UBS Investment Bank

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Trimming your Hedge: A Thorny Issue

Inflation Trading Perspectives Post-Credit Crunch

Dariush Mirfendereski

26 February 2009

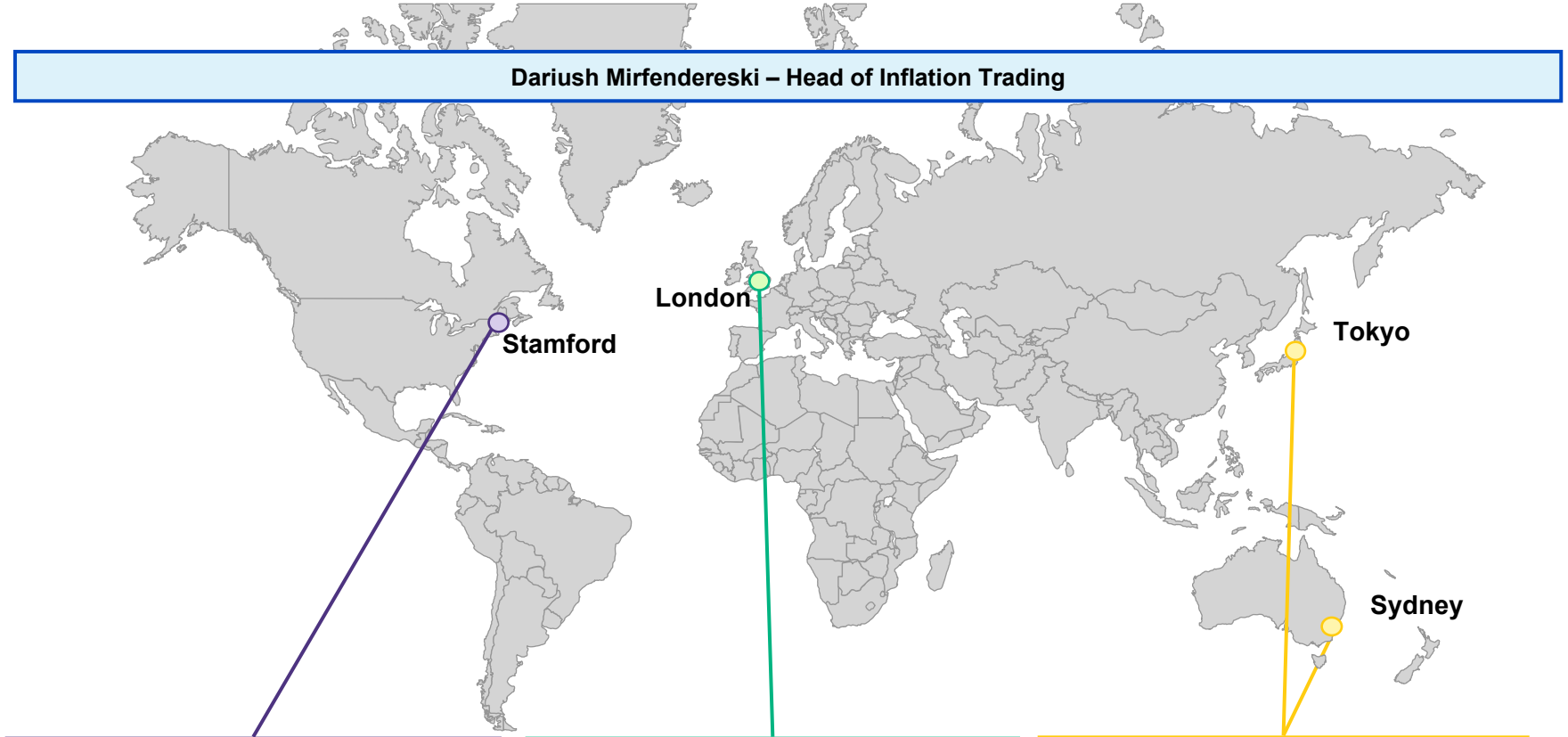
ASSOCIATION OF aca CONSULTING ACTUARIES

SECTION 0

What I do

UBS Global Inflation Trading Desk

Dariush Mirfendereski – Head of Inflation Trading



Stamford Inflation Trading Desk

Joseph Simpson, Director

London Inflation Trading Desk

Dariush Mirfendereski, Managing Director
Antonio Giampaolo, Executive Director
Mark Button, Executive Director
Adam Pasztor, Associate Director
John Baker, Associate Director
Pierre Lalanne, Analyst

Tokyo Inflation Trading Desk

Takahiro Tajima, Executive Director

Sydney Inflation Trading Desk

Andrew Barnet, Executive Director

Sovereign IL Benchmark Mandates

UBS lead-managed landmark sovereign inflation-linked benchmarks in continental Europe and the UK

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

- **OATei 1.80% due July 2040**
  €4 billion

  Longest Euro-denominated inflation linked bond

  UBS joint bookrunner



- **BTPei 2.10% due September 2017**
  €4 billion

  New 10-year inflation-linked benchmark

  UBS joint bookrunner and sole duration manager

- **BTPei 0.95% due September 2010**
  €5 billion

  New 5-year inflation-linked benchmark

  UBS joint bookrunner and sole duration manager



- **GGBei 2.90% due July 2025**
  €1.25 billion

  Inaugural Greek inflation-linked bond

  UBS joint bookrunner and sole duration manager



- **UKTi 1.25% due November 2055**
  £1.25 billion

  Longest ever inflation-linked bond

  UBS joint bookrunner

Leadership in UK Infrastructure IL Issuance:

