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Society of Actuaries in Ireland

Annual Banking Update
from
Members of the Banking & Aviation Finance Sub-Committee

Monday 12 December 2022

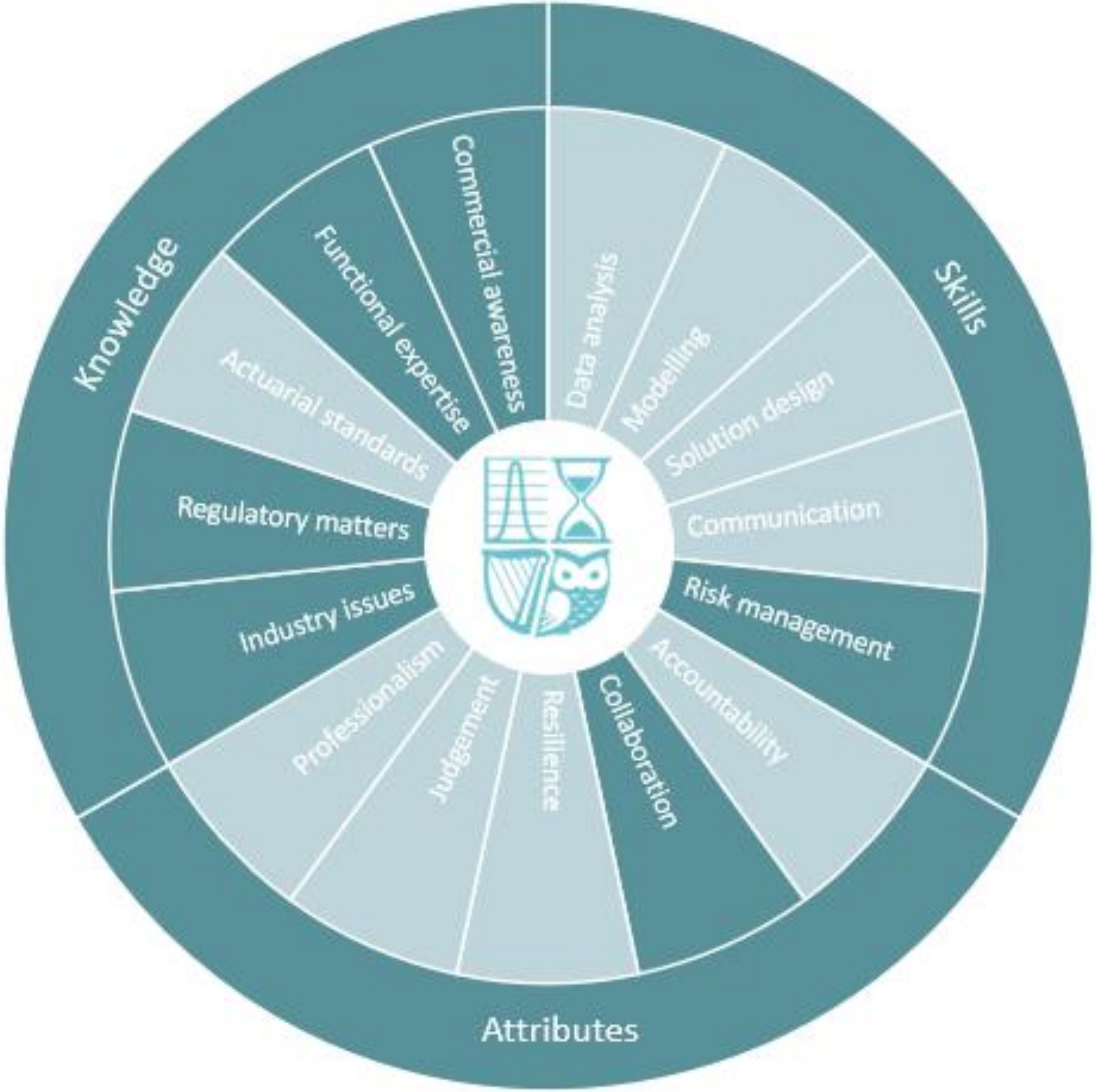
Introduction & Housekeeping

- Speakers and topics
- Biographical details
- Recording of presentations
- NO recording of questions and answers
- Slides
  - – Pulsed by Elisa
  - – Shared with all members later this week

Disclaimer

The views expressed in this presentation are those of the presenters and not necessarily those of their employers or the Society of Actuaries in Ireland.

Competency Framework Wheel



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Adia Wang

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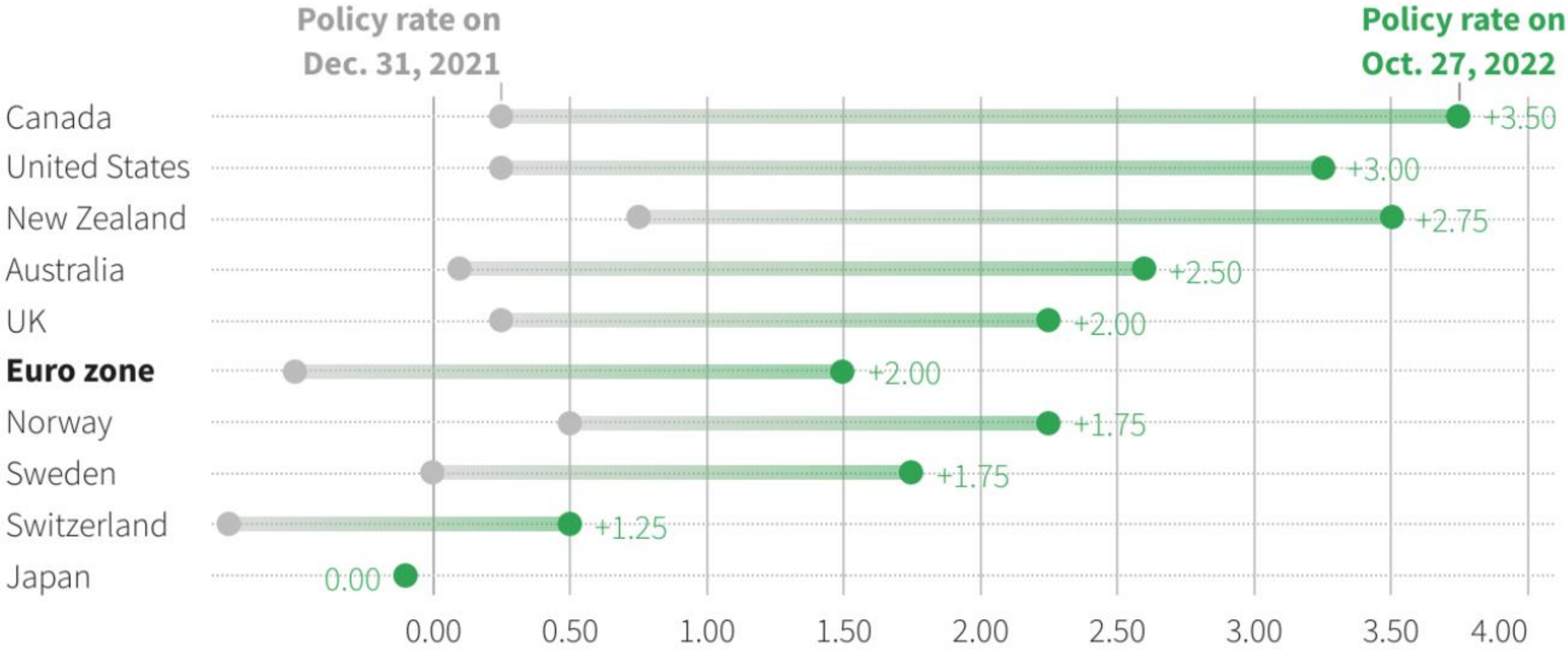
ECB Key Interest Rates

