Institute and Faculty of Actuaries

GIRO Conference 2022

21–23 November, ACC Liverpool

#GiroConf22

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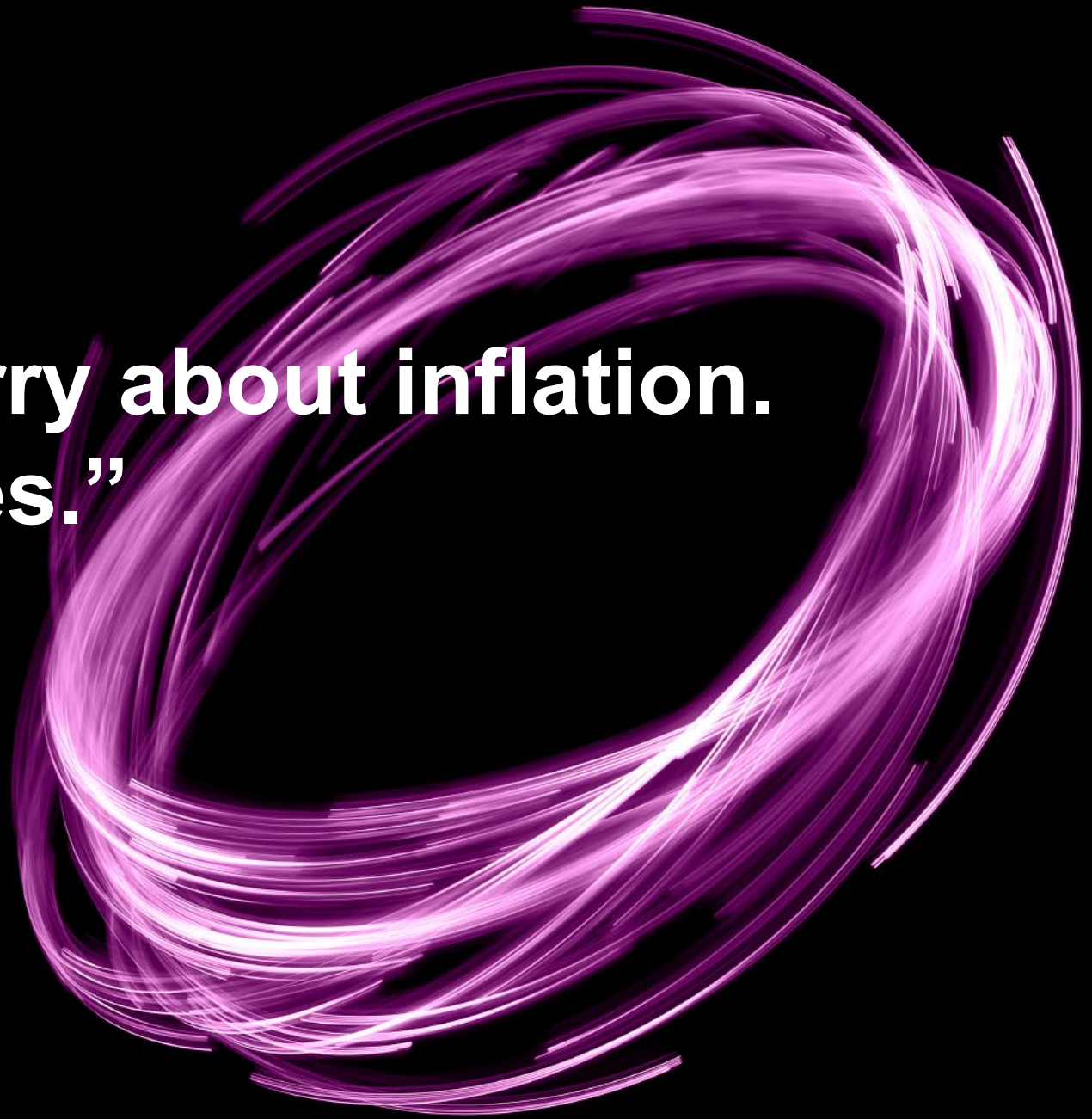
“We don’t have to worry about inflation. We’re commercial lines.”

Martin Cairns (FTI Consulting)
April Lu (FTI Consulting)
Nasir Shah (Enstar)



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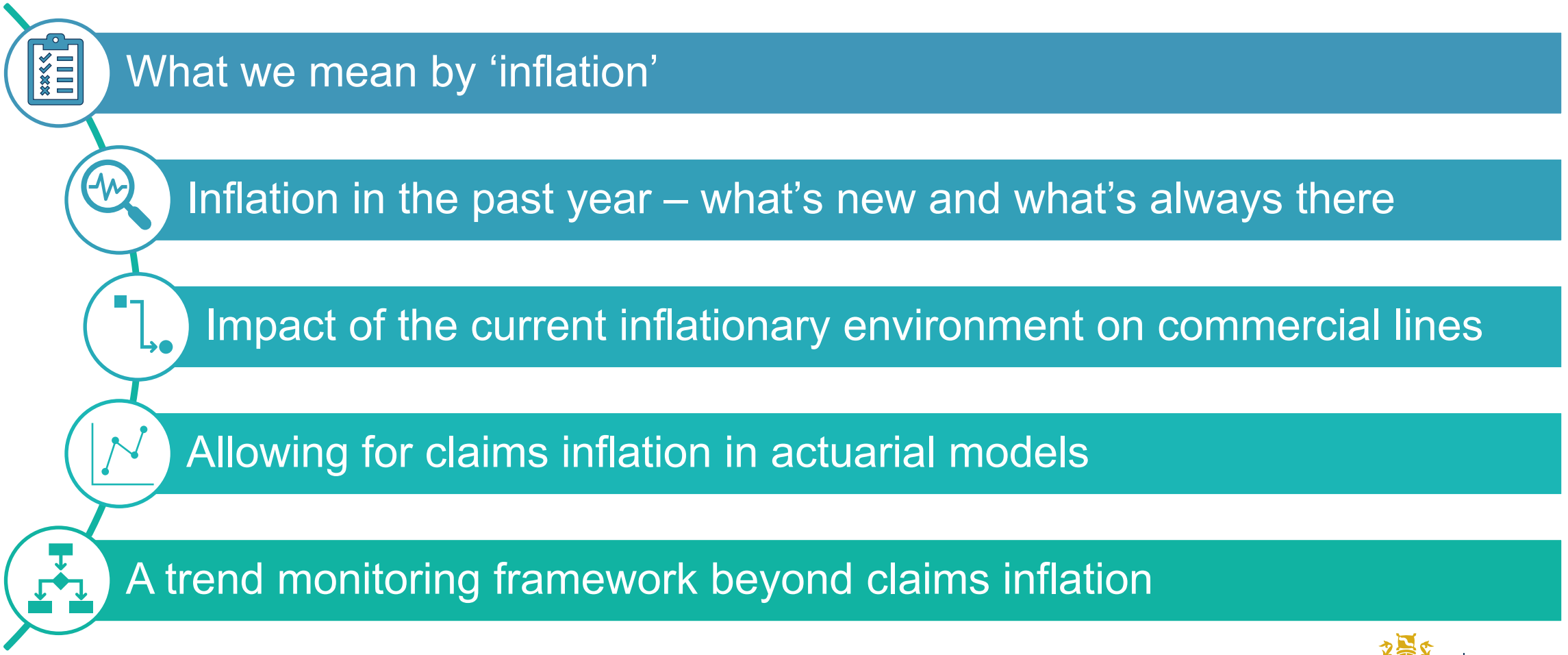
Content



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What do we mean by ‘inflation’

Inflation is defined as a sustained increase in the general price levels of goods and services in an economy over a period of time. Inflation is usually measured by monitoring the price for an average basket of goods and services over time.

