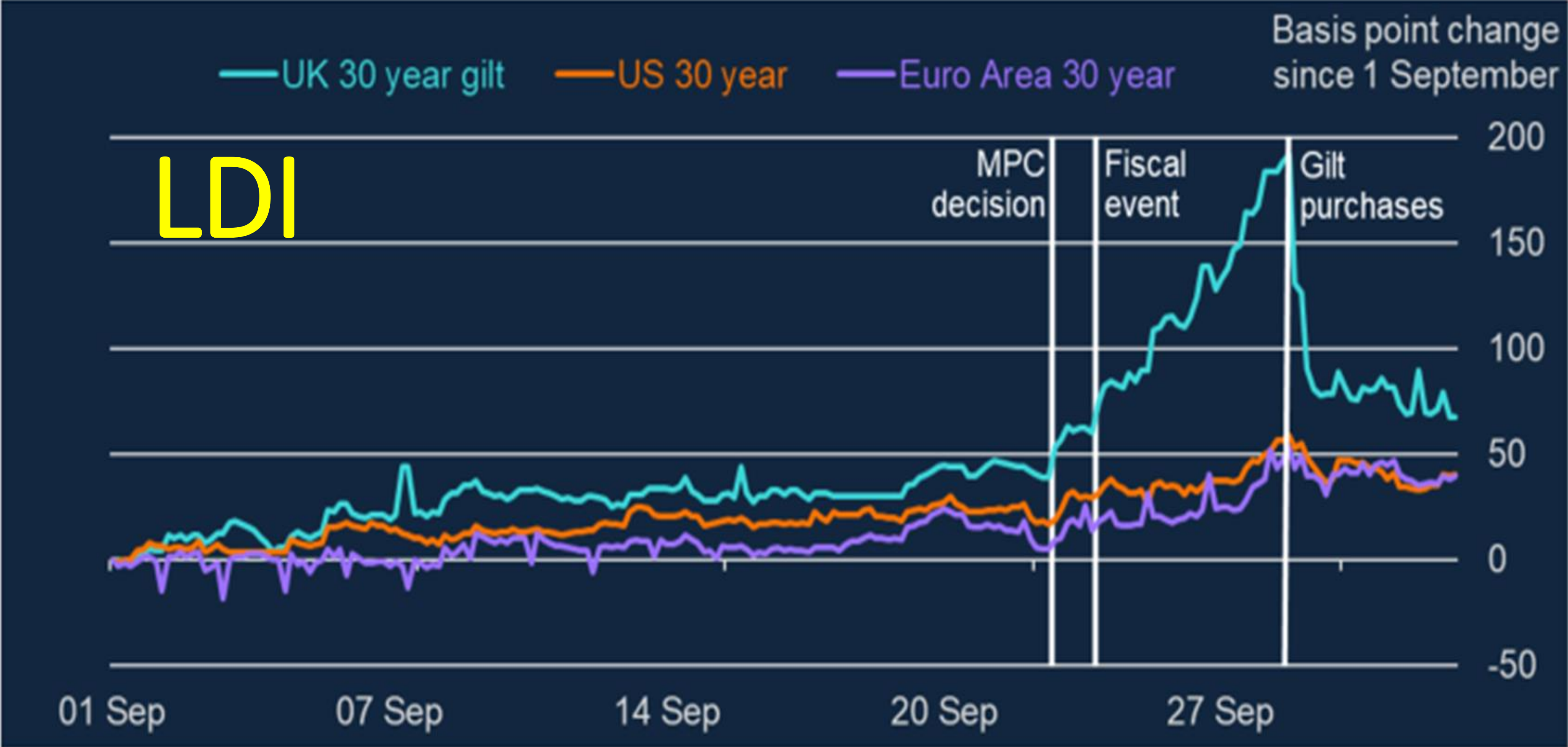
FENtoon

By Mike Shapiro

Figure 1: Cumulative change in long-term government bond yields since 1 September



