CHAPTER 7

ANNUITIES

***Summary**: Life annuities provide a medium for contractually transferring the risk of early and late death to a life insurer. The use of actuaries by the courts has its origin in the need for evidence as to the price at which to purchase a life annuity. This evidence has with time become corrupted into a fiction about consuming interest and capital over the expectation of life. In recent years there has been a resurgence of interest in life annuities in the form of `settlement annuities'. There are a variety of different annuity contracts of which the `annuity certain' and the `life annuity' deserve special note. It was the practice in the classical Roman-Dutch law to ignore the price at which `life annuities' were commercially available. That practice, with few exceptions, continues today.*

[7.1] DEFINITIONS

An annuity is the right to two or more payments,[1] usually at monthly or yearly intervals, perhaps subject to various conditions. An annuity is distinguished from a loan at interest by the feature that at the end of the term there is no repayment of the original capital.[2] There are a variety of different types of annuity distinguished by the contingencies to which they are subject:

[7.1.1] Life annuity: The right to a series of periodic payments, usually made monthly or yearly, **which will cease upon the death of the contingent life**.

[7.1.2] Joint-life annuity: An annuity payable **until the first death** amongst the two or more contingent lives.

[7.1.3] Joint-life and survivor annuity: An annuity payable **until the last death** amongst two or more contingent lives.

[7.1.4] Deferred life annuity: The right to a series of periodic payments **commencing at some future time**, usually retirement age and thereafter payable until the death of the contingent life or lives.[3] This annuity is familiar to the South African public as a `retirement annuity' or simply `annuity'. This last colloquial usage can be a source of some confusion when annuities, in the more formal sense, are discussed.

[7.1.5] Immediate annuity: An annuity in terms of which **payments commence immediately**. In this thesis the word `annuity' refers to an immediate annuity, as

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[1] *SIR v Watermeyer* 1965 4 SA 431 (A).

[2] *KBI & MMF v Hogan* 1993 (A) (unreported 28.5.93 cases 663/91 & 683/91).

[3] Such annuities are usually guaranteed payable for the first 5 or 10 years after commencement regardless of whether the contingent life lives or dies.

distinct from a deferred annuity.

[7.1.6] Annuity certain: The periodic payments are unconditionally guaranteed for a stated period of time, regardless of whether the annuitant lives or dies.

[7.1.7] Increasing annuity: The periodic payments increase on a regular basis according to a stated formula or set of rules. Usually there is a fixed rate of increase (5% 10% or perhaps 15% per year compound or simple).[4] Some increases are determined on a `with profits' basis, ie according to the investment profits achieved by the particular life office underwriting the contract.[5] There is a reported instance from Australia of a life annuity which increases in line with the consumer price index.[6]

[7.1.8] Settlement annuity: This is an immediate increasing life annuity actuarially designed by a life office to provide for instalments of compensation for loss of income or support. Evidence of the purchase price for such an annuity has been used in lieu of the more usual form of actuarial evidence.[7] The MMF effectively issues such an annuity when it elects to pay compensation by instalments.[8] For a number of reasons South African life insurers are unwilling to quote for such annuities.[9]

[7.1.9] The right to an annuity: This is acquired by the payment of a lump sum to the insurer, the price or premium. A number of life offices[10] will these days provide a surrender value should the owner of the contract wish to redeem the remaining capital. With retirement annuities there are restrictions placed by legislation on the extent to which capital may be withdrawn. Under a life annuity the insurer may demand evidence of good health before releasing the surrender value.

[7.1.10] Taxation of annuity payments: In general annuity payments are gross income

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[4]Such contracts are issued by Sanlam, Old Mutual, Norwich Life, inter alia.

[5]The increasing annuity offered by Liberty Life would seem to be of this nature.

[6]Gratton `Immediate Annuity Business in Australia' 1985 (unpublished) `at least one office in Australia already offers CPI indexed annuities'. The political uncertainty of the South African economy renders such contracts unduly risky for South African insurers who must consider the possibility of a long period of high inflation rates coupled with low investment returns.