- The ECB has announced 3 rate increases in the last 5 months (+50bp, +75b and +75bp)
- This occurred after the key rates have been stale since September 2019
- **Next meeting: 15-Dec-2022**

Source: Bloomberg

Central Bank Policy Rates – 10 Most Traded Currencies



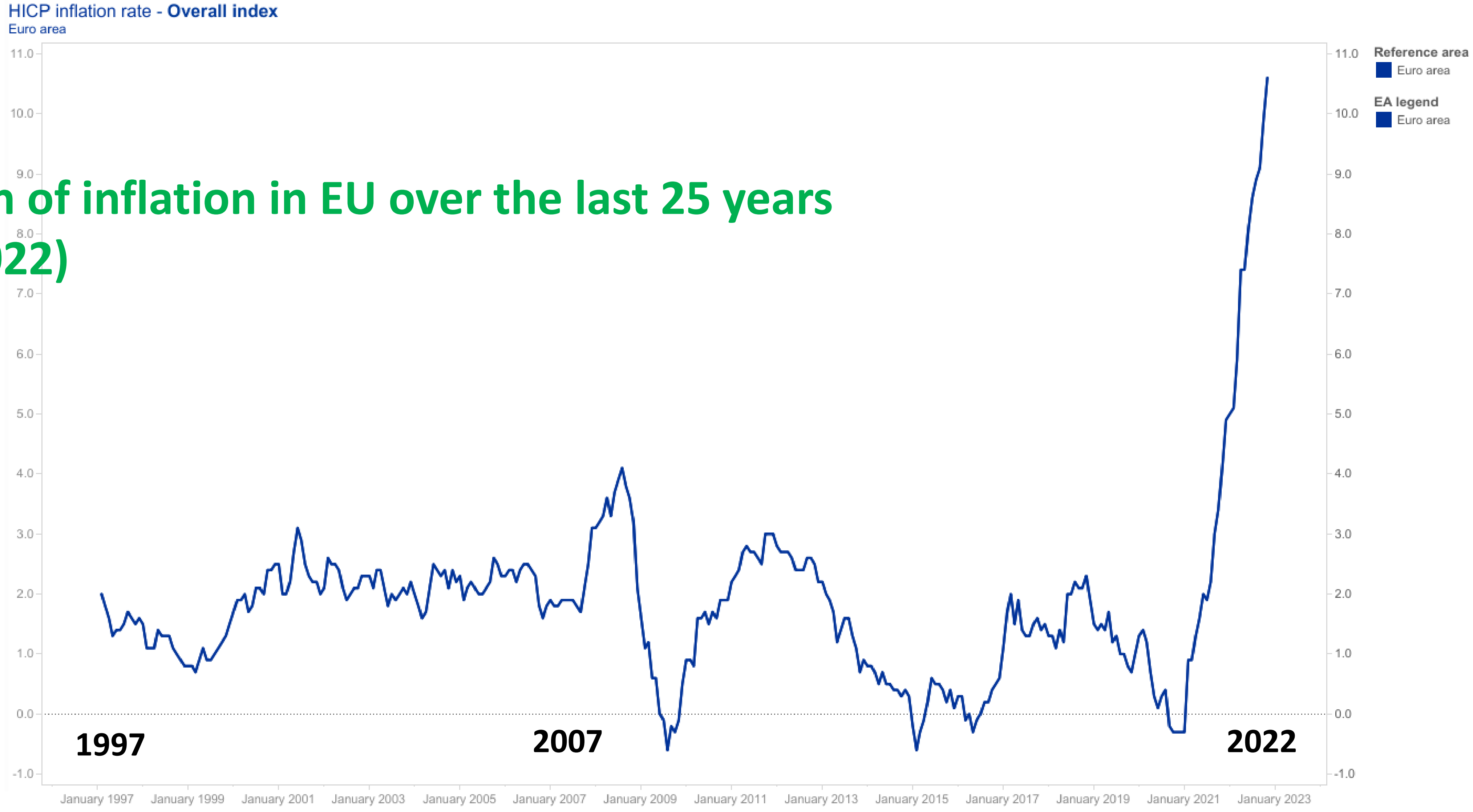
Source: Reuters; ECB raises interest rates again, cuts bank subsidies; 28-Oct-22

Why Increase Interest Rates?

