Pensions & inflation

Is it sensible to put money in pension schemes?

av **Sven Guldberg**, aktuar og tidligere administrerende direktør i KP Pensjon & Forsikring

Sven Guldberg

The intention of this paper is to give a simple and, it is hoped, instructive picture of the devastating effects of inflation. The effect of inflation on individual annuities is especially severe, as there is no third party who is able to compensate the owner of the annuity.

Another purpose is to focus attention on the fact that life insurance is dealing with people's money – pounds & pennies – crowns & oeres – and that the actuarial science is our tool to enable us to serve our policyholders, clients & owners. When the environment in which we are working prevents us from fulfilling our task we should not just observe the facts and then either say 'sorry' or keep quiet. We have the duty to publicise the evils and point out how we are hindered from executing the economic services we are supposed to render the citizens of our society.

This paper was originally presented at the 24. Actuarial Congress in Montreal.

1. Nominal benefits

In life insurance, premiums and benefits are expressed in nominal values. The purchasing power of these nominal amounts varies over the years. This raises the question whether it is possible for an insurer, who has contracts lasting for many decades, to fulfill the ambition a life office should have: the benefits paid to the policyholder should have a value similar to that of the premiums paid by him.

The usual way to study the variations of the purchasing power of money is to look at the Consumer's Price Index, CPI. This figure is calculated at consecutive intervals on the prices of a number of goods and services, often called a basket. The range of consumption changes over the years, and the content of the basket does not remain the same: some goods & services disappear or get less weight whereas new ones enter. This implies that the comparison of the standard of living or of the purchasing power over a long period, when using CPI as gauge, has to be done with great caution. Thus the inferences drawn in the following should be interpreted critically.

In order to give a simple picture of the economic development three different cases are considered in each of two countries, Norway(N), and Sweden(S).

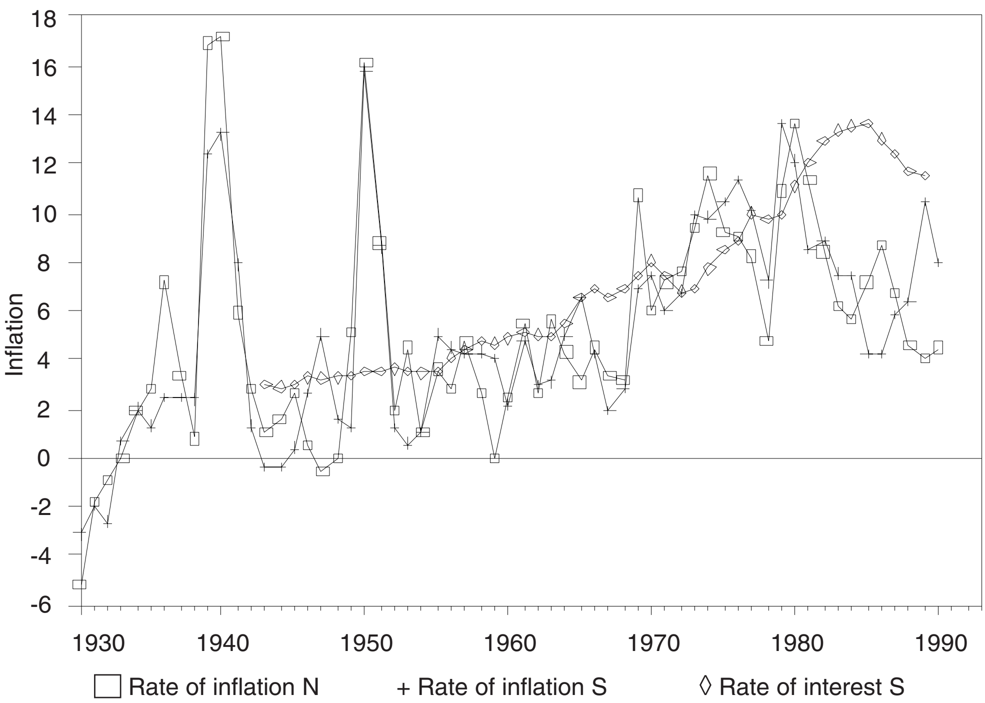
i) A university professor,
ii) An employee in the private sector,
iii) A person seeking security for his old age by using a life insurance company.

