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Futures Perfect? Pension Investment in Futures Markets

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28 September 2017



***FUTURES
PERFECT?***

**applications to
pensions**

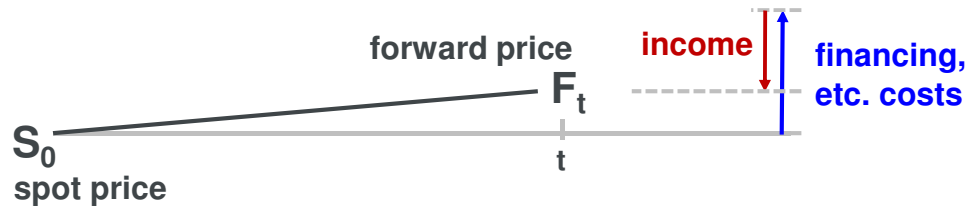
**futures vs OTC
derivatives**

**tour of futures
markets**



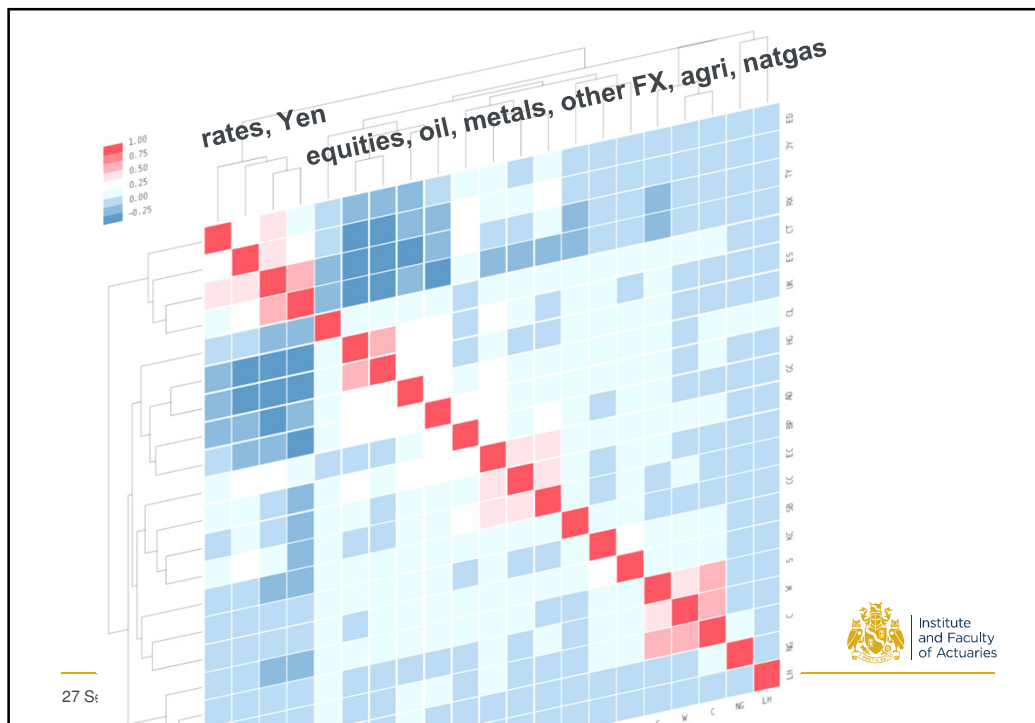
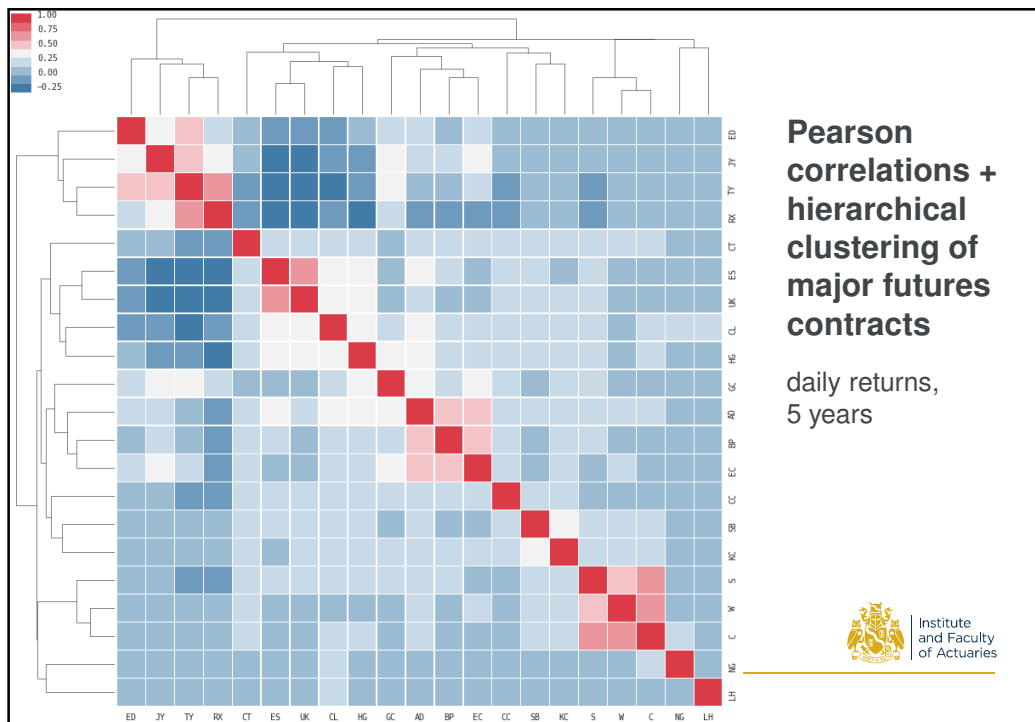
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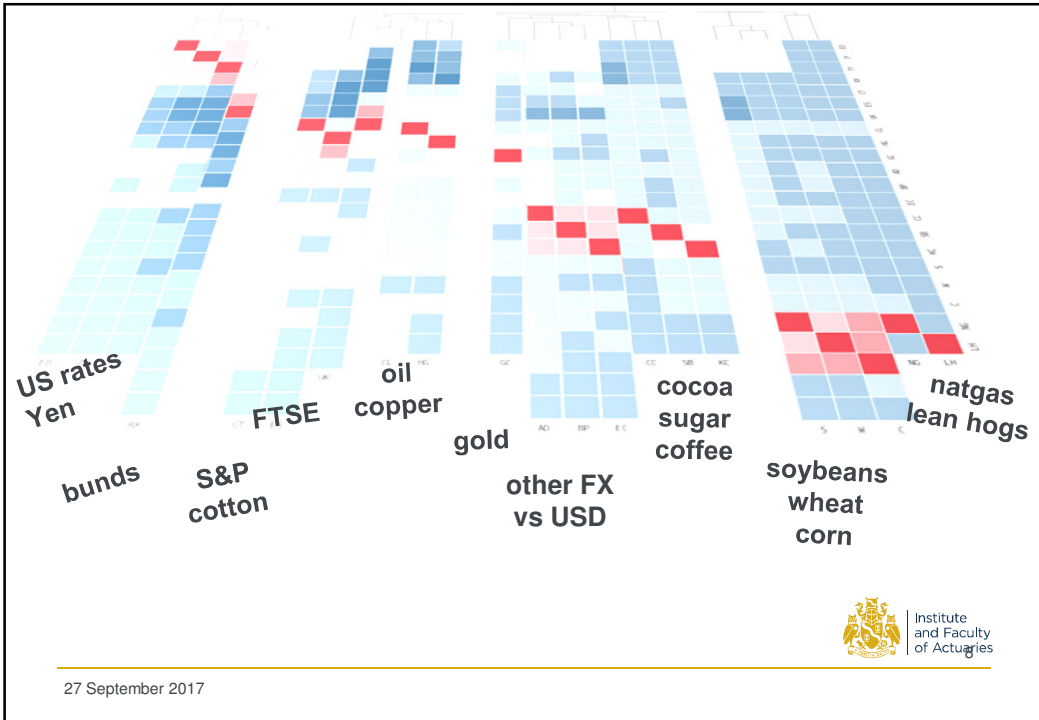
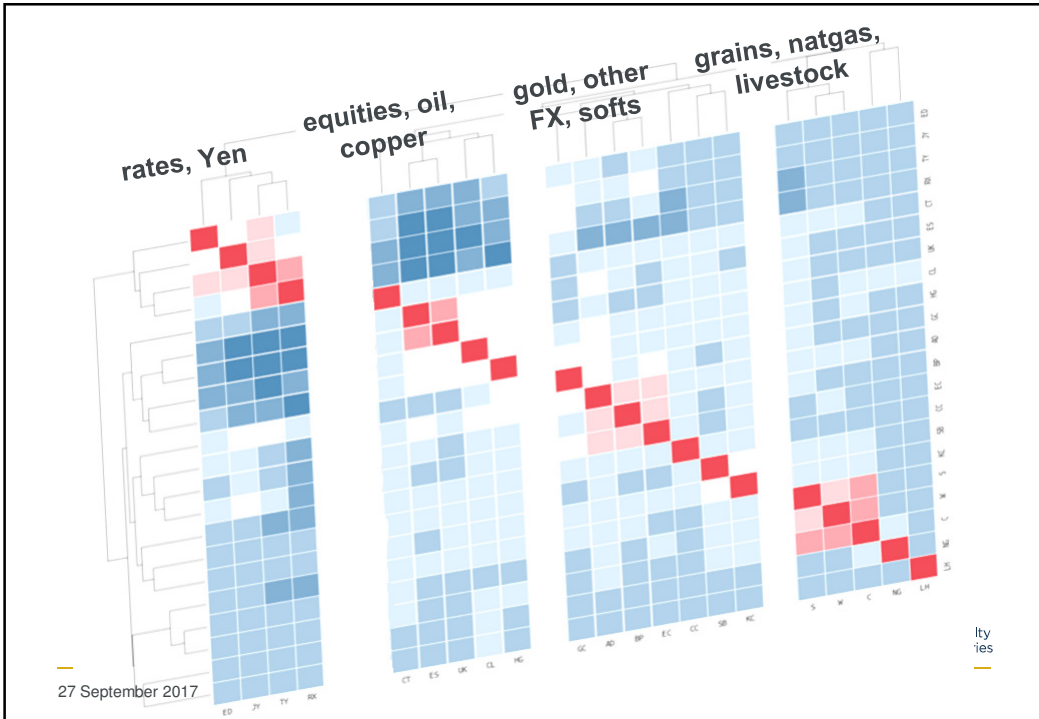
The futures price



