. —			1					1										
Hightower																		
Securities does not						HIGHTOWER SECURITIES, LLC - Held NMS												
receive payment for						Stocks and Options Order Routing Public												
order flow.						Report												
4th Quarter, 2022																		
October 2022 S&P 500 Stocks																	l	
Summary																		
,							Non-Marketable											
	Non-Directed		Market Orders as %		Marketable Limit		Limit Orders as % of		Other Orders as %									
Total Non-Directed			of Non-Directed	Total Marketable	Orders as % of Non-		Non-Directed		of Non-Directed									
Orders 16	Orders 100.00	Total Market Orders		Limit Orders	Directed Orders 0.00	Total Non-Marketable Limit Orders	Orders 6.25	Total Other Orders	Orders 0.00									
10	100.00	13	93.73	0	0.00	,	0.23		0.00	1			1		<u> </u>			
Venues																		
												Net Payment		Net Payment		Net Payment		
											Net Payment	Paid/Received for Market	Net Payment Paid/Received for	Paid/Received for Marketable Limit	Net Payment Paid/Received for	Paid/Received for Non-Marketable	Net Payment	Net Payment Paid/Received for
Venue - Non-	Non-Directed	Non-Directed			Marketable Limit		Non-Marketable	Non-Marketable			Paid/Received for	Orders(cents per	Marketable Limit	Orders(cents per	Non-Marketable		Paid/Received for	Other Orders(cents
directed Order Flow		Orders(%)	Market Orders	Market Orders(%)	Orders	Marketable Limit Orders(%)	Limit Orders	Limit Orders(%)	Other Orders	Other Orders(%)	Market Orders(USD)		Orders(USD)	hundred shares)	Limit Orders(USD)		Other Orders(USD)	per hundred shares)
Citadel Securities																		
LLC(CDRG)	7	36.84	7	46.67	0	0.00	0	0.00	0	0.00	0	0) (0) () (0	0
VIRTU Americas, LLC(NITE)				33.33				0.00		0.00								
LLC(NITE)	- 5	26.32	5	33.33	0	0.00	0	0.00	0	0.00	0	0	0	0	0	0	0	0
1													1	1	1			1
NASDAQ Execution													1					
Services, LLC(NSDQ)	3	15.79	0	0.00	0	0.00	3	75.00	0	0.00				0			0	0
Jane Street Capital,																		
LLC(JNST) Choe EDGX US	1 2	10.53	2	13.33	0	0.00	0	0.00	0	0.00	· · · · · ·	1 0	1 0	1 0	1 0	1 0	0	0
Equities																		
Exchange(EDGX)	1	5.26		0.00	0	0.00	1	25.00	0	0.00			o .	0	((0
UBS Securities,																		
LLC(UBSS)	1	5.26	1	6.67	0	0.00	0	0.00	0	0.00	0	0) (0) () (0	0
October 2022	1	-		1	1		-		1				-	-	-	-	-	-
Non-S&P 500 Stocks																		
Summary				1	1				1				1					
,							Non-Marketable											
	Non-Directed		Market Orders as %		Marketable Limit		Limit Orders as % of		Other Orders as %									
Total Non-Directed			of Non-Directed	Total Marketable	Orders as % of Non-		Non-Directed		of Non-Directed									
Orders 15	Orders 100.00	Total Market Orders		Limit Orders	Directed Orders 0.00	Total Non-Marketable Limit Orders	Orders 6.67	Total Other Orders	Orders 13.33									
Venues 15	100.00	12	80.00	0	0.00		0.07	· ·	13.33	1								
												Net Payment		Net Payment		Net Payment		
	1																	
I .												Paid/Received for	Net Payment	Paid/Received for	Net Payment	Paid/Received for		Net Payment
L											Net Payment	Market	Paid/Received for	Marketable Limit	Paid/Received for	Non-Marketable	Net Payment	Paid/Received for
Venue - Non-	Non-Directed	Non-Directed	Market Orders	Market Orders(%)	Marketable Limit	Markatable Limit Orders(%)	Non-Marketable	Non-Marketable	Other Orders	Other Orders(%)	Paid/Received for	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow		Non-Directed Orders(%)	Market Orders	Market Orders(%)		Marketable Limit Orders(%)	Non-Marketable Limit Orders	Non-Marketable Limit Orders(%)	Other Orders	Other Orders(%)		Market Orders(cents per	Paid/Received for	Marketable Limit	Paid/Received for	Non-Marketable Limit Orders(cents		Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG)				Market Orders(%) 41.67	Orders	Marketable Limit Orders(%)	Limit Orders			Other Orders(%)	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital,		Orders(%) 40.00	5	41.67	Orders 0	0.00	Limit Orders	Limit Orders(%)	0	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(JNST)		Orders(%)	5		Orders 0	,	Limit Orders	Limit Orders(%)	0		Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(JNST) VIRTU Americas,		Orders(%) 5 40.00 8 20.00	5	41.67 25.00	0 Orders	0.00	Limit Orders 1	Limit Orders(%) 100.00	0	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(JNST) VIRTU Americas,		Orders(%) 40.00	5	41.67	0 Orders	0.00	Limit Orders 1	Limit Orders(%)	0	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(JNST) VIRTU Americas, LLC(NITE) G1 Execution		Orders(%) 5 40.00 8 20.00 8 20.00	3	41.67 25.00 8.33	0 0 0	0.00	Limit Orders 1 0	Limit Orders(%) 100.00 0.00	0	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(JINST) VIRTU Americas, LLC(NITE) G1 Execution Services, LLC(ETMM)		Orders(%) 5 40.00 8 20.00	3	41.67 25.00	0 0 0	0.00	Limit Orders 1 0	Limit Orders(%) 100.00	0	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(NITE) G1 Execution Services, LLC(ETMM) Two Sigma		Orders(%) 5 40.00 8 20.00 8 20.00	3	41.67 25.00 8.33	0 0 0	0.00	Limit Orders 1 0	Limit Orders(%) 100.00 0.00	0	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(DRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(NITE) G1 Execution Services, LLC(ETMM) Two Sigma Securities,		Orders(%) 5 40.00 8 20.00 8 20.00 2 13.33	3 1 2	41.67 25.00 8.33	0 0 0 0 0	0.00	Limit Orders 1 0 0	100.00 0.00 0.00	0 0 2	100.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CNRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(NITE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SOHO) October 2022		Orders(%) 5 40.00 8 20.00 8 20.00	3 1 2	41.67 25.00 8.33	0 0 0 0 0	0.00	Limit Orders 1 0 0	Limit Orders(%) 100.00 0.00	0 0 2	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(JNST) VIRTU Americas, LLC(NST) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SOHO) October 2022 Option Contracts		Orders(%) 5 40.00 8 20.00 8 20.00 2 13.33	3 1 2	41.67 25.00 8.33	0 0 0 0 0	0.00	Limit Orders 1 0 0	100.00 0.00 0.00	0 0 2	100.