



Board of Retirement Regular Meeting

Sacramento County Employees' Retirement System

Agenda Item 5

MEETING DATE: May 15, 2019

SUBJECT: Trading Activity Report – First Quarter 2019

SUBMITTED FOR: Consent Deliberation and Action Receive and File

RECOMMENDATION

Staff recommends the Board receive and file the Quarterly Trading Activity Report for the quarter ending March 31, 2019.

PURPOSE

This agenda item does not specifically support the 2018-19 Strategic Management Plan, but complies with SCERS' investment policy statement reporting requirements and contributes to the effective management and oversight of investment activities.

DISCUSSION

SCERS engages Elkins / McSherry (E/M), a State Street company, to track SCERS' equity and fixed income trading activity and to monitor manager trade execution. E/M analyzes a manager's trade activity against like managers across E/M's universe of approximately 1,400 institutional investors.

E/M's trade analysis report will highlight potential manager trading issues and, if they occur over two or more quarters, Staff will discuss compliance with the manager. The E/M trading cost reports will analyze and compare the following:

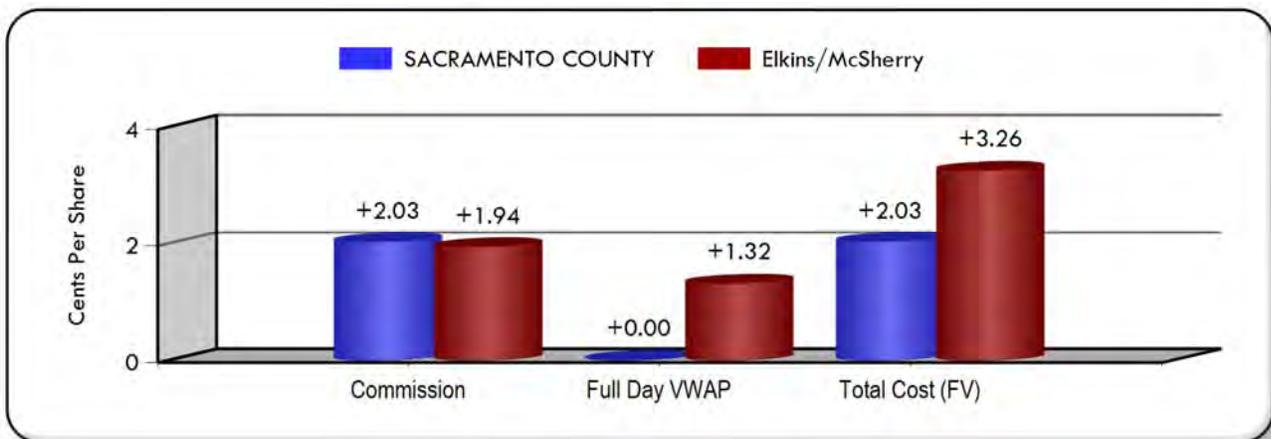
1. Commission costs, trade costs, and any soft dollar amounts.
2. Market Impact Cost, an industry performance metric, which measures the difference between a manager's trade price and the market's volume weighted average price (VWAP). VWAP is the average security price weighted by the share volume trade that day.
3. Total trading costs.

Industry metrics used to measure trade performance include "cps" (cents per share) and "bps" (basis points = 1/100th of one percent).