- Graph shows Harmonised Index of Consumer Prices (HICP) against German 5Y Government Bond Yield and ECB deposit facility rate
- Enormous increase of inflation since February 2022
  - Crisis and a decade's worth of ECB stimulus
- ECB expects inflation to be persistent enough to demand further rate hikes in the upcoming meetings

Source: Bloomberg

Europe Inflation – HICP Index



Evolution of inflation in EU over the last 25 years (1997-2022)

Source: ECB; Measuring inflation – the Harmonised Index of Consumer Prices (HICP); Updated 17-Nov

Impact of Rising Rate on Banks

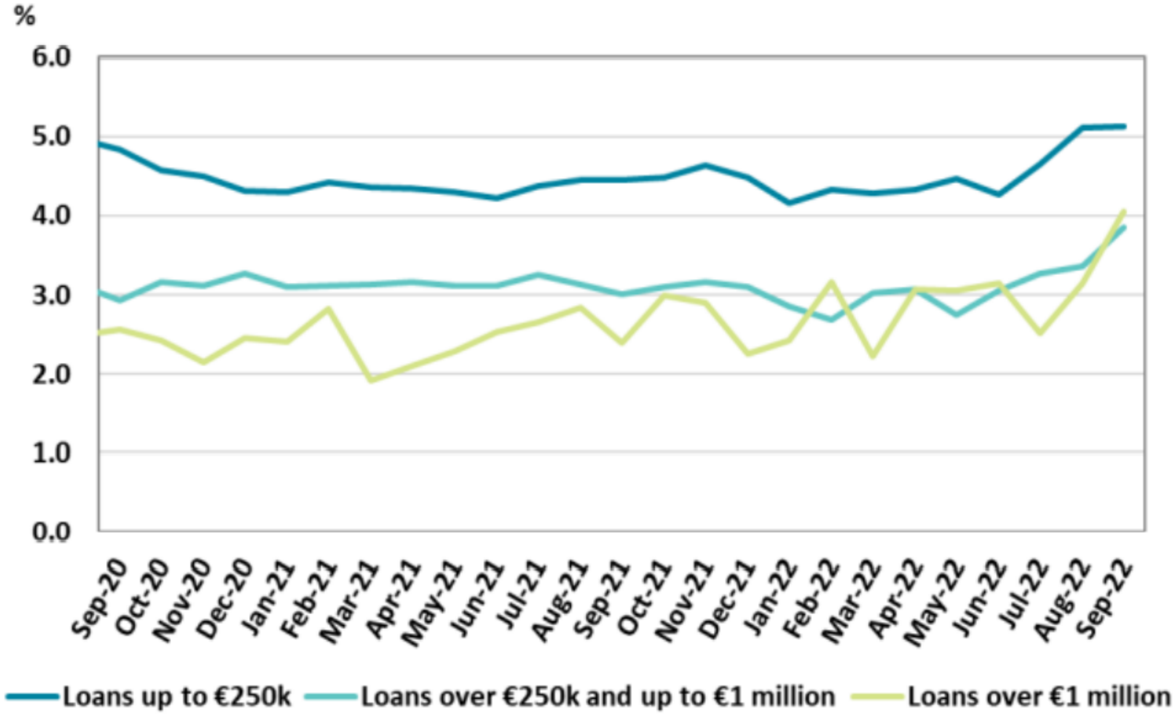
- Net interest income ("NII"): difference between the revenue generated from interest-bearing assets and the expenses from interest-bearing liabilities
- Expected NII increase in € monetary term:
  - BOI in November: around 6% to 7%, previously only "moderate increase" expected
  - AIB in October: NII will increase more than 15%, previously 10% expected

Source: RTE; Bank of Ireland raises net interest income guidance; 9-Nov-22

Pass-through of ECB Rate Hikes

- Targeted Longer-term Refinancing Operations (TLTRO): banks borrow at below average interest rate during COVID
  - Risk-free guaranteed profit at the ECB's expense after rate hike
  - Preventing rate hikes from being fully passed on
- Subsidy stopped in November 2022
  - banks will now have to start paying going rates
  - encouraging earlier repayment

Interest rates of new NFC loan agreement, by loan size

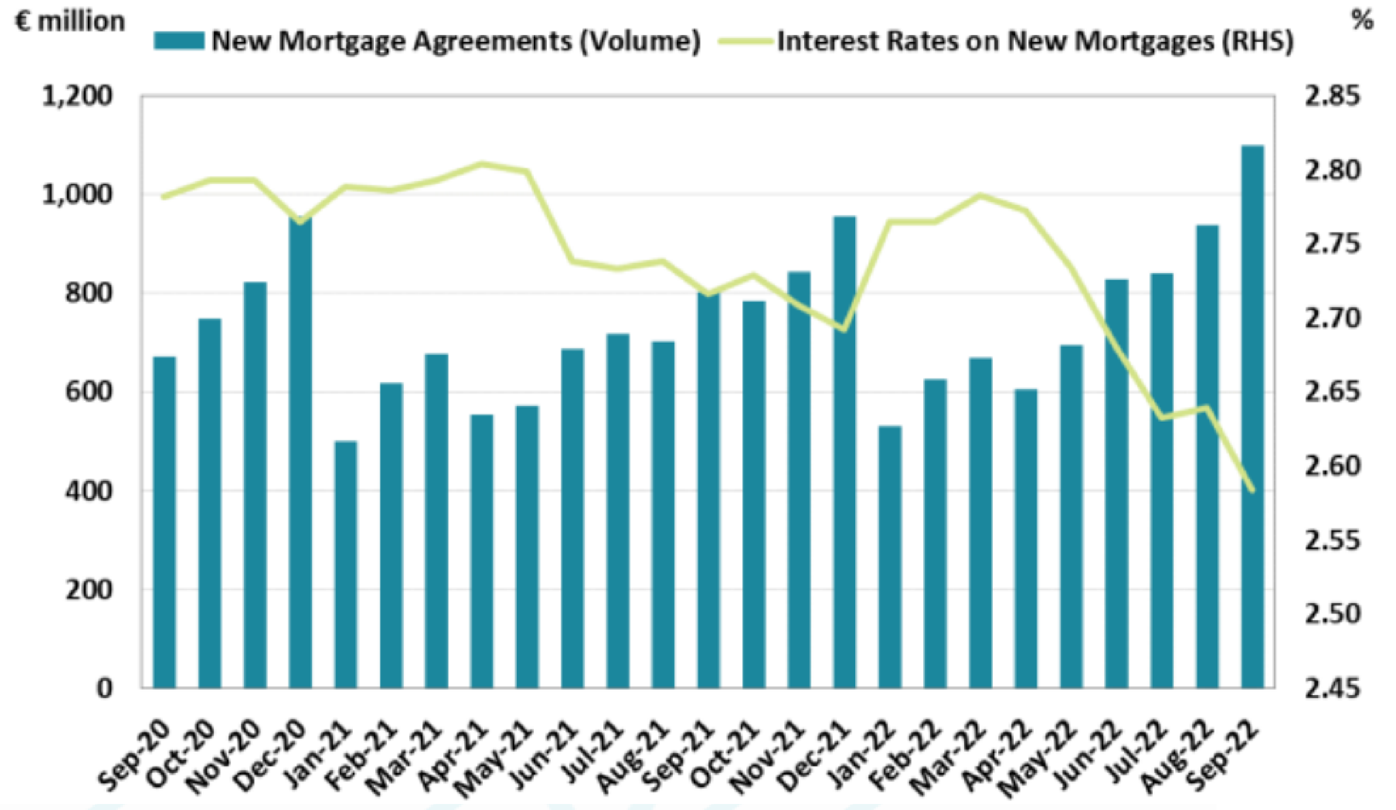


Source: Central Bank of Ireland; Statistical Release: Retail Interest Rates – September 2022; 9 November 2022