nationalgrid Gas

February 2007
£65 million due 2037

United Utilities Water

November 2006
£50 million due 2056

United Utilities Water

October 2006
£50 million due 2056

nationalgrid Electricity

July 2006
£25 million due 2056

nationalgrid Electricity

June 2006
£50 million due 2056

United Utilities Water

December 2005
£100 million due 2040

United Utilities Water

October 2005
£100 million due 2035

nationalgrid Electricity

September 2005
£75 million due 2035

Network Rail

November 2004
£2,500 million
£250m I / L tranche due 2025

nationalgrid Gas

April 2007
£100 million due 2039

LCR Channel Tunnel Rail Link

November 2003
£1,250 million (ABS)
£500m I / L tranche due 2051

METRONET

March 2003
£515 million (ABS) due 2032

United Utilities Water

November 2002
£50 million due 2032

nationalgrid Electricity

April 2007
£150 million due 2039

Network Rail

May 2007
£1,000 million due 2037

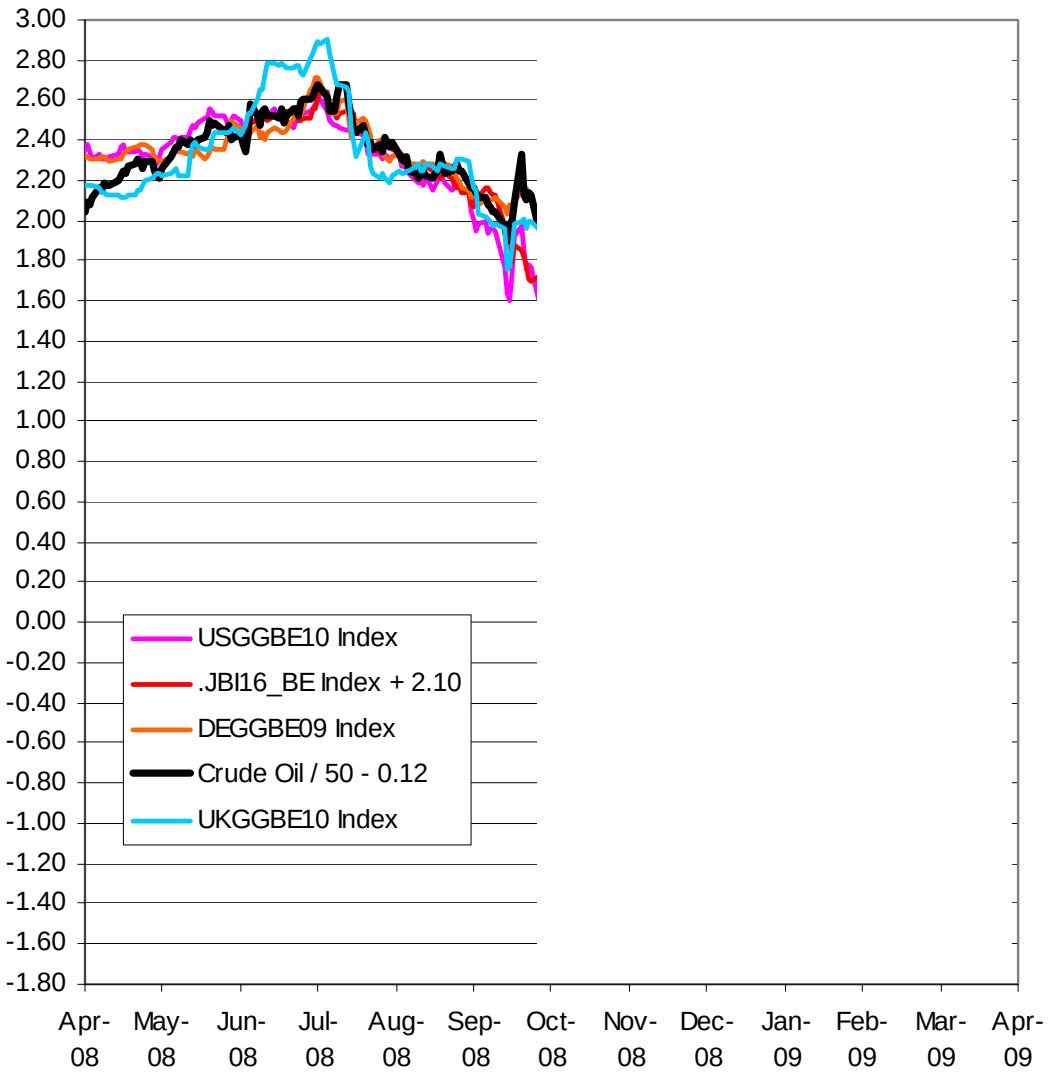
Network Rail

September 2007
£500 million due 2047

SECTION 1

Global Inflation Market update

Global 10y Breakevens: 1 April 2008 through February 2009



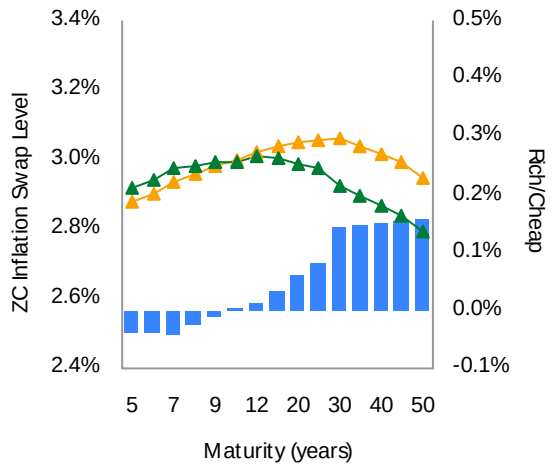
Source: Bloomberg, UBS

SECTION 2

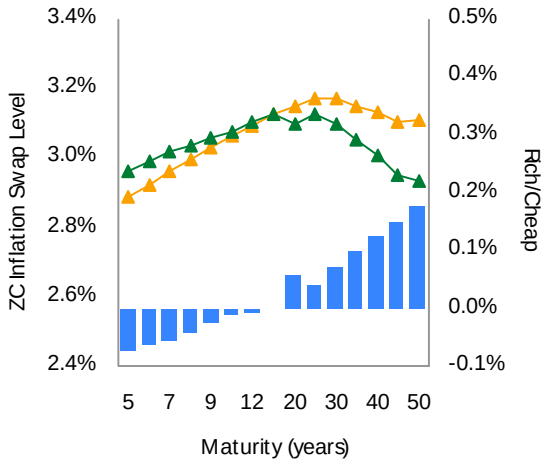
A glance back to the UK RPI market in 2006 …

How Rich/Cheap Evolved in 2006

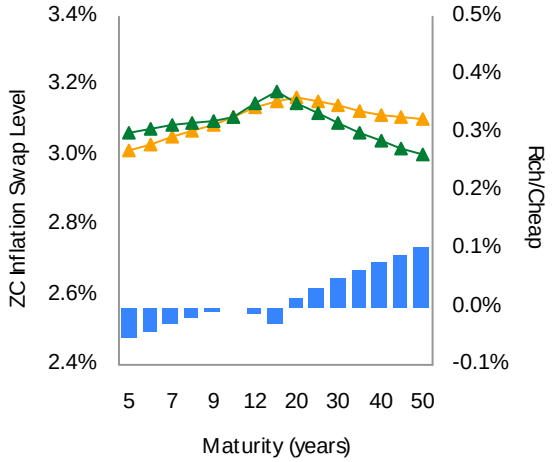
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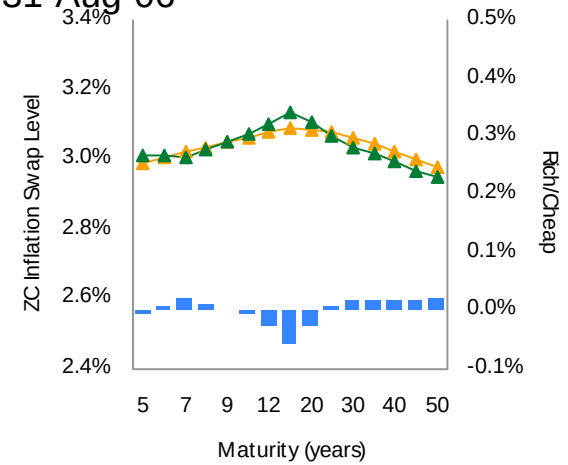
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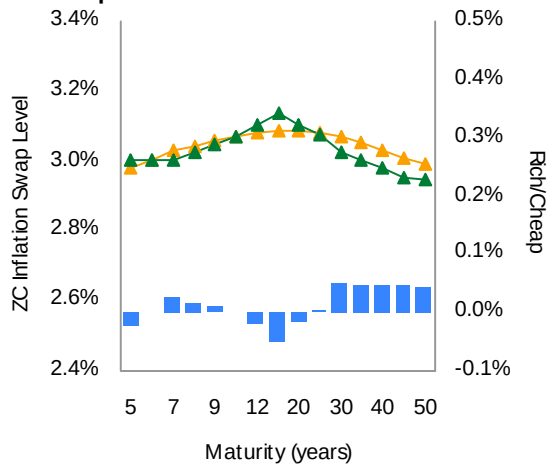
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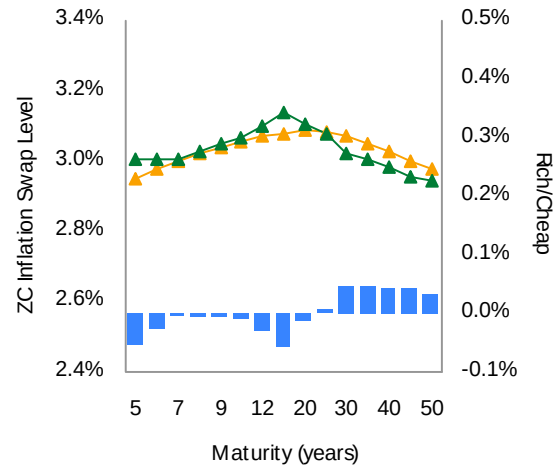
31-Aug-06