SCERS TRADE COST SUMMARY

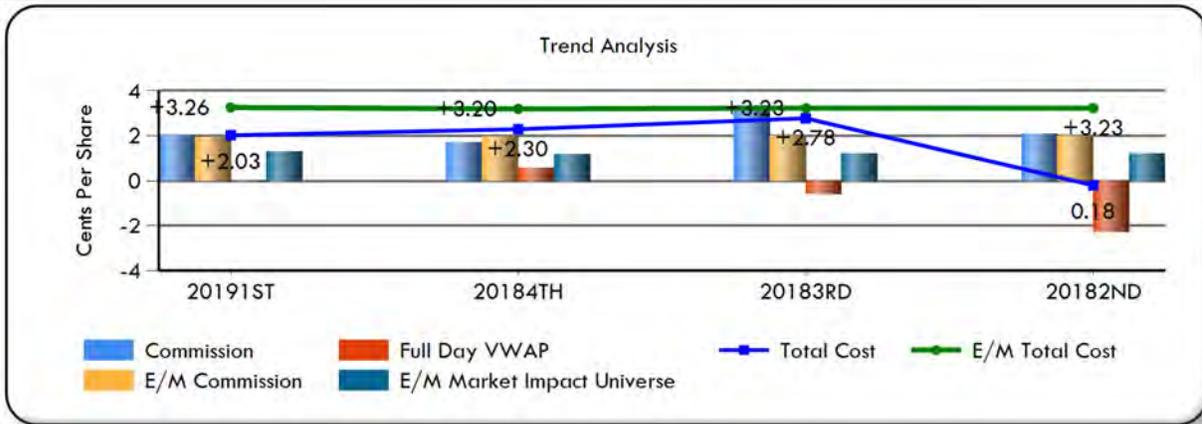
U.S. EQUITY

- SCERS’ U.S. equity managers traded 4.5 million shares across the AMEX, NASDAQ, and NYSE exchanges totaling \$188.7 million in principal, and ranked in the 76th percentile, as measured by the E-Score rank¹ among the E/M U.S. Equity universe.
- SCERS’ total trading costs equaled +2.03 cps, which is 1.23 cps lower than the peer group at +3.26 cps, as follows:
 - Commission cost of +2.03 cps versus +1.94 cps
 - Market impact cost of +0.00 cps versus +1.32 cps



- SCERS’ total trading costs were better than 66% of the peer group.
- Several of SCERS’ U.S. Equity managers experienced unfavorable commission costs compared to the U.S. Equity peer group. Managers with commission costs greater than the average peer group cost of +1.94 cps include:
 - DGHM at +3.58 cps
 - Weatherbie at +3.53 cps
 - Eagle Capital at +2.99 cps
- As illustrated below, SCERS’ managers generally generate higher commission costs than the peer group.
- SCERS’ total trading costs have been consistently below the total trading costs of the E/M universe, with the difference averaging 1.50 cps over the past four quarters.

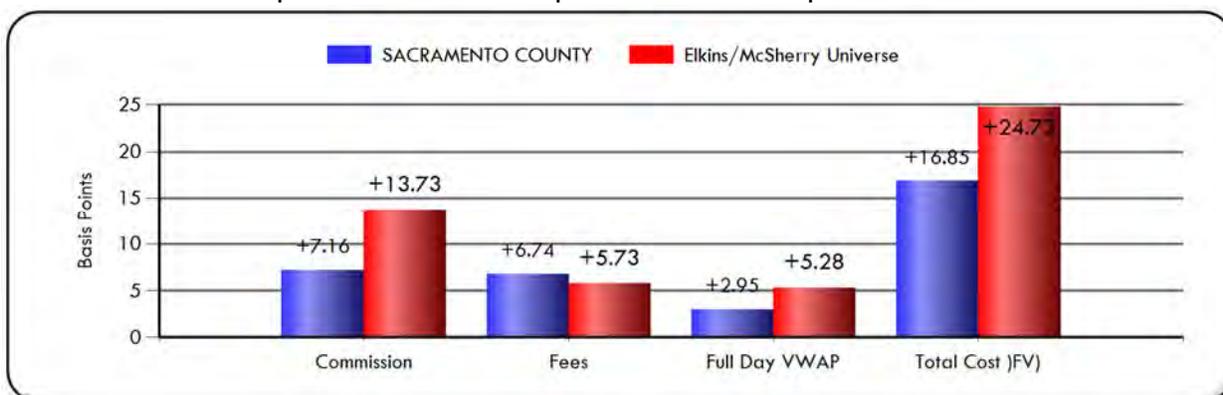
¹ Elkins/McSherry E-Score Rank evaluates transaction cost analysis, including stock specific trading ranges, to provide an assessment of execution quality compared to other market participants in the Elkins/McSherry universe.