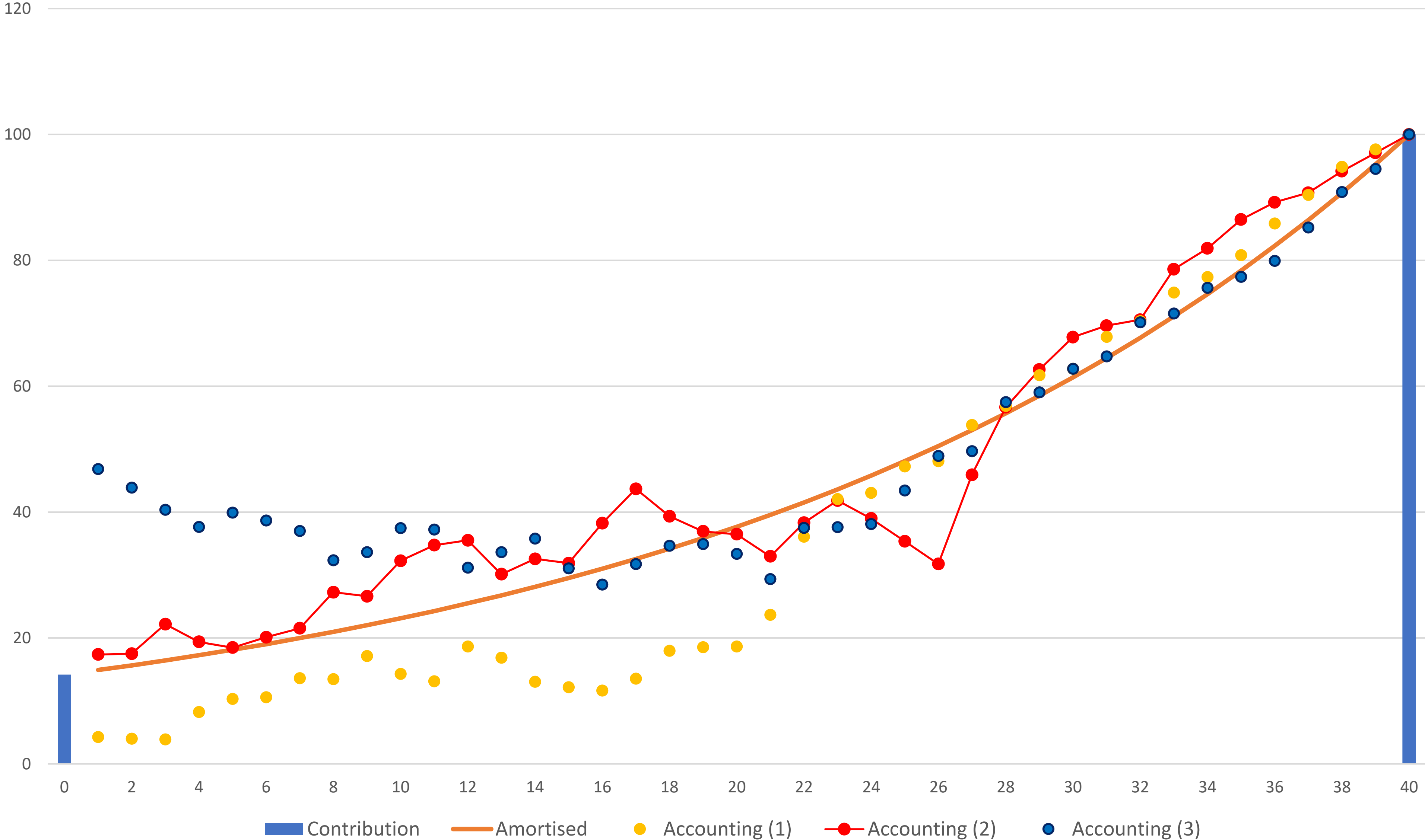
Source: Bloomberg, Bank calculations

No body could have predicted ??

- The initiation of the event sequence was not extreme.

	22/11/2036	22/03/2039	15 Year
	Dirty	Dirty	Zero
21/09/2022	-0.18%	-0.20%	-2.57%
22/09/2022	-3.08%	-3.35%	-2.50%
23/09/2022	-3.21%	-3.56%	-3.06%
26/09/2022	-7.18%	-8.49%	-4.84%
27/09/2022	-8.05%	-9.99%	-4.58%
28/09/2022	9.50%	13.39%	8.56%

- The Bank rate increase and QE announcement affected only conventionals.
- ILG selling is pension scheme LDI portfolios.