Pass-through of ECB Rate Hikes: Mortgages

- Pass-through is slow: Irish mortgage rates decreased in Sep 22
- Ireland moving closer to the euro area average
- Higher volume may be due to people trying to cash in cheap rate before expected increase

Volume and interest rate of new mortgage agreements (excluding renegotiations)



Source: Central Bank of Ireland; Statistical Release: Retail Interest Rates – September 2022; 9 November 2022

Pass-through of ECB rate hikes: mortgages

Chart 1: Weighted average interest rates on lending for house purchase across the euro area, June 2022

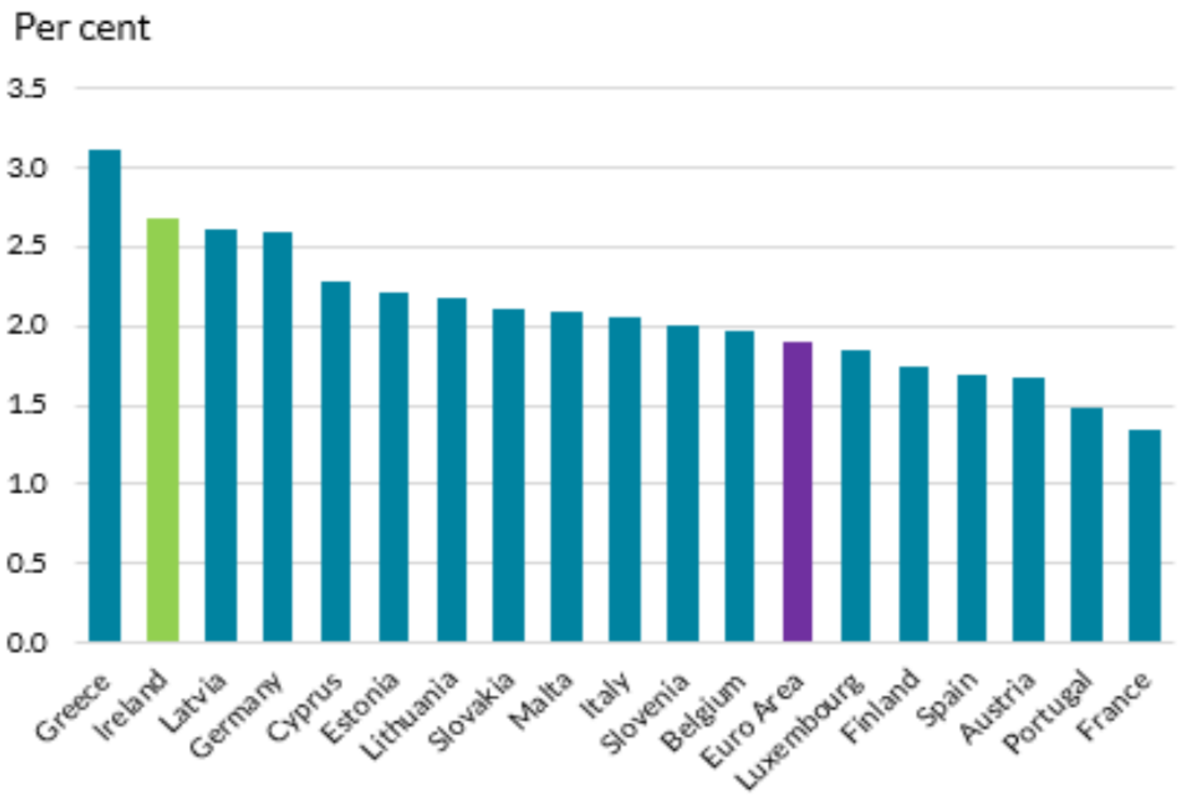
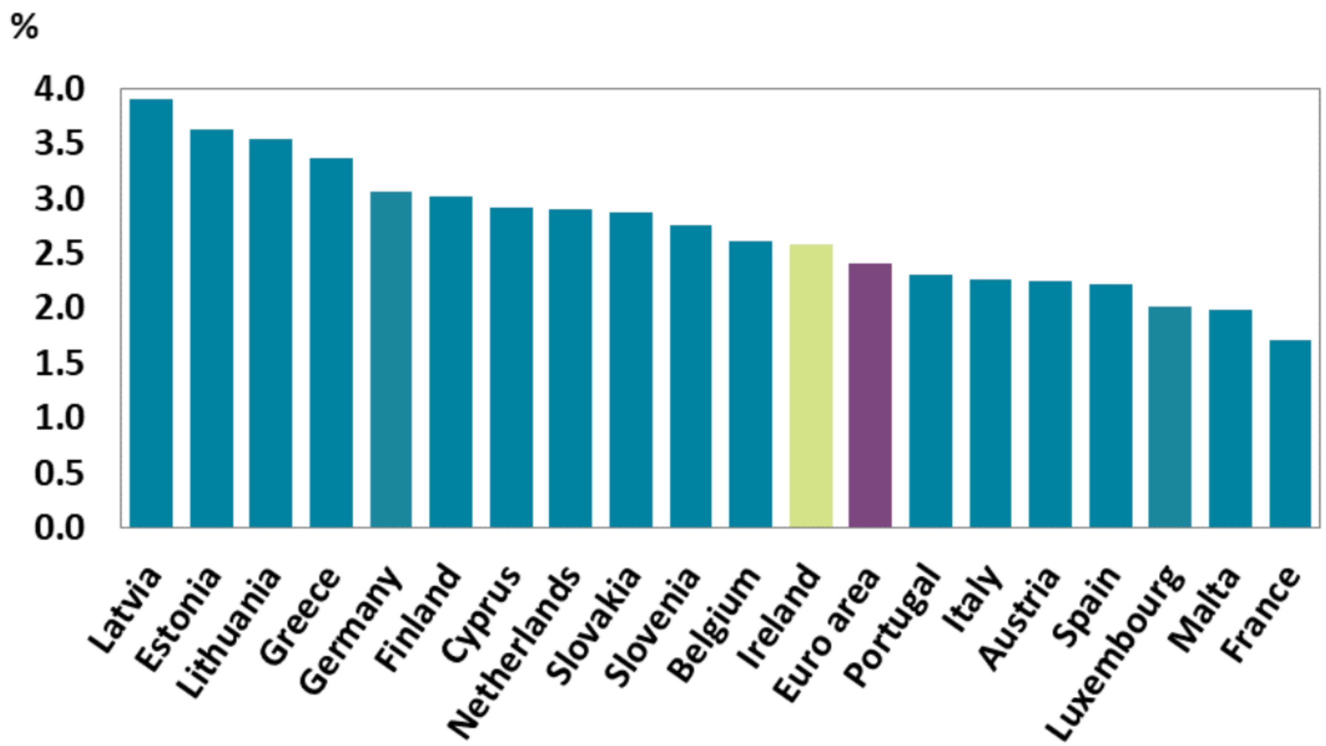


