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UK annuity price series, 1957–2002

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. . . but if you observe, people always live for ever when there is an annuity to be paid them; and she is very stout and healthy, and hardly forty. An annuity is a very serious business; it comes over and over every year, and there is no getting rid of it.

Jane Austen, *Sense and Sensibility* (1811)

I

A life annuity is an income stream, which, in exchange for a lump sum, is paid to an annuitant over his or her remaining lifetime, and as such insures the annuitant against longevity risk. The existence of annuities can be traced back to Roman times in valuing legacies[2] and they were used throughout the Middle Ages, becoming popular with governments as a method of raising money. The Equitable Life Assurance Society was founded in 1762, and the following centuries saw the growth of life assurance companies and societies competing with the government to sell annuities. The UK government stopped selling annuities in 1928.[3]

The annuities market was given a boost under the 1956 Finance Act, which implemented the main recommendations of the 1954 Millard Tucker No. 2 Committee on the introduction of tax-efficient personal pensions for the self-employed. This meant that the self-employed were treated the same as the employed sector who had enjoyed the benefits of tax-efficient occupational pension schemes for a number of years. Ever since 1956 the annuities market has been linked with pensions policy in the UK.

Following the 1956 Act, individuals could obtain tax relief on contributions into an *approved* pension contract, and at retirement would be required to annuitise the fund that had been built up. Further, the returns to investments in the pension fund of life assurance companies during the accumulation part of the pension contract

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[2] E. J. W. Dyson, 'The history of individual annuity contracts', Insurance Institute of London, 1969.

[3] M. Wadsworth, A. Findlater and T. Boardman, 'Reinventing annuities', Staple Inn Actuarial Society, 2001.

would be exempt from tax. An additional part of the 1956 Act also affected the tax treatment of voluntary annuities: a fixed proportion of the annuity payment for purchased life annuities was to be regarded as a run-down of capital, and an annuitant would only be liable for income tax on the balance. These changes stimulated the demand for annuities in the UK, and Table 1 shows the sales of voluntary annuities averaged over five-yearly intervals from the 1950s to the present day.

The numbers of annuities purchased each year vary greatly, though the value of the lump sum used to purchase an annuity contract has grown steadily from £106 million pounds in the late 1960s to £650 million in the first half of the 1990s. Subsequently in the latter half of the decade the value of annuities premiums fell.

The 1956 changes introduced a new compulsory-purchase annuities market for those who had built up a personal pension fund, distinct from the existing voluntary annuities market. As noted by Finkelstein and Poterba,[4] the difference between the voluntary and compulsory annuities markets is that it is likely that selection effects are more important in the former than the latter. Only individuals who expect to live for a long time are likely to purchase a voluntary annuity, whereas compulsory annuities are purchased as part of the terms of the pension contract. Initially the pensions annuity market had zero sales, since it would have been the young working cohort in the late 1950s who would have started saving through a personal pension, and it is unlikely that this cohort would have annuitised immediately. By the 1990s this compulsory annuity market was ten times larger than the voluntary annuities market, and it will continue to grow as the percentage of the population with personal pensions grows. Table 1 also records the growth in personal pensions throughout the second half of the last century.

The UK currently has three tiers of pension provision in operation. The first tier is the basic state scheme, which is *unfunded* and pays a flat-rate pension. With an unfunded scheme there is no underlying fund of assets (so current workers pay the pensions of the retired) and this type of scheme represents an intergenerational transfer between the working population and the retired population. Membership of the basic state scheme is compulsory for all employed and self-employed workers with earnings above a small exception limit, and contributions are collected through the national insurance system. The second tier is the State Earnings-Related Pension Scheme (SERPS), which is also *unfunded* and pays a *defined-benefit* pension which is related to average earnings over the employee's life. Membership is compulsory for all employees (but not the self-employed) unless the employee has contracted out into a private pension scheme, and contributions are collected through the national insurance system. SERPS was replaced in April 2002 by the State Second Pension, which provides more generous pensions to persons on low and moderate incomes, and gives pension entitlements to carers.

[4] A. Finkelstein and J. M. Poterba, 'Selection effects in the United Kingdom individual annuities market', *Economic Journal*, 112 (2002).

Table 1. *Growth in number and value of purchased life annuities, pension annuities and outstanding personal pension schemes 1954–2000: annual averages over successive five-year periods*

	1954/55	*1956/60*	*1961/65*	*1966/70*	*1971/75*	*1976/80*	*1981/85*	*1986/90*	*1991/95*	*1996/00*
Panel A: New purchased life annuities (immediate and deferred)										
No. of new annuity policies per year (000s)	.	.	.	33.8	173.2	67.6	84.2	67.8	65.4	13.8
Premiums on new immediate annuity policies (£m)	.	.	.	106.0	235.3	159.6	394.5	432.2	650.4	444.8
Annuity pay-outs per annum (£m)	0.7	1.6	.	12.7	44.0	25.1	66.2	80.5	129.8	43.8
Panel B: New pension annuities										
Premiums on new immediate pension annuities (£m)									2,794.6	5,178.4
Pension annuity pay-outs per annum (£m)									276.4	440.0
Panel C: Personal pensions in force										
No. of Policies (000s)	.	83.9	.	.	620.0	1,309.4	3,151.4	8,835.2	17,916.0	20,634.8
Yearly premiums (£m)	.	10.6	.	.	68.0	212.6	758.1	2,451.6	4,876.2	6,277.3

Source: Life Offices' Association; Association of British Insurers.

In the third tier are forms of voluntary private pension provision, of which there are two types: occupational and personal pension schemes. Contributions into these schemes are made out of pre-tax income, so that contributions are effectively subsidised by the government. Occupational pension schemes are usually *funded* and require contributions throughout the employees' working life. In a funded scheme an employee (and/or employer) pays into a fund, which accumulates over time, and then is allowed to draw on this fund in retirement. These schemes are provided by an employer and may pay on a *defined-benefit* or a *defined-contribution* basis. Defined-benefit schemes offer a pension, guaranteed by the employer, usually defined in terms of some proportion of final-year earnings, and are related to the number of years of employment. Defined-contribution (or money purchase) schemes are always funded and convert the value of the pension fund at retirement into an annuity. Under a defined-benefit scheme, the employer bears the risk of fund under-performance; under defined-contribution schemes, the pensioner bears the risk of fund under-performance. In addition, a defined-contribution plan also exposes the pensioner to the risk of converting the fund into an annuity at a particular point in time, although the 1995 Pensions Act allows a pensioner to defer the conversion of the fund into an annuity until age 75 and 'draw-down' the fund to provide an income until annuitisation.

In the tax year ending in April 1996, 24.27 million persons paid national insurance contributions which will entitle them to some part of the basic state pension at retirement.[5] The percentage of the working population covered by each of the second and third tier schemes is given in Table 2. This table shows that out of about 35 million people of working age, roughly 80 per cent are covered by a second- or third-tier pension.

Up until the 1980s, pension provision had been a fundamental bedrock of the welfare state (from the National Insurance Act 1946, which introduced the basic

Table 2. *Employees covered by type of pension in UK*

Type of pension scheme	*Numbers of persons (millions)*	*Percentage of working population covered*
Occupational pensions	10.5	30
Appropriate personal pensions	5.6	16
Personal pensions (Not eligible for SERPS)	4.6	13
SERPS	7.1	20
Not covered by second/third tier	7.4	21

Source: Government Green Paper (ch. 2, paras. 15, 25, December 1998), and own calculations.

[5] *Annual Abstract of Statistics*, 1999, Table 10.2.

flat-rate pension, and the Social Security Pensions Act 1975 which introduced SERPS). Concerns about the state's ability to pay for the state pension commitments, coupled with demographic trends of an ageing population, resulted in a change of policy in the 1980s, with an emphasis on the private-sector provision of pensions. The government Green Paper 1998 reported that in 1960 there were over four persons of working age for every pensioner; but by 2060 it is projected that there will only be two and a half persons of working age for every pensioner. The implication is that a declining workforce will have to support a growing number of pensioners.

The Social Security Act 1980 replaced the indexation of the basic pension from earnings growth to the change in the retail price index. Further, the Social Security Act 1986 reduced the pension benefits of SERPS, and encouraged individual employees to opt out of SERPS and into a funded personal pension scheme, which explains the dramatic growth in personal pensions since 1988. The government Green Papers of 1998 and 2002 both emphasise that the state provision of pensions will decline, and individuals will be expected to contribute to third-tier schemes. This emphasis on the private sector to provide for pensions relies on a well-functioning annuities market in the decumulation phase of the pension plan, whereby individuals or group schemes can exchange their accumulated savings for an income until death. The government has become increasingly concerned about the functioning of the annuities market, as evidenced by the publication of a consultative document on the topic and the emphasis on annuities in the 2002 Green Paper on pensions.[6] Although, as shown by Yaari, risk-averse individuals should optimally annuitise all of their capital at retirement, Mitchell, Poterba, Warshawsky and Brown note that the private annuity market remains small. Poterba suggests a number of explanations for this 'annuity puzzle': load factors, the bequest motive, precautionary savings, adverse selection, substitutes for the private annuity markets and behavioural reasons.[7] But our ability to understand the reasons for this puzzle is limited by the lack of data on annuity markets.