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CNRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(NITE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SOHO) October 2022		Orders(%) 5 40.00 8 20.00 8 20.00 2 13.33	3 1 2	41.67 25.00 8.33	0 0 0 0 0	0.00	0 0 0	100.00 0.00 0.00	0 0 2	100.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(JNST) VIRTU Americas, LLC(NST) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SOHO) October 2022 Option Contracts	Orders 6 3 3 2	Orders(%) 5 40.00 8 20.00 8 20.00 2 13.33	3 1 2 1	41.67 25.00 8.33	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.00	Umit Orders 1 0 0 0 0 Non-Marketable	100.00 0.00 0.00	0 0 0 0	100.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDMG) Jane Street Capital, LLC(INT) VIRTU Americas, LLC(NTE) GI Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SOHO) Cottober 202 Option Contracts Summary	Orders 6 3 3 7 Non-Directed	Orders(%) 5 40.00 8 20.00 8 20.00 2 13.33	5 3 1 1 2 Market Orders as %	41.67 25.00 8.33 16.67	Orders 0 0 0 0 0 Marketable Limit	0.00	Umit Orders 1 0 0 0 0 0 Non-Marketable Limit Orders as % of	100.00 0.00 0.00	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(JNST) VIRTU Americas, LLC(NST) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SOHO) October 2022 Option Contracts	Orders 3 3 2 Non-Directed Orders as % of All Orders	Orders(%) 40.00 20.00 20.00 13.33 1.6.67	3 1 2 2 Market Orders as % of Non-Directed Orders	41.67 25.00 8.33	Orders 0 0 0 0 0 0 Marketable Limit Orders as % of Non-	0.00	Umit Orders 1 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders	100.00 0.00 0.00 0.00 0.00 Total Other Orders	0 0 0 0 0 0 0 0 0 0 0 0 Other Orders as % of Non-Directed Orders	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) GI Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SOHO) October 2022 Option Contracts Summary Total Non-Directed	Orders 3 3 3 Non-Directed Orders as % of All	Orders(%) 40.00 20.00 20.00 13.33 1.6.67	3 1 1 2 Market Orders as % of Non-Directed	41.67 25.00 8.33 16.67 8.33	Orders 0 0 0 0 0 0 Marketable Limit Orders as % of Non-	0.00 0.00 0.00	Umit Orders 1 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed	100.00 0.00 0.00 0.00 0.00 Total Other Orders	0 0 0 2 0 0 0 0 0 0 0 0 Other Orders as % of Non-Directed	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Cinded Security LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTG) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SWO) October 2022 Option Contracts Summary Total Non-Directed Orders 3	Orders 3 3 2 Non-Directed Orders as % of All Orders	Orders(%) 40.00 20.00 20.00 13.33 1.6.67	3 1 2 2 Market Orders as % of Non-Directed Orders	41.67 25.00 8.33 16.67 8.33	Orders 0 0 0 0 0 Marketable Limit Orders as % of Non	0.00 0.00 0.00	Umit Orders 1 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders	100.00 0.00 0.00 0.00 0.00 Total Other Orders	0 0 0 0 0 0 0 0 0 0 0 0 Other Orders as % of Non-Directed Orders	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) GI Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SOHO) October 2022 Option Contracts Summary Total Non-Directed	Orders 3 3 2 Non-Directed Orders as % of All Orders	Orders(%) 40.00 20.00 20.00 13.33 1.6.67	3 1 2 2 Market Orders as % of Non-Directed Orders	41.67 25.00 8.33 16.67 8.33	Orders 0 0 0 0 0 Marketable Limit Orders as % of Non	0.00 0.00 0.00	Umit Orders 1 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders	100.00 0.00 0.00 0.00 0.00 Total Other Orders	0 0 0 0 0 0 0 0 0 0 0 0 Other Orders as % of Non-Directed Orders	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per	Paid/Received for Marketable Limit	Marketable Limit Orders(cents per	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Cinded Security LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTG) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SWO) October 2022 Option Contracts Summary Total Non-Directed Orders 3	Orders 3 3 2 Non-Directed Orders as % of All Orders	Orders(%) 40.00 20.00 20.00 13.33 1.6.67	3 1 2 2 Market Orders as % of Non-Directed Orders	41.67 25.00 8.33 16.67 8.33	Orders 0 0 0 0 0 Marketable Limit Orders as % of Non	0.00 0.00 0.00	Umit Orders 1 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders	100.00 0.00 0.00 0.00 0.00 Total Other Orders	0 0 0 0 0 0 0 0 0 0 0 0 Other Orders as % of Non-Directed Orders	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per hundred shares)	Paid/Received for Marketable Limit	Marketable Linit Orders(cents per hundred shares)	Paid/Received for Non-Marketable	Non-Marketable Limit Orders(cents	Paid/Received for	Paid/Received for Other Orders(cents
directed Order Flow Cinded Security LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTG) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SWO) October 2022 Option Contracts Summary Total Non-Directed Orders 3	Orders 3 3 2 Non-Directed Orders as % of All Orders	Orders(%) 40.00 20.00 20.00 13.33 1.6.67	3 1 2 2 Market Orders as % of Non-Directed Orders	41.67 25.00 8.33 16.67 8.33	Orders 0 0 0 0 0 Marketable Limit Orders as % of Non	0.00 0.00 0.00	Umit Orders 1 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders	100.00 0.00 0.00 0.00 0.00 Total Other Orders	0 0 0 0 0 0 0 0 0 0 0 0 Other Orders as % of Non-Directed Orders	0.00	Paid/Received for Market Orders(US)	Market Orders(cents per hundred shares) C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD)	Non-Marketable Limit Orders(cents per hundred shares) () () () () () () () () () () () () (Paid/Received for	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 Net Payment
