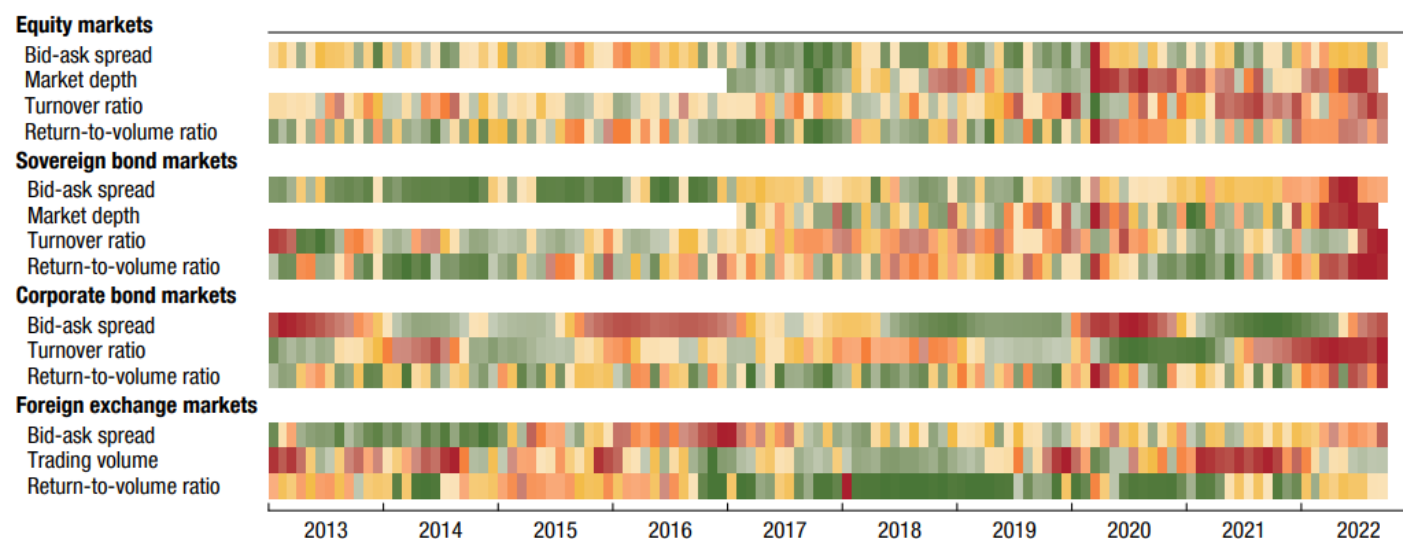

ECB Bond Market Contact Group

Market functioning and the monetary policy normalisation of central banks

November 2022

Monetary Policy normalisation and the impact on various asset classes

Market Liquidity conditions from IMF Global Financial Stability Report¹



Volatility Fear/Uncertainty Gauge– 3m ATM Implied vol, 1yr History - Implied vs Realised Volatility across asset classes²