Claims inflation is the change in the expected claims cost level of a like for like policy in an economy over time.

Components of claims inflation

Economic inflation (or “Pure” inflation)

Excess inflation (incl. Social inflation)

Impact on claim costs

Claim frequency

Claim severity

Sources: https://assets.lloyds.com/assets/pdf-claims-inflation-discussion-document-mg-20141128/1/Claims-Inflation-Discussion-Document-MG-20141128.pdf

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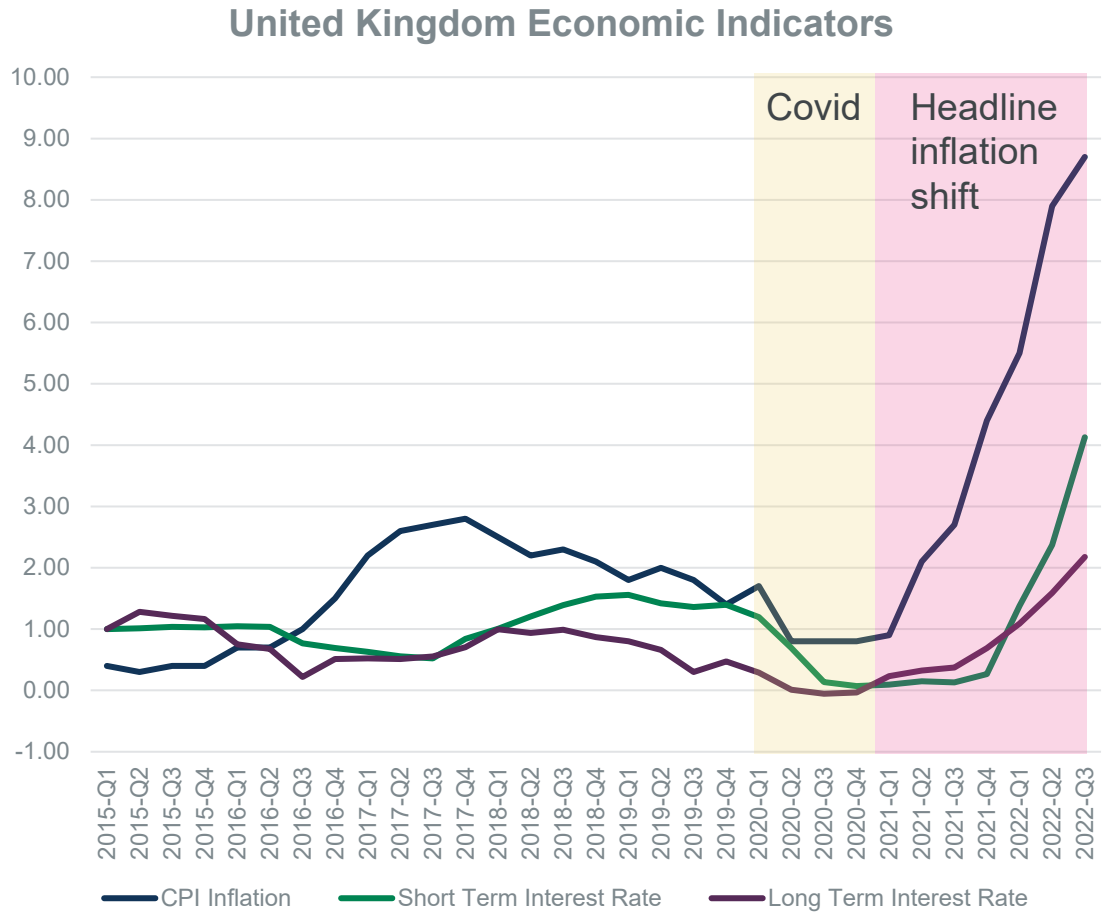
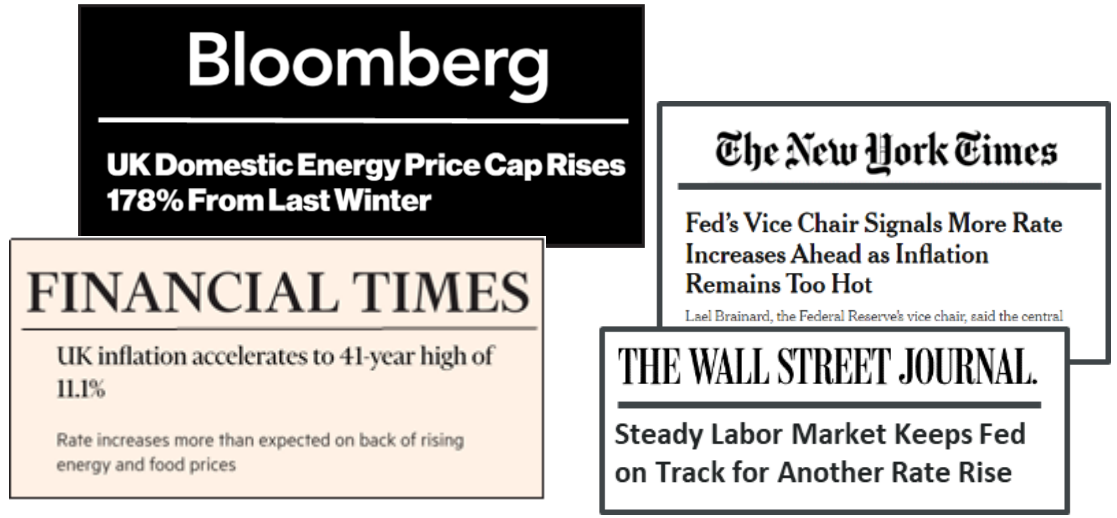
Headline economic inflation





Key drivers:

- Energy crisis / geopolitical tension
- Covid induced supply shortages
- Food
- Wage – price spiral

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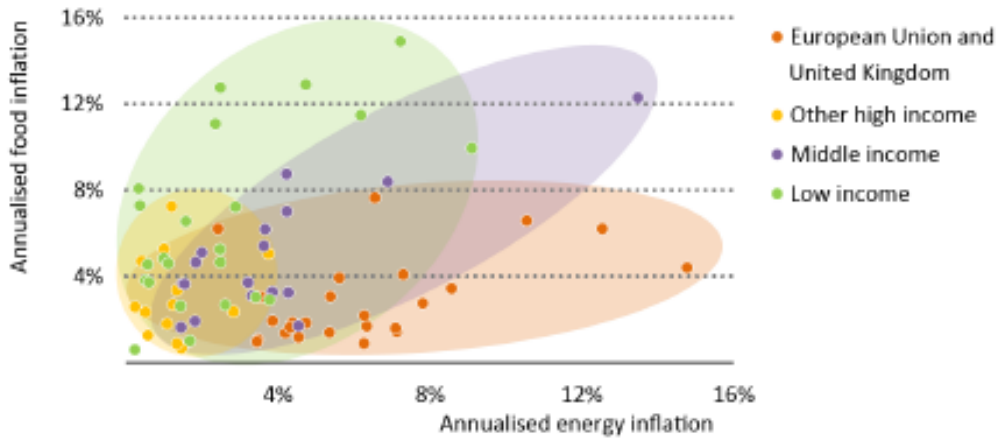
Energy inflation

Energy inflation is the key contribution to inflation for countries with highest level of insurance penetration.

