Money Purchase Pension Schemes in the UK

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Introduction

Legislative changes in the United Kingdom have made money purchase pension schemes fashionable again. As a result a large number of new money purchase pension schemes, both group and individual, will have been set up by the end of 1988. This paper indicates the reasons for this change and compares the benefits payable by this type of scheme with those payable by the still more popular defined benefit final salary type of arrangement.

Money purchase pensions were still widely used in the United Kingdom up to the early 1960s. For the self employed they remain the only form of provision that is available. But as far as occupational schemes for employees are concerned they went out of fashion when high and fluctuating inflation rates and rapid rises in standards of living focussed attention on providing pensioners with a continuation of the standard of living they had enjoyed just before retirement. The defined benefit schemes which replaced them were put in place at a time when the proportion of the working population covered by an occupational scheme increased rapidly. The defined benefit schemes were modelled on the schemes provided for state employees and others whose career patterns were predictable and rarely involved changes of employment. For such people these schemes provided attractive benefits and they became widely perceived as the only kind of scheme which was worth having.

In 1971, the state went one step further in seeking to maintain the standard of living of employees just before retirement and formalised the process of index linking pensions in payment for public sector pensioners.

There were however practical problems which defined benefit schemes failed to tackle adequately. These problems arose particularly in periods of high inflation and poor investment returns such as

those experienced in the 1970s. For example the private sector was slow to follow the public sector in providing index-linking. The problems were particularly acute for those employees who had changed jobs many times in their careers, which had the effect of breaking the link between standards of living near retirement and an individual's total pension. As a result, private sector pensions were perceived by many people as having failed to deliver.

In 1984, when the government came to conduct its enquiry into retirement provision, the dominant factors were:

[] A new political philosophy of self reliance, choice and identification with personal wealth;

[] A recent period of high real investment returns and lower inflation;

[] Concerns about demographic factors which, it was suggested ,meant the state pension scheme would be a heavy burden on the working population collectively in the next century;

[] A high level of apparent public concern about the poor pensions provided by conventional occupational pension schemes to frequent job changers and others whose career pattern did not fit the model for which the schemes were designed.

These combined to produce a government policy based on a greater role for money purchase pensions, to some extent replacing the state pension.

Money purchase in practice

This paper compares what could have been provided over the last quarter century by a typical money purchase arrangement with the benefits from a 60ths scheme for those in stable

employment. In addition we give some estimates based on that experience on what sort of results these new arrangements could provide in the future.

We have made some estimates of the benefits which might have been provided by a typical money purchase scheme subject to the economic and financial experience of the last 25 years. For convenience we have expressed our results in terms of the contribution rate which would have been required to provide the benefit offered to male members by a sixtieths final salary scheme at age 65. This has been the most common level of provision in a defined benefit scheme over the period concerned.

The chart below (figure 1) shows the range of contribution rates required to provide 60ths benefits for retirements in each of the ten years 1978 to 1987 for male employees entering the money purchase scheme at ages between 50 and 60.

