

Inflation: A P&C Reserving Actuary's Guide

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Introduction

After years of low inflation, economic inflation abruptly hit a 40-year high during 2022 and remains elevated and unpredictable. This comes on top of recent adverse trends in social inflation, defined here as changes to the cost of claims due to changes in legislation and litigation.

A fundamental premise of standard property and casualty (P&C) reserving methods and models is that the future development of claims will be similar to historical development. These increases in inflation, particularly after a period of low inflation, add considerable uncertainty and cost to future claims and companies should be reviewing their reserving processes to ensure economic conditions are adequately considered.

In this paper we give a brief overview of the recent economic and social inflation trends. We discuss early lessons learned by P&C reserving actuaries as well as important considerations throughout the reserving process. We close with actionable steps that P&C reserving actuaries can take to appropriately allow for inflation.

ECONOMIC INFLATION

At the highest level, economic inflation is measured by the consumer price index (CPI) and defined as the change in the prices of a basket of goods and services that are typically purchased. Economic inflation is measured in terms of a 12-month growth rate, estimated as a series of summary measures of the proportional change in the prices of a fixed set of goods and services of constant quantity and characteristics. On a granular level, the key drivers of inflation impact insurance claims costs differently (e.g., cost of raw materials, wage indices, geographical differences).

In the UK, the CPI 12-month rate reached 10.5%¹ in December 2022, driven by multiple factors. Russia's invasion of Ukraine has led to increases in the price of electricity, gas and other fuels. There has been a resurgence in spending following the relaxation of COVID-19 restrictions in the UK, whilst supply chain issues continue, partly due to ongoing developments in COVID-19 restrictions in China, which overall have led to higher costs of imported goods. Somewhat lagging the higher

costs of consumer goods, the labour market has been tightening, with employers increasing wages to attract job applicants and retain employees.

Similar trends in economic inflation are being observed in the US, where the CPI 12-month rate shows 6.5% in December.² European countries also follow suit, with year-on-year changes in CPIs reaching 5.9%³ in France and 8.6%⁴ in Germany during December.

Headline figures on economic inflation aren't necessarily informative for the impact of inflation on claims, particularly when inflation varies considerably over different consumer goods. In the UK, the December 10.5% inflation included⁵ 88.7% inflation for electricity, gas and other fuels, and 12.6% inflation for materials for maintenance and repair of dwellings, whilst only 4.8% inflation was observed for medical products, appliances and equipment.

The Bank of England expect inflation to be close to 10% until the middle of 2023 before falling rapidly to close to 2% from around the middle of 2024.⁶ The Bank of England has to target an inflation rate of 2%, but there's still considerable uncertainty in whether that can be achieved in the timeframe that's been projected. The November Monetary Policy Report helpfully includes projected ranges and probabilistic insight, including an estimated 19% chance of inflation continuing to exceed 3% by the fourth quarter (Q4) of 2025, if interest rates are constant at 3%. Further details on inflation forecasts can be found in a recent Milliman Research Report.⁷

SOCIAL INFLATION

Social inflation is generally considered to be on top of, or independent from, economic inflation. Definitions of social inflation can be wide-ranging, but in this paper, we are referring to the changes to the cost of claims due to changes in legislation and litigation. This includes:

- Increases in the frequency and severity of mass torts and class-action lawsuits
- Retroactively extending or reviving statutes of limitation

¹ Office for National Statistics (18 January 2023). Consumer price inflation, UK: December 2022.

² US Bureau of Labor Statistics (12 January 2023). Consumer Price Index, USA: December 2022.

³ French National Institute of Statistics and Economic Studies (31 January 2023).

⁴ German Federal Statistical Office (17 January 2023).

⁵ Office for National Statistics (18 January 2023). Dataset: Consumer price inflation tables, Table 4.

⁶ Bank of England (3 November 2022). Monetary Policy Report: November 2022.

⁷ Bevelsberg, T., Crowson, J., Dobiac, J. et al. History repeating itself? The Return of High Inflation and Its Implications (including modelling) for Life Insurers. August 2022.

- Third-party litigation funding and claims farming
- Broader interpretations of the definitions of liability
- Juries handing down larger awards to plaintiffs
- Plaintiff-friendly legal decisions

The impacts of social inflation have typically been to increase the claims cost for insurers, often impacting claims development in lumpy and unpredictable ways. For example, the reviver statutes relating to sexual abuse and molestation claims in some states in the US have led to a sudden increase in notifications from victims whose rights to make claims had otherwise expired.