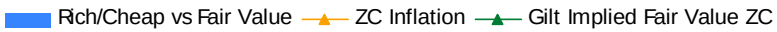


08-Sep-06

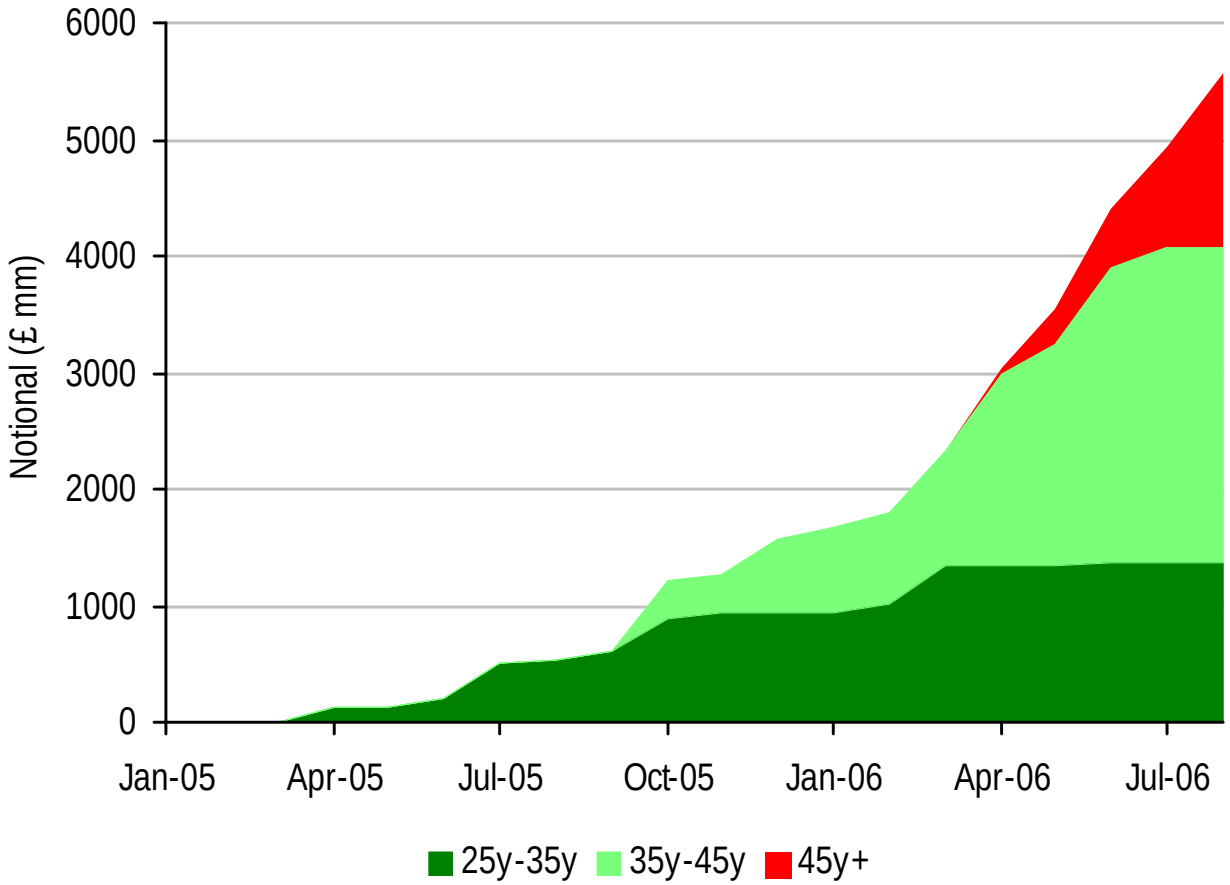


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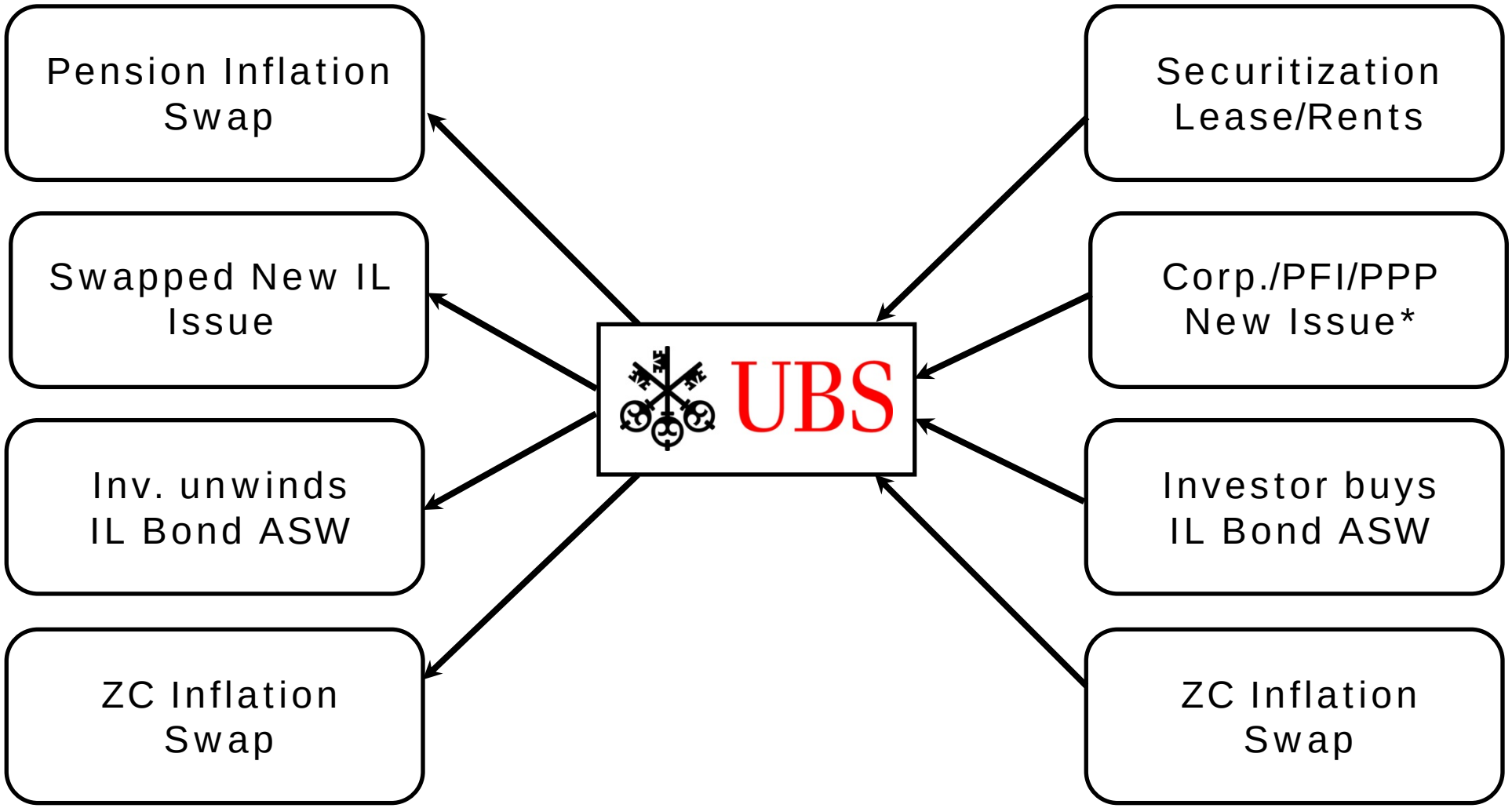