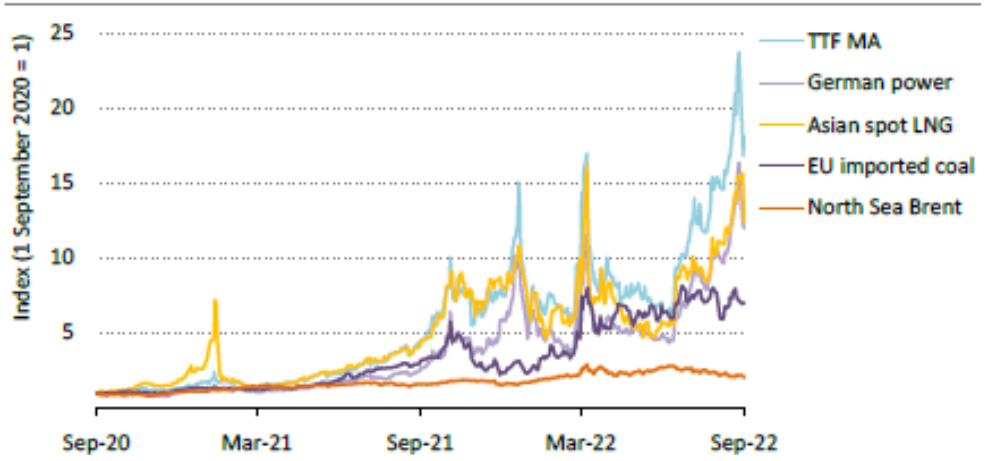
Contributions of energy and food to inflation in selected countries, 2022



Energy is behind many of the inflationary impacts of the crisis in Europe, but higher food prices – to which energy contributes – are the main driver in many low income countries.

Most traditional forms of energy have experienced significant price inflation since 2020. This year, 2022, has seen a period of extraordinary turbulence in energy markets intensified by the Ukraine War that began in February 2022.

Evolution in selected energy price indicators since September 2020



Source: World Energy Outlook 2022, IEA

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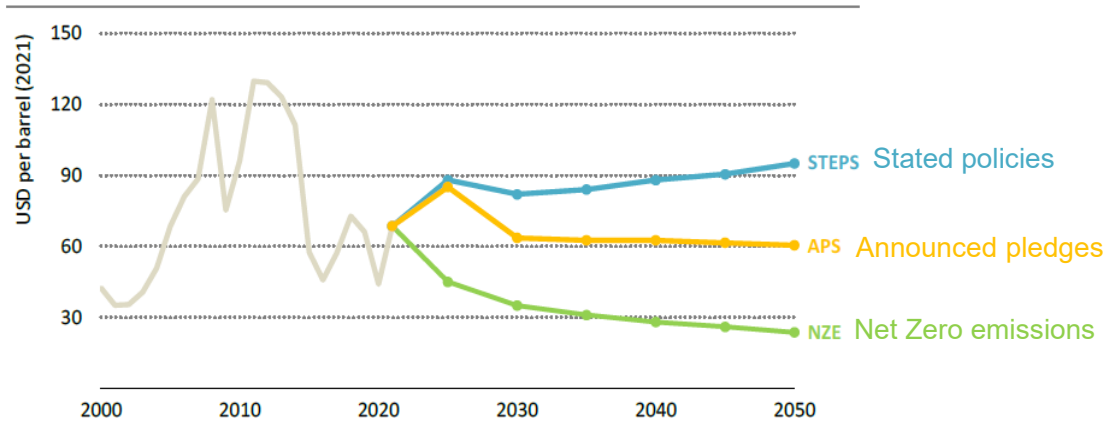
Energy inflation

Watch out for correlation between inflation and climate change risks

Fossil fuel prices by scenario

			Net Zero Emissions by 2050		Announced Pledges		Stated Policies	
Real terms (USD 2021)	2010	2021	2030	2050	2030	2050	2030	2050
IEA crude oil (USD/barrel)	96	69	35	24	64	60	82	95
Natural gas (USD/MBtu)								
United States	5.3	3.9	1.9	1.8	3.7	2.6	4.0	4.7
European Union	9.0	9.5	4.6	3.8	7.9	6.3	8.5	9.2
China	8.0	10.1	6.1	5.1	8.8	7.4	9.8	10.2
Japan	13.3	10.2	6.0	5.1	9.1	7.4	10.9	10.6
Steam coal (USD/tonne)								
United States	63	44	22	17	42	24	46	44
European Union	113	120	52	42	62	53	60	64
Japan	132	153	59	46	74	59	91	72
Coastal China	142	164	58	48	73	62	89	74

Average IEA crude import price by scenario



Energy prices are projected to increase across the first half of the 2020s under 2 out of the 3 scenarios assessed in the WEO. The progression of energy prices in future decades depends heavily on the effectiveness of climate change actions.