Social inflation has been particularly strong in the US. Outside of the US, social inflation is a growing risk within established insurance markets. In 2020 there was a \$17 billion investment into third-party litigation funding, globally. Whilst just over half was invested in the US, 8% was invested in Australia and 7% was invested in the UK.⁸ This is in part due to an observed acceleration in the number of class action lawsuits in Europe.⁹

In the UK specifically, an area to monitor in relation to social inflation is the changes to the Consumer Rights Act 2015, which now allows opt-out class action lawsuits in anti-competition cases.¹⁰ There is also a growing trend of shareholder claims under Section 90A of the Financial Services Markets Act 2000,¹¹ which provides statutory remedy for misstatements or omissions in listing particulars and prospectuses.

Reserving considerations

How inflation impacts reserves will vary considerably from one portfolio to another. This section doesn't suggest approaches or methodologies because a one-size-fits-all solution would be inappropriate, but instead sets out some areas that should be considered before assumptions or methods are selected.

CASE RESERVES

Communication and collaboration with the claims team is key. Claims handling is at the frontline of observing the impact of inflation on settled claims and determining the approach to adjusting open claims reserves for inflation. Below is a list of some questions that may be relevant to ask the claims team, and where actuarial input or challenge may be required:

- As inflation varies considerably over different consumer goods, and for each line of business, how granular are the inflation assumptions used to make adjustments?
- Has the impact of wage inflation been accounted for?
- Is the expected settlement date being factored into adjusting case reserves for inflation?

⁸ Holzheu, T. et al. (9 December 2021). US Litigation Funding and Social Inflation: The Rising Costs of Legal Liability. Swiss Re.

⁹ CMS Legal (9 February 2022). CMS Expert Guide to European Class Actions.

- How frequently is the claims team adjusting open case reserves for inflation? What cost components within each line of business have not been adjusted for inflation?
- Are open case reserves on all cost components for each line of business being adjusted? How are granular inflation assumptions mapped and aggregated?
- If fixed reserves amounts are used, for example assigning the same initial value to all new claims, will these amounts be adjusted for inflation?
- How is the reasonableness of claims inflation adjustments being monitored over time?
- Is claims inflation being tracked in a format that would enable adjustments to reserving triangles?
- How does the approach to calibrate and monitor inflation adjustments differ, if at all, by claims type and claims size?
- How does the approach to calibrate and monitor inflation adjustments differ, if at all, for ceded or reinsurance accepted reserves?

Further analyses may be needed to understand the impact that changes in mixes of claims sizes may be having on the development of claims. For example, if a reserve of £1,000 has historically been put on all new attritional claims, but settled attritional claims values are increasing with inflation, development patterns could be steeper in later development periods.

CLAIMS DIAGNOSTICS

For many lines of business, before undertaking a reserving exercise, average cost per claim (ACPC) assumptions should be monitored to see whether the emerging experience is in line. Recent economic inflation will impact claims on a calendar basis, so reviewing triangles is likely to be the best way to monitor emerging claims experience. The paid amount per settled claim, paid amount per reported claim and incurred amount per reported claim are all useful diagnostics. As well as monitoring emerging average cost per claim experience, other diagnostics should be considered, such as paid and incurred loss ratios to exposure, paid to incurred ratios and frequency metrics, to look for other inflation-driven trends in development.

If the paid to incurred ratios are showing a new trend, then the actual paid amounts could be showing different inflationary trends relative to the outstanding amounts estimated. The claims team can help with understanding any disconnect in metrics for paid and outstanding amounts.

Frequency metrics should be monitored closely to understand whether observed historical claims inflation is partially driven by an increased number of claims.

¹⁰ Morrison & Foerster (21 December 2020). Client Alert: UK Opt-Out Class Actions – A New (Anti)Competitive Landscape.

¹¹ RPC (3 August 2021). Current developments/trends in shareholder/D&O claims in Europe.

DEDUCTIBLES AND LIMITS

Where policy deductibles or limits are in place, they may need to be monitored more closely. Deductible indexation clauses not aligned with inflation may cause a greater proportion of losses to exhaust the deductible layer, resulting in an increased frequency of smaller claims. Similarly for larger claims, retentions not aligned with inflation may lead to strained reinsurance coverage. Understanding how inflation is allowed for in premium rating and the management of underwriting terms and conditions is an important, and often overlooked, consideration.

IBNR

Benefiting from the qualitative information from the claims team and diagnostics, a choice arises to either implicitly or explicitly account for historical claims inflation. Traditional methodologies assume inflationary forces have been consistent over time and are stable moving forward, and implicitly capture a level of observed historical inflation. For lines of business where claims costs are not being impacted by the recent increase in economic inflation, using an implicit approach may be adequate. For others, however, traditional methodologies need to be supplemented with explicit adjustments for higher levels of inflation.

