

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

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3rd Quarter, 2023

July 2023

S&P 500 Stocks

Summary

| Non-Directed Orders as % of All Orders | Market Orders as % of Non-Directed Orders | Marketable Limit Orders as % of Non-Directed Orders | Non-Marketable Limit Orders as % of Non-Directed Orders | Other Orders as % of Non-Directed Orders |
|--|---|---|---|--|
| 100.00 | 22.22 | 4.25 | 64.79 | 8.74 |

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 | 37.31 | 25.05 | 33.01 | 41.20 | 41.70 | 3,048.42 | 22.0000 | 864.55 | 22.0000 | 3,053.99 | 29.8283 | 879.74 | 15.0799 |
| Virtu Americas, LLC | 26.09 | 19.79 | 17.77 | 28.16 | 30.81 | 2,442.06 | 22.6429 | 537.05 | 22.9560 | 1,840.56 | 30.0000 | 292.91 | 26.0897 |
| Two Sigma Securities, LLC | 22.17 | 45.07 | 39.06 | 14.75 | 10.74 | 5,569.05 | 22.4134 | 1,952.66 | 24.1607 | 4,065.28 | 29.6791 | 897.91 | 26.8868 |
| G1 Execution Services, LLC | 14.43 | 10.09 | 10.16 | 15.88 | 16.75 | 1,218.78 | 22.1747 | 383.32 | 22.6523 | 1,119.62 | 30.0001 | 284.57 | 27.1591 |

Material Aspects:

CITADEL SECURITIES LLC:

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

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

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

Virtu Americas, LLC:

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

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

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.

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.

July 2023

Non-S&P 500 Stocks

Summary

| Non-Directed Orders as % of All Orders | Market Orders as % of Non-Directed Orders | Marketable Limit Orders as % of Non-Directed Orders | Non-Marketable Limit Orders as % of Non-Directed Orders | Other Orders as % of Non-Directed Orders |
|--|---|---|---|--|
| 100.00 | 24.12 | 5.70 | 62.28 | 7.90 |

Venues

| Venue - Non-directed Order Flow | Non-Directed Orders (%) | Market Orders (%) | Marketable Limit Orders (%) | Non-Marketable Limit Orders (%) | Other Orders (%) | Net Payment Paid/Received for Market Orders(USD) | Net Payment Paid/Received for Market Orders(cents per hundred shares) | Net Payment Paid/Received for Marketable Limit Orders(USD) | Net Payment Paid/Received for Marketable Limit Orders(cents per hundred shares) | Net Payment Paid/Received for Non-Marketable Limit Orders(USD) | Net Payment Paid/Received for Non-Marketable Limit Orders(cents per hundred shares) | Net Payment Paid/Received for Other Orders(USD) | Net Payment Paid/Received for Other Orders(cents per hundred shares) |
|---------------------------------|-------------------------|-------------------|-----------------------------|---------------------------------|------------------|--|---|--|---|--|---|---|--|
| CITADEL SECURITIES LLC | 36.52 | 25.12 | 31.74 | 41.00 | 39.46 | 18,590.06 | 20.0681 | 6,624.49 | 15.7060 | 15,335.03 | 25.7470 | 4,687.23 | 11.4455 |
| Virtu Americas, LLC | 25.59 | 19.80 | 17.19 | 28.08 | 29.72 | 16,921.46 | 23.3082 | 6,495.40 | 23.9781 | 10,792.96 | 29.0804 | 1,022.65 | 20.8280 |
| Two Sigma Securities, LLC | 23.76 | 45.11 | 41.57 | 15.08 | 14.11 | 34,607.14 | 20.8732 | 11,832.56 | 16.8540 | 25,290.94 | 26.1188 | 4,762.21 | 24.4574 |
| G1 Execution Services, LLC | 14.13 | 9.97 | 9.50 | 15.84 | 16.71 | 8,110.72 | 23.2594 | 3,702.23 | 24.4372 | 6,133.38 | 25.9443 | 1,151.79 | 27.0302 |

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

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.

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.