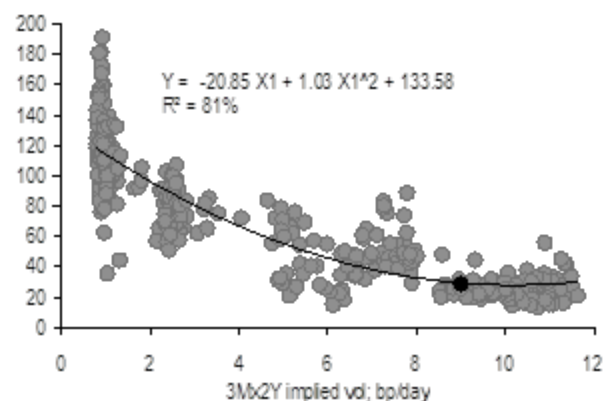
Asset	Current	Low	Low date	High	High date	5th percentile	5th percentile		Upside	Downside	Implied/realized volatility
S&P 500	24%	15%	05-Nov-21	28%	13-Jun-22	19.5%	24.7%		4%	9%	0.9x
EuroSTOXX	20%	14%	05-Nov-21	39%	04-Mar-22	20.5%	25.0%		19%	6%	1.4x
Nikkei 225	20%	17%	05-Jan-22	27%	09-Mar-22	18.9%	21.8%		7%	3%	1.0x
Hang Seng	32%	17%	13-Jan-22	39%	15-Mar-22	20.7%	25.9%		7%	14%	0.7x
MSCI EM	26%	15%	13-Apr-22	41%	11-Mar-22	21.1%	25.2%		15%	10%	0.9x
Gold	16%	13%	18-Jan-22	27%	08-Mar-22	14.7%	17.1%		11%	3%	1.0x
Oil (brent)	47%	34%	18-Nov-21	73%	23-Mar-22	43.7%	51.0%		26%	13%	1.5x
Copper	30%	24%	16-Nov-21	35%	15-Jul-22	27.0%	29.5%		5%	6%	0.8x
BB commodity index	26%	17%	10-Nov-21	30%	26-Jul-22	18.5%	27.2%		4%	9%	1.3x
EUR/USD	11%	5%	05-Nov-21	13%	28-Sep-22	6.6%	10.4%		2%	6%	1.1x
USD/NOK	15%	10%	08-Nov-21	18%	12-Oct-22	12.0%	14.8%		2%	5%	1.2x
USD/JPY	12%	6%	31-Dec-21	14%	21-Oct-22	7.0%	11.7%		2%	6%	1.4x
GBP/USD	13%	6%	07-Jan-22	19%	28-Sep-22	7.6%	11.4%		6%	7%	0.8x
USD/CHF	10%	6%	31-Dec-21	11%	28-Sep-22	6.7%	9.3%		1%	4%	1.1x
10y Treasury futures	135	72	08-Nov-21	187	12-Oct-22	88	137		52	63	0.8x
10Y bund futures	139	51	05-Nov-21	179	11-Oct-22	68	138		11	88	1.0x
CDX IG	57%	40%	05-Nov-21	76%	07-Mar-22	53.7%	62.9%		18%	17%	1.9x
CDX HY	56%	37%	05-Nov-21	68%	07-Mar-22	51.9%	59.7%		12%	19%	2.0x
iTraxx	63%	36%	08-Nov-21	86%	07-Mar-22	55.7%	65.4%		23%	27%	2.1x
iTraxx X/O	58%	42%	08-Nov-21	85%	07-Mar-22	57.8%	64.7%		27%	16%	2.3x

1.Sources: Bloomberg Finance L.P.; Haver Analytics; Japan Bond Trading; JPMorgan Big Data and AI Strategies; MarketAxess; Reuters; Securities Industry and Financial Markets Association; and IMF staff calculations.

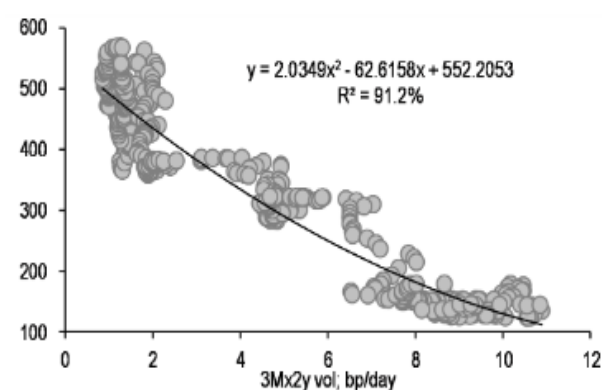
2.Source: J.P. Morgan. Bloomberg Finance L.P.

Volatility, Market Depth & Liquidity - A Repricing of Liquidity

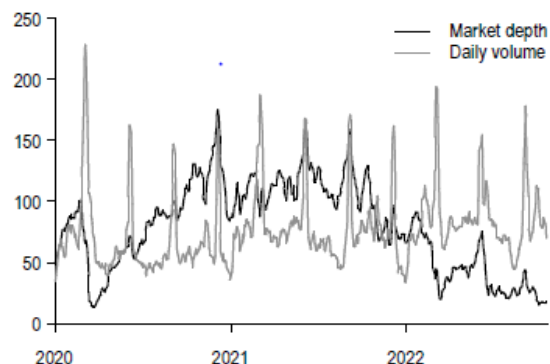
Bund Market Depth vs Volatility



Treasury market depth vs Volatility



Bund market depth (€mm equivalent) and Bund daily trading volume (€bn equivalent) since 1 Jan 2020