An example of such a framework¹² to supplement traditional methodologies was recently presented. On a granular basis, past inflation can be estimated using econometric indices (e.g., CPI, wage, legal, materials) weighted together for each line of business, coverage or claim type. The approach enables the granular calibration of explicit future inflation assumptions, which are net of the associated allowances assumed by traditional methodologies; and a detailed understanding of how inflation has historically impacted each portfolio. The result is a clear view on how inflationary pressures are expected to change over time, which can be communicated to stakeholders.

ULAE

Unallocated loss adjustment expense (ULAE) reserves are often modelled on the assumption that there is a relationship between unpaid ULAE and the outstanding amounts on open claims. Given the recent changes to inflation levels and the consequent increase in the volatility of claims reserve development, it's worth considering whether ULAE models need to become more divorced from outstanding amounts of claims, and more married to the number of open claims.

¹² Wohler, A. & Sappington, J. (September 2022). Reserve Methodologies to Account for Inflation. CLRS.

¹³ The Courts Act 2003, which was implemented in 2005, gave the Courts the power to order the use of periodic payment orders (PPOs), rather than lump sum settlements, in personal injury settlements without the consent or against the wishes of the parties involved. The costs associated with PPOs are assumed to be higher than if settled on a lump sum basis.

¹⁴ The quantum of the claims amount for those personal injury claims settled through the UK courts as a lump sum is determined with reference to annuity tables that are applied to future costs, loss of earnings etc. The annuity tables

are colloquially referred to as the "Ogden tables" and the annual discount rate applied to future costs etc. (net of inflation) as the "Ogden discount rate." For many years, the Ogden discount rate, which was set by the Lord Chancellor, remained at 2.5%. In February 2017, it was amended to -0.75%. and, with effect from July 2020, it was further amended to -0.25% to the change imposed during the year by the Lord Chancellor in respect of the personal injury discount rate (the "Ogden discount rate"), which resulted in material increases in the expected costs of future lump sum claim settlements.

Claims handling and associated operating costs are not likely to increase in lockstep with economic inflation. Wage inflation, for example, may lag further behind.

Again, the claims team should be able to provide helpful insight regarding projected operating costs. The finance team can supplement this with their views on trends in fixed cost allocations.

PERIODIC PAYMENT ORDERS AND THE OGDEN DISCOUNT RATE

Sensitivities around periodic payment orders¹³ (PPOs) and the Ogden discount rate¹⁴ (ODR) need to be considered in the UK, given the current inflation rates.

PPO propensity was at its highest around 2011, likely driven by the global financial crisis highlighting investment risk and also by legal changes that resulted in PPO payments being linked to care workers' wage indices rather than the Retail Price Index from 2008 onwards.¹⁵ PPO propensity has been much lower in recent years, with the negative ODR being a driver, and so PPO analysis may be garnering less attention from insurers. Given the cost-of-living crisis emerging in the UK, will we see a renewed preference towards more reliable, certain PPO settlements?

The ODR is required to be reviewed at least every five years, and the next reviews for England and Wales, Scotland and Northern Ireland are all due during 2024. Given the changing economic environment, with interest rates rising from 0.25% at the start of 2022 to 3.5% by December 2022, whilst long-term views on inflation are changing more slowly, the current direction of travel for the ODR is to rise. However, given the unprecedented times we are in, it is uncertain whether by 2024 we will see a rise in the ODR or not, or whether we will even see the introduction of more than one rate.

Actionable steps for reserving

Despite the backdrop of considerable reserving uncertainty due to inflation, there are actionable steps that actuaries can take to lead to informed business decisions, to reduce exposure to the impact of inflation and to clearly communicate insurance risks associated with inflation. Where inflation has the potential to lead to material changes to reserves, these steps need to be carried out with urgency. For some lines of business, inflation is one of the biggest risks, if not the biggest risk, of under-reserving (or over-reserving). This should be

¹⁵ Towers, P. & Thomas, J. (June 2021). Weighing the Options. The Actuary.

reflected in the amount of time that is carved out to focus on inflation-related actions.

ENSURE THERE IS REGULAR AND EFFECTIVE DIALOGUE BETWEEN FUNCTIONS

Before economic inflation reached record highs during 2022, we were already in a position where the latest (2020 and 2021) diagonals of the triangles were potentially distorted by the impact of COVID-19 restrictions. Now the 2022 diagonal should also be treated with caution due to high inflation. Are we in a position where we can only rely on 2019 and prior calendar periods? This would rely on precisely the data which manifested during the low inflation environment and could be viewed as less relevant to future development. Determining how to interpret the development of claims in recent years will require close and frequent dialogue with other departments.

Establishing an internal inflation working party is likely to be a good starting point. A good understanding is needed of how inflation is being factored into prices, and how its impacts are being offset by rate increases. A reserving actuary needs to be aware of the key assumptions other departments are making, particularly as they are likely to be highly subjective.

