

Ally Invest Securities LLC - Held NMS Stocks and Options Order Routing Public Report

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1st Quarter, 2023

January 2023

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	22.10	3.87	65.99	8.04

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	32.48	19.99	21.67	37.64	29.73	2,741.65	23.0210	1,048.30	25.4357	2,013.78	30.0000	583.23	27.4924
CITADEL SECURITIES LLC	31.21	24.88	26.05	32.29	42.18	3,161.19	22.0000	1,069.68	22.0001	2,464.18	30.0001	1,095.73	15.6206
Two Sigma Securities, LLC	21.91	45.29	42.86	13.68	15.07	6,115.26	22.7847	1,777.07	24.0207	3,969.91	29.6884	1,285.39	27.4402
Virtu Americas, LLC	14.40	9.84	9.42	16.39	13.02	962.48	18.6023	465.96	23.7494	722.60	30.0000	199.64	23.5609

Material Aspects:

G1 Execution Services, LLC:

We receive payment for executed orders routed to G1X Execution Services at the following rates:

- Marketable order, listed equity priced at \$1.00 per share or more: up to \$0.0022 per share
- Marketable order, listed equity priced under \$1.00 per share: up to \$0.001 per share
- Non-marketable order, listed equity priced at \$1.00 per share or more: up to \$0.003 per share
- Order greater than 10,000 shares or \$250,000 principal value: \$0.003 per share

These payment arrangements are conditioned upon regular attestations to G1X that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

CITADEL SECURITIES LLC:

We receive payment for executed orders routed to Citadel Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- Marketable order: up to \$0.0022 per share
- Non-marketable order: up to \$0.003 per share
- Extended hours order: up to \$0.001 per share
- Order greater than 10,000 shares or \$250,000 principal value: up to \$0.003 per share

These payment arrangements are conditioned upon regular attestations to Citadel that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

Two Sigma Securities, LLC:

We receive payment for executed orders routed to Two Sigma Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.0022 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Order greater than 10,000 shares or \$250,000 principal value: up to \$0.003 per share

These payment arrangements are conditioned upon regular attestations to Two Sigma that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

Virtu Americas, LLC:

We receive payment for executed orders routed to Virtu Americas with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.00175 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Order greater than 10,000 shares or \$250,000 principal value: \$0.003 per share

We do not receive payment for any extended hours orders, regardless of size or marketability. These payment arrangements are conditioned upon regular attestations to Virtu that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

APEX CLEARING CORPORATION:

We route orders of listed equities to our clearing firm, Apex Clearing Corporation, which further routes them to execution venues with which it has relationships. The execution venues may pay Apex for such order flow, in which case Apex retains 10% of such payment and pays us the remaining 90%. We do not determine or influence where Apex routes our orders. Further, we do not participate in any discussions concerning the payment-for-order-flow arrangements between Apex and the execution venues, nor do we influence those arrangements in any manner. See <https://www.apexclearing.com/sec-rule-606-and-607/> for reports concerning Apex's order routing practices, which we are adopting by reference.

January 2023

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	23.23	5.23	63.09	8.46

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	31.24	19.95	20.96	36.70	27.82	18,377.77	23.5019	8,708.55	24.3563	13,882.91	23.2063	3,254.71	25.6959
CITADEL SECURITIES LLC	31.08	25.17	25.94	31.84	44.81	17,499.88	17.8317	6,767.61	15.2462	14,615.61	24.8861	6,980.97	11.2890
Two Sigma Securities, LLC	23.69	44.86	43.95	15.39	14.92	34,321.15	19.4340	13,160.08	16.2306	25,071.07	22.0498	5,408.94	21.8843
Virtu Americas, LLC	14.00	10.02	9.15	16.07	12.45	8,041.67	20.0237	2,949.57	19.8281	5,688.74	26.2338	550.70	22.7126

Material Aspects:

G1 Execution Services, LLC:

We receive payment for executed orders routed to G1X Execution Services at the following rates:

- (i) Marketable order, listed equity priced at \$1.00 per share or more: up to \$0.0022 per share
- (ii) Marketable order, listed equity priced under \$1.00 per share: up to \$0.001 per share
- (iii) Non-marketable order, listed equity priced at \$1.00 per share or more: up to \$0.003 per share
- (iv) Order greater than 10,000 shares or \$250,000 principal value: \$0.003 per share

These payment arrangements are conditioned upon regular attestations to G1X that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

CITADEL SECURITIES LLC:

We receive payment for executed orders routed to Citadel Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.0022 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Extended hours order: up to \$0.001 per share
- (iv) Order greater than 10,000 shares or \$250,000 principal value: up to \$0.003 per share

These payment arrangements are conditioned upon regular attestations to Citadel that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

Two Sigma Securities, LLC:

We receive payment for executed orders routed to Two Sigma Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.0022 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Order greater than 10,000 shares or \$250,000 principal value: up to \$0.003 per share

These payment arrangements are conditioned upon regular attestations to Two Sigma that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

APEX CLEARING CORPORATION:

We route orders of listed equities to our clearing firm, Apex Clearing Corporation, which further routes them to execution venues with which it has relationships. The execution venues may pay Apex for such order flow, in which case Apex retains 10% of such payment and pays us the remaining 90%. We do not determine or influence where Apex routes our orders. Further, we do not participate in any discussions concerning the payment-for-order-flow arrangements between Apex and the execution venues, nor do we influence those arrangements in any manner. See <https://www.apexclearing.com/sec-rule-606-and-607/> for reports concerning Apex's order routing practices, which we are adopting by reference.

Virtu Americas, LLC:

We receive payment for executed orders routed to Virtu Americas with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.00175 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Order greater than 10,000 shares or \$250,000 principal value: \$0.003 per share

We do not receive payment for any extended hours orders, regardless of size or marketability. These payment arrangements are conditioned upon regular attestations to Virtu that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

January 2023

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
100.00	7.78	9.82	49.86	32.54

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	38.60	30.33	32.40	39.32	41.36	28,057.00	49.0953	64,717.00	49.6106	51,202.00	48.0486	37,545.50	47.3910

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)
Wolverine Execution Services, LLC	31.44	29.17	24.91	30.35	35.62	23,331.35	38.4213	33,819.80	39.7174	40,424.25	43.1394	38,411.05	47.8053
Global Execution Brokers LP	29.96	40.51	42.69	30.33	23.02	31,018.36	40.3601	64,115.68	42.1700	64,766.17	43.0801	29,260.03	46.1544

Material Aspects:

CITADEL SECURITIES LLC:

We receive payment for executed multi-listed, non-index option orders routed to Citadel Securities at a rate of up to \$0.50 per contract. Citadel waives fees associated with index options so long as they do not exceed 5% of the total monthly volume. These payment arrangements are conditioned upon regular attestations to Citadel that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

Wolverine Execution Services, LLC:

We receive payment for executed multi-listed, non-index option orders routed to Wolverine Execution Services at the following rates:

- (i) Single-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (ii) Single-Leg order, Penny Interval Program: up to \$0.35 per contract
- (iii) Multi-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (iv) Multi-Leg order, Penny Interval Program: up to \$0.43 per contract

Wolverine waives fees associated with index options so long as they do not exceed 5% of the total monthly volume. These payment arrangements are conditioned upon regular attestations to Wolverine that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

APEX CLEARING CORPORATION:

We route orders of multi-listed options to our clearing firm, Apex Clearing Corporation, which further routes them to execution venues with which it has relationships. The execution venues may pay Apex for such order flow, in which case Apex forwards such payment to us. We do not determine or influence where Apex routes our orders. Further, we do not participate in any discussions concerning the payment-for-order-flow arrangements between Apex and the execution venues, nor do we influence those arrangements in any manner. See <https://www.apexclearing.com/sec-rule-606-and-607/> for reports concerning Apex's order routing practices, which we are adopting by reference.