Figure 1: Required Contribution Rates 1978-87

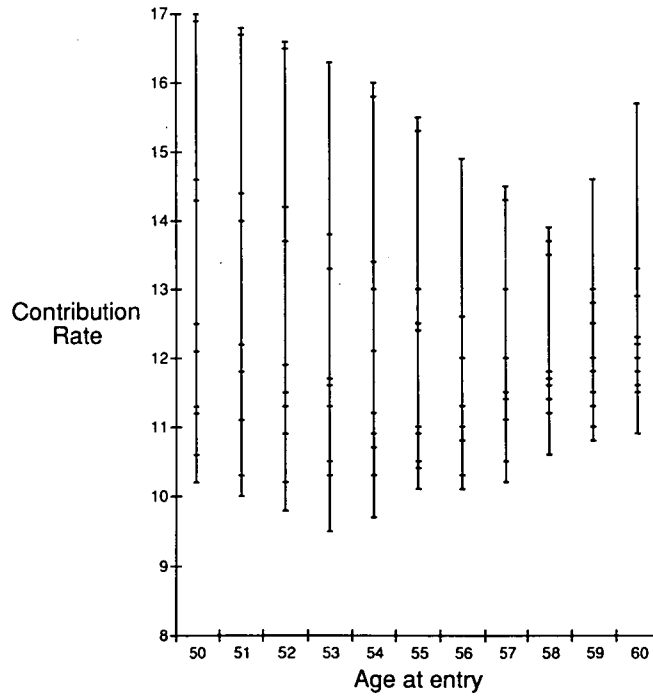

Figure 1. Contribution rates which provide 60ths pension by year of retirement

The full results for individuals with entry ages 40 to 64 are given in Appendix 1.The rates of return are based on the Phillips & Drew figures for private pension funds [1]. Annuity rates are based on redemption yields on 10 year UK Government securities for the year of retirement and allow for 3% pension increases [2].

Looking only at the figures for entry ages of 60 or less it can be seen that the required contribution rate varies from 25.1% for a 53 year old entrant retiring at the end of 1974 down to 9.5% for a 53 year old entrant retiring at the end of 1985. In other words the annual benefit actually secured by a contribution of 15.9%, which is the overall average required to provide a 60ths pension, would vary from 36ths down to 95ths, depending on the period of service and year of retirement. Even if we discount the extreme values we find that 90% of the figures lie between 20.7% and 10.3%.

We have taken this comparison further, by separately identifying the effects of annuity rate fluctuations and investment return variations. There is a further limited effect resulting from pay increases which we have ignored.

Figure 2 shows the deviation from the mean contribution rate resulting from fluctuating annuity rates alone for retirements in each of the ten years 1978 to 1987 for male members entering the scheme between ages 50 and 60 (i.e. they are assumed to receive the mean rate of return in the period up to retirement). Figure 3 on the other hand shows the range of deviations from the mean for each of those years resulting from differences in the investment returns available (i.e. they are assumed to receive the mean annuity rate on retirement).

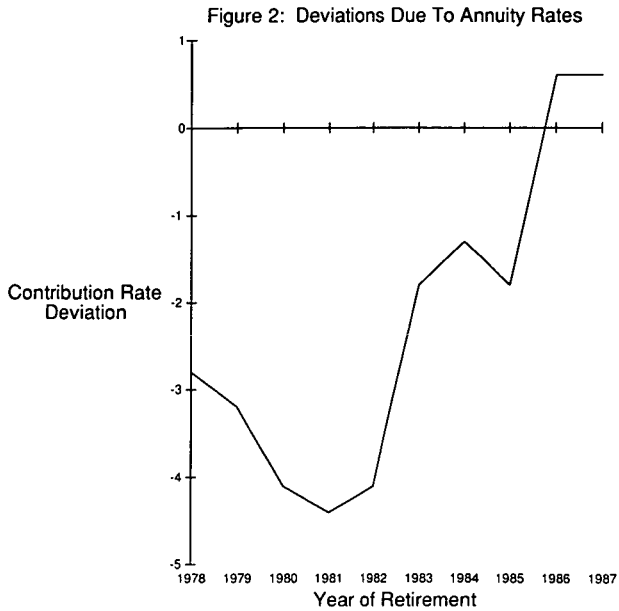

Figure 2. Deviation from mean contribution rate resulting from fluctuations in annuity rates