ADAPT RESERVING METHODOLOGIES

It is time to start assessing whether reserving methodologies can be adapted or changed to allow for varying inflation into the future, before planning how the changes can be made.

There is unlikely to be a one-size-fits-all approach for all lines of business that can adequately model inflation. Various models will likely need to be considered with particular focus on the actual versus expected metric used to help steer the method selection over time. Reserving actuaries should challenge whether current methods are fit for purpose and how easy they are to implicitly, or ideally explicitly, adjust for inflation. Explicitly allowing for inflation allows the inflation assumption to be more easily tracked over time, is easier to adjust to respond to emerging experience and can be more easily compared to, or aligned with, assumptions used elsewhere in the company. Explicit inflation allowance also increases transparency for audit and review purposes. For some insurers the decision around adjusting explicitly or implicitly for inflation isn't a choice. Lloyd's of London, for example, has stipulated that an explicit allowance must be made.

MONITORING EMERGING CLAIMS INFLATION

If reserves for a line of business are sensitive to assumptions made around future claims inflation, then monitoring the accuracy of those assumptions as experience emerges is vital. Determining an approach to monitor emerging claims inflation will allow for inflation assumptions to be refined over time. Ideally monitoring would be aligned with the same granularity to the assumptions determined for reserving or planning purposes. For example, one should monitor economic inflation separately from social inflation

and other excess inflation, if these trends are the splits in inflation used for planning purposes.

Many portfolios won't have the volume of data to allow for determining clear inflation trends. However, if a simple and pragmatic approach has been taken to determine an inflation assumption, for example trending recent ACPCs, then updating the approach taken with emerging data throughout the year may provide insight as to how inflation is trending, or at the least will provide insight into sensitivity of the assumptions of claims volatility.

TIME TO REVIEW RESERVING SEGMENTATIONS

Larger claims typically take longer to settle and so are more vulnerable to the compound effects of inflation than smaller claims. A review of large loss thresholds and an assessment as to whether they are still fit for purpose may be warranted.

The impact of inflation is likely to differ somewhat between cost components within a line of business, so it may be time to review reserving segmentations as well. Claims experts are likely to be able to provide insight into which groups of claims are being impacted by inflation in a similar way.

CLEARLY COMMUNICATE SENSITIVITIES AND SCENARIOS

Clearly communicating sensitivities and scenarios around claims inflation to management is key. It should be made clear what assumptions have been taken to assess claims inflation and a wide range of scenarios should be shown to highlight the uncertainty in the assumptions. Differences in inflation assumptions used in reserving from inflation assumptions used in other functions, such as pricing or claims, should be highlighted with clear rationale as to why they exist.

CONSIDER ACTIVE MANAGEMENT OF BACK BOOKS

Where outstanding reserves on old underwriting years are particularly sensitive to changes in inflation, it may be time to consider whether the legacy market could offer a solution to reduce further adverse claims development. Adverse development covers and/or loss portfolio transfers can limit the potential for adverse results if claims inflation deteriorates more than assumed in the modelling. The price for mitigating inflation risk may be seen as worthwhile.

Areas impacted beyond the reserves

This paper has mainly focussed on factors a reserving actuary may need to consider before and during a reserving exercise.

Below are some suggestions of other considerations a reserving actuary should be mindful of in managing inflation risk. This list is by no means exhaustive, but can serve as a starting point for establishing an appropriate framework:

- Pricing and business planning: The impact of inflation on loss trends should be taken into account in determining the required rate increases and changes to terms and conditions.

- **Payment pattern and cash flow calculations:** The shape and length of payment patterns may be impacted by inflation, particularly if analysed at an aggregate level, and the impact of inflation differs among more granular segments.
- **Own risk and solvency assessment (ORSA):** Extreme inflationary scenarios should be appropriately tested as part of the ORSA process.
- **Events not in data (ENIDs):** Potential legislative changes that could lead to further social inflation may need to be considered.
- **Actuarial reporting:** Additional information and data will likely be needed to report on the impact of inflation, particularly to the decision makers within the company.
- **Reinsurance strategy:** Retentions and reinsurance limits may need to be reconsidered in the context of updated loss trends that account for inflation expectations.

Summary

Inflation recently reached a 40-year high and continues to be driven by very unpredictable geopolitical and economic factors. Add social inflation trends on top of this and we're in a period where the economic impact on reserves for many lines of business will be one of the biggest, if not the biggest, risk of under-reserving. As reserving actuaries, we are used to dealing with unpredictability, but now is the time for a focussed and methodological approach to inflation. Time needs to be carved out for active collaboration with other departments. Communication of reserving approaches and assumptions used will be crucial in managing inflation risk during this period of greater uncertainty.



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