Global Execution Brokers LP:

We receive payment for executed multi-listed, non-index option orders routed to Global Execution Brokers at the following rates:

- (i) Single-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (ii) Single-Leg order, Penny Interval Program: up to \$0.37 per contract
- (iii) Multi-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (iv) Multi-Leg order, Penny Interval Program: up to \$0.44 per contract

Global Execution Brokers waives fees associated with index options so long as they do not exceed 5% of the total monthly volume. These payment arrangements are conditioned upon regular attestations to Global Execution Brokers that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

February 2023

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	21.13	3.72	67.16	7.99

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	36.34	25.08	26.60	38.93	48.94	3,455.62	22.0000	1,052.02	21.9999	3,136.41	30.0000	1,082.32	17.2069
Virtu Americas, LLC	27.26	19.86	19.07	30.28	25.24	2,294.15	19.0982	563.94	19.2803	2,025.10	29.9996	282.62	22.6910
Two Sigma Securities, LLC	21.67	45.04	44.01	14.18	12.40	6,442.75	23.6436	1,994.94	25.0561	5,090.44	29.7796	1,172.49	27.3681
G1 Execution Services, LLC	14.73	10.02	10.31	16.61	13.42	1,287.19	22.5240	424.05	23.5555	1,282.62	30.0001	392.55	28.4851

Material Aspects:

CITADEL SECURITIES LLC:

We receive payment for executed orders routed to Citadel Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.0022 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Extended hours order: up to \$0.001 per share
- (iv) Order greater than 10,000 shares or \$250,000 principal value: up to \$0.003 per share

These payment arrangements are conditioned upon regular attestations to Citadel that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

Virtu Americas, LLC:

We receive payment for executed orders routed to Virtu Americas with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.00175 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Order greater than 10,000 shares or \$250,000 principal value: \$0.003 per share

We do not receive payment for any extended hours orders, regardless of size or marketability. These payment arrangements are conditioned upon regular attestations to Virtu that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

APEX CLEARING CORPORATION:

We route orders of listed equities to our clearing firm, Apex Clearing Corporation, which further routes them to execution venues with which it has relationships. The execution venues may pay Apex for such order flow, in which case Apex retains 10% of such payment and pays us the remaining 90%. We do not determine or influence where Apex routes our orders. Further, we do not participate in any discussions concerning the payment-for-order-flow arrangements between Apex and the execution venues, nor do we influence those arrangements in any manner. See <https://www.apexclearing.com/sec-rule-606-and-607/> for reports concerning Apex's order routing practices, which we are adopting by reference.

Two Sigma Securities, LLC:

We receive payment for executed orders routed to Two Sigma Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.0022 per share
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G1 Execution Services, LLC:

We receive payment for executed orders routed to G1X Execution Services at the following rates:

- (i) Marketable order, listed equity priced at \$1.00 per share or more: up to \$0.0022 per share
- (ii) Marketable order, listed equity priced under \$1.00 per share: up to \$0.001 per share
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February 2023

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	22.79	5.14	63.28	8.79

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	35.83	25.06	26.77	38.50	49.81	18,902.01	18.6838	6,806.75	16.6191	16,188.38	26.2985	6,370.99	11.6778
Virtu Americas, LLC	26.43	19.93	18.53	29.77	23.87	16,155.99	19.5839	6,354.76	20.6332	12,302.82	28.0507	1,097.82	21.3638
Two Sigma Securities, LLC	23.38	45.01	44.18	15.28	13.39	36,531.08	20.9003	12,833.22	18.5360	26,473.04	25.5381	6,562.58	25.0102
G1 Execution Services, LLC	14.36	10.00	10.51	16.45	12.92	9,045.96	23.0291	3,391.66	23.1814	7,025.14	25.6380	1,626.16	27.0672

