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Fixed Income

SMART MARKETS™ ANALYSIS:

BOND TRENDS BEFORE & AFTER STOCK MARKETS CRISIS IN EARLY AUGUST 2024

Leveraging Smart Markets™, the advanced analytics platform powered by Mosaic Smart Data & Euroclear, this paper analyses the most recent trends in selected government and corporate bonds after the global stock market volatility observed in early August 2024, specifically on Friday 2nd August and Monday 5th.

In particular, this paper focuses on three product types that have been of particular interest due to the correlation of the US Stock market, especially the S&P500 index, and the Japanese Stock market, which experienced a record-breaking drop on Monday 5th:

- Japanese government bonds (**JGBs**)
- Corporate bonds issued by the some of the largest US tech companies, often labelled as the "**Magnificent Seven**", i.e. bonds issued by Apple, Alphabet, Amazon, Nvidia, Meta, Microsoft and Tesla. *Note: Tesla has no "outstanding" bonds at the moment.*
- US treasury bonds (**UST**)

In summary, the key findings are:

- The analysis highlighted some interesting trends building up in the Japanese Government Bonds (**JGBs**) space a few days before the Japanese stock crash on Monday 5th. Specifically, on Friday 2nd, before the Japanese Stock crash on the 5th, there was **significant JGB buying activity** from European and international investors, particularly focused on **10Y and 20Y** tenors. In fact, on Friday 2nd **European and international investors**, through various depository institutions, bought more than $5 Bln net of JGBs from institutions outside of the Euroclear network (likely, global investment banks), one business day before a +5.4% increase in JGB prices.
- "**Magnificent Seven**" corporate bonds liquidity and turnover soared during the stock crisis and remained strong throughout the entire week. The average yield for these corporate bonds decreased, mostly due to the decrease in the UST benchmark curve. More interestingly, investors traded much **longer duration** (~8.8 years in average, +2.2 years compared with same period in July) and the **credit spread slightly decreased** (~39 bps on average) despite the correspondent stocks suffering large losses. This indicates that "Magnificent seven" bonds are deemed to be extremely safe despite the market turmoil, and investors might have preferred bonds issued by blue chips during a period of uncertainty.
- The liquidity of **UST** flow remained strong over the days immediately before and after the global stock rout in early August, and UST **turnover increased** at the peak of the crisis **by 6%** on a notional basis, while the yield curve decreased by more than 20 bps over a few days. Also, investors traded **longer duration**, with the average duration reaching **9.5 years** on Monday 5th (almost one year more than the average duration in July 2024).

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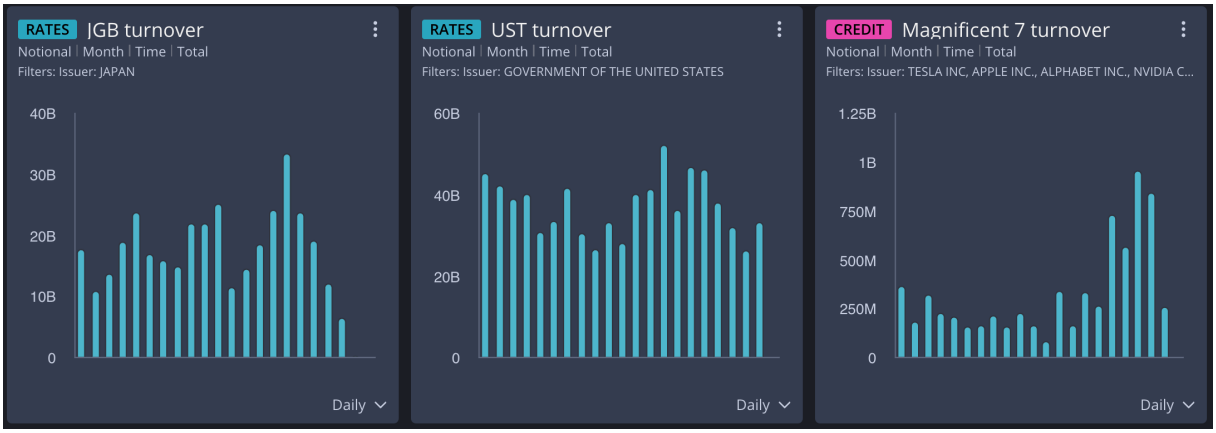
BONDS FLOW ANALYSIS IN EARLY AUGUST 2024

The market mayhem of Friday 2nd August and the consecutive Monday pushed stock indexes down very significantly across the globe, especially in the US on Friday (2nd), and in Japan the following Monday (5th). That big selloff made the S&P 500 index to fall by 1.8% on Friday 2nd and by 3% on Monday 5th, while the Japanese stock index Nikkei 225 was down by 12% on Monday 5th, suffering its biggest decline for nearly forty years.

At the same time, the historical negative correlation of stocks and bonds was observed during this high volatility period, with US and Japanese bond prices rising, and their yields decreasing sharply.

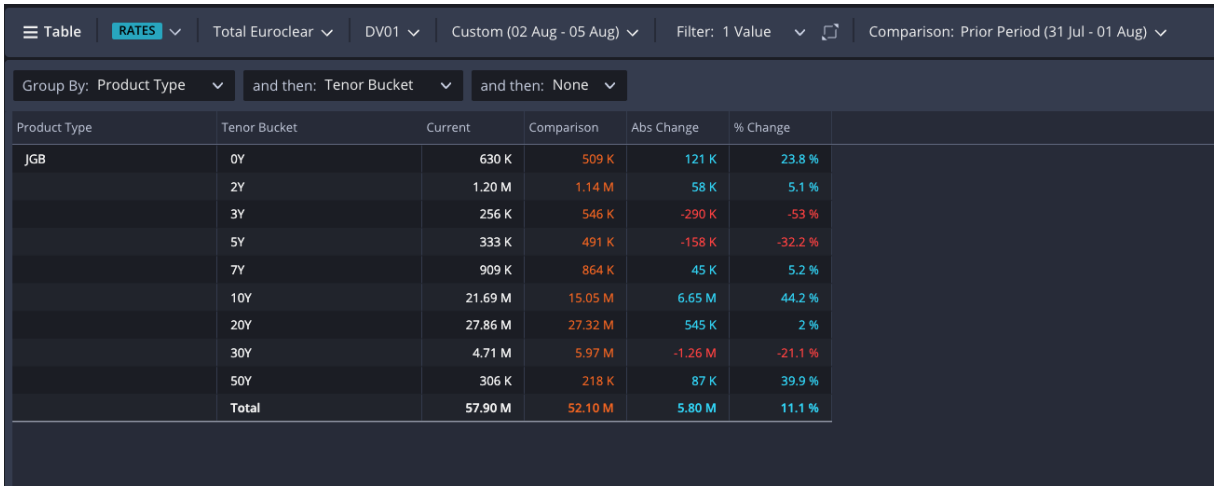
While most of this directional flow reverted during the course of the week, and the global stock market recovered most of the losses experienced during Friday 2nd and Monday 5th, it is extremely interesting to analyse the correspondent fixed income flows in and out of the stock crisis.
Let's focus on what happened in three bond markets which are obviously highly correlated with the top US and Japanese stock indexes, i.e. JGBs, UST, and "Magnificent Seven" corporate bonds:



