116.10	8.88	128.60	10.75	138.19	10.23	149.53	8.90	127.42	10.07
31 October	116.94	9.69	129.25	12.14	138.19	11.72	147.48	13.34	128.02	11.30
30 November	118.92	10.59	132.69	12.20	141.32	12.18	151.68	13.34	130.92	11.75
31 December	117.74	11.63	128.98	14.41	135.51	15.77	148.31	14.54	127.81	13.74

Table 1.4. *BGS Portfolio Indices: Cumulative rates of return for each sector for each year*

	1980	1981	1982	1983	1984
<i>Gross</i>					
Up to 5 years	+17.87%	+9.39%	+23.37%	+10.73%	+9.92%
5 to 15 years	+19.20%	+3.17%	+46.79%	+13.83%	+9.05%
Over 15 years	-21.26%	+1.58%	+54.14%	+16.43%	+7.20%
Irredeemables	-17.79%	-1.26%	+45.77%	+16.29%	+8.17%
All Stocks	-19.46%	-4.54%	+41.46%	+13.59%	+7.22%
<i>Net of tax at 37½%</i>					
Up to 5 years	-13.59%	+5.30%	+18.69%	+6.79%	+5.92%
5 to 15 years	-13.99%	- .65%	+40.54%	+9.31%	+4.58%
Over 15 years	+15.52%	-3.66%	+47.16%	+11.59%	+2.70%
Irredeemables	+12.97%	-5.79%	+39.90%	+12.13%	+4.31%
All Stocks	+14.39%	- .19%	+35.51%	+9.20%	+3.62%

Rates of return are shown as percentages, and are calculated on the 'first assumption', in which interest is reinvested in the index at the end of the month during which it has gone ex-dividend.

Table 1.5. *BGS Yield Indices: numbers of changes of constituents in each year*

	1980	1981	1982	1983	1984
New issues fully paid excluding A stocks	2	1	1	2	—
New issues partly paid, entering when fully paid, excluding A stocks	9	4	3	4	4
One year from redemption	7	5	6	5	4

Table 1.6. *BGS Yield Indices: ranges of coupon bands, and numbers of stocks in each band at 31 December each year and at each date when the bands were changed*

	Low coupons	Medium coupons	High coupons
31 December 1979	3% to 8¼% (21)	8½% to 11¼% (23)	12% to 15½% (26)
15 February 1980	3% to 8¾% (24)	9% to 12% (24)	12¼% to 15% (22)
25 July 1980	3% to 9% (26)	9½% to 12¼% (24)	12½% to 15½% (24)
31 December 1980	(25)	(25)	(24)
15 June 1981	3% to 9½% (26)	9½% to 12¼% (25)	12½% to 15½% (24)
31 December 1981	(24)	(25)	(25)
31 December 1982	(22)	(25)	(25)
31 December 1983	(22)	(27)	(24)
18 January 1984	2½% to 9½% (24)	9½% to 12¼% (26)	12½% to 15½% (24)
16 April 1984	2½% to 9¾% (25)	10% to 12% (24)	12¼% to 15½% (26)
31 December 1984	(24)	(24)	(25)

Table 1.7A. BGS Yield Indices: gross redemption yield (convertible half yearly) per cent, 1980

	Low coupons				Medium coupons				High coupons				Irredeemables
	5 Yrs	15 Yrs	25 Yrs		5 Yrs	15 Yrs	25 Yrs		5 Yrs	15 Yrs	25 Yrs		
31 December 1979	12.49	12.56	12.72		14.78	14.45	14.17		14.96	14.87	14.60		12.23
31 January 1980	12.18	12.18	12.18		14.40	13.81	13.72		14.87	14.30	14.00		11.22
29 February	13.07	12.90	12.90		15.09	14.48	14.26		15.17	14.80	14.69		11.85
31 March	13.10	12.89	12.89		14.98	14.54	14.33		15.03	14.84	14.73		12.39
30 April	12.41	12.31	12.31		14.12	13.91	13.79		14.22	14.22	14.22		11.54
30 May	12.21	12.15	12.15		14.04	13.83	13.69		14.16	14.17	14.07		11.36
30 June	11.94	11.94	11.94		13.42	13.46	13.43		13.49	13.80	13.83		11.27
31 July	11.67	11.62	11.62		13.06	12.94	12.84		13.19	13.30	13.09		11.13
29 August	12.27	12.27	12.27		13.89	13.76	13.64		14.03	14.10	13.89		11.80
30 September	11.71	11.71	11.71		13.09	13.30	13.06		13.26	13.54	13.30		11.30
31 October	11.60	11.57	11.57		13.19	13.19	12.92		13.28	13.44	13.08		11.07
28 November	11.64	11.62	11.62		13.17	13.36	13.08		13.16	13.58	13.25		11.23
31 December	11.96	11.96	11.96		13.53	13.84	13.51		13.53	14.06	13.74		11.61
1980 High	13.32	13.12	13.12		15.37	14.71	14.50		15.44	15.06	14.92		12.53
(on)	(4/3)	(4/3)	(4/3)		(4/3)	(4/3)	(4/3)		(4/3)	(4/3)	(4/3)		(21/3)
1980 Low	11.17	11.11	11.11		12.45	12.40	12.35		12.71	12.81	12.63		10.80
(on)	(21/7)	(21/7)	(21/7)		(21/7)	(21/7)	(23/7)		(17/7)	(21/7)	(23/7)		(21/7)

Table 1.7C. BGS Yield Indices: gross redemption yield (convertible half yearly) per cent, 1982

	Low coupons				Medium coupons				High coupons				Irredeemables
	5 Yrs	15 Yrs	25 Yrs	5 Yrs	15 Yrs	25 Yrs	5 Yrs	15 Yrs	25 Yrs	5 Yrs	15 Yrs	25 Yrs	
29 January 1982	12.49	13.54	13.29	15.13	15.05	14.47	15.19	15.22	14.83	15.19	15.22	14.83	12.92
26 February	12.49	13.18	12.95	14.74	14.57	14.01	14.71	14.73	14.33	14.71	14.73	14.33	12.63
31 March	11.69	12.73	12.59	13.90	13.73	13.27	13.87	13.90	13.32	13.87	13.90	13.32	12.21
30 April	12.07	12.91	12.89	14.25	14.04	13.54	14.19	14.23	13.76	14.19	14.23	13.76	12.60
28 May	11.42	12.67	12.69	13.79	13.74	13.22	13.74	13.71	13.31	13.74	13.71	13.31	12.28
30 June	11.02	12.57	12.86	13.58	13.68	13.14	13.68	13.83	13.25	13.68	13.83	13.25	12.46
30 July	10.01	12.04	12.17	12.52	13.00	12.38	12.59	13.17	12.75	12.59	13.17	12.75	11.94
31 August	9.34	10.81	11.00	11.50	11.74	11.27	11.54	11.94	11.48	11.54	11.94	11.48	10.91
30 September	8.82	10.28	10.47	11.19	11.29	10.79	11.30	11.49	10.96	11.30	11.49	10.96	10.53
29 October	8.12	9.47	9.65	10.30	10.50	10.18	10.26	10.73	10.28	10.26	10.73	10.28	9.59
30 November	8.88	10.31	10.56	11.47	11.59	11.12	11.52	11.76	11.28	11.52	11.76	11.28	10.61
31 December	8.79	9.94	10.24	11.18	11.15	10.70	11.26	11.38	10.92	11.26	11.38	10.92	10.25
1982 High	13.49	14.28	14.17	16.41	16.10	15.46	16.30	16.28	15.76	16.30	16.28	15.76	13.64
(on)	(5/1)	(5/1)	(12/1)	(12/1)	(5/1)	(12/1)	(8/1)	(5/1)	(12/1)	(8/1)	(5/1)	(12/1)	(12/1)
1982 Low	7.89	9.25	9.47	9.89	10.32	10.01	9.96	10.55	10.14	9.96	10.55	10.14	9.31
(on)	(2/11)	(11/11)	(2/11)	(11/11)	(3/11)	(19/10)	(3/11)	(2/11)	(2/11)	(3/11)	(2/11)	(2/11)	(3/11)

Table 1.7D. BGS Yield Indices: gross redemption yield (convertible half yearly) per cent, 1983

