

# INFLATION AND INSURERS

BY **WILBERT OUBURG** AND **PIETER BOUWKNEGT**

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**One word is turning up everywhere at the moment: inflation. After many years of a general belief that high inflation was definitively over, it has undeniably returned. We are noticing it at the bakery, in the beer garden and when we book travel.**



**DR WILBERT OUBURG**  
MSC AAG FRM is CRO  
NN Life & Pensions

**W**riting as insurance actuaries, inflation is deeply relevant to each of us in different ways based on our role and responsibility. From our experience we contend that actuaries should also be concerned with recognising and assessing inflation, and incorporate it into risk management. Inflation may be difficult to predict and model, but it represents a crucial risk factor. Several insurers have recently given their attention to the issue – for example by undertaking inflation hedges – and it has also been cited as a source of increased uncertainty in half-year reporting.

This article examines the ways inflation is relevant to insurance companies and considers what role the actuary has as a consequence.

## **INSIGHTS FOR YOUNGER READERS**

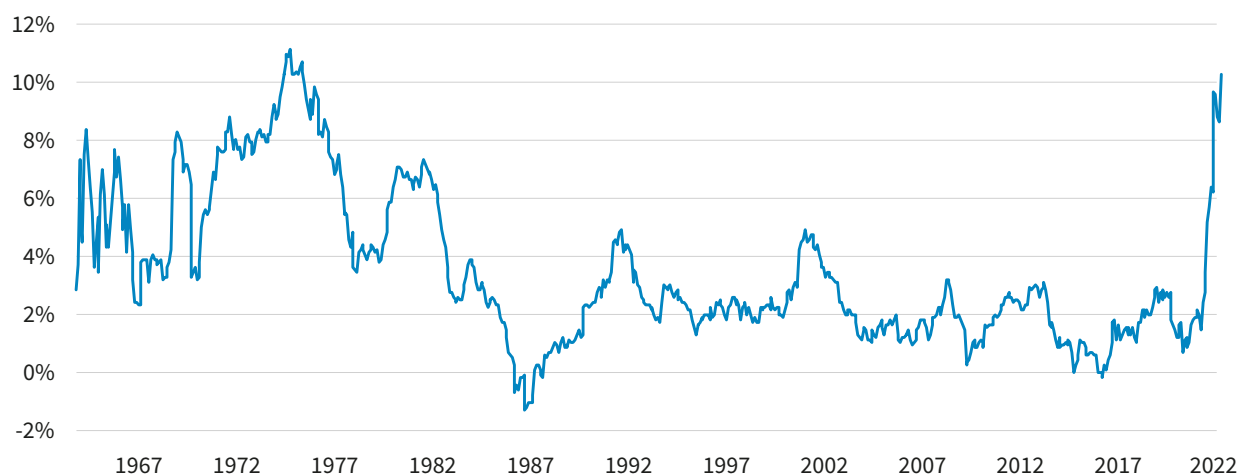
Inflation in the Netherlands has not been above 5% since the second half of the 1980s, so only older readers will have memories of inflation being newsworthy. But if we look further back, we can confirm that high inflation has been a reality here too.

The aftermath of the 1973 oil crisis caused inflation in the 1970s to exceed 10 per cent; at that time interest rates were also high, which meant the loss in value of savings was rather limited. Furthermore, many collective agreements in place then still automatically linked salaries to inflation – this eased the pain for workers, but resulted in inflation that did not evaporate when energy prices came back down. The fiscal and monetary >



**DRS. PIETER  
BOUWKNEGT AAG**  
is Balance Sheet and  
Capital manager  
NN Life & Pensions

FIGURE 1: INFLATION IN THE NETHERLANDS SINCE 1963



Source: CBS

policies implemented in the first half of the 1980s successfully brought inflation down, and those policies were continued in the agreements governing introduction of the Euro. Inflation could be consigned to history!

Now we know better. Fiscal and monetary interventions to relieve coronavirus-related pain, alongside the effects of energy policy in conjunction with uncertainty concerning Russian gas and oil supplies, have dealt a sharp shock to commodity prices. Energy price rises are the most eye-catching, but costs are now going up across a broad front.

### INFLATION IMPACTS FOR INSURERS

Insurance companies encounter inflation at two points: in their own operational costs and in payouts under the insured service. Own operational costs primarily consist of staff costs, and also some external procurement. In the short term the trend of own operational costs may diverge from that of external inflation, for instance because procurement contracts and collective agreements do not contain an inflation clause and have a longer duration. But in the longer

term, higher inflation will certainly impact on an insurer's costs.

How inflation affects servicing of insurance claims depends on the type of insurer.

**Life:** Most life insurance policies have a nominal benefit guarantee which is not affected by inflation. However, there are also (pension) contracts where the benefit is (partially) indexed on the basis of an external index, such as the Dutch CBS consumer price index, or the European HICP, the price index set by Eurostat for the entire Eurozone. The inflation allocation will be able to use a floor or cap, which may introduce complex optionalities into the contract. For pension insurers, higher inflation will lead to higher premium income due to indexations.

**Funeral plan:** The insured service is provision of a funeral. Not only will funeral costs rise with the general price level, but they will also be subject to specific developments related to the funeral industry, such as regulations around burials or cremations. These insurance contracts have often been concluded in the (distant) past, with a fixed nominal premium. >



## *Fiscal and monetary interventions to relieve coronavirus-related pain have dealt a sharp shock to commodity prices*

**Loss:** Most non-life insurance policies offer restitution for the financial consequences of an insured event (fire, theft, car accident, liability etc.). The amount to be paid out will therefore include an inflation component specific to the type of insurance. ‘Legal inflation’ may also play a role here, where court decisions increase the amounts to be paid out. On the claims side there are also cover situations (such as disability) which are explicitly linked to an external inflation benchmark. However, repair obligations covered by non-life insurance also carry an inflation component. For instance, the growing complexity of car repair leads to increased costs: electric cars can no longer be fixed by a mechanic with a spanner. Damage repair has become more expensive.

**Healthcare:** Health insurance is a politically driven insurance. The health insurer manages its expenditure by entering into purchasing contracts. Health insurance covers various healthcare needs. As a result, cost inflation in the short term will depend not only on the cost per insured event, but also on the overall use of care. It is difficult to distinguish between ‘pure inflation’ and an improvement in the care provided, though both contribute to cost increases. This can be seen, for example, in the rise of complex and expensive treatment options or the more frequent use of private clinics for treatments.

### **RATING**

How inflation will develop in future is inherently uncertain. It is a variable that can affect the level of insured benefits, and in the longer term cumulative effects can have a significant impact.

We identify two ways of incorporating inflation into the assessment of insurance liabilities.

- **Historical estimation:** Draw on historical experience, assuming that past price trends are a good predictor for the future. The use of extrapolation techniques based on historical data is widely accepted in non-life business, and this method implicitly includes an inflation assumption. The approach seems appropriate for inflation processes which have their own dynamics, including some that are independent of external developments. The main disadvantage of the method is that it does not take new developments into account, such as the current increase in inflation. Also, effective selection of which historical period to be guided by requires considerable expertise.
- **Market pricing:** Inflation swaps and inflation bonds are traded in the financial markets, which refer to HICP inflation. You can use their pricing to estimate future inflation. Market prices are also published for options on inflation, which you could use to generate market-consistent inflation scenarios that allow you to evaluate (complex) inflation options. Market-price-based valuation of inflation elements is especially appropriate for benefits that refer to the same inflation as the index of inflation instruments used for the valuation scenarios, given that the method requires you to implicitly assume that prices are reliable and reflect liquid trading. With respect to inflation options and for longer durations, there are good reasons for doubt here: the trade is not liquid. For Solvency II, you are additionally left with the issue of whether to build in a UFR-like convergence by analogy with the yield curve. >

The graph below shows the daily evolution of 'implied inflation' for inflation-linked swaps (ILS) with durations of 1, 5, 10 and 20 years. Implied inflation reflects the inflation that has been priced into those instruments during that period. We can see from the chart that the market expectation for the long-term remains around 2%, but an increase in inflation is also expected for the longer term. It is interesting to note that short instruments traded below long instruments for a sustained period. This may indicate higher inflation expectations in the long term, or a structural risk premium for long instruments.

### FINANCIAL RISK MANAGEMENT

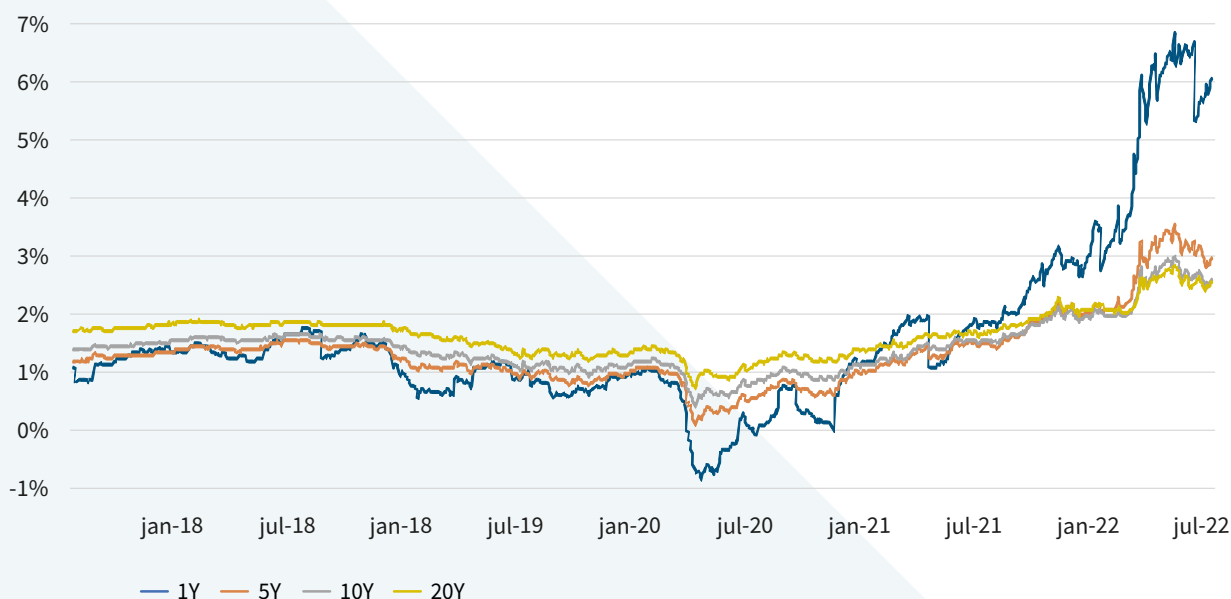
There are several ways to mitigate inflation risk. Own operational costs can be influenced by management. You can match the length of procurement and outsourcing contracts with the length of insurance contracts, and personnel costs can be adapted by means of the organisational set-up in place. Salary development can be stipulated in the collective agreement, with the employer as one of the signatories.

The cost trend of insured benefits is harder to modify, although keeping claims repair and settlement in-house can help. The contractual duration of the policy is a natural risk mitigator, and capping benefits (as in travel insurance) may be useful.

Inflation-linked investments can be implemented by means of inflation-calibrated bonds or swaps. In both of these the principal amount is indexed to the underlying inflation rate (European HICP). Inflation-linked bonds impose a credit risk on the issuer. For inflation-linked swaps, the credit risk is mitigated by the obligation to deposit collateral, though this does introduce significant liquidity risk.

Other asset classes have a direct or indirect link to inflation. Consider equity or real estate: shares represent a claim on the real economy, and as such will be somewhat inflation resistant. For many properties, the rental charge is subject to an inflation clause, even though the value development of the property may not follow inflation. Interest rates are also assumed to >

FIGURE 2: IMPLIED INFLATION ILS



Source: Bloomberg

correlate with inflation over the longer term. Such instruments are not suitable for a precise (short-term) hedge, but in the longer term they will provide protection. For insurers, the long-term inflation protection of these instruments cannot count towards mitigation of inflation risk on account of fundamental risk; the short-term differences in value trends are too large for that.

### **RISK MEASUREMENT**

For Solvency II goals, risk measurement is important. This is evident at two points: first, in the required solvency SCR. The standard formula has no explicit charge for inflation, though it does require capitalisation for unfavourable cost development. If an insurer uses an internal model, inflation will have to be considered there. Second, inflation belongs in the ORSA. We can expect more attention to inflation in next year's ORSAs. It is interesting to see how many ORSAs already included relevant inflation scenarios that are indicative of the current development.

For risk measurement, you can apply inflation impacts to the balance sheet. But on what basis do you calculate those impacts? That is a difficult choice. If you have a time series, you can use it to generate shocks based on developments over that period, or to derive key figures that reflect confidence intervals. Choosing the right time series is crucial. Whichever period is selected, the inherent implication is that the inflation probability process demonstrated in that period is expected to also be valid for the near future as well. This gives rise to a structural problem, as we tend not to consider that a trend reversal may be occurring. In the case of Dutch inflation, it may be attractive to start the time series from 1985, after all that is when a change in monetary policy had

been introduced. But now we know that policy can subsequently change again, causing inflation to climb once more.

Moreover, it is generally better to work with a shorter time frame for which we have frequent data: the implied inflation graph shows that the data in question have been readily available on a daily basis since 2017. In our view, the advantage of more frequent data outweighs the disadvantage of not including other inflation scenarios.

### **INFLATION AND THE ACTUARY**

The current inflation trend is proving more persistent than had been assumed. The ECB and DNB are also concerned, and now (September 2022) the market expectation is that the ECB will raise interest rates to combat inflation. Appeals are being made to counteract inflation for certain groups in society. It appears that economic operatives are starting to respond to the prospect of elevated inflation, which may create its own dynamics in turn. We are evidently not expecting to get rid of inflation overnight.

Inflation warrants the attention of insurers from many angles. Actuaries will be involved here to provide various functions: actuarial assumptions on costs, product design, hedging, balance sheet valuation and capital requirement determination.

As actuaries, we have perhaps spent too long thinking that inflation risk was a thing of the past. After all, one thing history has taught us is that just when you think a problem is under control, it can return with unexpected force. We are experiencing that now with inflation – so let's be well prepared for the next risk. <