JAPAN GOVERNMENT BONDS (JGB)

Looking at the JGB time series we observe that on 2nd August, the first day the stock market plunged, activity on Japanese bonds reached the peak of the last month, for a total traded volume of $36.12 Bln (in US Dollar equivalent), with JGB prices soaring and JGB yields reaching a minimum of 0.75% for the JGB 10y benchmark on Monday 5th.

Let's now break down by tenor bucket to analyse the Japanese volumes in DV01 basis more closely:

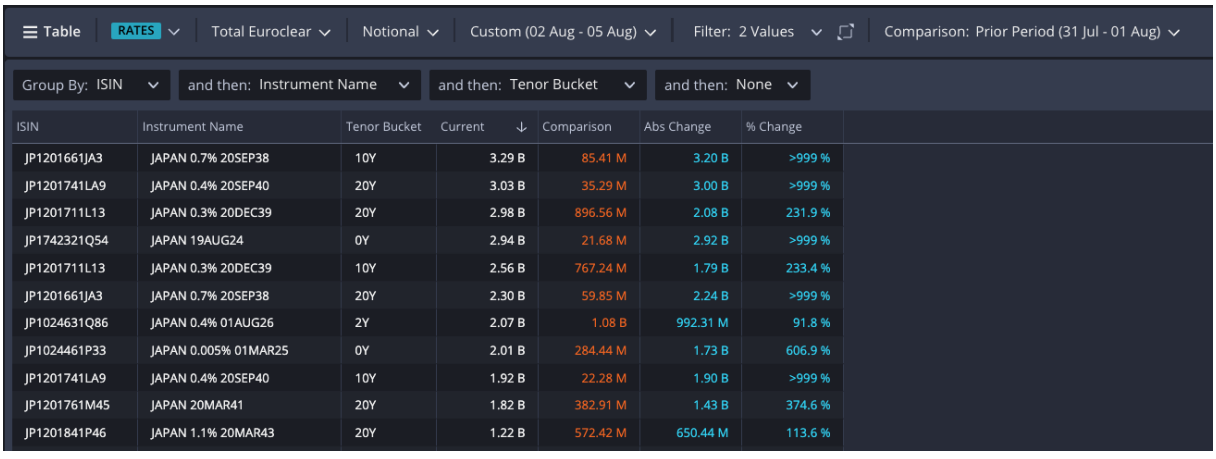


Product Type	Tenor Bucket	Current	Comparison	Abs Change	% Change
JGB	0Y	630 K	509 K	121 K	23.8 %
	2Y	1.20 M	1.14 M	58 K	5.1 %
	3Y	256 K	546 K	-290 K	-53 %
	5Y	333 K	491 K	-158 K	-32.2 %
	7Y	909 K	864 K	45 K	5.2 %
	10Y	21.69 M	15.05 M	6.65 M	44.2 %
	20Y	27.86 M	27.32 M	545 K	2 %
	30Y	4.71 M	5.97 M	-1.26 M	-21.1 %
	50Y	306 K	218 K	87 K	39.9 %
	Total	**57.90 M**	**52.10 M**	**5.80 M**	**11.1 %**

Note: DV01 risk is expressed in US Dollar equivalent.

We notice a general increase in JGB traded volumes, +11.1% in the two days of market fall, and it's interesting to see that the most traded tenors on risk basis are the medium-long tenors, specifically 10Y and 20Y, with the 10Y tenor bucket increasing by 44.2% in DV01.

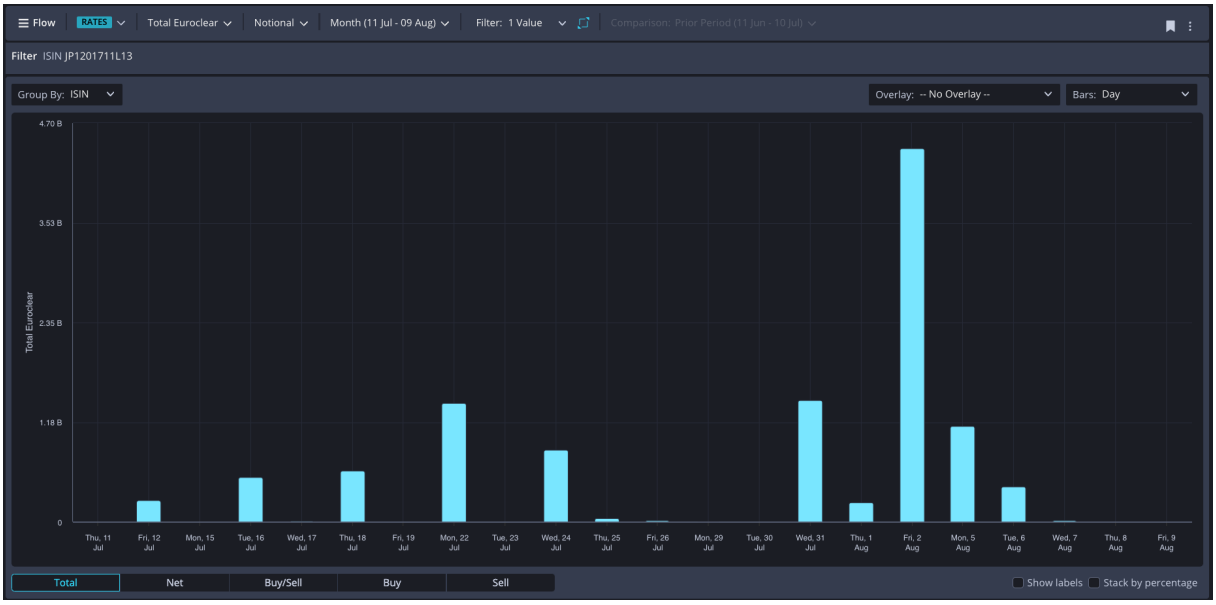
Let's now have a look at which Japanese bonds were mainly traded during these two days:



ISIN	Instrument Name	Tenor Bucket	Current	Comparison	Abs Change	% Change
JP1201661JA3	JAPAN 0.7% 20SEP38	10Y	3.29 B	85.41 M	3.20 B	>999 %
JP1201741LA9	JAPAN 0.4% 20SEP40	20Y	3.03 B	35.29 M	3.00 B	>999 %
JP1201711L13	JAPAN 0.3% 20DEC39	20Y	2.98 B	896.56 M	2.08 B	231.9 %
JP1742321Q54	JAPAN 19AUG24	0Y	2.94 B	21.68 M	2.92 B	>999 %
JP1201711L13	JAPAN 0.3% 20DEC39	10Y	2.56 B	767.24 M	1.79 B	233.4 %
JP1201661JA3	JAPAN 0.7% 20SEP38	20Y	2.30 B	59.85 M	2.24 B	>999 %
JP1024631Q86	JAPAN 0.4% 01AUG26	2Y	2.07 B	1.08 B	992.31 M	91.8 %
JP1024461P33	JAPAN 0.005% 01MAR25	0Y	2.01 B	284.44 M	1.73 B	606.9 %
JP1201741LA9	JAPAN 0.4% 20SEP40	10Y	1.92 B	22.28 M	1.90 B	>999 %
JP1201761M45	JAPAN 20MAR41	20Y	1.82 B	382.91 M	1.43 B	374.6 %
JP1201841P46	JAPAN 1.1% 20MAR43	20Y	1.22 B	572.42 M	650.44 M	113.6 %

In this chart we can see the first 12 bonds by notional in the days 2nd-5th of August increased their traded amount significantly, some by more than 1000%. This chart includes liquid and less liquid bonds.

If we consider the third most traded bond – the JGB 0.3% 20dec2039 (JP1201711L13) – we can observe its evolution over the last month:



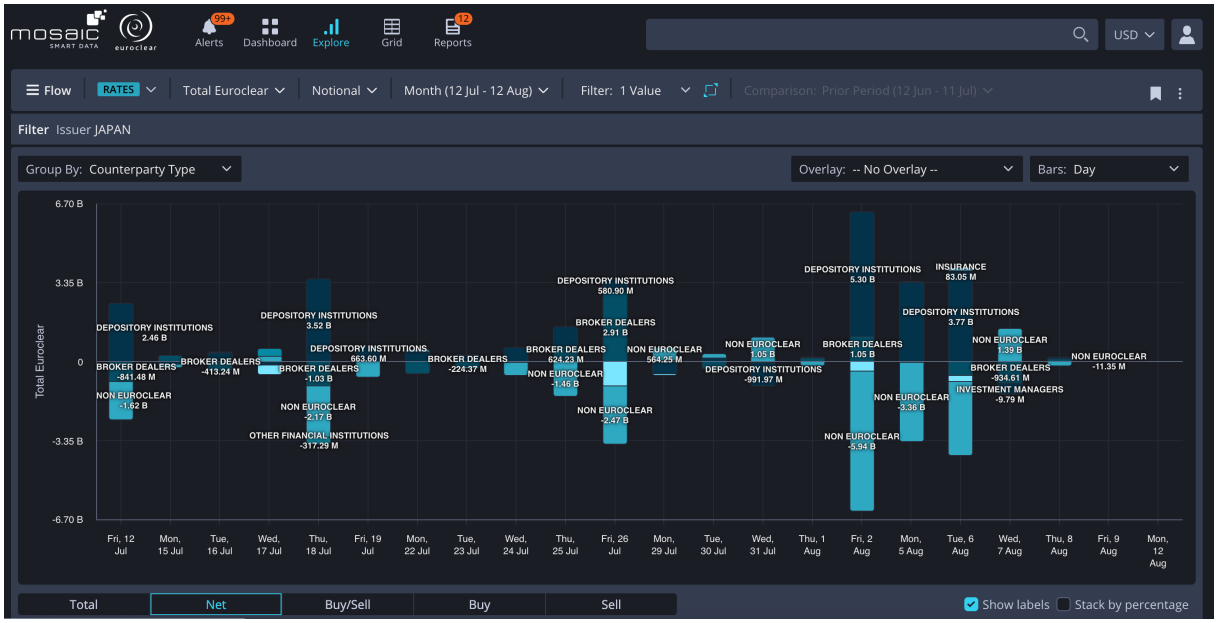
On Friday 2nd, we see a peak of $4.40 Bln.

We can even observe which were the main counterparties active in JGB 0.3% 20dec2039 (JP1201711L13) over the course of last month, looking at the who were the main buyers and who were the main sellers.
The main highlight we get from the following image are:

- The main sellers were non-Euroclear investors, i.e. institutions settling outside the Euroclear ecosystem, which most likely can be identified as large global investment banks, for -$1.6 Bln.

- The main buyers were (mostly European) depository Institutions with an active buy balance sheet of $1.45 Bln.

We can look at the same counterparty type breakdown across the entire universe of JGBs:

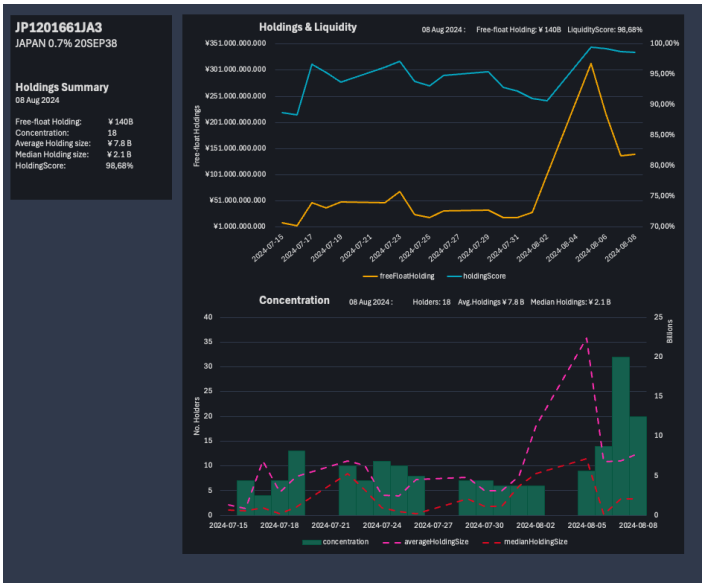


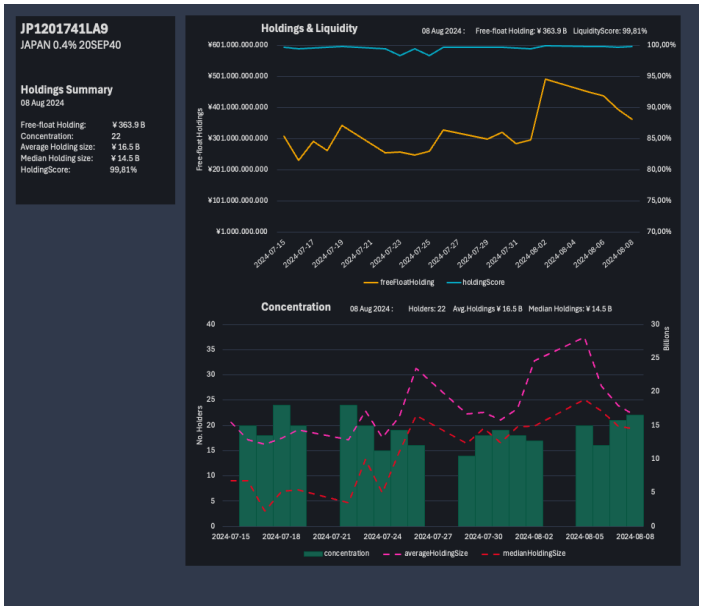
This time series shows that on 2nd August there was a peak in net trading activity on JGBs. In line with what we observed for JGB 0.3% 20dec2039 (JP1201711L13), by aggregating all the Japanese government bonds we can observe that:

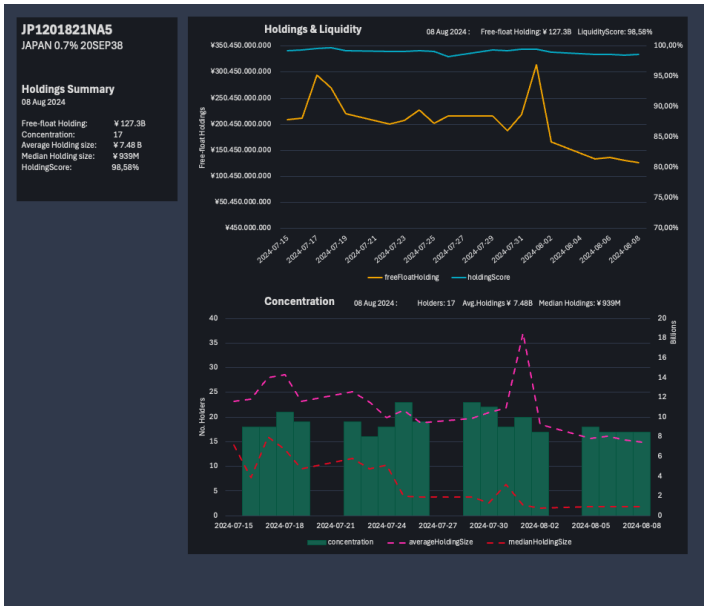
- The main sellers on Friday 2nd August were non-Euroclear investors, mainly settling outside the Euroclear ecosystem, for an aggregate net short position of -$5.94 Bln.
- The main buyers on Friday 2nd August were depository institutions with an overall net buying of +$5.30 Bln.

HOLDINGS ANALYSIS FOR SELECTED JGB

The following holding analysis on a selection of liquid JGBs confirms the increased amount of JGB held within Euroclear investors' portfolios in the days ahead of the Japanese stock market crisis on Monday 5th.







The chart at the top right refers to **JGB 0.3% 20dec2039** (JP1201711L13), already analysed in the previous paragraph, and confirms that about ¥300 Bln (about $2 Bln) has been purchased, in an aggregate and net view, by market participants settling within the Euroclear network ahead of Monday 5th.

Other JGBs experienced similar spikes of volume held by European and international investors:

- **JGB 0.7% 20sep2038** (JP1201661JA3), which had a ~¥300 Bln spike settled on Monday 5th.
- **JGB 0.4% 20sep2040** (JP1201741LA9), which had a ~¥200 Bln spike settled on Friday 2nd.
- **JGB 1.1% 20sep2042** (JP1201821NA5), which had a ~¥100 Bln spike settled on Thursday 1st.

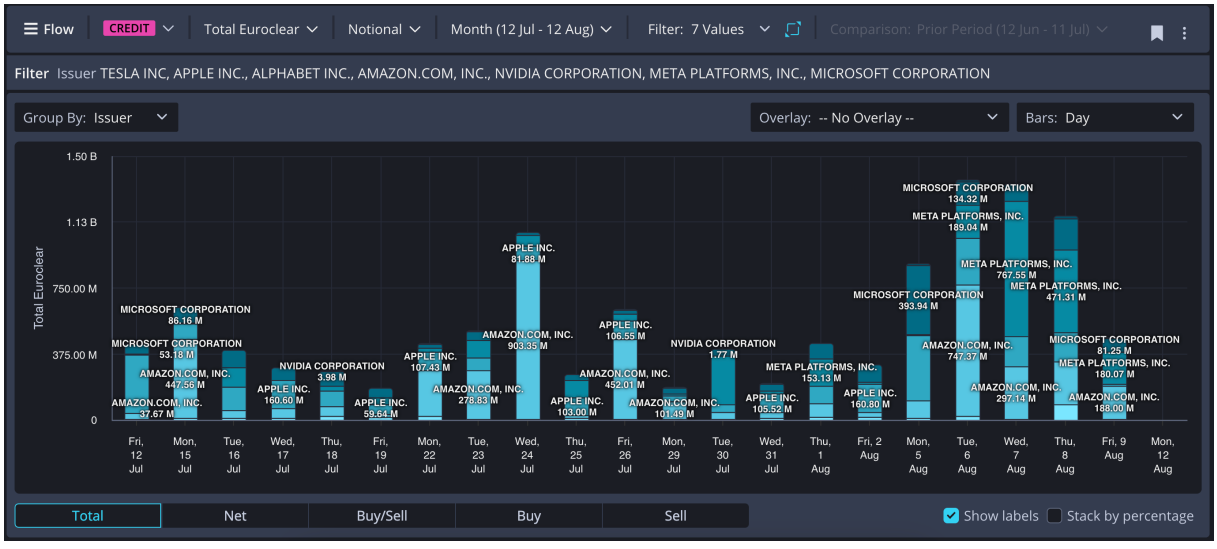
THE US "MAGNIFICENT SEVEN" CORPORATE BONDS

Government bonds (UST and JGBs) are historically negatively correlated with the correspondent stock markets, and indeed both USTs and JGBs experienced a soar in prices (and a drop in yield) during the global stock crisis of Friday 2nd August and Monday 5th.