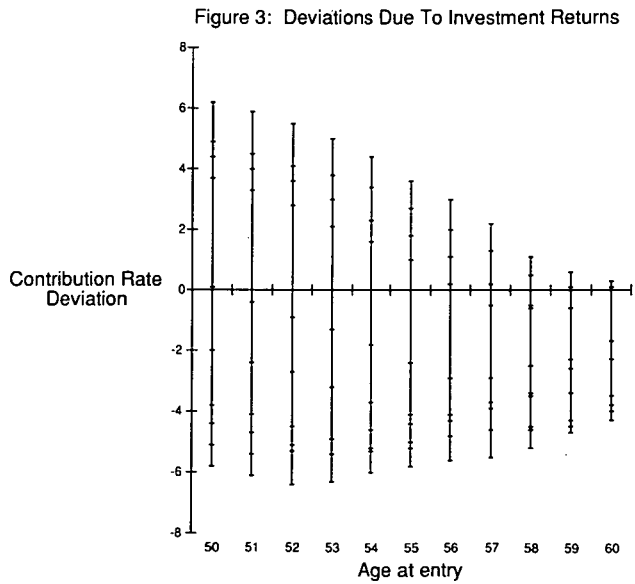

Figure 3. Deviations from mean contribution rate resulting from fluctuations in investment returns

The full results are given in Appendices 2.1 and 2.2

Projections for Money Purchase Benefits

So much for the past. What will things look like in the future ? Taking the view that the whole of actuarial work is founded on being able to apply some pattern detected in the past to the future, we have used the data used above to simulate future experience.

Figures 4 and 5 below show the spread of results under two different approaches to simulation for future rates of return on investments. In both cases it is assumed that the annuity rates on retirement are independent of the yield achieved over the period of service. In practice this is not unreasonable given periods of service greater than 5 years. The first approach is to assume that the rate of return achieved in any year is independent of that achieved in any other year i.e, it is selected randomly from the past experience. While in practice there seems little evidence against this assumption it seems intuitively to be unrealistic. The second approach, therefore, is to select five year runs of past experience selected at random to provide a reasonable degree of correlation between succeeding annual figures.

Figure 4: Distribution of Contribution Rates

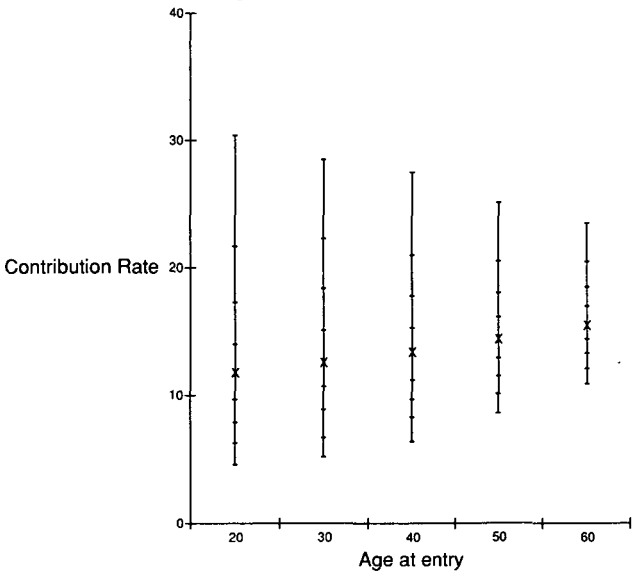

Figure 4. Projected contribution rates to provide 60ths pension : Deciles (simulated using rates of return for individual years)

Figure 5: Distribution of Contribution Rates

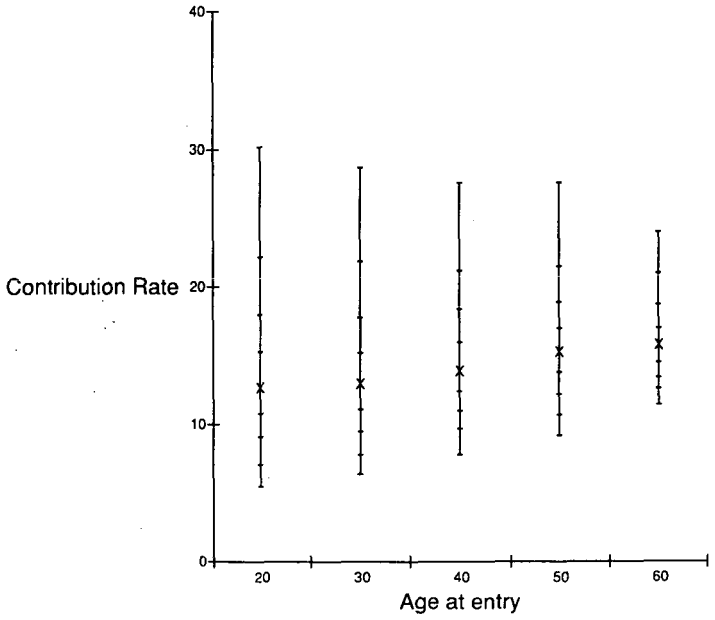

Figure 5. Projected contribution rates to provide 60ths pension : Deciles (simulated using rates of return over 5 year periods)

