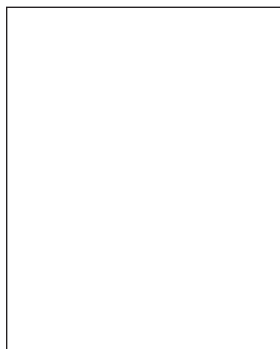


Pensions & inflation

How has the Life Industry coped with Inflation?

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This paper describes the historical background that led to the formulation of the investment rules under which the life offices were obliged to operate.

The author has analysed data supplied by two life offices, one in Norway and one in Sweden, and concluded that the offices have indeed succeeded in treating their policyholders equitably. The inability of the life offices to provide compensation for inflation has, in his view, been due to the restrictive investment policy imposed by the authorities.

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Introduction

In his previous paper (NFT 3/1996) on Pensions & Inflation, presented at the 1992 Congress in Montreal, the author compared the retirement arrangements, and the resulting benefits, in Norway and Sweden for three categories of persons: a university professor, a white-collar worker and a purchaser of an annuity from a life office. The study showed that whilst in the first two cases the salaries and the retirement benefits kept pace with the changes in money values measured by the Retail Price Index (RPI), the purchaser of the annuity policy received when he retired an annuity whose nominal amount was that which he had signed for but whose purchasing power was drastically reduced because of the fall in

money values brought about by inflation. Although, after several years, each of the life offices had granted a bonus to be added to the original amount of the annuity, the bonus compensated for only some 30 % of the inflation that had taken place during the years the annuity had been paid.

These differences arose because the public service scheme which covered the professor was based on Pay-As-You-Go (PAYG) and the staff pension scheme which covered the white-collar worker, though based on actuarial funding, included (with the consent of the authorities) an element of PAYG that made it possible to compensate the pensioners for the inflation experienced while the pensions were being paid: in these two schemes "fresh money" was brought into the system. The life

office, however, had to base the benefits on the funds that had been built up from the investment of the premiums, no "fresh money" being available to compensate for the effect of inflation.

The Early Years of the Life Industry

In Norway and Sweden the first life companies were set up around 1850. In Norway the control of the companies was based upon an ordinance of 15 May 1810 issued by the United Kingdom of Denmark and Norway. The ordinance prescribed that institutions having as their aim to provide financial support for old age, widows, etc, were to be supervised by a committee appointed by the King. After the separation from Denmark in 1814 Norway entered into a union with Sweden, which lasted until 1905, when Norway became a sovereign state. During all these years the 1810 ordinance was applied.

The rapid growth of the industry in the second half of the 19th century required adequate legislation. In Norway a committee was set up in 1881 in order to prepare a bill for stock companies and a few years later the committee was commissioned to prepare a bill for insurance companies. The idea was that some of the legal structure of a law on insurance might be linked to the law on stock companies.

The first proposition was presented in 1895 but it was remitted for further study. In 1900 it was proposed that the Norwegian committee should discuss the matter together with Denmark and Sweden who were also planning for specific legislation for the insurance industry and it was deemed wise to co-operate within the Nordic countries in this field. Jointly, proposals were worked out, each country taking into consideration national circumstances. In Denmark and Sweden the propos-

als were presented to their respective parliaments. The bills were passed in 1903 in Sweden and in 1904 in Denmark. In Norway the legislation was delayed because the idea prevailed that the insurance law should be coupled with the legislation on stock companies. The matter was studied further and finally a proposal on an independent insurance law was presented in 1911 and passed by the parliament on 29 July. The law became effective from 1 January 1912 and replaced the 1810 ordinance.

Life Insurance and Legislation from the First Decade of the 20th Century

Why this lengthy description of the long-lasting pregnancy and complicated birth of the first insurance laws? The laws reflected the economic environment that had reigned in the long period during which the bills were prepared and still reigned when the laws were passed in the parliaments.

The second half of the 19th century and the first decade of the 20th century showed a remarkable stability as regards rates of interest and inflation. In Norway during the 45 years from 1865 to 1910 the RPI increased on an average by 1/3 % a year. In Sweden the annual increase was slightly higher, just 0,4 %. The rate of interest oscillated between 4 % and 5,5%. No wonder that the rules for investing the quickly increasing funds were very "conservative", allowing the funds of a life company to be invested only in bonds issued by the government and local authorities, and in loans not exceeding 60 % of a "safe" valuation of the mortgaged property. In addition the same limit was applied to the company's own property. Investment in shares or properties in general was not permitted. It may be argued that there is an anomaly: the company may offer loans to the owner of a

property, but may not be the owner itself. If after a company has granted a loan the property increases in value the company does not benefit. There might however be an explanation for not letting the policyholders' money be invested in the property market. At the end of last century and in the first decade of this century there had been a couple of crises in the property market followed by a number of bankruptcies.