Source: World Energy Outlook 2022, IEA

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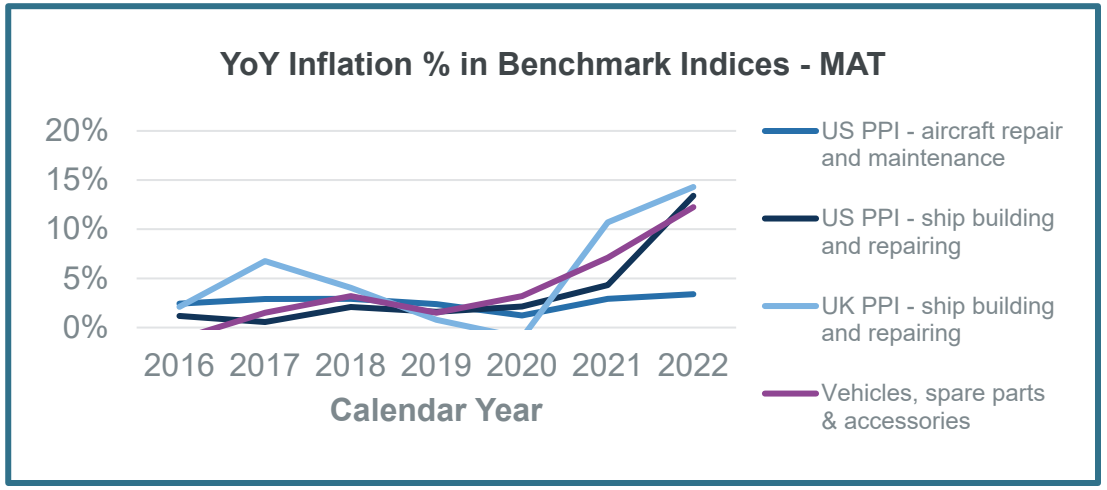
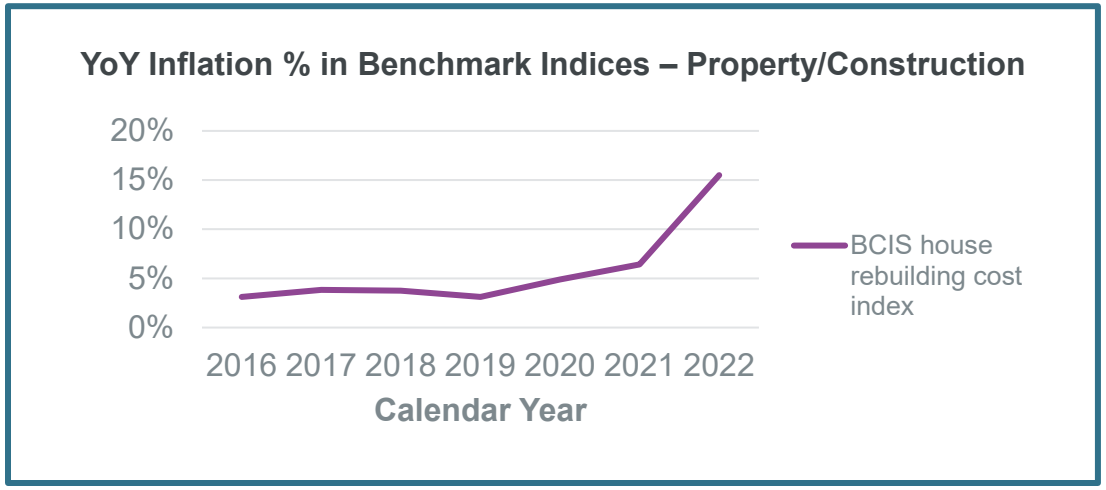
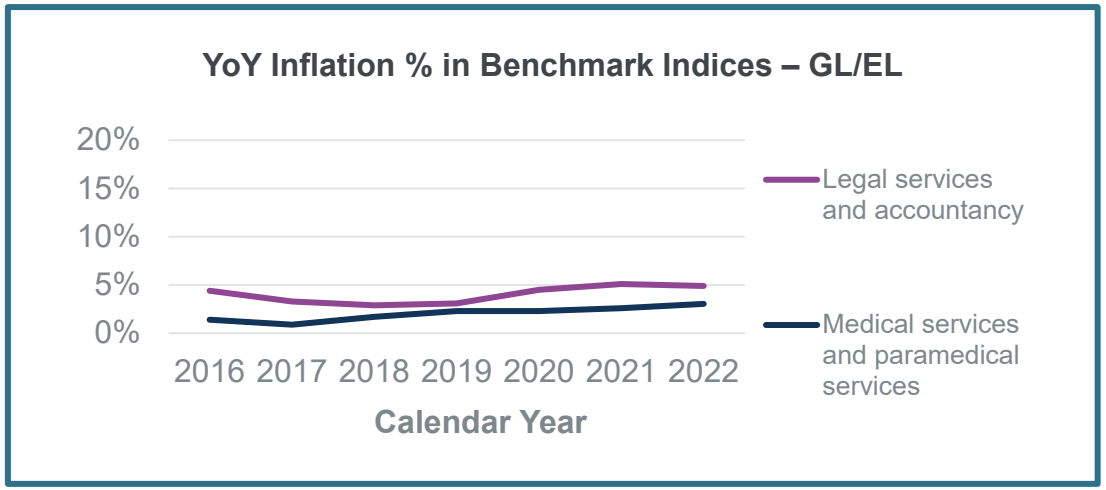
Not all inflation is created equal: What's new and what's always there?







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What's always been there?

- Social inflation refers to the increase in insurance losses caused by societal trends beyond Pure inflation.
- From increasing litigation, broader definitions of coverage and liability, more plaintiff-friendly legal decisions leading to larger compensatory jury awards. Specific drivers of social inflation are thought to be:

Erosion of trust of Corporate America

Desensitisation to large jury verdicts

Desire to punish "wrongdoers" leading to increases in litigation funding

- Social inflation is a major contributor to the worsening of (re)insurance industry results for casualty business in the US.
  - Signs that countries such as the UK, Canada and Australia are also being affected and the extent of this could increase in the near future.
  - This could be because these countries operate on a common law basis like in the US, where judicial precedents can be set.

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Which of the following classes are the top 3 most impacted by the current inflationary environment on claims costs?

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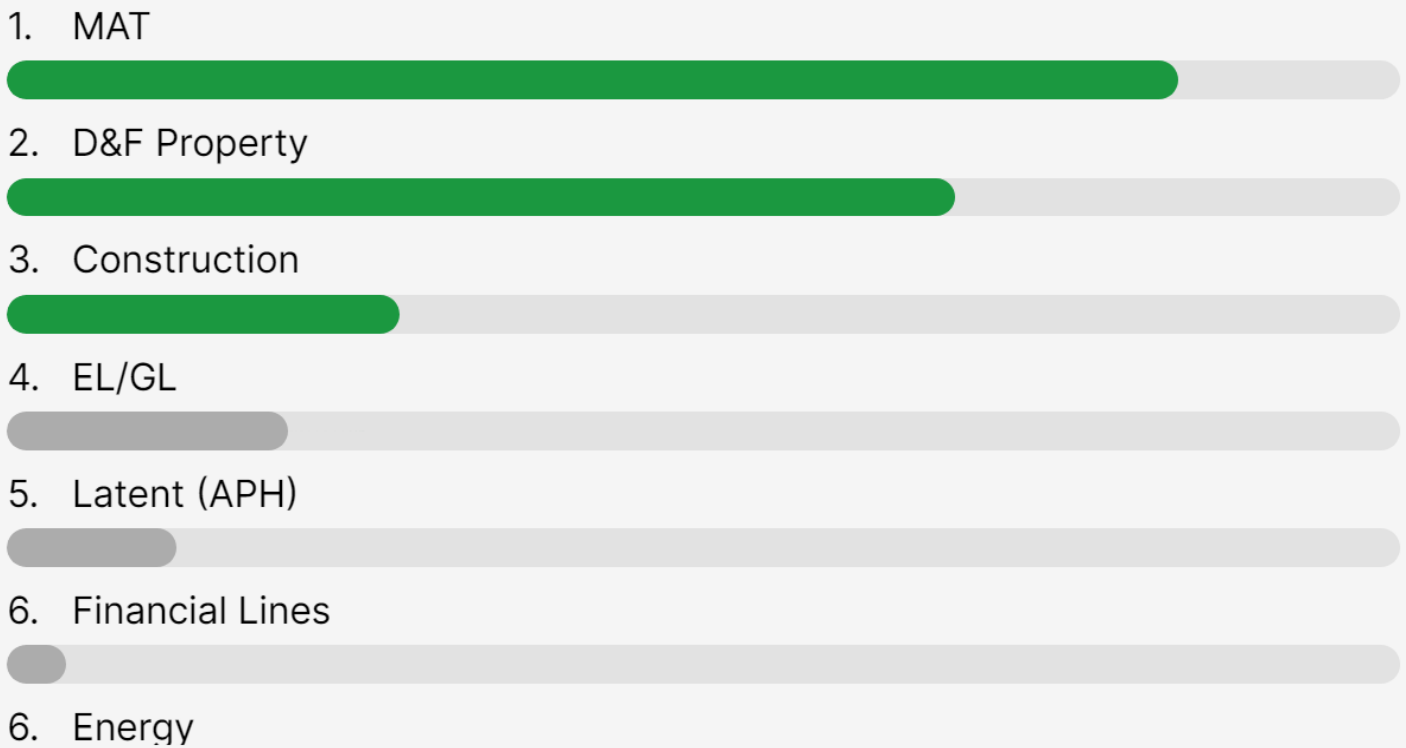
Answers from claims teams…

Which of the following classes are the top 3 most impacted by the current inflationary environment on claims costs?