	Low coupons				Medium coupons				High coupons				Irredeemables
	5 Yrs	15 Yrs	25 Yrs		5 Yrs	15 Yrs	25 Yrs		5 Yrs	15 Yrs	25 Yrs		
31 January 1983	9.28	10.90	11.18		11.85	12.09	11.70		12.00	12.22	11.79		11.06
28 February	8.95	10.49	10.62		11.45	11.39	10.93		11.57	11.59	11.10		10.59
31 March	9.42	10.24	10.24		11.47	11.09	10.61		11.47	11.31	10.71		10.06
29 April	9.31	10.13	10.02		11.21	10.93	10.34		11.26	11.11	10.49		9.97
31 May	9.48	9.97	9.72		11.23	10.74	10.14		11.34	10.94	10.29		9.79
30 June	9.62	10.08	9.75		11.24	10.90	10.22		11.32	11.08	10.40		9.72
29 July	10.16	10.76	10.37		11.84	11.53	10.82		12.00	11.71	10.95		10.15
31 August	10.18	10.68	10.31		11.92	11.41	10.79		11.99	11.61	10.85		10.18
30 September	9.84	10.04	9.75		11.18	10.85	10.31		11.23	11.06	10.40		9.75
31 October	9.82	9.97	9.83		10.98	10.76	10.23		11.10	10.96	10.34		9.76
30 November	9.52	9.76	9.66		10.86	10.53	10.00		10.97	10.70	10.12		9.65
30 December	9.35	9.98	9.73		10.89	10.55	10.00		11.06	10.74	10.10		9.71
1983 High	10.18	10.91	11.18		12.16	12.16	11.76		12.29	12.28	11.82		11.07
(on)	(11/8)	(24/1)	(31/1)		(12/1)	(24/1)	(24/1)		(12/1)	(24/1)	(24/1)		(2/2)
1983 Low	8.69	9.62	9.47		10.76	10.42	9.89		10.85	10.63	10.04		9.49
(on)	(5/1)	(22/11)	(13/6)		(14/11)	(11/11)	(13/6)		(11/11)	(11/11)	(11/11)		(13/6)

Table 1.7E. *BGS Yield Indices: gross redemption yield (convertible half yearly) per cent, 1984*

	Low coupons			Medium coupons			High coupons			Irredeemables
	5 Yrs	15 Yrs	25 Yrs	5 Yrs	15 Yrs	25 Yrs	5 Yrs	15 Yrs	25 Yrs	
31 January 1984	9.72	10.09	9.69	11.00	10.68	10.05	11.17	10.84	10.17	9.68
29 February	9.92	10.17	9.81	10.76	10.67	10.11	10.89	10.81	10.21	9.72
30 March	9.94	10.05	9.66	10.54	10.51	9.97	10.66	10.65	10.05	9.62
30 April	10.35	10.37	9.92	10.94	10.84	10.23	11.04	11.01	10.34	9.85
31 May	11.30	11.11	10.53	12.13	11.52	10.78	12.22	11.69	10.87	10.40
29 June	11.08	11.12	10.55	12.03	11.51	10.93	12.06	11.70	10.94	10.44
31 July	11.99	11.60	10.91	13.06	12.12	11.29	13.11	12.24	11.30	10.78
31 August	11.22	10.70	10.25	11.92	11.13	10.47	11.93	11.30	10.57	10.18
28 September	11.06	10.48	10.02	11.67	10.86	10.22	11.74	11.03	10.31	9.95
31 October	10.91	10.45	10.09	11.47	10.81	10.18	11.45	10.97	10.30	9.87
30 November	10.31	10.20	9.74	10.86	10.60	10.01	10.92	10.75	10.12	9.68
31 December	10.65	10.50	10.03	11.29	10.92	10.31	11.38	11.07	10.40	9.90
1984 High	12.02	11.65	10.98	13.13	12.20	11.53	13.18	12.30	11.40	10.84
(on)	(30/7)	(30/7)	(23/7)	(30/7)	(30/7)	(23/7)	(30/7)	(30/7)	(23/7)	(30/7)
1984 Low	9.24	9.88	9.63	10.49	10.41	9.87	10.62	10.61	9.98	9.54
(on)	(17/1)	(9/1)	(9/1)	(13/3)	(9/1)	(9/1)	(6/3)	(13/3)	(9/1)	(12/1)

2. THE DEBENTURE AND PREFERENCE INDICES

2.1. *Introduction*

The principles on which the Debenture and Preference Indices were to be constructed were described in Section 5 of the original paper by Dobbie and Wilkie. These principles have been somewhat modified as the indices have been developed. The principles are similar for the two sets of indices but they will be described separately.

2.2. *The Debenture and Loan Stock Indices*

The main principle for selecting the constituents of the Debenture indices is that most stocks of a sufficient size and of a suitably normal type are included in the price index, regardless of 'quality'. Of these, only the stocks with sufficient interest cover are used for the construction of the yield indices.

The qualification rules for debentures and loan stocks for inclusion in the price index were originally:

- (i) Outstanding nominal issue not less than £11 million;
- (ii) The company registered in the United Kingdom;
- (iii) The principal quotation for the stock on The (U.K.) Stock Exchange;
- (iv) Stocks with options such as "tenderable at par for exercising warrants" excluded (and of course Convertible stocks);
- (v) Stocks where a sinking fund exists, intended at the date of issue to redeem more than one third of the issue before maturity, are excluded.

For inclusion in the yield index the additional qualification rules apply:

- (vi) Interest to be covered by the profits shown in the previous two years' published accounts. (This cover requirement applies also to new issues);
- (v) Coupon not unusually low (4% or less in practice).

These rules have been modified over the course of the years:

In order to include in the yield indices stocks with sufficiently short (less than 5 years) and sufficient long (more than 25 years) outstanding terms, a few issues with outstanding nominal less than £11 million were included.

In June 1984 a considerable number of recent new issues were added. At the same time issues with outstanding nominal less than £15 million were excluded, and all stocks with sinking funds (actually only one) were excluded.

The Debenture indices have been calculated from 30 December 1977, and the base value of the price index was chosen as 100·0 at that date. Table 2.1 lists the 57 stocks that constituted the indices at that date, identifying those 7 that were excluded from the yield indices. Table 2.2 lists the changes in the constituents over the years 1978 to 1984. Table 2.3 gives the number of stocks and the total market values of stocks in the price index at 31 December of each year from 1977 to 1984. Table 2.4 lists the constituents at 31 December 1984.

Table 2.1. *Debenture and Loan Stock Indices: Constituents at 30 December 1977*

	Market value £m
3½%	Bass Charrington Debenture 1977–79
8½%	Grand Metropolitan ULS 1978–80
4%	Imperial Group ULS 1975–80
14%	London & Scottish Marine Oil ULS 1981–83
5½%	Imperial Group ULS 1982–85
7½%	Burmah Oil ULS 1981–86
7%	Courtaulds Debenture 1982–87
15%	British Land Mortgage Debenture 1987
6½%	Ranks Hovis McDougall ULS 1985–88
7%	British Shoe Corporation ULS 1985–90
7½%	Imperial Chemical Industries ULS 1986–91
6½%	AEI Debenture 1986–91
7½%	Imperial Metal Industries ULS 1986–91
7½%	Barclays Bank International ULS 1986–91
7%	Guardian Royal Exchange ULS 1986–91
7½%	Dickinson Robinson Group ULS 1986–91
7%	Vauxhall Motors Guaranteed ULS 1987–92
8½%	Bass Charrington Debenture 1987–92
7½%	Massey-Ferguson ULS 1987–92
7½%	Industrial & Commercial Finance Corporation A Debenture 1989–92
7½%	Distillers ULS 1988–93
8%	Imperial Chemical Industries ULS 1988–93
6%	Land Securities Investment Trust Mortgage Debenture 1988–93
8½%	Barclays Bank ULS 1986–93
7½%	Courtaulds Debenture 1989–94
7½%	Industrial & Commercial Finance Corporation A Debenture 1991–94
8½%	Thomas Tilling ULS 1989–94
10½%	Courage ULS 1990–95
8½%	Ranks Hovis McDougall ULS 1991–95
10½%	Imperial Group ULS 1990–95
10½%	Guest, Keen & Nettlefolds (U.K.) Guaranteed Debenture 1990–95
10½%	Imperial Chemical Industries ULS 1991–96
7½%	Courtaulds ULS 1994–96
6½%	Courtaulds ULS 1994–96
10½%	Trust House Forte Debenture 1991–96
8½%	Industrial & Commercial Finance Corporation ULS 1992–97
9%	Associated Portland Cement Manufacturers Debenture 1992–97
8½%	Land Securities Investment Trust ULS 1992–97
7½%	Plessey Debenture 1992–97
10½%	Lucas Industries ULS 1992–97
9½%	Cavenham ULS 1992–97
10½%	Euston Centre Property Mortgage Debenture 1992–97
9½%	Michelin Tyre Debenture 1992–97
7½%	Bass Charrington ULS 1992–97
7½%	Bass Charrington Brewers ULS 1992–97
10%	Arthur Guinness Son ULS 1993–98
10½%	Distillers ULS 1993–98
10½%	Midland Bank Subordinated ULS 1993–98
6%	Rugby Portland Cement ULS 1993–98
7½%	Whitbread ULS 1995–99

Table 2.1 (cont.)