The three cases are of course not entirely compatible, but may all the same be a good illustration to the question asked above. The cases illustrate also the very unfair treatment different persons are subject to in countries which claim to be democratic and egalitarian.

N & S form the Scandinavian Peninsula and have a common borderline of 1,650 km. They understand each other's language, so that no translation is necessary. They are mutually amongst the most important trading partners. During World War 2 (WW2) N was occupied for 5 years by the Nazis, S was neutral and escaped the ravages of the war. After WW2 Norway's economy was heavily engaged rebuilding industry and housing, whilst Sweden had suffered no war damage. Still there are many similarities in their economy and the inflation and development of the purchasing power of their currencies, NOK and SEK respectively are astonishingly parallel.

Both countries adhered to the Gold Standard and had the same gold content in their 'crown', which was given up in 1931 after the Wall Street disaster. During the early 1930s the purchasing power of both currencies increased with a maximum in 1933 (just alike the BGP). Thereupon both currencies have undergone continuous inflation, apart from a single revaluation of the SEK in 1946. The exchange rates varied considerably just after WW2, but have later on been more stable. Now in 1991 1,05 NOK is about equal to 1 SEK. Using CPI as gauge, 19 SEK or 20 NOK are needed to buy one 1930 Gold

Figure 1



Crown! Other currencies have been worse off: One GBP of 1930 is equivalent to 30 GBP of 1990 using the British Retail Price Index, RPI, as gauge.

Figure 1 shows the annual rates of inflation in N & S from 1930 on. In addition the fine dotted 'staircase line' indicates the annual gross rate of interest of the KP Pension Fund in S, founded in 1942. The author was actuary from the beginning and general manager from 1944 until his retirement in 1978. When the Fund started the rate of interest in S was subject to strict regulations, and it was only in the late 1950s that the rates started to increase. Thus the inflation caused by the Korean War played havoc with the pensioners.

Now let us turn to the three examples.

1.1 The Professor

Salary, S, and Old Age Pension, P, of a University Professor in N and S.

Norway (NOK)

Year	*S*	*P*	*CPI*	*Sx/ S30*	*Px/ P30*
1930	11.700	5.400	1,00	1,0	1,0
1965	44.100	29.100	2,95	3,8	5,4
1990	316.700	189.300	20,10	27,1	35,1

Sweden (SEK)

Year	*S*	*P*	*CPI*	*Sx/ S30*	*Px/ P30*
1930	12.000	6.000	1,00	1,0	1,0
1965	59.460	38.649	2,98	5,0	6,4
1990	333.600	216,800	18,60	27,8	36,1

The figures given are all annual amounts. The pension is the amount the professor, with full pensionable service, receives during the first year of retirement if retired the year indicated. Professors adhered to specific 'salary grades' in both N & S. From 1989 on the grades have been abandoned in S, so the salary for 1990 is an average.

Norway

The indexing of pensions works slightly differently in N & S. In N the pension is calculated as a fixed percentage of the salary (65% up to a certain level and a lower percentage on exceeding amounts). This percentage stays constant. After retirement the pensions are increased by the general percentage increase which has been applied to the salaries of those still active.

However, the retired do not profit from any upgrading that may take place in the positions they had previously held. The effect is that the pensions will increase more slowly than the general level of salaries. In order to avoid this phenomenon, which over the years creates an important lag in pensions related to coming generations, a new principle has recently been introduced. The indexing is attached to the development of the basic amount in Social Security, called G, which in principle should reflect the standard of living for the active generation. The politicians have, however, in some instances had other preferences than securing the standard of the pensioners and G has lagged behind. As an excuse it has been suggested that many of the pensioners have small mortgages and thus cheap dwellings and don't need full indexing of the pensions!

Anyhow public employees in N have fair inflation-proof, nearly standard-proof, pensions apart from the small anomalies mentioned above. These anomalies do not affect special groups: Members of the Government and of the Parliament and, in order to avoid shame, as they themselves have taken the decisions - the members of the Supreme Court! The pensions for these groups are based upon the remunerations paid to active politicians.