Conclusion

The figures both for past history and for the projections show the great variation in the levels of benefit produced in a money purchase scheme for a given level of contribution. The figures also show the comparative significance of fluctuations in annuity rates.

Such variations are unacceptable in practice creating problems whether in terms of inadequate pensions or benefits which exceed the limits set by the Inland Revenue. They mean that individuals with money purchase type benefits who wish to guarantee a particular level of income in retirement, will have to devote considerable attention in the period up to their retirement to protecting the real value of their benefits against changes in investment values and fluctuations in annuity rates. While such steps can be taken, the avoidance of the risks involved will have a impact on the overall yield which can be expected and hence the average level of benefits provided by a money purchase arrangement.

References:

1. Phillips and Drew Fund Management : Pension Fund Indicators 1987

2. Bank of England Quarterly

Appendix 1

PENSION SCHEME COMPARISON

FINAL SALARY VS MONEY PURCHASE

The table shows the contribution rate (as a percentage of salary) required to secure money purchase benefits equivalent to those available from a sixtieths final one-year salary scheme (at age 65) for different entry ages and years of retirement.

Rates of return are based on Phillips & Drew figures for private pension funds and the provisional CAPS return for 1987. Annuity rates are based on redemption yields on 10 year gilts for the year of retirement and allow for 3% escalation.

MALES

Entry Age / Year of Retirement	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
1963																									25.7
1964																								26.3	26.1
1965																							23.1	22.9	22.5
1966																						23.1	22.8	22.5	22.2
1967																					21.6	21.4	21.2	21.1	21.3
1968																				17.1	17.0	17.0	17.1	17.6	18.9
1969																			17.9	17.8	17.9	18.1	18.6	19.4	19.4
1970																		20.4	20.4	20.4	20.5	20.9	21.3	20.7	19.3
1971																	17.2	17.1	17.1	17.2	17.4	17.7	17.3	16.7	17.2
1972																17.0	17.0	17.0	17.1	17.4	17.6	17.4	17.1	17.7	18.5
1973															20.6	20.6	20.6	20.6	20.8	21.0	20.7	20.3	20.6	20.5	18.8
1974														25.1	25.0	24.8	24.7	24.6	24.5	23.8	23.0	22.5	21.3	18.8	15.3
1975													19.4	19.2	18.9	18.7	18.5	18.2	17.6	16.8	16.2	15.2	13.5	11.6	10.8
1976												20.1	19.8	19.6	19.3	19.0	18.7	18.0	17.3	16.6	15.7	14.3	12.8	12.5	13.4
1977											16.1	15.9	15.7	15.5	15.2	14.9	14.5	13.9	13.4	12.8	11.8	10.9	10.8	11.5	12.1
1978										17.2	16.9	16.7	16.5	16.3	16.0	15.5	14.9	14.5	13.9	13.0	12.2	12.2	13.0	13.7	14.3
1979									17.5	17.3	17.0	16.8	16.6	16.3	15.8	15.3	14.9	14.3	13.5	12.8	12.9	13.6	14.0	14.3	13.7
1980								15.2	15.0	14.8	14.6	14.4	14.2	13.8	13.4	13.0	12.6	12.0	11.4	11.5	12.0	12.3	12.4	12.0	11.9
1981							15.1	14.9	14.7	14.5	14.3	14.0	13.7	13.3	13.0	12.5	12.0	11.5	11.6	12.0	12.3	12.4	12.1	12.1	12.3
1982						13.0	12.8	12.6	12.5	12.3	12.1	11.8	11.5	11.3	10.9	10.5	10.1	10.2	10.6	10.8	10.9	10.8	10.9	11.2	11.8
1983					13.6	13.4	13.3	13.1	13.0	12.8	12.5	12.2	11.9	11.6	11.2	10.9	11.0	11.4	11.7	11.8	11.8	12.0	12.5	13.2	14.4
1984				12.5	12.4	12.2	12.1	12.0	11.8	11.6	11.3	11.1	10.9	10.5	10.3	10.4	10.8	11.1	11.2	11.3	11.6	12.1	12.9	14.0	14.9
1985			11.4	11.3	11.2	11.0	10.9	10.8	10.6	10.4	10.2	10.0	9.8	9.5	9.7	10.1	10.3	10.5	10.6	11.0	11.5	12.3	13.2	14.1	14.8
1986		11.9	11.8	11.7	11.6	11.5	11.3	11.1	10.9	10.8	10.6	10.3	10.2	10.3	10.7	11.0	11.3	11.5	11.8	12.5	13.3	14.3	15.2	16.0	16.8
1987	12.7	12.6	12.5	12.4	12.3	12.2	12.0	11.8	11.7	11.5	11.2	11.1	11.3	11.7	12.1	12.4	12.6	13.0	13.7	14.6	15.7	16.6	17.4	18.0	18.4