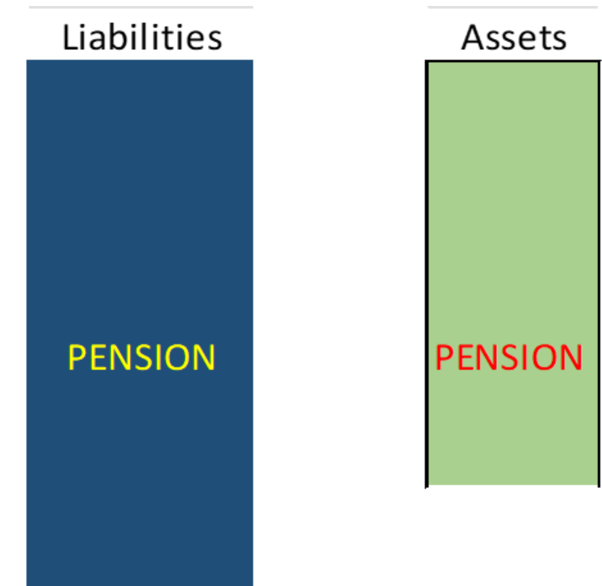
CAR and Accounting Amortisation
120
100
80
60
40
20
0
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
Contribution
Amortised
Accounting (1)
Accounting (2)
Accounting (3)

Contractual Accrual Rate (CAR)

- The natural rate of scheme funding growth or amortisation is the rate of growth required of the contribution to meet the projected benefit values (CAR).
- This rate is inherently invariant and may only be modified by the experience of the various factors which determine the amounts of those benefit projections, where that varies from the original assumptions.

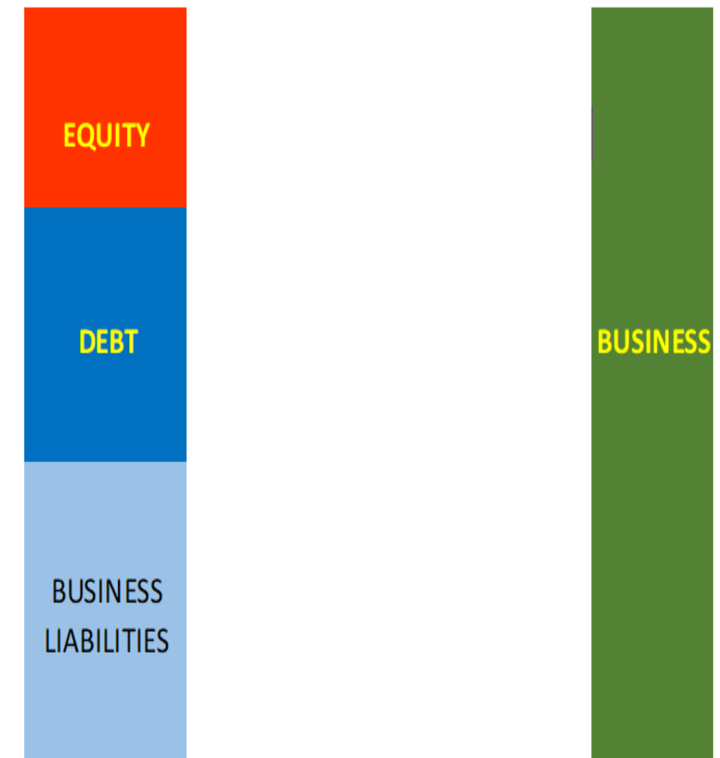
What is LDI

- LDI was concerned with matching the variability of liabilities with similarly variable assets.
- Most of the variability of the present value of pension liabilities stems from the discount rate used.
- Note that to achieve this matching, pension assets must be riskier than pension liabilities.
- A second objective was introduced, to repair scheme deficits
- Assets must become riskier still.
- The way chosen to square these two objectives was to:
  - Lever the asset portfolio
  - Divide into matching and growth sub-portfolios
- Leverage is achieved using Interest Rate Swaps and Repo



Asset & Liability Management

- Standard ALM is concerned with protecting equity.
- From the aggregate risks to equity from assets **and** liabilities.
- Note that assets > non-equity liabilities
- The firm may have leverage through bonds or loans
- With a surplus of assets to liabilities we may match the non-equity liabilities with assets
- And have a surplus to pursue growth
- But the Regulator looks to Scheme Funding, not Sponsor Covenant
- Funding trumps Covenant
- They do not consider sponsor covenant to be an asset of the scheme.