The UK annuities market is well developed and is of considerable interest to researchers on pensions. Cross-sectional data on annuity rates for the last few years is readily available from the web or commercial organisations and has already been analysed.[8] There is, however, no long time-series data, in contrast to the USA where

[6] Department of Social Security, *A New Contract for Welfare: Partnership in Pensions* (1998) Cm 4179; Inland Revenue, *Modernising Annuities: A Consultative Document*, 2002; Department for Work and Pensions, *Simplicity, Security and Choice: Working and Saving for Retirement* (2002), Cm 5677.

[7] M. Yaari, 'Uncertain lifetime, life assurance, and the theory of the consumer', *Review of Economic Studies*, 32 (1965); O. S. Mitchell, J. M. Poterba, M. J. Warshawsky and J. R. Brown, 'New evidence on the money's worth of individual annuities', *American Economic Review*, 89 (1999); J. M. Poterba, 'Annuity markets and retirement security', *Fiscal Studies*, 22 (2001).

[8] M. Murthi, J. M. Orszag and P. R. Orszag, 'The value for money of annuities in the UK: theory, experience and policy', Birkbeck College, London, discussion paper (1999); Finkelstein and Poterba, 'Selection effects'.

annuity data are available from 1918.[9] In this article we present annual UK annuity rates for 1957 to 2002 and describe how the data were collected. All of our data are for voluntary annuities, since compulsory annuities were not quoted on the open market for most of the period: where both series are available they move closely together.

Our data are divided into two parts. From 1972 to 2002 we have collected data for level annuities with a five-year guarantee period for both men and women at a range of ages; over the period 1957 to 1973 we have data for level annuities with no guarantee period for men aged 65 only. The difference with respect to the guarantee period is driven by availability of data. We only provide data for men aged 65 for the earlier years because in the later period the series move so closely together that there is little to be gained by having series for a variety of ages.

All of our data are for level annuities, which have the disadvantage that they do not insure against inflation and have provided a steadily falling real income stream in the inflationary environment of the second half of the twentieth century. However, the vast majority of annuities purchased over the relevant period were level annuities, and although more sophisticated index-linked or escalating annuities exist, they are less popular.[10] For purposes of comparisons across time, level annuities provide the best guide to the products readily available and actually chosen and we believe that these would be the most appropriate prices to analyse given a choice. Since data on other annuities are not easily available for most of the period, however, this is a moot question.

The rest of this article is arranged as follows: Section II enumerates the issues and problems raised by our data sources and how we ensure that these do not lead to systematic biases in our data. Section III provides a detailed description of our data sources and the way that we have obtained an aggregate series. In Section IV we illustrate the data and discuss briefly the annual and monthly properties of the data series.

II

Our data are constructed from quoted annuity prices in two trade magazines, *Policy* and *Pensions World,* with data from *Money Management* and *Money Facts* to fill in the missing periods. Annuity prices are usually quoted in the form of an annual annuity payment of £X per £10,000 purchased (consideration or premium), which we refer to as an annuity rate of X/10,000 per cent. On a monthly basis, annuity rates are available for a selection of annuity providers (life offices): the size and composition of this selection changes over time, partly due to firms entering or leaving the

[9] Department for Social Security, *The Changing Welfare State: Pensioners' Incomes* (1986) has a graph of some data, but no further information. USA data is in M. J. Warshawsky, 'Private annuity markets in the United States: 1919–1984', *Journal of Risk and Insurance*, 55 (1988).

[10] J. Stark, 'Annuities: the consumer experience', ABI Research Report (2002).

market, but partly due to rates not being quoted. There is nearly always a considerable variation between the lowest and highest annuity rate quoted and for this reason the main series that we report are simple averages (means or medians) of the annuity rates that we have at each point in time as well as measures of the dispersion of annuity rates.

If we wanted to know the best value annuity available at any point in time, the average measures would be inappropriate, since a well-informed investor would choose to purchase an annuity with the highest rate available. For this reason we also present data on the maximum annuity rate for which we have data, although this statistic is more susceptible to changes in the composition of annuity providers for which we have data. We do not know how easy it was for a potential annuitant to obtain information on annuity rates for much of the period: both *Policy* and *Pensions World* are specialist publications and unlikely to be widely available. The consumers magazine *Which?* has both a wider readership and easier availability (e.g. through public libraries) and this published surveys of annuity rates in 1964 and 1970. In both issues readers were advised to contact *Policy* for more detailed information as well as an additional publication, *Planned Savings*. An additional consideration in comparing annuity rates is possible variation in levels of service, a consideration that we ignore.

Alternatively, if we wanted to know the typical annuity rate actually purchased, a more appropriate measure might be a weighted average of annuity rates, where annuity rates were weighted by the number of policies sold by different companies. Unfortunately we do not have the relevant data to construct such weights.

Finally, we should also note that the rate offered for an annuitant of a given sex and age is also dependent on other considerations such as health and it might be that some life offices had customers with above or below average life expectancy (this is a separate consideration for annuities offered explicitly for impaired lives). Evidence that variation in life expectancy experienced by different life offices is both large and stable over time is provided in reports of the Continuous Mortality Investigation Bureau.[11] Since the inter-office comparisons are anonymised, we are unable to match the annuity rates with the life expectancies, but it is likely that some of the variation in annuity rates is linked to variation in life expectancy.

During the periods September 1972 to November 1977 and monthly from April 1980 to May 1998, *Pensions World* published consistent series of data of non-escalating purchase annuities guaranteed for five years, for both men and women of different ages from a variety of different annuity providers. We have also used data from *Money Management* and *Money Facts* to fill in the missing periods 1978–80 and 1998–2002 respectively. Unfortunately the annuity rates in *Money Management* and to a lesser extent those in *Money Facts* are not directly comparable with those of *Pensions World* and this means that we need to make some adjustments to fit the series together: since this is a case of relatively small inter- or extrapolation, these adjustments can be made with some confidence. The other major source of data is

[11] Continuous Mortality Investigation Bureau, 13 (1993) and 20 (2001), Institute of Actuaries.

The Policy for 1957–73. Again, this is not directly comparable to the data in *Pensions World* as it is for annuities with no guarantee period; we have accordingly presented these data as a separate series.

This leaves two issues the importance of which can be estimated internally from our data, namely composition bias and stale/inaccurate prices. We discuss the general problems that these issues raise before looking in detail at the published sources.

We know that the composition and number of firms quoted changes over time as well as between sources. Where the sample of firms chosen is random, this will not on average affect our estimate of the average annuity rate but may affect any measure of the dispersion. More problematic, however, is the fact that the sample of firms chosen may not be random. This may happen in two ways. In the *Pensions World* data from 1980 to 1998, the number of firms quoted regularly falls over time. We have been able to test the effect of this by looking at a constant subsample of firms over the entire period and found that it makes no difference to our estimate of the mean.

Annuity providers in the UK are life assurance companies, and the UK life assurance industry has witnessed a number of mergers over the last fifteen years. Table A6 provided by Watson Wyatt lists the major significant mergers over the last fifteen years. The Sandler review of the retail savings industry noted that although there had been a trend towards demutualization and mergers in the UK life industry throughout the 1990s, 'the market share of the leading (10 UK life) companies had not increased materially'.[12] The reason that concentration has not been greatly altered is because most of this M&A activity has been from overseas firms, and the rise of integrated financial organizations called bancassurance. Stark reports that there are approximately 13 life offices that regard individual annuity business as strategically important, though she predicts that this number could fall to six over the following ten years.[13]

In the *Money Management* data from 1978–9, the prices are for the best 20 firms. This would impart an upward bias to our average compared with a random sample, which in principle could be corrected by subtracting a suitable number from the series (this is impossible in practice because we have no overlap period upon which to calculate the correction factor). However, these data are being used to interpolate for a small period and we overcame the upward bias problem by splicing the series.

The second problem is that some of the prices quoted might be stale or misquoted in the magazine: this certainly happens at least once in *Money Management*, when in the April 1979 issue there are two annuity rates quoted for the firm 'English' for men aged 60 and 70: the previous month's quote and a new quote (it is noteworthy that the same mistake is made in two separate tables). We overcome this problem by

[12] R. M. Sandler 'Medium and long-term retail savings in the UK', HM Treasury (2002), p. 172.

[13] J. Stark, 'The future of the pension annuity market – summary report', Association of British Insurers (2003).

looking at the prices of only those firms which have changed prices in a given month. The disadvantage of using changed rates is that it sometimes reduces or even eliminates the sample.

III

Figure 1 illustrates annual data series (simple averages of monthly data) for both males and females at a variety of ages. It can be seen that the different series move very closely together, which is unsurprising since most of the time-series variation is due to changes in interest rates. General findings are that annuity rates increase the older the person is (and hence the lower life expectancy is) and are lower for women than men. These differences are roughly consistent with actuarial considerations of life expectancy.

