

# Inflation Expertise

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# Introduction to the Inflation-Linked bond market

**“I used to think that if there was reincarnation, I wanted to come back as the President or the Pope or as a 0.400 baseball hitter. But now I would like to come back as the bond market. You can intimidate everybody”**

**James Carville, Political Advisor, 1994**

# Why AXA IM for Fixed Income?

\$508 billion in Fixed Income, over \$35 billion in inflation assets<sup>1</sup>, circa 120 investment professionals

## Team

investment experts located in each major market around the world, ensuring our clients benefit from local insights

## Philosophy

focused on income generation and downside mitigation while aiming at optimising the risk/return profile over the market cycle

## Process

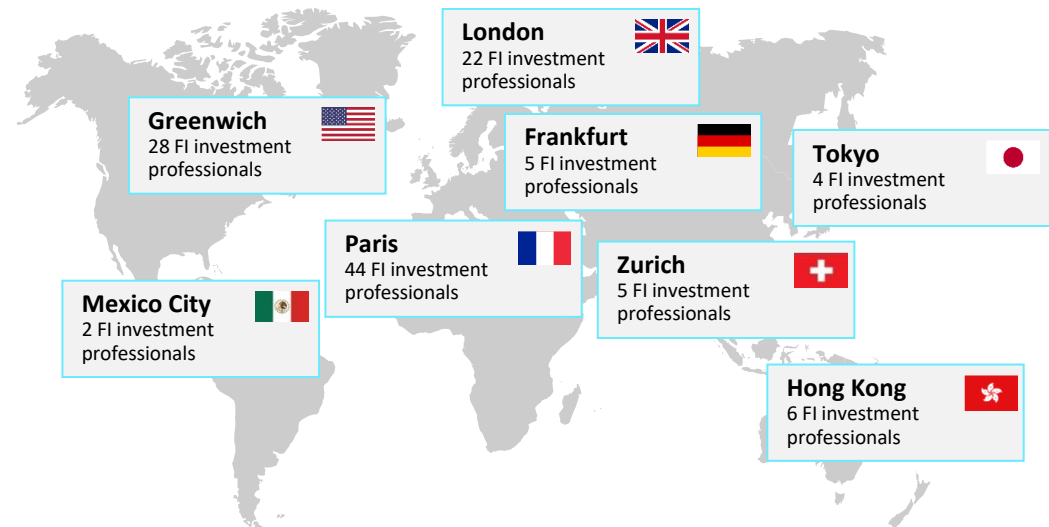
a global, top-down approach complemented by bottom-up research specific to the drivers of each sub-asset class

## Solutions

proven ability to provide bespoke solutions to meet our clients' evolving needs

## Scale

critical size, particularly in inflation linked assets, affords us excellent access to the markets










## Robust global framework bringing together local experts


Source: AUM and Staff data as at 30/06/2022. (1) Inflation assets figure as at 30/06/2022 does not include AXA IM joint ventures underlying assets. Information about the staff team Fixed Income AXA Investment Managers and / or AXA Investment Managers is only informative. We do not guarantee the fact that staff remain employed by AXA Investment Managers and exercise or continue to exercise in the Fixed Income team of AXA Investment Managers and / or AXA Investment Managers

# Our Inflation-Linked bonds offering

Investors can take advantage of our diversified offering and comprehensive expertise of this asset class

