CORTEX EQUITIES

CORTEX ALTERNATIVE TRADING SYSTEM (“ATS”)

ATS Monthly Statistics

January 2022

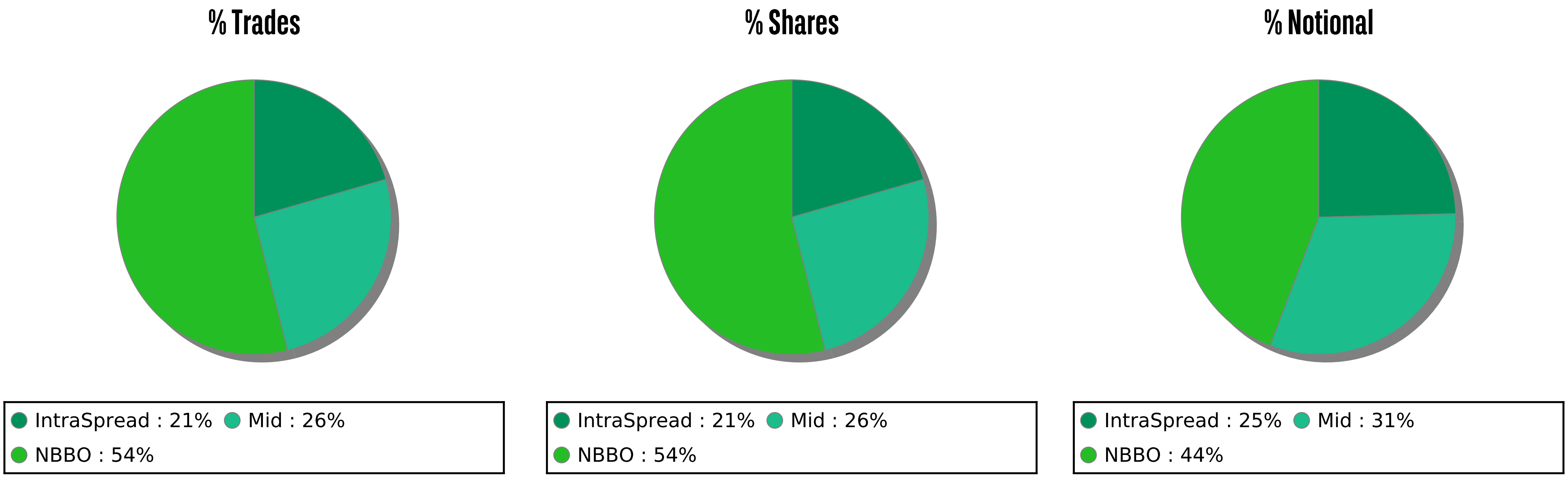
Cortex ATS is BNP Paribas’ Alternative Trading System (“ATS”). The Cortex ATS is a non-displayed order book for listed equities that can be accessed by clients directly, or using one of BNP Paribas’ equity trading platforms.

Summary Statistics	
ADV - Shares (MM) *	13.27
ADV - Notional (MM) *	17,435.0
# Symbols traded	8,839

* These figures are single counted.

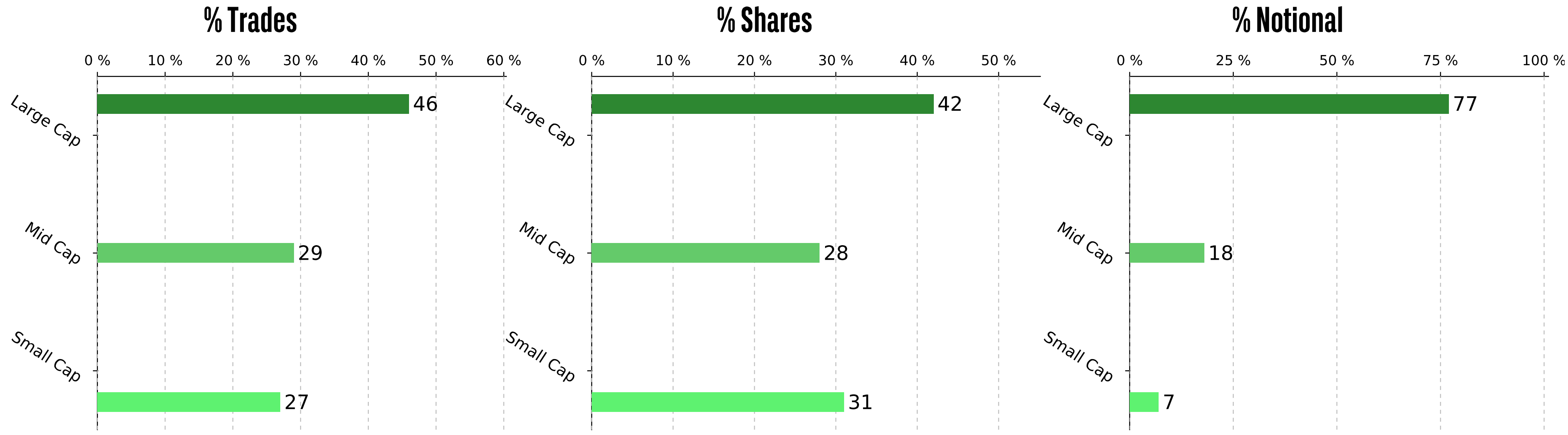
Trade Size Statistics	
Avg Trade Size (shares)	112
% trades >= 10k shares	4.52%
% trades >= $200k	10.75%