[7]Blattenburg (1986) 20 *The Actuary* 5; *Lloyd's List* August 9 1991; Patel 1993 *The Actuary* 16. In England settlement annuities provide a means for introducing actuarial evidence which would otherwise not be acceptable (see Koch `Damages' 49).

[8]In terms of article 43 of MMF agreement ito Act 93 of 1989. See *Marine & Trade Insurance v Katz* 1979 4 SA 961 (A).

[9]For such a scheme to work every claimant must be compelled to invest the compensation money with the life insurer and write it all off in the event of death. This eliminates what actuaries call adverse selection. It is well known that persons who voluntarily purchase life annuities have above average expectations of longevity. Life insurers in South Africa are also unwilling to assume liability for payments which increase in line with wages or commodity prices (see 132).

[10]Sanlam, Federated Employers, inter alia. The facility is not generally advertised.

and subject to income tax.[11] If the annuity has been purchased with free capital,[12] then the capital content of the payments is not taxed.[13] An actuarial certificate is issued by the life office as to the proportion of the regular payment that represents capital. With increasing annuities this leads to a far more favourable tax position than with fixed interest deposits because the initial taxable income is relatively low compared to interest receipts on invested capital. With fixed-interest deposits subject to consumption of interest and capital the interest income will decline as the years go by; with an increasing annuity the taxable income will increase in line with the annuity payments. If the tax tables are regularly adjusted downward for fiscal drag[14] the average tax liability is far less with the increasing annuity that it would be for an equivalent interest-bearing deposit.

Annuities paid in terms of ss39(1)(c) or (d) of the Workmen's Compensation Act[15] are exempt from tax.[16] The exemption does not apply to temporary pensions payable in terms of s38 nor to payments for loss of support made in terms of s40. This is probably an oversight. The incomes involved are usually so small that they, in any event, do not give rise to a liability for taxation.

Revenue practice is to tax instalments of lost earnings or support made in terms of the Multilateral Motor Vehicle Accidents Fund Act[17] except when such payments are made in respect of medical and related expenses.

[7.2] FORENSIC APPLICATIONS

[7.2.1] Price of a life annuity: The issue price, the premium payable for the right to a life annuity, is these days calculated using the year-by-year method. During the 19th century the issue price was often calculated using the gross multiplier method, a safe approach for the life office since, as I have noted,[18] the gross multiplier method tends to overstate the present value, that is to say the issue price. The original purpose of actuarial evidence would seem to have been to advise the court as to the appropriate price for the issue of a suitable *life annuity*. The earliest recorded use of an actuary by a South African court was in 1886 when Mr Mouat was called `to shew that it would require about £1100 to buy an annuity of £104 on the life of a man aged 48'[19] and between £703 and £861 to secure an annuity `upon the contingency of the joint lives of plaintiff and her late husband'.[20] The court here clearly had in mind *life*

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[11] *SIR v Watermeyer* 1965 4 SA 431 (A); definition of `gross income' subsec (a) of s1 of Income Tax Act 58 of 1962. See too *KBI & MMF v Hogan* 1993 (A) (unreported 28.5.93 cases 663/91 & 683/91).

[12] That is to say capital which does not by law have to be invested through an approved pension funding scheme.

[13] s10A Income Tax Act 58 of 1962.

[14] See 232.

[15] 30 of 1941.

[16] s10(1)(gB) of Income Tax Act 58 of 1962.

[17] Article 43 of MMF agreement ito Act 93 of 1989.

[18] See 97.

[19] *Clair v PE Harbour Board* (1886) 5 EDC 311 317sup.

[20] *Clair v PE Harbour Board* (1886) 5 EDC 311 318sup.

annuities and not *annuities certain*. This would seem to be the first, and the last, case in which a South African court has made any clear distinction between the two types of annuity. There is one subsequent explicit reference to a life annuity but it is by no means clear that the court appreciated the significance of the words.[21]

[7.2.2] Changing perceptions: A number of judgments from the early twentieth century would seem to suggest that the purchase of an annuity certain was at least contemplated.[22] In 1935 we find the first reference to a plaintiff consuming interest and capital,[23] a notion which was subsequently given unambiguous expression in *Gillbanks v Sigournay*.[24] The notion of a plaintiff who himself, instead of the life office, consumes interest and capital has substantially displaced consideration of a purchased annuity.[25] It may be that this displacement is more a preference for a particular terminology than a conscious decision in favour of any particular financial instrument. It may well be that the purchase of an annuity certain, a life annuity or self-investment and consuming interest and capital are not properly distinguished from one another and are thus all perceived, for practical purposes, to involve restitution through the medium of consuming interest and capital. What is clear is that the role of risk has been increasingly ignored by the forensic dialectic, possibly due to the absence of an adequate theoretical basis for its inclusion.