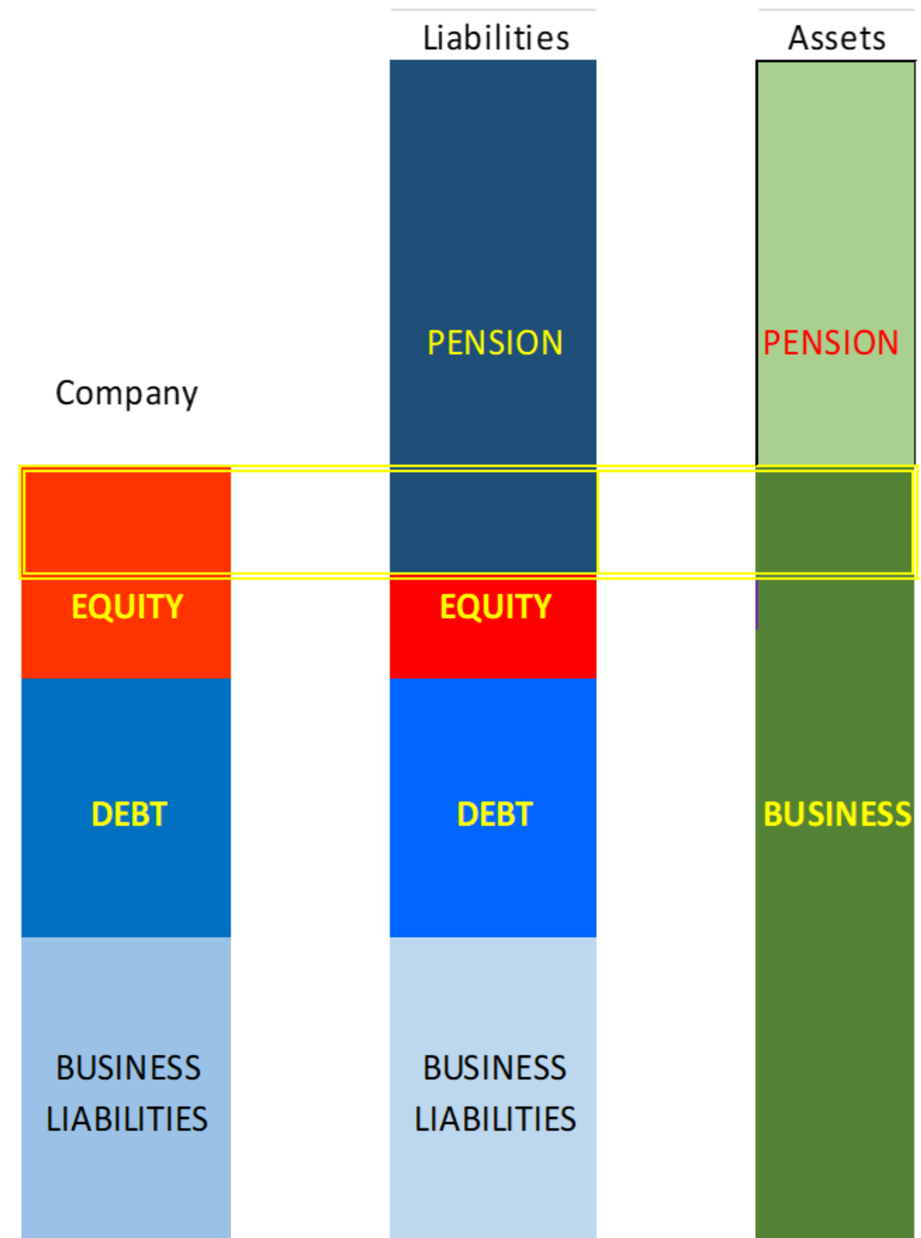


Holistic View of Risk

- The analysis should be of scheme and company sponsor
- It should be of Equity exposure to
- The aggregate of:
  - Corporate Debt
  - Business Liabilities
  - Pension Liabilities

and

  - Company Assets
  - Pension Assets



- Interest rates (Discount rates) do not figure in the determination of the pensions ultimately payable by a scheme.
- They do determine a trajectory or amortisation schedule for liabilities.
- This interest rate risk is perceived but not real
- These rates merely determine a present value for those projected benefits
- In and of themselves their variability does not matter unless we base decisions and actions upon them.
- Even hedging using conventional gilts actually introduces a dependency, a risk, on the performance of gilts (interest rates) into the scheme.
- Schemes will gain when rates decline and lose when they rise.