Non Gilt IL Issuance 2005 & 2006, Showing Maturity



Direction of Inflation-Indexed Swap Cash-Flows



SECTION 3

Historical Aggregate Data from The US & UK Markets

—The Andromeda Galaxy & the Olympic Diver

Notation for Zero Rates Spreads

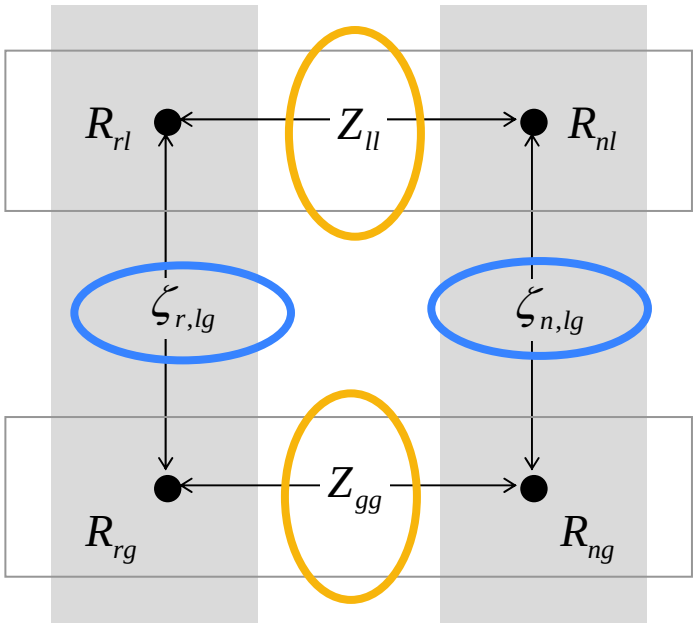
R_{rl} : real LIBOR Rate

R_{nl} : nominal LIBOR Rate

R_{rg} : real gov't Rate

R_{ng} : nominal gov't Rate

r : real rates $\quad$ n : nominal rates



l : LIBOR

g : Gov't

$\zeta_{i,jk}$ *where* $i \in \{r,n\}$ *and* j *and* $k \in \{g,l\}$