July 2023

Options

| Summary | | | | |
|--|---|---|---|--|
| Non-Directed Orders as % of All Orders | Market Orders as % of Non-Directed Orders | Marketable Limit Orders as % of Non-Directed Orders | Non-Marketable Limit Orders as % of Non-Directed Orders | Other Orders as % of Non-Directed Orders |
| 100.00 | 7.75 | 11.81 | 50.92 | 30.51 |

Venues

| 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) |
|--------|---------------------------------|-------------------------|-------------------|-----------------------------|---------------------------------|------------------|--|---|--|---|--|---|---|--|
|--------|---------------------------------|-------------------------|-------------------|-----------------------------|---------------------------------|------------------|--|---|--|---|--|---|---|--|

| 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 | 34.65 | 25.30 | 26.75 | 34.87 | 39.89 | 17,716.00 | 49.0898 | 52,468.00 | 49.9210 | 36,906.00 | 49.2336 | 26,471.50 | 45.1170 |
| Wolverine Execution Services, LLC | 31.40 | 29.07 | 25.47 | 30.86 | 35.32 | 22,485.50 | 49.3081 | 43,122.00 | 49.8595 | 37,170.50 | 49.3246 | 26,510.50 | 45.8421 |
| Global Execution Brokers LP | 25.66 | 35.57 | 37.17 | 26.63 | 16.80 | 24,959.00 | 49.7379 | 66,339.00 | 49.8951 | 57,785.50 | 49.5226 | 16,471.50 | 45.1286 |
| Dash/IMC Financial Markets | 8.28 | 10.05 | 10.61 | 7.63 | 8.00 | 7,921.50 | 49.7894 | 17,521.00 | 49.9302 | 17,768.50 | 49.4490 | 7,483.00 | 46.4696 |

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 at a rate of up to \$0.50 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 a rate of up to \$0.50 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.

Dash/IMC Financial Markets:

We receive payment for executed multi-listed, non-index option orders routed to Dash/IMC Financial Markets at a rate of up to \$0.50 per contract. Dash/IMC Financial Markets 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 Dash/IMC Financial Markets 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. We route to Dash Financial Technologies, who has a relationship with IMC whereby Dash routes to an exchange and preferences IMC.

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.

August 2023

S&P 500 Stocks

Summary

| Non-Directed Orders as % of All Orders | Market Orders as % of Non-Directed Orders | Marketable Limit Orders as % of Non-Directed Orders | Non-Marketable Limit Orders as % of Non-Directed Orders | Other Orders as % of Non-Directed Orders |
|--|---|---|---|--|
| 100.00 | 21.51 | 3.90 | 66.52 | 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) |
|---------------------------------|-------------------------|-------------------|-----------------------------|---------------------------------|------------------|--|---|--|---|--|---|---|--|
| CITADEL SECURITIES LLC | 37.11 | 24.99 | 32.61 | 40.94 | 40.03 | 3,039.15 | 22.0000 | 880.20 | 21.9999 | 2,665.60 | 29.8804 | 932.93 | 16.3401 |
| Virtu Americas, LLC | 27.48 | 20.01 | 17.98 | 29.95 | 31.63 | 2,813.99 | 23.2766 | 742.97 | 24.0746 | 1,900.51 | 30.0000 | 393.90 | 23.6825 |
| Two Sigma Securities, LLC | 21.18 | 44.82 | 39.51 | 13.52 | 12.45 | 5,754.45 | 23.0663 | 1,977.77 | 24.4779 | 4,390.79 | 29.7303 | 1,197.15 | 26.0300 |
| G1 Execution Services, LLC | 14.22 | 10.18 | 9.90 | 15.58 | 15.89 | 1,322.06 | 23.0622 | 395.61 | 25.3296 | 1,013.12 | 30.0001 | 335.16 | 27.5711 |

Material Aspects:

CITADEL SECURITIES LLC:

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

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

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

Virtu Americas, LLC:

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

- (i) Marketable order: up to \$0.0022 per share
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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.