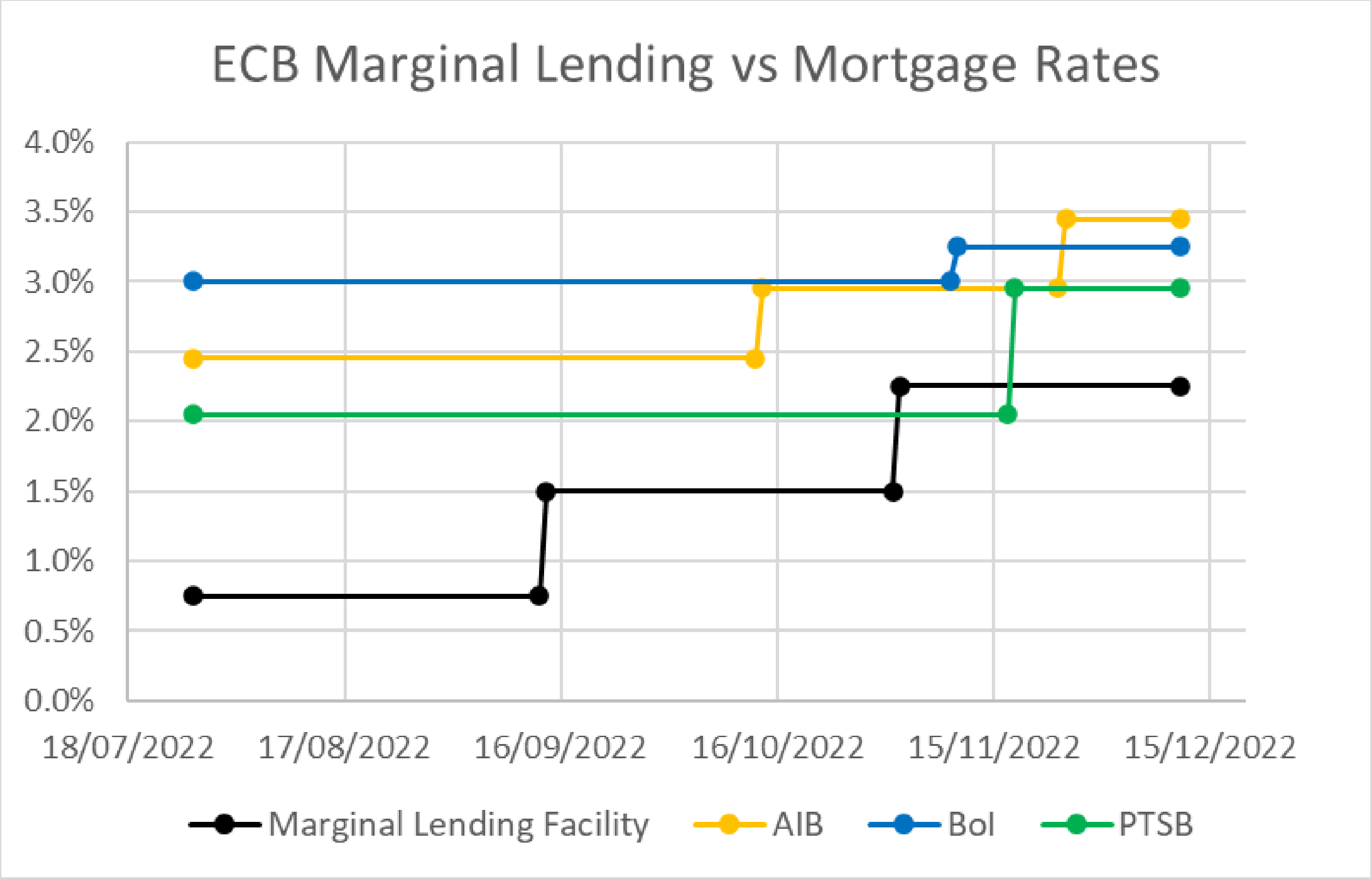
Chart 2: Weighted average interest rates on lending for house purchase across the euro area, September 2022



Source: Central Bank of Ireland; Statistical Release: Retail Interest Rates – Jun 2022; 10 August 2022
Central Bank of Ireland; Statistical Release: Retail Interest Rates – Sep 2022; 9 November 2022

Irish Bank Mortgage Rate Hikes

- **Graph shows the 5y fixed rate for 60% LTV**
- Irish banks were slow to pass-through rate hikes to clients
- As a result, Irish mortgage were brought back in line with the European market



References

- Bloomberg
- Euro money market statistics: Sixth maintenance period 2022 (europa.eu)
- ECB raises interest rates again, cuts bank subsidies | Reuters
- Retail Interest Rates | Central Bank of Ireland
- Ireland's mortgage rates drop again as banks hold off passing on ECB hikes (irishexaminer.com)
- Ireland's AIB expects 10% rise in net interest income in 2022 | Reuters
- Bank of Ireland raises net interest income guidance (rte.ie)
- Retail Interest Rates – June 2022 (centralbank.ie)
- Retail Interest Rate – September 2022 (centralbank.ie)