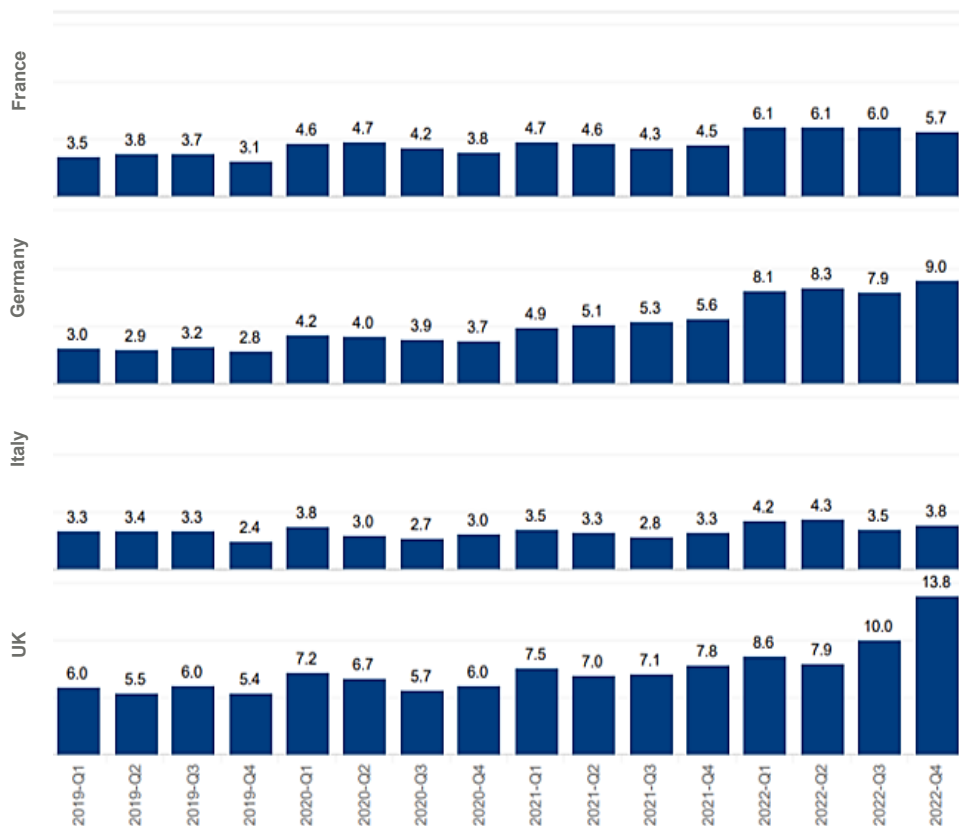
Market depth and average daily volume for German Eurex future

	Market depth (€mm equivalent)				Volume (€bn equivalent)			
	Current	YTD Avg	Last 5Y Avg	Last 5Y Min	Current	YTD Avg	Last 5Y Avg	Last 5Y Min
Schatz	135	259	1476	62	53	56	40	13
Bobl	48	96	423	29	48	63	51	14
Bund	17	42	87	14	84	86	77	24
Buxl	2	5	8	1	9	9	7	2