Appendix 2.1

PENSION SCHEME COMPARISON

FINAL SALARY VS MONEY PURCHASE

The table shows the contribution rate (as a percentage of salary) required to secure money purchase benefits equivalent to those available from a sixtieths final one-year salary scheme (at age 65) for different entry ages and years of retirement, compared with the mean contribution rate due to annuity rates.

Rates of return are based on Phillips & Drew figures for private pension funds and the provisional CAPS return for 1987. Annuity rates are based on redemption yields on 10 year gilts for the year of retirement and allow for 3% escalation.

MALES

Entry Age	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Year of Retirement																									
1963																									8.7
1964																								7.4	7.4
1965																							5.0	5.1	5.1
1966																						4.0	4.0	4.0	4.1
1967																					5.0	5.0	5.0	5.1	5.1
1968																				3.0	3.1	3.1	3.1	3.1	3.1
1969																			.6	.6	.6	.7	.7	.7	.7
1970																		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
1971																	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
1972																1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
1973															-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7
1974														-4.7	-4.7	-4.7	-4.7	-4.7	-4.8	-4.8	-4.8	-4.8	-4.8	-4.9	-4.9
1975													-3.6	-3.6	-3.6	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.8	-3.8	-3.8	-3.8
1976												-3.6	-3.6	-3.6	-3.6	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.8	-3.8	-3.8	-3.8
1977											-3.2	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.4	-3.4
1978										-2.7	-2.7	-2.7	-2.7	-2.8	-2.8	-2.8	-2.8	-2.8	-2.8	-2.8	-2.8	-2.9	-2.9	-2.9	-2.9
1979									-3.1	-3.1	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	-3.4	-3.4
1980								-3.9	-3.9	-3.9	-4.0	-4.0	-4.0	-4.0	-4.0	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.2	-4.2	-4.2	-4.2
1981							-4.2	-4.3	-4.3	-4.3	-4.3	-4.3	-4.4	-4.4	-4.4	-4.4	-4.4	-4.5	-4.5	-4.5	-4.5	-4.5	-4.6	-4.6	-4.6
1982						-3.9	-3.9	-3.9	-3.9	-3.9	-4.0	-4.0	-4.0	-4.0	-4.0	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.2	-4.2	-4.2	-4.2
1983					-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.9	-1.9	-1.9
1984				-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
1985			-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.9	-1.9	-1.9
1986		.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.7	.7	.7	.7
1987	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.7	.7	.7	.7

Appendix 2.2

PENSION SCHEME COMPARISON

FINAL SALARY VS MONEY PURCHASE

The table shows the contribution rate (as a percentage of salary) required to secure money purchase benefits equivalent to those available from a sixtieths final one-year salary scheme (at age 65) for different entry ages and years of retirement, compared with the mean contribution rate due to rates of return.