Futures Asset Classes

commodities - metals - agri - energies	bonds + rates	FX	equity	volatility
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Coefficient of skewness

Futures contract	Skewness	90% confidence interval
EURUSD	0.1	(-0.2, +0.4)
GBPUSD	-2.4	(-4.6, +0.1)
JPYUSD	0.3	(-0.1, +0.7)
10-year US Treasury note	-0.2	(-0.4, +0.1)
S&P 500 E-mini	-0.5	(-1.0, -0.1)
WTI crude oil	0.1	(-0.2, +0.4)
CME gold	-0.8	(-1.8, +0.2)
CME wheat	0.2	(0.0, +0.4)

5-years daily returns to 1 September 2017, source: Bloomberg/OMGI



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Commodity futures

- **precious metals** (gold, silver, platinum, palladium)
- **base metals** (copper, aluminium, zinc, lead, tin, iron ore,...)
- **energies** (crude oil, gasoline, natural gas, coal, power...)
- **softs** (sugar, coffee, cotton, cocoa, ...)
- **grains** (soybeans, wheat, corn, ...)
- **livestock, meat** (live cattle, lean hogs...)

✓ **spreads (crack, crush spreads), convenience yields, seasonality**

⚡ **physical settlement**



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Bond and rates futures

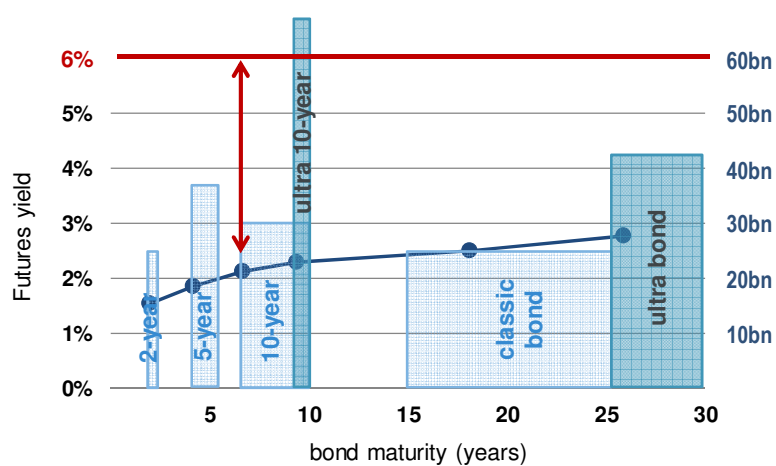
- US Treasuries, bunds, gilt, ...
- Swap futures
- Fed Funds futures
- LIBOR replacement, SOFR?