However, it is also interesting to analyse the dynamics of corporate bond trading before, during and after the global stock crisis of Friday 2nd August and Monday 5th, as the correlation of corporate bonds with equity is less obvious: on one hand, corporate bonds should benefit from a decreasing benchmark yield curve, on the other, spreads vs benchmark are expected to increase in a stressed market regime.

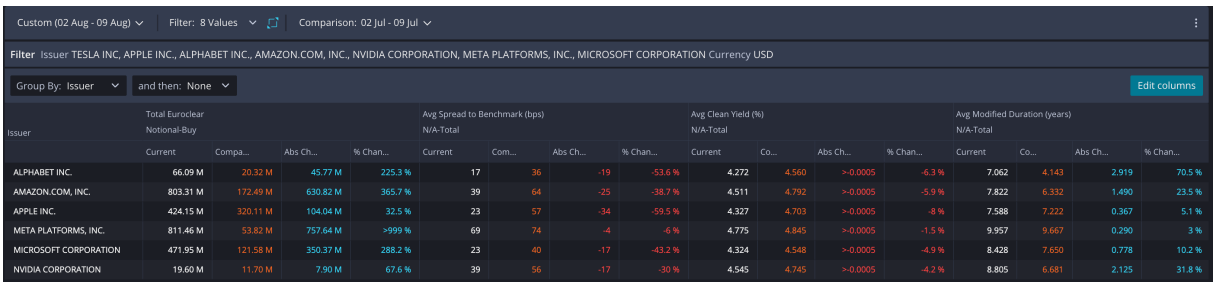
Specifically, in this section we analyse the corporate bonds of the "Magnificent Seven", or actually the 'Magnificent Six', given that Tesla has no outstanding bonds after the 2% convertible bond expired in May 2024 and a previous 5.3% issuance has been redeemed early. We're therefore looking at bonds issued by:

- Apple (APPLE INC.)
- Microsoft (MICROSOFT CORPORATION)
- Nvidia (NVIDIA CORPORATION)
- Amazon (AMAZON.COM, INC.)
- Google / Alphabet (ALPHABET INC.)
- Facebook / Meta (META PLATFORMS, INC.)



From this time series, we can appreciate how the liquidity and turnover of the "Magnificent Seven" corporate bonds soared during the week 5th – 9th August 2024.

Looking more in detail, we can track multiple KPIs (key performance indicators) for these six issuers in the stressed regime period 5th – 9th August 2024 with the same period in the previous month:



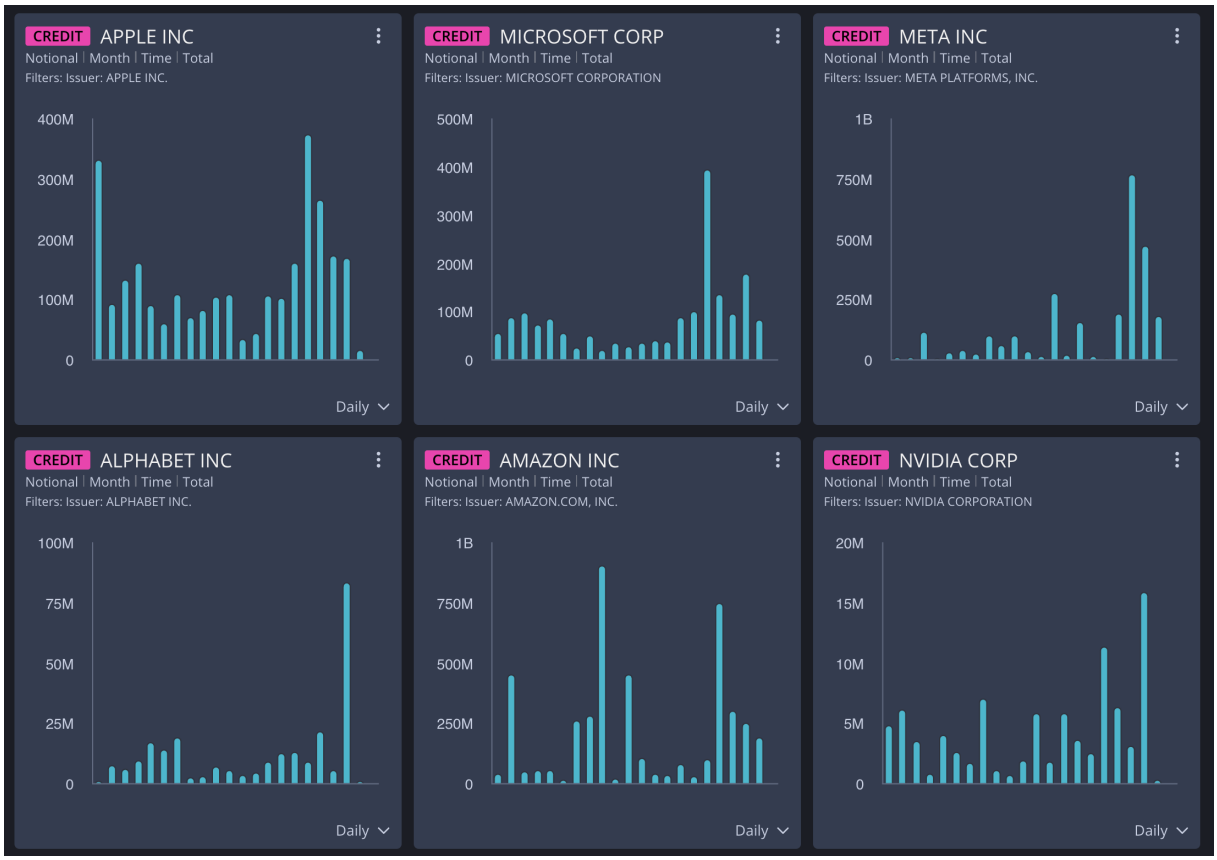
Issuer	Total Euroclear Notional-Buy				Avg Spread to Benchmark (bps) N/A-Total				Avg Clean Yield (%) N/A-Total				Avg Modified Duration (years) N/A-Total			
	Current	Compa...	Abs Ch...	% Chan...	Current	Com...	Abs Ch...	% Chan...	Current	Co...	Abs Ch...	% Chan...	Current	Co...	Abs Ch...	% Chan...
ALPHABET INC.	66.09 M	20.32 M	45.77 M	225.3 %	17	36	-19	-53.6 %	4.272	4.560	>-0.0005	-6.3 %	7.062	4.143	2.919	70.5 %
AMAZON.COM, INC.	803.31 M	172.49 M	630.82 M	365.7 %	39	64	-25	-38.7 %	4.511	4.792	>-0.0005	-5.9 %	7.822	6.332	1.490	23.5 %
APPLE INC.	424.15 M	320.11 M	104.04 M	32.5 %	23	57	-34	-59.5 %	4.327	4.703	>-0.0005	-8 %	7.588	7.222	0.367	5.1 %
META PLATFORMS, INC.	811.46 M	53.82 M	757.64 M	>999 %	69	74	-4	-6 %	4.775	4.845	>-0.0005	-1.5 %	9.957	9.667	0.290	3 %
MICROSOFT CORPORATION	471.95 M	121.58 M	350.37 M	288.2 %	23	40	-17	-43.2 %	4.324	4.548	>-0.0005	-4.9 %	8.428	7.650	0.778	10.2 %
NVIDIA CORPORATION	19.60 M	11.70 M	7.90 M	67.6 %	39	56	-17	-30 %	4.545	4.745	>-0.0005	-4.2 %	8.805	6.681	2.125	31.8 %