EXPOSURE TO REAL YIELDS, BREAKEVEN & REALISED INFLATION					
PERFORMANCE INDICATOR					TOTAL RETURN
OECD Countries			Single market exposure		
<b>AXA WF Global Inflation Bonds</b> AUM :€ 1858,7M Launched: 2005 	<b>AXA WF Global Inflation Short Duration Bonds</b> AUM :\$ 3664,2M Launched: 2016 	<b>AXA WF Global Inflation Bonds Redex</b> AUM :€ 345,9M Launched: 2018 	<b>AXA WF Euro Inflation Bonds</b> AUM :€ 333,2M Launched: 2005 	<b>AXA Sterling Index Linked Bond Fund</b> AUM :£ 120,3M Launched: 2004	<b>AXA WF Euro Inflation Plus</b> AUM :€ 176,8M Launched: 2021 
All Maturities	Short Duration	REDEX	All Euro Maturities	All UK Maturities	Flexible
<b>Mandate</b> AUM :€ 225,1M Global Sovereigns (ILB & Nominal)	<b>Mandate</b> AUM :\$ 719,3M Short Duration		<b>Mandate</b> AUM: €4,5 Bn All maturities LDI	<b>Mandate</b> AUM :\$ 1685,4M 1-10 years	
<b>Mandate</b> AUM :€ 97,7M GDP Weighted	<b>Mandate</b> AUM :€ 2739,5M  1-10 years		<b>Mandate</b> AUM :€ 468,9M Label ISR  Euro Short Duration		<b>Mandate</b> AUM: €120M
<b>Mandate</b> AUM :\$ 1174,6M 1-30 years			<b>Mandate</b> AUM :\$ 785,7M Short Duration		

 SFDR Article 8

 Deeper ESG optimization or label

Source: AXA IM. The most recent prospectus and Key Investor Information Document of those funds are available to all investors and must be read prior subscription, and the decision whether to invest or not must be based on the information contained in the prospectus and Key Investor Information Document . AUM Data are as at 31/08/2022 – The list of portfolios is not exhaustive. This slide can not be read separately from the general presentation with the characteristics of the above funds, including its investment objectives, its fees and risks associated. Inflation-Linked bonds offering information is provided for illustrative purposes only in order to present AXA IM expertise and capabilities in inflation mandates and should not be considered as an offer, solicitation or investment, legal or tax advice. Certain products described herein may not be available in your jurisdiction. Please check the countries of registration with the asset manager or investment adviser

# Inflation

## The basics (1/2)

Inflation denotes an ongoing fall in the overall purchasing power of the monetary unit due to a rise in the general level of prices

### HOW IS IT MEASURED?



Inflation cannot be observed directly but is estimated using **price indices**, based on subjective baskets of goods and services; these baskets evolve over time as products on the market and consumers' interests change:



✓ **CPI** (Consumer Price Index)



✓ **HICP** (Harmonised Index of Consumer Prices)



✓ **RPI** (Retail Price Index)



- Measure of the average monthly change in the nominal price of the reference basket.
- They are calculated on a monthly basis and published two to three weeks after the end of the measured month.



Based on the **components**, there are two categories for inflation:

- ✓ **Headline** (*overall*) which is subject to cyclical fluctuations.
- ✓ **Core** (*underlying*), more representative of the structural evolution of prices (excludes volatile elements such as food and energy).



Depending on the **changes in price levels** over time, we also discuss about

- ✓ **Disinflation:** Refers to a deceleration in the inflation rate. The inflation rate is declining over time, but it remains positive.
- ✓ **Deflation:** is a decrease in general price levels of throughout an economy. The inflation rate is negative.

# Inflation

## The basics (2/2)

### WHAT CAUSES INFLATION?



**Money supply** if the growth of the money stock increases faster than the level of productivity in the economy, price increases are likely as there is more money “chasing” the same amount of goods and services.



**Cost-push inflation** If there is an increase in the costs of firms (e.g.. raw materials), the firms will pass this on to consumers through the sale prices (with no adjusted margins).



**Demand-pull inflation** When there is an excess in aggregate demand (which occurs when the economy is growing too fast) prices are pushed higher.



**Inflation expectations** Inflation tends to be self-serving. “Future inflation will be as important as past inflation”, This is the core message from Central Banks when using inflation targeting policies. Current measures , however, may jeopardize the credibility.