[7.2.3] Modern life annuities: The availability of life annuities has certain significance within the modern context:

* A life annuity permits a risk-averse plaintiff to insure himself against the risk of living too long. The rates for early ages are unattractive[26] by comparison with other investment media, such as participation mortgage bonds.[27] A diligent investor would probably defer the purchase of an increasing life annuity until his late 60's or early 70's when a significant advantage is perceivable.[28] Comparison with a fixed-interest deposit leads to a perception that the purchaser's capital is forfeited to the life office.[29]

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[21] *Butler v Durban Corporation* 1936 NPD 139 150.

[22] See, for instance, *Chisholm v ERPM* 1909 TH 297 302; *Waring & Gillow Ltd v Sherborne* 1904 TS 340; *Dale v Hamilton* 1924 WLD 184 204.

[23] *Davies v Crossling* 1935 WLD 107 114.

[24] 1959 2 SA 11 (N) 15A.

[25] Some jurists still allude to the purchase of an annuity certain: Davel `Skadevergoeding' 99n615; Boberg 1988 *BML* 11 (Boberg does not distinguish between consuming interest and capital and the purchase of an annuity).

[26] Largely due, it seems, to life office fears of selection against the office by persons of unusual longevity. The poor competitiveness of the rates for young ages may also reflect an unwillingness by the offices to write annuity business of very long duration.

[27] These offer comparable if not better short-term returns and guarantee a return of the capital invested. See table 10B at 123 for rates of interest on PMB schemes.

[28] For earlier ages the rate of return does not significantly exceed that available on investments which do not require the forfeiture of capital.

[29] This is true of the standard form of immediate life annuity quoted by a life office. A guarantee of a return of capital can be obtained by writing a whole life contract together

* The ability to purchase an increasing annuity certain provides access for persons with limited capital to the very high rates of investment return achieved by life offices. Investment income can be released at rates appropriate to the needs of the investor. The problem of forfeiture of capital on early death can be avoided by using annuities certain coupled with an endowment plan. This form of investment can be taken for a period as short as 10 years. This availability of this investment medium, and the associated high returns, can have considerable relevance to the duty of mitigation.[30]

[7.2.4] Discount rates of return: In *Kotwane v UNSBIC*[31] the court took judicial notice of a **nominal** discount rate of interest of 5% per year compound. One sometimes finds similar unrealistically low nominal discount rates used by actuaries, although instances of this have become rare. As I have noted above the availability of increasing annuities ensures that even claimants with fairly small amounts of money can invest at quite good rates of return. A survey of increasing annuity prices in 1991 indicated a rate of return to the purchaser of about 17% per year compound,[32] well above the rate of inflation.

[7.2.5] Immunisation theory: Actuarial theory as regards the discount rate for pricing immediate annuities focuses on fixed-interest investments coupled with annuity payments that do not increase. This permits `immunisation'[33] and avoidance of the `reinvestment risk'.[34] These considerations, however, are generally given only lip service by life insurers in South Africa when competing for investor funds by way of immediate annuity contracts:

* In South Africa there are insufficient fixed-interest investments of long enough duration to permit immunisation in the classical sense.
* The rates at which immediate annuities are being issued (17% per year in 1991) discount returns that exceed the rates available on fixed interest investments

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with a life annuity contract, but then with a major reduction in the rate of return offered by the contract.

[30]In *Kotwane v UNSBIC* 1982 4 SA 458 (O) 466-7 the court did its own actuarial calculations and adopted a net capitalization rate of *minus* 6,25% per year. The plaintiff could at the time have purchased an increasing annuity certain based on a net capitalization rate of about 0% per year which included allowance for real increases in earnings above the rate of inflation.