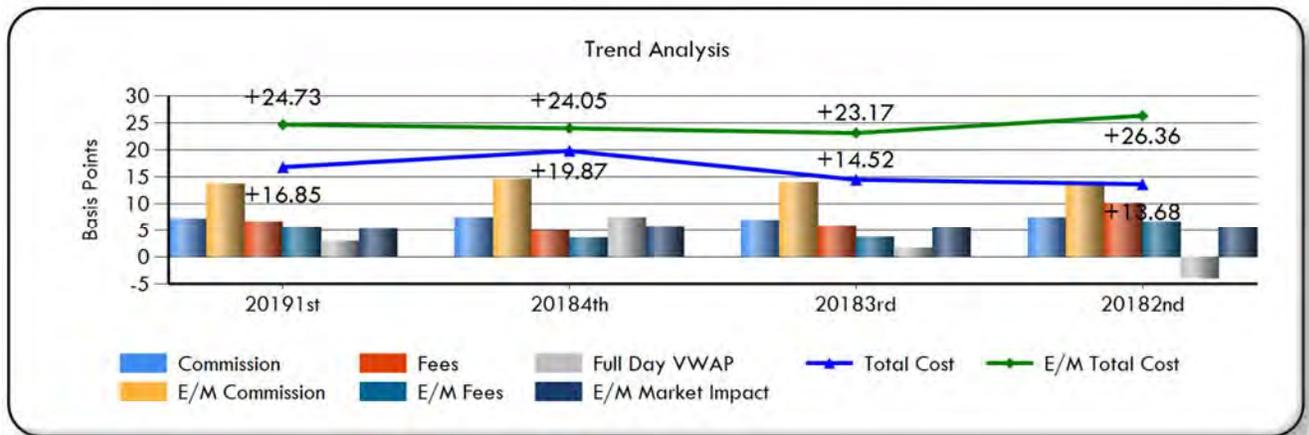
- The U.S. small cap managers (Weatherbie and DGHM) will typically incur additional commission costs in the form of a soft dollar relationship where, in return for conducting trades through a brokerage firm, the manager receives the brokerage firm’s research, generally an additional +2.0 cps.
- According to Elkins / McSherry, the average commission for the Bundled (Research Dollars) commission universe is +3.88 cps, which is higher than all of SCERS’ U.S. Small Cap managers in the fourth quarter.
- The following SCERS’ U.S. Equity managers experienced market impact costs that were greater than the peer group cost of +1.32 cps:
 - Alliance Bernstein at +12.10 cps
 - Weatherbie at +1.43 cps

INTERNATIONAL EQUITY

- SCERS’ International Equity managers traded 6.3 million shares totaling \$75.1 million in principal across 22 countries.
- Total trading cost equaled +16.85 bps, which is 7.88 bps lower than the peer group at +24.74 bps, as follows:
 - Commission cost of +7.16 bps versus +13.73 bps
 - Fees (country taxes, tariffs) of +6.74 bps versus +5.73 bps
 - Market impact cost of +2.95 bps versus +5.28 bps



