

SuperX ATS Monthly Statistics

SuperX is Deutsche Bank's Alternative Trading System (ATS) in the US. The SuperX ATS is a non-displayed order book for listed equities that can be accessed by clients directly, or using one of Deutsche Bank's equity trading platforms.

November 2020

SUMMARY STATISTICS

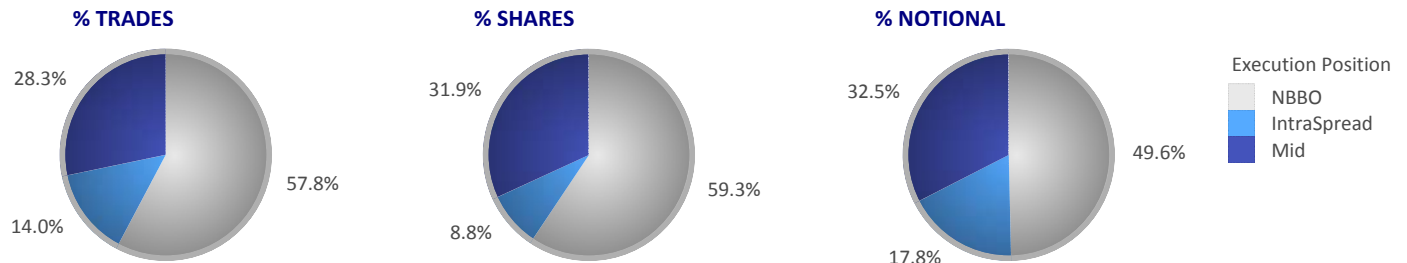
ADV - Shares (MM) *	26.1
ADV - Notional (MM) *	1,362.4
# Symbols traded	8,199

* These figures are single counted.

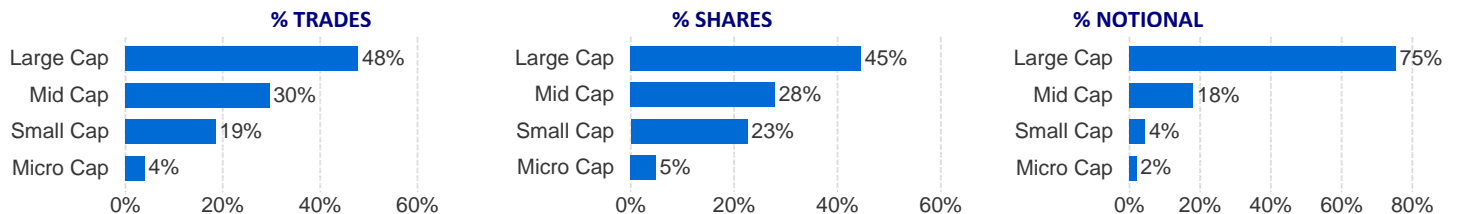
TRADE SIZE STATISTICS

Avg Trade Size (shares)	142
% trades >= 10k shares	0.80%
% trades >= \$200k	1.20%