- ✓ increasing well defined curve e.g. UST
- ✗ Cheapest To Deliver (CTD) and the basis



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Increasing well defined US bond futures curve



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FX futures

- OTC forwards trading still dominates
- CME futures have USD numeraire
- covered interest rate parity

✓ physical settlement (except some NDF currencies)



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Equity index futures

- S&P500 e-mini, EURO STOXX 50, FTSE100, etc.
- Increasing expiry frequency, e.g. weeklies
- sectoral, single stock futures
- licence can move between exchanges
- quadruple witching hour

✓ cash settlement



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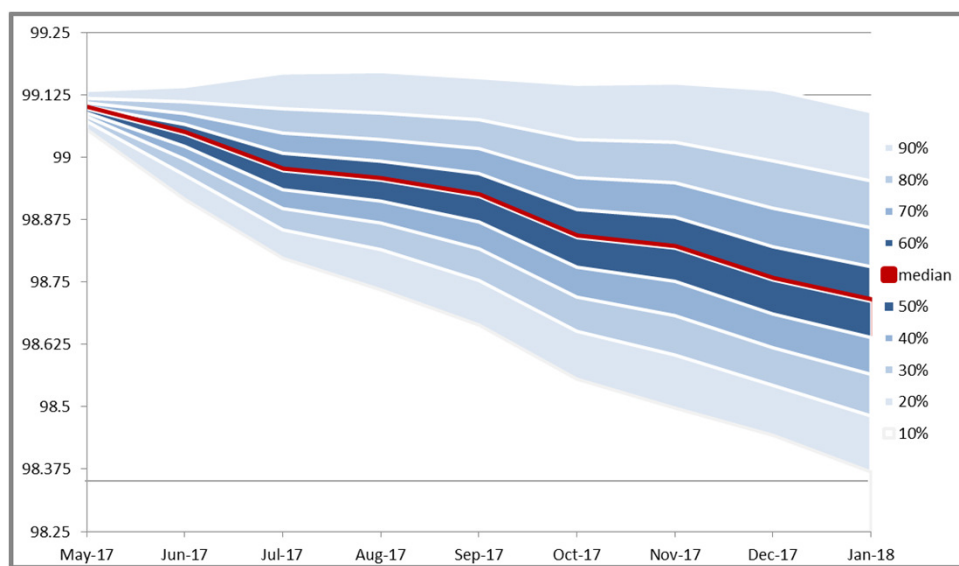
Volatility

- **VIX, VSTOXX**, etc. volatility index futures cash settled to index
- **variance futures**
- **options on volatility index futures**
- **options on futures**



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Fed Funds futures options reveal likely path




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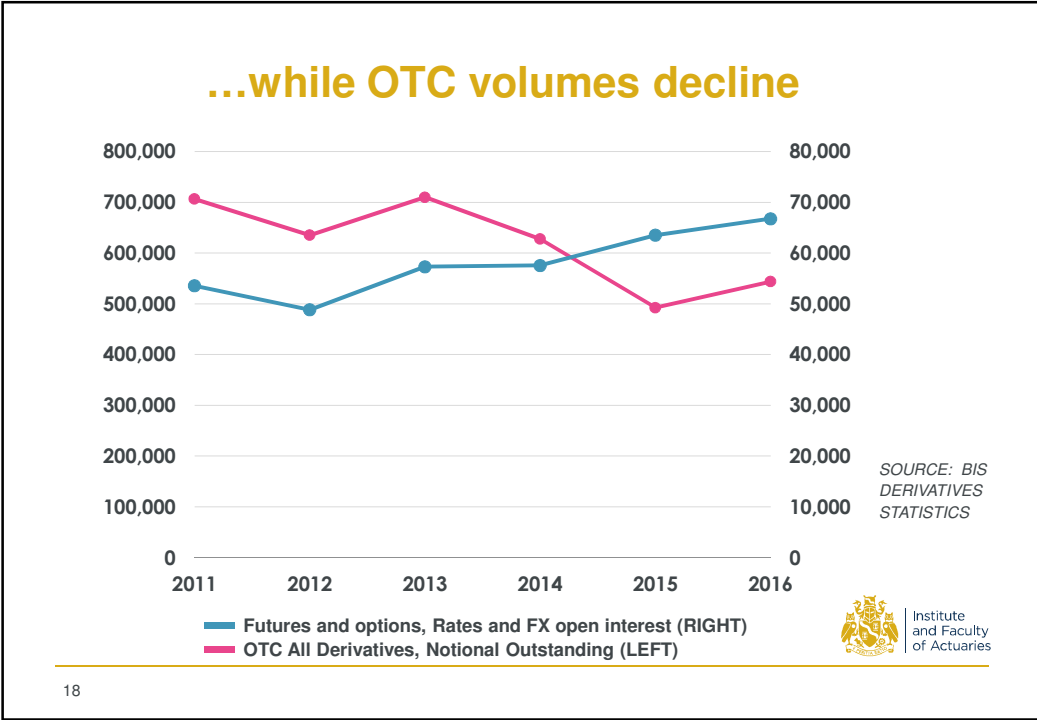
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futures vs OTC derivatives