i.e. credit spreads in real or nominal space between gov't and LIBOR

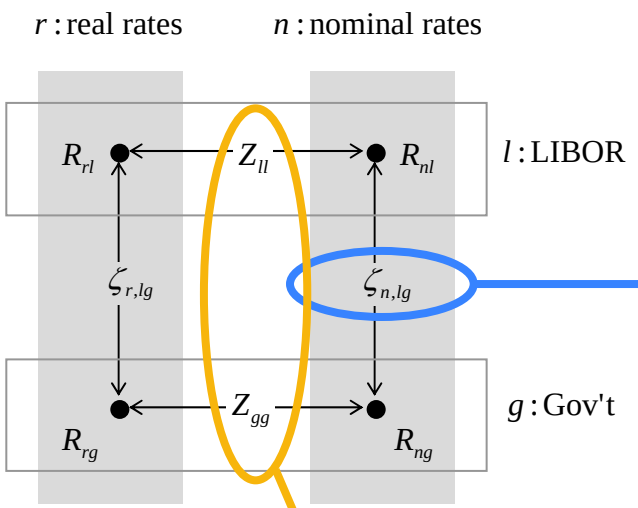
$\zeta_{i,jk} = R_{ij} - R_{ik}$

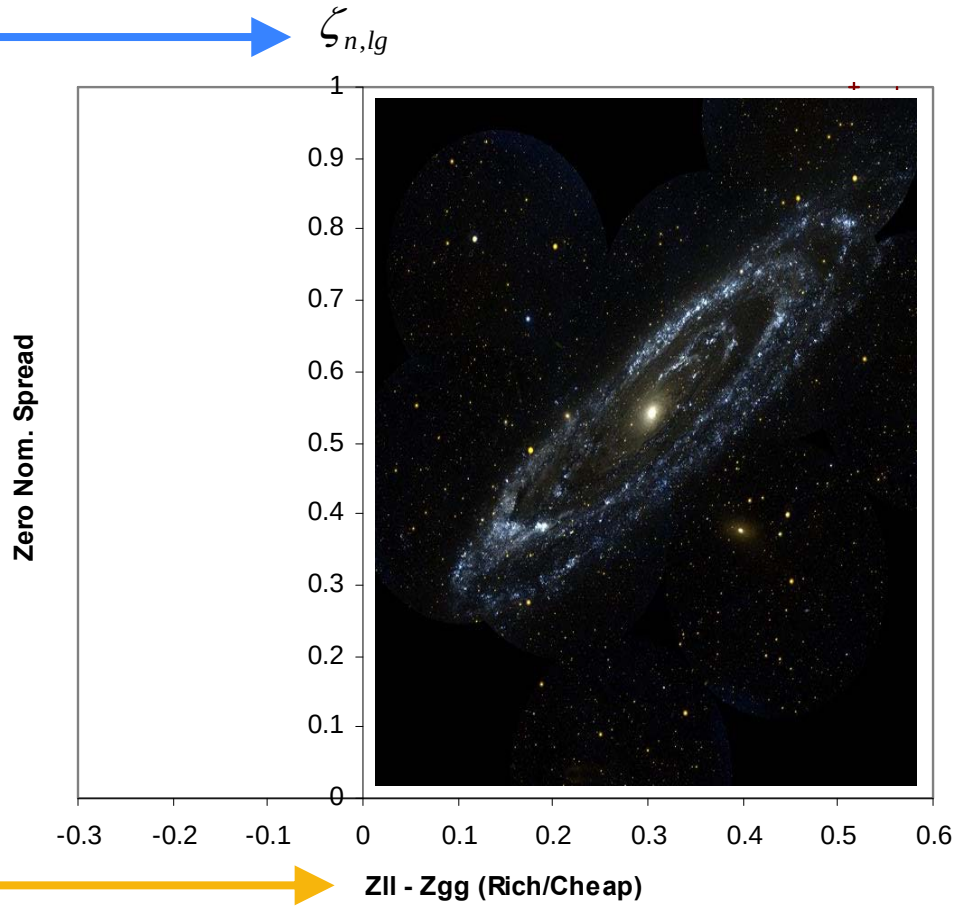
Z_{ii} *where* $i \in \{g,l\}$

i.e. zero inflation rates for gov't or LIBOR curves

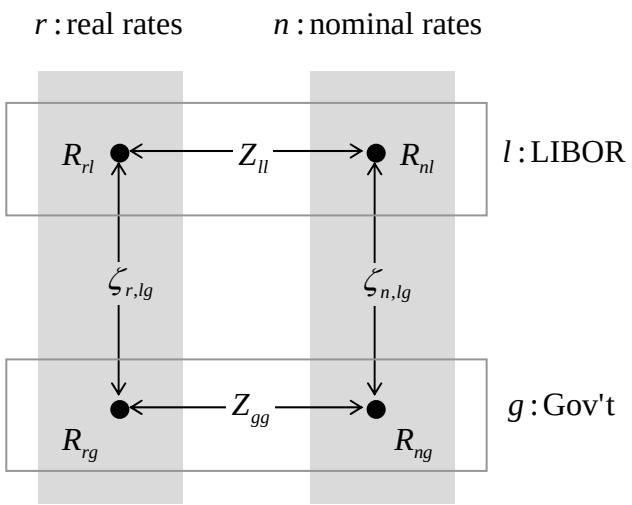
$Z_{ii} = R_{ni} - R_{ri}$

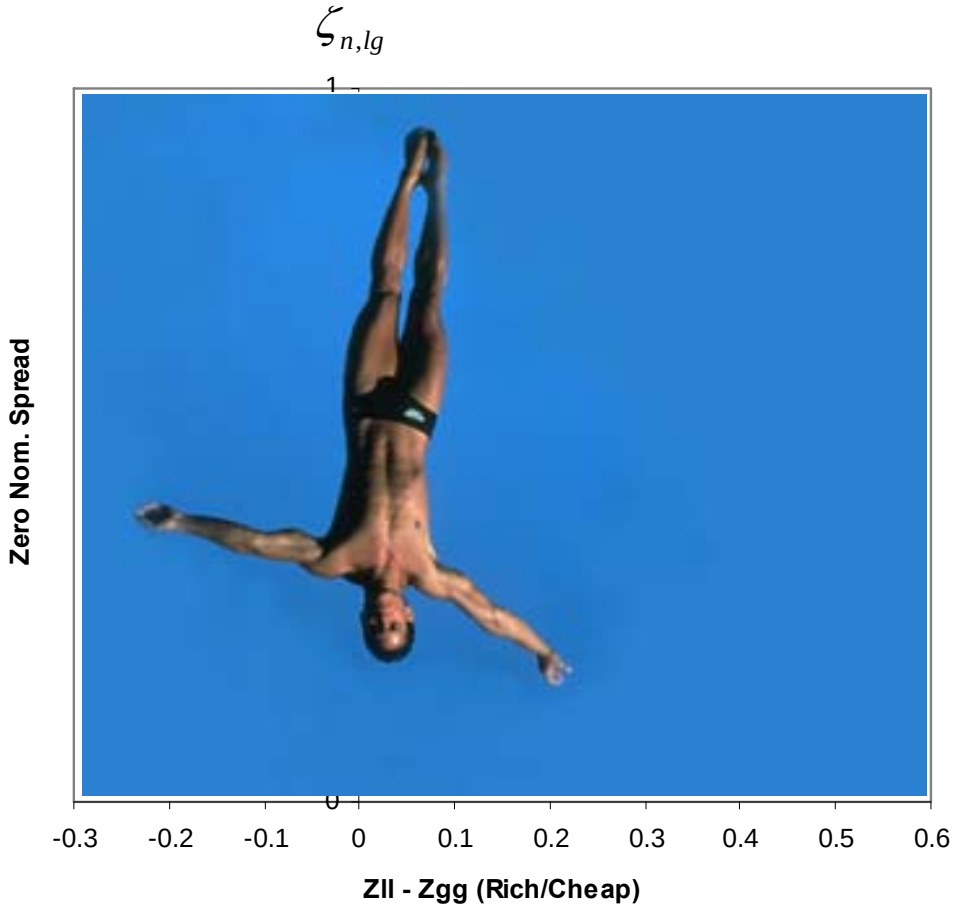
US Market: 2006-2008 "Andromeda Galaxy"



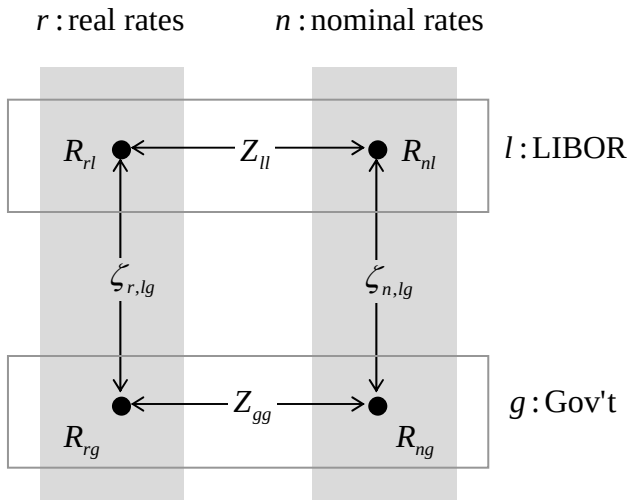


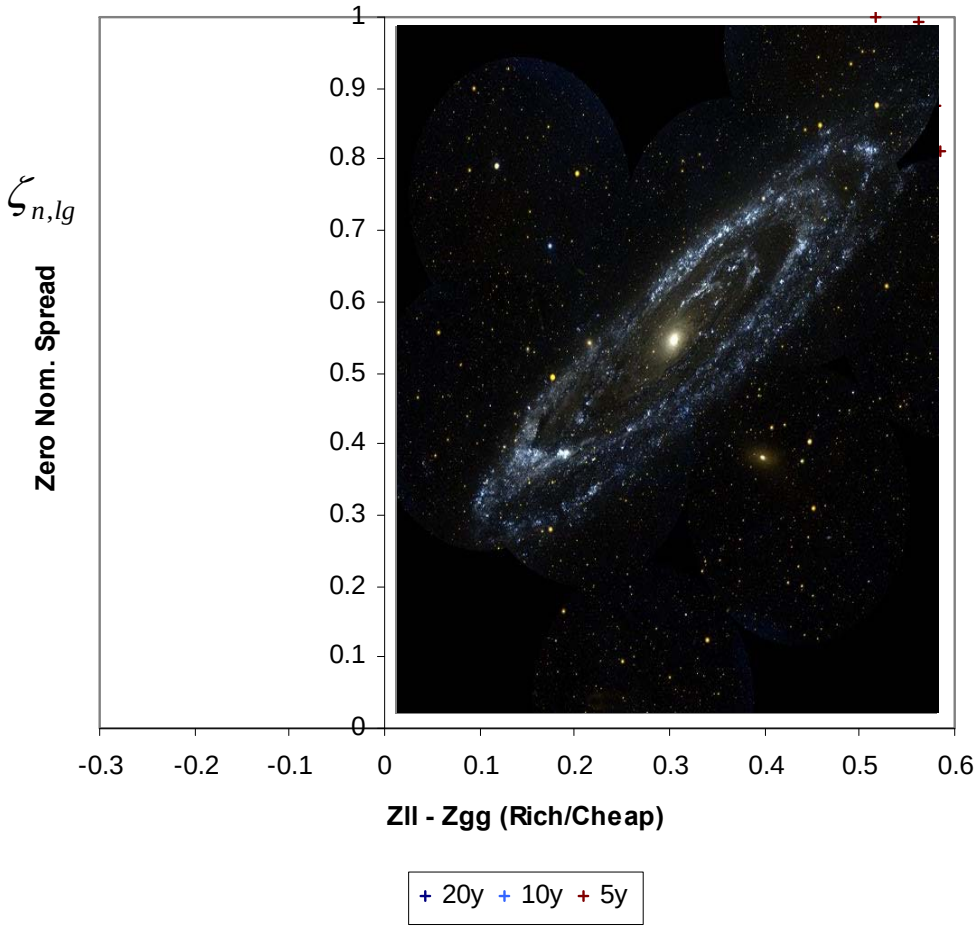
UK Market: 2006-2008 "The Olympic Diver"

