

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

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1st Quarter, 2022

January 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	26.02	4.50	59.90	9.58

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	41.12	40.22	40.76	40.27	49.12	7,628.97	22.0000	2,159.58	22.0000	5,481.31	30.0000	1,854.81	20.1786
G1 Execution Services, LLC	39.92	39.89	41.07	40.71	34.52	7,392.45	22.4902	2,501.70	25.3198	5,632.61	30.0000	1,558.21	27.7117
Virtu Americas, LLC	18.95	19.89	18.17	19.02	16.37	3,251.79	18.8742	925.15	21.6267	2,420.48	30.0000	352.40	21.9745

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.

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.

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 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	24.73	5.79	61.92	7.56

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	41.39	40.06	41.25	40.65	51.92	34,178.08	20.5149	17,012.49	18.8608	29,074.94	27.5994	9,852.72	15.0896
G1 Execution Services, LLC	39.70	40.03	40.63	40.40	32.22	40,493.92	23.3119	21,074.71	24.0545	29,886.18	28.0967	7,008.92	26.5073
Virtu Americas, LLC	18.91	19.91	18.12	18.95	15.85	18,044.27	20.5187	7,504.59	19.9812	13,438.99	29.1951	1,059.91	22.4520

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.

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.

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 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	6.06	7.56	51.53	34.85

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	40.85	29.36	31.40	37.80	49.42	31,214.50	49.4511	60,189.50	49.6867	82,910.50	49.0302	59,517.50	45.8751
Wolverine Execution Services, LLC	32.96	35.14	30.30	33.23	32.77	29,379.25	38.1014	49,382.75	42.5860	75,063.50	43.7260	49,203.85	46.7184
Global Execution Brokers LP	26.18	35.50	38.30	28.97	17.81	27,745.89	39.6761	61,710.16	45.8239	96,357.45	44.6970	27,204.16	43.3920

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

February 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	22.99	4.50	63.26	9.25

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	42.28	40.60	41.16	41.35	53.37	6,766.48	22.0000	1,588.65	22.0000	5,209.47	30.0000	2,252.48	17.9818
G1 Execution Services, LLC	38.09	39.06	39.62	38.72	30.58	6,538.34	22.9981	1,556.34	22.7243	4,579.94	30.0000	1,642.81	27.2865
Virtu Americas, LLC	19.63	20.34	19.22	19.93	16.04	3,133.13	19.1178	803.57	20.5559	2,218.20	30.0000	430.95	21.3051

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.

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.

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.

February 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	22.08	5.49	64.07	8.36

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	42.33	40.66	41.95	41.47	53.56	30,273.85	20.1762	14,798.36	18.4605	26,216.36	28.1714	8,299.26	15.7680
G1 Execution Services, LLC	38.04	38.86	39.65	38.65	30.12	31,904.23	23.0444	17,774.21	23.8535	24,942.11	28.1740	5,958.37	26.3783
Virtu Americas, LLC	19.63	20.48	18.40	19.88	16.32	15,275.44	19.8099	7,293.33	19.9275	10,828.25	29.2615	1,102.37	22.9791

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
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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
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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:
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(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.

February 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	6.16	7.86	53.24	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	38.88	25.60	28.09	35.37	49.66	23,512.00	49.3566	49,845.50	49.5138	60,472.00	49.4489	52,817.00	46.7821
Wolverine Execution Services, LLC	34.62	38.69	33.39	35.91	32.04	28,340.45	40.8376	48,389.60	44.4537	64,223.30	44.1996	43,988.19	47.0855

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)
Global Execution Brokers LP	26.51	35.71	38.52	28.72	18.29	26,923.97	41.0351	52,857.92	44.8800	74,973.56	45.6735	26,903.56	43.7506

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

March 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	22.06	3.72	65.87	8.35

Venues

Venue - Non-directed Order Flow	Non-Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non-Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/Received for Market Orders(cents per hundred shares)	Net Payment Paid/Received for Marketable Limit Orders(USD)	Net Payment Paid/Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Non-Marketable Limit Orders(USD)	Net Payment Paid/Received for Non-Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/Received for Other Orders(cents per hundred shares)
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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	40.92	41.15	42.29	41.46	35.44	10,388.46	24.4632	1,795.39	22.7292	6,917.99	30.0000	2,663.31	28.2178
CITADEL SECURITIES LLC	39.96	38.93	39.76	39.32	47.89	8,319.97	22.0000	1,588.92	22.0000	6,035.50	30.0000	2,551.85	19.3425
Virtu Americas, LLC	19.11	19.91	17.95	19.22	16.67	3,970.81	20.1780	667.37	18.4530	2,771.94	30.0000	623.55	20.6979

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.

March 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	22.17	5.07	64.30	8.45

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	40.80	40.96	41.44	41.66	33.42	48,601.92	23.2803	24,907.61	23.8949	42,679.45	27.7580	9,528.40	27.0623
CITADEL SECURITIES LLC	40.35	39.17	40.41	39.37	50.88	39,869.70	19.8356	20,193.96	18.1007	39,254.71	27.4692	11,858.65	13.6898
Virtu Americas, LLC	18.85	19.87	18.15	18.98	15.69	21,924.66	20.2597	9,551.03	19.9941	16,377.81	28.9017	1,433.71	23.6351

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.

March 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	5.96	7.74	53.49	32.81

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	39.08	25.48	28.05	35.48	50.01	28,729.50	49.2120	65,200.50	49.7695	72,650.00	49.5603	58,462.00	46.8052
Wolverine Execution Services, LLC	34.60	38.76	33.30	35.93	31.98	34,645.20	38.9881	67,610.35	45.9581	80,825.25	46.2808	46,549.92	46.5355
Global Execution Brokers LP	26.32	35.76	38.66	28.59	18.01	34,324.42	41.4251	72,237.22	47.6156	100,569.85	47.6774	34,800.48	45.1632

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