**Currency war** Currency depreciation makes import prices more expensive, leading to an increase in inflation.

# Inflation

180,000 price quotations collected every month, covering 730 consumer goods and services

## Allocation of items to Consumer Prices Index including owner occupier's housing costs (CPIH) divisions in 2022

	CPIH weight, February 2022 (per cent)	Observed variation in price changes	Representative items (per cent of total)
<b>1 Food and non-alcoholic beverages</b>	9.3	Medium	24
<b>2 Alcohol and tobacco</b>	3.9	Low	4
<b>3 Clothing and footwear</b>	4.9	Medium	12
<b>4 Housing and household services</b>	31.4	Low	5
<b>5 Furniture and household goods</b>	6.3	Medium	10
<b>6 Health</b>	1.8	Low	3
<b>7 Transport</b>	11.1	High	6
<b>8 Communication</b>	1.9	Medium	2
<b>9 Recreation and culture</b>	10.5	Medium	17
<b>10 Education</b>	2.6	Low	1
<b>11 Restaurants and hotels</b>	9.0	Low	7
<b>12 Miscellaneous goods and services</b>	7.3	High	11

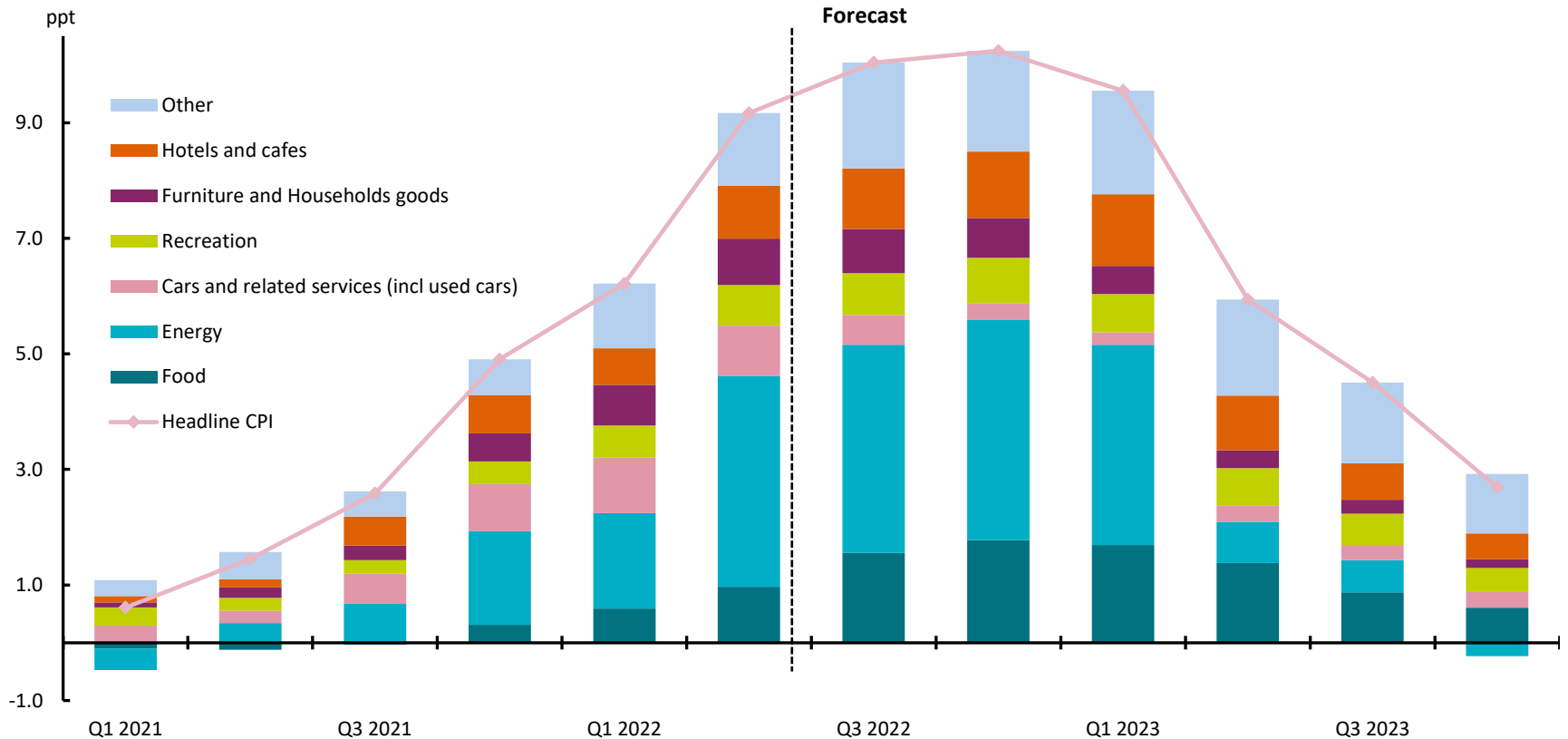
Source: Office for National Statistics, AXA IM research, September 2022



# Inflation

What driven UK CPI higher?