[31]1982 4 SA 458 (O).

[32]Based on a survey in 1989 of 5 life offices that issue such contracts. A follow-up survey in 1991 revealed much the same levels of discount rates. In 1993 the rates have dropped to about 1% per year compound.

[33]See, for instance, Redington 1952 *JIA* 286.

[34]When a future interest payment is received the investment rates then current may be different, higher or lower, from those at which the original investment was made. Where use is made of an expected future rate of return there is an implicit assumption that the reinvestment rates will be the same as the original investment rate. This is a valid assumption for pricing one-off payments, such as damages awards, but not necessarily valid when the solvency of a life office may be at risk and reserves need to be set up to ensure continuing solvency.

(16,3% per year in 1991).[35] The rate of 17% per year is the internal rate of return[36] offered by the contract to the investor.[37] The life office actuary would have used a higher discount rate but would then have built in allowance for the expenses of the life office, thereby reducing the effective internal rate of return to the investor. Observed high rates of return on immediate annuities can only explained if one assumes investment in growth investments such as share market equities and immovable property. The pricing of immediate annuities in South Africa has not been the subject of any paper to the Actuarial Society.

* The contracts used for the survey that revealed an internal rate of return of 17% per year were all with payments increasing over 25 years at 13,2% per year compound. The long period and fact of increasing instalments placed the problem firmly outside considerations of the classical theory. The actuary setting the rates was thereby compelled to take a view on the expected long-term investment return in general.[38]

I conclude that actuarial theory as regards immunisation and avoidance of reinvestment risk is irrelevant to the assessment of damages for a single individual. This is so not only because of the inordinately long periods of time usually covered by an assessment, but also because the calculation has regard to payments that increase, usually in line with inflation. The theory, in any event, seems to be little applied, even in the life office context.

Prevett[39] lists a number of objections to the use of life annuities for compensation purposes but these objections reflect more on the limited nature of the contracts available than on the principle in general. The more flexible forms of annuity contracts have been designated `settlement annuities'.[40]

[7.3] THE ROMAN-DUTCH PRACTICE

[7.3.1] Market values: The available evidence suggests that in 17th century Holland the courts ignored the current market prices for life annuities and based compensation on the tables from the Digest,[41] by then 1000 years old. The commercial rates, unlike modern rates, had no regard for the age of the contingent life. Quite apart from this aspect the financial differences are quite startling. Table 9 below shows 16th and 17th century commercial rates[42] together with Ulpian's life table from the Digest.

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[35]See table 10B at 123.

[36]See 128.

[37]Contracts (annuities certain) free of the mortality risk were examined.

[38]See 135.

[39]1972 *MLR* 140 144 155.

[40]See 114.

[41]See table 1 at 15.

[42]Kopf (1927) 13 *PCAS* 225 238; Houtzager `*Lijfrenteleningen*' 43 58 73 74 84 85 90 98. The bond rate refers to what we would today call fixed interest government bonds. Withey `Annuities' 107 records that life annuities about 1800 were yielding 12% to 14% per year, ie 7 to 8 years' purchase.

TABLE 9 - EUROPEAN LIFE ANNUITY & BOND RATES

ULPIAN'S TABLE			Years' ---Purchase---		
Age	Years' Purchase	Year	Single life	Joint life	Bond rate
0-20	30	1554	6	8	8,3%
21-25	28	1606	7	9	7,1%
26-30	25	1608	8	10	6,3%
30-35	22	1634	9	11	5,0%
36-40	20	1646	10	12?	5,0%
40-50	60-age-1	1653	11	13?	5,0%
50-55	9	1665	12	15?	4,0%
55-60	7	1671	14	17	4,0%
61 +	5				

Rates flagged with `?' have been estimated.

Years' purchase is the present value of one unit of currency after discounts for delay and the risk of death. This is the multiplier to be applied to the yearly amount to obtain the capital sum. The lower the multiplier the lower the capital sum and the higher the associated discount rate of return.

The allowance to be made for mortality was not based on any scientific life table approach as it is today. A form of `gut feel' approach seems to have been used, strongly influenced by what was popularly considered to be a fair price. An attempt by De Witt to place annuity price calculations on a sound basis (see paragraph 7.3.3) was one of the factors harked on by his enemies in bringing about his downfall.