Figure 2 illustrates the complete annual series for males aged 65 over the longer time period. For 1972–2002 we plot the mean: as we discuss in Section IV, there is some evidence that for 1957–73 the mean is biased down by stale prices and so we plot the median for the earlier period. For comparison, the consol rate is also plotted as a representative long-term interest rate. On this graph it is clear to the eye that the difference between the two series has narrowed over the entire time period, consistent with increased life expectancy. The gap narrows when interest rates are high, which is also unsurprising: if annuity rates are priced actuarially fairly, then the effect of mortality will be least when future payments are most heavily discounted. Our preferred data series, as most representative of UK annuity rates over the period 1957–2002, are given in Table 3.

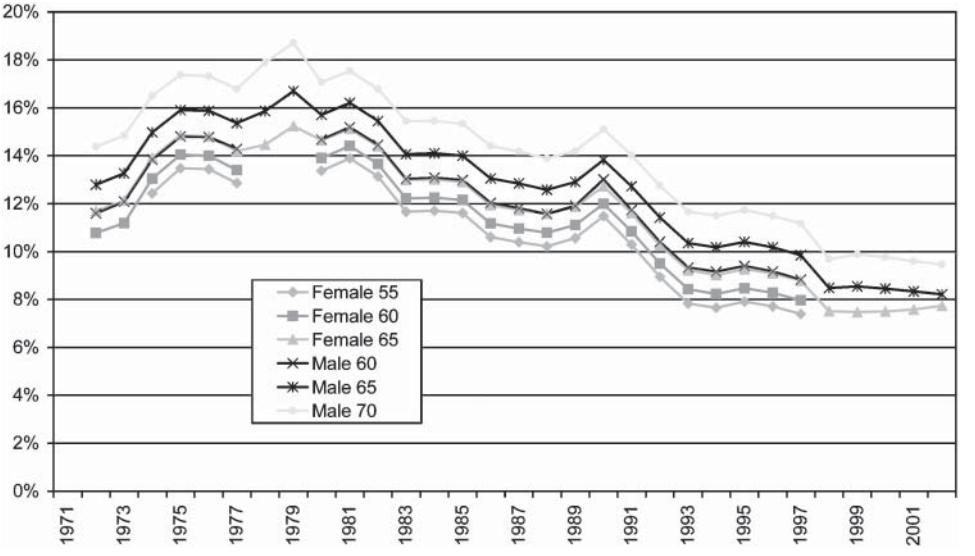

Figure 1. *Annual annuity series*
Source: see text.

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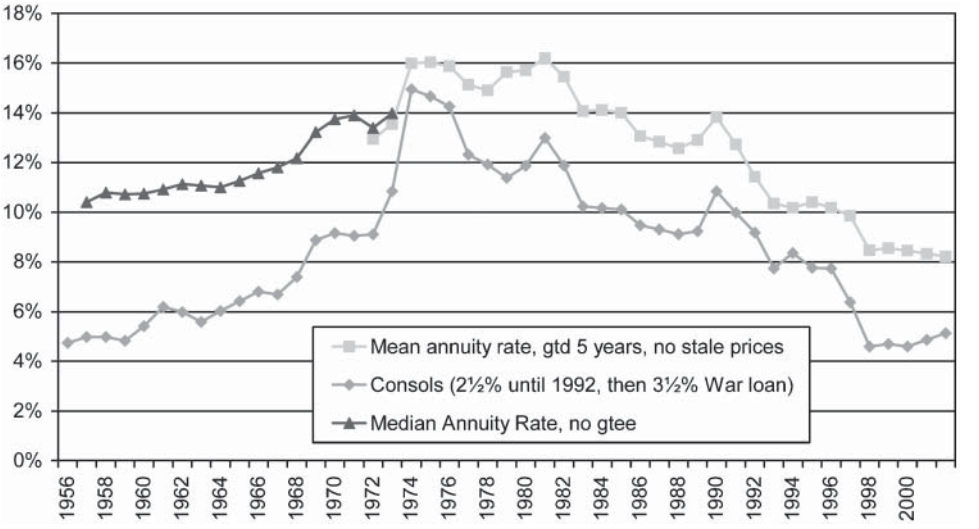

Figure 2. *Annuity rate, male 65, level*
Source: see text.

Figures 3 and 4 show the maximum and minimum annuity rates (monthly data) for 1957–73 and 1980–98, respectively. The spread is often about 2 per cent, although, if the worst rates were not actually published then these figures may under-estimate the true spreads. To give some idea of the importance of stale prices in our data, Figure 4 includes the maxima and minima based upon changed prices alone: the picture is broadly similar. Indeed it is notable that the graphs for the minimum, maximum and average annuity price all move very closely together, showing how insensitive our conclusions are to the choice of summary statistic for these data.

Table 3. *Male aged 65, voluntary level annuities*

	No guarantee *Median Rate* *Source:* The Policy	*5-year guarantee* *Mean Rate* *Source: mainly* Pensions World
1957	10.4%	
1958	10.8%	
1959	10.7%	
1960	10.7%	
1961	10.9%	
1962	11.1%	
1963	11.1%	
1964	11.0%	
1965	11.3%	

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Table 3. *Continued*

	No guarantee *Median Rate* *Source:* The Policy	*5-year guarantee* *Mean Rate* *Source: mainly* Pensions World
1966	11.6%	
1967	11.8%	
1968	12.2%	
1969	13.2%	
1970	13.7%	
1971	13.9%	
1972	13.4%	13.0%
1973	14.0%	13.5%
1974		16.0%
1975		16.0%
1976		15.9%
1977		15.1%
1978		14.9%
1979		15.6%
1980		15.7%
1981		16.2%
1982		15.4%
1983		14.1%
1984		14.1%
1985		14.0%
1986		13.1%
1987		12.8%
1988		12.6%
1989		12.9%
1990		13.8%
1991		12.7%
1992		11.4%
1993		10.3%
1994		10.2%
1995		10.4%
1996		10.2%
1997		9.9%
1998		8.5%
1999		8.6%
2000		8.5%
2001		8.3%
2002q1		8.2%

Annuity prices are usually quoted in the form of an annual annuity payment of £X per £10,000 purchased, and this converts to an annuity rate of X/10,000 per cent. The mean and median are very similar in both series, but the mean is more noisy for the earlier period, so we report the median.

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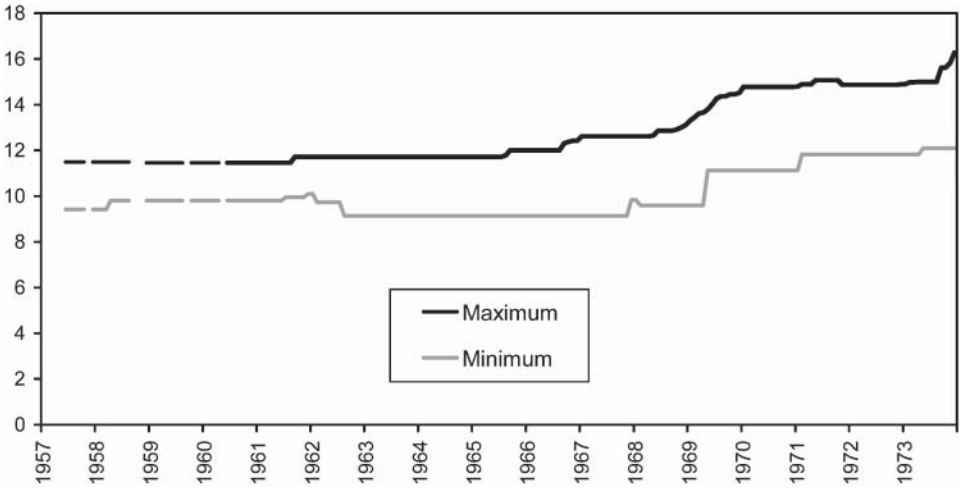

Figure 3. *Annuity rates, male 65, no guarantee, 1957–73*
Source: *The Policy*, 1957–73, various issues.

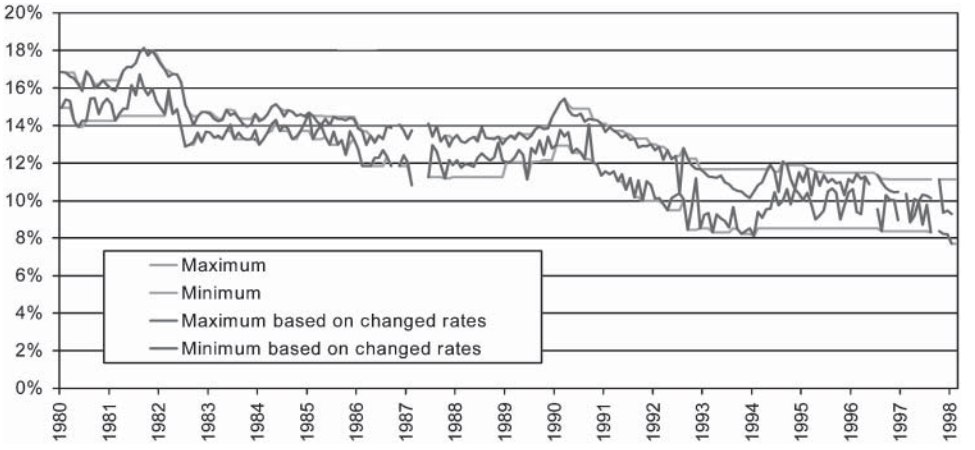

Figure 4. *Maximum and minimum annuity rates, 1980–98*
Source: *Pensions World*, 1980–98, various issues.