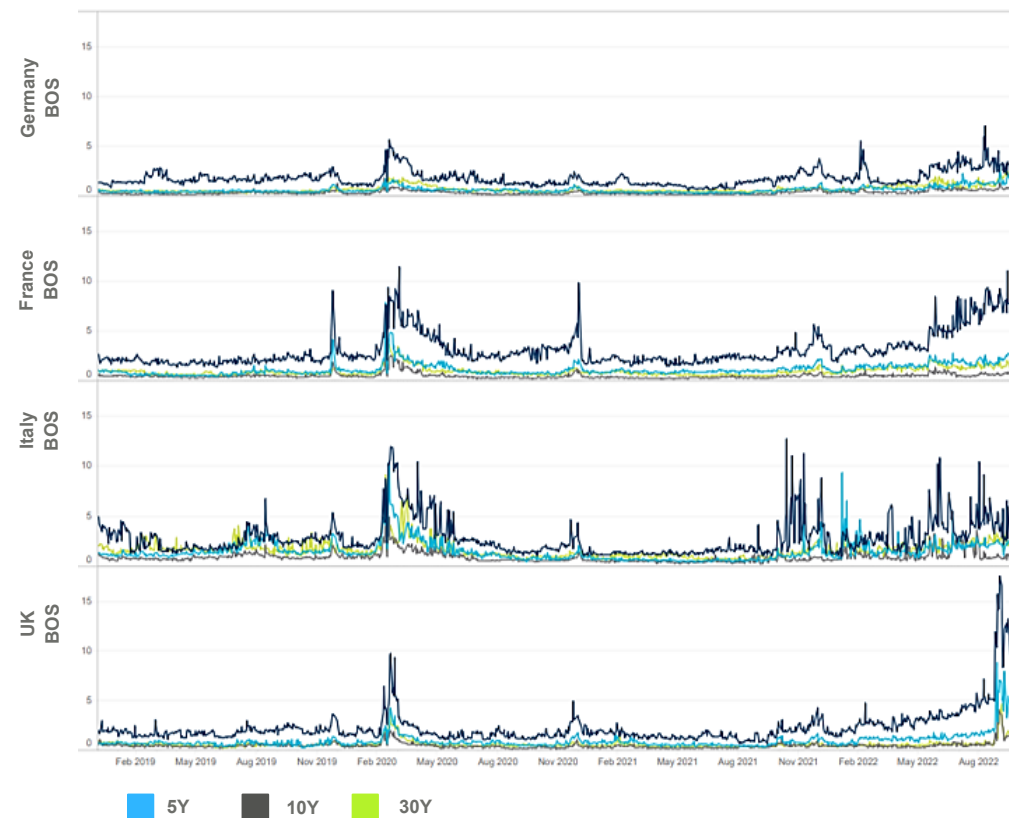
Sources: J.P. Morgan research

Volatility, Market Depth & Liquidity - A Repricing of Liquidity Contd

Average daily notional volume in € Bn



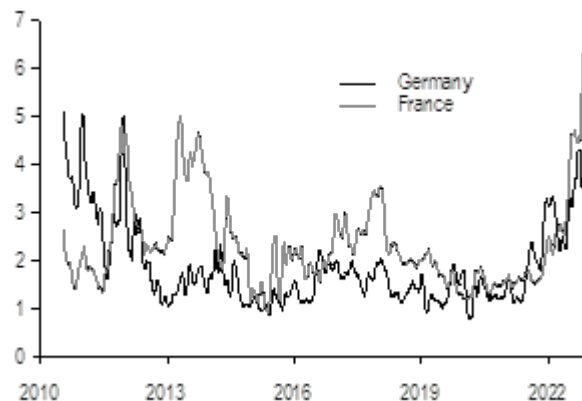
Benchmark BOS in bps



Sources: Tradeweb

Is the liquidity evenly distributed? A multi-tiered approach to liquidity with more concentrated flows

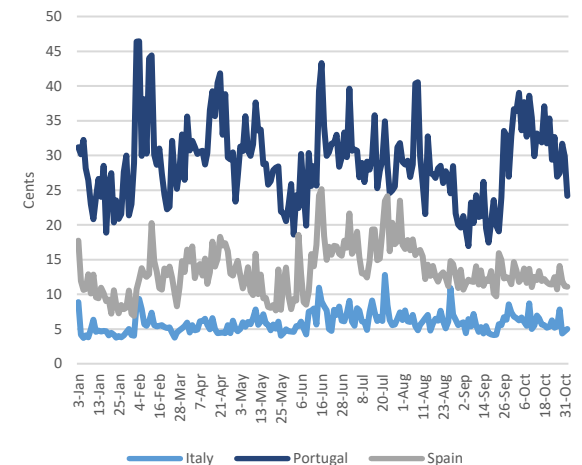
1M MA of yield RMSE for German and French par curves; bp¹



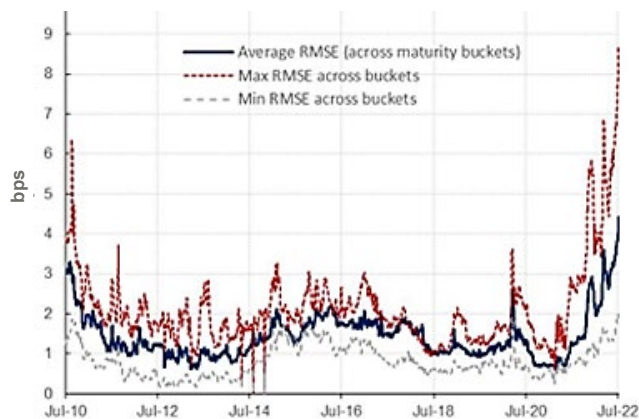
1M MA of yield RMSE for Italian and Spanish par curves; bp²