### Contributions to CPI

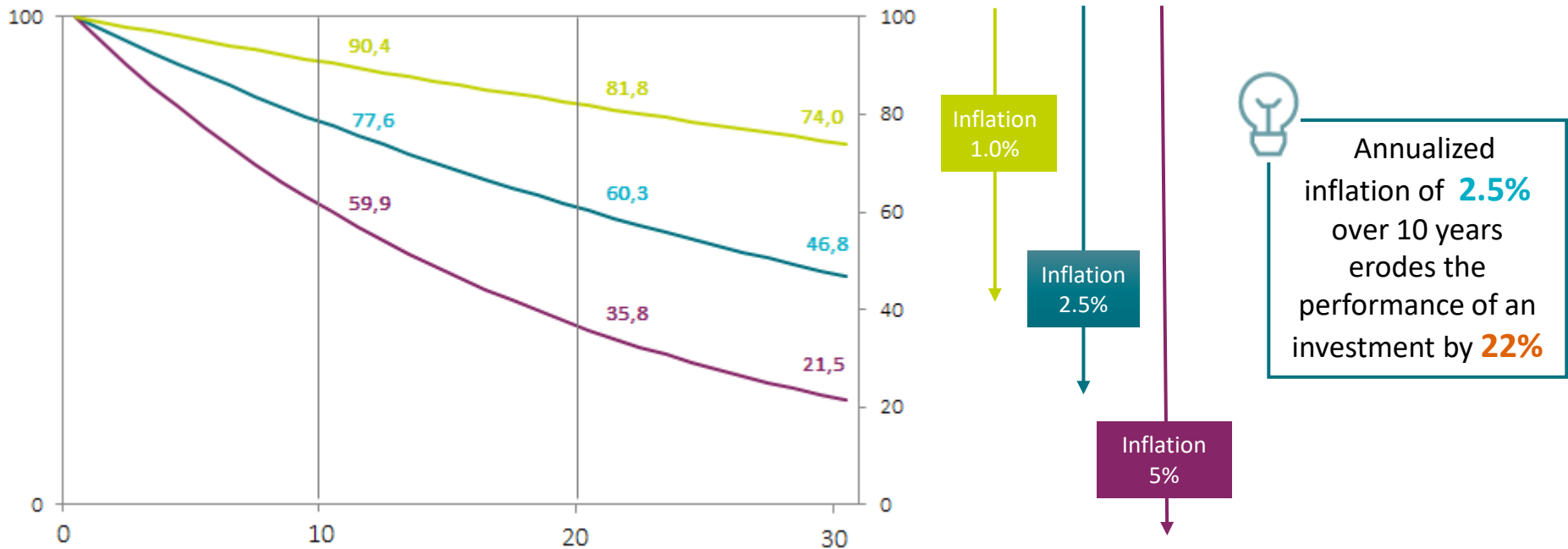


Source: Office for National Statistics, AXA IM research, September 2022

# Inflation

## Impact on investments

Inflation **erodes the real value** of investments. The **need to think in real rather than nominal terms** and to hedge against inflation risks arises...



## Inflation-Linked Bonds may provide protection

Source: AXA IM – For illustrative purposes only

# Inflation-linked bonds

## Key concepts of investing in inflation linked bonds

### REAL RATES

- **Premium received** every year by the buyer of the indexed linked bond **in addition to inflation**
- As future inflation is fully guaranteed by the bond issuer, market participants will agree on the annual premium earned on top of inflation every year when they trade.

### INFLATION BREAKEVEN

- The breakeven is the inflation level for which an investment made in an inflation linked bond equals an investment made in a nominal bond.
- Breakeven **reflects the expected rate of inflation** until the bond's maturity, **embedded in market prices**
- However it is also influenced by supply / demand imbalances, the inflation risk premium and relative liquidity.