		Market value £m
11 $\frac{3}{4}$ %	Turner & Newall ULS 1995–2000	12.12
9%	Land Securities Investment Trust 1st Mortgage Debenture 1996–2001	30.78
10 $\frac{3}{8}$ %	Rank Organisation ULS 1997–2002	16.20
9 $\frac{3}{4}$ %	MEPC 1st Mortgage Debenture 1997–2002	17.20*
6%	BLMC ULS 1998–2003	4.54*
5 $\frac{1}{2}$ %	Imperial Chemical Industries ULS 1994–2004	13.54
7 $\frac{1}{2}$ %	Unilever ULS 1991–2006	37.08
	(57 stocks)	Total
		<u>£1,119.93</u>

* Indicates stocks excluded from the yield indices (7 stocks).

Table 2.2. *Debenture and Loan Stock Indices: Changes in constituents, 1978 to 1984*

1978

Name changes: Imperial Metal Industries to IMI

1979

Additions:

2 January	£10.0m	5 $\frac{1}{2}$ %	Industrial & Commercial Finance Corporation Debenture 1980–82
1 November	£26.7m	9%	National Westminster Bank Secured Loan 1993
3 December	£8.0m	7%	Spillers Debenture 1978–83
	£13.7m	10 $\frac{1}{2}$ %	Industrial & Commercial Finance Corporation ULS 1986
	£15.0m	12 $\frac{1}{2}$ %	Industrial & Commercial Finance Corporation ULS 1992
	£53.9m	8 $\frac{1}{2}$ %	Burmah Oil ULS 1991–96
	£15.0m	13 $\frac{1}{2}$ %	London Trust Debenture 2000–2006

Redemption:

24 August 3 $\frac{1}{2}$ % Bass Charrington Debenture 1977–79

Deletions (nominal now too small):

3 December	5 $\frac{3}{8}$ %	Imperial Group ULS 1982–85
	7 $\frac{1}{2}$ %	Barclays Bank International ULS 1986–91
	7 $\frac{1}{2}$ %	Massey-Ferguson ULS 1987–92

Included in yield indices (cover now sufficient):

3 December	7 $\frac{1}{2}$ %	Burmah Oil ULS 1981–86
	7%	Vauxhall Motors Guaranteed ULS 1987–92
	9 $\frac{3}{8}$ %	MEPC 1st Mortgage Debenture 1997–2002

Excluded from yield indices (one year to redemption):

31 March 8 $\frac{1}{2}$ % Grand Metropolitan ULS 1978–80

1980

Redemptions:

1 March	8 $\frac{1}{2}$ %	Grand Metropolitan ULS 1978–80
14 November	4%	Imperial Group ULS 1975–80

Name changes:

Industrial & Commercial Finance Corporation to FFI (UK Finance) (6 stocks)
 Associated Portland Cement Manufacturers to Blue Circle Industries
 Bass Charrington to Bass (2 stocks)
 Bass Charrington Brewers to Bass Investments

Coupon change:

9 $\frac{3}{4}$ % Cavenham ULS 1992–97 to 10 $\frac{1}{4}$ %

Table 2.2 (*cont.*)*1981*

Additions:

17 June	£8.0m	7 $\frac{30}{2}$ %	Brooke Bond Group ULS 2003–08
	£10.3m	5 $\frac{10}{2}$ %	Distillers CULS undated

Excluded from yield indices (one year to redemption):

30 September	5 $\frac{10}{2}$ %	FFI (UK Finance) Debenture 1980–82
--------------	--------------------	------------------------------------

Name change: Dickinson Robinson Group to DRG

1982

Redemption:

7 September	5 $\frac{10}{2}$ %	FFI (UK Finance) Debenture 1980–82
-------------	--------------------	------------------------------------

Deletion:

20 December	14%	London & Scottish Marine Oil ULS 1981–83
-------------	-----	--

Excluded from yield indices (one year to maturity)

1 September	7%	Spillers Debenture 1978–83
-------------	----	----------------------------

Name change: Vauxhall Motors to General Motors

1983

Addition:

20 June	£30.0m	12%	MEPC 1st Mortgage Debenture 2017
---------	--------	-----	----------------------------------

Redemption:

1 August	7%	Spillers Debenture 1978–83
----------	----	----------------------------

Name change: Courage to Imperial Brewing & Leisure

1984

Additions:

31 May	£70.0m	10 $\frac{30}{2}$ %	MEPC 1st Mortgage Debenture 2024
29 June	£97.8m	14%	Woolworth Holdings ULS 1987–89
	£40.0m	12 $\frac{10}{2}$ %	ELF UK ULS 1991
	£100.0m	12 $\frac{30}{2}$ %	National Westminster Bank ULS 2004
	£100.0m	14%	Midland Bank ULS 2002–07
	£100.0m	12 $\frac{30}{2}$ %	Standard Chartered ULS 2002–07
	£100.0m	16%	Barclays Bank ULS 2002–07
	£25.0m	13%	S. Pearson & Son ULS 2007
	£30.0m	12 $\frac{30}{2}$ %	Westland Debenture 2008
	£50.0m	12 $\frac{30}{2}$ %	Watney Mann & Truman Debenture 2008
	£365.0m	12 $\frac{10}{2}$ %	BAT Industries ULS 2003–08
	£75.0m	11 $\frac{10}{2}$ %	Allied-Lyons Debenture 2009
	£33.3m	12 $\frac{30}{2}$ %	Slough Estates ULS 2009
	£150.0m	12%	Barclays Bank ULS 2010
	£19.1m	12 $\frac{30}{2}$ %	Throgmorton Trust Debenture 2010
	£50.0m	12 $\frac{30}{2}$ %	Seagram Distillers Debenture 2012
	£15.0m	12%	Queens Moat Houses 1st Mortgage Debenture 2013
	£100.0m	12 $\frac{10}{2}$ %	BOC Group ULS 2012–17
	£15.0m	11 $\frac{30}{2}$ %	Brixton Estate 1st Mortgage Debenture 2018
13 July	£15.0m	11 $\frac{10}{2}$ %	Brixton Estate 1st Mortgage Debenture 2023
30 July	£15.0m	11 $\frac{10}{2}$ %	Border & Southern Stockholders Trust Debenture 2014
6 September	£40.0m	11 $\frac{10}{2}$ %	Edinburgh Investment Trust Debenture 2014
11 October	£23.0m	11 $\frac{10}{2}$ %	Scottish Northern Investment Trust Debenture 2009
22 November	£25.0m	11 $\frac{10}{2}$ %	Marley Debenture 2009

Table 2.2 (cont.)

Deletions (nominal now too small):

29 June	10 $\frac{10}{2}$ %	FFI (UK Finance) ULS 1986
	6 $\frac{30}{8}$ %	Ranks Hovis McDougall ULS 1985-88
	7%	British Shoe Corporation ULS 1985-90
	6 $\frac{30}{4}$ %	AEI Debenture 1986-91
	7 $\frac{10}{4}$ %	IMI ULS 1986-91
	7 $\frac{10}{4}$ %	FFI (UK Finance) A Debenture 1989-92
	6%	Land Securities Mortgage Debenture 1988-93
	6 $\frac{10}{2}$ %	Courtaulds ULS 1994-96
	10 $\frac{10}{2}$ %	Trusthouse Forte Debenture 1991-96
	9%	Blue Circle Industries Debenture 1992-97
	10 $\frac{10}{4}$ %	Cavenham ULS 1992-97
	10 \cdot 4 $\frac{0}{0}$ %	Euston Centre Property Mortgage Debenture 1992-97
	9 $\frac{10}{2}$ %	Michelin Tyre Debenture 1992-97
	7 $\frac{10}{4}$ %	Bass ULS 1992-97
	7 $\frac{30}{8}$ %	Bass Investments ULS 1992-97
	6%	Rugby Portland Cement ULS 1993-98
	11 $\frac{30}{4}$ %	Turner & Newall ULS 1995-2000
	6%	BLMC ULS 1998-2003
	7 $\frac{30}{4}$ %	Brooke Bond Group ULS 2003-08
	5 $\frac{10}{2}$ %	Distillers CULS undated
13 July	8 $\frac{30}{8}$ %	FFI (UK Finance) ULS 1992-97