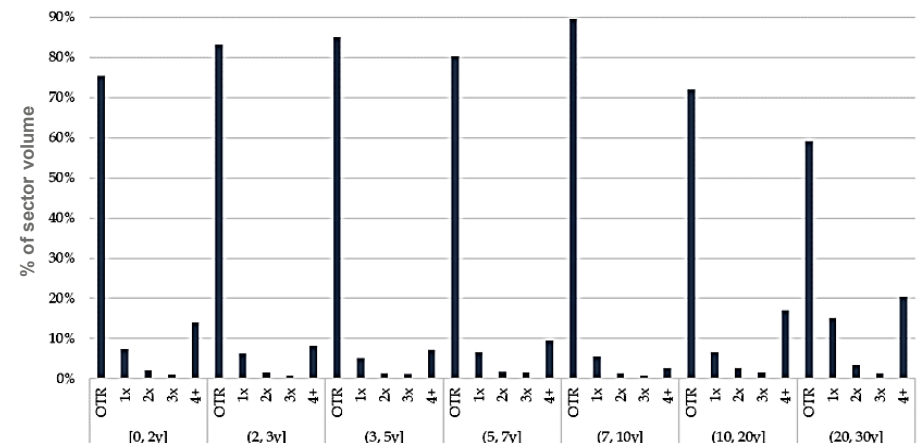
BondVision Composite Daily B/O Spreads: NON-CORE 10-Yr Benchmarks³



Root Mean Square Error (RMSE), a measure of US Treasury Curve Deviations⁴



On-and-off-the-run nominal coupon volumes, share of sector volume Based on average daily volumes in DV01 in 2022⁵



1. – 2. Sources: J.P. Morgan Research

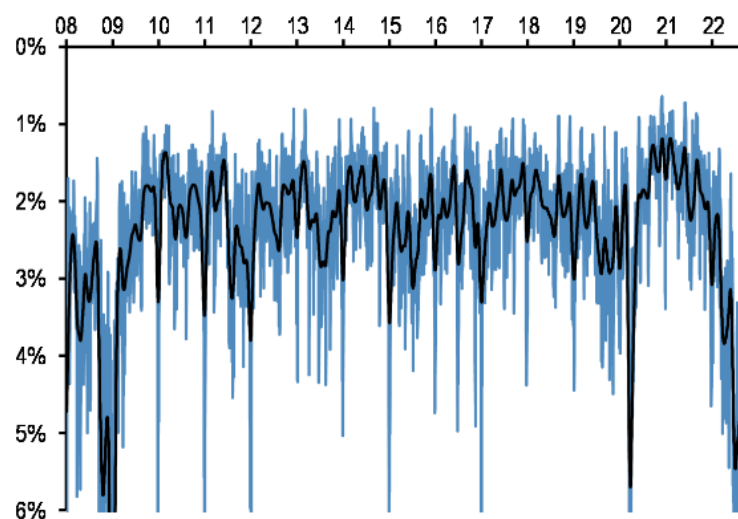
3. Sources: MTS

4. Sources: J.P. Morgan Research

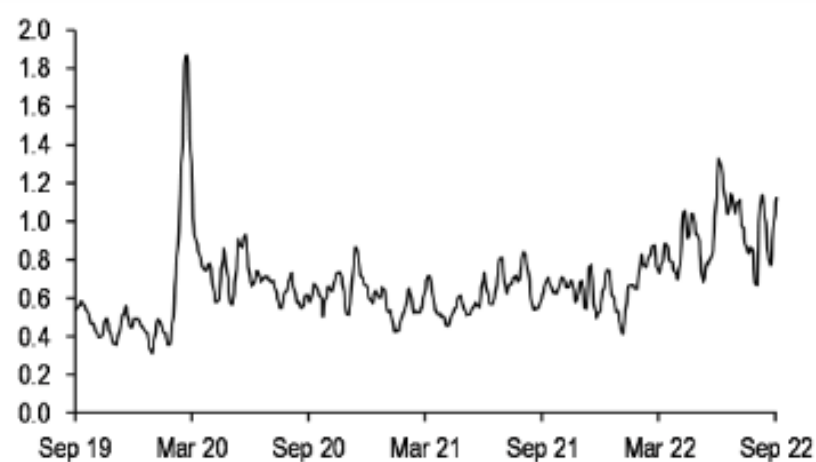
5. Sources: FINRA TRACE, US Department of Treasury