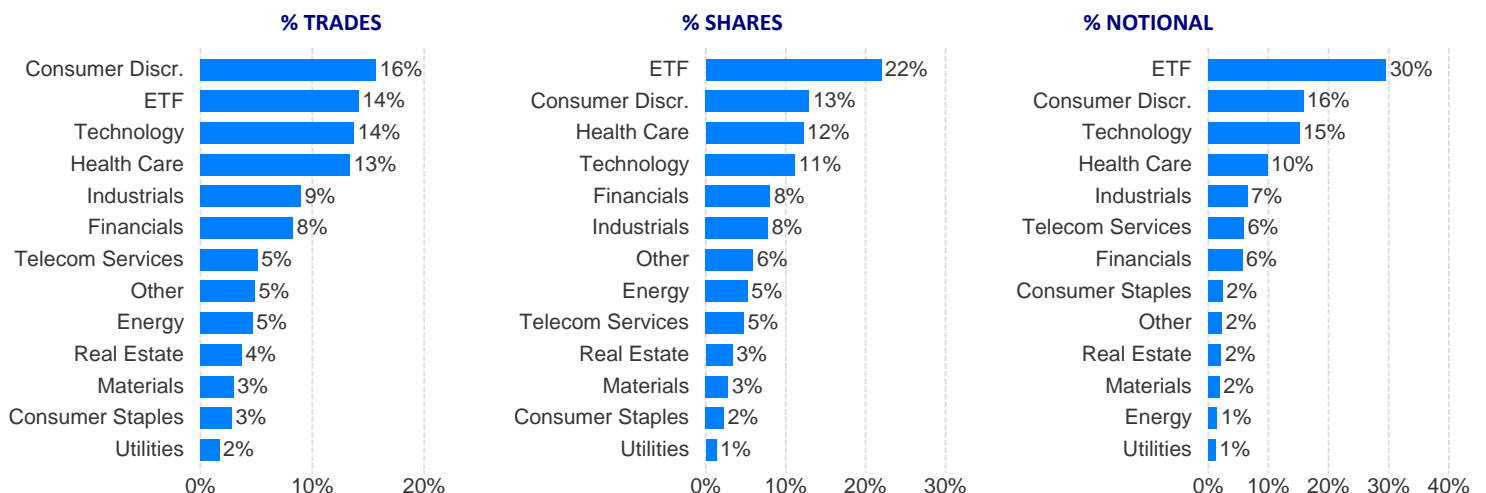
TRADE PRICE SUMMARY



MARKET CAP SUMMARY



SECTOR SUMMARY



SuperX is Deutsche Bank's Alternative Trading System (ATS) in the US. The SuperX ATS is a non-displayed order book for listed equities that can be accessed by clients directly, or using one of Deutsche Bank's equity trading platforms.

November 2020

COUNTERPARTY TYPE SUMMARY

CounterParty Type	% Filled Shares	Average Fill Size	Spread (bps)	Spread Savings (bps)	Spread Savings (%)	Midpoint Slippage (bps)	T+20ms (bps)	T+30s (bps)	T+60min (bps)
1 Principal	0.1%	129	18.08	14.03	76.6%	5.55	-0.01	-29.30	-6.76
2 Agency	1.7%	146	9.94	7.89	79.4%	3.07	-1.03	-2.40	-6.05
3 Direct Low	63.4%	151	10.34	4.39	42.5%	-0.34	0.66	0.39	-0.17
4 Direct Medium	17.9%	109	10.57	5.71	54.0%	0.06	-0.83	-0.11	0.33
5 Direct High	16.9%	159	6.04	4.11	68.4%	0.74	-1.12	-0.83	1.14
Total	100.0%	142	9.76	4.75	50.0%	-0.00	-0.00	-0.00	-0.00

GLOSSARY

- 1 Principal: DBSI acting as principal
- 2 Agency: Agency client order flow sent from DBSI's Algorithms or Smart Order Routers, where the router or the Algorithm logic elects to route to SuperX
- 3 Direct Low: Agency client orders directly routed to SuperX that are determined by DBSI to have a low average price reversion
- 4 Direct Medium: Agency client orders directly routed to SuperX that are determined by DBSI to have a medium average price reversion
- 5 Direct High: Agency client orders directly routed to SuperX that are determined by DBSI to have a high average price reversion

% Filled Shares: percentage of shares executed against a counterparty type.

Average Fill Size: the arithmetic average of fill size across all executions.

Spread (bps): the average difference in ask and bid prices expressed in basis points.

Spread Savings (bps): the notionally-weighted difference between fill price and the far touch price at fill time expressed in basis points.

Spread Savings (%): the notionally-weighted difference between fill price and the far touch price as a percentage of the bid-ask spread.

Midpoint Slippage (bps): the notionally-weighted difference between fill price and the midpoint price of the stock expressed in basis points.

T+X (bps): the notionally-weighted difference between the midpoint price at fill +X time units and the midpoint price at fill time expressed in basis points.

The above numbers are side-adjusted.

Positive mark outs reflect that prices moved in your favor. e.g. When buying, prices increased after the trade.

Negative mark outs reflect that prices moved against you. e.g. When buying, prices decreased after the trade.

Disclaimer

These materials are generic in nature and may not apply in particular circumstances. Quantitative models, processes and parameters are subject to amendment, modification, adjustment and correction at Deutsche Bank's discretion, and may incorporate Deutsche Bank's qualitative judgment. Deutsche Bank may from time-to-time run or update such models at its discretion. Categorization of counterparties in SuperX is for analysis purposes and DB is not responsible for updating the included data if client categorizations change at a later date. Deutsche Bank may from time to time modify the methods, processes and parameters used in the analyses and/or as described in this material. Any descriptions of such models, processes, or parameters, or the analyses resulting from them, are only represented to be accurate as of the date of this material. These materials are generic in nature. There may be regional differences in the processes, parameters and models in Deutsche Bank's products.

This document does not constitute an offer, an invitation or a recommendation to enter into any transaction. We have sent you this document in our capacity as a potential counterparty acting at arm's length. We are not acting as your financial adviser or in a fiduciary capacity in respect of this proposed transaction or any other transaction with you unless otherwise expressly agreed by us in writing. Prospective investors should understand and discuss with their professional tax, legal, accounting and other advisors the effect of a transaction they may enter into. BEFORE ENTERING INTO ANY TRANSACTION YOU SHOULD TAKE STEPS TO ENSURE THAT YOU UNDERSTAND AND HAVE MADE AN INDEPENDENT ASSESSMENT OF THE APPROPRIATENESS OF THE TRANSACTION IN LIGHT OF YOUR OWN OBJECTIVES AND CIRCUMSTANCES, INCLUDING THE POSSIBLE RISKS AND BENEFITS OF ENTERING INTO SUCH TRANSACTION. YOU SHOULD ALSO CONSIDER MAKING SUCH INDEPENDENT INVESTIGATIONS AS YOU CONSIDER NECESSARY OR APPROPRIATE FOR SUCH PURPOSE.