The Two World Wars

The economic climate in Scandinavia as well as in the rest of the world was soon to be subjected to storms and turbulences. World War 1 gave rise to high inflation which lasted until the first years of the 1920s and was followed by a general deflation in the second half of the same decade. The Black Thursday on 24 October 1929 on the New York Stock Exchange started the Great Depression. On 12 March 1932 the Swedish financier Ivan Krüger committed suicide in Paris. This event had severe repercussions also outside Sweden. The depression lasted nearly until World War 2. In Norway and Sweden the RPI had its lowest value in the years 1933-34; thereafter the RPI has steadily been increasing. In both Norway and Sweden one 1934 crown was in July 1994 worth 24 crowns.

The turbulences on the financial market had astonishingly little effect on the rate of interest used in the tariffs. The 4 % level that had reigned before World War 1 continued. In 1918 a committee was set up in Sweden in order to make proposals for new life tariffs. The rate of interest had so far been 4 % and it "was judged by economic experts to be adequate for all future time"; thus no change was proposed. This did not last for ever. In the mid-1930s when prices started to move upwards the rate of interest went the other way, and fell nearly to 2 %. This low level of the

rate of interest lasted throughout World War 2 and the authorities intended to keep the rate low, not least to facilitate the enormous reconstruction that took place in the countries devastated by World War 2. The low rate of interest lasted for some 10 years. New economic forces entered the market and the surge of the rate in the later decades is too well known to be dealt with here.

The Investment Rules for Life Companies

The rules set out in the first insurance laws, those of 1903 in Sweden and 1911 in Norway, were very "conservative" but clearly based upon the economic conditions that had prevailed for several decades. As mentioned above, investments in bonds and loans issued and guaranteed by the government or municipalities and in mortgages were allowed, but investments in shares and in property were not allowed, for the parts of the funds that were pledged to the policyholders. The rest of the funds, free funds, could be invested more freely, and investments could be made in shares and in property. These rules were unaltered until after World War 2. In the late 1940s committees were set up in both Norway and Sweden to study the structure of the insurance industry. In Norway proposals were presented suggesting a more "free" investment policy for life companies, but not until 1961 were the companies allowed to invest a proportion (not exceeding 15 %) of the pledged funds in shares and properties. In the 1980s the rules were modified so that the 15 % limit applied to shares only and there were no limits for investing in properties, inside or outside Norway. In Sweden the rules that the pledged funds may not be invested in shares are still in force. However, great changes are soon to take place. With the entry of Sweden into the European Union, EU, the Swedish

insurance industry will be adopting EU rules. The legislation governing insurance in Norway will be brought closer to that which applies in the EU.

The Tariffs and the Rate of Interest

The life industry met a quite new situation in the mid-1930s with the falling rate of interest. Until then the turbulences during and after World War 1 had produced spells with higher or even considerably higher rates of interest. This gave the companies increased revenue and a redistribution of this to the policyholders was akin to normal distribution of profits. That the return on investments should fall below the rates used in the tariffs was most disturbing and could in the long run have jeopardized the solvency of the life companies. The rates fell quicker in Sweden than in Norway. The life offices responded to the challenge of the falling rate of interest by reducing the rates used in the tariffs. In Sweden the tariff rate was reduced from 4 % to 2,25 % during less than 4 years, ie from 1935 to 1938. In Norway the first reduction, from 4 % to 3 %, took place in 1938 and the reduction to the lowest level, 2,25 %, came only after World War 2, in 1946.

Table 1 shows the value of $(1+i)^{-n}$ for four values of i and for $n = 25$ and $n = 50$. It also shows the ratio of each of those values to that for $i = 0,0225$.

Table 1.

<i>n</i>	<i>100 i</i>			
	4	3,5	3	2,25
	<i>(1+i)⁻ⁿ</i>			
1	0,962	0,966	0,971	0,978
25	0,375	0,423	0,478	0,573
50	0,141	0,179	0,228	0,329
	<i>ratio</i>			
25	1,00	1,13	1,37	1,53
50	1,00	1,27	1,62	2,34

With these figures in mind I give some examples of premiums according to the tariffs that were successively introduced by Norwegian and Swedish life companies in the 1930s and the following decades.

In this study I am interested in life annuities which have been bought by young persons, paid with single premiums or during a short period of 4–6 years, and maturing at a normal pensionable age, 60–65. The period from the payment of the premiums until the annuities started to be paid out has thus been rather long: 30–40 years or longer.

Table 2 and 3, which show the dates to which the tariffs applied, give the single premiums payable in respect of a girl aged 11 whose father buys a life annuity maturing at the age of 60.