From the above, we can appreciate how the turnover increased massively across all the issuers (+270% overall) and especially for Meta and Amazon. At the same time, yields decreased by 24 bps on a weighted average in the last month, which is mostly driven by the increase in the benchmark (UST) prices in the last week, and the associated decrease in the benchmark UST curve.

It is interesting to also notice that:

- Average duration of the top issuers significantly shifted towards the longer duration, from 6.6 years on average to 8.8 years (+2.2 years in a month)
- Average spread to benchmark slightly decreased over the month, indicating that despite the stressed market regime and the poor correspondent stocks' performances, the credit spread of the "Magnificent Seven" remains in the order of ~40 bps which implies an extremely very low credit risk.

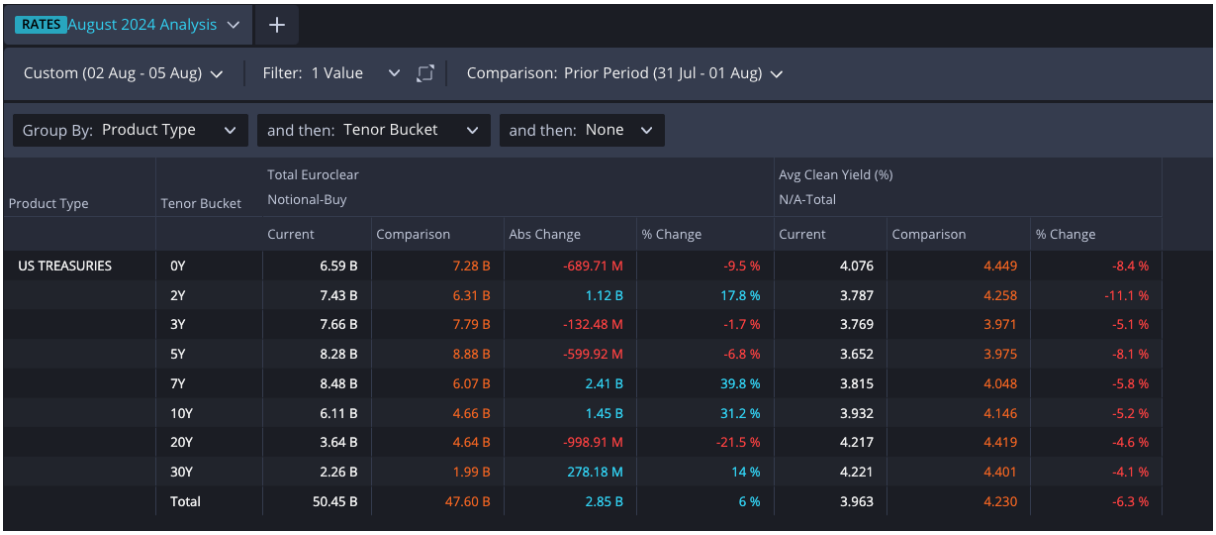
Individually, this is a time series of the six issuers over time, in USD by notional for the last month:



US GOVERNMENT BONDS (UST)

US treasuries were traded for $50.91 B USD on Friday 2nd, registering an increase of 31.3% compare to the previous day. A similar amount was traded the following Monday on US treasuries.

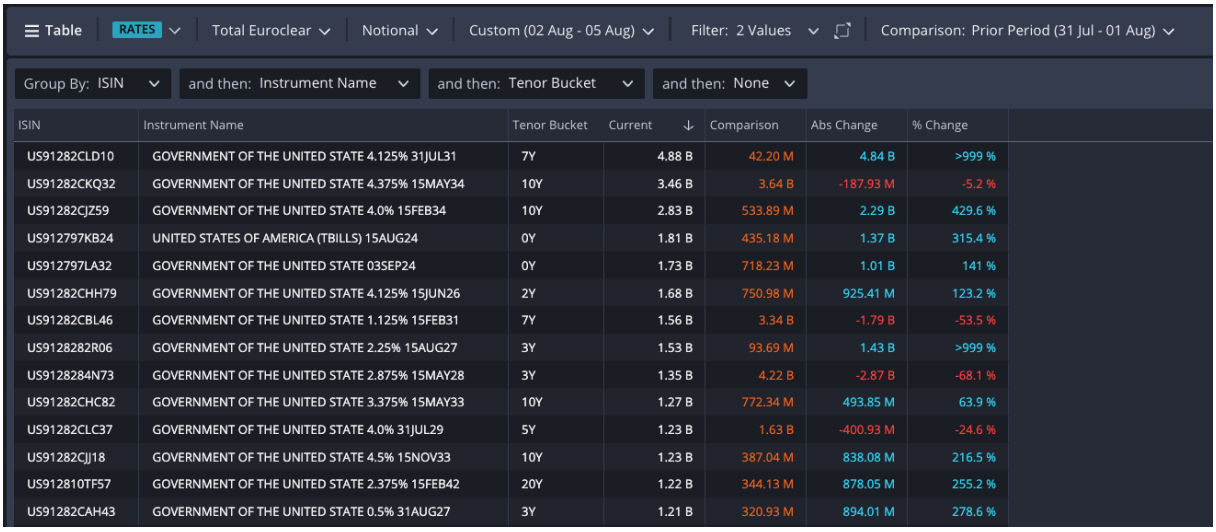
Let's now look at US treasuries data in the period 2nd-5th of August compared with the previous trading days:



Product Type	Tenor Bucket	Total Euroclear Notional-Buy				Avg Clean Yield (%) N/A-Total		
		Current	Comparison	Abs Change	% Change	Current	Comparison	% Change
US TREASURIES	0Y	6.59 B	7.28 B	-689.71 M	-9.5 %	4.076	4.449	-8.4 %
	2Y	7.43 B	6.31 B	1.12 B	17.8 %	3.787	4.258	-11.1 %
	3Y	7.66 B	7.79 B	-132.48 M	-1.7 %	3.769	3.971	-5.1 %
	5Y	8.28 B	8.88 B	-599.92 M	-6.8 %	3.652	3.975	-8.1 %
	7Y	8.48 B	6.07 B	2.41 B	39.8 %	3.815	4.048	-5.8 %
	10Y	6.11 B	4.66 B	1.45 B	31.2 %	3.932	4.146	-5.2 %
	20Y	3.64 B	4.64 B	-998.91 M	-21.5 %	4.217	4.419	-4.6 %
	30Y	2.26 B	1.99 B	278.18 M	14 %	4.221	4.401	-4.1 %
	Total	50.45 B	47.60 B	2.85 B	6 %	3.963	4.230	-6.3 %

We observe a general increase in the total traded amount, by 6% in total. Interestingly, all the yields across the curve dropped by 27 bps (-6.3%) on average. This may indicate an increase in demand for government bonds due to the increased risk associated with shares, and then an increase in bond prices which lead to a UST yield lowering.

Now, let's see the changes in notional in the most traded US treasuries in the analysed period:

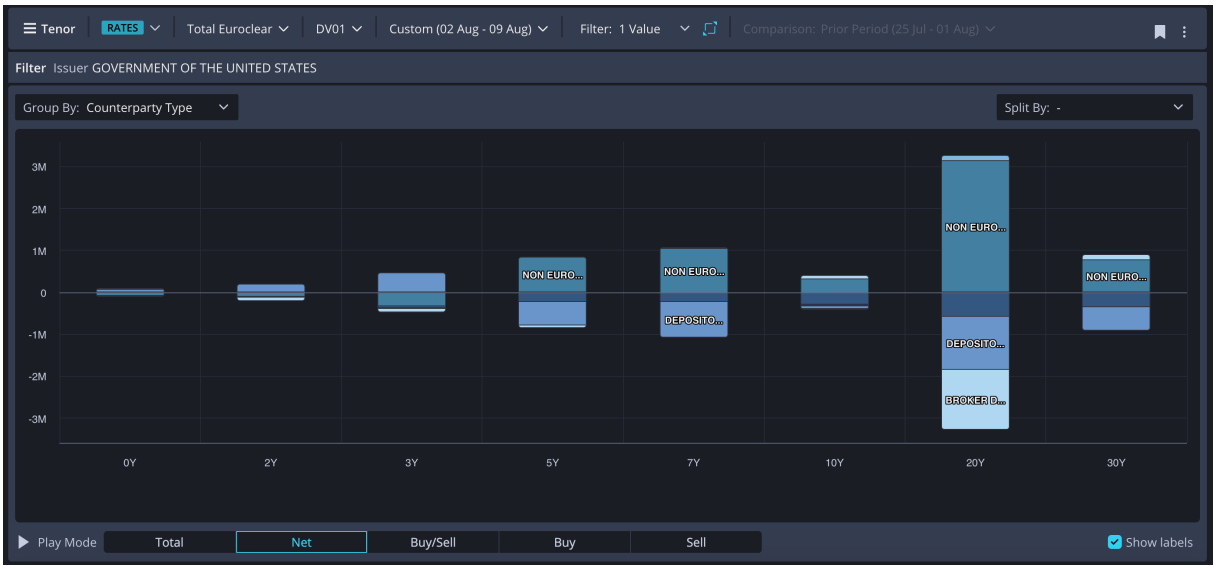


ISIN	Instrument Name	Tenor Bucket	Current	Comparison	Abs Change	% Change
US91282CLD10	GOVERNMENT OF THE UNITED STATE 4.125% 31JUL31	7Y	4.88 B	42.20 M	4.84 B	>999 %
US91282CKQ32	GOVERNMENT OF THE UNITED STATE 4.375% 15MAY34	10Y	3.46 B	3.64 B	-187.93 M	-5.2 %
US91282CJZ59	GOVERNMENT OF THE UNITED STATE 4.0% 15FEB34	10Y	2.83 B	533.89 M	2.29 B	429.6 %
US912797KB24	UNITED STATES OF AMERICA (TBILLS) 15AUG24	0Y	1.81 B	435.18 M	1.37 B	315.4 %
US912797LA32	GOVERNMENT OF THE UNITED STATE 03SEP24	0Y	1.73 B	718.23 M	1.01 B	141 %
US91282CHH79	GOVERNMENT OF THE UNITED STATE 4.125% 15JUN26	2Y	1.68 B	750.98 M	925.41 M	123.2 %
US91282CBL46	GOVERNMENT OF THE UNITED STATE 1.125% 15FEB31	7Y	1.56 B	3.34 B	-1.79 B	-53.5 %
US9128282R06	GOVERNMENT OF THE UNITED STATE 2.25% 15AUG27	3Y	1.53 B	93.69 M	1.43 B	>999 %
US9128284N73	GOVERNMENT OF THE UNITED STATE 2.875% 15MAY28	3Y	1.35 B	4.22 B	-2.87 B	-68.1 %
US91282CHC82	GOVERNMENT OF THE UNITED STATE 3.375% 15MAY33	10Y	1.27 B	772.34 M	493.85 M	63.9 %
US91282CLC37	GOVERNMENT OF THE UNITED STATE 4.0% 31JUL29	5Y	1.23 B	1.63 B	-400.93 M	-24.6 %
US91282CJJ18	GOVERNMENT OF THE UNITED STATE 4.5% 15NOV33	10Y	1.23 B	387.04 M	838.08 M	216.5 %
US912810TF57	GOVERNMENT OF THE UNITED STATE 2.375% 15FEB42	20Y	1.22 B	344.13 M	878.05 M	255.2 %
US91282CAH43	GOVERNMENT OF THE UNITED STATE 0.5% 31AUG27	3Y	1.21 B	320.93 M	894.01 M	278.6 %