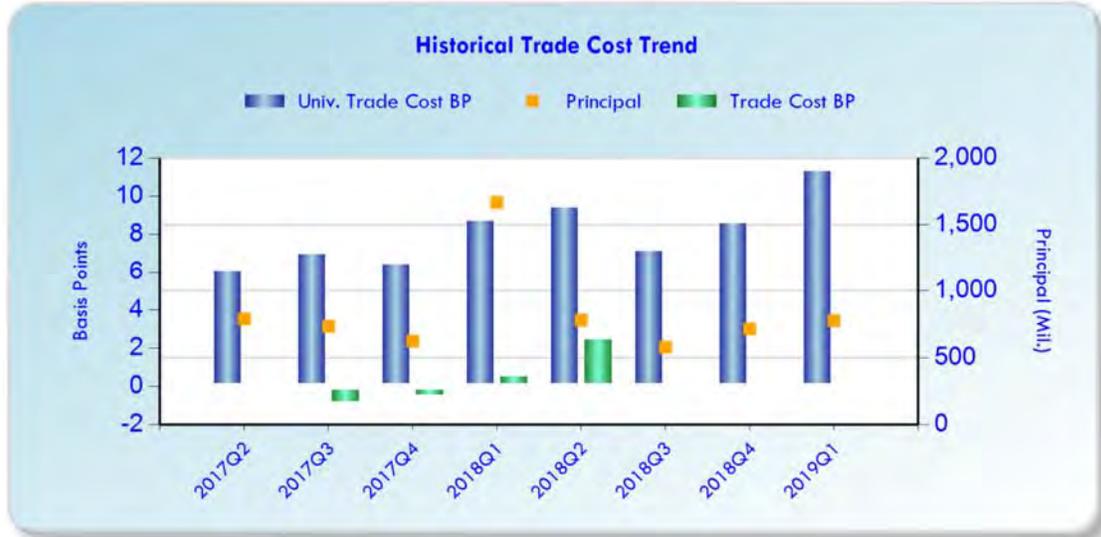
- All of SCERS' International Equity managers analyzed generated commission costs (ranging from +4.31 bps to +9.68 bps), significantly less than the E/M peer group (ranging from +13.28 bps to +14.41 bps). This result is consistent with the previous quarters' lower trade costs versus the peer group, as illustrated below (commission vs. E/M commission).
- The following International Equity managers experienced unfavorable market impact cost versus the peer group during the quarter (full day VWAP vs. E/M market impact):
 - William Blair at +14.86 bps vs. +4.31 bps
 - LSV at +5.63 bps vs. +4.78 bps
- SCERS' total international trading costs have been consistently below the total trading costs of the E/M universe, with the difference averaging 8.35 bps over the past four quarters.



U.S. FIXED INCOME

- SCERS' U.S. Fixed Income managers conducted 441 trades totaling \$778 million in principal, as follows:
 - Governments: 305 trades totaling \$607 million
 - Mortgages: 78 trades totaling \$137 million
 - Corporates: 57 trades totaling \$33 million
 - Municipals: 1 trade for less than \$1 million
- Total trading cost equaled -0.25 bps, which is 11.74 bps lower than the E/M peer group cost of +11.49 bps, as follows:
 - Governments at -0.12 bps versus +12.13 bps
 - Mortgages at -0.64 bps versus +9.15 bps
 - Corporates at -0.97 bps versus +9.40 bps
 - Municipals at +0.75 bps versus +12.48 bps

- As illustrated below, the total trade cost (in basis points) is consistent with previous quarters' trade costs versus the peer group. SCERS' overall trading volume (in Principal) is consistent with previous quarters, with the exception of first quarter 2018, which was higher due to rebalancing performed across the fixed income portfolio.



- Comparing SCERS' U.S. Fixed Income Core Plus and Treasury managers trade costs versus their peer group is as follows:
 - TCW / MetWest (Core Plus) at -0.75 bps versus +13.62 bps
 - NeubergerBerman (Treasury) at +0.54 bps versus +8.30 bps

INTERNATIONAL FIXED INCOME

- SCERS is invested with Brandywine Global Fixed Income's commingled fund; therefore, trading activity is not tracked.
- Prudential, one of SCERS' Core Plus Fixed Income managers, is permitted up to a 20% allocation in international bonds or non-U.S. denominated bonds, which is reported as follows:
 - Prudential conducted 228 international trades totaling \$94 million in principal as follows:
 - Governments: 104 trades totaling \$61 million
 - Corporates: 115 trades totaling \$29 million
 - Mortgages: 8 trades totaling \$4 million
 - Municipals: 1 trade totaling less than \$1 million
 - Total trading cost was +1.53 bps, which was 4.49 bps lower than the E/M peer group cost of +6.02 bps, as follows:
 - Governments at +5.06 bps versus +6.02 bps
 - Corporates at -1.10 bps versus +6.02 bps
 - Mortgages at -40.89 bps versus +5.91 bps

- Municipals at +85.70 bps versus +6.02

➤ Trading costs were in line with previous quarters' results, as illustrated below.