Hedging of Interest Rates

- Interest rates are not a risk factor for pensions
- What is being hedged is the variability of valuations
- Is that legal for Trustees?
- TPR deficit repair contribution demands are based on these valuations
- Hedging could be done by the company – none have.
- Hedging is done through Pooled Funds or Segregated Accounts
    - Pooled Funds have limited liability and may borrow
    - Some extreme leverage has been seen – 4x common 6x frequent
    - Repo of some gilts to buy more
    - Interest rate swaps – Fixed Receiver – Pay Short Rate
- Note that the pooled fund is dominated by short term rate concerns

Pooled fund

- Suppose we buy £20 units in fund
- Fund is allowed to gear four times
- Fund buys £100 gilts using repo (for terms < 1 Year)
- Gilt market falls 10%
- Equity now £10 (NAV) (note loss is £10, not £2)
- If call to subscribe £8 new units is not met
- Fund must sell £40 (by value) of gilts to maintain 4x gearing
- Repo is sensitive to the short rate at roll-over
- If gilt prices fall less may be raised at roll-over (creating cash shortfall)
- Subject to changing initial margin 'haircuts'
- Can a trustee really justify buying such a risky security?

Borrowing

- **Repo**
- Economically this is secured borrowing. It effectively subordinates the interests of scheme members
- It has been widely utilised in the financing of long positions in conventional and index linked gilts-edged securities.
- The repurchase leg clearly satisfies the statute implied test of borrowing - of repayment from the scheme's assets.
- Schemes have been borrowing for long terms and in amounts far in excess of their liquidity needs.
- ICMA - the principal use of repo is in fact the secured borrowing and lending of cash.
- But TPR baldly states: "We understand that repo financing is structured as a sale and future repurchase of an asset and, as such, would not amount to borrowing for the purposes of the Investment Regulations".
- The Bank of England does not agree: "LDI strategies enable DB pension funds to use leverage (i.e. to borrow) to increase their exposure to long-term gilts, while also holding riskier and higher-yielding assets such as equities in order to boost their returns."

The Law - Borrowing

- **Borrowing – IORP II, Art 19**
- The home Member State **shall prohibit IORPs from borrowing** or acting as a guarantor on behalf of third parties. However, Member States **may** authorise IORPs to **carry out some** borrowing **only for liquidity purposes and on a temporary basis.**
- **The Occupational Pension Schemes (Investment) Regulations 2005 (OPS, 2005)**
- Borrowing and guarantees by trustees
- **5.**—(1) Except as provided in paragraph (2), **the trustees** of a trust scheme, and a fund manager to whom any discretion has been delegated under section 34 of the 1995 Act**, must not borrow money** or act as a guarantor in respect of the obligations of another person where the **borrowing is liable to be repaid**, or liability under a guarantee is liable to be satisfied, **out of the assets of the scheme.**
- (2) Paragraph (1) does not preclude borrowing made only for the purpose of providing liquidity for the scheme and on a temporary basis.

Are Repos Derivatives ?

- No mainstream finance texts make this claim
- We found just one paper supporting this concept
- (Is the repo a derivative? A.P.Faure, Rhodes University, June 2011)
- EMIR: “A derivative is a financial contract linked to the fluctuation in the price of an underlying asset or a basket of assets.”
- However, we would note that **repos are not derivatives *of* the underlying securities**
- **But rather operations *on* those securities**, (their sale and purchase)
- **For the purpose of borrowing money**.
- But, in the Investment Risk Appendix to the (PPF) Board’s Determination under Section 175(5) of the Act:
- 30. Gilt derivatives include gilt repos, …