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Niall Dillon

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Irish Banks – NIM & Costs/Income Ratio Trajectory

AIB	2015	2016	2017	2018	2019	2020	2021
NIM	1.97%	2.25%	2.50%	2.47%	2.37%	1.94%	1.58%
Operating Cost	1292	1377	1428	1448	1504	1527	1534
Exceptionals, Bank Levies & Reg Fees	368	(95)	373	249	696	330	480
Income	2630	2623	2906	2726	2695	2371	2384
C/I Ratio	49%	52%	49%	53%	56%	64%	64%
All in C/I Ratio	63%	49%	62%	62%	82%	78%	84%

BOI	2015	2016	2017	2018	2019	2020	2021
NIM	2.19%	2.19%	2.29%	2.20%	2.14%	2.00%	1.86%
Operating Cost	1746	1788	1900	1852	1785	1720	1646
Bank Levies & Reg Fees	75	109	99	101	117	125	130
Non-Core Items	43	35	226	100	113	386	145
Income	3272	3105	3049	2805	2836	2620	2944
C/I Ratio	53%	58%	62%	66%	63%	66%	56%
All in C/I Ratio	57%	62%	73%	73%	71%	85%	65%

What will a new rising interest rate environment mean?

Source: Annual Results Presentations

All Figs €'m

NIM: Net Interest Margin, a measure of income. Net interest margin (NIM) is a measurement comparing the net interest income generated from credit products like loans and mortgages, with the outgoing interest paid on deposits and other funding sources.

NIM Reduction Drivers up to year-end 2021:

- Negative Rates on income side and inability/ reluctance to pass through on funding side e.g. Deposits.
- Flat yield curve negates maturity transformation, historically Banks borrow short/ lend long
- COVID-19 - reduced credit demand and higher deposits meant Bank's were placing more cash with the ECB at -50bps during 2021.

Cost/Income Drivers:

- Increased cost of Regulation
- Digital Investment
- Reduced NIM
- Over reliance on interest income Vs fee income, need to diversify income streams

NII Sensitivity as at Jun 2022 (€m)

AIB	-100bps	+25bps	+50bps	+100bps
Euro	(301)	75	150	301
Sterling	(48)	12	23	47
Other (mainly US$)	(21)	5	10	21
Total	**(370)**	**92**	**183**	**369**

BOI	-100bps	+50bps	+100bps
EUR	(160)	200	370
GBP	(80)	25	50
USD	(10)	10	15
Total	**(250)**	**235**	**435**

2021	AIB	BOI
Net Interest Income	1,794	2,219
Other Income	590	725
Income	**2,384**	**2,944**

Net interest income (NII) is the difference between the revenue generated from a bank's interest-bearing assets and the expenses associated with paying on its interest-bearing liabilities.

AIB – NII sensitivity estimates are based on certain simplifying assumptions such as; a static/constant balance sheet, parallel rate movements and pass through assumptions.

BOI

- Assets and liabilities whose pricing is mechanically linked to market / central bank rates assumed to reprice accordingly
- Certain other assumptions including pass-throughs to assets and liabilities
- The sensitivities should not be considered a forecast of future performance in these rate scenarios as they do not capture potential management actions

AIB

AIB's NII sensitivity drivers tend to fall into one of three interest rate cohorts:

- market rate portfolios (e.g. IBOR-priced lending);
- official rate portfolios (e.g. ECB balances, tracker mortgages)
- managed rate portfolios (e.g. variable rate mortgages, customer liabilities)

Source: 2022 Half-Year Results Presentations

Expected Credit Losses – IFRS 9

Bank of Ireland - June 2022 Source page 53 1/2 year report	Central scenario	Upside scenario	Republic of Ireland Downside Scenario 1	Scenario 2	Central scenario	Upside scenario	United Kingdom Downside Scenario 1	Scenario 2
Scenario probability weighting	**45%**	**10%**	**35%**	**10%**	**45%**	**10%**	**35%**	**10%**
Gross Domestic Product (GDP) - annual growth rate	4.20%	4.60%	3.60%	2.50%	1.90%	2.30%	1.30%	0.30%
Gross National Product (GNP) - annual growth rate	3.90%	4.30%	3.10%	2.00%	n/a	n/a	n/a	n/a
Unemployment - average yearly rate	5.20%	4.80%	6.40%	8.20%	4.20%	3.70%	5.70%	7.50%
Residential property price growth - year end figures	2.20%	3.20%	(1.40%)	(4.20%)	1.60%	2.80%	(2.00%)	(4.40%)
Commercial property price growth - year end figures	1.60%	2.70%	(0.90%)	(4.00%)	1.60%	2.90%	(0.80%)	(4.00%)

Downside scenario 1

A broadening of sanctions on Russia, including additional embargoes on oil and gas exports. This leads to higher global energy and other commodity prices and more supply chain disruption, which add to inflationary pressures in Ireland and the UK in 2022 and 2023. Tighter financial conditions and monetary policy further depress consumer and business confidence and spending, with both economies tipping into mild recession for a time. Unemployment increases in response and stays relatively high throughout the forecast horizon.

Downside scenario 2

Also assumes a broadening of sanctions on Russian energy exports. In addition, the emergence of new vaccine-resistant variants of the COVID-19 virus sees the re-imposition of some public health restrictions this winter and next, while the spill-over of post-Brexit tensions results in the termination of the UK-EU trade agreement. Amid high inflation, heightened uncertainty, collapsing confidence and tightening financial conditions, economic activity in Ireland and the UK slows sharply. Both countries experience a recession in 2022 and again in 2023, while unemployment rises and remains elevated over the entire forecast period.