Although the information herein has been obtained from sources believed to be reliable, we do not guarantee its accuracy completeness or fairness. Opinions and estimates may be changed without notice and involve a number of assumptions which may not prove valid. The past performance of securities, indexes or other instruments referred to herein does not guarantee or predict future performance. If applicable, the principal protection feature applies only if the securities or instruments are held to maturity. Please note: market values may be affected a number of factors including index values, interest rates, volatility, time to maturity, dividend yields and issuer credit ratings. These factors are interrelated in complex ways, and as a result, the effect of any one factor may be offset or magnified by the effect of another factor.

Calculations of returns on instruments referred to herein may be linked to a referenced index or interest rate. In such cases, the investments may not be suitable for persons unfamiliar with such index or interest rate, or unwilling or unable to bear the risks associated with the transaction. Products denominated in a currency, other than the investor's home currency, will be subject to changes in exchange rates, which may have an adverse effect on the value, price or income return of the products. These products may not be readily realizable investments and are not traded on any regulated market. The securities referred to herein involve risk, which may include interest rate, index, currency, credit, political, liquidity, time value, commodity and market risk and is not suitable for all investors.

These instruments are not insured by the Federal Deposit Insurance Corporation (FDIC) or any other U.S. governmental agency. These instruments are not insured by any statutory scheme or governmental agency of the United Kingdom. The distribution of this document and availability of these products and services in certain jurisdictions may be restricted by law. These securities have not been registered under the United States Securities Act of 1933 and trading in the securities has not been approved by the United States Commodity Exchange Act, as amended. We or our affiliates or persons associated with us or such affiliates may: maintain a long or short position in securities referred to herein, or in related futures or options, purchase or sell, make a market in, or engage in any other transaction involving such securities, and earn brokerage or other compensation.

Deutsche Bank AG and/or its affiliated entities, as the context requires, does not provide accounting, tax or legal advice. Notwithstanding any other express or implied agreement, arrangement or understanding to the contrary, we hereby authorize you (and any of your employees, representatives or agents), subject to applicable U.S. federal and state securities laws, to disclose to any and all persons the structure and tax aspects of this potential transaction, and all materials of any kind (including opinions or other tax analyses) that are provided to you related to such structure and tax aspects, without Deutsche Bank imposing any limitation of any kind. This authorization is effective without limitation of any kind from the commencement of our discussions.

Deutsche Bank Private Wealth Management refers to Deutsche Bank's wealth management activities for high-net-worth clients around the world. Deutsche Bank Alex. Brown is a division of Deutsche Bank Securities Inc. Deutsche Bank AG, including its subsidiaries and affiliates, does not provide legal, tax or accounting advice. This communication was prepared solely in connection with the promotion or marketing, to the extent permitted by applicable law, of the transaction or matter addressed herein, and was not intended or written to be used, and cannot be used or relied upon, by any taxpayer for purposes of avoiding any U.S. federal income tax penalties. The recipient of this communication should seek advice from an independent tax advisor regarding any tax matters addressed herein based on its particular circumstances.

Derivative transactions involve numerous risks including among others, market, counterparty default and liquidity risk. The appropriateness or otherwise of these products for use by investors is dependent on the investors' own circumstances including their tax position, their regulatory environment and the nature of their other assets and liabilities and as such investors should take expert legal and financial advice before entering into any transaction similar to or inspired by the contents of this publication. Trading in options involves risk and is not suitable for all investors. Prior to buying or selling an option investors must review the Characteristics and Risks of Standardized Options (<http://onn.theocc.com/publications/risks/riskstoc.pdf>). If you are unable to access the website please contact Deutsche Bank AG at +1 (212) 250-8182 for a copy of this important document. Please note that multi-leg options strategies will incur multiple commissions. The products described in this document are not eligible for sale in all countries and in any event may only be sold to qualified investors. Securities shown in this document shall not be offered or sold to any person prohibited by the law in their country of origin or in any other relevant country.

IMPORTANT: This presentation has been prepared by members of our Global Markets department. Statements and opinions regarding the Company's investment case, positioning and valuation are not, and should not be construed as, an indication that Deutsche Bank will provide favourable research coverage of the Company or publish research containing any particular rating or price target for the Company's common stock. This presentation speaks only as of the date it is given, and the views expressed are subject to change based upon a number of factors, including market conditions and the Company's business and prospects.

Copyright© 2019 Deutsche Bank AG. MARKETING MATERIALS