Deletion (sinking fund):

29 June	7 $\frac{30}{4}$ %	Courtaulds Debenture 1989-94
---------	--------------------	------------------------------

Name change: FFI (UK Finance) to Investors in Industry (2 stocks)

Table 2.3. *Debenture and Loan Stock Indices: Numbers of stocks and market values at end of each year from 1977 to 1984*

	Number of stocks in price index	Market value £m	Number of stocks in yield indices
30 December 1977	57	1,119.9	50
29 December 1978	57	1,004.1	50
31 December 1979	60	988.9	56
31 December 1980	58	1,006.3	56
31 December 1981	60	910.9	57
31 December 1982	58	1,088.9	56
30 December 1983	58	1,177.2	57
31 December 1984	60	2,728.5	60

Table 2.4. *Debtenture and Loan Stock Indices: Constituents at 31 December 1984*

	Market value £m		Market value £m		Market value £m
7 $\frac{10}{16}$ %	Burmah Oil 1981–86	14.7	9%	Land Securities 1996–2001	32.5
7%	Courtaulds 1982–87	36.7	10 $\frac{8}{16}$ %	Rank Organisation 1997–2002	16.9
15%	British Land 1987	23.3	9 $\frac{3}{16}$ %	MEPC 1997–2002	18.1
14%	Woolworth Holdings 1987–89	104.6	13 $\frac{1}{16}$ %	London Trust 2000–04	16.2
7 $\frac{4}{16}$ %	Imperial Chemical Industries 1986–91	47.9	12 $\frac{1}{16}$ %	National Westminster Bank 2004	104.8
12 $\frac{10}{16}$ %	ELF UK 1991	41.8	5 $\frac{1}{16}$ %	Imperial Chemical Industries 1994–2004	14.1
7%	Guardian Royal Exchange 1986–91	18.7	7 $\frac{3}{16}$ %	Unilever 1991–2006	39.4
7 $\frac{30}{16}$ %	DRG 1986–91	16.2	14 $\frac{1}{16}$ %	Midland Bank 2002–07	116.0
12 $\frac{5}{16}$ %	Investors in Industry 1992	16.6	12 $\frac{5}{16}$ %	Standard Chartered 2002–07	108.8
7 $\frac{30}{16}$ %	General Motors 1987–92	12.0	16 $\frac{1}{16}$ %	Barclays Bank 2002–07	129.8
8 $\frac{1}{16}$ %	Bass 1987–92	19.9	13 $\frac{1}{16}$ %	S. Pearson & Son 2007	27.5
7 $\frac{1}{16}$ %	Distillers 1988–93	23.7	12 $\frac{3}{16}$ %	Westland 2008	32.6
8%	Imperial Chemical Industries 1988–93	48.6	12 $\frac{8}{16}$ %	Watney Mann & Truman 2008	54.6
8 $\frac{1}{16}$ %	Barclays Bank 1986–93	49.4	12 $\frac{1}{16}$ %	BAT Industries 2003–08	386.0
9%	National Westminster Bank 1993	17.8	11 $\frac{10}{16}$ %	Scottish Northern Investment Trust 2009	24.5
7 $\frac{4}{16}$ %	Investors in Industry 1991–94	11.9	11 $\frac{3}{16}$ %	Allied Lyons 2009	77.1
8 $\frac{1}{16}$ %	Thomas Tilling 1989–94	13.2	12 $\frac{8}{16}$ %	Slough Estates 2009	35.2
10 $\frac{1}{16}$ %	Imperial Brewing & Leisure 1990–95	14.1	11 $\frac{3}{16}$ %	Marley 2009	25.9
8 $\frac{3}{16}$ %	Ranks Hovis McDougall 1991–95	13.8	12%	Barclays Bank 2010	153.0
10 $\frac{1}{16}$ %	Imperial Group 1990–95	93.0	12 $\frac{10}{16}$ %	Throgmorton Trust 2010	20.3
10 $\frac{10}{16}$ %	Guest, Keen & Nettlefolds (U.K.) 1990–95	19.1	12 $\frac{3}{16}$ %	Seagram Distillers 2012	54.6
10 $\frac{3}{16}$ %	Imperial Chemical Industries 1991–96	40.7	12%	Queens Moat Houses 2013	15.6
7 $\frac{1}{16}$ %	Courtaulds 1994–96	20.1	11 $\frac{9}{16}$ %	Edinburgh Investment Trust 2014	40.2
8 $\frac{1}{16}$ %	Burmah Oil 1991–96	44.1	11 $\frac{1}{16}$ %	Border & Southern Stockholder Trust 2014	15.3
8 $\frac{1}{16}$ %	Land Securities 1992–97	40.0	12%	MEPC 2017	32.7
7 $\frac{1}{16}$ %	Plessey 1992–97	11.1	12 $\frac{1}{16}$ %	BOC Group 2012–17	107.0
10 $\frac{3}{16}$ %	Lucas Industries 1992–97	16.9	11 $\frac{3}{16}$ %	Brixton Estate 2018	15.9
10%	Arthur Guinness & Sons 1993–98	14.0	11 $\frac{1}{16}$ %	Brixton Estate 2023	14.9
10 $\frac{1}{16}$ %	Distillers 1993–98	38.7	10 $\frac{9}{16}$ %	MEPC 2024	67.6
10 $\frac{10}{16}$ %	Midland Bank 1993–98	29.7		(60 stocks)	
7 $\frac{1}{16}$ %	Whitbread 1995–99	19.4		Total	£2,728.5m

It was originally intended that the yield curve for debentures and loan stocks should be calculated using the same formula as for British Government Securities, viz:

$$\text{Yield } (t) = A + B \exp(-Ct) + D \exp(-Ft),$$

where t is the term to redemption. It was found, however, that this form was too flexible, perhaps because of the absence of irredeemable stocks, and it was better to use the simpler form:

$$\text{Yield } (t) = A + B \exp(-Ct).$$

This curve allows only for an upwards or downwards sloping curve going from $\text{Yield} = A + B$ when $t = 0$, asymptotically to A as t tends to infinity.

The yield curve is fitted, as for BGS, by minimizing the sum of squares of deviations from the yield curve, weighted by the market value of the stock. Values of Yield according to the formula for terms 5, 15 and 25 are quoted. Stocks are always included in the index so that at least one with a term of less than 5 years and another with a term of more than 25 years are included. This has sometimes required the inclusion of stocks with a smaller nominal outstanding than normally.

A record of the values of the price index and of the yield indices for the end of each month for the years 1978 to 1984 is shown in Tables 2.5A to 2.5G.

The cumulative rate of return for each year can be calculated using the same method as for BGS, described in §§5.1 to 5.6 of the 1976 note. Table 2.6 shows the results for each year on the 'first assumption' in which it is assumed that interest is reinvested in the index at the end of the month in which it has gone ex-dividend, and on two tax bases: gross and net at $37\frac{1}{2}\%$.

2.3. The Preference Share Indices

The main principles for selecting the constituents of the Preference share indices are the same as for the Debenture indices; most shares of a sufficient size and of a suitably normal type are included, regardless of 'quality', but only those with sufficient dividend cover are included in the yield index.

The qualification rules for Preference shares for inclusion in the price index were originally:

- (i) outstanding nominal issue not less than £3 million;
- (ii) the company registered in the United Kingdom;
- (iii) the principal quotation for the stock on The Stock Exchange;
- (iv) normal rights, i.e. cumulative, not redeemable, not convertible, not participating, and with 'normal' voting rights (i.e. not in all circumstances);
- (v) dividends paid to date;

and for inclusion in the yield index:

- (vi) dividend cover not less than 3 times, calculated on a priority percentage basis.