Material Aspects:

CITADEL SECURITIES LLC:

We receive payment for executed orders routed to Citadel Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.0022 per share
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Two Sigma Securities, LLC:

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February 2023

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
100.00	8.31	9.83	50.71	31.15

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	38.32	30.34	32.33	39.00	41.24	31,437.50	48.9917	69,605.00	49.6732	53,320.00	48.7283	40,896.00	46.8781
Wolverine Execution Services, LLC	31.06	29.20	24.80	30.09	35.12	22,650.40	38.1275	33,693.05	40.1835	39,601.20	41.9767	37,872.38	45.2483
Global Execution Brokers LP	30.61	40.46	42.87	30.91	23.64	34,569.49	39.6981	67,999.70	42.7588	69,584.99	43.4868	31,626.68	45.2916

Material Aspects:

CITADEL SECURITIES LLC:

We receive payment for executed multi-listed, non-index option orders routed to Citadel Securities at a rate of up to \$0.50 per contract. Citadel waives fees associated with index options so long as they do not exceed 5% of the total monthly volume. These payment arrangements are conditioned upon regular attestations to Citadel that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

Wolverine Execution Services, LLC:

We receive payment for executed multi-listed, non-index option orders routed to Wolverine Execution Services at the following rates:

- (i) Single-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (ii) Single-Leg order, Penny Interval Program: up to \$0.35 per contract
- (iii) Multi-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (iv) Multi-Leg order, Penny Interval Program: up to \$0.43 per contract

Wolverine waives fees associated with index options so long as they do not exceed 5% of the total monthly volume. These payment arrangements are conditioned upon regular attestations to Wolverine that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

APEX CLEARING CORPORATION:

We route orders of multi-listed options to our clearing firm, Apex Clearing Corporation, which further routes them to execution venues with which it has relationships. The execution venues may pay Apex for such order flow, in which case Apex forwards such payment to us. We do not determine or influence where Apex routes our orders. Further, we do not participate in any discussions concerning the payment-for-order-flow arrangements between Apex and the execution venues, nor do we influence those arrangements in any manner. See <https://www.apexclearing.com/sec-rule-606-and-607/> for reports concerning Apex's order routing practices, which we are adopting by reference.

Global Execution Brokers LP:

We receive payment for executed multi-listed, non-index option orders routed to Global Execution Brokers at the following rates:

- (i) Single-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (ii) Single-Leg order, Penny Interval Program: up to \$0.37 per contract
- (iii) Multi-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (iv) Multi-Leg order, Penny Interval Program: up to \$0.44 per contract

Global Execution Brokers waives fees associated with index options so long as they do not exceed 5% of the total monthly volume. These payment arrangements are conditioned upon regular attestations to Global Execution Brokers that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

March 2023

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	21.09	4.38	67.47	7.06

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	37.20	25.34	26.86	40.36	48.84	5,215.75	22.0000	1,366.75	22.0000	4,051.66	30.0001	1,630.18	16.5935
Virtu Americas, LLC	26.89	19.30	18.72	30.08	24.18	3,762.29	19.5103	1,136.28	20.3567	2,747.56	30.0000	520.77	21.0531
Two Sigma Securities, LLC	22.39	45.61	44.16	14.52	14.70	10,540.33	24.3296	3,557.78	24.6634	7,286.69	29.6857	2,235.94	26.9754
G1 Execution Services, LLC	13.52	9.76	10.26	15.04	12.28	2,214.33	23.9572	620.47	23.5158	1,489.70	30.0001	516.52	27.6650

Material Aspects:

CITADEL SECURITIES LLC:

We receive payment for executed orders routed to Citadel Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.0022 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Extended hours order: up to \$0.001 per share
- (iv) Order greater than 10,000 shares or \$250,000 principal value: up to \$0.003 per share

These payment arrangements are conditioned upon regular attestations to Citadel that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