The increase in notional is maybe less evident than in JGBs but still significant looking at the *% Change* column on the right part of the table.

If in JGBs the main increase in trading activity was more focused on 10Y and 20Y term maturities, here it seems more widespread.

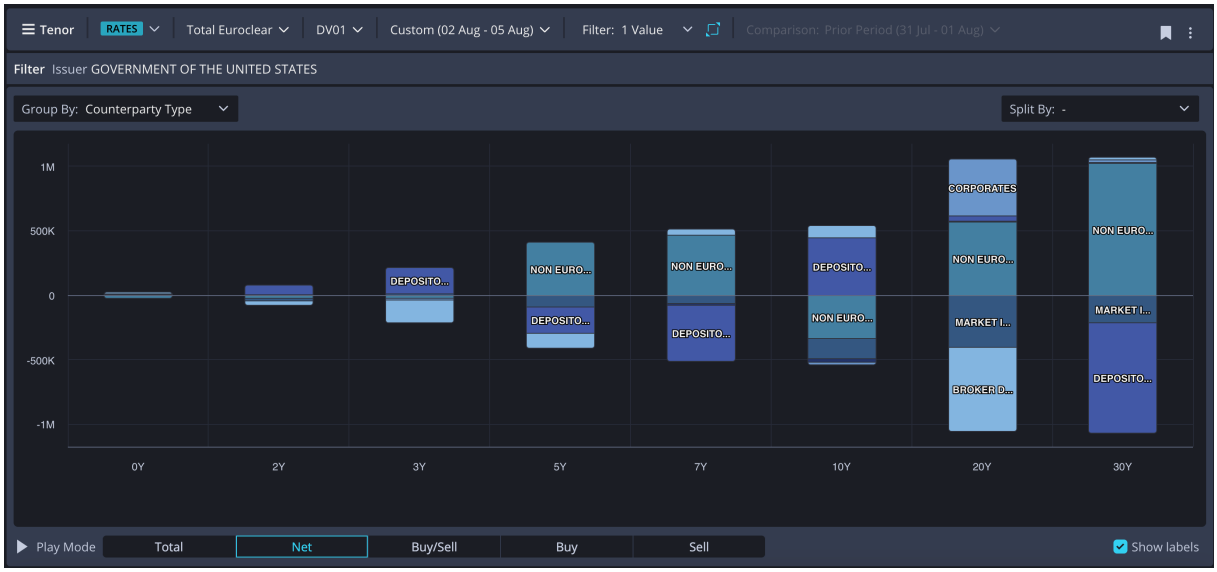
Let's now break down by counterparty type to see the main investors in US treasury bonds and how they changed their UST portfolios, in aggregated risk basis (DV01), across the different tenor buckets:



The main investor types on the period 2nd – 9th August 2024 were:

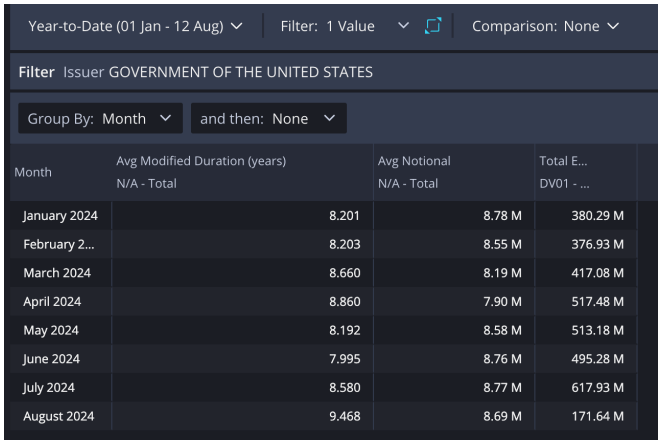
- Buy-side investors settling through various depository institutions were net sellers of -$2.6 M of DV01 risk, mainly on the 20Y bucket
- Non-Euroclear institutions, most likely global investment banks, were strong net buyers of UST risk, with a total of $5.6M DV01, mainly on the 20Y bucket.

Restricting the scope of the analysis to the core of the global stock crash, i.e. 2nd and 5th of August, the net DV01 view by tenor is very different, with a lot of activity building up on the ultra-long part of the curve, likely because investors shifted their portfolios from equities to long fixed income durations. Particularly interesting is the contribution of large corporates settling directly via Euroclear, which usually is only a relatively small fraction of the flow, and which bought more than $440k DV01 ($270M notional) of 20Y UST bonds at the peak of the stock crisis, with prices already relatively high.



This chart above shows a trend of risk-weighted flow becoming more concentrated on the long part of the curve during the first week of August.

This sharp increase in the average duration preferred to trade by investors in the secondary market caused the average duration to reach 9.47 years on Monday 5th (almost +1 year from an average of ~8.58 years in July 2024 and almost +1.5 years from ~8 years in June 2024).
Average trade size remained constant at around $8.7M per trade.
See table below.



Month	Avg Modified Duration (years) N/A - Total	Avg Notional N/A - Total	Total E... DV01 - ...
January 2024	8.201	8.78 M	380.29 M
February 2...	8.203	8.55 M	376.93 M
March 2024	8.660	8.19 M	417.08 M
April 2024	8.860	7.90 M	517.48 M
May 2024	8.192	8.58 M	513.18 M
June 2024	7.995	8.76 M	495.28 M
July 2024	8.580	8.77 M	617.93 M
August 2024	9.468	8.69 M	171.64 M