tour of futures markets



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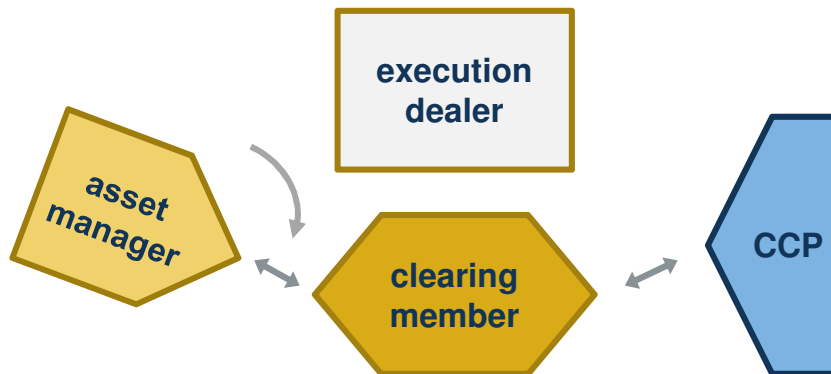
Bilateral OTC derivatives trading



Cleared OTC derivatives trading



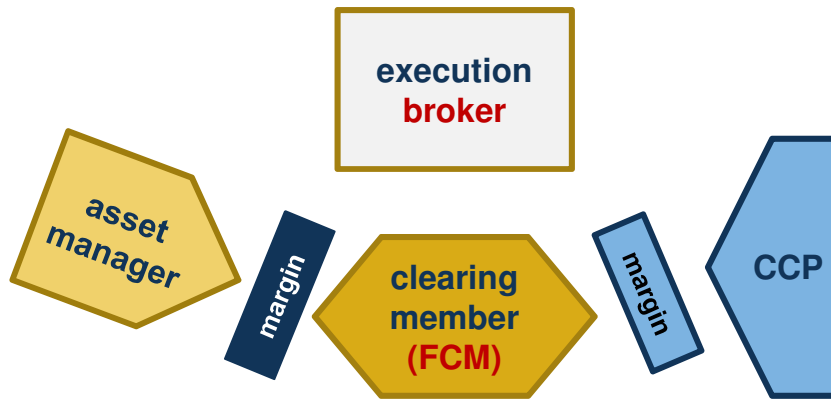
Cleared OTC derivatives trading



Cleared OTC derivatives trading



Futures trading



futures

vs

OTC derivatives

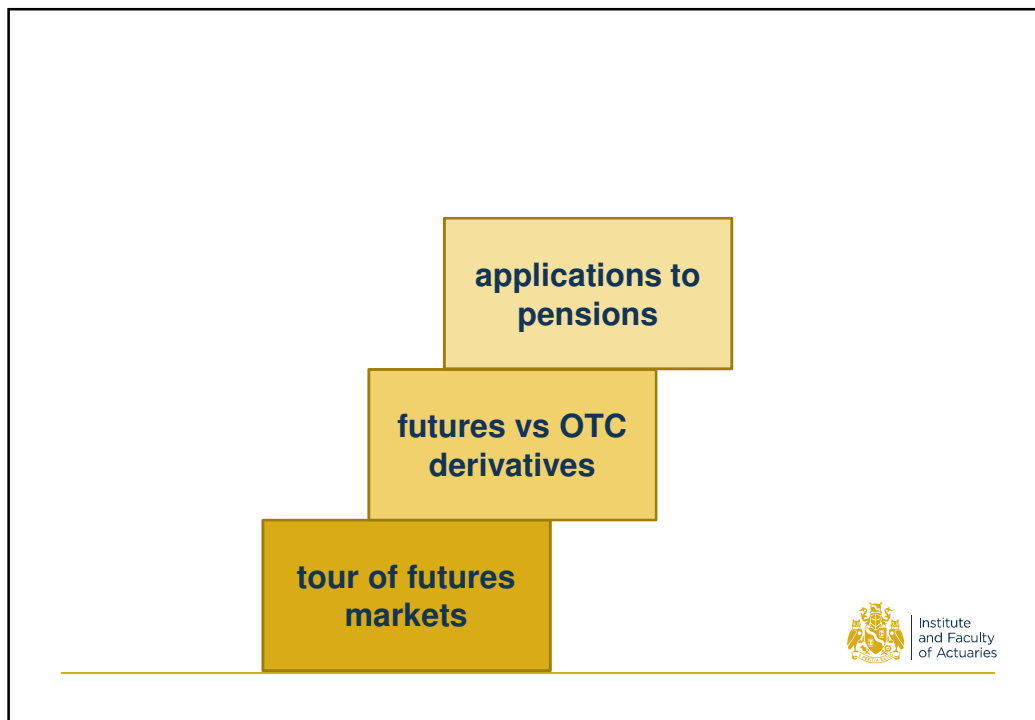
standardised design
 standard margining
 exchange liquidity
 (plus block liquidity)
 anonymity
 clear regulatory reporting
 physical settlement risk
 regular rolling contracts
 centrally cleared

customised
 margin negotiable
 dealer liquidity