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Which of the following heads of damage are the top 3 most impacted by the current inflationary environment on claims costs?

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Answers from claims teams…

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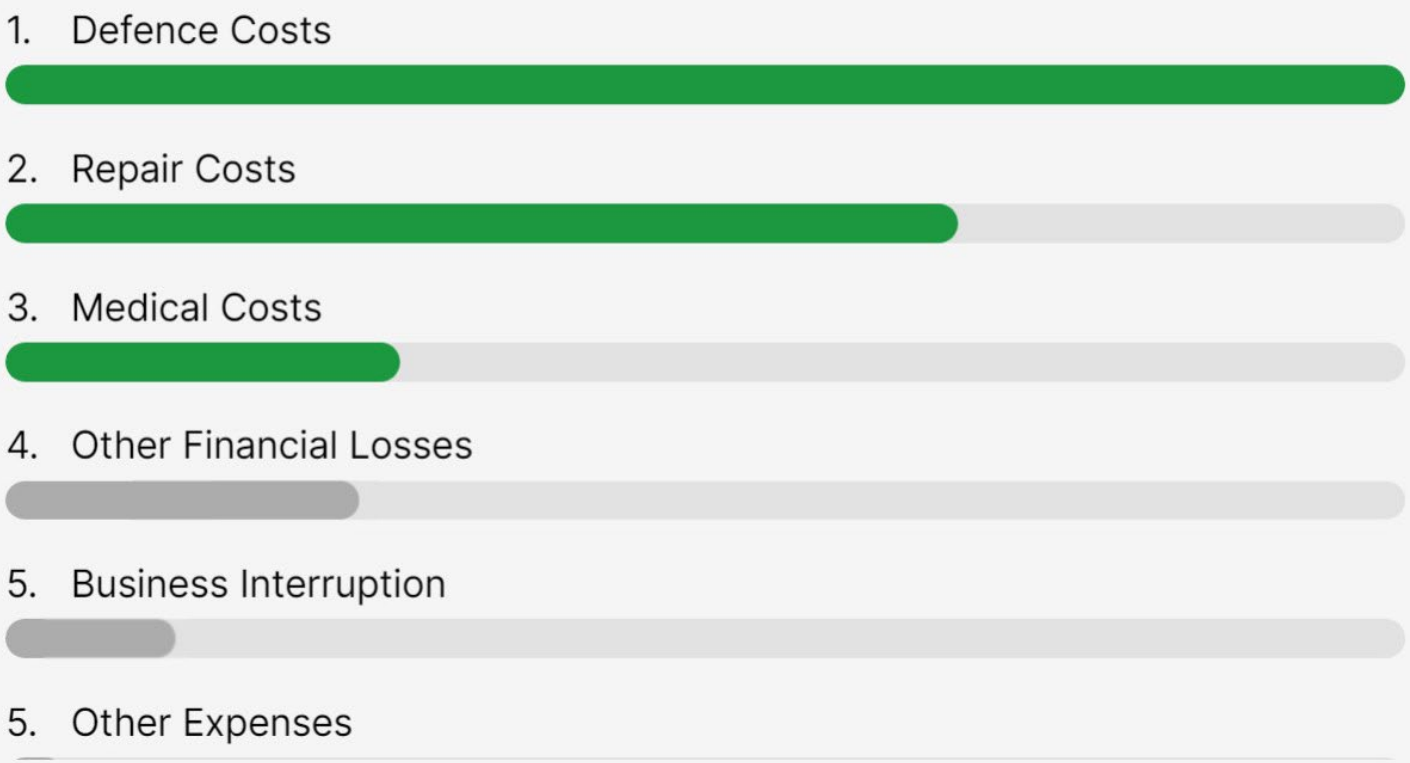

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What are the key factors influencing the level of inflation experienced by a group of claims?

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Answers from claims teams…

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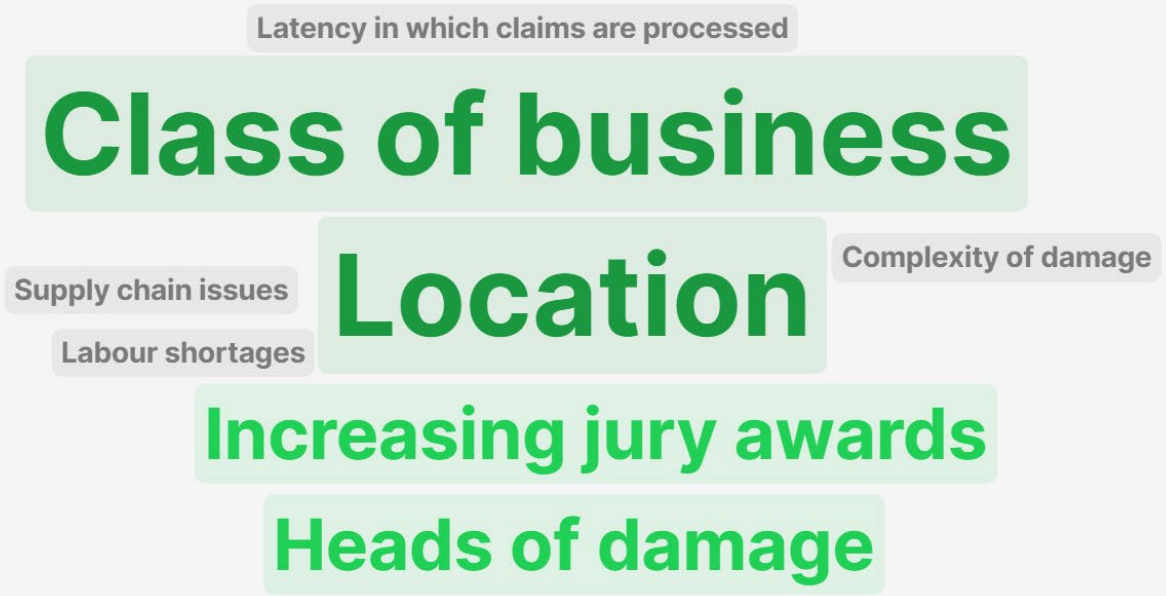

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Secondary impacts of sustained economic inflation

Secondary impacts:

- Government interventions
- Market speculations
- Business responses
- Customer behaviours
- Impact on correlation between social and economic inflation?

How these could impact commercial insurers:

- Investment returns
- FX gain/losses
- Revenue
- Business mix
- Propensity to claim

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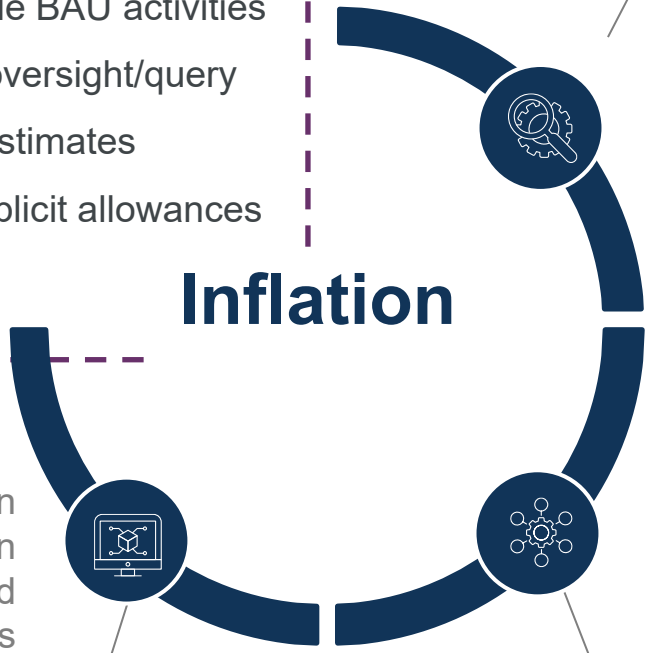
How do we model claims inflation now?