### INFLATION INDEXATION

- Most of the inflation accrual that occurs over the life of an inflation linked bond is **paid out at maturity as part of the indexation to inflation of the principal** of the bond (the rest is paid as part of coupons).
- Inflation indexation is **computed and adjusted daily** so that investors pay for past and already known inflation while getting exposure to future inflation accrual.

# Inflation-linked bonds

What is the real rate?

REAL RATE (RETURN) OF AN INVESTMENT =  
NOMINAL RATE (RETURN) - INFLATION

- Yields computed in conventional government bonds' prices are [nominal yields](#) Whereas yields computed in linkers' prices are [real yields](#)
- When plotting the real rate for a same issuer but at different maturities we obtain the [real yield curve](#)

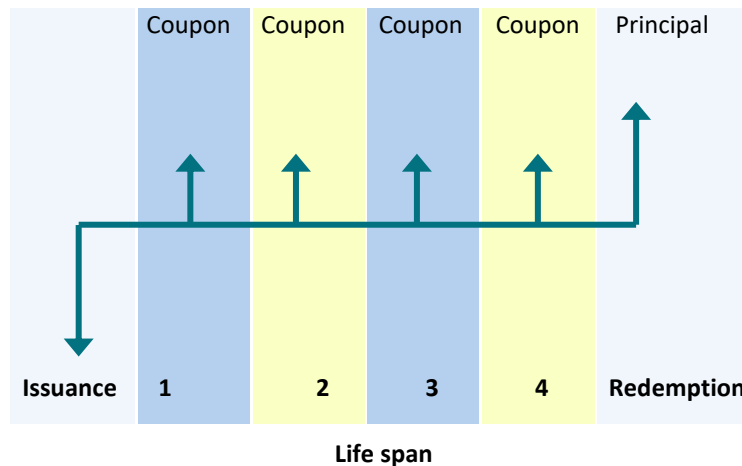
Index-linked buyers are real-rates buyers

For fixed income investors, inflation reduces the return that conventional bonds can provide. Bond investors need to think about the real rate.

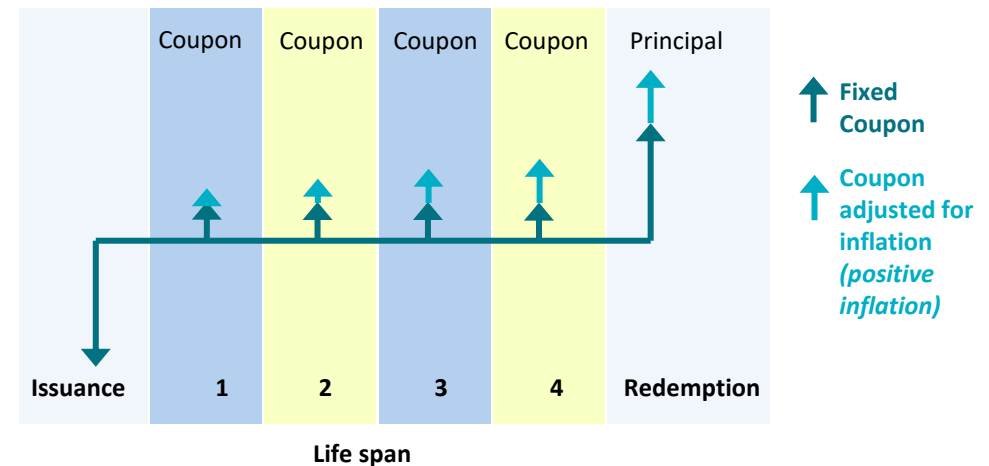
# Inflation-linked bonds

## How do they work

Cash flows of a nominal bond



Cash flows of an indexed bond



## LINKERS PROVIDE A COUPON THAT COVERS 100% INFLATION INCLUDING VOLATILE ITEMS

- Pay a fixed coupon on a principal adjusted for inflation
- Given the fact that the coupon is adjusted for inflation, it is initially smaller than the one of a nominal bond
- Pay back the maximum between par and principal adjusted for inflation at maturity