Sweden

The salaries increased more after WW2 in S than in N and are still on a slightly higher level. The pensions have also in S in principle followed the level of the salaries. The indexing has, however, also in S suffered from peculiar regulations. In the late sixties the indexing was made by adding the same amount to the pensions, independently of their size. The idea was to increase «equality» and reduce the difference between higher and lower pensions. This state of affairs has disappeared, and the pensions have for some years been indexed according to the Basic Amount in Social Security, B. The politicians have, sorry to say, also in S manipulated when determining B. The latest example was in connection with the new Tax Laws, which would reduce taxes specially for the pensioners. If B had got its 'full value' the pensioners would have been compensated twice!

The indexing of pensions for public employees, both in N & S, is based upon the principle that their standard should be maintained. The costs are borne by the taxpayers according to 'Pay-As-You-Go', PAYG.

1.2 An Employee in the Private Sector

Now let us see how things are in the private sector. Private pension schemes are in most countries subject to regulations like those which are in force for life insurance companies. The methods of financing are often connected with the requirements for tax exemption of the premiums and are normally based on the building up of reserves established according to actuarial technique. In this system the future pensions are to be paid out from the accumulated funds. The capacity to pay the pensions is thus directly connected to the future yields of the funds.

The insurance is often a 'Group Contract' using assumptions on marital status, difference in age of spouses, etc. Whether the pension is administered by a pension fund, friendly society or the like the technical bases are principally the same.

The group contract is an important part of the conditions of employment. Ordinarily the employer undertakes to adjust benefits to actual salaries. The commitment of the employer rarely goes so fas as to guarantee the purchasing power of the pensions or any sort of indexing. The insurer has on the other hand no obligation to pay higher benefits than those promised in the insurance contract.

The protection of the standard of pensions in payment is of fundamental importance not only for the receiver, but also for the labour relations. A PAYG-system does not work, since there can be no guarantee that the resources will be available at the time they are needed. Indeed, the employer may no longer exist. Many suggestions have come forth, but the final solution is yet to be found.

The main problem we are concerned with in this paper is that caused by the dwindling purchasing power of the currency in which the benefits are measured. The problem may be expressed in the following way: How to replace the values the inflation takes away from the insurance company? In the discussion on pensions in Tokyo in 1976 the author said that 'New money has to be put into the System!' But how? Here follows a description of some methods employers and insurance companies, with the approval of the Supervisory Authorities, have implemented in N & S.

Sweden

Let us return to the KP Pension fund in S. During WW2 the salaries included a partial compensation for increased cost of living, which was not taken into account when calculating pensions. Thus the pensions lagged behind already from the start. After the war the supplements did not disappear as some politicians had hoped (and which was in their minds at the time of the 1946 revaluation. The pensioners were however partly compensated through the important increases in Social Security in 1947. The Korean Inflation 1951–

52 increased the need for compensating pensions in payment. The Board did not feel that it had the authority to oblige the employers to pay supplements and only asked if they were willing to do so. A majority did, but a number were not wiilling and in a few cases discriminated among some of their former employees. The Board was not happy with this state of affairs and from 1954 on supplements were paid out of the common proceeds and on an objective basis whereby the supplement reflected the increase in the CPI from the year the pension started until the current year. This method of compensation had already been introduced in Finland.

With the introduction of the Graduated Pensions in Social Security in 1960 the white collar workers and their employers in private enterprises agreed on a new system of complementary pensions. The partners in the labour market asked the insurers to introduce a bonus system allowing compensation for past and future increases in the cost of living according to the CPI to be paid from the surplus. In 1977 the inflation was higher than the rate of interest and the insurers' surplus was not sufficient to finance supplements necessary to compensate for the increase in the CPI. The partners agreed that a part of the annual premiums should be used for supplements in such cases. This system is now used for all private pensions and works well: a pension of 100 SEK starting 1935 or earlier will for 1990 amount to 1.800 SEK.

The financing of the supplements, which first were paid by the employers who had pensioners, was undertaken in the latter part of the 1950s, with the increasing rates of interest, by the insurers. As the pensions are non-contributory the burden falls all the same on the employers. Instead of using a bonus system where the surplus returned to the policyholders in proportion to how the surplus is generated, the burden of the supplements is carried by all policyholders independently of the age distribution of the insured employees.