Key Challenges

- Coping with one-off changes alongside BAU activities
- Responding to increased regulatory oversight/query
- Significant uncertainty around point estimates
- Difficulty understanding implicit vs explicit allowances within current models



Pricing / Business Planning

- Inclusion of Accident/Policy Year in GLM calibration to remove impact of time on historical loss experience
- Inflation assumption for prospective year attracted increased scrutiny

Capital Modelling

- Reliance on ESG
- Implicit allowance through insurance risk assumptions
- Explicit modelling as a risk driver

Reserving

- Implicit allowance for calendar year inflation on claims development pattern
- Underwriting/ accident year inflation allowed in IELR assumptions on recent years
- Manual adjustments based on expert judgements

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Allowing for claims inflation in reserving models

What are we going to do?

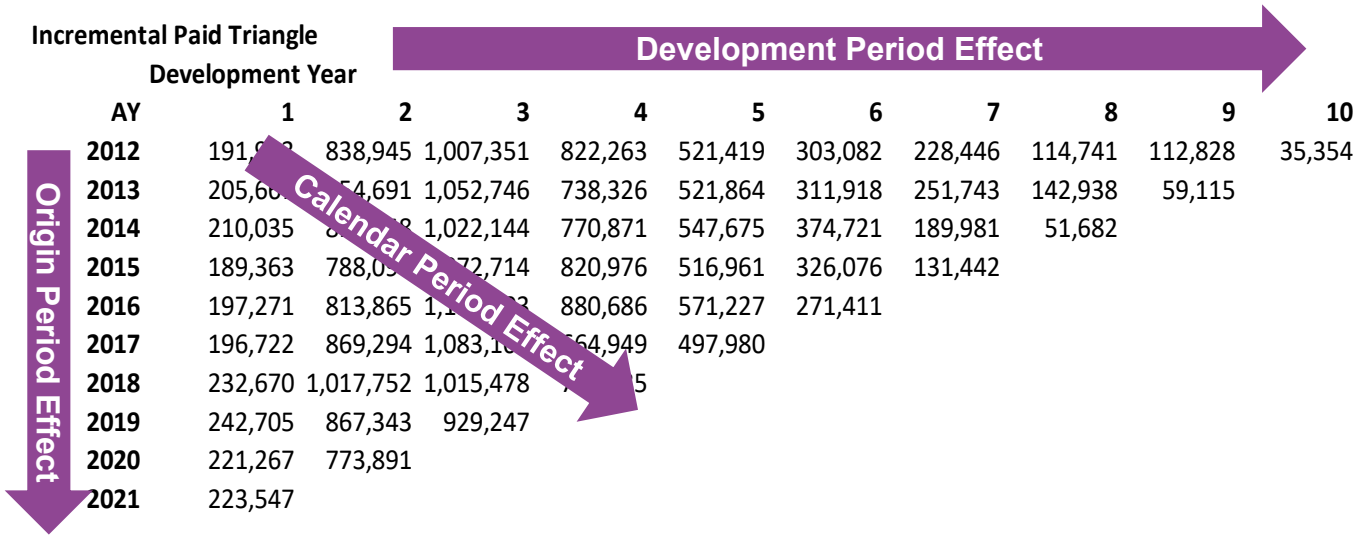
- Offer tools and a structure to quantify implicit allowance for inflation within triangle based methods, which will also help inform IELR selections and any manual adjustments needed

Why is this important?

- Understand the implicit 'starting' allowance within the historical data
- Have a solid foundation for explicit inflation allowance
- See the past to predict the future
- Understand the relevance of prior years for IELR picks
- Understand the appropriateness of plan loss ratio picks

Key assumptions and limitations

- Claims inflation is a calendar year effect
- No separation of claims inflation from other calendar year effects



AY	1	2	3	4	5	6	7	8	9	10
2012	191,9	838,945	1,007,351	822,263	521,419	303,082	228,446	114,741	112,828	35,354
2013	205,66	4,691	1,052,746	738,326	521,864	311,918	251,743	142,938	59,115	
2014	210,035	8	1,022,144	770,871	547,675	374,721	189,981	51,682		
2015	189,363	788,05	72,714	820,976	516,961	326,076	131,442			
2016	197,271	813,865	1,1	880,686	571,227	271,411				
2017	196,722	869,294	1,083,1	64,949	497,980					
2018	232,670	1,017,752	1,015,478	5						
2019	242,705	867,343	929,247							
2020	221,267	773,891								
2021	223,547									

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Introducing the historical inflation assessment methods

The Calendar Year Development Ratio ('CYDR') Method

- Argues that development factors are influenced by calendar and development year effects only
- Argues that calendar effects would present as certain diagonals being higher than average
- So by comparing (product of) factors in one calendar period to others we can observe calendar year effects
- Ref: CAS research paper, Social inflation and loss development

AY Prior	1	2	3	4	5	6	7
2012	1.000	5.371	1.977	1.403	1.182	1.090	1.062
2013	1.000	5.156	1.993	1.349	1.183	1.092	1.068
2014	1.000	4.903	1.992	1.376	1.194	1.111	1.051
2015	1.000	5.162	2.097	1.400	1.180	1.096	1.035
2016	1.000	5.126	2.105	1.414	1.190	1.076	
2017	1.000	5.419	2.016	1.309	1.177		
2018	1.000	5.374	1.812	1.318			
2019	1.000	4.574	1.837				
2020	1.000	4.498					
2021	1.000						

The Separation Method

- Argues that incrementals are influenced by calendar and development year effects only
- Requires origin years to already be standardised
- Approximates a two factor model, and reads off calendar year index from the fitted parameters
- We have applied this on incremental ACPC* and loss ratio triangles
- Ref: G.C. Taylor, Separation of inflation and other effects from the distribution of non-life insurance claims delays