The Law - Derivatives

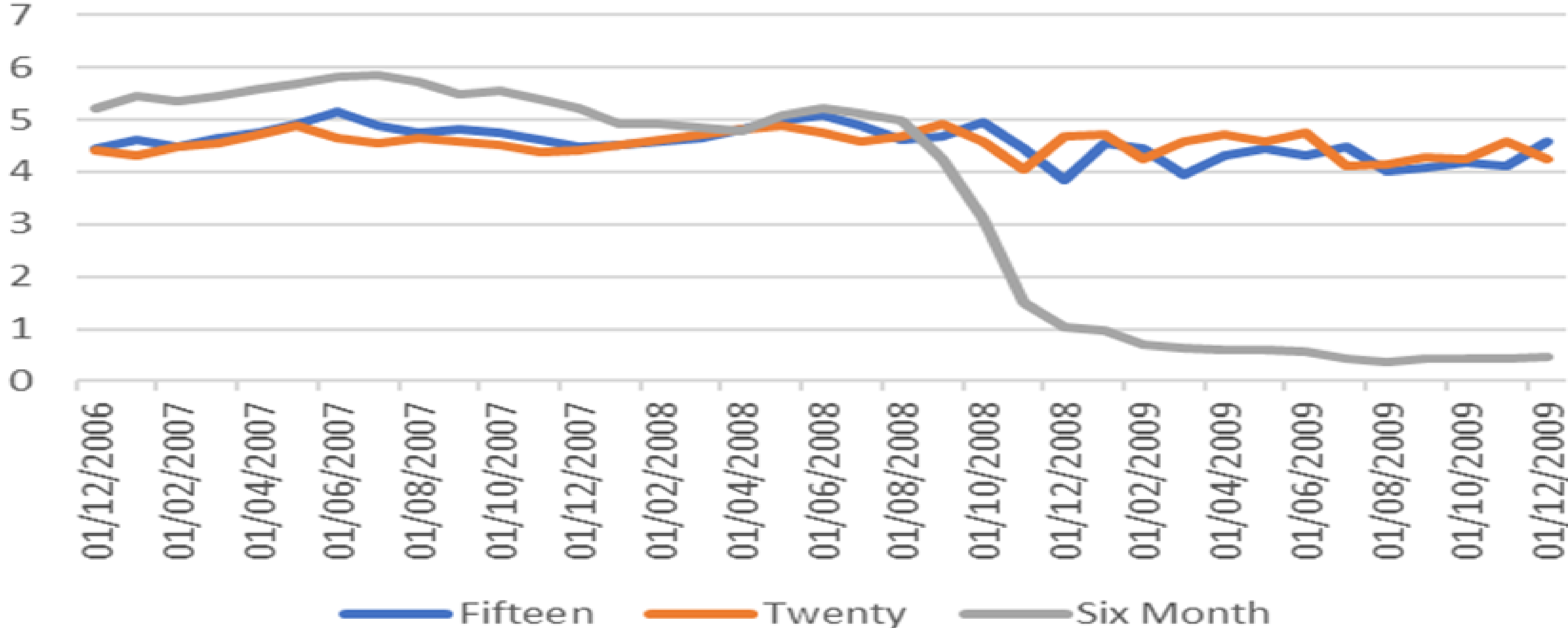
- **IORP II Art 19**
- (e) investment in derivative instruments shall be possible insofar as such instruments contribute to a reduction in **investment** risks or facilitate efficient portfolio management.

- **Occupational Pension Schemes (Investment) Regulations (2005)**
- (8) Investment in derivative instruments may be made only in so far as they—
- (a) contribute to a reduction of risks; or
- (b) facilitate efficient portfolio management **(including the reduction of cost or the generation of additional capital or income with an acceptable level of risk),**
- **and any such investment must be made and managed so as to avoid excessive risk exposure to a single counterparty and to other derivative operations.**