Our final consideration is the extent to which annuity rates vary with size of purchase. Data are available for adjustments based on size of annuity in both *The Policy* and *Pensions World* in the 1970s. Figures 5 and 6 illustrate the net annuity rate (after all adjustments and charges are taken into account) for annuity purchases of multiples of £1,000 for two sample months. Figure 5 shows a steep increase in the annuity rate for relatively small purchases, but this is driven largely by two or three companies which pull down the average and the minimum and perhaps ought to be

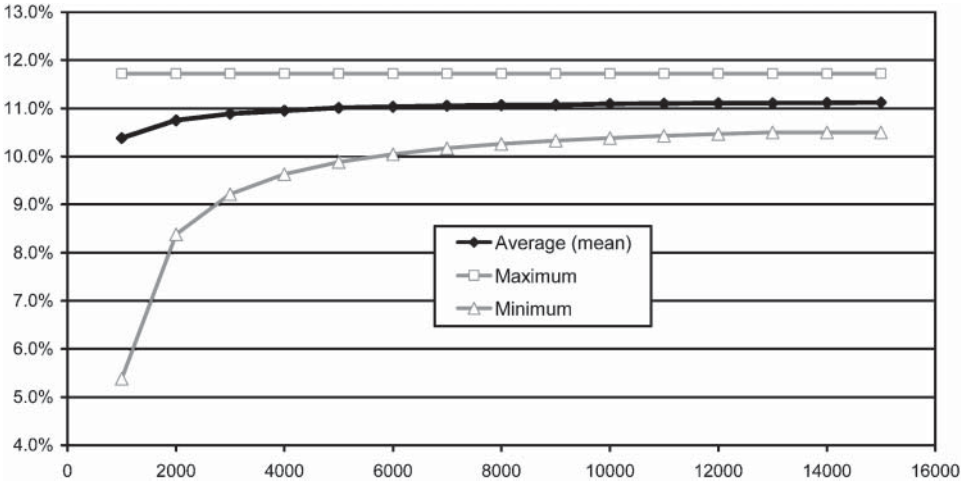

Figure 5. *Annuity rates and purchase price, January 1965*
Source: see text.

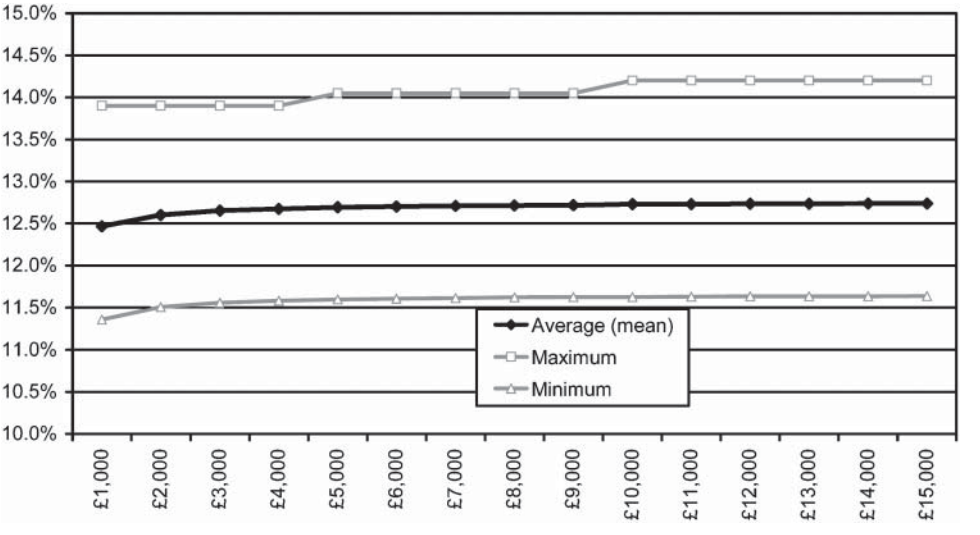

Figure 6. *Annuity rates and purchase price, Sept–Oct 1972*
Source: see text.

ignored. Other than this, in both cases the annuity rate rises very slightly with the size of purchase.

Our data do not allow us to determine how annuity rates depended upon purchase price for later periods. However, Finkelstein and Poterba[14] report that the

[14] A. Finkelstein and J. M. Poterba, 'Adverse selection in insurance markets: policyholder evidence from the UK annuity market', *Journal of Political Economy*, 112 (2004).

anonymous insurance company in their analysis used the following formula for pricing annuities over the period 1981 to 1998: if the annuity rate for a £10,000 purchase is X, then annuity rate for a purchase of P is

$$\frac{PX + (P - 10{,}000)\, f}{10{,}000}$$

where the policy fee f = £18 in 1998. The differences in the average annuity rate for a £5,000 purchase and a £15,000 purchase illustrated in Figures 5 and 6 are 0.11 per cent and 0.05 per cent respectively, slightly lower than the 0.18 per cent suggested by this formula. Since there is some evidence that there is non-linearity in the relationship and given changes in prices over the period due to inflation, these figures seem reasonably close to each other.

IV

This section describes in detail the construction of our time series on annuity rates using the original sources. The data from *Pensions World*, *The Policy*, *Money Management* and *Money Facts* were single-typed directly in Excel. Where data were provided for ages other than 60, 65 and 70 it was ignored as were special rates for smokers. The entry for 'Equity and Law' female aged 65 in issues January/February 1975 to March 1977 was amended from 1500 to 150 and no other alterations were made. The data from *Pensions World* from 1980 to 1998 was typically electronically scanned and recognised using the software package *FineReader 4.0*, after training the software to recognise the particular font: apart from occasional difficulty in recognising the decimal point the software had 100 per cent success in recognition. All of these series were then manually checked. The final series were also checked whenever the mean and median deviated significantly or the average for a subsample was much different from the average for the whole.

(a) The *Pensions World* data

The longest consistent series in our data is taken from the trade magazine *Pensions World,* which was first published in 1972. Initially the magazine was published bimonthly, converting to a monthly publication in July 1975. Data was published for 1972–7 and 1980–98. From May 1998 annuities data have continued to be published but only for three companies (initially top three, then first, fifth and tenth). At the same time as this change there were two other changes: first, the data switched from annuities guaranteed five years to annuities with no guarantee; second the quotes given are for £1,000 purchased for 1972–98 and then for £100,000 purchased from 1998 onwards. To the extent that annuity rates vary with the amount purchased and that the real value of £1,000 has changed over the period, we should attempt to adjust for the annuity rates paid on an annuity of a typical size. However, it is impossible for us to do this even for the period 1972–98, since we have no idea of the typical size of annuity purchase: also we have no data on how annuity rates varied with purchase price over the period 1980–98. We shall discuss below the

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evidence we have on this issue for the period 1972–7. What is clear is that there is a considerable discontinuity in 1998, with a big change in the size of the annuity for which a rate is quoted and a considerable reduction in the number of firms quoted, making it impossible to estimate a mean annuity rate after 1998 from this data source. For this reason we have not made extensive use of the *Pensions World* data for the period from 1998–2002.

In the first period, in the issues of September/October 1972 to November 1977, the magazine included a large table of annuity prices quoted by between 52 and 63 life assurance companies drawn from a list of 73 companies. The full list of companies is provided in Table A1. Each company provided quotes for 'Hancock' Annuities (which we did not enter) and Purchased Life Annuities for all ages from 60–70 for both men and women until the issue of May/June 1974, when the ages for women's annuities changed to 55–65. During the period that *Pensions World* was published monthly, it was normal for the annuities data to be published either for men or for women but not both, although some months are characterised either by no issue of the magazine or an issue with no table of data. The result is that there are 35 observations of men's annuities and up to 34 for women's annuities, running from August 1972 (published September/October 1972) to October 1977 (published November 1977). A total of 46 companies have 34 or more quotations. Figure 7 shows how the number of rates for which we have observations changes over time. Both the total sample and the subsample have good coverage for the whole period, but the number of observations of rates which have changed is generally disappointing. Fortunately there are quite a few observations of changed rates in 1974 (between 12 and 35 per bimonthly period), since this year turns out to be the period when there is greatest evidence of stale prices. This period was one of significant financial market turbulence following the oil price shock of 1973, and rapidly changing interest rates, which probably accounts for the existence of stale prices.