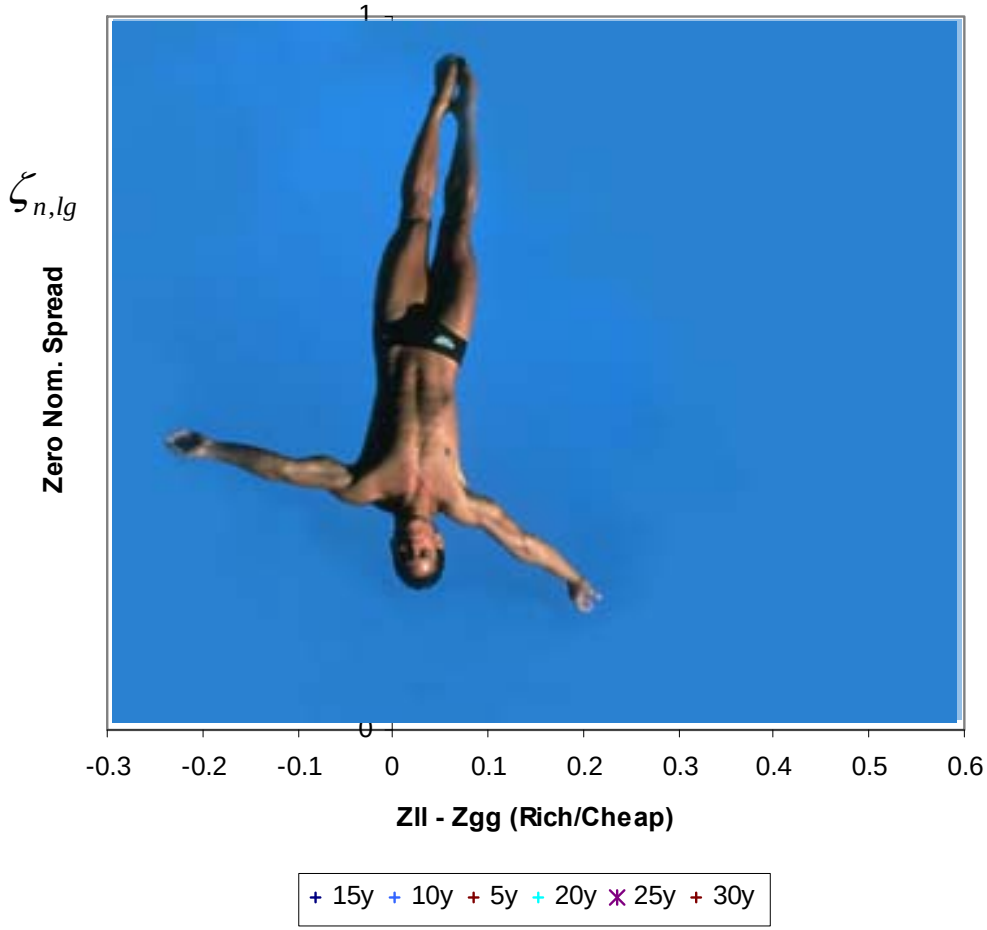




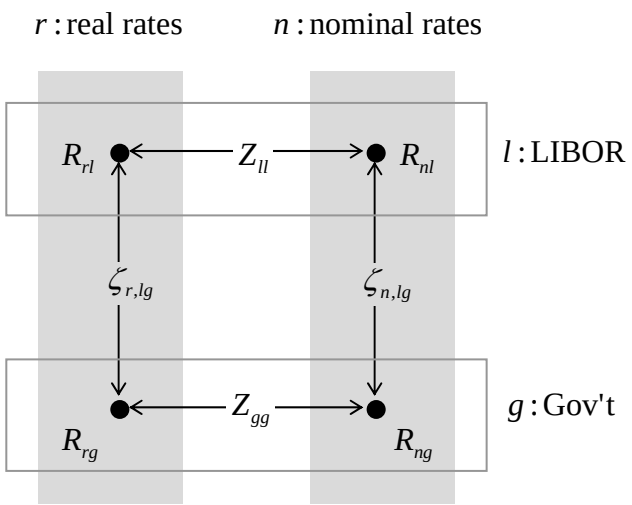
US & UK Markets: 2006-2008

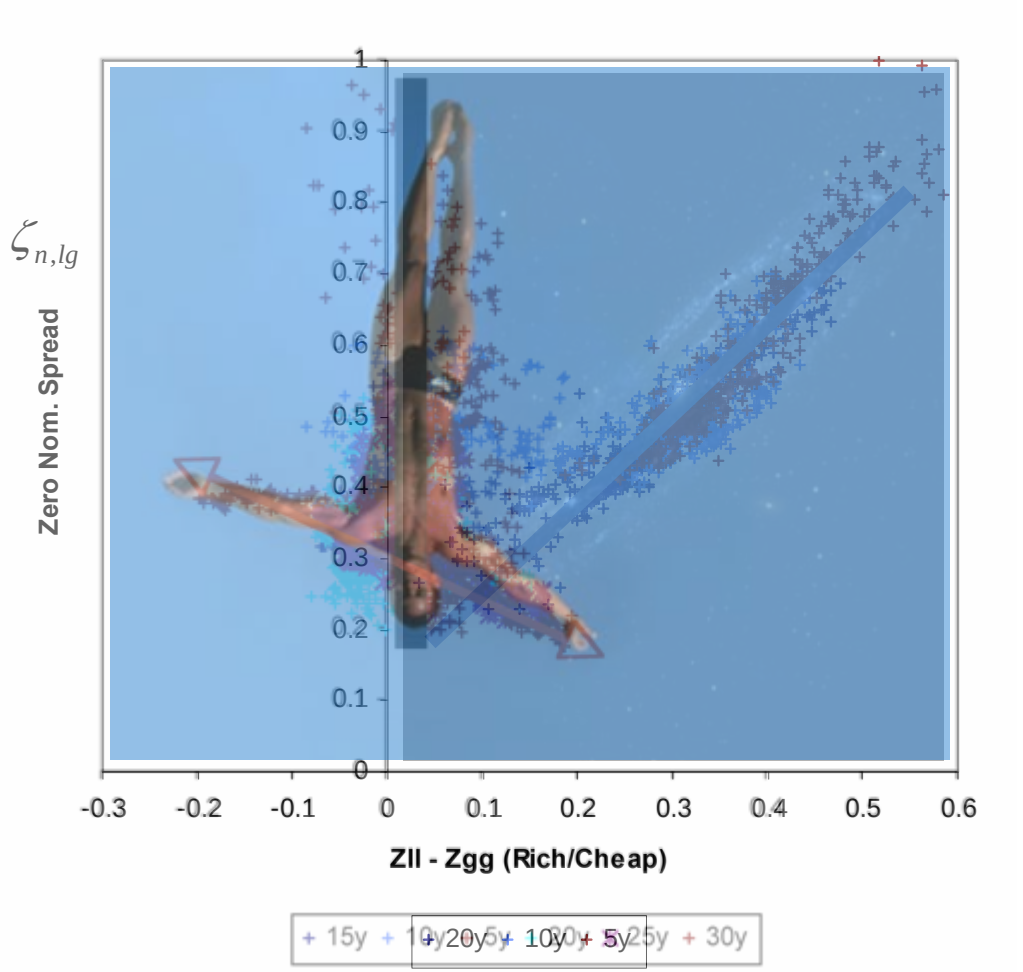




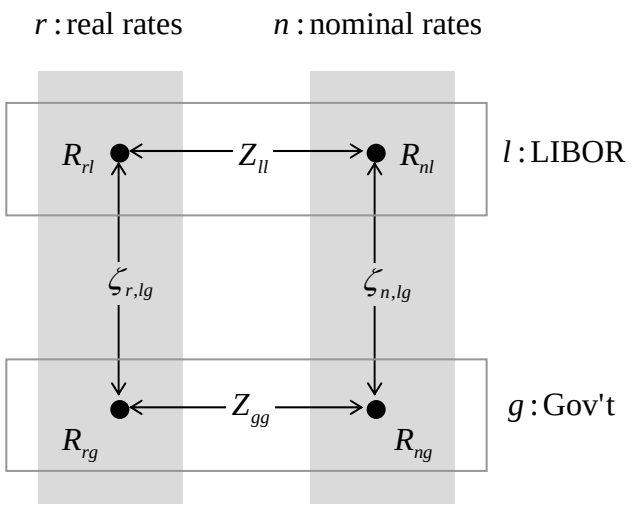


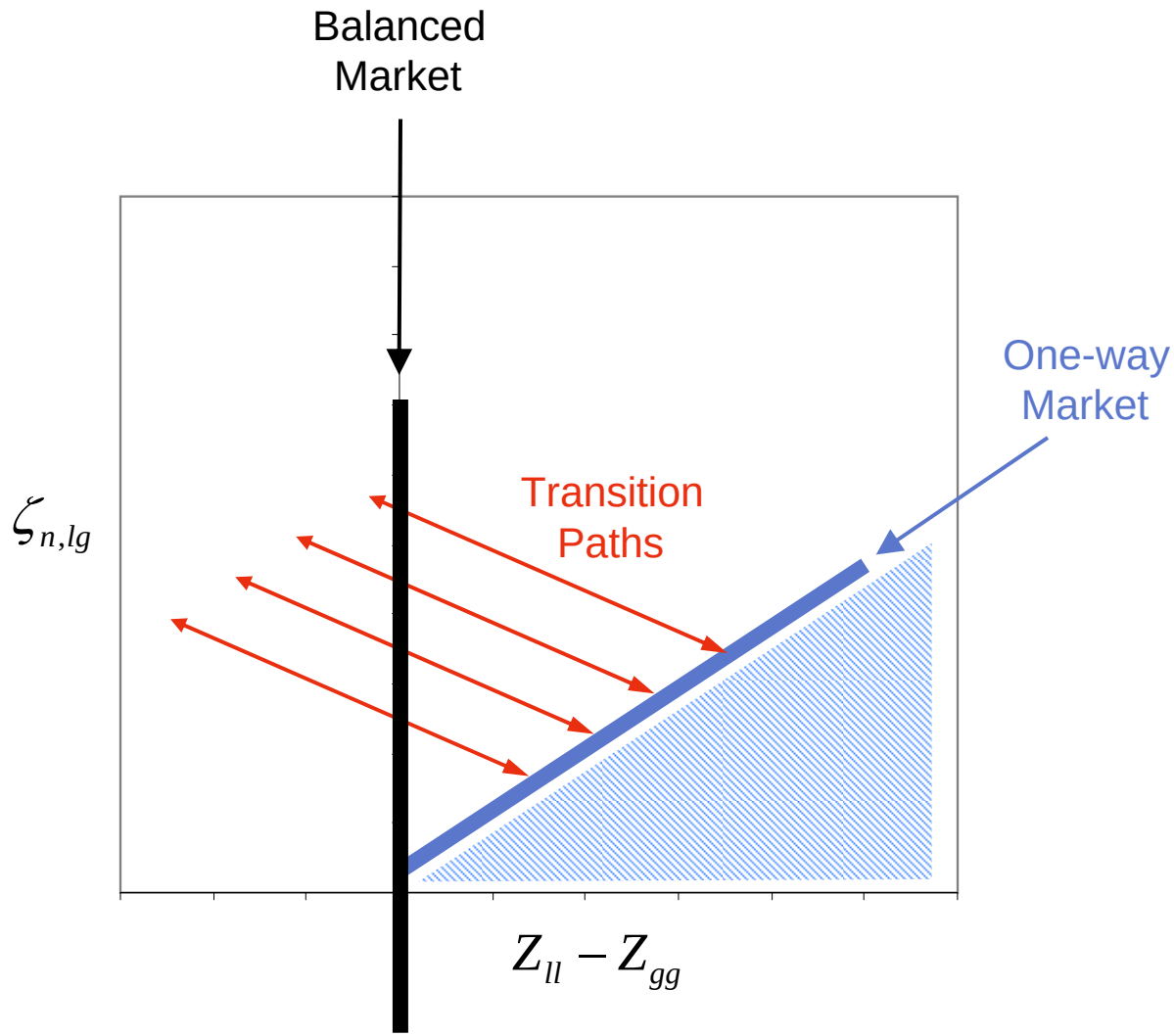
US & UK Markets: 2006-2008





2 Market Extremes & the Transition Paths

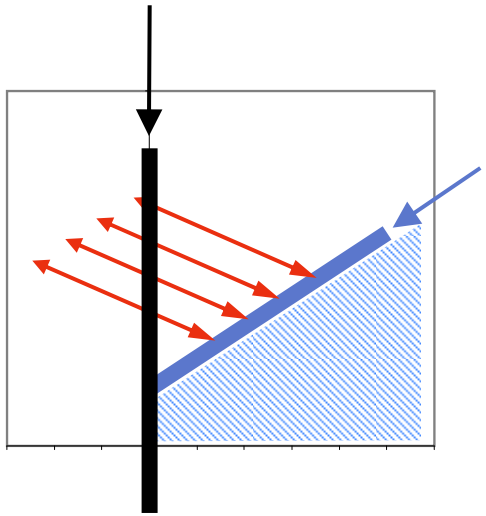




SECTION 4

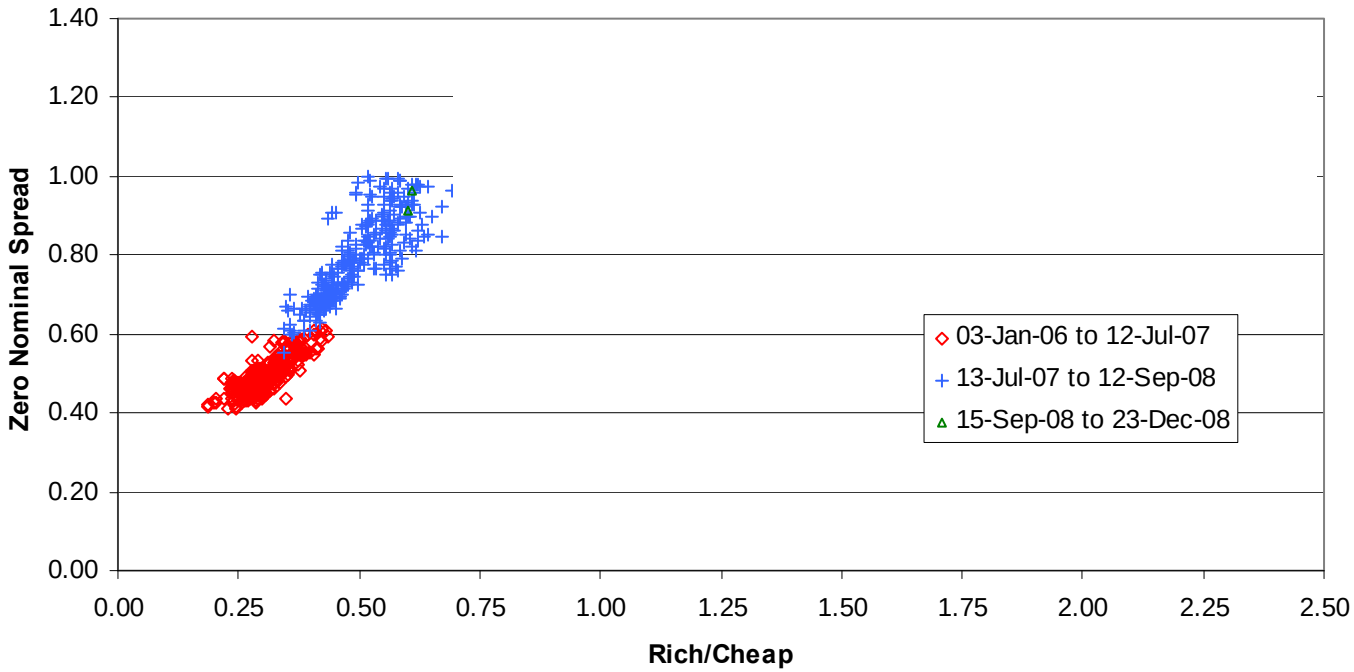