Expected Credit Losses – IFRS 9

AIB - 1/2 year report		June 2022 5 year (2022-2026) average forecast		
Macroeconomic factor (%)	Base	Downside 1 ('Lower growth in 2022')	Downside 2 ('Persistent high inflation')	Upside ('Quick economic recovery')
Republic of Ireland				
GDP growth	4.4	3.9	3.4	5.1
Residential property price growth	3.2	0.9	-3.6	4.9
Unemployment rate	5.2	7.8	9.2	4.5
Commercial property price growth	3	0.5	-4.9	4.5
Employment growth	2.4	1.7	1	2.8
Average disposable income growth	4.7	4.2	3.6	5.6
Inflation	3.4	4.3	4.3	4.2
United Kingdom				
GDP growth	1.9	1.3	0.8	2.6
Residential property price growth	2.1	-0.4	-5	3
Unemployment rate	4.2	6.8	8.2	3.6
Commercial property price growth	2.6	-0.9	-6	4.1
Inflation	3.7	4.7	4.6	4.5

PMAs
Post model adjustments (PMAs) are applied where Management believe that they are necessary to ensure an adequate level of ECL provision and to address known model limitations and/or emerging trends;

AIB	Weighting Jun-22	Dec-21		ECL €'m Jun-22
Base	50%	50%		1,414
Downside 1 (Lower growth in 2022)	30%	25%		1,577
Downside 2 (Persistent high inflation)	5%	5%		1,726
Upside 1 (Quick economic recovery)	15%	20%		1,406
			Reported	1,475

- Higher weightings assigned to the combined downside scenarios relative to the upside scenario reflects the Group's view that risks have become more tilted to the downside, with headwinds facing continued global economic recovery.
- Key drivers for the greater weighting to the downside at 30 June 2022 are elevated geopolitical risk, uncertainty, supply chain pressures as well as surging energy/food commodity prices a large part of which stems from the ongoing conflict in Ukraine.
- There is greater uncertainty surrounding the outlook with fears that aggressive tightening of official interest rates to contain inflationary pressures, e.g. by the Bank of England and the US Federal Reserve, will result in a recession in 2023.

Source - Page 41 1/2 year

Supervisory approach to distributions: plans anchored to sound bank-specific capital planning

The ECB assesses banks' distributions on an individual basis and expects:

- Distributions anchored to **sound capital planning** under credible **baseline** and **severe institution-specific adverse scenarios.**
- In particular: banks to define **sound internal capital targets, including minimum thresholds (management buffers)above supervisory requirements and buffers,** and evidence that their distribution plans remain compatible with those targets in the context of their capital planning exercise.
- Banks to refrain from expressing distribution policies in terms of **absolute amounts,** and anyway clarify that distributions are subject to the fulfilment of strategic plans, both in terms of profit generation and capital trajectories
- Banks to liaise in **supervisory dialogue before publicly announcing their distributions.**

- 2021 aggregate pay out ratio slightly above pre-pandemic.
- Catch-up broadly acceptable in light of previous period of restriction (ECB recommendation).
- As banks are reviewing their capital trajectories, those most affected by Ukraine war are revising their distribution plans

- **Distributions of excess capital,** i.e. exceeding profits generated in any specific year, are admitted, as long as they are consistent with sound capital planning and capital targets, both in baseline and adverse scenarios. Banks should clearly distinguish in their disclosures the ordinary component of distributions from the extraordinary distribution of excess capital.

Source: ECB at Morgan Stanley European Financials Conference 15/3/2022

- "We will propose to ask banks to recalculate their capital trajectories under a more adverse scenario, including also potentially a gas embargo or a recessionary scenario, and use this also for the purpose of vetting their distribution plans going ahead," Andrea Enria, the ECB's bank supervisor, told European Parliament committee (June 2022).

Climate Risk Stress Tests

Evaluates aspects of both physical and transition risks.

- **Physical risk** focuses on two extreme weather events: a major flood and a severe drought over a one-year time horizon.
- **Transition risk**, the test includes several scenarios and time frames. First, it assesses banks' short-term vulnerabilities in a three-year baseline and a disorderly transition scenario, triggered by a sharp increase in the price of carbon emissions.
- Second, it looks at their longer-term strategies in the face of three different transition scenarios over a 30-year horizon. The exercise considers the impact of transition risk from credit, market, operational and reputational risk standpoints as well as from a qualitative perspective.

Purpose: Use of outputs to impact Strategy, Risk Appetite etc. Help customers transition away from carbon intensive business.

Outcome 2022 Climate Risk Stress Tests - Banks must sharpen their focus on climate risk, ECB supervisory stress test shows

- Banks managed to report comprehensive and innovative information on climate risk
- Most banks do not have robust climate risk stress-testing frameworks and lack relevant data
- Stress test shows banks' losses lower in an orderly transition scenario than after delayed action

Credit and market losses, short-term disorderly transition & 2 physical risk scenarios - €70 billion on aggregate for the 41 banks in question. However, significantly understates actual climate-related risk, as it reflects only a fraction of the actual hazard, owing to:

(i) the **scarcity of available data** at this early stage,

(ii) the modelling underlying the banks' projections **only capturing climate factors rudimentarily**,

(iii) the **exclusion of economic downturns and second-round effects** from the scenarios, and

(iv) the exposures within the scope of this exercise only accounting for around **one-third of the total exposures of the 41 banks**. Moreover, given the learning nature of the exercise there were no supervisory overlays, **meaning that the calculation originally proposed by banks were not changed**.

ECB - *8 July 2022*

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Society of Actuaries in Ireland