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G1 Execution Services, LLC:

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

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

August 2023

Non-S&P 500 Stocks

Summary

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| 100.00 | 23.50 | 5.91 | 63.60 | 7.00 |

Venues

| Venue - Non-directed Order Flow | Non-Directed Orders (%) | Market Orders (%) | Marketable Limit Orders (%) | Non-Marketable Limit Orders (%) | Other Orders (%) | Net Payment Paid/Received for Market Orders(USD) | Net Payment Paid/Received for Market Orders(cents per hundred shares) | Net Payment Paid/Received for Marketable Limit Orders(USD) | Net Payment Paid/Received for Marketable Limit Orders(cents per hundred shares) | Net Payment Paid/Received for Non-Marketable Limit Orders(USD) | Net Payment Paid/Received for Non-Marketable Limit Orders(cents per hundred shares) | Net Payment Paid/Received for Other Orders(USD) | Net Payment Paid/Received for Other Orders(cents per hundred shares) |
|---------------------------------|-------------------------|-------------------|-----------------------------|---------------------------------|------------------|--|---|--|---|--|---|---|--|
| CITADEL SECURITIES LLC | 36.47 | 25.03 | 32.07 | 40.86 | 38.73 | 19,911.24 | 19.6187 | 6,917.46 | 14.1332 | 15,787.21 | 23.9019 | 6,414.34 | 12.2053 |
| Virtu Americas, LLC | 26.50 | 19.84 | 17.42 | 29.37 | 30.49 | 22,090.21 | 23.5946 | 8,634.01 | 24.1147 | 11,821.39 | 28.5669 | 1,410.47 | 23.8657 |
| Two Sigma Securities, LLC | 23.35 | 45.21 | 40.91 | 14.55 | 15.12 | 42,341.84 | 20.5654 | 13,744.57 | 15.9814 | 25,234.83 | 23.1622 | 6,938.95 | 24.4942 |
| G1 Execution Services, LLC | 13.67 | 9.93 | 9.60 | 15.22 | 15.66 | 10,397.94 | 23.4278 | 4,470.68 | 24.5011 | 6,404.14 | 23.2648 | 1,797.24 | 27.6324 |

Material Aspects:

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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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G1 Execution Services, LLC:

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

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- (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.

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.

August 2023

Options

Summary

| Non-Directed Orders as % of All Orders | Market Orders as % of Non-Directed Orders | Marketable Limit Orders as % of Non-Directed Orders | Non-Marketable Limit Orders as % of Non-Directed Orders | Other Orders as % of Non-Directed Orders |
|--|---|---|---|--|
| 100.00 | 7.96 | 12.59 | 50.21 | 29.25 |

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 | 34.86 | 25.46 | 26.52 | 35.48 | 39.96 | 19,348.00 | 49.3005 | 50,649.50 | 49.8372 | 36,093.50 | 49.1717 | 29,654.00 | 44.5509 |
| Wolverine Execution Services, LLC | 31.53 | 29.11 | 25.79 | 31.26 | 35.12 | 22,073.00 | 48.7833 | 47,444.00 | 49.7729 | 38,682.50 | 49.2019 | 25,165.50 | 43.8370 |
| Global Execution Brokers LP | 25.50 | 35.37 | 37.25 | 25.90 | 17.05 | 32,161.00 | 49.7017 | 71,260.00 | 49.8573 | 51,217.00 | 49.5458 | 13,801.50 | 42.6591 |
| Dash/IMC Financial Markets | 8.11 | 10.06 | 10.44 | 7.36 | 7.86 | 8,745.00 | 49.5776 | 22,082.00 | 49.8150 | 14,397.50 | 49.1617 | 7,653.00 | 43.4830 |

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 at a rate of up to \$0.50 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 a rate of up to \$0.50 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.

Dash/IMC Financial Markets:

We receive payment for executed multi-listed, non-index option orders routed to Dash/IMC Financial Markets at a rate of up to \$0.50 per contract. Dash/IMC Financial Markets 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 Dash/IMC Financial Markets 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. We route to Dash Financial Technologies, who has a relationship with IMC whereby Dash routes to an exchange and preferences IMC.