COMMISSION RECAPTURE

- SCERS' commission recapture program, administered by State Street, instructs investment managers to trade with the program's brokerage partners but only if the trade cost is lower and is the best execution.
- For the first quarter of 2019, SCERS' brokerage partners provided a rebate back to SCERS for approximately 48% of the commissions paid.
 - For the quarter ending March 31, 2019, the commission rebate totaled \$17,665.
 - For comparison, the commission rebate for the quarter ending March 31, 2018 totaled \$16,153.

ATTACHMENTS

- Elkins / McSherry Trading Cost Summary report for the quarter ending March 31, 2019 for U.S. equity, international equity, U.S. fixed income, and global fixed income.

Prepared by:

/S/

 Brian Miller
 Investment Officer

Reviewed by:

/S/

 Steve Davis
 Chief Investment Officer

/S/

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SACRAMENTO COUNTY

Trade Cost Summary - U.S. Equity Trading

Period End March 31, 2019





REPORT CONTENTS

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- **Results / Methodology**
- **Performance vs. Universe / Trading Components**
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- **Commission Review**

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- **Manager Performance**
- **Broker Performance**

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- **Most Active Stocks**
- **10 High / Low Cost Trades**
- **10 High Cost Trade Graphs**
- **10 Low Cost Trade Graphs**



(+) = Cost

EXECUTIVE SUMMARY

Elkins/McSherry has been providing trading cost analysis to institutional investors since 1991, serving many of the worlds largest investment managers, pension funds, banks, and broker dealers. Using this vast experience combined with an un-matched collection of global equity market and Universe data, Elkins/McSherry has produced a Trading Cost Analysis on behalf of SACRAMENTO COUNTY. This study evaluates U.S. equity executions from January 1, 2019 to March 31, 2019. The analysis included trading of 4,459,275 shares representing \$188.72 million in principal.

Methodology :

The Elkins/McSherry analysis measures trading efficiency by quantifying the cost of brokerage commission and execution quality versus a Full Day VWAP benchmark for each of the securities traded. These data have been aggregated to summarize results by Buy/Sell, Commissions, Market Impact, Short Term Alpha, Market Cap, Trade Difficulty and Trade Detail. These results are quantified in USD as well as being displayed graphically to highlight the outcomes.

Results :

BENCHMARK PERFORMANCE

Commission	Full Day VWAP	E - Score
<ul style="list-style-type: none"> Your commission cost was +2.03 cps (+4.79 bp) or +\$90,386 (+0.08 cps (+0.20 bp) worse than the Elkins/McSherry All Trading Universe) 	<ul style="list-style-type: none"> Your market impact cost was +0.00 cps (+0.01 bp) or 1.31 cps (3.10 bp) better than the Elkins/McSherry Universe Your overall trading cost of +2.03 cps (+4.80 bp) was 1.23 cps (2.90 bp) better than the Elkins/McSherry Universe Full Day VWAP Universe Rank: 69% Total Cost Universe Rank: 66% 	<ul style="list-style-type: none"> E-Score Rank : 76 E-Score : 0.30

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)	
Bundled	All Trading	Execution Only	Program	Median	Full Day VWAP
+3.88	+1.94	+1.22	+1.55	75 %	+1.32
				25 %	0.45
					+3.50