Virtu Americas, LLC:

We receive payment for executed orders routed to Virtu Americas with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.00175 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Order greater than 10,000 shares or \$250,000 principal value: \$0.003 per share

We do not receive payment for any extended hours orders, regardless of size or marketability. These payment arrangements are conditioned upon regular attestations to Virtu that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

APEX CLEARING CORPORATION:

We route orders of listed equities to our clearing firm, Apex Clearing Corporation, which further routes them to execution venues with which it has relationships. The execution venues may pay Apex for such order flow, in which case Apex retains 10% of such payment and pays us the remaining 90%. We do not determine or influence where Apex routes our orders. Further, we do not participate in any discussions concerning the payment-for-order-flow arrangements between Apex and the execution venues, nor do we influence those arrangements in any manner. See <https://www.apexclearing.com/sec-rule-606-and-607/> for reports concerning Apex's order routing practices, which we are adopting by reference.

Two Sigma Securities, LLC:

We receive payment for executed orders routed to Two Sigma Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.0022 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Order greater than 10,000 shares or \$250,000 principal value: up to \$0.003 per share

These payment arrangements are conditioned upon regular attestations to Two Sigma that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

G1 Execution Services, LLC:

We receive payment for executed orders routed to G1X Execution Services at the following rates:

- (i) Marketable order, listed equity priced at \$1.00 per share or more: up to \$0.0022 per share
- (ii) Marketable order, listed equity priced under \$1.00 per share: up to \$0.001 per share
- (iii) Non-marketable order, listed equity priced at \$1.00 per share or more: up to \$0.003 per share
- (iv) Order greater than 10,000 shares or \$250,000 principal value: \$0.003 per share

These payment arrangements are conditioned upon regular attestations to G1X that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

March 2023

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	23.07	5.33	63.66	7.94

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	36.84	25.42	27.26	39.93	51.64	21,497.07	18.1994	8,316.74	15.1845	20,756.78	24.5720	8,098.08	11.1260
Virtu Americas, LLC	26.13	19.57	18.07	29.59	22.84	18,087.77	19.3811	8,496.76	20.9101	13,837.13	27.5531	1,337.39	22.3446
Two Sigma Securities, LLC	23.88	45.36	44.50	15.62	13.86	40,097.38	19.6434	18,047.09	18.1698	30,075.43	24.6096	5,859.98	24.0643
G1 Execution Services, LLC	13.16	9.65	10.17	14.87	11.66	10,721.10	23.0808	5,057.37	24.6909	8,392.28	23.4958	2,267.42	25.1175

Material Aspects:

CITADEL SECURITIES LLC:

We receive payment for executed orders routed to Citadel Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.0022 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Extended hours order: up to \$0.001 per share
- (iv) Order greater than 10,000 shares or \$250,000 principal value: up to \$0.003 per share

These payment arrangements are conditioned upon regular attestations to Citadel that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

Virtu Americas, LLC:

We receive payment for executed orders routed to Virtu Americas with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.00175 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Order greater than 10,000 shares or \$250,000 principal value: \$0.003 per share

We do not receive payment for any extended hours orders, regardless of size or marketability. These payment arrangements are conditioned upon regular attestations to Virtu that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

Two Sigma Securities, LLC:

We receive payment for executed orders routed to Two Sigma Securities with respect to listed equities priced at \$1.00 per share or more, at the following rates:

- (i) Marketable order: up to \$0.0022 per share
- (ii) Non-marketable order: up to \$0.003 per share
- (iii) Order greater than 10,000 shares or \$250,000 principal value: up to \$0.003 per share

These payment arrangements are conditioned upon regular attestations to Two Sigma that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

APEX CLEARING CORPORATION:

We route orders of listed equities to our clearing firm, Apex Clearing Corporation, which further routes them to execution venues with which it has relationships. The execution venues may pay Apex for such order flow, in which case Apex retains 10% of such payment and pays us the remaining 90%. We do not determine or influence where Apex routes our orders. Further, we do not participate in any discussions concerning the payment-for-order-flow arrangements between Apex and the execution venues, nor do we influence those arrangements in any manner. See <https://www.apexclearing.com/sec-rule-606-and-607/> for reports concerning Apex's order routing practices, which we are adopting by reference.