The important effect on the premiums is clearly demonstrated in the column showing the ratios of the successively used premiums to the old premiums calculated at 4 %. For obvious reasons these ratios cannot be compared directly with those in table 1. The difference between the ratios in table 2 and 3 show that the premiums have been affected by factors other than the rate of interest. The ratio, 1,36, between the post-World War 2 and the pre-November 1938 Norwegian 4 % rates is largely due to the increase in longevity. The even higher ratio for the Swedish 4 % premium rates after World War 2 is due to the fact that the interest rate is in reality close to 3 % because of a loading for security and costs, deducted from the 4 %.

The Policyholder and the Tariffs

I return to the father of the 11 year old girl who I assume was born in 1920, and for whom the premiums are given in Tables 2 and 3. I want to consider the options available to the father during the 1930s if he had stuck to the idea of providing his daughter with a life annuity.

Table 2. Sweden

Period from	to	Rate of interest	Single premium	Ratio to pre-war single premium at 4%
-	31.12.34	4 %	1.335,80	1,00
1. 1.35	31.12.36	3,5 %	2.306,30	1,73
1. 1.37	26. 8.38	3 %	3.107,70	2,33
27. 8.38	31. 8.55	2,25 %	4.175,80	3,13
1. 9.55	31. 8.64	3 %	3.890,70	2,91
1. 9.64	-	4 %	3.555,40	2,66

Table 3. Norway

Period from	to	Rate of interest	Single premium	Ratio to pre-war single premium at 4%
-	31.10.38	4 %	1.967,00	1,00
1.11.38	26. 1.46	3 %	3.561,00	1,81
27. 1.46	31.12.52	2,25 %	5.792,00	2,94
1. 1.53	31.12.55	2,25 %	5.577,00	2,84
1. 1.56	31.12.63	3 %	4.241,00	2,16
1. 1.64	-	4 %	2.683,00	1,36

Table 4. Single premium for a retirement annuity for 1.000 Crowns a year, payable from age 60 and purchased in the years indicated, for a girl born in 1920.

Year	Age	Sweden Tariff	Norway Tariff
1931	11	G28 1.335,80	L28 1.967,00
1935	15	G35 2.651,30	R35 2.285,00
1937	17	G37 3.704,50	
1938	18	G38 4.936,40	
1939	19		R39 4.434,00

The Danish poet Piet Hein once said: "You can't live your life backwards". Perhaps the father would have made provisions for his daughter long before 1935, before the premiums surged. The question I want to pose is: Would the girl have been worse off if the father had waited and bought the annuities later and paid the higher premiums? How did the life companies meet the challenge of giving an equitable return to their policyhold-

ers? Did the return reflect the premiums paid?

In my search for an answer I have been generously provided with a lot of material by actuaries in Norwegian and Swedish life offices. They have also made a number of special calculations to facilitate my studies.

The Funds and Variations in the Rate of Interest

Actuaries are not soothsayers and when the rate of interest plunges they have to decide how to react. They cannot be sure whether, and if so when, the rate will return to the hitherto "normal" level. As a general rule they will need to adjust their premiums to correspond to the new and lower level of interest rates. Examples of the effect on premiums are given in Tables 2 and 3. The bulk of the premiums, apart from amounts allocated to administrative costs and set aside for contingencies, is transferred to the technical

funds. In most companies the funds are credited with the same rate of interest irrespective of whether the premiums had been calculated at 4 % or 2,25 %.

The Norwegian company has provided me with the rates of interest that the company has credited to the funds since the beginning of this century. That makes very interesting reading and could be the subject of a special study. The material shows that until the mid-1930s the rate oscillated around 5 %. Only in the mid-1920s was the rate approaching 5,5 %. The downward trend caused by the plunge in the rate in the latter half of the 1930s brought the rate below 4 % in 1941. During the years 1948 to 1955 it was under 3 % but from then on the rate has increased steadily and passed 4 % in 1961 and 5 % ten years later. In the 1970s and 1980s the rate soared and reached a two-digit figure.

For more than 20 years, from 1941 to 1961, the funds were credited with less than 4 % and for nearly 10 years even under 3 %. The companies recalculated the insurances in various ways. The insurances whose premiums had been calculated at 4 % fell into deficit whereas those whose premiums had been calculated at 2,25 % showed a surplus. The annuities I have been studying matured in the 1960s and 1970s. The high-interest annuities were able to cover, from the surpluses of the high-interest years, the deficits of the low-interest years, whilst the low-interest annuities accumulated an even greater surplus. The actuaries, many of them now retired, have told me of the huge amount of work involved in these tedious calculations. Modern computers had not yet arrived and each annuity was handled separately.

The Swedish material gave detailed information on the annuities paid each year, the allocated bonus and the reserves. From these figures the annual yields are easily found. The Norwegian company gave me full information on how bonus was calculated and I was

able to work out the annual amounts. I grouped the annuities according to tariffs and compared in each group the level of bonus paid and the level of the premiums. Since the material is rather cumbersome I shall give only a summary of my findings.