(+) = Cost

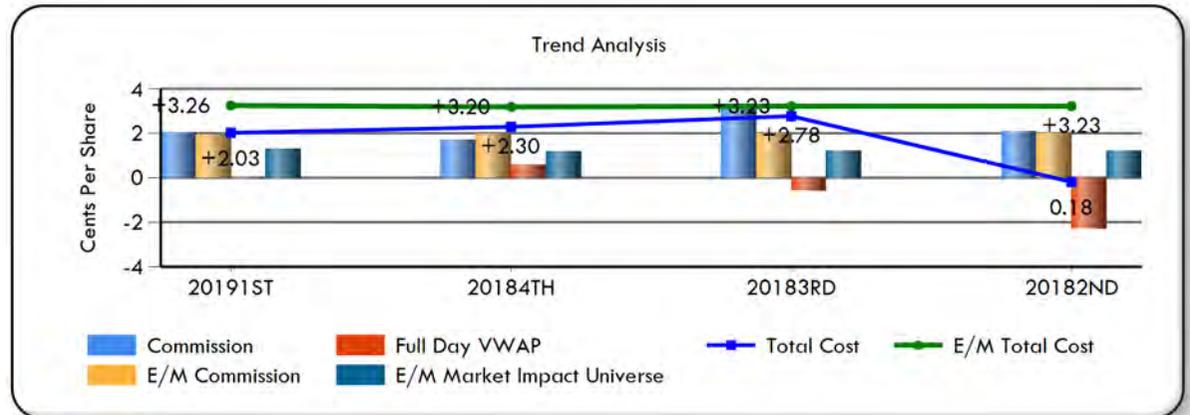
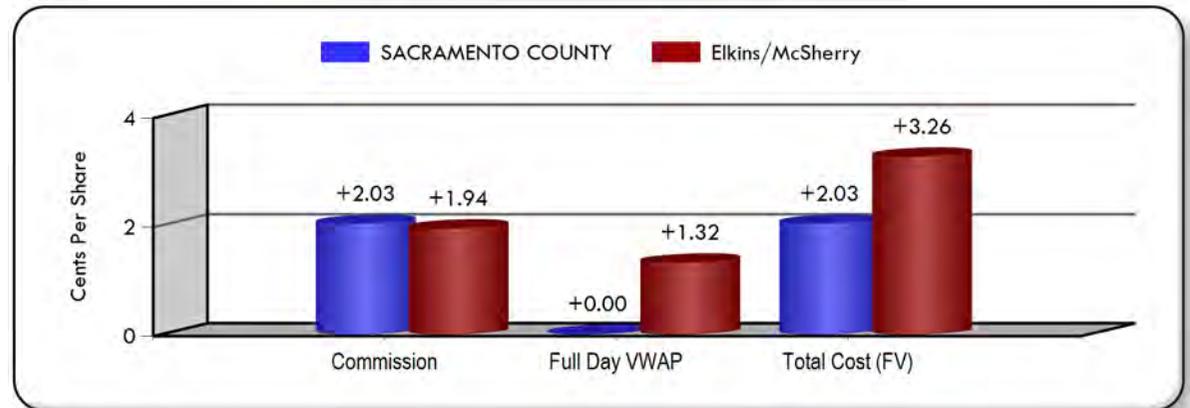
EXECUTIVE SUMMARY

TOTAL PORTFOLIO COST PERFORMANCE

Side	COMMISSION			MARKET IMPACT		Total Cost	Total Cost/Savings Vs. Universe	E - Score (Rank)	E -Score
	Your Avg. Commission (cps)	All Trading Universe (cps)	Bundled Universe (cps)	Full Day VWAP (cps)	Universe Full Day VWAP (cps)	(cps)	Commission+ Full Day VWAP (cps)		
Sells	+2.19	+1.94	+3.88	1.35	+1.32	+0.84	2.42	0	0.30
Buys	+1.90	+1.94	+3.88	+1.08	+1.32	+2.98	0.28	0	0.31
Total	+2.03	+1.94	+3.88	+0.00	+1.32	+2.03	1.23	76	0.30

TRADING COMPONENTS

	Buys	Sells
Trade Principal	96,297,182	92,425,995
Shares	2,481,695	1,977,580
Unique Names	475	200
Liquidity (% ADV)	0.052	0.098
Avg. Execution Size	2,357	3,570
Avg. Order Completion Time (min)	N/A	N/A
Total Number of Trades	1,053	554