directed Order Flow Cinadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, Securities, LLC(STMO) October 2022 Option Contracts Summary Total Non-Directed Orders 3 Venues	Orders 6 3 3 2 1 Non-Directed Orders as % of All Orders 100.00	Orders(%) 6 40.00 8 20.00 8 20.00 1 13.33 1 6.67	3 1 2 2 Market Orders as % of Non-Directed Orders	41.67 25.00 8.33 16.67 8.33	Orders 0 0 0 0 0 0 0 Marketable Limit Orders as % of Non-	0.00 0.00 0.00	Umit Orders 1 0 0 0 0 Non-Marketable Umit Orders 8% of Non-Directed Orders 0.00	Umit Orders(%) 100.06 0.00 0.	0 0 0 0 0 0 0 0 0 0 0 0 Other Orders as % of Non-Directed Orders	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Marketable Limit Marketable Limit Markatable Limit Markatable Limit Markatable Limit Markatable Limit Markatable Limit	Paid/Received for Paid Received for Paid Receive	Non-Marketable Non-Marketable Non-Marketable Non-Marketable Non-Marketable Non-Marketable Non-Marketable	Paid/Received for Other Orders (USD) 0 0 0 0 0 0 0 0 0 0 Net Payment	Paid/Received for Only Paid/Received Note Order Orders (ents per hundred shares) 0 0 0 0 0 0 Net Payment Paid/Received for
directed Order Flow Citadel Securities, LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SONO) October 2022 Option Contracts Summary Total Non-Directed Orders 3 Venues	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 8 20.00 8 20.00 2 13.33 1 6.67 Total Market Orders 0 3	Market Orders as % of Non-Directed Orders	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0	Orders 0 0 0 0 0 0 Marketable Limit Orders as % of Non- Directed Orders 0.00 Marketable Limit	0.00 0.00 0.00 0.00 Total Non-Marketable Limit Orders	Umit Orders 1 0 0 0 0 Non-Marketable Non-Marketable	Umit Orders(%)	Other Orders as % of Non-Directed Orders	0.00	Paid/Received for Market Orders(US)	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (1) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow (Citadel Securities LLC(CINR) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INT) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(STM) Two Sigma Securities, Securitie	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 6 40.00 8 20.00 8 20.00 1 13.33 1 6.67	Market Orders as % of Non-Directed Orders	41.67 25.00 8.33 16.67 8.33	Orders 0 0 0 0 0 0 Marketable Limit Orders as % of Non- Directed Orders 0.00 Marketable Limit	0.00 0.00 0.00	Umit Orders 1 0 0 0 0 Non-Marketable Umit Orders 8% of Non-Directed Orders 0.00	Umit Orders(%) 100.06 0.00 0.	0 0 0 0 0 0 0 0 0 0 0 0 Other Orders as % of Non-Directed Orders	0.00	Paid/Received for Market Orders(USD)	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Marketable Limit Marketable Limit Markatable Limit Markatable Limit Markatable Limit Markatable Limit Markatable Limit	Paid/Received for Paid Received for Paid Receive	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (1) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Onter Orders (cents per hundred shares) 0 0 0 0 0 0 Net Payment Paid/Received for
directed Order Flow Cinded Securities, LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, Securities, LLC(SOHO) October 2022 Option Contracts Summary Venues Venues Venue - Non-directed Order Flow Cindedel Securities,	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 8 20.00 8 20.00 2 13.33 1 6.67 Total Market Orders 0 3	Market Orders Market Orders	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0	Orders 0 0 0 0 0 0 Marketable Limit Orders as % of Non- Directed Orders 0.00 Marketable Limit	0.00 0.00 0.00 0.00 0.00 0.00 Total Non-Marketable Limit Orders 0	Umit Orders 1 0 0 0 0 Non-Marketable Non-Marketable	Umit Orders(%)	Other Orders Other Orders Other Orders	0.00 0.00 100.00 0.00	Paid/Received for Market Orders(US)	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(ETMM) Two Sigma Securities, LLC(STMM) Two Sigma Securities LLC(STMM) Citadel Securities LLC(STMM) Citadel Securities LLC(CDRG) Citadel Securities LLC(CDRG) Citadel Securities LLC(CDRG)	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 8 20.00 8 20.00 2 13.33 1 6.67 Total Market Orders 0 3	Market Orders Market Orders	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0	Orders 0 0 0 0 0 0 Marketable Limit Orders as % of Non- Directed Orders 0.00 Marketable Limit	0.00 0.00 0.00 0.00 Total Non-Marketable Limit Orders	Umit Orders 1 0 0 0 0 Non-Marketable Non-Marketable	Umit Orders(%)	Other Orders Other Orders Other Orders	0.00	Paid/Received for Market Orders(US)	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(STM) Two Sigma Securities, LLC(STM) Two Sigma Securities LLC(SOMO) Total Non-Directed Orders 3 Venues Venues Venue - Non- directed Order Flow Citadel Securities LLC(CDRG) Morgan Stanley & Company Morgan Stanley & Company	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 6 20.00 7 13.33 7 Total Market Orders 8 Non-Directed Orders(%) 8 33.33	Market Orders Market Orders Market Orders	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0 Market Orders(%) 33.33	Orders 0 0 0 0 0 0 0 Marketable Limit Orders as % of Non-Directed Orders 0.00 Marketable Limit Orders	Total Non-Marketable Limit Orders Marketable Limit Orders(%)	Umit Orders 1 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders 0 Non-Marketable Limit Orders 0 00	Limit Orders(%) 100.06 0.06 0.06 1.06	Other Orders 0.00 Other Orders 0.00	0.00 100.00 0.00 0.00 0.00 0.00 0.00	Paid/Received for Market Orders(US)	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities, LLC(CIMG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INST) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SOHO) October 2022 Option Contracts Summary Total Non-Directed Orders 3 Venues Venue - Non-directed Order Flow Venue - Non-directed Order Flow Morgan Stanley & Company LLC(CIMSO)	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 8 20.00 8 20.00 2 13.33 1 6.67 Total Market Orders 0 3	Market Orders Market Orders Market Orders	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0	Orders 0 0 0 0 0 0 0 Marketable Limit Orders as % of Non-Directed Orders 0.00 Marketable Limit Orders	0.00 0.00 0.00 0.00 0.00 0.00 Total Non-Marketable Limit Orders 0	Umit Orders 1 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders 0 Non-Marketable Limit Orders 0 00	Umit Orders(%)	Other Orders 0.00 Other Orders 0.00	0.00 0.00 100.00 0.00	Paid/Received for Market Orders(US)	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDR6) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(STM) Two Sigma