**ACPC is calculated as average incurred/paid claims divided by estimated ultimate claim numbers for each origin period*

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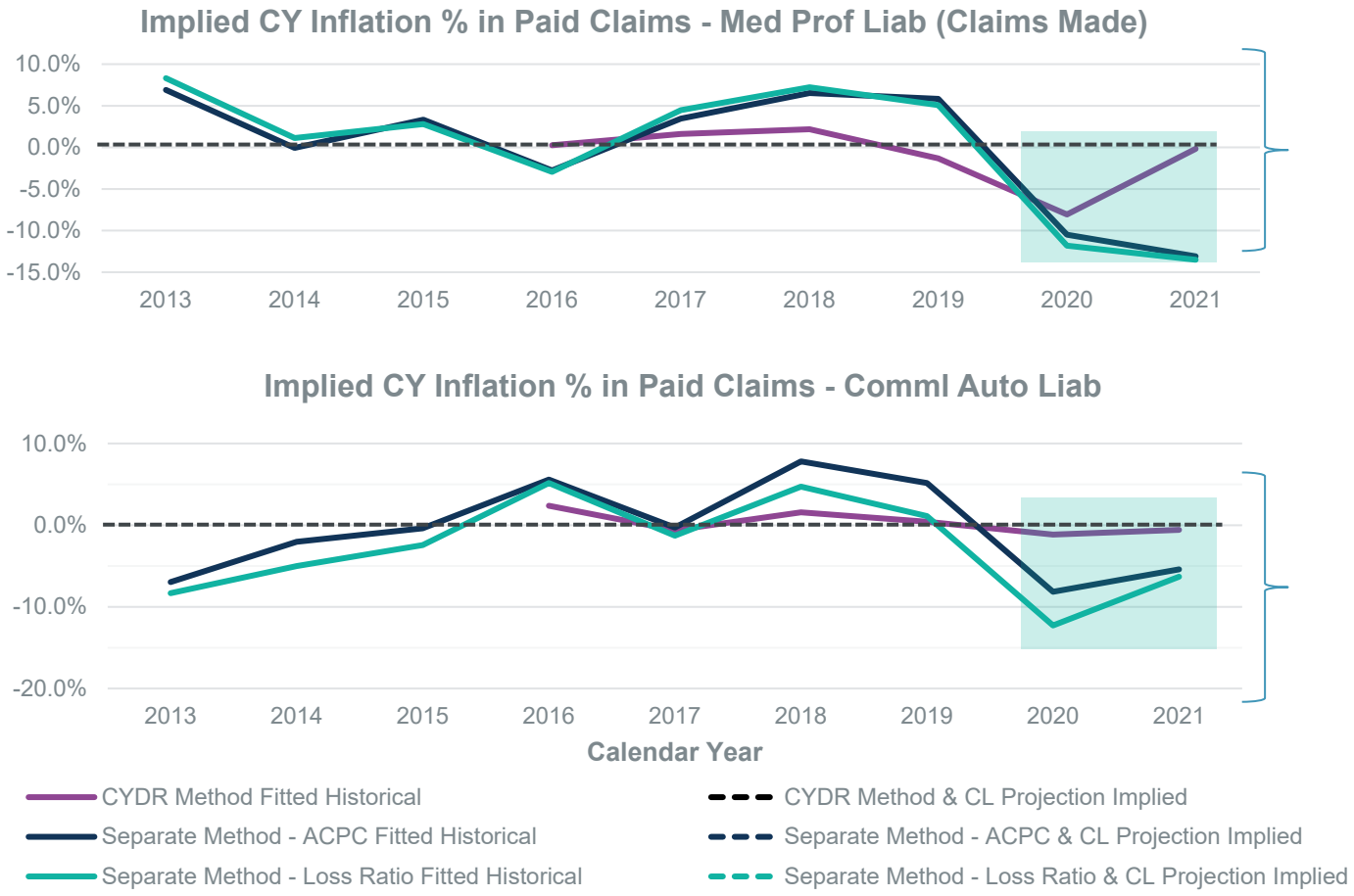
Examples – Implied historical CY inflation % in paid claims



Challenge:

- Deflation in recent history?

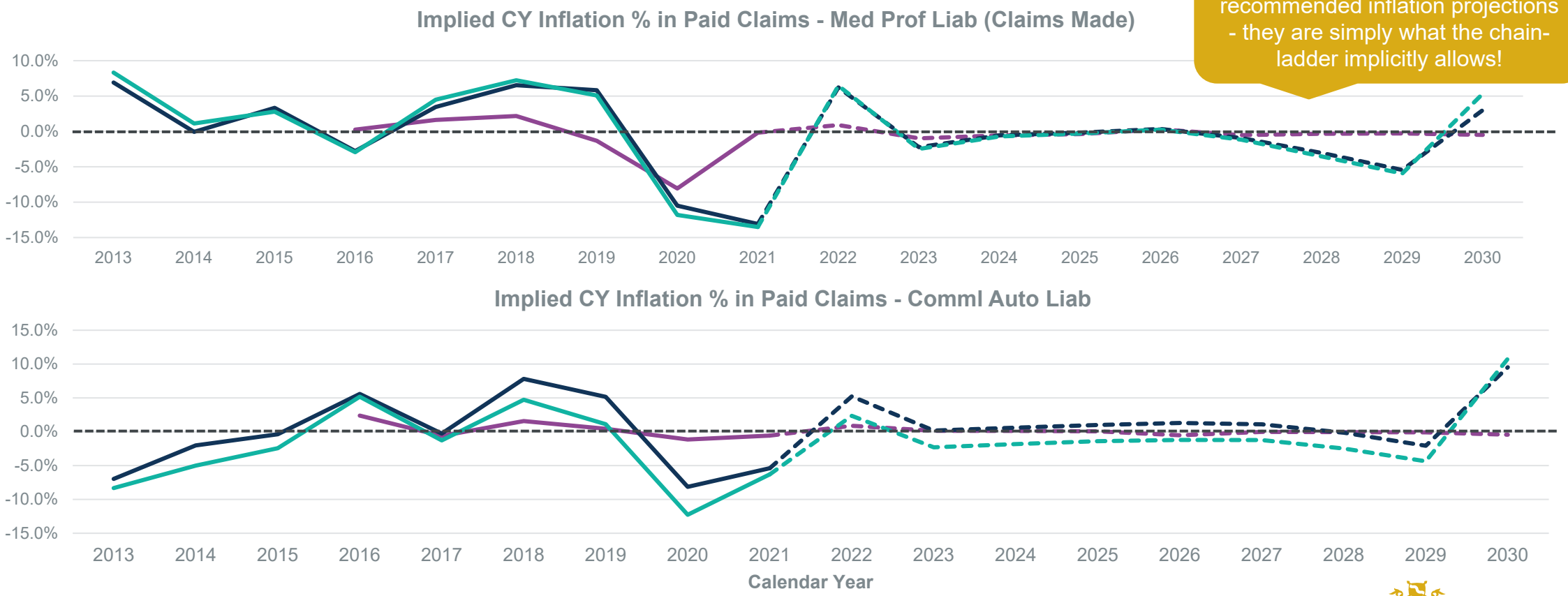
Potential reasons:

- Covid
- Other calendar year effects (e.g FX)
- Assumptions may not hold true

Data Source: 2021 Schedule P Triangles

Examples – Implied future CY inflation % in chain-ladder projections

Caution: these are not recommended inflation projections - they are simply what the chain-ladder implicitly allows!