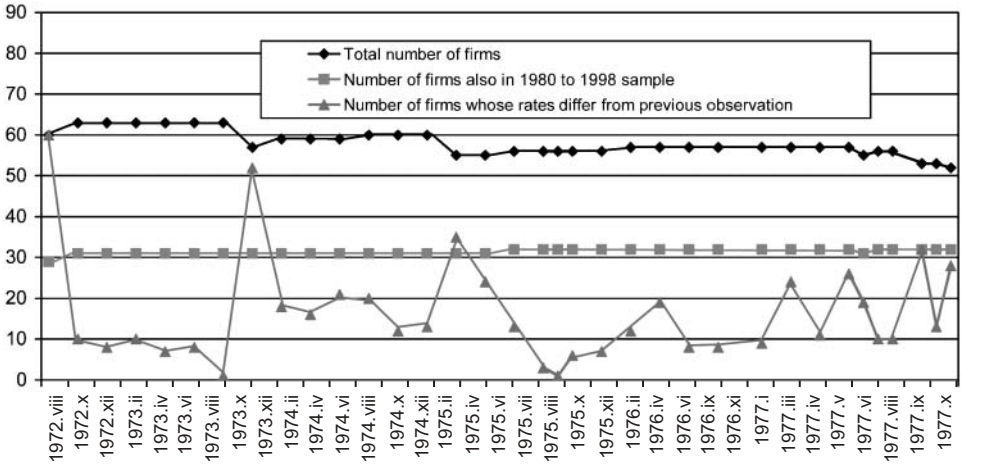

Figure 7. *Number of firms for which annuity rates are available*
Source: *Pensions World*, 1972–7, various issues (see text).

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As a result of requests from the readership of *Pensions World*, the magazine resumed publication of annuity rates monthly in April 1980, quoting rates for males aged 60, 65 and 70 and females aged 55, 60 and 65. There were no marginal- or footnotes to these tables and hence we have no information on charges, on how rates varied with the size of the annuity or any other conditions or late alterations.

The list of firms from which quotations were obtained was reduced to 39 with the typical number of firms quoted being 18 (see Table A2). The 39 firms can be divided into two groups: for 18 of the firms there is an annuity rate quoted for over half of the months and for 18 there is an annuity rate quoted for less than 20 per cent of the months. Figure 8 shows the number of firms on which our average is based over the period 1980–98. It can be seen that the firms for which relatively few prices are reported are particularly prominent in the early years and thus the composition of firms changes systematically over the period. For this reason we use not only the average of all firms reported in any given month but also the average of the 18 heavily reported firms. We isolate these 18 firms for the previous period 1972–7 as well to ensure that the averages from the two period are comparable.

As discussed above, we are concerned about the possibility of stale or inaccurate prices. To overcome this situation we have also considered using only those rates of firms which have changed since the previous month. The corresponding numbers of firms for which a changed rate is available are also shown in Figures 7 and 8: since the number is often quite small, the average rate arising from this subset is correspondingly more volatile.

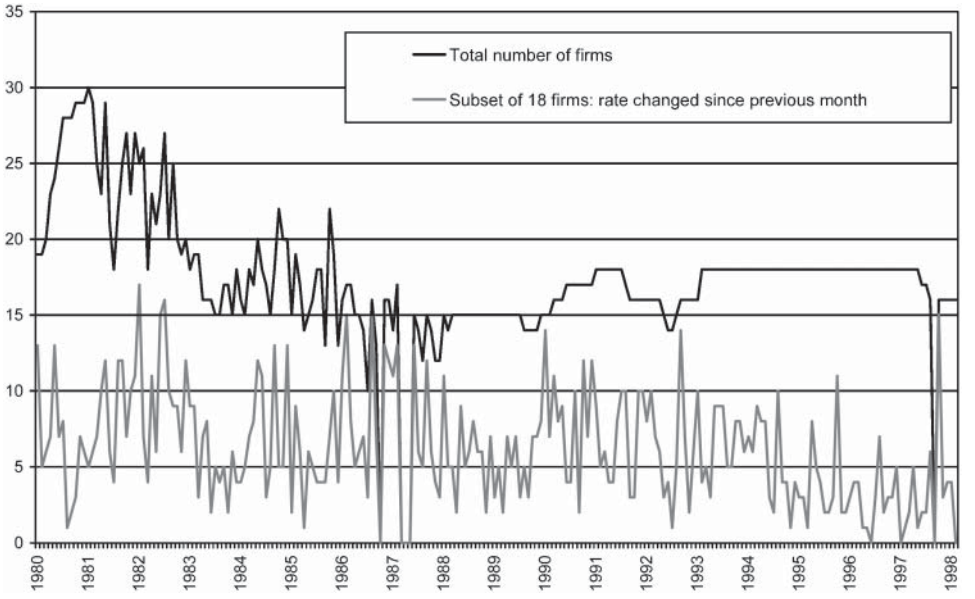

Figure 8. *Number of firms for which annuity rates are available, 1980–98*
Source: *Pensions World*, 1980–98, various issues (see text).

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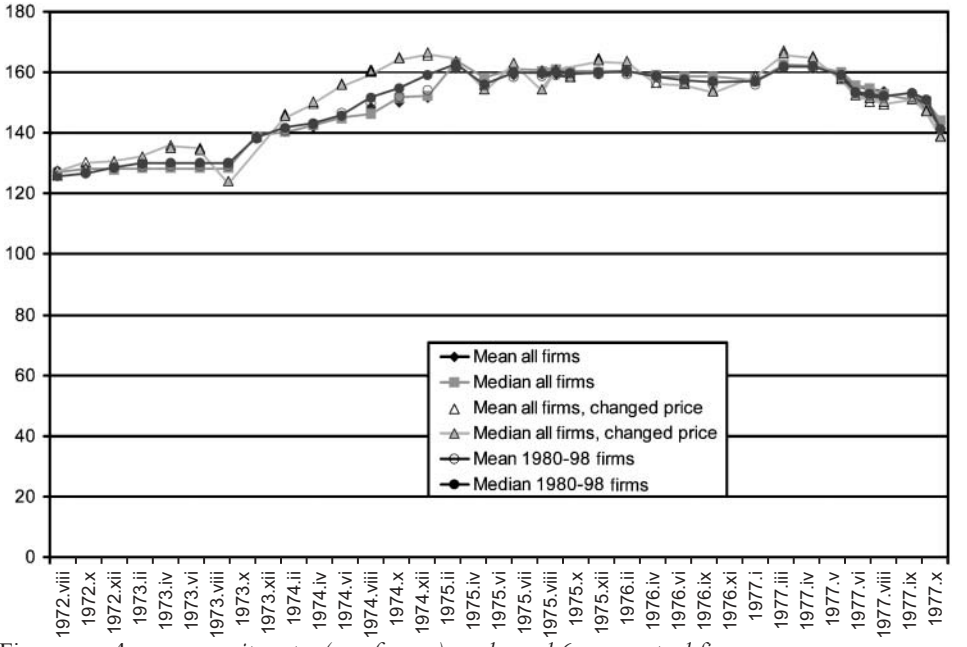

Figure 9. *Average annuity rates (per £1,000), male aged 65 guaranteed five years*
Source: *Pensions World*, 1972–7, various issues.

Figures 9 and 10 illustrate the average bimonthly and monthly annuity rates for males aged 65 for these two periods reported by *Pensions World*. These graphs plot the annual payment (in £) made per £1,000 paid to the annuity provider: if divided by ten the numbers can be treated as a percentage rate. We do not show in such detail the corresponding series for women's annuity rates or other ages because the graphs are qualitatively similar.

There is some evidence in the mid 1970s that the average of firms whose rate had changed was higher at a time when rates were rising, consistent with there being stale prices. The difference is approximately £10 per £1,000 purchased or one per centage point, which is economically large. However, there is little evidence for stale prices over the second period, where the main difference between the averages of all prices and the averages of changed prices is that the last are much more volatile, as would be expected. Over the whole period there is little evidence to suggest that the mean was different from the median or that the average of a subsample of annuity providers' rates differed from the average of all annuity providers for which we had information. This is particularly relevant for our longest run of data (1980–98) where the composition of providers does change in a systematic way. Together these facts suggest that there is little internal evidence to suggest that our averages are biased either by the composition or by the presence of stale prices, except in 1974–5. Our annual series are based upon the average changed prices for these two years to reflect this.