***[7.3.2] Meaning of `lijfrente'***: Grotius notes that compensation for dependants should be calculated on the basis of a `lijfrente'[43] regard being had to the age of the deceased.[44] Grotius was well aware of the commercial rates.[45] His note that account be taken of the age of the deceased clearly points to Ulpian's table, despite the dramatically lower values for commercially available life annuities.[46] It is interesting to note that in the 17th century the standard joint life annuity expired on the last death, and not on the first death as is required for dependency calculations. One could not in those days buy a life annuity as one may today. Governments and

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[43]Grotius *Inleiding* 3.33.2 `*ghereeckent by maniere van lijfrente*'.

[44]Grotius *De belli ac pacis* 2.17.13 `*ratione habita aetatis occisi*'.

[45]Grotius *Inleiding* 3.14.19 `*soo magmen oock voor ghereed geld niet meer renten koopen dan de redelickheid toe en laet, te weten zes ofte zeven ten honderd'; 3.14.20 `Hier van zijn vrij de lijfrenten, dat is renten die alleen duiren soo lang als duirt het leven van de rentheffer*'.

[46]This is the view of Feenstra 1958 *AJ* 27 31n23 and Davel `Broodwinner' 126n95.

municipalities raised capital by the issue of life annuities.[47] Only when such a fund-raising issue occurred could a life annuity be purchased. There was no market such as exists today for trading in the fixed interest securities of government and semi-government bodies.

[7.3.3] Johan de Witt: In table 9 one may observe a trend of declining interest rates during the 17th century in Holland. This did not reflect the operation of free market forces but government intervention in a deliberate attempt to keep down the cost of the borrowings needed to fight the incessant wars. The mastermind behind the reduction in interest rates was Johan De Witt, onetime advocate and later `Raadspensionaris' of Holland. In 1671 De Witt presented the States General with a life annuity scheme calculated using a scientific year-by-year technique. The resulting annuity prices were far higher than the Hollanders had been accustomed to pay. De Witt's political enemies accused him of seeking to line his own pocket and the scheme was rejected. With the coming to power of the Prince of Orange in 1672 De Witt and his brother were gaoled and then officially executed.[48]

[7.3.4] Voet's silence: Life annuities became in the process a politically charged issue and the discussion of loans and life annuities became a socially taboo topic.[49] It has been noted by South African courts that Voet does not mention `lijfrenten' as a basis for assessing compensation for personal injury and death.[50] If one bears in mind that Voet was an impressionable 23 year-old when De Witt met his horrendous end one may speculate that Voet tactfully refrained in his writings from any discussion of life annuities.

[7.3.5] The rise of life offices: De Witt's tragic tale was but a forerunner of a wave of annuity schemes, sound and unsound, that were inspired by the new mathematical techniques. Notable amongst these was the taking over of the finances of England by the South Sea Company. To stem the tide of unsound schemes the `Bubble Act' was passed.[51] The South Sea `bubble' collapsed shortly thereafter leaving many destitute.[52] These events led to legislation to restrict the issue of life annuities to approved institutions subject to actuarial control.

The earliest mathematical technique was what we today know as the gross multiplier

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[47]This practice was by then on the wane but had been the dominant fund raising technique during the medieval centuries (AD1000 to AD1500) when the prohibition on borrowing at interest had been at its most intense (Cambridge Economic History vol 3 527-53 vol 5 358-92; Kopf (1927) 13 *PCAS* 225 230).

[48]Bouwstoffen `*Levensverzekeringen en Lijfrenten*' 27 `*Met geweldt uyt de Gevangenpoorte ghehaeldt, doodt gheslagen, ende haerluyder Lichamen schandelijck ende Moeder-naeckt op 't Schavot gebracht, ende met de Beenen aen de Wip aldaer staende ghehangen*'. De Witt is today remembered as one of Holland's great statesmen and his statue stands before the Hague.

[49]`*Men hoort weinig meer spreken van leeningen en lijfrente*' Bouwstoffen `*Levensverzekeringen en Lijfrenten*' 27 .