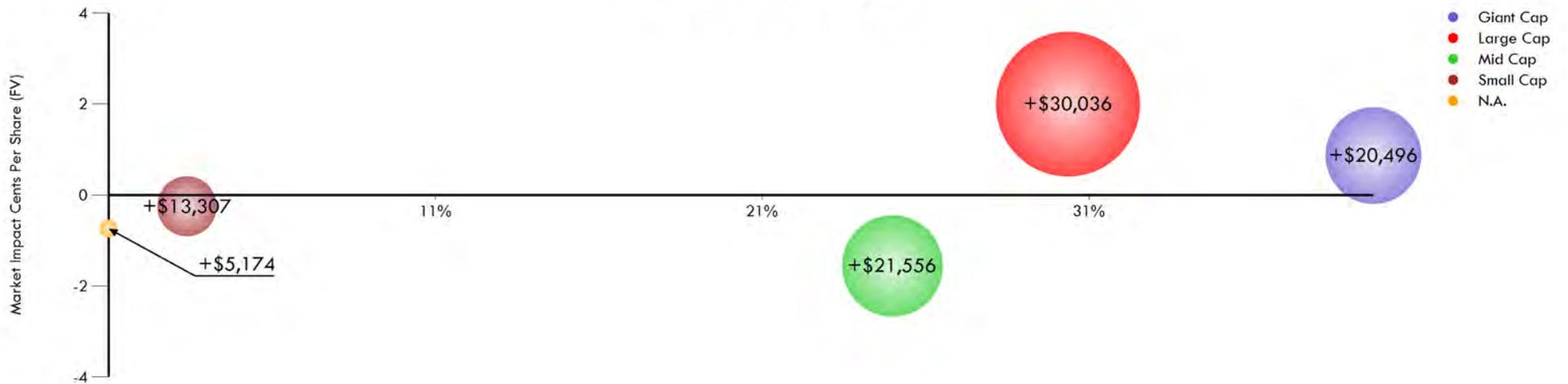
(+) = Cost

EXECUTIVE SUMMARY

MARKET CAPITALIZATION

Market Cap	% Traded (\$)	Avg. Shares Per Order	COMMISSION		MARKET IMPACT			Total Cost (cps)	Total Cost/Savings (cps)	E - Score (Rank)	E - Score	Market Cap Definition
			Your Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Universe Full Day VWAP (cps)	Rank Full Day VWAP					
Giant Cap	39.81 %	3,200	+0.87	+1.94	+0.87	+1.36	56 %	+1.74	1.57	84	0.20	Over \$25 B
Large Cap	30.47 %	1,820	+1.17	+1.94	+2.00	+1.83	47 %	+3.17	0.61	73	0.35	\$5 B To \$25 B
Mid Cap	25.10 %	3,005	+2.84	+1.94	1.56	+1.24	81 %	+1.28	1.90	69	0.40	\$1 B To \$5 B
Small Cap	3.51 %	2,711	+3.48	+1.94	0.25	+0.73	68 %	+3.23	+0.55	69	0.40	\$250 M To \$1 B
N.A.	1.11 %	58,085	+2.96	+1.94	0.73	+1.32	77 %	+2.23	1.03	76	0.31	

Total Cost by Market Cap: (USD)