The maxima and minima annuity rates over time both for all companies for which we have an annuity rate and also for only those companies for which the rate

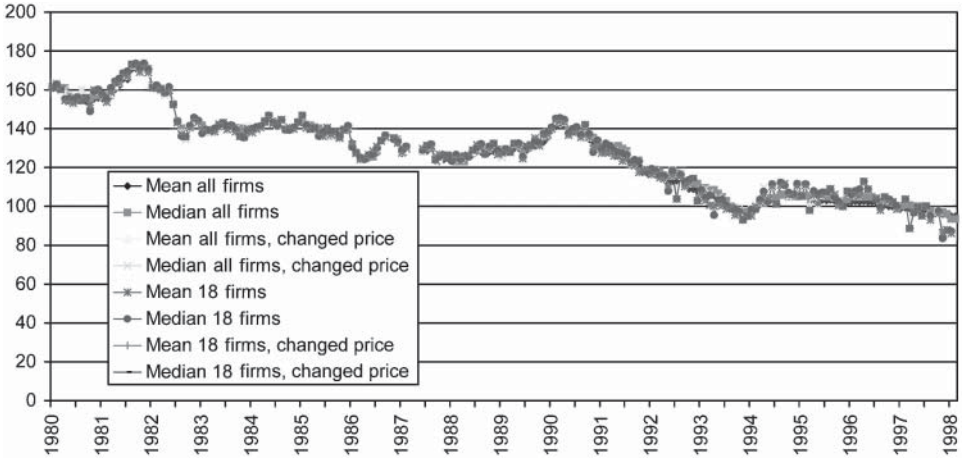

Figure 10. *Different average annuity rates (per £1,000), male aged 65, level, guaranteed five years*
Source: *Pensions World*, 1980–98, various issues.

has changed have already been illustrated in Figure 4. It is not possible to make any strong inferences about the difference between the maximum and minimum over the period because the composition of firms is changing: a constant set of firms would be relatively small and hence tend to underestimate the range of prices available. This is even more so with the series based on changed prices: indeed in September 1992 we only have a record of one company changing price and hence the maximum and minimum are the same on the graph, which is obviously a poor guide to the range of prices available at that time. If anything, however, the range of annuity rates seems to be fairly constant and to remain about £10 per £1,000 or 1 per cent. Since annuity rates at the end of the period are about £100 per £1,000, this implies that choosing the wrong provider could reduce the value of one's pension by one-tenth, which is economically very large.

(b) Filling the missing observations using *Money Facts* and *Money Management*
The gaps in the *Pensions World* series are filled with data from *Money Management* and *Money Facts*, which brings us to the problem of maintaining consistency between the data in *Pensions World* and the data in the other two sources.

Annuities in *Money Management* are quoted for men and women aged 65 and men aged 70: summary details are provided in Table A3. Annuity rates are always quoted for twenty companies, although unlike in *Pensions World* the twenty companies in any given month may differ for different ages and genders. The rates quoted appear to be from the best twenty annuity providers, rather than a random sample of companies. The rates are drawn from a total of 48 annuity providers for males aged 65 and 50 annuity providers for females aged 65. We exclude the annuity rate for the Royal National Pension Fund for Nurses (RNPFN), which is noted as being unavailable to the general public, so our average is sometimes based on 19 providers' rates. There are very few footnotes and we do not have any data for November

1978, so the maximum number of observations is fifteen: twelve annuity providers have rates quoted for ten or more months.

The data in *Money Management* are available from December 1977 to March 1979, so there is no overlap period with *Pensions World*. Furthermore the *Money Management* data are for a purchase of £10,000 instead of £1,000 and are for a different form of annuity, namely for annuities paid half yearly in arrears and not guaranteed, whereas the data in *Pensions World* are for annuities paid monthly in advance, guaranteed for five years: fortunately the data in *Money Management* are being used merely to fill in a small gap in the otherwise consistent *Pensions World* series. As discussed above, the difference between rates for £1,000 and £10,000 may not be economically significant. The final issue is that the average annuity rate from this source may be biased upwards because the rates are taken disproportionately from firms offering good rates, but we are unable to correct for this problem.

Since the objective is to have a consistent time series despite having data on two different sorts of annuity, we infer guaranteed monthly rate from the *Money Management* data on non-guaranteed half-yearly annuity rates. Our inference to correct for this definitional difference is based on some simple actuarial calculations as follows. Annuities paid half yearly in arrears result in payments being made on average a quarter of a year later, so we subtracted one-quarter of the then prevailing consol rate (actually 11.5 per cent) to effect the increased discount given to payments made further in the future.

The probabilities of dying for a man between the age of 65 and the ages of 66–70 can be written $1-\pi_{t,66,65}$, $1-\pi_{t,67,65}$, etc., where $\pi_{t,k,65}$, is the probability of someone aged 65 in year t living to age k (and hence receiving the annuity payment) for the two years 1978 and 1979. We write the headline annuity rate (i.e. the payment per year) as A per £1 paid to the annuity provider on retirement and assume a constant interest rate r equal to the contemporaneous consol rate. The present value (or *money's worth*) of an annuity guaranteed five years is

$$M_t \equiv A_t \left\{ \sum_{k=66}^{70} (1+r)^{-k} + \sum_{k=71}^{\infty} \pi_{t,k,65} (1+r)^{-k} \right\}$$

whereas that not guaranteed five years is

$$M_t^N \equiv A_t^N \left\{ \sum_{k=66}^{\infty} \pi_{t,k,65} (1+r)^{-k} \right\}.$$

Finkelstein and Poterba have argued that the money's worth for the two types of annuities will differ because of adverse selection effects: individuals with private information that they are likely to be shorter-lived self-select into annuities guaranteed for five years and thus the true money's worth for the guaranteed annuity should be based on lower survival probabilities.[15] Since we are unable to identify the true survival probabilities the money's worth appears to be higher. Then, assuming a constant interest rate,

[15] Finkelstein and Poterba, 'Selection effects'.

$$\frac{M_t}{A_t} - \frac{M_t^N}{A_t^N} = \sum_{k=66}^{70} (1 - \pi_{t,k,65})(1+r)^{65-k} \approx 0.37$$

where the number 0.37 arises from the data for a male aged 65 and the interest rates prevailing at that time. Rearranging this expression we obtain

$$A_t = \frac{M_t}{M_t^N / A_t^N + 0.37}.$$

Finkelstein and Poterba report 1998 money's worth figures of 0.862 for annuities, male 65 with no guarantee and 0.85 for a guarantee of five years and we use these figures to construct Figure 2, with analogous adjustments made for other ages.[16]

The data in *Money Facts* are defined similarly to those in *Pensions World*, but are drawn from a somewhat different and much shorter list of companies: the total list contains 24 companies, detailed in Table A4. In addition the rates are for a purchase of £10,000 instead of £1,000, which problem we ignore. As with the other data sources there are many firms whose rate does not change for considerable periods of time and thus we compare the average of all annuity rates with the average of annuity rates which have changed in the previous month. However, the total number of prices only averages just over eleven and the number of changed prices averages just under four. This means analysing the changed prices is not particularly informative and we only report the averages of all prices in our final series. Although this is a smaller sample than in *Pensions World*, the difference between the minimum and average price remains about one percentage point.

More worrying, the annuity rates for the subset of companies in both sources are different. We have contacted the relevant annuity providers to seek an explanation for this and have been told that it arises due to different commission charges being included in the two quotes (e.g. one included a commission of 1 per cent and the other a commission of 1.3 per cent). To overcome this difference we have spliced the series together using a shift factor derived from the overlap period of four months (1998 January–April), which turns out to be 0.38 per cent, comfortably close to the figure we might expect given the commission charges quoted.

(c) The *Policy* data

The data from *Policy* start in 1957: we cannot find earlier data and there is a good reason why data were published from that time on, namely the boost given to the voluntary annuity market by the 1956 Finance Act, which removed a tax discrepancy on voluntary annuities. The number of firms quoted rises fairly steadily from 63 to 101, with the total number of firms quoted over the whole period being 129; these are listed in Table A5. Of these, 79 provide a quote for more than 50 per cent of the months for 1957–73. Prices appeared to change for this period even less than in the later period, perhaps indicative of relatively stable long-term interest rates: for 70 per cent of the months the number of firms who changed their rates was in single figures.

[16] Finkelstein and Poterba, 'Selection Effects', Table 5.

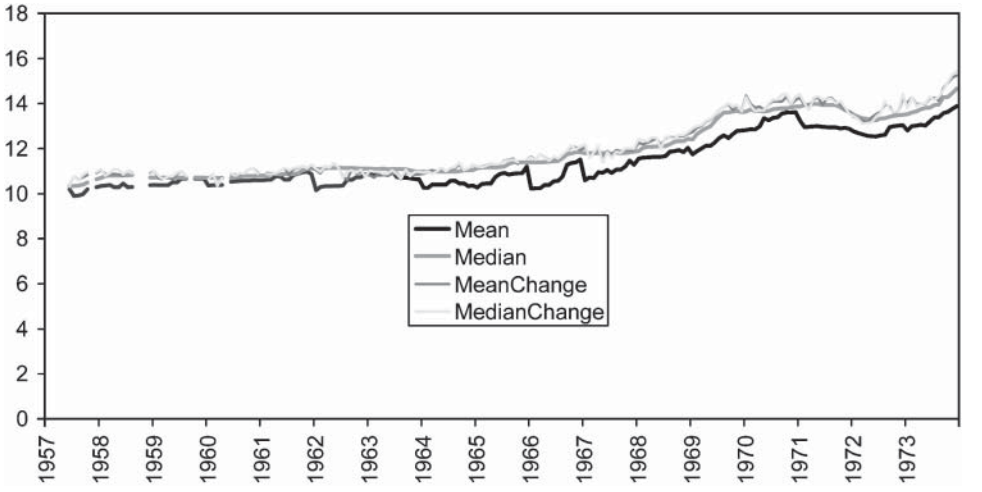

Figure 11. *Annuity rates, male 65, no guarantee*
Source: *Policy*, 1957–73, various issues.