For all the annuities in the data supplied to me the bonus seems to provide compensation related to the premiums paid. In Norway the 2,25 % annuities seemed to have received too little bonus but, as mentioned above, in the recalculations that were made the original amounts of annuity were increased and thus the bonus granted was calculated on a higher annuity amount than that in the original contract. Thus it can be said that justice was done.

The bonus paid reflects very closely the size of the premium paid according to the different technical bases. The companies and the actuaries have by their thorough calculations seen to it that the policyholders have been treated fairly and received benefits according to what they had actually paid – the premiums having been calculated according to various rates of interest from 4 % to 2,25 %.

When in my Montreal paper I compared the annuities in terms of the extent to which they had compensated for inflation, I was judging the life offices unfairly. A fair comparison with the pure PAYG of the pension scheme for public servants is of course out of the question. But also the staff pension companies in both Norway and Sweden have in their distribution of bonus used a system of PAYG in order to offset inflation. A part of the surplus has been allocated to the pensions in payment and used for giving full or nearly full compensation for the increases in prices calculated according to the RPI.

The Montreal annuity was in a way an unfortunate choice. It was an insurance taken out in 1934, the last year before the rate of interest plunged and the rates of premium soared. The insurance industry has however, according to my findings, responded fairly to

the challenges they met. But what about inflation?

The authorities have prescribed strict rules for the investments of the funds accumulated in the life offices, especially for the pledged funds. With these rules there was no scope for investing in "real values", ie shares and properties, and the companies had no chance to make capital gains. The figures that the Norwegian life office gave me regarding investment income show clearly that the "extra income" in the form of capital profit has added only a trifle to the total income from investments.

Thus the investment rules have prevented the life offices from maintaining the purchasing power of the policyholders' money. The strict rules were acceptable when the economy was stable as was the case during the early years of life insurance and well into this century. It was however a pity that the authorities did not listen to the committees set up after World War 2 which advocated a more free investment policy.

The freedom given in recent years by letting the life offices sell unit-linked policies is actually exempting the life offices from their basic task investing their policyholders money: to pay benefits commensurate in value with the premiums paid by the policyholders. In the system with unit-linked insurances the company can say to the policyholder in the case of a loss: "Sorry, but you made a bad choice!"

Possible achievement of a free investment policy

I shall end this paper by drawing your attention to what can be achieved by free investment under strict responsibility. That is the story of the Nobel Foundation which may sound like a fairy tale.

Alfred Nobel died on 10 December 1896. The first Nobel Prizes were awarded in 1901.

The amount of the Prize was 150.782 SEK and the capital of the Foundation amounted to 31.801.753 SEK. The amount awarded in the following decades never attained the original sum; it became smaller and smaller and was 140.694 SEK in 1911 and 122.482 SEK in 1921. In the 1930s the amount increased to some 170.000 SEK, but decreased to 121.000 SEK just after World War 2. In the meantime inflation had taken its toll and the Prize had only 30 % of its 1901 value. In 1945 the Foundation had a capital of 55,6 million SEK, but that had a value only 64 % of that of the capital in 1901.

The statutes of the Foundation prescribed that the investments should be "secure" and followed in principle the same rules as were used for life offices: no shares or properties. Just after World War 2, however, the Foundation bought some Swedish shares and properties and in the mid-1950s the statutes were changed and half of the capital could be invested freely, in Swedish or foreign shares and properties. Now a new era commenced. Very slowly the results of this freedom began to show. The size of the Prize started to increase, not only nominally but also recovering some of the loss caused by inflation. In 1971 the Prize amounted to 480.000 SEK which in real terms was 42 % of the 1901 value.

In the 1970s and 1980s the management of the Foundation made very clever investments and obtained huge capital gains. In 1988 the capital of the Foundation had attained the 1901 real value, 984 million SEK, and in 1994 the Prize reached 7.000.000 SEK which was 112 % of the original value in real terms. All these comparisons have been made using the Swedish RPI. It is not surprising that the Board of the Nobel Foundation is proud of its financial activities.

One must assume that not all life offices would have been able to present comparable results in their financial operations if they had

been granted the same freedom. However, the story of the Nobel Foundation should make some bells ring for the persons responsible for the rules governing the life industry.

In a paper to the Helsingfors Congress in 1988 Kennedy & Bernstein presented their findings that freer rules for investments, specifically in shares, give the insurance companies a higher return. Hopefully the greater freedom the EU rules are granting the insurance companies could be to the advantage of the policyholders. Hopefully, as years go on the life offices will be able to do better than

hitherto to fight the erosion of the money value.

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WESMANN'S SKANDINAVISKE FORSIKRINGSFOND

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