Price impact of trades increasing – Fixed Income markets getting less resilient

Weighted average Hui-Heubel liquidity ratio for 10y futures on US, German, Japanese, UK, French and Italian government bonds¹



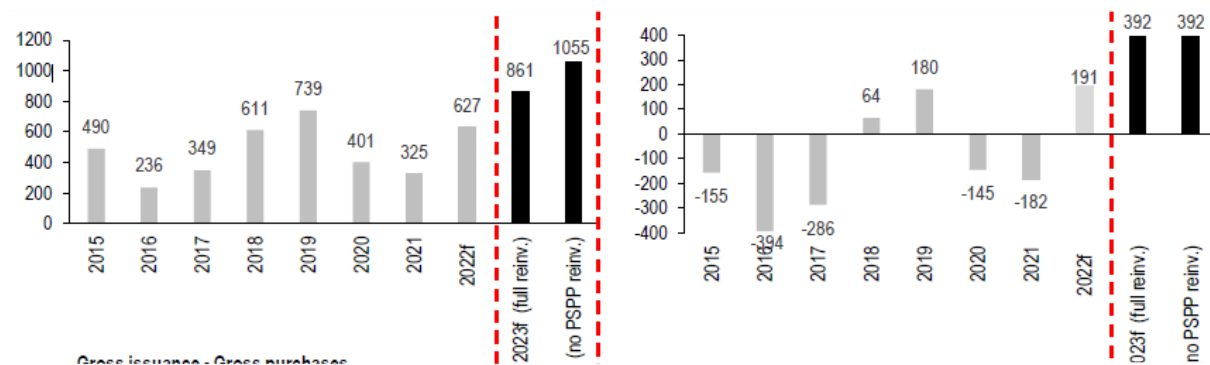
10-year Treasury price impact, 5-day moving average; 32nds²



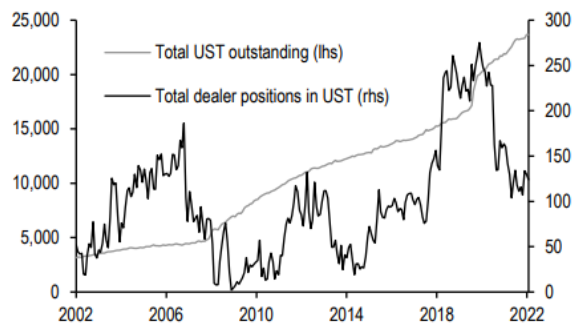
1. Sources: Bloomberg Finance L.P., J.P. Morgan
2. Sources BrokerTec, J.P. Morgan

Dealer balance sheets may be getting more constrained at the same time as supply is increasing and fund flows turning negative

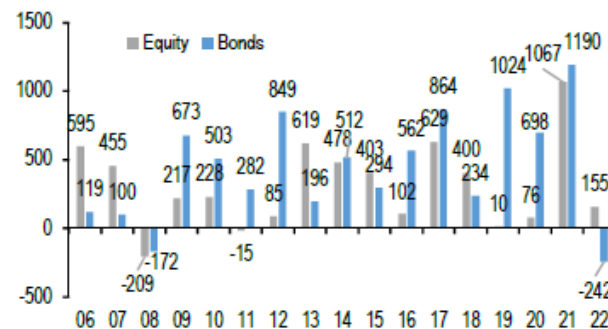
2023 supply vs ECB Purchase dynamics: material deterioration for Euro area sovereigns, even without QT ¹



Total marketable US Treasury debt outstanding (lhs, \$bn) versus absolute value of primary dealer positions in Treasuries (1m moving average, rhs, \$bn)²