Securities, LLC(STMO) Two Sigma Securities LLC(SOMO) Total Non-Directed Orders 3 Venues Venue - Non- directed Order Flow Citadel Securities LLC(CDR6) Morgan Stanley & Company LLC(MSCO)	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 6 20.00 7 13.33 7 Total Market Orders 8 Non-Directed Orders(%) 8 33.33	Market Orders Market Orders Market Orders	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0 Market Orders(%) 33.33	Orders 0 0 0 0 0 0 0 Marketable Limit Orders as % of Non-Directed Orders 0.00 Marketable Limit Orders	Total Non-Marketable Limit Orders Marketable Limit Orders(%)	Umit Orders 1 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders 0 Non-Marketable Limit Orders 0 00	Limit Orders(%) 100.06 0.06 0.06 1.06	Other Orders 0.00 Other Orders 0.00	0.00 100.00 0.00 0.00 0.00 0.00 0.00	Paid/Received for Market Orders(US)	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (1) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDNR) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INST) Venues Venu	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 8 20.00 9 13.33 1 6.67 Total Market Orders 0 3 Non-Directed Orders(%) 1 33.33	Market Orders Market Orders Market Orders 100.00	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0 Market Orders(%) 33.33	Orders 0 0 0 0 0 0 0 0 0 Marketable Limit Orders as % of Non- Directed Orders 0.00 Marketable Limit Orders	Total Non-Marketable Limit Orders Marketable Limit Orders(%)	Umit Orders 1 0 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders Non-Marketable Limit Orders 0 00 0 0 0 0 0 0 0	Umit Orders(%)	Other Orders 0.00 Other Orders 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Paid/Received for Market Orders(USD) C C C C C C C C C C C C C	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (1) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(STM) Two Sigma Securities, LLC(STM) Two Sigma Securities LLC(STM) Wenues Venue - Non-Directed Orders 3 Venues Venue - Non- directed Order Flow Citadel Securities LLC(CDRG) Morgan Stanley & Company LLC(MSCO) Susquehanna Capital C	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 6 20.00 7 13.33 7 Total Market Orders 8 Non-Directed Orders(%) 8 33.33	Market Orders Market Orders Market Orders 100.00	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0 Market Orders(%) 33.33	Orders 0 0 0 0 0 0 0 0 0 Marketable Limit Orders as % of Non- Directed Orders 0.00 Marketable Limit Orders	Total Non-Marketable Limit Orders Marketable Limit Orders(%)	Umit Orders 1 0 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders Non-Marketable Limit Orders 0 00 0 0 0 0 0 0 0	Limit Orders(%) 100.06 0.06 0.06 1.06	Other Orders 0.00 Other Orders 0.00	0.00 100.00 0.00 0.00 0.00 0.00 0.00	Paid/Received for Market Orders(USD) C C C C C C C C C C C C C	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (1) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SIGTM) Two Sigma Securities, LLC(SIGTM) Two Sigma Securities, LLC(SOHO) October 2022 Option Contracts Summary Total Non-Directed Orders 3 Venues Venue - Non- directed Order Flow Citadel Securities LLC(CDRG) Morgan Stanley & Company LLC(MSCO) Susquehanna Capital Company LLC(MSCO) Susquehanna Capital Overegues Susquehan	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 8 20.00 9 13.33 1 6.67 Total Market Orders 0 3 Non-Directed Orders(%) 1 33.33	Market Orders Market Orders Market Orders 100.00	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0 Market Orders(%) 33.33	Orders 0 0 0 0 0 0 0 0 0 Marketable Limit Orders as % of Non- Directed Orders 0.00 Marketable Limit Orders	Total Non-Marketable Limit Orders Marketable Limit Orders(%)	Umit Orders 1 0 0 0 0 0 Non-Marketable Limit Orders as % of Non-Directed Orders Non-Marketable Limit Orders 0 00 0 0 0 0 0 0 0	Umit Orders(%)	Other Orders 0.00 Other Orders 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Paid/Received for Market Orders(USD) C C C C C C C C C C C C C	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (1) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, Securities, Option Contracts Summary Venue - Non-Directed Orders 3 Venues Venue - Non-directed Order Flow Citadel Securities LLC(LCORG) LLC(LCORG) Susquestanta Company Securities LLC(LCORG) Susquestanta Group (SUSQ) Susquestanta Group (SUSQ) Susquestanta Group (SUSQ)	Orders 6 3 3 7 Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 8 20.00 9 13.33 1 6.67 Total Market Orders 0 3 Non-Directed Orders(%) 1 33.33	Market Orders Market Orders Market Orders 100.00	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0 Market Orders(%) 33.33	Orders 0 0 0 0 0 0 0 0 0 Marketable Limit Orders as % of Non- Directed Orders 0.00 Marketable Limit Orders	Total Non-Marketable Limit Orders Marketable Limit Orders(%)	Umit Orders 1 0 0 0 0 0 0 Non-Marketable Umit Orders as % of Non-Directed Orders 0.00 Non-Marketable Umit Orders 0.00 0 0 0 0 0 0	Umit Orders(%)	Other Orders 0.00 Other Orders 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Paid/Received for Market Orders(USD) C C C C C C C C C C C C C	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (1) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, Securities, LLC(SOLIC) Option Contracts Summary Total Non-Directed Orders 3 Venues Venue - Non- directed Order Flow Citadel Securities LLC(CDRG) Morgan Stanley & Company LLC(MSCO) Sussquehanna Capital Option Company LLC(MSCO) Sussquehanna Capital Option Susquehanna Capital Option Susquehann	Non-Directed Orders Non-Directed Orders as % of All Orders Non-Directed Orders	Orders(%) 5 40.00 8 20.00 9 13.33 1 6.67 Total Market Orders 0 3 Non-Directed Orders(%) 1 33.33	Market Orders as % of Non-Directed Orders 100.00	41.67 25.00 8.33 16.67 8.33 Total Marketable Limit Orders 0 Market Orders(%) 33.33	Orders 0 0 0 0 0 0 0 0 0 Marketable Limit Orders as % of Non-Directed Orders 0.00 Marketable Limit Orders	Total Non-Marketable Limit Orders Marketable Limit Orders(%)	Umit Orders 1 0 0 0 0 0 0 Non-Marketable Umit Orders 0 0 0 0 0 0 