Table 2.5A. *Debenture and Preference Indices: values of price indices and yield indices, 1978*

	Price Indices			Yield Indices			
	Debentures		Preference	Debentures		Preference	
	P	C	P C (net)	5 yrs	15 yrs	25 yrs	Preference
30 December 1977	100.00	—	76.72	10.78	11.69	11.87	13.86
31 January 1978	98.34	.79	78.76	10.76	12.02	12.24	13.55
28 February	95.38	2.40	75.86	12.12	12.41	12.56	13.80
31 March	95.40	3.08	75.48	11.60	12.46	12.47	13.86
28 April	91.96	3.81	75.99	11.99	13.05	13.11	13.61
30 May	91.11	5.02	74.75	12.57	13.23	13.27	13.94
30 June	90.85	5.51	73.88	12.86	13.31	13.33	14.19
31 July	92.59	6.14	73.14	12.61	13.06	13.13	14.40
31 August	92.98	6.95	73.09	12.28	13.01	13.12	14.12
29 September	91.54	8.65	74.03	12.58	13.11	13.21	13.98
31 October	90.20	9.42	74.40	13.11	13.40	13.58	13.99
30 November	89.08	10.56	73.93	13.39	13.58	13.67	14.21
29 December	89.65	10.63	74.45	13.62	13.62	13.62	14.26
1978 High (on)				13.65 (14/12)	13.65 (14/12)	13.69 (27/11)	14.44 (24/7)
1978 Low (on)				10.22 (23/1)	11.66 (5/1)	11.82 (4/1)	13.49 (27/1)

Table 2.5B. *Debenture and Preference Indices: values of price indices and yield indices, 1979*

	Price Indices			Yield Indices			
	Debentures		Preference	Debentures			Preference
	P	C	P C (net)	5 yrs	15 yrs	25 yrs	Preference
29 December 1978	89.65	—	74.45	13.62	13.62	13.62	14.26
31 January 1979	86.11	1.01	74.93	14.20	14.30	14.40	14.32
28 February	89.09	2.35	70.82	13.07	13.73	13.82	14.91
30 March	96.37	3.58	74.11	11.89	12.39	12.56	14.21
30 April	97.93	4.07	76.46	11.23	12.22	12.33	13.23
31 May	95.21	5.07	76.49	12.01	12.64	12.66	13.32
29 June	92.09	5.70	72.23	12.67	13.22	13.29	14.17
31 July	93.58	6.36	73.78	12.77	13.08	13.08	13.75
31 August	94.15	8.03	72.19	12.48	12.87	12.87	14.17
28 September	92.64	8.98	71.64	12.74	13.10	13.11	13.92
31 October	88.90	9.52	68.81	13.36	13.86	13.88	14.59
30 November	82.27	10.85	66.02	15.25	15.13	15.01	15.27
31 December	82.14	11.52	64.72	15.84	15.27	15.00	15.81
1979 High (on)				15.85	15.58	15.32	15.81
				(10/12)	(10/12)	(16/11)	(28/12)
1979 Low (on)				11.10	12.08	12.18	13.22
				(8/5)	(4/5)	(8/5)	(1/5)

Table 2.5C. *Debtenture and Preference Indices: values of price indices and yield indices, 1980*

	Price Indices			Yield Indices			
	Debtentures		Preference	Debtentures		Preference	
	P	C	P	5 yrs	15 yrs	25 yrs	P
31 December 1979	82.14	—	64.72	15.84	15.27	15.00	15.81
31 January 1980	86.21	.62	67.47	14.90	14.51	14.33	15.15
29 February	82.29	2.17	64.69	15.81	15.21	14.97	15.54
31 March	81.50	3.24	63.86	15.69	15.40	15.11	15.78
30 April	84.94	3.67	63.48	14.92	14.77	14.63	15.93
30 May	86.17	4.36	64.34	14.59	14.53	14.47	15.75
30 June	88.62	5.51	67.99	14.17	14.12	14.07	15.04
31 July	92.50	6.22	72.50	13.51	13.44	13.37	14.13
29 August	87.26	6.95	70.79	14.49	14.42	14.34	14.51
30 September	88.54	8.88	69.54	14.17	14.06	13.94	14.49
31 October	90.23	9.37	69.04	13.95	13.82	13.70	14.61
28 November	89.04	10.46	69.07	14.25	14.02	13.79	14.63
31 December	87.02	11.11	69.53	14.64	14.49	14.35	14.64
1980 High (on)				15.92	15.53	15.25	15.95
				(25/2)	(21/3)	(21/3)	(1/5)
1980 Low (on)				13.32	13.34	13.29	14.13
				(23/7)	(24/7)	(25/7)	(4/8)

Table 2.5D. *Debtenture and Preference Indices: values of price indices and yield indices, 1981*

	Price Indices			Yield Indices			
	Debtentures		Preference	Debtentures			Preference
	P	C		5 yrs	15 yrs	25 yrs	
31 December 1980	87.02	--	69.53	14.64	14.49	14.35	14.64
30 January 1981	87.56	.64	70.82	14.48	14.49	14.49	14.43
27 February	87.91	1.40	69.31	14.15	14.48	14.48	14.37
31 March	87.76	3.47	67.96	14.11	14.35	14.35	14.37
30 April	87.73	3.66	67.61	14.44	14.44	14.44	14.52
29 May	85.31	4.59	65.13	14.92	14.94	14.94	15.19
30 June	84.09	5.43	63.47	15.25	15.31	15.31	15.65
31 July	81.55	6.27	61.90	15.79	15.91	16.00	16.13
28 August	80.88	7.67	61.89	15.96	16.02	16.06	15.91
30 September	76.36	9.00	59.50	16.83	17.03	17.03	16.55
30 October	76.99	9.63	58.87	17.00	16.91	16.85	16.82
30 November	80.96	10.60	60.39	16.09	15.97	15.97	16.40
31 December	78.73	11.06	61.27	16.85	16.67	16.54	16.25
1981 High (on)				17.13	17.11	17.11	16.83
				(27/10)	(28/9)	(28/9)	(29/10)
1981 Low (on)				13.80	14.16	14.17	14.28
				(12/3)	(20/3)	(23/3)	(24/3)

Table 2.5E. *Debenture and Preference Indices: values of price indices and yield indices, 1982*

	Price Indices			Yield Indices			
	Debentures		Preference	Debentures			Preference
	P	C	P	5 yrs	15 yrs	25 yrs	P
31 December 1981	78.73	—	61.27	16.85	16.67	16.54	16.25
29 January 1982	81.71	.89	64.30	16.27	16.06	15.95	15.55
26 February	84.26	1.60	63.48	15.54	15.45	15.42	15.52
31 March	87.83	3.51	64.72	14.72	14.64	14.60	15.19
30 April	86.57	3.96	63.84	15.14	15.01	14.93	15.51
28 May	88.26	4.81	64.79	14.67	14.63	14.60	15.25
30 June	88.26	5.56	65.68	14.75	14.67	14.62	15.10
30 July	92.69	6.46	67.40	13.80	13.85	13.85	14.72
31 August	99.79	7.67	70.94	12.33	12.58	12.59	13.83
30 September	99.97	8.91	74.17	12.31	12.49	12.51	13.17
29 October	105.93	9.67	79.02	11.42	11.57	11.68	12.46
30 November	101.01	10.84	78.06	12.48	12.34	12.34	12.76
31 December	101.80	11.50	75.89	12.29	12.32	12.32	13.08
1982 High (on)				17.07 (12/1)	16.85 (12/1)	16.72 (12/1)	16.24 (11/1)
1982 Low (on)				11.11 (12/11)	11.35 (12/11)	11.49 (15/11)	12.24 (12/11)

Table 2.5F. *Debenture and Preference Indices: values of price indices and yield indices, 1983*

	Price Indices			Yield Indices				
	Debentures		Preference	Debentures				
	p	C	P C (net)	5 yrs	15 yrs	25 yrs	Preference	
31 December 1982	101.80	—	75.89	12.29	12.32	12.34	13.08	
31 January 1983	99.01	.64	75.55	12.85	12.85	12.85	13.21	
28 February	100.04	1.52	76.84	12.50	12.65	12.69	12.78	
31 March	101.71	2.90	80.10	12.28	12.33	12.34	12.26	
29 April	103.62	3.03	80.55	12.16	12.15	12.14	12.25	
31 May	103.71	4.53	81.31	11.94	12.08	12.12	12.17	
30 June	104.34	5.36	82.70	12.04	11.95	11.89	11.98	
29 July	101.91	5.69	79.23	12.58	12.40	12.34	12.56	
31 August	102.25	6.94	76.83	12.46	12.35	12.27	12.84	
30 September	104.34	8.36	77.78	12.06	11.96	11.89	12.56	
31 October	105.71	9.11	78.38	11.89	11.86	11.84	12.53	
30 November	107.60	10.53	80.37	11.53	11.51	11.51	12.24	
30 December	107.74	11.16	80.46	11.57	11.57	11.57	12.31	
1983 High (on)				12.99	12.88	12.90	13.24	
				(1/2)	(2/2)	(4/2)	(24/1)	
1983 Low (on)				11.42	11.46	11.46	11.97	
				(8/12)	(23/11)	(22/11)	(1/7)	