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.

September 2023

S&P 500 Stocks

Summary

| Non-Directed Orders as % of All Orders | Market Orders as % of Non-Directed Orders | Marketable Limit Orders as % of Non-Directed Orders | Non-Marketable Limit Orders as % of Non-Directed Orders | Other Orders as % of Non-Directed Orders |
|--|---|---|---|--|
| 100.00 | 20.51 | 3.78 | 68.45 | 7.26 |

Venues

| Venue - Non-directed Order Flow | Non-Directed Orders (%) | Market Orders (%) | Marketable Limit Orders (%) | Non-Marketable Limit Orders (%) | Other Orders (%) | Net Payment Paid/Received for Market Orders(USD) | Net Payment Paid/Received for Market Orders(cents per hundred shares) | Net Payment Paid/Received for Marketable Limit Orders(USD) | Net Payment Paid/Received for Marketable Limit Orders(cents per hundred shares) | Net Payment Paid/Received for Non-Marketable Limit Orders(USD) | Net Payment Paid/Received for Non-Marketable Limit Orders(cents per hundred shares) | Net Payment Paid/Received for Other Orders(USD) | Net Payment Paid/Received for Other Orders(cents per hundred shares) |
|---------------------------------|-------------------------|-------------------|-----------------------------|---------------------------------|------------------|--|---|--|---|--|---|---|--|
| CITADEL SECURITIES LLC | 37.00 | 24.93 | 30.69 | 40.56 | 40.87 | 2,445.02 | 22.0000 | 1,023.78 | 21.9999 | 2,779.88 | 29.9248 | 675.70 | 16.0369 |
| Virtu Americas, LLC | 27.60 | 19.74 | 18.82 | 30.07 | 31.02 | 1,906.21 | 22.8489 | 886.96 | 24.7904 | 1,524.29 | 30.0000 | 263.32 | 23.3902 |
| Two Sigma Securities, LLC | 21.13 | 45.23 | 40.00 | 13.77 | 12.70 | 4,914.75 | 24.0831 | 2,122.81 | 25.3163 | 4,742.31 | 29.7824 | 991.27 | 27.0558 |
| G1 Execution Services, LLC | 14.26 | 10.10 | 10.49 | 15.60 | 15.41 | 1,046.86 | 23.7222 | 453.21 | 25.0916 | 1,206.26 | 30.0000 | 275.05 | 27.3567 |

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.

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 \$0.0022 per share

(ii) Non-marketable order: up to \$0.003 per share

(iii) Order greater than 10,000 shares or \$250,000 principal value: \$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.

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.

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.

September 2023

Non-S&P 500 Stocks

Summary

| Non-Directed Orders as % of All Orders | Market Orders as % of Non-Directed Orders | Marketable Limit Orders as % of Non-Directed Orders | Non-Marketable Limit Orders as % of Non-Directed Orders | Other Orders as % of Non-Directed Orders |
|--|---|---|---|--|
| 100.00 | 25.36 | 6.40 | 61.82 | 6.43 |