The legal risks of LDI

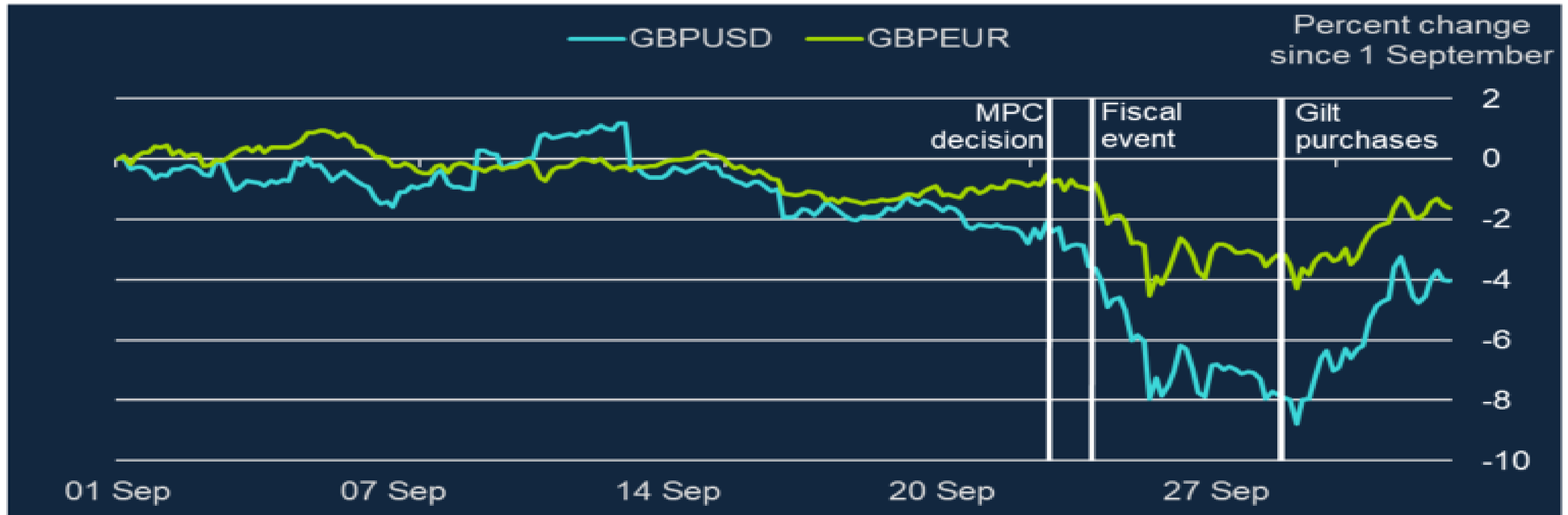
- Schemes are borrowing, heavily
- Schemes are hedging liabilities with derivatives
- Schemes are hedging illusory risks (discount rates) with derivatives
- Schemes have become short-term market-sensitive institutions supplying liquidity when markets are stressed.
- Schemes are buying assets which increase the cost of pension provision.
- It is the borrowing and derivatives contracts which have generated the collateral calls
- And with that distressed selling of securities
- At a scale that disrupted the gilt market
- **Trustees should be aware of the risks**
- **And so too should be LDI managers**
- **And TPR must explain why it is encouraging this and not enforcing the law.**

Why did Leveraged LDI catch on



Sterling FX rates

Figure 2: Cumulative change in exchange rates since 1 September



Source: Bloomberg, Bank calculations

- 30% of gilts are held by overseas holders
- A weak exchange rate discourages further purchases

- **A case can be made that:**

The Pensions Regulator

- Did not understand leveraged LDI.
- Did not understand how to regulate DB scheme funding.
- Did not understand the difference between paying benefits as and when they fall due and a valuation deficit.
- Proactively and naively encouraged the embedding of systemic risk.
- Did not understand QE and so encouraged buying of gilts with a real negative yield in a market skewed upwards by QE.
- Encouraged and supported the introduction of leverage and the introduction of significant interest rate risk into pension funds by encouraging them to borrow short at floating interest rates and buying long at fixed rates.
- Encouraged and supported the introduction of roll over risk in respect of repos.
- As a consequence, the Regulator has overseen the destruction of capital on a grand scale at the expense of employers, employees, scheme members, many innocent savers and the taxpayer.

Remedy

- The regulations state: “the rates of interest used to discount future payments of benefits must be chosen prudently, taking into account either or both—
- (i) **the yield on assets held by the scheme to fund future benefits and the anticipated future investment returns**, and
- (ii) the market redemption yields on government or other high-quality bonds;”
- If we recognise the sponsor covenant as an asset of the scheme, then we may directly introduce the contractual accrual rate for use as the discount rate.
- This is the required rate of return on contributions (implicitly) promised by the sponsor.
- The contractual accrual rate is invariant over time unless the projected pension benefits are modified.
- This removes the motivation for liability driven investment.
- It is also open and transparent – informing members of both the contribution made and the investment return promised.

"We structured the deal so it won't make any sense to you."