15 September 2008 Changed Everything

Post-Lehman Collapse: 5y US Maturity Zero Spreads & Rich/Cheap



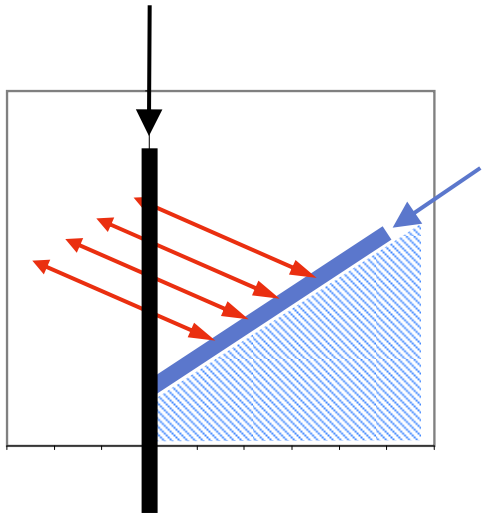
- **A rush to replace Lehman hedges—surge in demand**
- **No rush to put back on TIPS ASW by those who had faced Lehman**
- **Unwinds of TIPS ASWs by leveraged accounts**
- **Lack of willingness for investors to put on TIPS ASWs**
- **… a lot of demand vs zero supply … prices go to ∞?**