G1 Execution Services, LLC:

We receive payment for executed orders routed to G1X Execution Services at the following rates:

- (i) Marketable order, listed equity priced at \$1.00 per share or more: up to \$0.0022 per share
- (ii) Marketable order, listed equity priced under \$1.00 per share: up to \$0.001 per share
- (iii) Non-marketable order, listed equity priced at \$1.00 per share or more: up to \$0.003 per share
- (iv) Order greater than 10,000 shares or \$250,000 principal value: \$0.003 per share

These payment arrangements are conditioned upon regular attestations to G1X that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

March 2023

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
100.00	7.62	8.99	50.65	32.74

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	38.63	30.38	32.50	39.23	41.29	32,960.50	48.1625	67,511.50	49.4213	60,583.00	48.6575	44,072.50	44.4580
Wolverine Execution Services, LLC	31.38	29.16	25.03	30.23	35.44	23,171.10	39.0922	38,171.30	43.4046	48,796.40	43.1922	41,112.91	45.5555
Global Execution Brokers LP	29.99	40.46	42.46	30.54	23.27	35,453.22	40.3878	72,205.51	45.5064	75,398.80	44.4076	32,817.70	42.8362

Material Aspects:

CITADEL SECURITIES LLC:

We receive payment for executed multi-listed, non-index option orders routed to Citadel Securities at a rate of up to \$0.50 per contract. Citadel waives fees associated with index options so long as they do not exceed 5% of the total monthly volume. These payment arrangements are conditioned upon regular attestations to Citadel that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

Wolverine Execution Services, LLC:

We receive payment for executed multi-listed, non-index option orders routed to Wolverine Execution Services at the following rates:

- (i) Single-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (ii) Single-Leg order, Penny Interval Program: up to \$0.35 per contract
- (iii) Multi-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (iv) Multi-Leg order, Penny Interval Program: up to \$0.43 per contract

Wolverine waives fees associated with index options so long as they do not exceed 5% of the total monthly volume. These payment arrangements are conditioned upon regular attestations to Wolverine that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.

APEX CLEARING CORPORATION:

We route orders of multi-listed options to our clearing firm, Apex Clearing Corporation, which further routes them to execution venues with which it has relationships. The execution venues may pay Apex for such order flow, in which case Apex forwards such payment to us. We do not determine or influence where Apex routes our orders. Further, we do not participate in any discussions concerning the payment-for-order-flow arrangements between Apex and the execution venues, nor do we influence those arrangements in any manner. See <https://www.apexclearing.com/sec-rule-606-and-607/> for reports concerning Apex's order routing practices, which we are adopting by reference.

Global Execution Brokers LP:

We receive payment for executed multi-listed, non-index option orders routed to Global Execution Brokers at the following rates:

- (i) Single-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (ii) Single-Leg order, Penny Interval Program: up to \$0.37 per contract
- (iii) Multi-Leg order, non-Penny Interval Program: up to \$1.00 per contract
- (iv) Multi-Leg order, Penny Interval Program: up to \$0.44 per contract

Global Execution Brokers waives fees associated with index options so long as they do not exceed 5% of the total monthly volume. These payment arrangements are conditioned upon regular attestations to Global Execution Brokers that substantially all of the orders we route to them qualify as "retail" orders (i.e., originating from natural persons and not generated by trading algorithms or other computerized methods). Although we do not negotiate for higher payment rates in exchange for lower execution quality, in general there is an inverse (though not necessarily proportional) relationship between payment for order flow rates and price improvement.