[50]*Hulley v Cox* 1923 AD 234 243-4; *Maasberg v Hunt Leuchars & Hepburn* 1944 WLD 2 14-15.

[51]Bubble Companies etc Act 1825 (6 Geo 4c91)

[52]Kopf (1927) 13 *PCAS* 225 253-5.

method[53]. This was superseded by the more accurate year-by-year method[54] which was first made public in the writings of De Moivre and Simpson during the years 1740 to 1744. Once a sound mathematical basis had been established for tackling the contingencies of human life it was possible for the first time to conduct life insurance business on a scientific basis. In 1756 the Equitable Assurance Society was formed by Royal Charter. The `Old Equitable' conducted business **on the novel basis of charging a premium that varied according to the age of the life to be assured**. In 1777 the `Annuity Act' was passed placing onerous registration requirements upon those who wished to issue annuities. The scientifically managed life offices, the `Old Equitable', the `Royal Exchange' and others, were granted exemption from the requirements of the Act.[55] This placed the life annuity business exclusively in the hands of the life insurance companies and today in South Africa only licensed insurers are permitted to conduct life annuity business.[56]

[7.4] CONCLUSIONS

Life annuity contracts are historically important to an understanding of modern forensic attitudes to damages contingent upon human life.

Increasing annuities for short periods, such as 10 years, provide a useful investment medium, particularly for smaller awards. Life annuities proper are not generally popular as an investment medium because they are perceived as requiring the investor to forfeit his capital when he dies. There are a number of other technical difficulties with using conventional life annuities as an investment medium.

The discount rate of return used by life-office actuaries in South Africa to price life annuities is determined primarily by considerations of competition for investors' funds and thus provides one of the best guides to future investment returns.

`Settlement annuities' have had their greatest success in jurisdictions where actuarial evidence is otherwise unacceptable, as in England, or where complex financial issues need to be communicated to an unsophisticated audience such as a jury. Neither of these factors prevail in South Africa. Instalment settlements in terms of third-party legislation provide a form of settlement annuity.

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[53]See paragraph 6.1.1.

[54]See paragraph 5.4.1.

[55]Supple `The Royal Exchange Assurance' at 118n.

[56]See definition of `life business' s1 of the Insurance Act 27 of 1943.

TABLE 10A - YIELDS ON STOCK EXCHANGE EQUITIES: 1960 - 1991

Year	*Div Yield*	*Capital Growth*	*Total Yield*	*CPI*	*Real Yield*	*Averages 10yr*	*15yr*	*20yr*
1960	7,1					9,5	7,7	10,9
1961	7,0	3,2	10,2	2,0	8,3	8,9	6,2	9,7
1962	6,1	20,8	26,9	1,5	26,3	11,1	5,6	9,3
1963	5,5	17,0	22,5	1,1	22,1	8,5	5,6	8,3
1964	5,3	13,4	18,7	2,5	16,5	7,3	8,3	7,4
1965	5,3	1,8	7,1	3,7	3,3	4,3	9,6	8,2
1966	5,1	15,0	20,1	3,7	16,6	1,3	7,5	8,9
1967	4,5	14,1	18,6	3,3	15,4	1,4	7,6	7,1
1968	3,1	46,1	49,2	1,8	48,0	(0,5)	4,9	5,1
1969	3,7	(13,2)	(9,5)	2,9	(12,5)	6,3	5,7	7,4
1970	5,5	(29,7)	(24,2)	4,9	(29,3)	12,4	9,6	8,3
1971	5,3	4,1	9,4	6,4	3,0	10,5	11,4	8,8
1972	3,7	57,2	60,9	6,5	53,1	7,6	6,9	5,7
1973	5,1	1,2	6,3	9,5	(2,9)	8,1	7,2	
1974	6,4	9,5	15,9	11,6	4,4	7,4	9,1	
1975	8,1	(18,9)	(10,8)	13,5	(22,8)	12,4	9,6	
1976	8,6	(10,9)	(2,3)	11,2	(13,0)	17,0	11,6	
1977	7,3	20,6	27,9	11,0	16,6	13,1	9,3	
1978	6,6	27,8	34,4	10,9	22,8	11,0		
1979	5,2	81,8	87,0	13,2	69,0	8,5		
1980	7,0	32,2	39,2	13,8	24,3	4,2		
1981	7,9	(7,3)	0,6	15,1	(13,1)	7,0		
1982	5,5	27,0	32,5	14,7	16,8	3,8		
1983	5,7	8,1	13,8	12,3	1,7			
1984	5,6	3,6	9,2	11,6	(2,0)			
1985	4,9	34,4	39,3	16,2	21,3			
1986	3,8	49,1	52,9	18,7	30,4			
1987	4,7	(8,0)	(3,3)	16,1	(17,0)			
1988	4,5	9,6	14,1	13,0	1,4			
1989	3,6	49,5	53,1	14,7	35,0			
1990	4,1	(8,6)	(4,5)	14,3	(16,8)			
1991	3,3	26,5	29,8	15,3	13,3			
1992	3,6	(5,4)	(1,8)					
Averages	5,4	12,4	17,8	9,5	8,3			

