A Primer on Inflation Risk Management

Purpose

After a long period of stability, the current macroeconomic environment has reminded us that inflation is a very real risk. It has been 40 years since we last saw high inflation and therefor most actuaries working today have not experienced how to manage risks in such an environment.

With this paper, the AAE wants to aid the actuarial community in providing effective risk management in the current volatile and uncertain inflation environment.

A Short Introduction to Inflation

Inflation is the increase in the price of goods and services in an economy. Before we discuss the actual purpose of this paper – inflation risk management – it is good to have an idea on the concept of inflation, what causes it and what it impacts. This section provides a short introduction to inflation.

Macroeconomics and Inflation – Cause and Control

There are three main forces that can cause inflation:

- Increased Demand – As demand for goods and services increase, prices will rise if supply cannot be expanded for the increased demand.
- Reduced Supply – As availability of inputs into the production of goods and services declines, the costs of those goods and services will rise.
- Inflation Expectations – Expectations about future inflation can impact inflation. If the expectations are that future inflation may be high, demand for goods may increase as consumers accelerate purchases and stockpile goods. Similarly, if expectations for inflation are high, members of the labour force may expect higher wages.

Government policy can impact inflation. Expansionary fiscal policies[1] can increase inflation. Under an expansionary fiscal policy, governments will try to grow the economy by increasing the money supply in the economy. This can be done via increased government spending or reducing taxes. The resulting increased demand can cause inflation.

Central Banks try to control inflation via monetary policy[2]. By increasing interest rates in inflationary times, they make borrowing more expensive, thereby reducing the monetary supply. This causes economies to contract and reduces inflation. The Central Banks look to a 2% inflation target.

Types of inflation

Besides normal inflation, there exist three special forms of inflation.

- Deflation – The decrease in the price of goods and services in an economy. Deflation is usually seen as bad as it is often a signal of a downturn in the economy. It can also be the result of technological improvements.

[1] Fiscal policy – Government policy intended to impact the economy through the use of government spending and taxing.

[2] Monetary policy - Central bank policy intended to impact the economy through the use of interest rates.

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- Hyperinflation – A rapid, excessive and out of control general price increase within an economy. A commonly quoted benchmark is a 50% increase in the price of goods in a month. It is caused when a government increases its money supply to a level that its GDP cannot support. Germany experienced hyperinflation following WWI due to the debt it had acquired during the war as well as the reparations imposed on it by the Treaty of Versailles.
- Stagflation – Stagflation refers to a period of high inflation in a stagnating economy with the inflation often being caused by an external shock. The world experienced stagflation in the 70's due to the Oil Crisis.

These inflation types typically have bigger negative impacts on the economies and good risk management is even more important when the risk of these inflation types is higher than normal. Until 2022, inflation levels had been relatively stable for an extended period with periodic spikes caused by external crises. However, there have been extended periods of high inflation and deflation throughout history.

- The Great Deflation - The global economy experienced a period of deflation from 1870-1890 due to the productivity gains from the Second Industrial Revolution.
- WWI and WWII – The war time spending and borrowing led to an increase in inflation.
- The Great Depression – This period of deflation was the result of the collapse of the financial sector and bank failures.
- The Great Inflation – The global economy experienced an extended period of high inflation from the mid 1960's through the early 1980's. This period of inflation included periods of stagflation caused by the oil crisis. This extended period of inflation is considered to be caused by a lack of understanding of the link between inflation and an expansionary fiscal policy.

Low, stable inflation is seen as good for the economy as it induces consumers to make purchases before prices go up and not wait for prices to drop.

The Impact of Inflation

Inflation erodes the real value of "fixed claim" assets.

Inflation transfers real value from the "accumulated value of past savings" to the "future productivity of real assets". Simply put, goods cost more and your accumulated wealth will now buy you less of what you need in the future.

Inflation also transfers real value from asset owners to borrowers. Inflation reduces the real burden of existing debt. By reducing the burden of debt, inflation also creates aggregate space in the economy for either more debt or more surplus both of which could mean more space for investment in the economy.

Rising nominal interest rates work to reduce inflation by (1) reducing aggregate demand across the economy by increasing the cost of the debt burden and (2) capturing the emergent excess economic surplus which is driving inflation by increasing the debt servicing costs.

The Current Situation

In Europe, major contributing factors are the price and availability of energy and commodities, as a result of COVID related supply chain effects and the war in Ukraine. Higher energy prices bleed through into prices on most goods, so that reducing inflation may take longer than usual as new energy infrastructure in Europe will take time to invest in and build.

Recently, the US Federal Reserve and European Central Bank changed the nature of their inflation targeting from targeting 2% each year to targeting 2% average annual inflation over a longer (unspecified) time

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period. This change may mean that policy rates may not be pushed as high as the 1970s, as central banks allow higher inflation to achieve the long-term average run inflation at 2%.

Managing Inflation Risk

Inflation is very relevant for both life and non-life insurance companies. Even if your technical provisions are not exposed to inflation risk, your customers will still have the inflation risk in their lives and we should use our knowledge to ensure good product management to ensure stability and protection for the greater public good. Here we propose some of the most important tools for good inflation risk management.

Inflation hedging

Pension and insurance providers can be directly or indirectly exposed to inflation risk through the pension/insurance obligations. Direct inflation risk comes from benefits, that are directly linked to some kind of price index. Indirect inflation risk comes from benefits, where customers have a justified expectation to follow general price levels in society within a relative short time period. In both cases it is relevant to consider if the investment strategy should contain a full or partial inflation hedge strategy to manage the inflation risk. This is especially important for payments with short maturity where you cannot expect other asset classes to outperform quick changes in inflation.

The most common inflation hedge strategies are index linked bonds and inflation swaps. But be aware, inflation hedge strategies are typically not as simple as other hedge-strategies as they are often followed by increased interest rate risk from the discounting effects on your hedge, increased liquidity risk from collateral and lastly a more substantial basis risk than your typical hedge as the inflation risk market is not as liquid as interest rate and equity risk. This is especially true for European countries that have their own currency which can be more or less linked to the euro.

Inflation hedge strategies is a strong tool to ensure good risk management of both your capital and your customers, but they should be accompanied by good and thorough risk management strategy that considers the new risks that are introduced by the strategy.

Future Management Action plans

The Solvency II framework for risk management allows for management approved future management action plans to deal with inflation. These are great tools to ensure timeliness and good risk management in uncertain and volatile environments. We suggest you consider preparing future management actions plans related to inflation in order to prepare for changes in inflation so you already know what to, who you should involve and how fast you should react when inflation spikes.

Product design

If you haven't got products designed to handle inflation well already, then use this era to remember the importance of inflation when you are designing new products. Make sure your business case templates, product design committees and product governance in general considers how your products should or could adapt and react in volatile inflation environments such that you protect both company and customers.

Scenario Testing

In the USA the Fed and the government are aligned to bring back the inflation around 2% by raising interest rates up to 5% or plus and reducing the deficit in order to reduce liquidity in the economy even if it to a recession. The bet is that the companies will be less likely to accept salary rises, and households spend less so the inflation rate will come back around the 2% target.

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In Europe, the situation is more difficult. While the ECB may have a mandate to target a 2% inflation rate, member countries have will different public spending and deficit policies that hamper ECB action. This is further challenged by the macro-economic environment. It will be difficult to battle against inflation, maintain households revenues, face the energy crisis , finance the transition to carbon neutrality and cope with financial markets volatility.

Scenario testing is a great tool to test how your obligations towards both beneficiaries and shareholders are affected by adverse scenarios and if your governance and risk management setup is ready for these scenarios. Management should look at the impact of multiple inflations on their companies. Here are some examples that could be relevant to test in the current volatile inflation environment we are in:

Scenario 1: There will be a strong recession that will lower inflation to target levels without the Central Banks obliged to strongly raise their rates,

Scenario 2: Central banks will be obliged to raise the interest rates beyond what financial markets expect to successfully lower inflation to target levels

Scenario 3: Central banks do not raise rates as sharply as otherwise expected in order to address the other challenges they face resulting in a new, higher, target inflation rate such as 3.0-3.5%.

Scenario 4: Despite the central banks attempts at lowering inflation, inflation expectations become embedded within consumer's minds resulting in increases in wages to compensate and an extended period of high inflations and interest rates.

The appendix contains a couple of papers that illustrate historical inflation rates for the UK and USA. These papers may be helpful in designing scenarios to test the impact on a company.

Inflation risks in your general risk management

You will no doubt already have a good and thorough risk management setup where you are monitoring numerous types of risk and have warning indicators and action plans in your daily routines. Give your setup a revisit with inflation risks in mind and consider if your risk surveillance could be expanded with risks and parameters that are driving inflation development. In the last section we give you a brief insight to inflations risks which could inspire you to amend your risk management system.

Inflation Risks

Effective risk management of inflation risk involves uncertainty management. The degree of uncertainty will differ from one country to another according to the rate of growth in the economy, and how governments prioritize

- maintaining households revenue,
- addressing the current energy crisis,
- financing the transition to carbon neutrality, and
- the public deficit.

A country like Germany with a low deficit will have more room to maneuver than other countries with high public deficits. Moreover the actions of the US Federal Reserve will influence the European Central Bank's actions. Last the evolution of the war between Ukraine and Russia will also influence Central Bank actions.

This uncertainty management will differ if you are a sovereign fund, an insurer, a pension fund, a bank, a shadow banking firms or an asset manager. Insurers and pension funds will be concerned by the long term

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impact on their assets and liabilities. Expected future benefit payments, expected to be funded at historical inflation rates, may grow unexpectedly and become underfunded.

In addition to funding issues, companies may be exposed to liquidity issues that occur when markets are stressed. The level of risk will differ depend on the level of leverage and the level of use and type of derivatives. Management should review its derivative portfolio and understand the impacts on the company under a variety of adverse scenarios.

Additional financial market risks that should be more closely monitored in a volatile inflationary market.

a) Impact on Banking Sector
b) Securitization of banks receivables
c) Unsustainability of public debts in the Euro zone
d) Redemption of life insurance contracts
e) Losses of asset managers on illiquid assets coupled with high debt leverage
f) Financial crisis across emerging countries in debt in US$ and import raw material

A- Impact on the Banking Sector: The higher interest rates as a result of inflation will drive up the cost of borrowing impacting bank lending. Should monetary policy put the economy into recession, banks will see an increase in credit defaults.

B- Securitization of banks receivables A banking crisis like in 2008-2009 is less likely since bank's capital are 3 times higher than at the time of the subprime crisis. The volume of securitization (i.e. transforming banking credits in various type of bonds with different level of risk and interest rates) is at present low and more prudent. But it needs to be watched.

C-Unsustainability of public debts in the Euro zone. This is a risk for countries that must pay a risk premium and have a low growth perspective of their economy. Should the ECB rise its key interest rates up to 4%, Italian rates would likely rise to 5,5% which is above the nominal annual growth of its economy.

D-Life insurance Lapses. Should the interest rates rise significantly, an increase in lapse rates could occur. Policyholders may need to lapse policies to pay other bills, to access account values within the policy or to take advantage of lower premiums or higher, alternative returns on investments due to the higher interest rates. This may force life insurance companies to have to liquidate their bond portfolios at a loss.

E-Losses of asset managers & funds invested in illiquid assets. In order to increase returns in the former low interest rate environment, some asset managers and funds have invested in high yield corporate debts and/or illiquid assets utilizing high leverage and short-term borrowing to enhance returns. The rise of interest rates has for consequence the fact that leveraging is no longer profitable and the value of high yield or illiquid assets drops. As a result, these asset managers and funds will maybe be obliged to sell at a loss part of their assets. This could trigger a confidence crisis in financial markets.

F- Financial crisis amongst some of emerging markets. Emerging market countries that do not export raw material at high prices but import them like oil, gas, wheat, …. and are in debt in US$ could default. Ski-Lanka and Zambia are already in this situation. Ghana, Egypt, Tunisia, Pakistan are in a difficult situation. These difficulties are increased by the debts contracted towards China through the Belt and Road initiative.

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Appendix

Inflation Papers

- https://www.top1000funds.com/2014/11/how-to-hedg-long-term-inflation-linked-liabilities-without-inflation-linked-instruments/
- https://www.actuaries.org.uk/system/files/documents/pdf/d3-inflation-real-returns-and-inflation-hedging.pdf
- https://www.genevaassociation.org/sites/default/files/2023-01/inflation_report.pdf
- www.economicshelp.org/blog/2647/economic/history-of-inflation-in-uk
- https://www.whitehouse.gov/cea/written-materials/2021/07/06/historical-parallels-to-todays-inflationary-episode/#:~:text=Since%20World%20War%20II%2C%20there,1973%E2%80%9382%2C%20and%202008
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