Norway

The bonus system is quite interesting. As the inflation went on and became stronger in the 1960s the need to compensate for the diminished purchasing power was felt important. With the inflation the rate of interest went up too and the life offices were able to return parts of the profit as premium discount and/or supplements to the retired. A lot of discussion took place and the result was that the life offices, with the approval of the Authorities, were given permission to construct a scale of compensation to the retired in proportion to the rise in the CPI from the date the pension started to the actual year of payment. In N the compensation is some 3/4 of the inflation but limited to around 7 times the original amount of the pension. Thus a pension of 100 NOK, that started to be paid out in 1949 or earlier, will in 1990 be remunerated with 793 NOK. This amount could not have been paid if the Authorities had not allowed the companies to depart from the sacrosanct principle of contribution that surplus has to be paid to the policy which generates the surplus!

The swapping is done within each group insurance company. No transfers take place 'across the frontiers', i.e. between the companies

Until 1984 the group insurance companies used a common scale for the supplements. Later the companies started to use their own scales with slightly different compensations in order to show which is the best performing company. This system has worked until the end of the 1980s. In the new legislation lately introduced it is brought to an end.The contribution system has to be followed to the letter. The result is that the life offices may no longer swap surplus from the active to the retired or from one policyholder to another. Fortunately the surplus already allocated to the retired person may stay with him, but future supplements will depend entirely on surplus generated by the individual's own insurance.

In the author's opinion this in an important step backwards. If the generated surplus no longer suffices to compensate the retired person for inflation, he will actually be dependent on the willingness of his old employer, if still existing, to pay. Why should not 'Group Pensions' be allowed to include in their technical elements, in addition to marital status etc. also the general risk of having a pension in payment which includes indexation?

The pure contributory surplus system may be justified in individual insurance contracts. In 'Group Pensions' the system departs from the nature of this sort of insurance. Who is the employer? In times of mergers and take-overs the emloyee or pensioner is more secure when an independent insurer rather than an employer has the responsibility to secure the standard of the pensions.

It is hoped that the above effect of the new system was unintended and will be remedied.

In N & S employees who join a collective pension scheme are reasonably well taken care of. The system is built on the assumption that the employer will take care of his employees not only whilst in active service but also lifelong after they have left his service. Thus the employer assumes the responsibility, which is the result of the incapability of the insurer to fulfil the ambition of every 'honest' insurer: to pay benefits with the same value as that of the premiums!

1.3 The Annuitant

What about a person not eligible to join a 'Group Insurance' but who has to resort to an ordinary life office which presents him with a life annuity? Sorry to say, in the two countries studied here, he is not to be envied.

The following table gives figures from a Norwegian and a Swedish life office on a life annuity of 100 per annum, maturing at the age of 65, taken out in 1934 by a male born in 1908. The annuities started to be paid out in 1973 and in both cases with the amount originally provided for, 100. In N the first supplements were paid after 10 years and thereupon supplements increased each year. If the supplements had followed the CPI the addition in 1990 should have been 281, col 5, instead of 85, col 1, actually paid. The situation is not much better in S, though the first supplement was paid after 5 years. In 1990 the annuity has been a little more than doubled, col 2, but according to CPI, col 4, it shold have been almost quadrupled!

Year of payment	*Life annuity bonus paid*		*Group pension bonus paid*		*(CPIx/ CP173-1) for N*
X	*N* (1)	*S* (2)	*N* (3)	*S* (4)	*%* (5)
1973	-	-	-	-	-
1974	-	-	5	6	9
1975	-	-	13	16	22
1976	-	-	22	29	33
1977	-	-	31	41	45
1978	-	-	41	60	57
1979	-	7,2	50	73	64
1980	-	7,2	58	87	83
1981	-	7,2	70	115	108
1982	-	7,2	88	139	131
1983	-	7,2	105	157	151
1984	10	42,4	119	181	166
1985	19	49,6	133	203	181
1986	29	60,0	144	223	202
1987	39	72,0	158	237	228
1988	53	84,8	177	254	250
1989	67	94,4	193	273	266
1990	85	104,8	205	298	281

In the examples the premiums were paid annually, but the situation would not have been any better if a single premium had been paid! Cols 3 and 4 give the supplements paid in 'Group Insurance'. As mentioned, in N the compensation is some 3/4, see cols 5 and 3.