Table 2.5G. *Debtenture and Preference Indices: values of price indices and yield indices, 1984*

	Price Indices			Yield Indices			
	Debtentures		Preference	Debtentures			Preference
	P	C	P	5 yrs	15 yrs	25 yrs	
30 December 1983	107.74	—	80.46	11.57	11.57	11.57	12.31
31 January 1984	108.86	.20	81.81	11.52	11.52	11.52	12.13
29 February	108.07	1.61	81.78	11.50	11.59	11.61	11.98
30 March	109.43	3.01	76.39	11.30	11.30	11.30	12.83
30 April	108.72	3.62	78.49	11.50	11.49	11.48	12.54
31 May	103.16	4.47	76.15	12.54	12.27	12.11	13.00
29 June	103.16	5.39	75.90	12.47	12.65	12.69	12.99
31 July	101.35	5.59	74.00	12.94	13.04	13.06	13.43
31 August	105.98	6.70	76.37	12.41	12.28	12.15	13.05
28 September	108.60	7.68	74.38	12.07	11.90	11.74	13.17
31 October	107.57	9.67	75.65	12.06	11.93	11.79	13.03
30 November	109.99	10.90	77.48	11.56	11.50	11.45	12.71
31 December	108.81	11.89	77.80	11.73	11.68	11.64	12.71
1984 High (on)				12.99	13.04	13.10	13.44
				(1/8)	(31/7)	(12/7)	(17/7)
1984 Low (on)				11.18	11.29	11.29	11.90
				(22/3)	(29/3)	(29/3)	(7/3)

Table 2.6. *Debenture and Preference Indices: Cumulative rates of return for each year*

	Debenture and Loan Stocks		Preference shares		
	Gross	Net of tax at 37½%	Gross	Net	Tax rate
1978	+ 49%	- 3.70%	+ 11.34%	+ 6.33%	35/33%
1979	+ 3.98%	- .82%	+ .08%	- 4.17%	33/30%
1980	+ 20.33%	+ 14.74%	+ 24.58%	+ 19.21%	30%
1981	+ 3.31%	- 1.68%	+ 2.79%	- 1.82%	30%
1982	+ 46.25%	+ 39.67%	+ 43.14%	+ 37.10%	30%
1983	+ 17.80%	+ 13.18%	+ 19.70%	+ 15.44%	30%
1984	+ 12.74%	+ 8.20%	+ 9.38%	+ 5.43%	30%

Where two tax rates are given for preference shares it is assumed that a tax credit at the first rate given applied for January to March of the year and at the second rate given for April to December. The gross rate is based on these rates. The net rate is based on the actual dividend.

These rules have been modified to exclude stocks where the total amount of (net) dividend is less than £150,000 per year.

The Preference share price index is calculated in just the same way as the BGS and Debenture indices, with the simplification that all stocks are irredeemable, so there is no need to consider redemptions.

It should be noted that the ex-dividend adjustment for Preference shares is on a 'net' or 'actual' basis, and does not take into account the associated tax credit.

The base value for the price index was chosen as 76.72 on 30 December 1977, the same value as the old Commercial and Industrial Preference Share Index had attained on that date.

The Preference yield index is the weighted average of the yields on the constituents included. Since all the stocks are irredeemable there is no question of a yield curve being relevant. The yield published is the gross yield, in which the net or actual dividend is grossed up at the current rate of Advance Corporation Tax to give a current gross equivalent. The relevant tax rates have been:

35% from 30 December 1977 to 5 April 1978

33% from 6 April 1978 to 5 April 1979

30% since 6 April 1979.

Since the indices were not being published at the dates of change it was actually possible to introduce these changes at the correct effective date, even though they may have been announced in budgets at a later date. This will not be possible in future.

Table 2.7 lists the constituents of the Preference share indices at 30 December 1977. There were 39 stocks in the price index, of which 36 were in the yield index. Table 2.8 gives changes in the constituents during the years 1978 to 1984. Table 2.9 gives the numbers of stocks in the price and yield indices, and the market value of the stocks in the price index at the end of each year from 1977 to 1984. Table 2.10 lists the constituents at 31 December 1984.

Table 2.7. *Preference Share Indices: Constituents at 30 December 1977*

		Market value £m
10%	Cavenham (net)	57.17
5.83%	Thomson Organization (net)	3.30
5.6%	Burmah Oil (8%)	1.61*
5.6%	Carrington Viyella (8%)	3.06
5.25%	Allied Breweries (7½%)	3.16
5.25%	Thomas Tilling (net)	5.04
5.075%	Burmah Oil (7½%)	7.35*
4.9%	Bass Charrington (7%)	2.11
4.9%	National Westminster Bank (7%)	9.29
4.9%	Shell Transport & Trading (7%)	6.80
4.9%	Whitbread 3rd Pref. (7%)	1.99
4.85%	Dalgety (net)	2.71
4.55%	Automotive Products 2nd Pref. (6½%)	1.70
4.55%	British Shoe Corporation (6½%)	1.91
4.55%	British Shoe Corporation 3rd Pref. (6½%)	2.98
4.55%	Carrington Viyella (6½%)	3.06
4.375%	Grand Metropolitan (6¼%)	1.61
4.375%	Rank Organisation (6¼%)	5.60
4.2%	British-American Tobacco 2nd Pref. (6%)	3.42
4.2%	Whitbread 3rd Pref. (6%)	2.05
4.025%	EMI (5¼%)	1.55
4.025%	Scottish & Newcastle Breweries (5¼%)	5.15
3.85%	Allied Breweries (5¼%)	2.39
3.85%	Bowater Corporation (5¼%)	3.62
3.85%	Hawker Siddeley (5¼%)	3.10
3.85%	Scottish & Newcastle Breweries (5¼%)	2.03
3.65%	Associated Biscuit Manufacturers (net)	1.58
3.5%	Albright & Wilson (5%)	1.46
3.5%	Atlas Electric & General Trust (5%)	1.87
3.5%	British-American Tobacco (5%)	2.14
3.5%	British Assets Trust A Pref. (5%)	1.76
3.5%	Cadbury Schweppes (net)	1.51
3.5%	Grand Metropolitan (5%)	2.94
3.5%	Imperial Chemical Industries (5%)	3.93
3.5%	John Lewis Partnership (5%)	3.97
3.5%	Reckitt & Colman (5%)	2.07
3.5%	Tootal (5%)	2.50
3.325%	Rio Tinto-Zinc Corporation A Pref. (net)	3.36
2.8%	Bass Charrington (4%)	1.20
	(39 stocks)	
	Total	<u>£174.04m</u>

* Indicates share excluded from the yield indices (3 stocks)

Table 2.8. *Preference Share Indices: Changes in constituents, 1978 to 1984*

1978

Deleted (takeover)		
3 November	3.5%	Albright & Wilson (5%)
Change of interest rate:		
	4.025%	Scottish & Newcastle Breweries (5½% to 5.425% (7½%))
Change of tax rate:		
6 April	Now 33%	

1979

Additions:		
2 July	10.25%	Raybeck (net)
	9%	Automotive Products (net)
	9%	Marchwiell (net)
	8%	Greenall Whitley (net)
	6.3%	J. Swire (net)
	5.775%	Newarthill (8½%)
	4.2%	Union International (6%)
3 December	4.725%	Britannia Arrow (6½%) (not to yield index)
Deletions (total dividend too small):		
3 December	4.9%	Whitbread 3rd Pref (7%)
	4.55%	Automotive Products 2nd Pref (6½%)
	4.375%	Grand Metropolitan (6½%)
	4.025%	EMI (5½%)
	3.65%	Associated Biscuit Manufacturers (net)
	3.5%	British Assets Trust A Pref (5%)
	3.5%	Cadbury Schweppes (net)
	2.8%	Bass Charrington (4%)
Change of tax rate:		
6 April	Now 30%	

1980

No changes

1981

Additions:		
10 February	10.25%	Newman Industries (net) (not in yield index)
	10%	Outwich Investment Trust (net)
Excluded from yield indices (uncovered):		
16 March	5.6%	Carrington Viyella (8%)
	4.55%	Carrington Viyella (6½%)
Name change:		Allied Breweries to Allied-Lyons

1982

Deletion (dividend not paid):		
13 May	10.25%	Newman Industries (net)
Name change:		Atlas Electric & General Trust to T.R. Technology Investment Trust

1983

Deletions (dividend not paid):		
11 April	5.6%	Carrington Viyella (8%)
	4.55%	Carrington Viyella (6½%)

Table 2.8 (cont.)