The maxima and minima prices have already been plotted in Figure 3. Averages are plotted in Figure 11. It is certainly the case that the mean of all prices is different from averages of changed prices or the mean: there appears to be a lower tail of possibly stale prices. For this reason we have used the median in constructing the annual series: it is slightly smoother than the changed series and has the same characteristics.

V

This article has explained the construction of a representative annuity price series for the UK annuity market in the period 1957–2002. The start of this period marked a watershed in pensions policy in general and annuities in particular, since the 1956 Finance Act allowed for the introduction of tax-efficient personal pensions, and removed the distortionary capital taxes on voluntary annuities. Our annuity series were constructed from the quotes of annuity providers from various trade magazines. We have allowed for a composition bias – changing identities of annuity providers, and the problem of stale price quotes – and demonstrated that our constructed series are robust to these concerns. We have found some evidence that annuity rates rise slightly with the size of purchase.

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APPENDIX

Table A1. *Life assurance companies quoting purchased life annuities*

Arrow Life	5	Nat Mut of Austral	35
Aust Mut Prov	35	Nat Mut Life Ass	15
Avon	29	Nat Prov Inst	19
Bedford Life	32	NFU Mutual	18
British Life	13	New Ireland	14
Canada Life	7	Norwich Union	35
Cannon	27	Pearl	35
Charter Japhet	23	Phoenix	35
Clerical, Med + Gen	28	Pioneer Life	7
Ciy of Glasgow	7	Prov Life Assoc of London	35
Colonial Mut Life	35	Prov Mut Life	35
Commercial Union	34	Prov Life	35
Confed Life	35	Prudential	35
Cornhill	35	Reliance Mut	34
Crusader	35	Royal	35
Eagle Star	35	Royal Nat Nurses	35
Ecclesastical	35	Scot Amicable	31
Economic	28	Scot Equitable	35
English	34	Scot Life	35
Equit Life	35	Scot Mutual	34
Equity and Law	35	Scot Prov	35
Friends Prov	35	Scot Widows	35
FS Assurance	35	Sentinal	35
Guardian	34	Slater Walker	30
Hill Samuel Life	34	Standard Life	35
Hodge	14	Sun Alliance	35
International Life	5	Sun Life	35
Irish Life	7	Swiss Life	35
Legal & Gen	35	Trident	35
Life Assoc of Scot	35	Ulster	14
Lifeguard	35	UK Prov	35
London Indem	14	Welfare	35
London Life	35	Windsor Life	35
Marine	35	Yorkshire	35
Minster	14	Zurich Life	3
Nat Farm Union	14		

Figures show number of times a price is quoted (maximum possible is 35).
Source: Pensions World, 1972–7, various issues.

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Table A2. *Life assurance companies quoting purchased life annuities*

	Prices	*Changed prices*
Britannia	1	1
Canada Life	60	12
Cler Med Gen	176	55
Col Mut Life	30	8
Commerc Un	174	58
Confed Life	125	65
Cornhill	56	16
Crusader	119	45
Eagle Star	197	57
Ecclesiastical	16	5
English	32	16
Equitable Life	154	51
Equity & Law	16	7
FS Assurance	20	8
Guard Royal Ex	126	50
Hill Samuel	12	6
Leg and Gen	33	17
London Life	163	82
Manu Life	39	25
MGM	38	22
Nat Emp Life	31	27
Nat Prov Ins	73	25
Norwich Un	196	85
Pearl	14	10
Phoenix	67	43
Prov Cap	178	45
Prudential	130	34
Royal (later RSA)	181	113
Scot Equit	62	38
Scot Life	187	112
Scot Prov	203	71
Scot Widows	198	90
Sentinel	12	7
Stalwart	95	49
Stand Life	201	96
Sun All	177	82
Sun Life	185	117
UK Prov	14	2
York Gen	10	3

Figures show number of times a price is quoted (maximum possible is 218).
Source: Pensions World, March 1980 to July 1998.

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Table A3. *Life assurance companies quoting purchased life annuities*

	Male 65	*Female 65*		*Male 65*	*Female 65*
AMP	1	2	Phoenix	5	6
Avon = NFU	12	9	Pioneer Life	8	11
Canterbury Life	6	6	Property, Equity and Life	5	6
Coop	3	2	Providence Capitol	0	0
Cornhill	1	0	Provident Mutual	10	7
Crusader	15	15	Provident Life		1
City of Westminster	2	1	Provincial Life	60	
Eagle Star	13	13	Prudential	2	4
Ecclesiastical	2	1	Reliance Mut	6	6
English	13	10	Royal	10	11
Equitable Life	9	9	Schroder Life	1	6
Equity & Law	0	1	Scot Am	7	7
Excess Life	7	6	Scot Equit	11	10
Friends' Provident	5	7	Scot Life	13	11
Guardian	2	2	Scot Mut	1	3
Hill Samuel	0	0	Scot Prov	10	14
Irish Life	3	3	Scot Widows	4	5
Legal & General	1	1	Sentinel	6	6
Life Assoc of Scot	7	9	Sun Alliance	1	2
London Life	11	11	Sun Life	12	13
Manulife	6	6	Target Life	15	10
MGM	11	11	Time	3	4
NEL	9	8	Trident Life	6	6
Norwich Union	1	1	UK Provident	1	1
Pearl	5	2	Yorks General		3

Figures show number of times a price is quoted (maximum possible is 15). The companies also quoted for annuity rates for different ages.
Source: Money Management, Dec. 1977 to March 1979.

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Table A4. *Life assurance companies quoting purchased life annuities*

	Prices	*Changed prices*
AXA Equity & Law	1	1
Abbey Life	21	11
AXA Sun Life	14	1
Btittannic Assce	0	0
Canada Life	50	21
Carlyle Life	23	8
Commercial Union	8	3
Equitable Life	35	16
Friends Provident	46	11
Genrali	5	4
Norwich Union	43	12
RNPF Nurses	4	2
GE Life	27	1
Hodge Life	13	1
Royal Liver	33	6
Scot Amicable	46	16
Scot Equitable	50	17
Scot Life	8	4
Scot Widows	11	5
Stalwart	21	15
Stalwart Assurance	21	14
Standard life	50	18
Sun Life	27	10
Sun Life of Canada	2	0

Figures show number of times a price is quoted (maximum is 51).
Source: Money Facts, Jan. 1998 to March 2002.

Table A5. *Life assurance companies quoting purchased life annuities*

	Prices	*Changed prices*
Abbey Life	96	4
African Life	195	6
Alliance	123	9
American Life	11	1
Atlas	171	25
Australian Mut Prov	137	13
Avon	195	23
Beacon	123	10
Bedford Life	144	26
Bradford	96	14
Britannic	195	17
British Life	144	9
British National	195	20
Caledonian	195	21
Canada Life	195	47
Cannon	12	5
Citibank	12	1
City of Glasgow	36	1
City of Westminster	60	6
Champion	24	2
Clerical, Medical	195	14
Colon Mutual	183	11
Commercial Union	195	36
Confed Life	84	16
Consumers life	108	7
Contingency	48	4
Coop	195	18
Cornhill	84	10
Coronet	84	6
Crown Life	24	1
Crusader	195	26
Dominion-Lincoln (later Schroder)	85	4
Eagle Star	195	29
Ecclesiastical	144	19
Economic	84	11
English	60	8
Equit Life	195	29
Equity and Law	195	22
Excess Life	84	16
Fordham Life	24	1
Friends Prov	195	20
General Life	183	13
Gresham	195	26
Guardian	195	27
Hill Samuel (see Noble Lowndes)		

Table A5. *Continued*

	Prices	*Changed prices*
Hodge Life	96	18
Imperial Life of Canada	84	9
Indemnity Guarantee	72	8
International Life UK	48	7
Investment Annuity	84	8
Irish Assurance	38	2
Irish Life	157	25
Langham Life (see Migdal-Binyan)		
Law Union and Rock	195	25
Legal & Gen	195	30
Licenses and General	171	20
Life Assoc of Scot	195	29
Life Casualty and Gen (later Windsor)	106	7
Lifeguard	120	20
Lloyds Life	12	3
Liverpool London & Globe	87	10
London & Edinburgh	96	4
London and Manchester	195	15
London Assurance	123	12
London Indemnity	108	26
London Life	195	50
Manufacturers Life	147	17
Marine and General	195	12
Medical Sickness	195	15
Midland	183	15
Migdal-Binyan (later Langham Life)	168	4
Minister	114	21
Nat & Colonial	39	3
Nation life	120	6
Nat Emp Life	167	13
Nat Farmers	195	24
Nat Mut of Austral	171	16
Nat Mut Life	159	11
Nat Provident	195	24
New Ireland	55	8
Noble Lowndes Annuities	144	33
North Brit & Mercantile	171	25
Northern	147	13
Norwich Union	195	32
Occidental	96	3
Pearl	195	25
Pendle	12	1
Phoenix	195	19
Pioneer	195	29