Global equity & bond fund flows ³



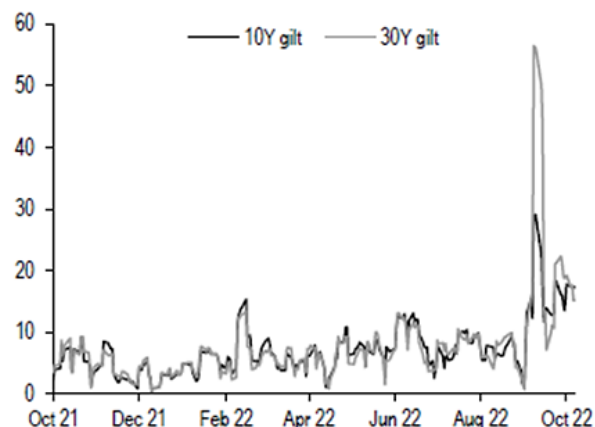
1. Sources: J.P. Morgan

2. Sources Federal Reserve Bank of New York

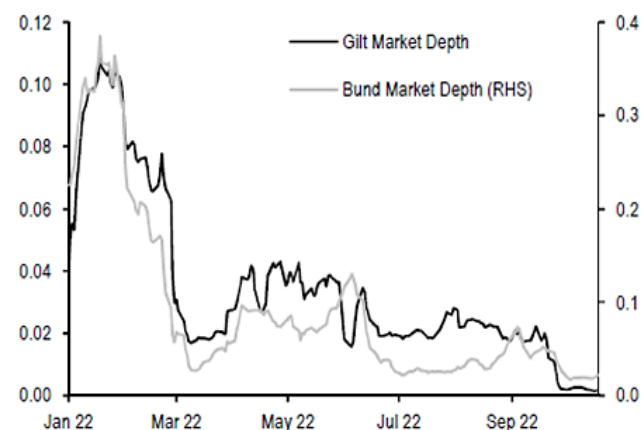
3. Sources: ICI, EPFR, EFAMA, Bloomberg Finance L.P., J.P. Morgan

Lessons from Sterling Market – Following the broad trend, but with sui generis catalysts and lingering scars

5D rolling standard deviation of daily yield changes; bp¹



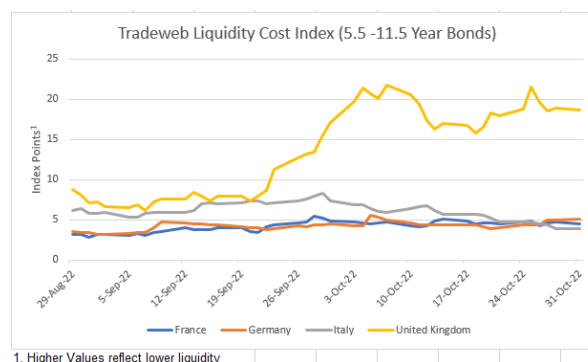
Gilt and bund market depth (contracts 000's), adjusted by volatility²



Levels and changes for selected UK rate market metrics; bp unless levels³

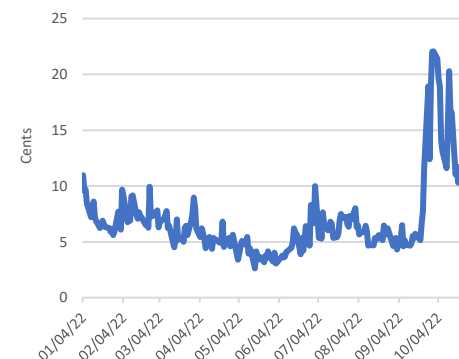
	27-Oct	22 Sep, COB	12 Oct, COB	Change		
				22 Sep - 12 Oct	12 Oct - current	Retracement
Nov 22 MPC OIS	295	289	330	41	-35	87%
1Yx1Y SONIA, %	4.63	4.89	5.64	0.75	-1.01	135%
10Y gilt, %	3.60	3.59	4.58	0.98	-0.98	99%
30Y gilt, %	3.60	3.76	4.85	1.09	-1.25	114%
10s/30s gilt	0	16	27	11	-28	247%
10Y swap spread	19	4	28	24	-9	36%
30Y swap spread	-25	-49	-35	14	10	-
30Y UST, %	4.09	3.64	3.89	0.25	0.20	-
30Y Bund, %	2.08	1.93	2.45	0.52	-0.37	70%
30Y gilt - UST	-49	12	96	85	-145	172%

Tradeweb liquidity Cost index⁴



1. Higher Values reflect lower liquidity

BV Composite Daily B/O Spread: GILT 10-Yr Benchmark⁵



1. – 3. Sources: J.P. Morgan Research

4. Sources: Tradeweb

5. Sources: MTS

Questions

- ▶ What are the potential sources of further financial stress?
- ▶ Will Central Banks be proactive or reactive in addressing financial market stress? What pre-emptive action can Central Banks take?
- ▶ Will liquidity improve as volatility decreases, or is the market permanently scarred?
- ▶ Is the uneven distribution of liquidity within individual bond curves a function of policy normalisation?
- ▶ What can European Sovereign borrowers do to help ensure market functioning?

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