Data Source: 2021 Schedule P Triangles

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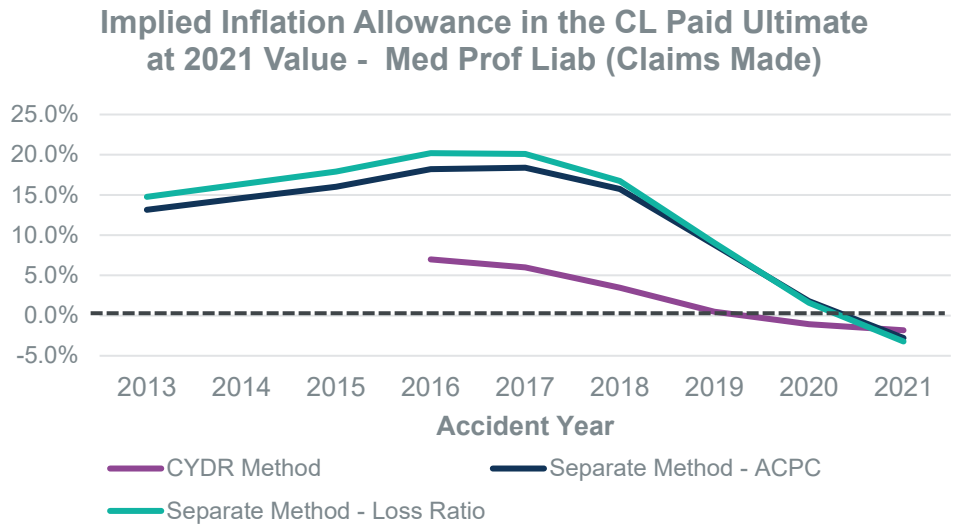
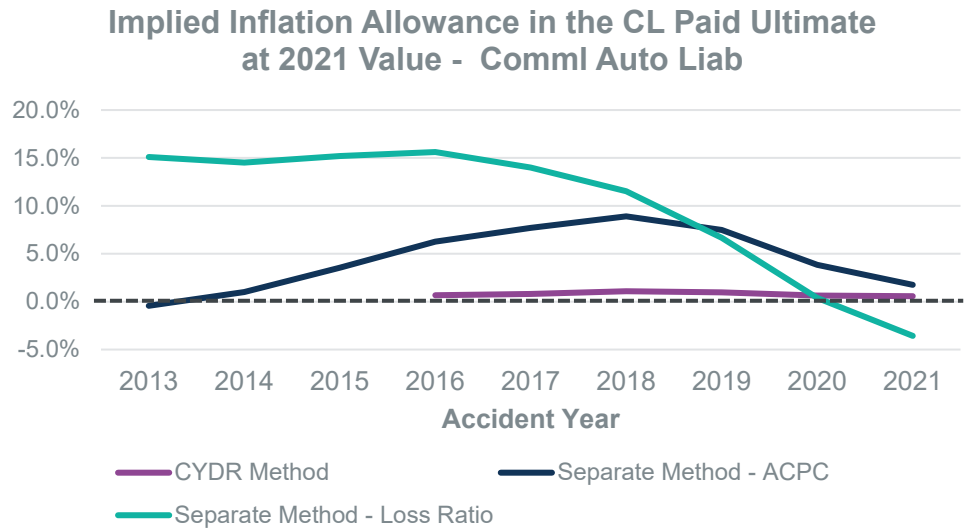
Examples – Implied origin period inflation allowance in chain-ladder projections





Implied Inflation Allowance in the Reserves at 2021 Value

Accident Years	CYDR Method*	Separation Method - ACPC	Separation Method - Loss Ratio
2018 & Prior	4.4%	17.9%	18.9%
2019 - 2021	-1.4%	0.8%	0.5%
All Years	-0.2%	4.2%	4.1%

* for CYDR method, only AY2016 - 2021 are included

Implied Inflation Allowance in the Reserves at 2021 Value

Accident Years	CYDR Method*	Separation Method - ACPC	Separation Method - Loss Ratio
2018 & Prior	1.3%	12.7%	8.8%
2019 - 2021	0.9%	4.7%	-1.6%
All Years	1.0%	5.8%	-0.1%

Data Source: 2021 Schedule P Triangles

How can we use this?

Triangle based methods used to:

- ☑ Understand the implicit ‘starting’ allowance within data
- ☑ Have a solid foundation for explicit inflation allowance
- ☑ See the past to predict the future

To help inform:

- ☑ Understand the relevance of prior years for IELR picks
- ☑ Understand the appropriateness of plan loss ratio picks

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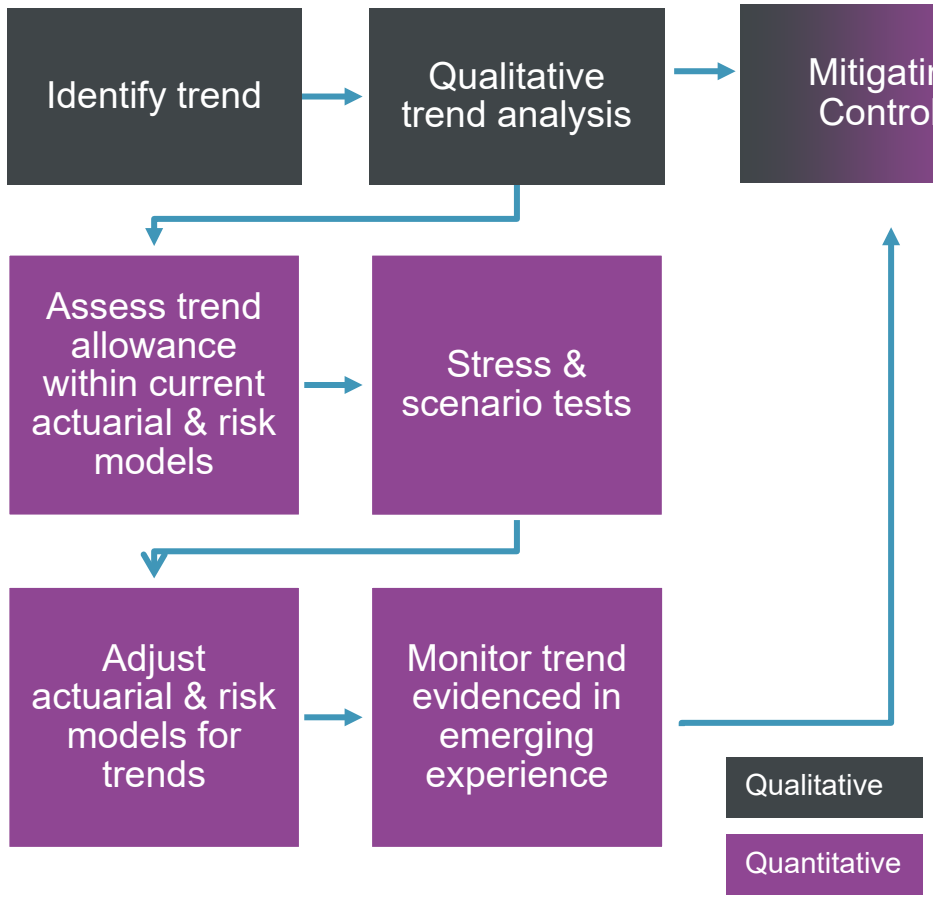
“We don’t have to worry about inflation. We’re commercial lines.”

A Trend Monitoring Framework beyond Claims Inflation



Mitigating Controls

Reserving & Capital

Ensure adequate reserves and capital to cover inflation risk

Best estimate
Margin
Standalone Risks
Dependencies

Underwriting

Mitigate the impact of inflation risk through underwriting actions

Rate adequacy
Terms & conditions
Portfolio management

Financial Engineering

Reduce the impact of inflation risk through active balance sheet management

Asset liability matching
Reinsurance strategy
Alternative risk transfers

Operations

Reduce the impact of inflation risk through operational controls

Claims management
HR strategy
Expense controls

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Questions

Comments

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.

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Thank you

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