0 0 0 0 0 0 0	Umit Orders(%)	Other Orders Other Orders Other Orders Onders Other Orders Other Orders	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Paid/Received for Market Orders(USD) C C C C C C C C C C C C C	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (7) (8) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CDRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) GI Execution Services, LLC(ETMM) Two Sigma Securities, LLC(STMM) Two Sigma Securities, LLC(STMM) Two Sigma Securities, LLC(STMM) Two Sigma Securities, LLC(STMM) Two Sigma Securities LLC(STMM) Securities LLC(STM	Non-Directed Orders Non-Directed Orders as % of All Orders 100.00	Orders(%) 5 40.00 8 20.00 9 13.33 1 6.67 Total Market Orders 0 3 Non-Directed Orders(%) 1 33.33	Market Orders Market Orders Market Orders Market Orders	41.67 25.00 8.33 16.67 8.33 17.01 18.33 18.33 19.33 19.33 19.33 19.33 19.33 19.33 19.33	Orders 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Non-Marketable Limit Orders Marketable Limit Orders(%)	Non-Marketable Limit Orders 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Umit Orders(%)	Other Orders as % Other Orders Other Orders Other Orders Other Orders Other Orders Other Orders	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Paid/Received for Market Orders(USD) C C C C C C C C C C C C C	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Order/scents per hundred shares) 0 0 0 0 0 Net Payment Paid/Received for Other Order/scents
directed Order Flow Citadel Securities LLC(CNRG) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INTE) G1 Execution Services, LLC(ETMM) Two Sigma Securities, LLC(SOM) October 2022 Option Contracts Summary Total Non-Directed Orders Venue - Non- directed Order Flow Citadel Securities LLC(CORG) Morgan Stanley & Company LLC(MSCO) November 2022 Susquehanna Capital One Stocks Summary LLC(MSCO) November 2022 S8P 500 Stocks Summary Total Non-Directed	Non-Directed Orders Non-Directed Orders as % of All Orders Non-Directed Orders Non-Directed Orders	Orders(%) 5 40.00 8 20.00 9 13.33 1 6.67 Total Market Orders 9 3 8 Non-Directed Orders(%) 1 33.33	Market Orders as % of Non-Directed Market Orders Market Orders 100.00 Market Orders 1	### ##################################	Orders 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Non-Marketable Limit Orders One Marketable Limit Orders(%) One One One One One One One One One On	Umit Orders 1 0 0 0 0 0 0 0 0 0 0 0 0	Umit Orders(%)	Other Orders as % of Non-Directed Other Orders Other Orders Other Orders Other Orders Other Orders	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Paid/Received for Market Orders(USD) C C C C C C C C C C C C C	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents
directed Order Flow Citadel Securities LLC(CINR) Jane Street Capital, LLC(INST) VIRTU Americas, LLC(INST) VIRTU Americas, LLC(INST) JURTU Americas, JURT	Non-Directed Orders 1 Non-Directed Orders as % of All Orders 1 Non-Directed Orders as % of All Orders	Orders(%) 3	Market Orders as % of Non-Directed Orders 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	41.67 25.00 8.33 16.67 8.33 16.67 Total Marketable Limit Orders Market Orders(%) 33.33 33.33	Orders 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Non-Marketable Limit Orders Marketable Limit Orders(%) 0.00 0.00 0.00 Total Non-Marketable Limit Orders (%)	Non-Marketable Limit Orders 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Limit Orders(%) 100.06 0.06 0.06 100.06 Total Other Orders 0.06 0.06 Non-Marketable Limit Orders(%) 0.06 0.06 Total Other Orders	Other Orders as % Other Orders Other Orders Other Orders Other Orders Other Orders Other Orders	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Paid/Received for Market Orders(USD) C C C C C C C C C C C C C	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Orders(cents per hundred shares) 0 0 0 0 0 0 Net Payment Paid/Received for Other Orders(cents for the Paid/Received for Other
directed Order Flow Claded Securities LLC(CING) Claded Securities LLC(CING) Claded Securities LLC(CING) Clade Securities LLC(CING) Clade Securities LLC(CINT) Claded Securities LLC(CINT) LLC(CINT) Claded Securities LLC(CINT) LLC(CINT) LLC(CINT) Claded Securities LLC(CINT)	Non-Directed Orders 1 Non-Directed Orders as % of All Orders 1 Non-Directed Orders as % of All Orders	Orders(%) 3	Market Orders as % of Non-Directed Orders Market Orders as % of Non-Directed Orders A	41.67 25.00 8.33 16.67 8.33 16.67 Total Marketable Limit Orders Market Orders(%) 33.33 33.33	Orders 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Non-Marketable Limit Orders Marketable Limit Orders(%) 0.00 0.00 0.00 Total Non-Marketable Limit Orders (%)	Non-Marketable Limit Orders O Non-Marketable Limit Orders as % of Non-Directed Orders O O Non-Marketable Limit Orders as % of Non-Directed Orders O O O Non-Marketable Limit Orders as % of Non-Directed Orders	Limit Orders(%) 100.06 0.06 0.06 100.06 Total Other Orders 0.06 0.06 Non-Marketable Limit Orders(%) 0.06 0.06 Total Other Orders	Other Orders as % of Non-Directed Orders Other Orders Other Orders Other Orders Other Orders	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Paid/Received for Market Orders(USD) C C C C C C C C C C C C C	Market Orders(cents per hundred shares) C C C C C C C C C C C C C C C C C C	Paid/Received for Marketable Limit Orders(USD) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Marketable Limit Orders(cents per hundred shares) 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid Received for Non-Marketable Limit Orders(USD) (0) (0) (1) (1) (1) (2) (2) (3) (4) (4) (5) (6) (6) (7) (7) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Non-Marketable Limit Orders(cents per hundred shares) (0) (1) (2) (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Paid/Received for Other Orders(USD) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paid/Received for Other Order/scents per hundred shares) 0 0 0 0 0 Net Payment Paid/Received for Other Order/scents