Trade Price Summary



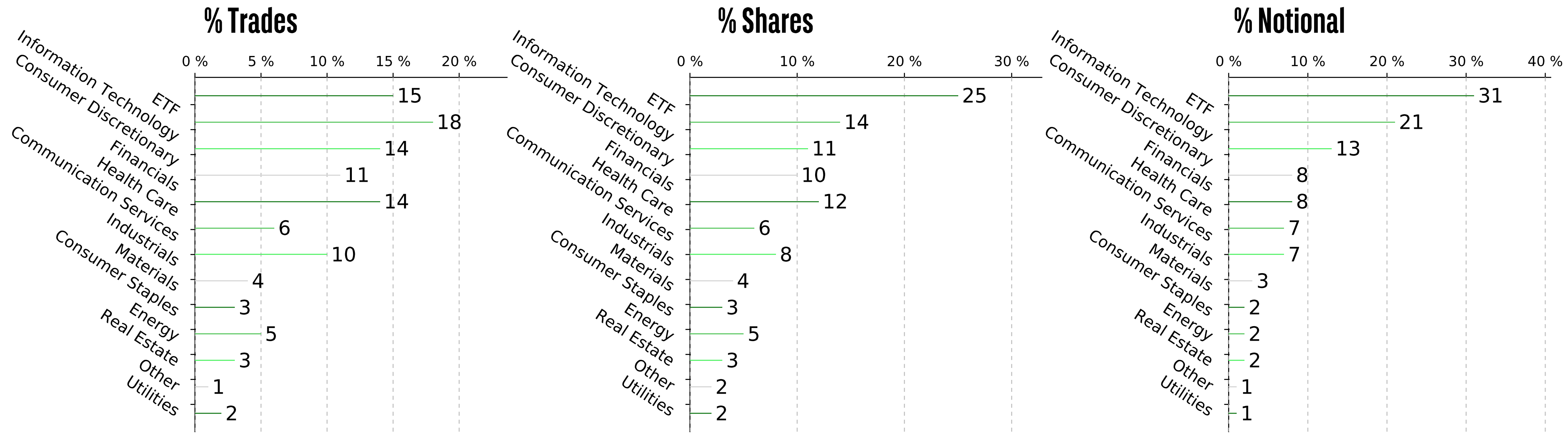
Source: BNP Paribas, January 2022

Market Cap Summary



Source: BNP Paribas, January 2022

Sector Summary



Source: BNP Paribas, January 2022

Counterparty Type Summary

CounterParty Type	% Filled Shares	Average Fill Size	Spread Savings (bps)	Spread Savings (%)	Midpoint Slippage (bps)	T+20ms (bps)	T+30s (bps)	T+30m (bps)
2 Agency	6.31%	84.63	6.58	0.41	1.85	-0.48	-1.31	-2.88
3 Direct Low	64.56%	117.01	4.02	0.57	-0.60	0.64	0.72	0.78
4 Direct Medium	12.13%	95.12	5.38	0.44	0.96	-1.54	-1.74	-1.31
5 Direct High	17.00%	122.95	3.72	0.28	1.06	-1.40	-1.20	-1.03
Total	100.00%	112.10	4.33	0.50	-0.00	-0.00	0.00	-0.00

Source: BNP Paribas, January 2022

Glossary

Counterparty Type

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

% 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.

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