Rates of return are based on Phillips & Drew figures for private pension funds and the provisional CAPS return for 1987. Annuity rates are based on redemption yields on 10 year gilts for the year of retirement and allow for 3% escalation.

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1963																									-.4
1964																								.9	.8
1965																							.7	.4	.0
1966																						1.5	1.2	.9	.6
1967																					-.3	-.5	-.8	-.9	-.8
1968																				-2.4	-2.5	-2.6	-2.6	-2.2	-1.2
1969																			.6	.5	.4	.6	1.0	1.7	1.6
1970																		2.7	2.6	2.5	2.6	2.8	3.2	2.6	1.2
1971																	-1.3	-1.4	-1.5	-1.4	-1.3	-1.2	-1.6	-2.2	-1.8
1972																-.2	-.2	-.3	-.3	-.1	.0	-.3	-.6	-.1	.6
1973															5.5	5.4	5.3	5.4	5.5	5.6	5.2	4.7	4.9	4.8	2.9
1974														22.1	21.8	21.5	21.2	21.1	20.8	19.7	18.3	17.5	15.7	11.7	6.3
1975													9.9	9.6	9.2	8.8	8.5	8.0	7.1	6.0	5.1	3.7	1.4	-1.2	-2.4
1976												10.1	9.7	9.2	8.8	8.4	7.9	7.0	5.9	5.0	3.7	1.8	-.1	-.7	.4
1977											4.1	3.8	3.4	3.1	2.8	2.3	1.6	.9	.2	-.7	-1.9	-3.2	-3.3	-2.5	-1.8
1978										5.2	4.9	4.5	4.1	3.8	3.4	2.7	2.0	1.3	.5	-.6	-1.7	-1.7	-.8	-.1	.6
1979									7.0	6.6	6.2	5.9	5.5	5.0	4.4	3.6	3.0	2.2	1.1	.1	.1	.9	1.5	1.7	.9
1980								5.4	5.1	4.7	4.4	4.0	3.6	3.0	2.3	1.8	1.1	.2	-.6	-.6	.0	.3	.4	-.2	-.4
1981							5.1	4.7	4.4	4.1	3.7	3.3	2.8	2.1	1.6	1.0	.2	-.5	-.5	.0	.3	.3	-.1	-.2	.0
1982						1.6	1.3	1.0	.7	.4	.1	-.4	-.9	-1.3	-1.8	-2.4	-2.9	-2.9	-2.5	-2.3	-2.3	-2.5	-2.4	-2.1	-1.4
1983					-.3	-.6	-.8	-1.1	-1.3	-1.6	-2.0	-2.4	-2.7	-3.2	-3.7	-4.1	-4.1	-3.7	-3.5	-3.4	-3.5	-3.3	-2.9	-2.1	-.9
1984				-2.1	-2.3	-2.5	-2.7	-2.9	-3.2	-3.5	-3.8	-4.1	-4.5	-4.9	-5.2	-5.2	-4.8	-4.6	-4.5	-4.5	-4.3	-3.8	-3.0	-2.0	-1.0
1985			-2.6	-2.8	-3.0	-3.2	-3.4	-3.6	-3.9	-4.2	-4.4	-4.7	-5.1	-5.4	-5.3	-5.0	-4.8	-4.6	-4.6	-4.3	-3.8	-3.0	-2.0	-1.1	-.4
1986		-4.0	-4.1	-4.3	-4.5	-4.6	-4.8	-5.1	-5.3	-5.6	-5.8	-6.1	-6.4	-6.3	-6.0	-5.8	-5.6	-5.5	-5.2	-4.7	-4.0	-3.1	-2.3	-1.7	-1.0
1987	-3.0	-3.2	-3.4	-3.5	-3.7	-3.9	-4.1	-4.4	-4.6	-4.8	-5.1	-5.4	-5.3	-4.9	-4.6	-4.4	-4.3	-3.9	-3.4	-2.6	-1.7	-.9	-.2	.4	.6