Venue - Non- directed Order Flow	Non-Directed Orders	Non-Directed Orders(%)	Market Orders	Market Orders(%)	Marketable Limit Orders	Marketable Limit Orders(%)	Non-Marketable Limit Orders	Non-Marketable Limit Orders(%)	Other Orders	Other Orders(%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/Received for Market Orders(cents per hundred shares)	Net Payment Paid/Received for Marketable Limit Orders(USD)	Net Payment Paid/Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Non-Marketable Limit Orders(USD)	Net Payment Paid/Received for Non-Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/Received for Other Orders(cents per hundred shares)
NASDAQ Execution Services, LLC(NSDQ)	11	1 39.29	0	0.00	0	0.00	11	91.67	. 0	0.00) c	c	c	, a		0	o c	0
G1 Execution																		
Services, LLC(ETMM)		5 21.43	6	37.50	0	0.00	0	0.00	0	0.00		0	C	0		0	0	0
VIRTU Americas, LLC(NITE)		5 17.86	5 5	31.25	0	0.00	0	0.00	0	0.00		c	c	c		0		0
Jane Street Capital, LLC(JNST)		4 14.29		25.00	0	0.00		0.00		0.00					,			
Citadel Securities					_													
Choe EDGX US		1 3.57	1	6.25	0	0.00	0	0.00	0	0.00	0		-	-	1	0	-	0
Equities Exchange(EDGX)	ļ ,	3.57	,	0.00	0	0.00	1	8.33		0.00					,			
November 2022		3.3.		0.00	Ü	0.00	-	0.55		0.00		,						
Non-S&P 500 Stocks																		
Summary							Non-Marketable											
Total Non-Directed	Non-Directed		Market Orders as % of Non-Directed	Total Marketable	Marketable Limit		Limit Orders as % of		Other Orders as % of Non-Directed									
Orders	Orders	Total Market Orders	Orders	Limit Orders	Orders as % of Non- Directed Orders	Total Non-Marketable Limit Orders	Non-Directed Orders	Total Other Orders	Orders									
Venues 30	100.00	22	73.33	0	0.00	0	0.00	8	26.67									
Venue - Non- directed Order Flow	Non-Directed	Non-Directed Orders(%)	Market Orders	Market Orders(%)	Marketable Limit Orders	Marketable Limit Orders(%)	Non-Marketable Limit Orders	Non-Marketable Limit Orders(%)	Other Orders	Other Orders(%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/Received for Market Orders(cents per	Net Payment Paid/Received for Marketable Limit Orders(USD)	Net Payment Paid/Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Non-Marketable Limit Orders(USD)	Net Payment Paid/Received for Non-Marketable Limit Orders(cents	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/Received for Other Orders(cents per hundred shares)
VIRTU Americas,					_													
LLC(NITE)	12	2 40.00	6	27.27	0	0.00	0	0.00	6	75.00	0	0	0	0	1	0	0	0
G1 Execution Services, LLC(ETMM)	,	30.00		36.36	0	0.00		0.00	, ,	12.50					,			
Citadel Securities		3 26.67		31.82		0.00				12 50								
Jane Street Capital,					0		0	0.00	1							, 0		0
LLC(JNST) November 2022	1	1 3.33	1	4.55	0	0.00	0	0.00	0	0.00	0	C	C	C		0	0	0
Option Contracts																		
Summary																		
Total Non-Directed			Market Orders as % of Non-Directed	Total Marketable	Marketable Limit Orders as % of Non-		Non-Marketable Limit Orders as % of Non-Directed		Other Orders as % of Non-Directed									
Orders 0	Orders 0.00	Total Market Orders	Orders 0.00		Directed Orders 0.00	Total Non-Marketable Limit Orders	Orders 0.00	Total Other Orders	Orders 0.00									
Venues																		
Venue - Non- directed Order Flow December 2022	Non-Directed Orders	Non-Directed Orders(%)	Market Orders	Market Orders(%)	Marketable Limit Orders	Marketable Limit Orders(%)	Non-Marketable Limit Orders	Non-Marketable Limit Orders(%)	Other Orders	Other Orders(%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/Received for Market Orders(cents per hundred shares)	Net Payment Paid/Received for Marketable Limit Orders(USD)	Net Payment Paid/Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Non-Marketable Limit Orders(USD)		Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/Received for Other Orders(cents per hundred shares)
S&P 500 Stocks																		
Total Non-Directed Orders	Non-Directed Orders as % of All Orders	Total Market Orders	Market Orders as % of Non-Directed	Total Marketable Limit Orders	Marketable Limit Orders as % of Non-	Total Non-Marketable Limit Orders	Non-Marketable Limit Orders as % of Non-Directed Orders	Total Other Orders	Other Orders as % of Non-Directed									
Orders 42	100.00				Directed Orders 2.38	Total Non-Marketable Limit Orders 1	Urders 1 2.38		0.00									
Venues																		
Venue - Non- directed Order Flow Citadel Securities	Non-Directed Orders	Non-Directed Orders(%)	Market Orders	Market Orders(%)	Marketable Limit Orders	Marketable Limit Orders(%)	Non-Marketable Limit Orders	Non-Marketable Limit Orders(%)	Other Orders	Other Orders(%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/Received for Market Orders(cents per hundred shares)	Net Payment Paid/Received for Marketable Limit Orders(USD)	Net Payment Paid/Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Non-Marketable Limit Orders(USD)		Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/Received for Other Orders(cents per hundred shares)
LLC(CDRG)	14	4 33.33	14	35.00	0	0.00	0	0.00	0	0.00	0	0		0		0	0	0
G1 Execution Services, LLC(ETMM)	10	23.8	1 10	25.00	0	0.00	0	0.00	0	0.00		C	C	0			0	0
VIRTU Americas, LLC(NITE)		19.05		20.00	0	0.00	0	0.00	0	0.00								
Jane Street Capital, LLC(JNST)		5 11.90		12.50		0.00		0.00		0.00								
Two Sigma		11.90	1	12.50		0.00	1	0.00		0.00						1		1
Securities, LLC(SOHO)	:	3 7.14	3	7.50	0	0.00	0	0.00	0	0.00						0		0
Choe EDGX US Equities																		
Exchange(EDGX)		2 4.76	5 0	0.00	0	0.00	2	100.00	0	0.00	0	C	C	C		0	0	0
December 2022																		
Non-S&P 500 Stocks																		
Summary																		