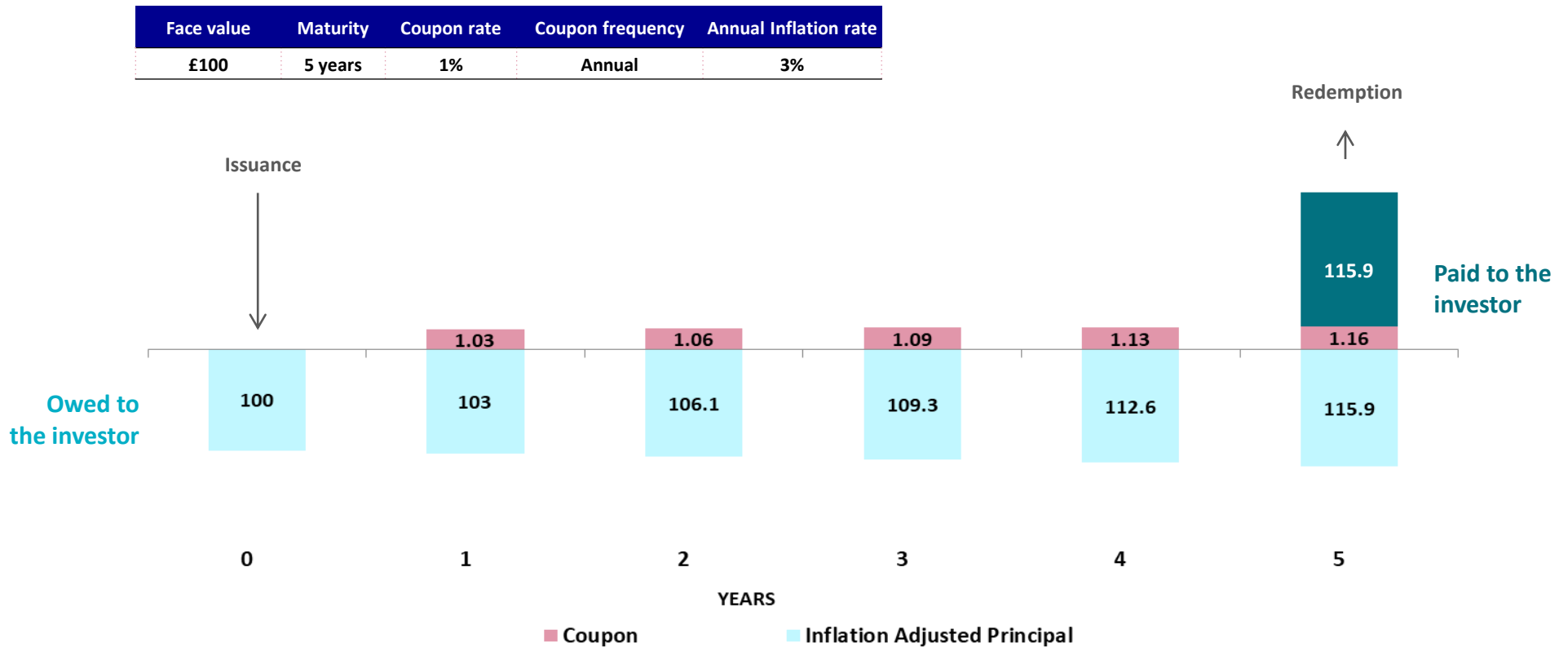
## INFLATION LAG

- The measure of inflation is given by the Price Index, which is a monthly figure. Nevertheless, calculation of coupons requires the use of a daily inflation measure.
- The daily inflation is compounded in the **Daily Inflation Reference (DIR)**. DIR is an interpolation of the compounded CPI between m-3 and m-2 figures.
- DIR Corresponds to the 3-month old CPI

# Inflation-linked bonds

## Cashflows

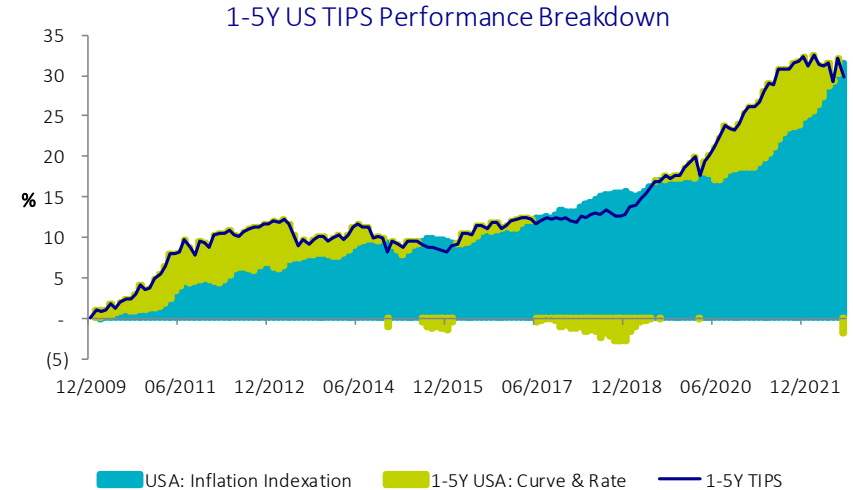
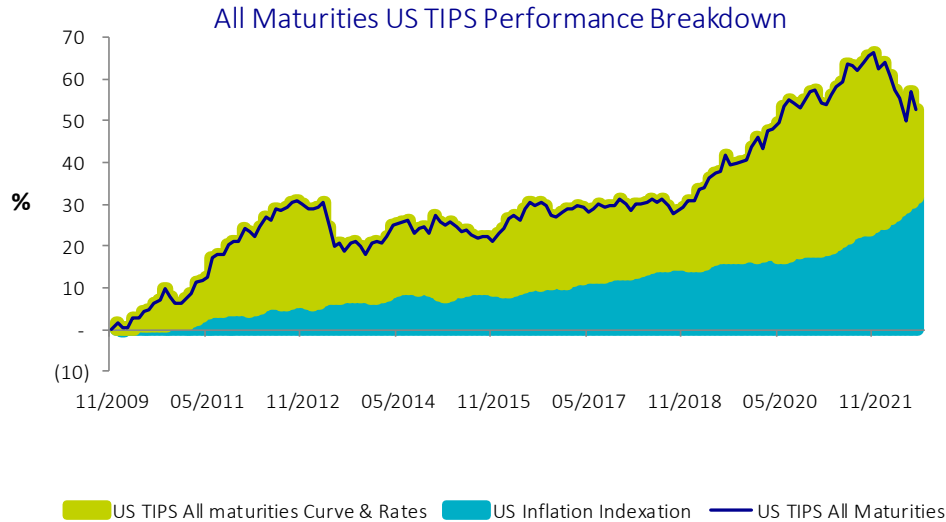
Both principal and coupons are adjusted for inflation. While the impact of inflation on coupons is low, the compounding effect significantly increases the principal repayment at maturity.



Source: AXA IM – For illustrative purposes only

# Inflation linked bonds investment principles

## Short and long maturities inflation linked bonds tradeoff



### All Maturities

- ✓ Inflation linked bonds are not floating rate notes and while they are fully indexed to inflation, **they are also sensitive to interest rates fluctuations.**
- ✓ All maturities inflation linked bonds tend to perform better in environments of stable to lower interest rates.
- ✓ Historically, all maturities inflation linked bonds have performed best in “late stages” of an economic cycle or during episodes of quantitative easing.

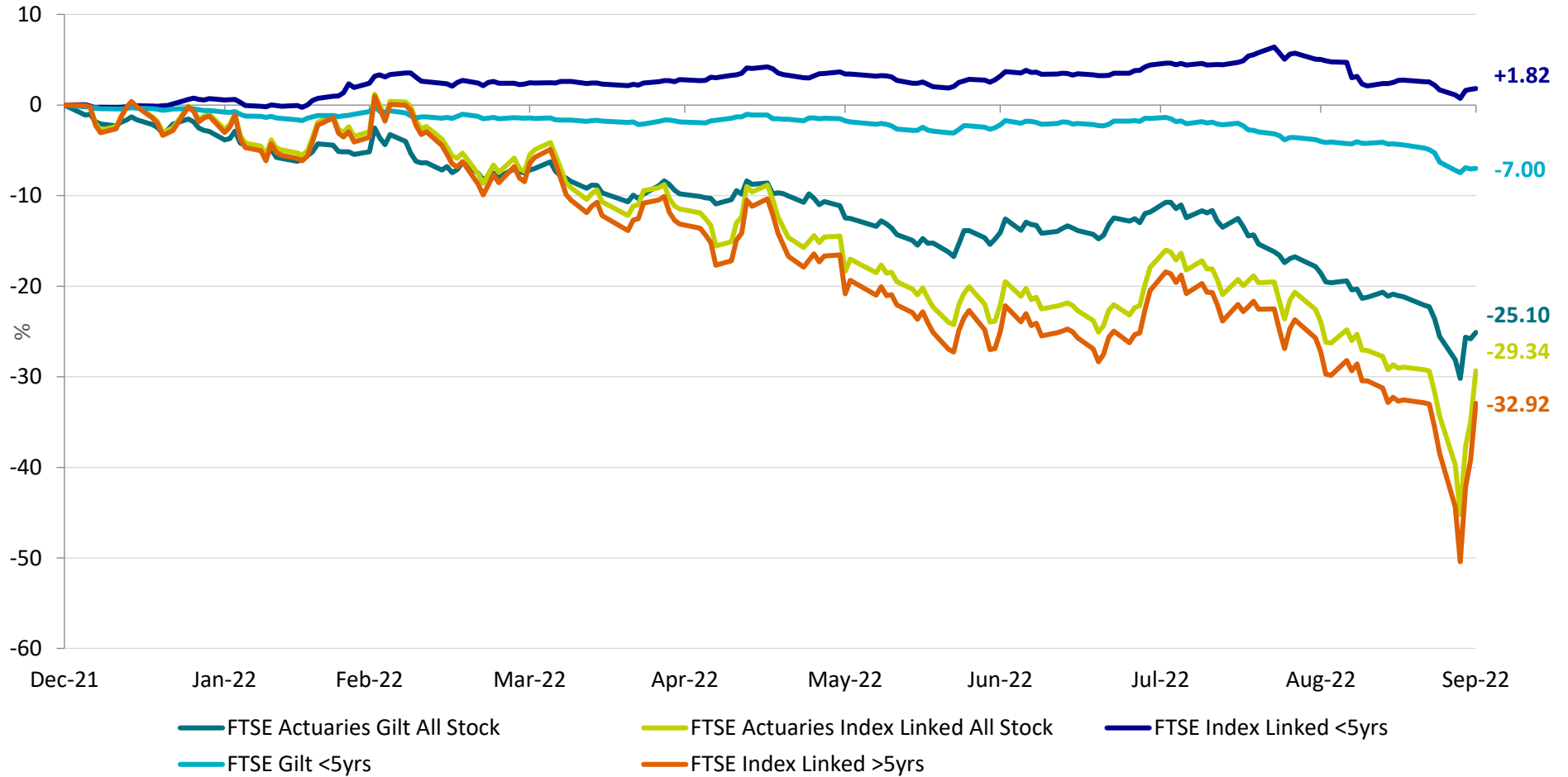
### Short Duration

- ✓ Short maturities inflation linked bonds have grown in popularity as all inflation linked bonds from a given issuer are indexed to the same inflation rate, independently of their maturity.
- ✓ Therefore, investors that are willing to **capture inflation indexation** without getting excessive duration exposure, prefer short duration inflation linked bonds.
- ✓ Short duration inflation linked bonds tend to perform better when inflation indexation is elevated.

Source: AXA IM, Bloomberg, as of 31/08/2022 – for illustrative purpose only and subject to change

# When investing in Inflation linked bonds, duration matters

YTD-22 evolution of FTSE Index Returns



Source: AXA IM, Bloomberg as at 30/09/2022.



# When investing in Inflation linked bonds, duration really matters

YTD-22 evolution of UKTi 0.125 2073 Price



Source: AXA IM, Bloomberg as at 04/10/2022.

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