 identity known
 opaque reporting
 usually cash settled
 flexible expiry
 may be bilateral

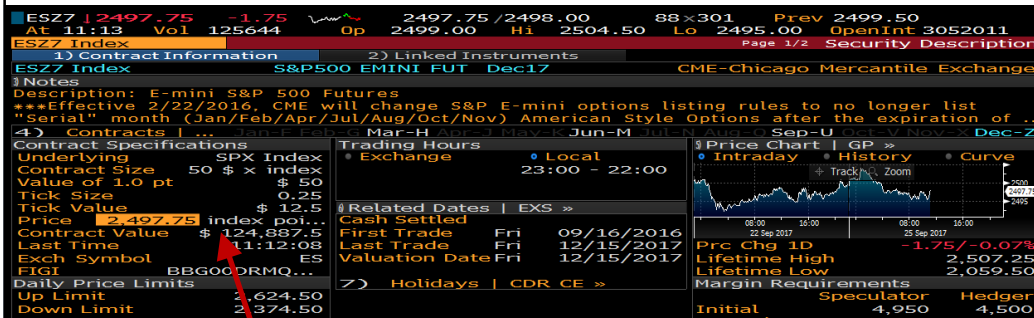
Failed futures contracts

weather, catastrophe, inflation,
ultralong gilt, ...

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Leverage, e.g. S&P500 e-mini futures



\$124 887.5
 \div **\$4 950** \Rightarrow
25x leverage



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Currency risk

- initial margin, variation margin have to be funded in the currency of the futures contract



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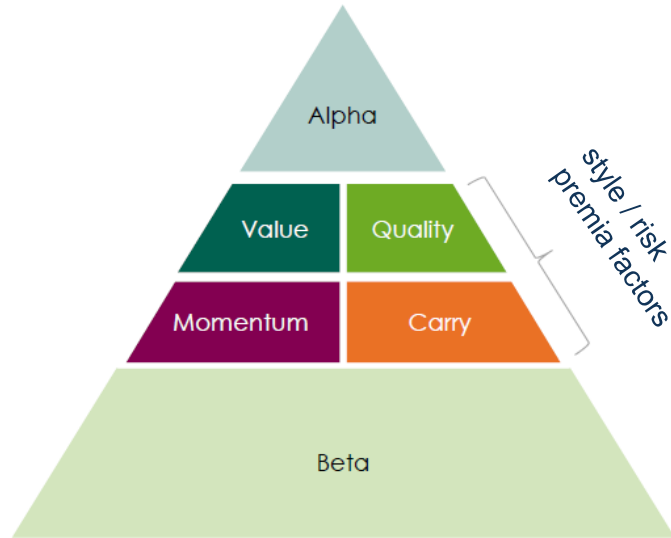
Defined Benefit Pensions