							I									_		
							Non-Marketable											
	Non-Directed		Market Orders as %		Marketable Limit		Limit Orders as % of		Other Orders as %									
Total Non-Directed			of Non-Directed	Total Marketable	Orders as % of Non-		Non-Directed		of Non-Directed									
Orders	Orders	Total Market Orders		Limit Orders	Directed Orders	Total Non-Marketable Limit Orders	Orders	Total Other Orders										
78	100.00	50	64.10	0	0.00	1	1.28	27	34.62									
Venues																		
												Net Payment		Net Payment		Net Payment		
												Paid/Received for	Net Payment	Paid/Received for	Net Payment	Paid/Received for		Net Payment
											Net Payment	Market	Paid/Received for	Marketable Limit	Paid/Received for	Non-Marketable	Net Payment	Paid/Received for
Venue - Non-	Non-Directed	Non-Directed			Marketable Limit		Non-Marketable	Non-Marketable			Paid/Received for	Orders(cents per	Marketable Limit	Orders(cents per	Non-Marketable	Limit Orders(cents	Paid/Received for	Other Orders(cents
directed Order Flow		Orders(%)	Market Orders	Market Orders(%)		Marketable Limit Orders(%)	Limit Orders	Limit Orders(%)	Other Orders	Other Orders(%)	Market Orders(USD		Orders(USD)	hundred shares)	Limit Orders(USD)	per hundred shares)		per hundred shares
VIRTU Americas,	Oracis	Orders(70)	William Ct Orders	Market Gracis(70)	Oracis	marketable anni orders(%)	Limit Orders	Limit Orders(70)	Other orders	Other Orders(10)	market orders(osb	, indirect situres,	Olucia(OSD)	manarca snarcs _j	Limit Orders(OSD)	per numureu snures,	Other orders(osb)	per manarea smares
	42	54.43		38.00		2.00		0.00	2.0	88.89							l ,	
LLC(NITE) Citadel Securities	43	54.43	19	38.00	0	0.00	0	0.00	24	88.89	,	, ,	1	— '	<u>'</u>	1 0	-	4
					_									l .				
LLC(CDRG)	17	21.52	16	32.00		0.00	0	0.00	1	3.70	, ,	, ,		-	1	1 0		4
l		1	1		1		1	1			1	1	1	1		1	1	1
G1 Execution																		
Services, LLC(ETMM)	10	12.66	9	18.00	0	0.00	0	0.00	1	3.70) () (0)	0	() (
Two Sigma																		
Securities,																		
LLC(SOHO)	4	5.06	4	8.00	0	0.00	0	0.00	0	0.00) () ((C			0	(J (
Jane Street Capital,																		
LLC(JNST)	2	2.53	2	4.00	0	0.00	0	0.00	0	0.00) () (· .			0		J c
Members																		
Exchange(MEMX)	1	1.27	0	0.00	0	0.00	1	50.00	0	0.00	0) (· c) .	0		a (
New York Stock																		
Exchange(NYSE)	1	1.27	·	0.00	0	0.00	1	50.00	0	0.00) () (ا ا		ol ,	ol 0	(al i
UBS Securities,																		
LLC(UBSS)	1	1.27	·	0.00	0	0.00	0	0.00	1	3.70) () (ا ا		ol ,	ol 0	(a .
December 2022																		
Option Contracts																		
Summary																		
							Non-Marketable											
l .	Non-Directed	1	Market Orders as %		Marketable Limit		Limit Orders as % of	1	Other Orders as %		1	1						
Total Non-Directed		1	of Non-Directed	Total Marketable	Orders as % of Non-		Non-Directed	1	of Non-Directed		1	1						
	Orders as % or All	Total Market Orders		Limit Orders	Directed Orders	Total Non-Marketable Limit Orders	Orders	Total Other Orders	Orders		1	1						
Orders	0.00								0.00									+
- 0	0.00		0.00	- 0	0.00		0.00		0.00		-	-				+		+
																		+
Venues																		+
		1						1			1	1						
		1					1	1			1	Net Payment		Net Payment		Net Payment		
1		1	1		1		1	1			1		Net Payment	Paid/Received for	Net Payment	Paid/Received for	1	Net Payment
		1					1	1			Net Payment	Market	Paid/Received for	Marketable Limit	Paid/Received for	Non-Marketable	Net Payment	Paid/Received for
	Non-Directed	Non-Directed	1		Marketable Limit		Non-Marketable	Non-Marketable			Paid/Received for	Orders(cents per	Marketable Limit	Orders(cents per	Non-Marketable	Limit Orders(cents	Paid/Received for	Other Orders(cents
directed Order Flow	Orders	Orders(%)	Market Orders	Market Orders(%)	Orders	Marketable Limit Orders(%)	Limit Orders	Limit Orders(%)	Other Orders	Other Orders(%)	Market Orders(USD	hundred shares)	Orders(USD)	hundred shares)	Limit Orders(USD)	per hundred shares)	Other Orders(USD)	per hundred shares