Table A5. *Continued*

	Prices	*Changed prices*
Provident Life Ass	195	19
Prov Mut	195	26
Provincial Life	60	14
Prudential	195	37
Refuge	195	19
Reliance Mut	195	20
Royal Exchange	171	25
Royal Insurance	195	40
Royal London	195	9
Royal Nat PF Nurses	188	14
Save & Prosper	12	2
Schroder Life (see Dominion Lincoln)		
Scot Amicable	183	16
Scot Equitable	195	25
Scot Life	195	21
Scot Mutual	195	18
Scot Prov	195	40
Scot Union &Nat	135	18
Scot Widows	195	27
Sentinel	195	17
Slater, Walker	24	7
Southampton	96	8
Stamford	96	12
Standard	195	27
Sun Alliance and London (previously three companies: Alliance; Beacon and London)	84	14
Sun Life of Canada	144	38
Sun Life Assurance	111	14
Swiss Life	72	12
Target Life	0	0
Time	36	1
Trident	48	14
Triumph	36	1
Ulster Scot	84	9
UK Temperance	195	15
Unitholders Prov	48	10
University Life	167	21
Welfare	84	11
Wesleyan and General	195	8
Western Australian	87	2
Windsor Life (see Life Casualty and General)		
Yeoman	96	16
Yorks	159	16
Yorkshire General Life	60	13

Figures show number of times a price is quoted (maximum is 213).
Source: Policy, March 1957 to Dec. 1973.

Table A6. *Acquisitions of UK life assurers, 1986–2000*

Approximate date	*Insurer acquired*	*Acquirer*	*Nationality of acquirer*
Jan-86	British National	Citibank	US
Jan-86	Cornhill	Allianz	Germany
Jan-86	Providence Capitol	Old Mutual	South Africa
Feb-86	Tyndall	Aetna	US
Apr-86	UKPI*	Friends Provident	UK
Sept-86	Schroder	National Mutual	Australia
May-87	City of Westminster	AGF	France
June-87	Target	TSB Group	UK
Aug-87	Merchant Investors	Cornhill	UK
Oct-87	Equity & Law	Axa	France
Oct-87	Hill Samuel	TSB Group	UK
Oct-87	Consolidated	RCK Holdings	US
May-88	London Life[i]	AMP	Australia
Sept-88	Financial Assurance	Allegiance Capitol	US
Dec-88	Abbey Life[i]	Lloyds Bank	UK
Mar-89	Sentinel	Century	UK
July-89	Framlington	Skandia Life	UK
Aug-89	Prolific	Hafnia	Denmark
Sept-89	City of Edinburgh Life	Century	UK
Oct-89	Windsor Life	New York Life	US
Nov-89	Devonshire Life	American Express	US
Nov-89	FS Assurance*	Britannia Building Society	UK
Nov-89	Pearl	AMP	Australia
Jan-90	General Portfolio	GAN	France
Jan-90	Premium Life	Management buy-out	UK
Apr-90	Time Assurance*	Templeton International	US
June-90	NEL Group	UNUM/Century	US/UK
July-90	Victory Re	Nationale Nederlanden	Netherlands
Oct-90	Pioneer Mutual*	Swiss Life	Switz
Jan-91	Regency Life	Aegon	Netherlands
June-91	Crusader	Britannia Building Society	UK
Dec-91	Gresham Life	Windsor Life	UK
Dec-91	Scottish Mutual*	Abbey National	UK
Dec-91	Sun Life	UAP/Liberty Life	France/ South Africa
Sept-92	CCL	Century	UK
Dec-92	Prolific	Scottish Provident	UK
Dec-92	Sterling Life	Consolidated Life	UK
May-93	Interlife	SE Banken	Sweden
May-93	Aetna	Windsor Life	UK
June-93	Citibank	Lincoln National	UK

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Table A6. *Continued*

Approximate date	*Insurer acquired*	*Acquirer*	*Nationality of acquirer*
Sept-93	Life Association of Scotland	Britannia Building Society	UK
Oct-93	Acuma	United Friendly	UK
Oct-93	NM Life	Friends Provident	UK
Oct-93	City of Westminster	Irish Life	Ireland
Dec-93	Scottish Equitable*	Aegon, 40% stake initially	Netherlands
Dec-93	Economic	Management Buy Out	UK
May-94	Templeton Life	Family Assurance	UK
May-94	Stalwart	European Acquisition Capital	
May-94	Victory Re (NRG)	Employers Re	
Aug-94	Confederation Life	Sun Life of Canada	UK
Sept-94	Consolidated Life	GE Capital	US
Dec-94	Windsor Life	St James' Place Capital (part only)	UK
Jan-95	Prosperity Financial Services	Century Life	UK
Feb-95	Liberty Life	Lincoln National	UK
Feb-95	Pegasus Assurance	Scottish Mutual	UK
Feb-95	ManuLife Financial	Canada Life	Canada
Feb-95	Crown Financial Management	Windsor Life	UK
Apr-95	Laurentian Financial	Lincoln National	UK
June-95	Permanent Insurance	Equitable Life (majority stake)	UK
July-95	Sun Life Holdings	UAP remaining 50% stake	France
Aug-95	Premium Life Assurance	Hambro Assured	UK
Dec-95	Provident Mutual*	General Accident	UK
Jan-96	Leeds Life**	Halifax Life	UK
Jan-96	Lifetime Assurance (UK branch)	LAHC	UK
Jan-96	Midland Life (remaining 20% stake from CU)	Midland Bank	UK
Mar-96	Clerical Medical*	Halifax Building Society	UK
Mar-96	Terra Nova (life business)	Cornhill Insurance	UK
Aug-96	N&P Life**	Abbey National Life	UK
May-96	Royal Insurance**	Sun Alliance	UK
May-96	Refuge**	United Friendly	UK
May-96	Mercantile & General Reinsurance	Swiss Reinsurance	Switz
Oct-96	Combined Life Assurance	Life Assurance Holdings Corp	UK
Jan-97	Medical Sickness Annuity & Life Assurance Society*	Wesleyan Assurance Society	UK

Table A6. *Continued*

Approximate date	*Insurer acquired*	*Acquirer*	*Nationality of acquirer*
Mar-97	Scottish Amicable*	Prudential	UK
Apr-97	No company[ii]	Norwich Union	UK
Apr-97	J Rothschild Assurance Holdings	St James's Place Capital	UK
July-97	Permanent Insurance	Equitable Life (remaining stake)	UK
July-97	AXA Equity & Law	Sun Life & Provincial Holdings	UK
July-97	Direct Line Life	Scottish Widows (50% stake)	
Sept-97	Stalwart Group	GE Capital	USA
Sept-97	Albany Life	Canada Life	Canada
Dec-97	PPP Healthcare	Guardian Royal Exchange	UK
Jan-98	Gan Life & Pensions	Life Assurance Holdings Corp.	
June-98	General Accident Plc**	Commercial Union Plc	UK
Sept-98	London & Manchester	Friends Provident	UK
Sept-98	Allied Dunbar-Eagle Star-Zurich Life**	Zurich Financial Services Group	Switz
May-99	National Provident Institution*	AMP	Australia
Feb-99	Guardian Royal Exchange	AXA	France
May-99	M&G	Prudential	UK
Aug-99	Guardian Royal Exchange Group (life, pensions and UT business)	Aegon NV	UK
Sept-99	Britannia Life[iii]	Britannic Assurance	UK
Oct-99	British & European Reinsurance Company (life reinsurance portfolio)[iv]	World-Wide Reassurance	UK
Jan-00	Old Mutual[v]	Century Life	
Mar-00	Scottish Widows	Lloyds TSB	UK
Feb-00	United Assurance	Royal London	UK
May-00	CGU**	Norwich Union	UK
May-00	St James's Place Capital[vi]	Halifax	UK
May-00	Liberty International Pensions	Schroders Plc	UK
June-00	Colonial (UK)	Winterthur Life	UK
Sept-00	Scottish Provident	Abbey National Plc	UK
Oct-00	Scottish Life	Royal London	UK
Oct-00	Woolwich**	Barclays	UK
Dec-00	Permanent Insurance	Liverpool Victoria Friendly Society	UK

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Table A6. *Continued*

Source: Watson Wyatt.
Notes:
*These transactions involved the reconstruction of a mutual.
**Merger.
[i]In a complex transaction involving Black Horse Life Assurance, its own insurance subsidiary, Lloyds Bank acquired a controlling interest in Abbey Life.
[ii]Flotation.
[iii]Britannic acquired Britannia as part of a transaction to acquire a 75% stake in Britannia Asset Management. Britannia Life has been closed to new business since end 1997.
[iv]Seller was CGU plc (UK).
[v]Immediate annuity book is to be transferred to XL Mid Ocean Reinsurance in Bermuda. Remaining non-linked and linked life business is to be bought by Century for £75m.
[vi]£750m tender offer for 60% of St James's Place Capital, the holding company for J Rothschild Assurance.