1984

Additions:

29 June	11½%	Ropner (net)
	5·6%	Carrington Viyella (8%) (dividend paid to date)
	10%	Paterson Zochonis (net)
	8·75%	H. P. Bulmer Holdings 2nd Pref (net)
	4·55%	Carrington Viyella (6½%) (dividend paid to date)

Name change and change of interest rate:

3·85%	Bowater Corporation to Bowater Industries (5½%) to 4·35%
-------	--

Table 2.9. *Preference Share Indices: Numbers of stocks and market values at end of each year from 1977 to 1984*

	Number of stocks in price index	Market value £m	Number of stocks in yield index
30 December 1977	39	174·0	37
29 December 1978	38	166·5	36
31 December 1979	38	166·3	35
31 December 1980	38	178·7	35
31 December 1981	40	155·6	34
31 December 1982	39	191·6	34
30 December 1983	37	198·9	34
31 December 1984	42	232·5	39

The introduction of Corporation Tax in 1972 affected the way in which Preference shares are described. A share that was formerly described as, say, a 5% Preference Share, with the dividend of 5% subject to tax, changed so that the actual (net) dividend payable was 70% of the previous value, i.e. 3·5% in this example. This actual dividend carries with it a tax credit at the current rate of Advance Corporation Tax, which was 30% at the date of change, but which has subsequently altered, although it is currently back to 30%. Preference shares issued before 1972 are still usually described by their old dividend rate (5% in this example) although the actual net dividend is different (3·5%). New Preference shares are described just by their new (net) rate. The lists in Tables 2.7, 2.8 and 2.9 give the actual net rate before the name, and the old gross rate in parentheses after it, or the word 'net' if the share is a more recent issue.

A record of the values of the price and yield indices at the end of each month from December 1977 to December 1984 appears in Tables 2.5A to 2.5G.

A cumulative rate of return can be calculated on essentially the same basis as for BGS and Debentures, though the tax treatment is different. Table 2.6 gives the rates on two tax bases. The net rate assumes reinvestment of the actual net dividends received. The gross rate assumes that the actual dividends are grossed up by the tax credit that would have been received thereon. Where that tax rate changed during the year, it is assumed that dividends paid in January to March

Table 2.10. *Preference Share Indices: Constituents at 31 December 1984*

		Market value £m
11.5%	Ropner (net)	4.65
10.25%	Raybeck (net)	2.94
10%	Cavenham (net)	53.73
10%	Outwich Investment Trust (net)	5.71
10%	Paterson Zochonis (net)	8.26
9%	Automotive Products (net)	6.75
9%	Marchwiell (net)	4.91
8.75%	H. P. Bulmer Holdings 2nd Pref. (net)	21.68
8%	Greenall Whitley (net)	4.85
6.3%	J. Swire (net)	7.50
5.83%	Thomson Organisation (net)	3.28
5.775%	Newarthill (8½%)	3.37
5.6%	Burmah Oil (8%)	1.98*
5.6%	Carrington Viyella (8%)	2.95
5.425%	Scottish & Newcastle Breweries (7½%)	4.76
5.25%	Allied-Lyons (7½%)	2.91
5.25%	Thomas Tilling (net)	4.72
5.075%	Burmah Oil (7½%)	9.45*
4.9%	Bass (7%)	1.97
4.9%	National Westminster Bank (7%)	8.67
4.9%	Shell Transport & Trading (7%)	6.20
4.85%	Dalgety (net)	4.26
4.725%	Britannia Arrow (6½%)	2.12*
4.55%	British Shoe Corporation (6½%)	1.93
4.55%	British Shoe Corporation 3rd Pref. (6½%)	2.85
4.55%	Carrington Viyella (6½%)	3.03
4.375%	Rank Organization (6½%)	5.50
4.35%	Bowater Industries (net)	3.92
4.2%	British-American Tobacco 2nd Pref. (6%)	3.18
4.2%	Union International (6%)	3.36
4.2%	Whitbread 3rd Pref. (6%)	1.92
3.85%	Allied-Lyons (5½%)	2.23
3.85%	Hawker Siddeley (5½%)	2.86
3.85%	Scottish & Newcastle Breweries (5½%)	1.88
3.5%	T.R. Technology Investment Trust (5%)	1.85
3.5%	British-American Tobacco (5%)	1.94
3.5%	Grand Metropolitan (5%)	3.33
3.5%	Imperial Chemical Industries (5%)	3.77
3.5%	John Lewis Partnership (5%)	3.76
3.5%	Reckitt & Colman (5%)	1.91
3.5%	Tootal (5%)	2.50
3.325%	Rio Tinto-Zinc Corporation A Pref. (net)	3.21
	(42 stocks)	
	Total	<u>£232.52m</u>

* Indicates share excluded from the yield indices (3 stocks).

are grossed up at one rate and in April to December at the second rate. This is not strictly precise: the actual tax credit accompanying the dividend depends on the date of payment of the dividend, whereas the record in the index of a cumulative ex-dividend adjustment is credited on the ex-dividend date. It is not now possible to adjust retrospectively, and it would be difficult to keep in step contemporaneously even if it was worth the trouble.

It should be noted that the total market value of the stocks in the Preference index has only recently risen above £200 million, an almost trivial amount in comparison with the BGS or Ordinary Share indices. Many of the stocks appear to be thinly traded, since the observed price changes for individual stocks are infrequent and relatively large. Further, one single issue, 10% Cavenham, has accounted for some 25% to 30% of the total market value, and its yield has often been out of line with that of other stocks in the index, thus distorting the value of the yield index. For example, at 31 December 1984 the index yield was 12.71% gross (8.89% net). Of the 39 stocks in the yield index only 6 had a yield higher than this, and 33 had a lower yield. The median yield on the stocks, unweighted, was 11.83% (8.28% net). This must be borne in mind when using the index as an indicator of the yield on a 'typical' Preference share.

3. THE BRITISH GOVERNMENT INDEX-LINKED STOCKS INDICES

3.1. *The Index-Linked Price Index*

There is one price index for all index-linked stocks. It is constructed on exactly the same principles as the price indices for other British Government Securities and for the Debenture and Unsecured Loan Stocks and the Preference Share Indices. The index value is based on the quoted middle market prices of the stocks (generally the same as appear in the London Share Service pages of the *Financial Times*), which are weighted by the nominal amount of stock in issue. Accrued interest is added (deducted if the stock is quoted ex-dividend) for stocks with less than five years to redemption. The index is chain-linked for changes in constituents in the same way as the other indices.

An 'ex-dividend adjustment' is calculated which shows the amount of interest to be received on the index, credited whenever a stock is first quoted ex-dividend. The cumulative amount of this for the year to date is also shown.

Stocks which are issued fully paid are included in the index on the day of issue at their issue price. Stocks issued partly paid are not included until the day on which they are fully paid, and they enter at their market price on that day. Issues of further tranches of existing stocks, 'minitaps', are included in the index at the first opportunity at the current market price. It is not practicable to include them on the day their issue is announced. All these rules are the same as for the British Government Securities Indices.

Stocks come out of the index-linked index when they are one year from redemption. Other BGS come out when they cease to be quoted on the Stock Exchange, some four weeks before redemption. But the index-linked stocks

become equivalent to fixed interest stocks when the Retail Prices Index on which their final redemption amount will be based is published, which is about seven months before the redemption date. For some months before that they have the character of fixed interest stocks. The Committee therefore felt it appropriate to exclude them from both the price index and the yield index one year before their redemption date.

Stocks convertible into fixed-interest stocks, such as $2\frac{1}{2}\%$ Index-linked Treasury Convertible 1999 are excluded from the index; after the last date on which conversion would be possible, such stocks are normal index-linked ones, and any outstanding balance, if still quoted, would be included in the index. As it happens, the one such stock issued was almost all converted, so no worthwhile balance remains.

The base value of the price index was fixed at 100.0 on 30 April 1982, by which time four stocks had become fully paid. The index has been calculated from 26 May 1981, when the first index-linked stock to be issued, 2% Index-linked Treasury 1996, became fully paid. The value of the price index on that date was 99.66, very close as it happens to 100.

The index was first published in the *Financial Times* with the values for 2 July 1984, which appeared in the following day's paper.