John Caslin

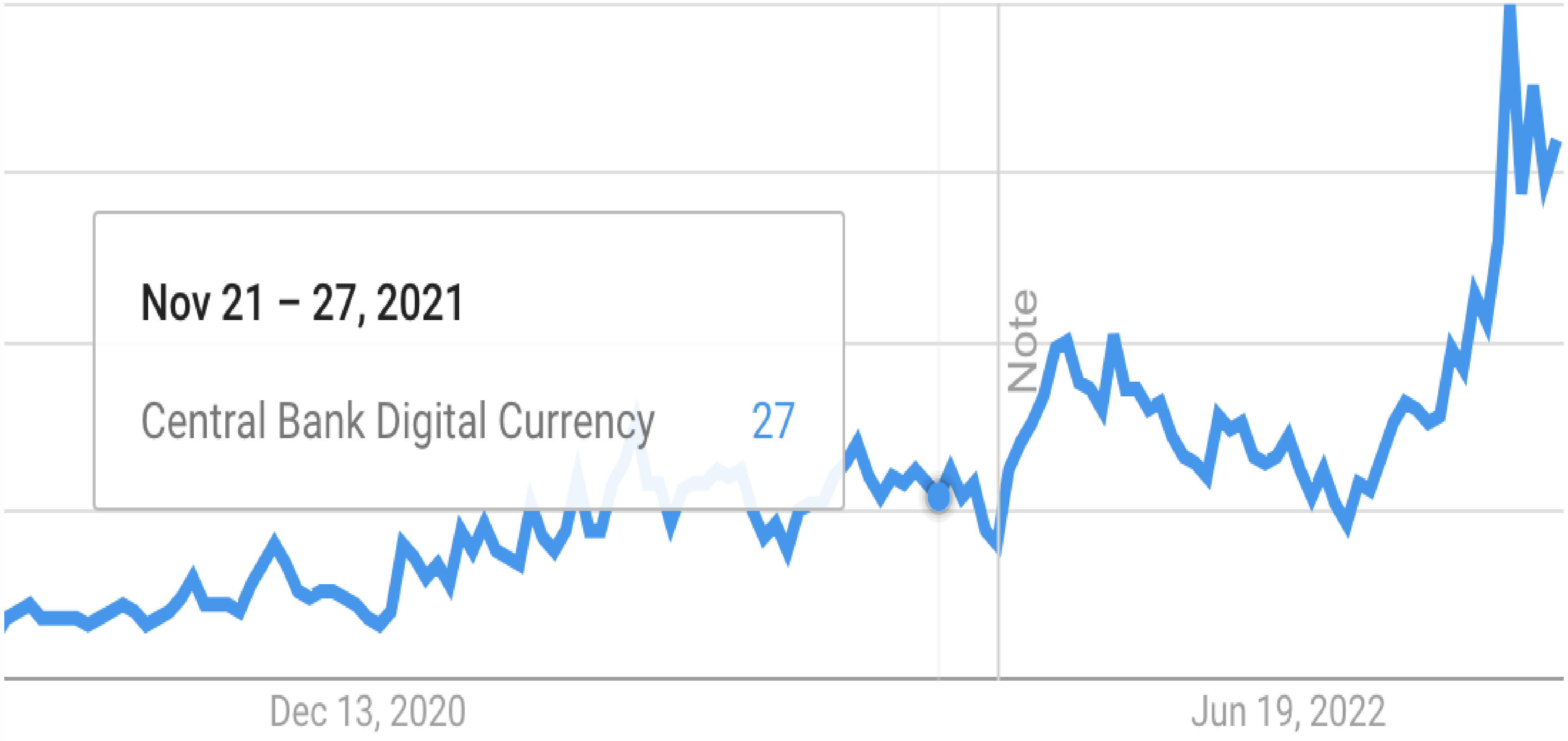
Monday 12 December 2022

Central Bank Digital Currency (CBDC)

- CBDC refresh
- 10 countries have CBDC
- Denmark – cancelled CBDC project for now
  – Reasons
- China's pilot of the e-CNY

Central Bank Digital Currency

Google Searches for Central Bank Digital Currency



Source: https://trends.google.com/trends/explore?date=today%205-y&q=%2Fg%2F11g9svs5sb

Crypto Assets | 2022 Annus Horribilis

TerraUSD-Luna ‘stablecoin’ collapse

Chapter 11 filings:

- Celsius
- Voyager
- FTX

IN THE UNITED STATES BANKRUPTCY COURT
FOR THE DISTRICT OF DELAWARE

In re:	Chapter 11
FTX TRADING LTD., *et al.*,[1]	Case No. 22-11068 (JTD)
Debtors.	(Joint Administration Pending)

DECLARATION OF JOHN J. RAY III IN SUPPORT OF CHAPTER 11 PETITIONS AND FIRST DAY PLEADINGS

Possible Implications of Annus Horribilis

Terra Luna 'stablecoin' collapse

Chapter 11 filings:

- Celsius
- Voyager
- FTX

Liquidity issues

Damage to investor trust

Political cover for intervention

European Union

2023

MiCA Regulation

Regulate issuing and offering of most tokens to the public

Crypto asset service providers

- EU-wide authorisation regime with conduct and prudential rules

Image of EU Flag: Source: https://duckduckgo.com/?t=ffab&q=eu+flag&atb=v287-1&iax=images&ia=images&iai=https%3A%2F%2Fwww.eu-startups.com%2Fwp-content%2Fuploads%2F2018%2F05%2FEuropean-Union-Flag.png

United Kingdom

2023

Most crypto assets

Regulation of stable coins used for payment

Introduction of a "sandbox"

Image of UK Flag: Source: https://duckduckgo.com/?t=ffab&q=uk+flag+&atb=v287-1&iax=images&ia=images&iai=http%3A%2F%2Fwww.publicdomainpictures.net%2Fpictures%2F140000%2Fvelka%2Fbritish-flag-in-the-sky-1443282351DLv.jpg

United States of America

White House

Framework for responsible development of digital assets

Financial Stability Oversight Council

Recommended that Congress legislate to address risks to the financial system

Image of US Flag: Source: https://duckduckgo.com/?t=ffab&q=US+flag+image&atb=v287-1&iax=images&ia=images&iai=https%3A%2F%2Fcdn.pixabay.com%2Fphoto%2F2016%2F05%2F29%2F19%2F35%2Fus-flag-1423651_960_720.jpg

Stablecoins

Aim

Create a crypto asset the price of which does not fluctuate

Popular stable coins

Empirical role

USDT
tether

USD Coin

Image of USDT Source: https://duckduckgo.com/?t=ffab&q=image+usdt+&atb=v287-1&iax=images&ia=images&iai=https%3A%2F%2Fcryptorecharge.org%2Fwp-content%2Fuploads%2F2021%2F03%2FUSDT-gift-card.png

Image of USDC Source: https://duckduckgo.com/?t=ffab&q=image+usdc&atb=v287-1&iax=images&ia=images&iai=https%3A%2F%2Fstatic.seekingalpha.com%2Fuploads%2F2018%2F12%2F2%2F49499619-15437943417567117_origin.png

Stablecoins

Trading and stability of stablecoins

Audit v. assurance

Source: https://www.tradingview.com/symbols/USDTUSD/

Crypto Assets and Banking

Banks hold risk-based capital at least equal in value to their Group 2 crypto asset exposures

Andrea Enria, Chair of the Supervisory Board of the ECB
Brussels, 1 December 2022

The level of interconnectedness between banks and providers of crypto-assets remains low

Banks have not been adversely affected by:

> the significant correction in valuations of crypto-assets
> or
> the defaults of major crypto players.

Andrea Enria, Chair of the Supervisory Board of the ECB
Brussels, 1 December 2022

Q&A – Recording is Turned Off

Please click on the ‘**Raise Hand**’ icon

to ask a question aloud

and

<u>wait to be unmuted</u>

or

Use the **Q&A function** to ask a question