In S full compensation according to CPI is given, thus col 4 is identical to the CPI, i.e. similar to col 5 for N.

In figure 2 the steep curve indicates how many NOK you must have in each year to buy a 1930 gold crown. In the right hand bottom corner are the sums the annuitant receives from the insurers, supplements inclusive.

It should be added that the types of annuities chosen are the worst off. In N the life offices introduced new tariffs on 27 January 1947. Annuities bought after that day are more expensive, but have also the capacity to generate more surplus. Annuities with a built in escalation do not exist here.

3. Environment

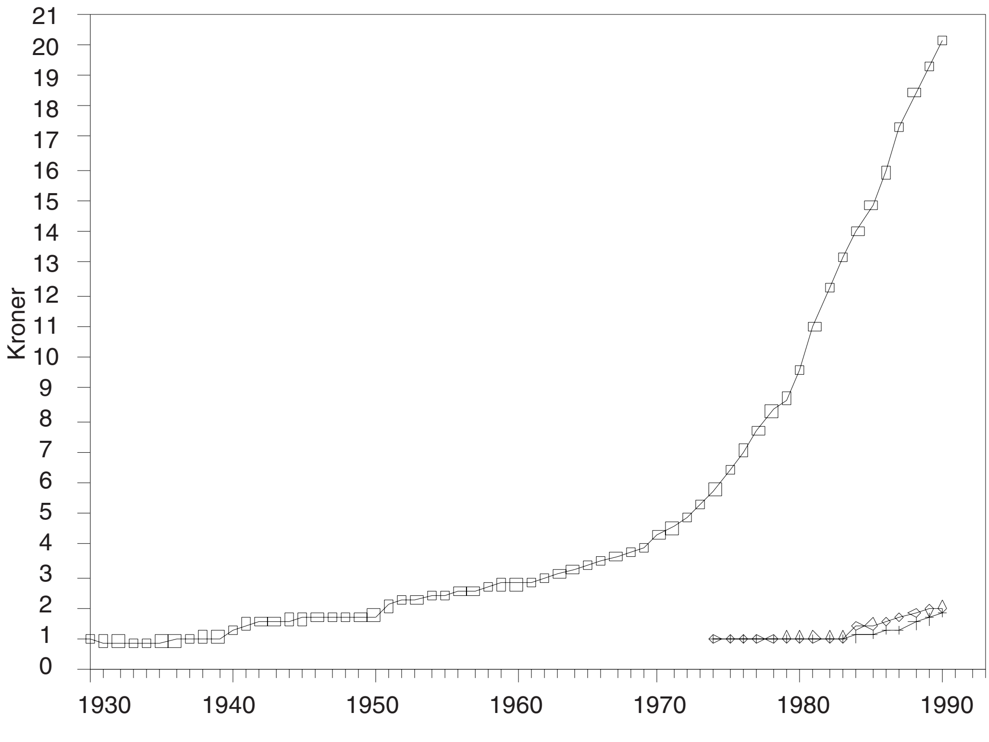
The administration of pensions is an important matter and the authorities impose strict regulations on those who plan to go into the business. The actuary knows that there are three technical systems:

1. Pay-As-You-Go, PAYG
2. Terminal Funding
3. Premiums Reserves

Method 1 is used by the State for the pensions of persons in public employment. By its power of taxation the problems caused by inflation can be solved. Whether the retired persons get full compensation for inflation, keeping the purchasing power or the standard of living, is up to the almighty State. That is not always the case is observed too.

Method 2 is used in a few cases, for instance in the negotiated scheme for blue collar workers in Sweden, but that is not to be treated here. It may however be noted that the problems associated with the yield on the

Figure 2



funds apply to this system just as they do in method 3.

Method 3 is the system which is applied generally in the private sector. Outgoing pensions are paid out of the income of the funds. The investment policy is thus of utmost importance. However, the authorities impose restrictions on the types of investments permitted. The rules vary from country to country and in our two countries, N & S, the limitations are severe.