The history of the index from its first calculation up to the end of 1984 is discussed in Section 3.3.

3.2. *The Index-Linked Yield Indices*

The yields shown are the gross 'real' redemption yields on the whole portfolio of stocks included in the price index. The constituents are therefore exactly the same as those of the price index at all times. The yields can be thought of as the inherent real yield to redemption which would be obtained by an investor who bought a constant proportion of each issue, and held each to its redemption date. Such a yield has the merits and faults of any redemption yield.

No 'yield curve' is calculated, as is done for the other British Government Securities. When only a few stocks had been issued it would have been impossible to observe a yield curve, and the Committee felt it likely that, initially at least, index-linked stocks would carry similar real yields whatever their duration. As it happens, a clearly falling yield curve has been observed for some time; however the decline is not large, and for the time being only redemption yields will be shown.

Because the calculated real yield on the index-linked stocks depends on the future rate of inflation, two yields are quoted, assuming future annual inflation rates of 5% and 10%, uniformly from the date of the last published value of the Retail Prices Index. Yields on the assumption of other inflation rates can be calculated by linear interpolation or extrapolation from the two published values.

The formula on which the yields are calculated is described by A. D. Wilkie in "On the Calculation of 'Real' Investment Returns", *J.I.A.* **111**, 149 and *T.F.A.*

39, 105. However, in that note it was assumed that the latest known value of the Retail Prices Index was always that for two calendar months before the date at which the calculations are being made. While this is true for part of the time, for some days in each month the latest known value is that for the immediately previous calendar month. The calculation of the real yield for the index-linked yield indices takes this fact correctly into account.

The yield indices have been calculated from 26 May 1981, over the same period as the price index, and they commenced publication on the same day, 2 July 1984. The history of the constituents follows exactly that of the constituents of the price index, and is described below.

3.3. History of the Index-Linked Indices

The price index and the yield indices have been calculated from 26 May 1981 when the first index-linked stock to be issued, 2% Index-linked Treasury 1996, became fully paid. Other stocks have entered as they were issued fully paid or became fully paid. Additional tranches of existing stocks have been added as they were issued. Ten stocks were issued by 31 December 1984.

So far no stocks have left the index. Of the ten stocks in issue at the end of 1984 the shortest is 2% Index-linked Treasury 1988, which will be taken out of the index on 30 March 1987, when it is one year from redemption.

The dates at which stocks entered the index are shown in Table 3.1, and the stocks in issue at 31 December 1984 are shown in Table 3.2. Values of the indices at the end of each month up to 31 December 1984 are shown in Tables 3.3A and 3.3B.

Just as for the other indices one can calculate cumulative rates of return over the year, on various assumptions. Table 3.4 shows the rates for successive years, using the 'first assumption', in which interest is assumed to be invested at the end of the month during which it has gone ex-dividend.

Table 3.1. *Index-linked Stocks Indices: Changes to the Constituents*

The following stocks entered the indices fully paid on the dates shown, having been issued partly paid earlier.

Date	Stock	Nominal £ million
26 May 1981	2 $\frac{0}{8}$ % IL 1996	1,000
11 September 1981	2 $\frac{0}{8}$ % IL 2006	1,000
16 March 1982	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2011	750
29 April 1982	2 $\frac{0}{8}$ % IL 1988	750
14 March 1983	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2016	750
12 December 1983	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2020	750

The following stocks entered fully paid as new issues on the dates shown:

Date	Stock	Nominal £ million
26 August 1982	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2001	250
19 October 1982	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2009	400
27 October 1982	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2003	250
5 January 1984	2 $\frac{0}{8}$ % IL 1990	300

The following additional tranches of stock entered the indices on the dates shown, and with the additional nominal amount shown.

Date	Stock	Nominal £ million
10 December 1982	2 $\frac{0}{8}$ % IL 1988	250
7 September 1983	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2001	100
	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2003	100
	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2009	100
	2 $\frac{0}{8}$ % IL 1990	100
2 October 1984	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2009	100
	2 $\frac{0}{8}$ % IL 1990	100
	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2003	100
16 October 1984	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2016	200
	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2003	100
19 December 1984	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2001	150
	2 $\frac{1}{2}$ $\frac{0}{8}$ % IL 2011	100

No stocks have left the indices.

Table 3.2. *Index-linked Stocks Indices: Constituents at 31 December 1984*

	Market Value £ Million
2 $\frac{1}{2}$ % IL 1988	1,082.1
2 $\frac{1}{2}$ % IL 1990	370.5
2 $\frac{1}{2}$ % IL 1996	1,098.8
2 $\frac{1}{2}$ % IL 2001	502.5
2 $\frac{1}{2}$ % IL 2003	446.6
2 $\frac{1}{2}$ % IL 2006	1,021.2
2 $\frac{1}{2}$ % IL 2009	594.8
2 $\frac{1}{2}$ % IL 2011	894.6
2 $\frac{1}{2}$ % IL 2016	898.9
2 $\frac{1}{2}$ % IL 2020	704.1
Total	<u>7,614.1</u>

Table 3.3A. *Index-Linked Stocks Indices: Record for 1981 and 1982*

Date	Price Index		Yield Indices	
	Index (P)	xd adjustment (C) (year to date)	Real redemption yields assuming inflation at	
			5%	10%
26 May 1981	99.66	—	2.72	2.52
29 May	100.43	—	2.67	2.48
30 June	101.20	—	2.68	2.48
31 July	96.82	—	3.09	2.90
28 August	96.57	.82	3.10	2.90
30 September	92.76	.82	3.24	3.08
30 October	94.98	.82	3.14	2.98
30 November	97.47	.82	3.05	2.88
31 December	96.03	1.31	3.20	3.04
1981 High (on)			3.25 (21/12)	3.08 (2/10)
1981 Low (on)			2.57 (15/6)	2.39 (15/6)
29 January 1982	95.90	—	3.26	3.10
26 February	95.18	.58	3.33	3.16
31 March	102.14	.58	2.83	2.68
30 April	100.00	.58	3.04	2.86
28 May	101.04	.58	3.12	2.94
30 June	100.75	.91	3.19	3.00
30 July	100.83	1.19	3.20	3.02
31 August	102.83	1.75	3.04	2.86
30 September	102.39	1.75	3.09	2.91
29 October	109.02	1.75	2.65	2.48
30 November	107.30	1.75	2.81	2.64
31 December	109.02	2.02	2.73	2.55
1982 High (on)			3.34 (24/2)	3.18 (9/3)
1982 Low (on)			2.52 (12/3)	2.37 (12/3)

Table 3.3B. *Index-Linked Stocks Indices: Record for 1983 and 1984*

Date	Price Index		Yield Indices	
	Index (P)	xd adjustment (C) (year to date)	Real redemption yields assuming inflation at 5%	10%
31 January 1983	112.49	·23	2.49	2.31
28 February	111.88	·84	2.51	2.33
31 March	111.75	·84	2.56	2.39
29 April	110.81	1.03	2.63	2.46
31 May	105.94	1.03	3.04	2.87
30 June	104.73	1.42	3.14	2.96
29 July	102.18	1.62	3.34	3.16
31 August	104.39	2.14	3.21	3.03
30 September	105.80	2.14	3.17	2.99
31 October	106.73	2.35	3.14	2.96
30 November	106.34	2.35	3.21	3.03
30 December	106.81	2.72	3.16	2.99
1983 High (on)			3.37 (12/8)	3.18 (10/8)
1983 Low (on)			2.47 (3/2)	2.29 (3/2)
31 January 1984	106.56	·17	3.21	3.03
29 February	104.19	·63	3.35	3.17
30 March	104.77	·76	3.35	3.17
30 April	105.12	·95	3.36	3.18
31 May	102.88	·95	3.63	3.44
29 June	102.03	1.36	3.71	3.52
31 July	98.33	1.53	4.01	3.82
31 August	101.15	2.08	3.79	3.60
28 September	102.88	2.23	3.74	3.55
31 October	109.00	2.44	3.31	3.12
30 November	109.38	2.44	3.35	3.16
13 December	109.61	2.88	3.34	3.16
1984 High (on)			4.02 (30/7)	3.82 (30/7)
1984 Low (on)			3.16 (4/1)	2.99 (4/1)

Table 3.4. *Index-Linked Indices: Cumulative rates of return for each year*

	1981 (26 May to 31 December)	1982	1983	1984
Gross	-2.33%	+15.82%	+·48%	+5.49%
Net of tax at 37½%	-2.82%	+14.96%	-·47%	+4.41%