

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

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2nd Quarter, 2022

April 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	23.04	4.40	63.87	8.69

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	44.68	45.16	46.06	45.43	37.18	8,315.02	23.4939	2,949.02	23.8084	6,732.10	30.0000	1,397.97	27.3694
CITADEL SECURITIES LLC	36.28	34.82	35.60	35.42	46.85	5,872.09	22.0000	2,061.09	22.0000	5,297.17	30.0000	1,607.76	17.2133
Virtu Americas, LLC	19.04	20.02	18.34	19.15	15.96	2,929.78	19.1149	1,042.62	20.5733	2,783.31	30.0000	287.59	23.3193

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.

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.

April 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	21.35	4.92	65.96	7.77

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	44.80	45.01	45.54	45.51	37.62	42,548.40	23.6833	19,791.73	24.1416	33,977.98	27.2080	7,597.91	26.1655
CITADEL SECURITIES LLC	36.24	35.16	36.33	35.39	46.40	25,895.38	19.0463	12,236.12	17.4145	25,709.55	27.0626	6,872.33	13.5895
Virtu Americas, LLC	18.96	19.83	18.13	19.10	15.97	15,534.39	20.0354	6,741.88	19.4162	12,164.14	29.0960	739.83	22.7825

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.

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.

April 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
100.00	5.88	8.17	51.51	34.44

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	39.88	25.55	27.84	36.11	50.82	19,910.50	48.7692	44,059.50	49.7673	52,108.00	49.2649	49,928.00	47.1949
Wolverine Execution Services, LLC	34.73	38.77	33.55	36.38	31.87	25,690.75	38.5400	44,932.15	45.7847	59,388.25	46.7065	39,251.08	46.0623
Global Execution Brokers LP	25.39	35.69	38.61	27.51	17.31	22,230.55	40.8890	49,765.90	47.1831	64,996.55	47.1622	25,120.37	44.8202

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.

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.

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

May 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	24.52	4.19	63.77	7.52

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	44.85	44.99	45.72	45.74	36.33	9,451.70	23.3895	2,707.15	24.0747	7,158.56	30.0000	1,434.62	27.6649
CITADEL SECURITIES LLC	33.94	30.79	31.72	33.82	46.49	5,990.21	22.0000	1,665.21	22.0000	4,899.56	30.0000	1,374.24	15.8061
Virtu Americas, LLC	18.93	19.89	18.23	18.95	15.92	3,743.75	19.0963	1,073.03	21.7073	2,309.94	30.0000	329.99	22.7670
Two Sigma Securities, LLC	2.29	4.33	4.34	1.48	1.27	1,015.51	23.6617	428.50	25.8063	556.20	29.6884	115.85	26.1815

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.

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.

May 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	23.80	5.43	63.10	7.67

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	44.68	45.17	46.18	45.45	35.78	40,480.33	23.0197	19,915.93	23.6597	32,041.54	27.3632	9,828.97	27.5030

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	34.11	30.62	31.50	34.00	47.65	24,087.45	19.7038	10,648.33	17.4108	20,138.81	27.4889	9,374.83	16.0999
Virtu Americas, LLC	18.92	19.90	18.09	19.06	15.25	16,478.50	19.6982	6,694.30	20.2185	11,630.81	29.2857	1,503.82	22.1907
Two Sigma Securities, LLC	2.29	4.31	4.23	1.49	1.31	3,700.23	20.7441	1,511.14	18.8465	2,464.63	25.0549	916.56	24.2474

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.

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.

May 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
100.00	6.68	8.19	53.07	32.06

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	41.21	30.29	32.76	38.95	49.37	22,984.00	49.2258	49,281.50	49.7567	62,957.50	49.2548	55,889.50	47.1204
Wolverine Execution Services, LLC	29.92	29.24	24.70	29.79	31.59	18,436.70	38.8771	30,554.75	43.9656	48,607.00	46.3763	42,994.90	46.3327
Global Execution Brokers LP	28.88	40.47	42.54	31.25	19.04	25,866.52	40.8440	55,731.56	45.9911	83,747.64	48.7265	33,145.03	45.7672

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.

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.

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

June 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	23.37	4.46	64.94	7.23

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	45.56	44.30	44.47	46.89	38.37	9,271.81	23.6090	2,182.06	23.6939	5,666.22	30.0000	1,640.00	27.3750
CITADEL SECURITIES LLC	32.88	29.97	31.30	32.71	44.78	6,065.80	22.0000	1,453.52	22.0001	4,165.78	30.0000	1,420.64	16.7957
Virtu Americas, LLC	18.61	19.85	18.98	18.53	15.08	3,464.77	19.4030	751.81	19.8907	2,226.07	30.0000	310.00	20.5677
Two Sigma Securities, LLC	2.95	5.88	5.24	1.87	1.77	1,167.12	23.1835	395.93	23.6557	814.64	29.8784	115.85	26.8335

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.

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.

June 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	22.80	5.49	63.64	8.07

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	45.38	44.31	44.98	46.85	37.14	37,455.72	23.4597	19,097.89	24.2932	27,566.97	26.0779	6,764.74	25.8587
CITADEL SECURITIES LLC	33.05	29.97	31.22	32.67	45.99	20,167.10	18.7453	9,880.28	18.3133	19,923.07	27.2411	7,330.77	14.2593
Virtu Americas, LLC	18.53	19.96	18.18	18.48	15.23	15,065.30	19.7306	6,425.78	20.0644	11,377.32	28.5098	1,413.21	22.2660
Two Sigma Securities, LLC	3.03	5.76	5.62	2.00	1.64	3,885.09	18.9039	2,243.08	21.3108	3,285.36	26.9902	741.28	25.7439

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.

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.

June 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
100.00	6.29	8.87	53.57	31.27

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	41.66	30.35	32.54	39.91	49.53	19,388.00	47.2164	49,703.00	49.5875	57,183.50	49.0580	48,271.50	45.9199
Wolverine Execution Services, LLC	29.62	29.08	24.77	29.24	31.76	14,063.40	39.1226	30,190.05	43.9857	43,706.65	45.8612	42,389.95	46.4186
Global Execution Brokers LP	28.72	40.57	42.70	30.85	18.71	19,880.19	39.6367	52,565.75	47.3271	73,992.06	48.2184	29,242.20	42.4193

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.

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.

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.