- liquidity as schemes mature
- LDI: beta to rates
- swap bond basis - swap futures?
- FX hedging
- alpha: to help fly over mountain range before glide path

Defined Contribution Pensions

- real returns
- diversification
- risk premia

The dynamic beta / style premia paradigm



Source: Old Mutual Global Investors

Style premia investing using futures

STYLE	strategy	single stocks	equity index	credit	commodities	FX	rates
CARRY	volatility		EQ vol		CO vol	FX vol	IR vol
	relative			CR carry	CO carry	FX carry	IR carry
	curve				CO curve		
MOMENTUM	trend	EQ momentum	EQ trend	CR trend	CO trend	FX trend	IR trend
	relative				CO momentum		
VALUE	valuation, size	EQ value, size				FX value	IR value
DEFENSIVE	low vol, quality	EQ quality, lowvol		CR curve			
FLOW	congestion		EQ intraday vs close		CO congestion		
	seasonality				CO seasonality		



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Style premia investing using futures

STYLE	strategy	single stocks	equity index	credit	commodities	FX	rates
CARRY	volatility		EQ vol		CO vol	FX vol	IR vol
	relative				CO carry	FX carry	IR carry
	curve				CO curve		
MOMENTUM	trend		EQ trend		CO trend	FX trend	IR trend
	relative				CO momentum		
VALUE	valuation, size					FX value	IR value
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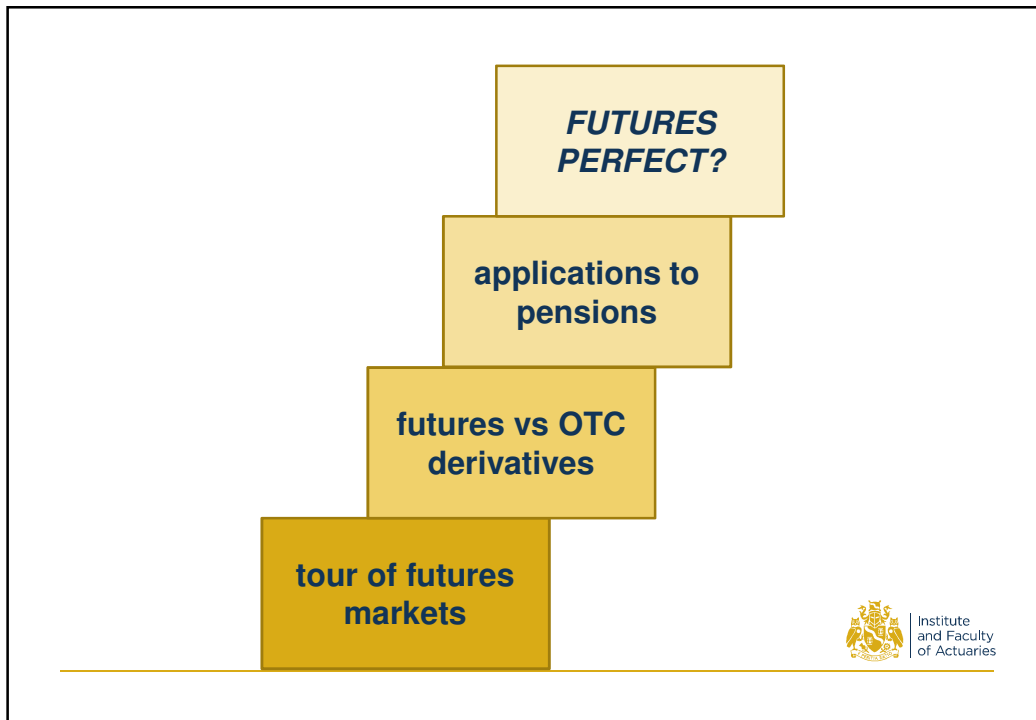
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e.g. commodity congestion strategy

- commodity index products use a static futures roll schedule
- resulting 'congestion' has significant effect on prices of expiry and next month futures
- positioning ahead of these flows has historically been profitable



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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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