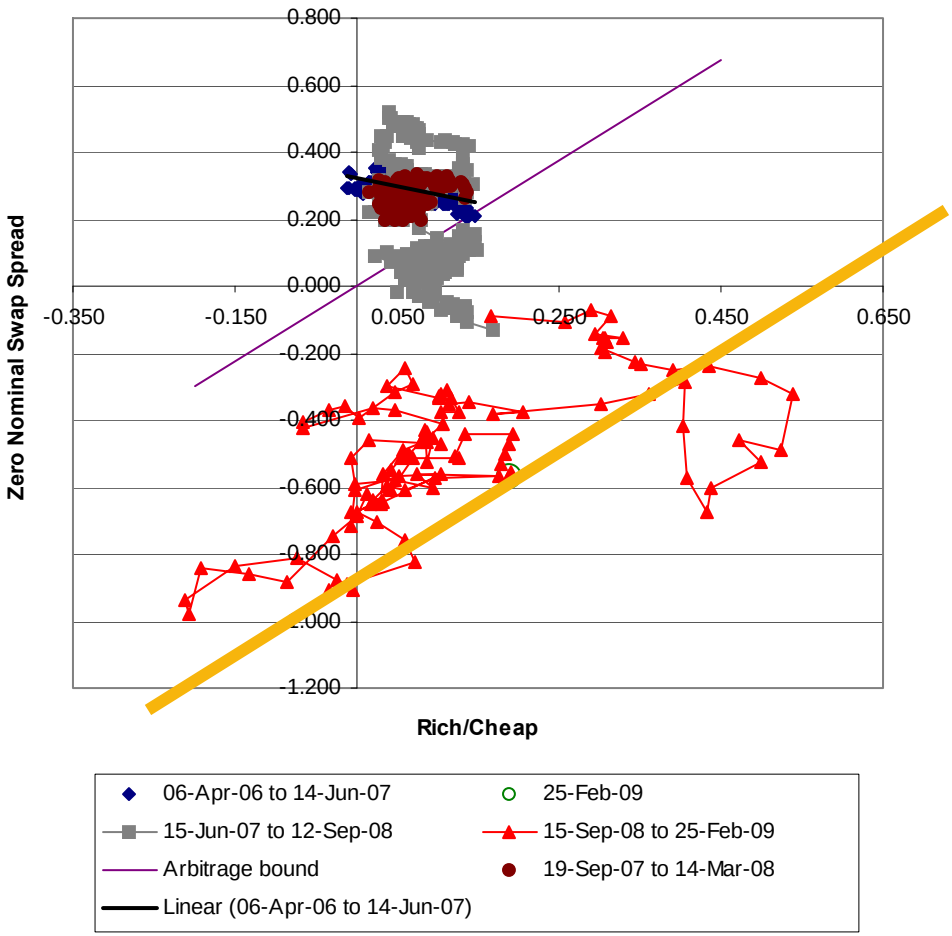
$\zeta_{n,lg}$



$Z_{ll} - Z_{gg}$

Olympic Diver? … 30y Maturity Zero UK Spreads & Rich/Cheap





SECTION 5

What we can look forward to

Solutions

Long end maturities

- IL gilt asset swaps are being bought by investors
- This generates RPI swap 'supply'—although this is 'synthetic' supply, it is supply nevertheless

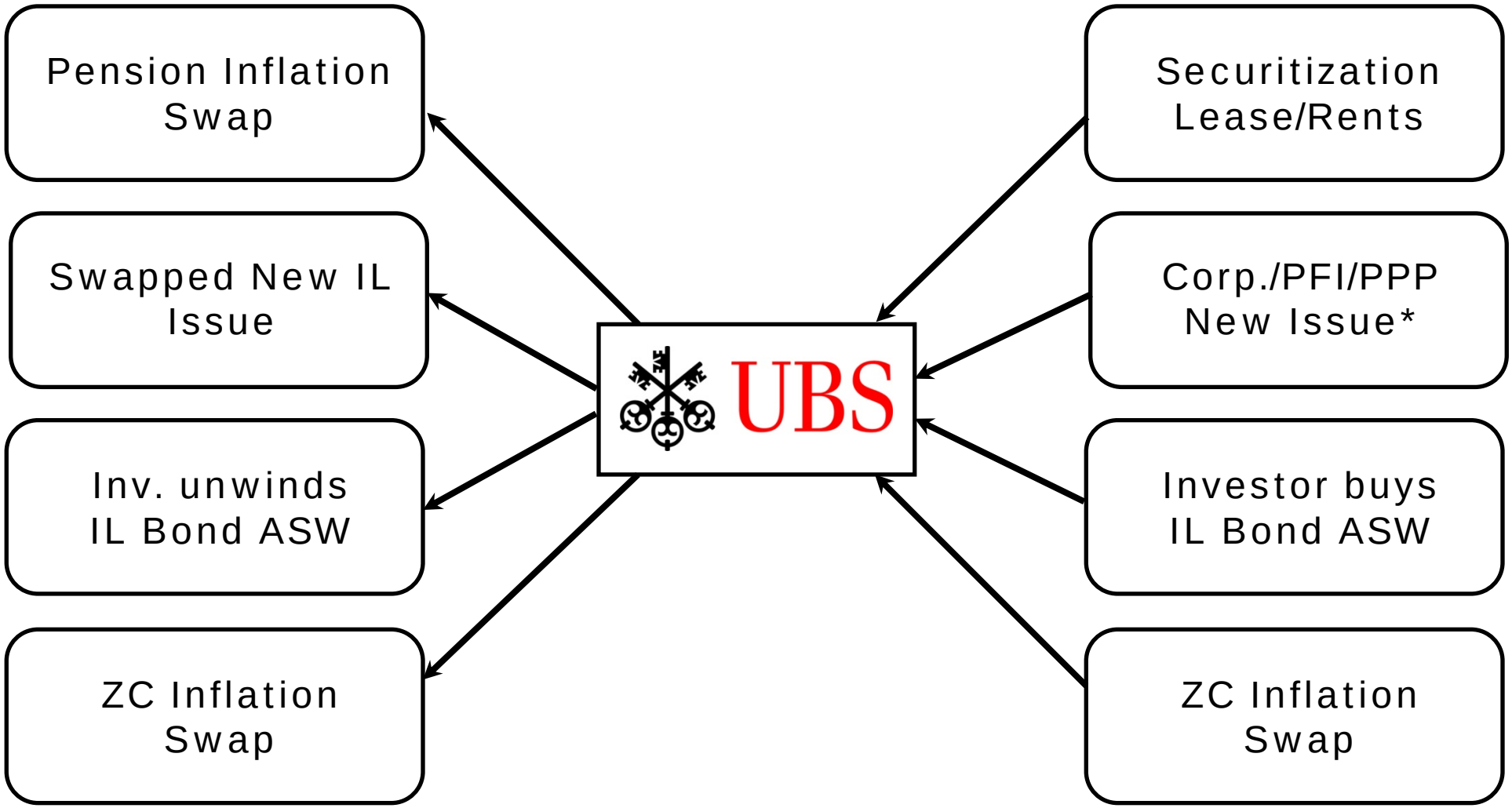
Short and medium maturities

- PFI and rental/lease securitizations were the flows that balanced the market
- PFI via bond issuance unlikely in the near future
- Securitization unlikely in the near future
- PFI via bank lending likely to be the best bet for bringing the RPI market back into balance in the short and medium maturities

LPI

- Rental/lease securitization has been a partial hedge
- Leveraged accounts also took some on board
- The rest was delta hedged by banks
- Lower market liquidity/wider bid/ask makes delta hedging more expensive
- Need return to more normality and more liquidity before this is solved

Ultimately, we need to go back to basics: we need swap supply



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