Source: `The Quantum Yearbook' 1993 50

TABLE 10B - YIELDS ON FIXED-INTEREST INVESTMENTS: 1960 - 1991

Year	***CPI***	*Yield Index*	*Escom Stock*	*Part Bonds*	*Home Loans*	*Bank Deposits*	*Guardians Fund*
1960	1,3	5,3	5,8	6,2	6,5	5,0	4,0
1961	2,0	5,8	6,3	6,7	7,0	5,5	4,5
1962	1,5	5,4	5,3	5,7	6,5	4,5	4,5
1963	1,4	4,8	5,1	5,7	6,5	4,5	4,5
1964	2,5	4,8	5,6	6,2	7,0	5,5	4,5
1965	3,7	5,6	6,7	6,7	7,5	6,0	4,5
1966	3,7	6,3	7,0	7,6	8,5	6,5	4,5
1967	3,3	6,5	7,3	8,1	8,5	7,0	5,0
1968	1,8	6,5	7,2	8,1	8,5	6,5	5,0
1669	2,9	6,5	7,3	8,6	8,5	7,0	5,3
1970	4,9	7,1	8,8	8,6	9,0	7,5	5,5
1971	6,4	8,4	9,3	9,5	9,0	7,5	6,0
1972	6,5	8,4	8,4	9,5	9,0	7,0	6,4
1973	9,5	7,8	8,3	8,5	8,3	6,5	6,5
1974	11,6	9,0	11,3	11,0	10,3	10,0	6,8
1975	13,5	9,7	11,4	11,5	10,5	10,0	6,9
1976	11,2	10,4	12,7	12,0	10,5	10,0	7,2
1977	11,0	10,9	11,6	12,0	10,5	10,0	7,8
1978	10,9	10,4	10,0	11,0	10,5	9,0	7,9
1979	13,2	9,3	9,5	9,0	11,5	7,5	8,5
1980	13,8	10,1	12,2	9,0	11,8	9,5	9,0
1981	15,1	13,0	13,4	14,5	14,3	14,0	9,0
1982	14,7	13,4	11,8	18,5	16,3	14,5	9,5
1983	12,3	12,7	14,5	17,5	17,0	16,0	9,5
1984	11,6	15,3	16,6	22,3	20,0	18,0	10,1
1985	16,2	16,7	18,7	16,0	19,8	16,0	10,8
1986	18,7	16,8	15,5	14,0	16,0	12,8	11,9
1987	16,1	15,4	15,7	12,5	14,5	13,0	12,4
1988	13,0	16,4	16,6	15,0	16,8	15,0	12,8
1989	14,7	16,8	15,5	18,0	20,0	17,5	13,0
1990	14,3	15,9	15,8	19,0	20,0	18,5	14,5
1991	15,3	16,2	16,3	18,0	20,0	17,5	14,5
1992	13,9	15,2	15,0	15,0	16,8	12,8	15,0
Avge	9,5	9,9	11,0	11,6	12,0	10,2	8,1
Excess over CPI		0,4	1,5	2,1	2,5	0,7	(1,4)

Source: `The Quantum Yearbook' 1993 48