During the period dealt with here, 1930-1990, the Norwegian law of insurance of 1911 was not replaced by a new law until 1988. The investment rules set up in 1911 remained unchanged for many year. These rules were adequate in times of relatively stable money value. This had also been the case in the decades which preceeded 1911. CPI was 5,5 in 1865 and 6,4 in 1910. During these 45 years there were ups & downs but during the whole period CPI rose by 16% or annually by 1/3%! (In S the increase in the CPI for the same years was 0,4% per annum.) The rate of interest varied around 4–5% and was also to be considered as the 'real rate of interest'.

The inflation around WW1 was followed by deflation. The average increase in CPI from 1910 to 1933, when prices were at the lowest, was only 2,2%. In N bonds and mortgages were considered as 'gilts', whereas properties were more doubtful. The share market was very meagre.

The development after WW2 did not follow the same pattern as after WW1, as some politicians had visualised. Ever since WW2 the money value has diminished. Some years the inflation had a magnitude of a two digit percentage. In both N & S the average inflation has been in the order of 5,5% per annum! The situation on the money market was quite new.

In 1947 a commission was set up in N in order to amend the 1911 law. After several years of work, which also included the Korean Inflation, a report was presented in 1953. One of the main preoccupations of the commission was the invest policy. The following quotation from the report is significant: 'The commission wants to preserve the conservative policy of investing in bonds & mortgages up to 85%. For the remaining 15% it suggests that permission be given to embark on an untested and uncertain course by allowing investments in properties & shares'. The project was rejected in 1953, but was passed 8 years later.

From 1961 on the life companies were allowed to invest 15% in Norwegian shares and properties. The 15% has recently been increased to 20% in shares and properties have been left free. Investments outside N are permitted too. Finally in 1988 the 1911 law was replaced by a new legislation.

These new rules have not yet had a visible effect on the investment income. The crisis during the eighties, specially the last one, raise the question of whether it has been wise to diverge very much from the 'classical' investments.

The problem of inflation in Group Pensions has been partly (but only partly) solved by the insurers by agreements with the employers to swap surplus between different groups of employers: Employers with young policyholders subsidize those with a greater number of older policyholders. The new insurance law in N outlaws this system of solidarity between employers. It is to be hoped that this will be changed.

In S the system with solidarity has been applied since the 1950s. Turbulences will also come about in S. The parties on the labour market have agreed to take away the quasimonopoly situation which has reigned in S for many years. The question is whether by getting 'freedom' on the group pension market the important problem of compensating the pensioners has been 'thrown away with the shells'.

Finally our annuitant is the innocent sufferer and loser. The figures given above show that the high rates of interest in the later years have produced somewhat higher supplements, but not at all sufficient to compensate for the inflation since the contract was signed.

4. Conclusion

Funded pension systems cannot, in an inflationary world, guarantee the value of pensions. Only by using unorthodox methods, by bringing 'New Money' into the system, can the purchasing power of pensions be maintained In 'Group Contracts' the employer has been the Father Christmas. In individual annuities, if the insurer cannot obtain yields on the funds sufficiently high to compensate for inflation the annuitant will be the victim.

In the latter part of the 1980s the insurance companies in N & S have got permission to invest more freely. In other countries similar investments are permitted, though the rules vary from country to country. To the Helsingfors Congress 1988 Kennedy & Bernstein, UK, presented a paper on investments. They showed, amongst other tings, that for investments in shares, where a ceiling exists, the ceiling is rarely reached; further that investments in shares have over the years in D, NL and UK given a better yield than bonds. Studying stock market indices in N & S over the past decades shows the same picture, but that was 'forbidden fruit'.

Now 'New Deal' has been introduced in several countries. When will the first paper be published saying that the freer'investments have given life insurance companies a tool to fight inflation?

5. Acknowledgements

In preparing this paper the author has discussed various problems with many colleagues. All these contacts have been very useful, and the author is extremely pleased to have this opportunity to thank them all for ideas, suggestions and encouragement to prepare this paper. A special thanks goes to my colleagues Arne Aamodt and Peter Johnson and my son Alf. Without their help this paper would never have been published.