Hightower Securities LLC - Held NMS Stocks and Options Order Routing Public Report Generated on Mon Jan 09 2023 14:20:49 GMT-0600 (Central Standard Time)

4th Quarter, 2022

October 2022

S&P 500 Stocks

Summary

Non-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non- Directed Orders	Non-Marketable Limit Orders as % of Non- Directed Orders	Other Orders as % of Non-Directed Orders
100.00	76.92	7.69	15.38	0.00

Venues

Venue - Non-directed Order Flow	Non- Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)
Citadel Securities LLC (CDRG)	30.79	40.00	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
G1 Execution Services, LLC (ETMM)	23.07	20.00	100.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VIRTU Americas LLC (NITE)	23.07	20.00	0.00	50.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
TWO SIGMA SECURITIES, LLC (SOHO)	15.38	10.00	0.00	50.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
UBS SECURITIES LLC (UBSS)	7.69	10.00	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Material Aspects:

October 2022

Non-S&P 500 Stocks

Summary

	Ion-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non- Directed Orders	Non-Marketable Limit Orders as % of Non- Directed Orders	Other Orders as % of Non-Directed Orders
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	Non-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non- Directed Orders	Non-Marketable Limit Orders as % of Non- Directed Orders	Other Orders as % of Non-Directed Orders
I	100.00	33.33	50.00	16.67	0.00

Venues

Venue - Non-directed Order Flow	Non- Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)
G1 Execution Services, LLC (ETMM)	33.35	50.00	33.33	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
TWO SIGMA SECURITIES, LLC (SOHO)	33.33	0.00	33.33	100.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Citadel Securities LLC (CDRG)	16.66	0.00	33.34	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
JANE STREET CAPITAL, LLC (JNST)	16.66	50.00	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Materia	I Aspects:
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October 2022

Options Summary

Non-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non- Directed Orders	Non-Marketable Limit Orders as % of Non- Directed Orders	Other Orders as % of Non-Directed Orders
0.00	0.00	0.00	0.00	0.00

Venues

Venue - Non- directed Order Flow	Non- Directed Order Orders (%) (%)		Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)	
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Material Aspects:

November 2022

S&P 500 Stocks Summary

Non-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non- Directed Orders	Non-Marketable Limit Orders as % of Non- Directed Orders	Other Orders as % of Non-Directed Orders
100.00	100.00	0.00	0.00	0.00

Venues

Venue - Non-directed Order Flow	Non- Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)
Citadel Securities LLC (CDRG)	33.35	33.35	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
UBS SECURITIES LLC (UBSS)	33.33	33.33	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
JANE STREET CAPITAL, LLC (JNST)	16.66	16.66	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
TWO SIGMA SECURITIES, LLC (SOHO)	16.66	16.66	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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November 2022

Non-S&P 500 Stocks Summary

Non-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non- Directed Orders	Non-Marketable Limit Orders as % of Non- Directed Orders	Other Orders as % of Non-Directed Orders
100.00	62.50	37.50	0.00	0.00

Venues

Venue - Non-directed Order Flow	Non- Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)
VIRTU Americas LLC (NITE)	37.50	40.00	33.33	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Citadel Securities LLC (CDRG)	12.50	20.00	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
G1 Execution Services, LLC (ETMM)	12.50	20.00	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
JANE STREET CAPITAL, LLC (JNST)	12.50	20.00	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Venue - Non-directed Order Flow	Non- Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)
TWO SIGMA SECURITIES, LLC (SOHO)	12.50	0.00	33.34	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
UBS SECURITIES LLC (UBSS)	12.50	0.00	33.33	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Material Aspects:

November 2022

Options Summary

	Non-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non- Directed Orders	Non-Marketable Limit Orders as % of Non- Directed Orders	Other Orders as % of Non-Directed Orders
1	0.00	0.00	0.00	0.00	0.00

Venues

	Venue - Non- directed Order Flow	Non- Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)	
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Material Aspects:

December 2022

S&P 500 Stocks

Summary

	Non-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non- Directed Orders	Non-Marketable Limit Orders as % of Non- Directed Orders	Other Orders as % of Non-Directed Orders
1	100.00	46.67	53.33	0.00	0.00

Venues

Venue - Non-directed Order Flow	Non- Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non- Marketable Limit Orders	Other Orders (%)	Net Payment Paid/Received for Market	Orders(cents per	Net Payment Paid/ Received for Marketable Limit	Net Payment Paid/ Received for Marketable Limit	Net Payment Paid/ Received for Non- Marketable Limit	Net Payment Paid/ Received for Non- Marketable Limit	Net Payment Paid/Received for Other	Net Payment Paid/ Received for Other Orders(cents per
				(%)		Orders(USD)	hundred shares)	Orders(USD)	Orders(cents per hundred shares)	Orders(USD)	Orders(cents per hundred shares)	Orders(USD)	hundred shares)

Venue - Non-directed Order Flow	Non- Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)
Citadel Securities LLC (CDRG)	26.69	28.59	25.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
G1 Execution Services, LLC (ETMM)	26.66	28.57	25.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
TWO SIGMA SECURITIES, LLC (SOHO)	16.66	21.42	12.50	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
UBS SECURITIES LLC (UBSS)	13.33	7.14	18.75	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VIRTU Americas LLC (NITE)	10.00	7.14	12.50	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
JANE STREET CAPITAL, LLC (JNST)	6.66	7.14	6.25	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Material Aspects:

December 2022

Non-S&P 500 Stocks

Summary

ı	Non-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non- Directed Orders	Non-Marketable Limit Orders as % of Non- Directed Orders	Other Orders as % of Non-Directed Orders
	100.00	53.85	23.08	23.08	0.00

Venues

Venue - Non-directed Order Flow	Non- Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)
VIRTU Americas LLC (NITE)	30.79	42.87	33.33	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
G1 Execution Services, LLC (ETMM)	23.07	14.28	0.00	66.67	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
TWO SIGMA SECURITIES, LLC (SOHO)	23.07	28.57	33.33	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
UBS SECURITIES LLC (UBSS)	15.38	14.28	0.00	33.33	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Venue - Non-directed Order Flow	Non- Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)
Citadel Securities LLC (CDRG)	7.69	0.00	33.34	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Material Aspects:

December 2022

Options Summary

	Non-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non- Directed Orders	Non-Marketable Limit Orders as % of Non- Directed Orders	Other Orders as % of Non-Directed Orders		
1	0.00	0.00	0.00	0.00	0.00		

Venues

Venue - Non- directed Order Flow	Directed 0		Marketable Limit Orders (%)	Non- Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non- Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non- Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)	
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Material Aspects: