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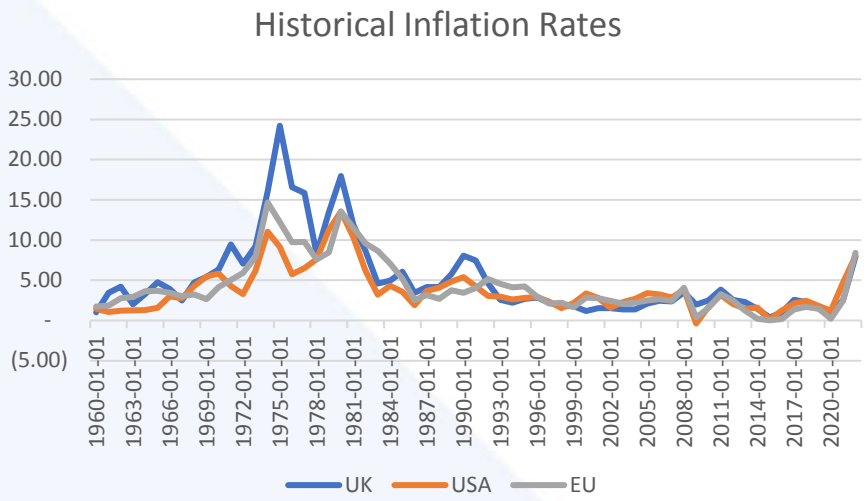
A Primer on Inflation Risk Management

Jason Wiebe

September 26, 2023

Background

- Discussion at AAE Risk Management Committee in Rome, October 6, 2022
  - Perceived lack of expertise given benign recent history
  - Lack of risk literature



Federal Reserve Economic Data – Federal Reserve Bank of St. Louis

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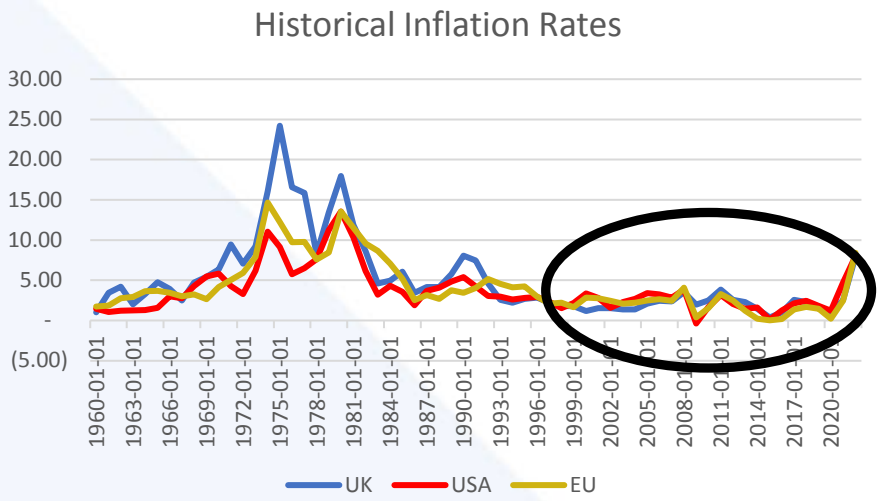

Federal Reserve Economic Data – Federal Reserve Bank of St. Louis

Background

- Working Group created
  - Jason Wiebe - Chair
  - Martin Melchior
  - Richard Deville
  - Sam Achord
  - Malcolm Kemp - Editor
- Goal: Paper to help the actuary to understand the fundamentals of inflation and the associated risks and inspire better risk management.
- Paper has been approved by the AAE Board and will be published soon

Content

- **An Introduction to Inflation**
  - Causes, types, impact, current situation
- **Managing Inflation Risk**
  - Hedging, management actions, scenario testing, product design
- **Inflation Risks**
  - Direct risks – funding future benefits , expense management
  - Indirect risks – financial market impacts, lapses,

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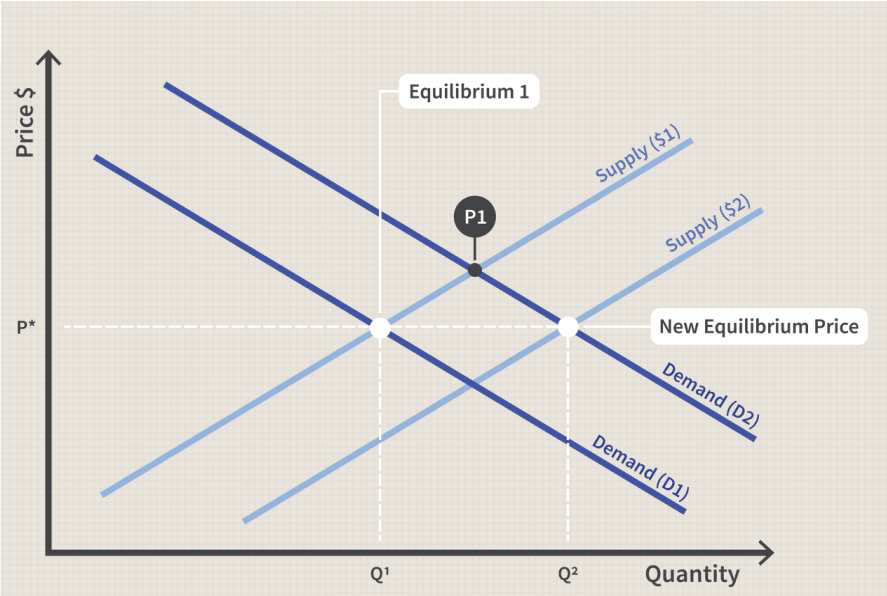
An Introduction to Inflation

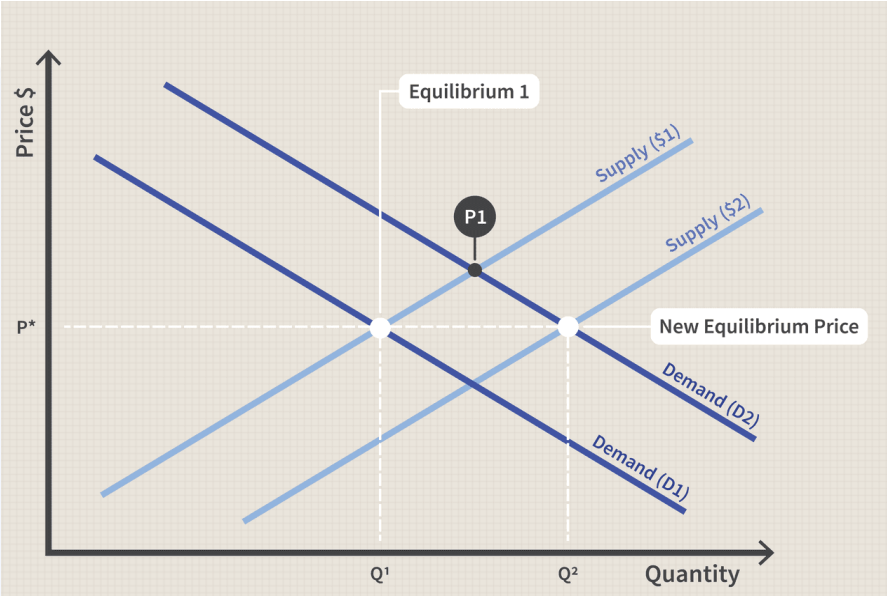
Macroeconomics and Inflation – Cause and Control

- Underlying Driving Forces
  - Increased demand
  - Reduced Supply
  - Expectations for future inflation
    - Fears of inflation may cause consumers to accelerate purchases/reduce savings
    - Expectations of high future inflation can lead to inflationary wage increases



Macroeconomics and Inflation – Cause and Control

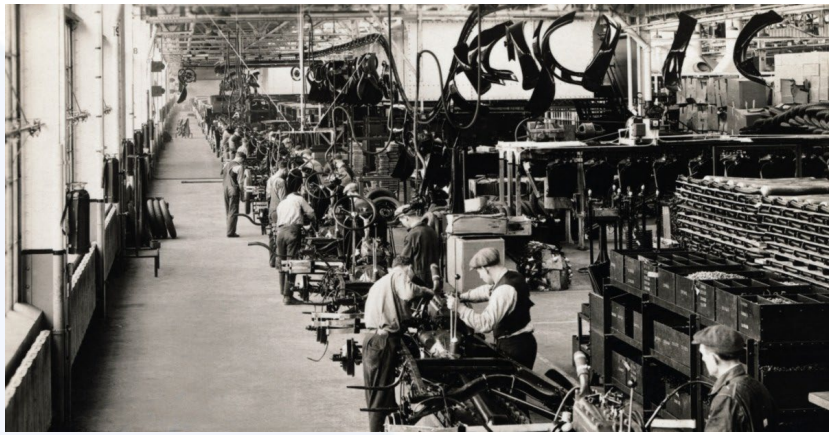
- Expansionary Fiscal Policies can increase inflation
  - Governments look to grow economy via increased money supply (reduced taxes or increased government spending)
  - Resulting increase in demand can cause inflation
- Central Banks use monetary policy to control inflation
  - Increases in interest rates make cost of borrowing more expensive and reduce demand



Special Types of Inflation

Deflation

- Decrease in price of goods and services
- Often signals downturn of an economy (China 2023)
- May be due to technological advances increasing productivity (Industrial Revolution)



Special Types of Inflation

Hyperinflation

- Rapid, excessive and out of control price increase
- Occurs when a government increases its money supply to a point its GDP cannot support
- Examples
  - Post war Germany
  - Zimbabwe (2007-9)

Special Types of Inflation

Stagflation

- Refers to a period of high inflation combined with stagnant economic growth
  - Often caused by an external shock
- Example
  - Oil price shocks of ’70’s

Notable Periods of Inflation

- The Great Deflation (1870-1890) – extended period of deflation due to productivity gains from Second Industrial Revolution
- The Great Depression (1929-1939) – 25% drop in consumer prices
- WWI & WWII (1914-1918/1939-1945) – significant wartime spending funded by borrowing lead to inflationary times
- The Great Inflation (1965 to 1982) – Lack of understanding of relation between expansionary fiscal policy and inflation led to inflation expectations becoming embedded.

Impact of Inflation

- Transfers value from accumulated savings to future production
  - Today's savings will purchase less in the future
- Transfers value from asset owners to borrowers
  - Reduces burden of existing debt
- Low amounts of inflation seen as good
  - Encourages spending and future investment

Current Situation

- Pre-pandemic Quantitative Easing created an environment of low interest and growing money supply
- Pandemic funding further expanded the money supply
- Pandemic constraints led to pent up demand
- Post pandemic supply chain breakdowns led to reduced supply
- Russian invasion of Ukraine compounds the situation
  - Shortages of key commodities (oil, natural gas, grain, sunflower oil)
  - Government cost of living support further grows monetary supply

Measures of inflation

- Inflation is not homogeneous across all goods and services
  - Inflationary pressures will vary by country/sector/service/product
- Inflation Measures
  - Headline Inflation is expressed in terms of change in Consumer Price Index (a basket of goods and services) including food and energy
    - Core Inflation excludes food and energy
  - Wage Inflation – rate of change in wages
- In considering risk, consider underlying costs
  - Indexed benefits typically tied to an external index
  - Insurance company expenses more heavily weighted to wages and rents than consumer goods
  - Indemnity insurances tied to inflation in specific sectors (i.e. medical services, automotive, veterinary services)

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Managing Inflation Risk

Managing Inflation Risk

- Product Design
  - Consider sources and impacts of inflation risk and potential means of mitigation in product design (for example, index caps, price adjustments)
  - Example
    - Indexing on fixed benefits
    - Sector specific inflation on indemnity benefits
      - Impact of deductibles/caps on benefits
- Management Actions
  - Consider possible actions management may take in event of unexpected inflation (for example – key risk indicators, cost cutting measures; rate increases, changes in investment strategy)
    - Important to monitor key risk indicators to be able to react

Managing Inflation Risk

- Hedging strategies
  - Index linked bonds and inflation derivatives available to hedge risk on indexed benefits
    - Market smaller and less liquid than interest and equity derivative markets creating greater basis risk
      - Increased likelihood of basis risk
        - Lack of market may mean using EU indices
        - Country specific inflation may differ from EU inflation
        - Currency basis risk if currency is not pegged to EUR

Managing Inflation Risk

- Stress and scenario testing
  - Consider as part of product design phase as well as ORSA
  - Scenarios for periods of high inflation
    - Inflation returns to target levels due to strong recession and central banks avoid raising rates excessively
    - Central banks raise rates quickly to curb inflation
    - Central banks raise rates more slowly and inflation does not return to historic targets
    - Central banks unable to control inflation, higher inflation expectations become embedded in consumer's minds and wages leading to extended period of high inflation
- Scenarios for inflation during stable times
  - Look to history to create inflation scenarios

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Inflation Risks

Inflation Risks - Direct

- Expected expenses grow more rapidly than expected
- Indexed benefits grow more rapidly than expected
- Indemnity benefits
  - Underlying costs grow more rapidly than expected
  - Sector inflation (for example, medical, automotive) differing than general inflation
  - High inflation erodes benefits of deductibles/increases values of maximum benefits

Inflation Risks – Macro-Economic

- Lending and Credit – Increased interest rates increase cost of borrowing leading to less borrowing and higher defaults
- Securitizations – Increased interest rates may make securitisations more volatile especially if
  - Highly leveraged, or
  - Lower tranche
- Policy lapses/Coverage reductions
  - Increase in rates may result in surrender of life insurance
    - Higher returns for cash values
    - Lower premiums
    - Affordability issues
  - Nonlife covers may see
    - Non essential covers not renewed
    - Benefit reductions to reduce cost

Inflation Risks – Macro-Economic

- Bank runs – Concerns about strength of financial sector in general or particular banks could lead to mass withdrawals of money creating potential liquidity crisis
  - Silicon Valley Bank; Signature Bank
- Losses to asset managers/funds – Highly leverage funds may find increased interest rates difficult to carry requiring forced selling of illiquid assets at a loss
- Emerging Markets – Emerging markets facing higher interest rates may be forced to default on their debt

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