Venues

| Venue - Non-directed Order Flow | Non-Directed Orders (%) | Market Orders (%) | Marketable Limit Orders (%) | Non-Marketable Limit Orders (%) | Other Orders (%) | Net Payment Paid/Received for Market Orders(USD) | Net Payment Paid/Received for Market Orders(cents per hundred shares) | Net Payment Paid/Received for Marketable Limit Orders(USD) | Net Payment Paid/Received for Marketable Limit Orders(cents per hundred shares) | Net Payment Paid/Received for Non-Marketable Limit Orders(USD) | Net Payment Paid/Received for Non-Marketable Limit Orders(cents per hundred shares) | Net Payment Paid/Received for Other Orders(USD) | Net Payment Paid/Received for Other Orders(cents per hundred shares) |
|---------------------------------|-------------------------|-------------------|-----------------------------|---------------------------------|------------------|--|---|--|---|--|---|---|--|
| CITADEL SECURITIES LLC | 36.30 | 25.08 | 31.00 | 41.02 | 40.50 | 12,722.21 | 17.8102 | 5,549.07 | 13.6567 | 11,163.90 | 23.7388 | 4,307.10 | 11.4040 |
| Virtu Americas, LLC | 26.49 | 19.94 | 17.55 | 29.72 | 30.08 | 14,873.68 | 23.5393 | 5,926.18 | 23.7911 | 8,537.90 | 28.6516 | 606.37 | 23.6749 |
| Two Sigma Securities, LLC | 23.57 | 44.99 | 41.95 | 13.89 | 13.78 | 26,407.69 | 20.1610 | 11,661.14 | 16.1521 | 17,670.50 | 25.6744 | 3,806.56 | 23.9094 |
| G1 Execution Services, LLC | 13.65 | 9.99 | 9.49 | 15.37 | 15.64 | 7,030.45 | 23.6949 | 3,632.86 | 24.7547 | 4,824.45 | 23.4626 | 1,146.78 | 27.6647 |

Material Aspects:

CITADEL SECURITIES LLC:

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

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

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

Virtu Americas, LLC:

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

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

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.

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.

September 2023

Options

Summary

| Non-Directed Orders as % of All Orders | Market Orders as % of Non-Directed Orders | Marketable Limit Orders as % of Non-Directed Orders | Non-Marketable Limit Orders as % of Non-Directed Orders | Other Orders as % of Non-Directed Orders |
|--|---|---|---|--|
| 100.00 | 8.10 | 11.32 | 51.26 | 29.33 |

Venues

| Venue - Non-directed Order Flow | Non-Directed Orders (%) | Market Orders (%) | Marketable Limit Orders (%) | Non-Marketable Limit Orders (%) | Other Orders (%) | Net Payment Paid/Received for Market Orders(USD) | Net Payment Paid/Received for Market Orders(cents per hundred shares) | Net Payment Paid/Received for Marketable Limit Orders(USD) | Net Payment Paid/Received for Marketable Limit Orders(cents per hundred shares) | Net Payment Paid/Received for Non-Marketable Limit Orders(USD) | Net Payment Paid/Received for Non-Marketable Limit Orders(cents per hundred shares) | Net Payment Paid/Received for Other Orders(USD) | Net Payment Paid/Received for Other Orders(cents per hundred shares) |
|-----------------------------------|-------------------------|-------------------|-----------------------------|---------------------------------|------------------|--|---|--|---|--|---|---|--|
| CITADEL SECURITIES LLC | 35.23 | 25.37 | 26.51 | 36.10 | 39.80 | 18,132.00 | 49.2959 | 36,958.00 | 49.7831 | 27,962.50 | 48.4888 | 22,686.00 | 43.8199 |
| Wolverine Execution Services, LLC | 31.67 | 29.14 | 26.02 | 31.50 | 34.85 | 17,733.00 | 49.0947 | 31,672.00 | 49.6839 | 31,778.00 | 49.0651 | 21,904.00 | 43.3708 |
| Global Execution Brokers LP | 25.09 | 35.52 | 36.92 | 25.19 | 17.48 | 27,661.50 | 49.6750 | 45,537.00 | 49.8397 | 36,783.50 | 49.2278 | 12,986.00 | 42.3011 |
| Dash/IMC Financial Markets | 8.01 | 9.97 | 10.54 | 7.22 | 7.88 | 6,245.00 | 49.5163 | 11,870.50 | 49.7506 | 11,907.50 | 49.2575 | 5,541.50 | 41.5872 |

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 at a rate of up to \$0.50 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 a rate of up to \$0.50 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.

Dash/IMC Financial Markets:

We receive payment for executed multi-listed, non-index option orders routed to Dash/IMC Financial Markets at a rate of up to \$0.50 per contract. Dash/IMC Financial Markets 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 Dash/IMC Financial Markets 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. We route to Dash Financial Technologies, who has a relationship with IMC whereby Dash routes to an exchange and preferences IMC.

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.