



# A KNOWN UNKNOWN

**Markus Gesmann, Raphael Rayees and Emily Clapham** point the way towards a consistent framework for defining and measuring claims inflation

**In the current time** of globalisation, faced with questions over commodity supply, security and price volatility and potential fluctuations in currency rates, claims inflation constitutes a serious threat to the profitability and security of insurers worldwide. Despite this, there are a plethora of views on the extent, and even the existence, of claims inflation.

First, an interesting fact: the Claims Inflation Working Party published its research report on *Claims Inflation – Uses and Abuses* at the GIRO Conference in 2005. Eight years have passed since then, five of them in a downturn, and yet this document is still the first result that comes up today when googling ‘Claims inflation in insurance’.

We put the question ‘What is claims inflation?’ to several of our colleagues and practitioners of the Lloyd’s Market. The majority of participants responded “somewhere between 3% and 5%”, yet none had a definitive explanation of how to define or measure it. Despite this, inflation is regarded as a risk and a challenge for insurers, and they are certainly not alone.

The 2011 Lloyd’s Risk Index, a survey of global corporate risk priorities and attitudes, listed inflation, together with changes in prices of material inputs, changes in legislation and currency fluctuations, in the top 10 concerns of business leaders. Insurers also understand that claims inflation is an important metric, particularly for pricing long tail lines of business, as well as an influential factor in reserving, planning and capital setting.

With the obvious exception of motor insurance, high levels of claims inflation have not been a big issue for other lines of business in recent years. Unfortunately, in the current litigious and economic environment, inflation and claims inflation are likely to head only one way from today’s levels – north.

In a recent analysis, Milliman showed that an increase in claims inflation of 1% could increase liabilities disproportionately. As a rule of thumb, the authors approximated the effect of claims inflation on liabilities by multiplying the change in inflation with the number of payment years. Hence, a change of claims inflation by 2% could have an impact

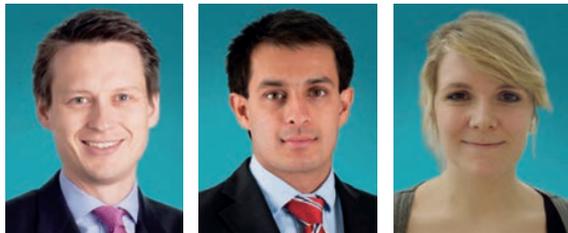
of 16% on a book that takes eight years to settle. It is difficult to hedge this risk in today’s environment, exemplified by the dynamics brought about by periodical payment orders (PPO) claims awards.

The Milliman analysis shows how necessary it is to allow for claims inflation; but for many this is easier said than done. Measuring any type of inflation is complex; recent discussions in the media around the differences between the Retail Price Index (RPI) and the Consumer Price Index (CPI) highlight this. While subtle differences in coverage and calculation may appear small in the incremental data, they can have a material impact over a longer time period.

The difficulties of measuring inflation were seen again following the creation of the eurozone currency union, which forced countries to agree upon a standard methodology to measure inflation centrally. This resulted in harmonised CPI (HCPI), which, despite its shortcomings, has set a standard to monitor inflation like-for-like.

This concept of measuring inflation sounds natural; the same methodology is used to

Left to right: **Markus Gesmann** leads the analysis team at Lloyd's, with a focus on performance analytics. **Raphael Rayees** was on the graduate programme at Lloyd's, working between the analysis and treasury & investment management teams. **Emily Clapham** is currently undertaking a placement with Beazley



adjust inflation indices following consumer price changes and to construct stock indices. However, when the Lloyd's market sought to establish a consistent framework to monitor rate movements of renewal business, an initial survey revealed that people, even within the same organisation, had a different understanding of what relative price movements on the same risk could mean. Just like measuring inflation, the crucial aspect here was to agree a standard approach to ensure a like-for-like comparison year on year across syndicates and lines of business.

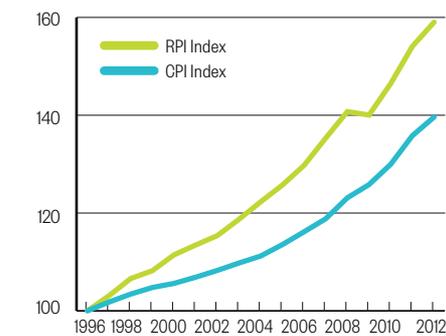
The decision taken by Lloyd's was to measure rate changes on a risk-adjusted basis, which means underwriters have to estimate how much they could have charged a year ago for this year's policy on this year's terms and conditions and expected loss costs. The relative difference between these two prices is termed the risk adjusted rate change (RARC). Therefore, RARCs are net of claims inflation and focus on the year-on-year impact in expected loss ratio.

### Where to start?

The industry needs a similar, consistent framework for defining claims inflation. As with price inflation, claims inflation comes with its own set of complexities; it is not measurable through direct observation, it can only be estimated using statistical techniques applied to historical data that is not necessarily relevant to future trends. That being said, the Lloyd's rate monitoring approach, along with the methodology behind established indexes such as the HCPI, may still prove insightful in achieving this framework.

There are a few available sources on the subject to consult. The paper of the Claims Inflation Working Party from 2005 still provides valuable insight; it outlines the key drivers of claims inflation and provides an overview of methods to estimate claims inflation. Towers Watson publishes a US claims cost index, which is based on the seminal work by Norton Masterson of the 1960s. The index is based on a selection of inflation factors for the US market and faces the same challenges as any other index – coverage and calculation. However, it also provides a blueprint to create an inflation index based on macro-economic data, which is tailored to specific portfolios. The Statistical Office Of The European Communities (Eurostat) provides a wealth of data and the inflation dashboard allows users

Figure 1: Cumulative impact of measurements of inflation



SOURCE: ONS

to extract the inflation factors most relevant to a business.

Of course, none of these macro-economic metrics measure either change in frequency of claims or social inflation. The RAND Corporation published a detailed review of the dramatic increase in claims frequency and severity of medical malpractice claims in the US in the early 1970s. Its model suggested that the single most powerful predictor of claims frequency and severity is urbanisation. Note also that claims inflation can vary by the size of claims and its impact can be amplified in excess of loss layers.

Consider the volatility of expected claims inflation, noting that inflation is more likely to go up than down, and use stress testing to establish what effects a spike or a shift in inflation levels would have on both profitability and solvency levels.

Historical loss triangles contain implicit information on claims inflation. Consulting the papers of Barnett and Zehnwrith and

Christofides offers ideas on how changes in the payment year trends, reflecting claims inflation, can be modelled. With modern statistical software, it is now relatively straightforward to implement these models; as demonstrated in a blog post by Markus Gesmann using R earlier this year.

Indeed, a better understanding about how to extract historical claims inflation from historical data can provide a good starting point for measuring and mitigating claims inflation, and form a basis for future strategies to navigate it.

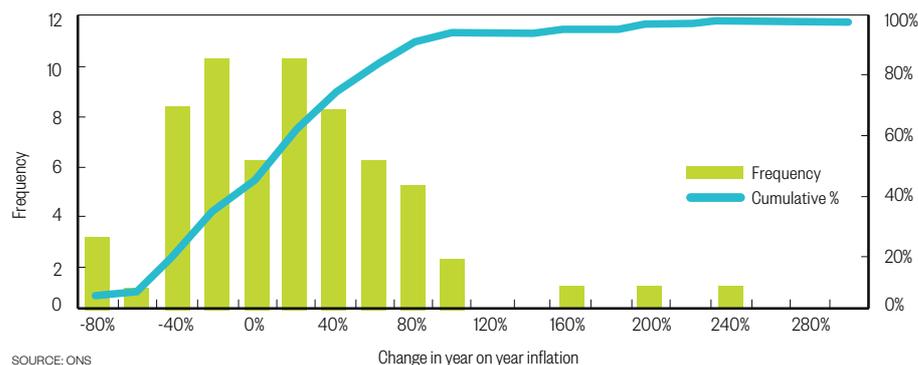
Engaging with colleagues, particularly those in the actuarial, underwriting and claims functions, can help to establish a consistent framework that will work across different lines of business. So, too, will considering which data should be captured and at what level of granularity, plus how assumptions on claims inflation could be back-tested or, in the future, be compared against actual experience.

This brings us back to the first principles. Define the use cases for claims inflation, and acknowledge that assumptions and time horizons may differ between pricing, reserving, planning and capital modelling.

By doing so, we may be in a much better position to answer that elusive question: "What is claims inflation?" Only then we can consider how to measure, monitor, manage and potentially mitigate inflationary effects. **A**

Full article with references available online. The authors would like to thank Tom Bolt, Henry Johnson, James Orr and Sush Amar for their valuable feedback and comments. All views and opinions outlined are the authors' own.

Figure 2: Change in year on year RPI inflation (1949-2012)



SOURCE: ONS