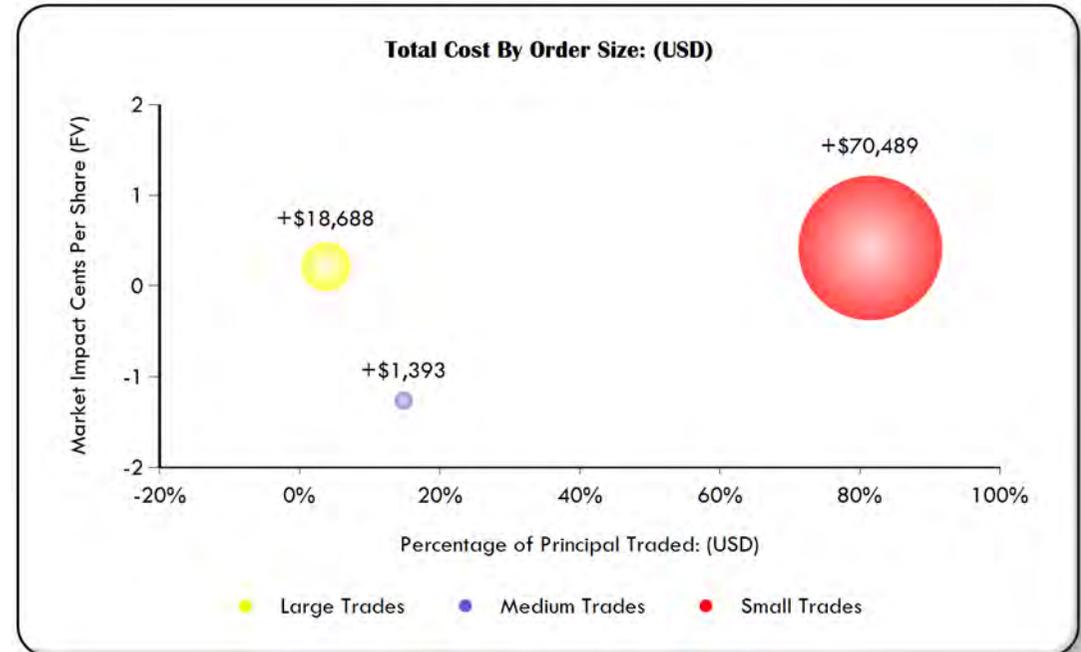
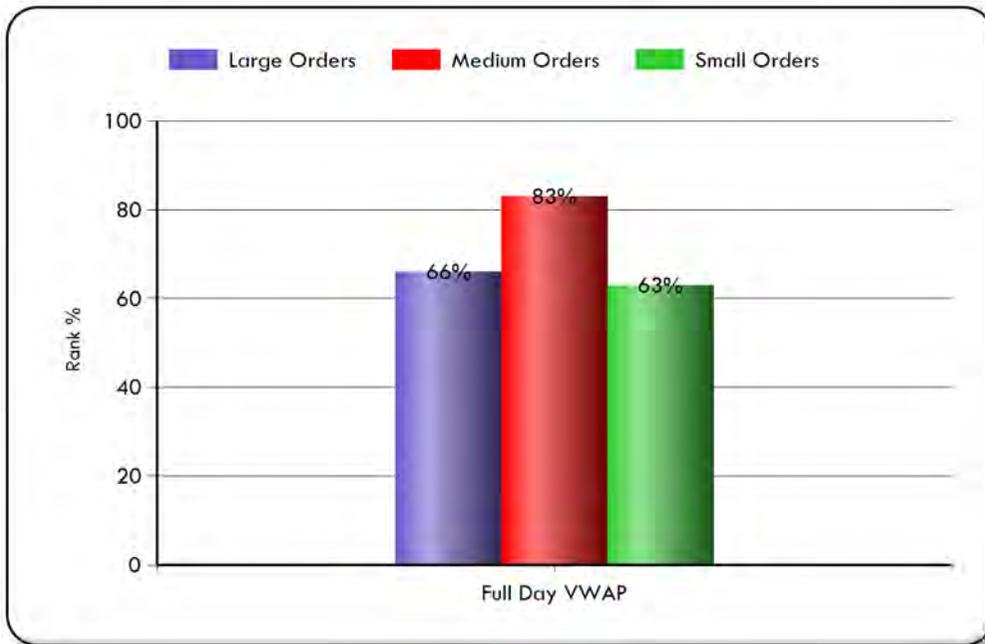


(+) = Cost

EXECUTIVE SUMMARY

ORDER SIZE EVALUATION

Order Size	Total # Of Orders	Avg. Shares Per Order	Avg. Order Completion Time (min)	COMMISSION		MARKET IMPACT			Total Cost	Total Cost/Savings	E - Score (Rank)	E - Score	Absolute Size (Shares)
				Your Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Universe Full Day VWAP (cps)	Rank Full Day VWAP	(cps)	Commission+Full Day VWAP Vs. Universe (cps)			
Large Orders	4	158,376	N/A	+2.74	+1.94	+0.21	+1.32	66 %	+2.95	0.31	71	0.37	50K Or More
Med. Orders	65	15,675	N/A	+1.40	+1.94	1.26	+1.32	83 %	+0.14	3.12	79	0.26	10K-50K
Small Orders	1,538	1,825	N/A	+2.09	+1.94	+0.42	+1.32	63 %	+2.51	0.75	76	0.31	10K Or Less





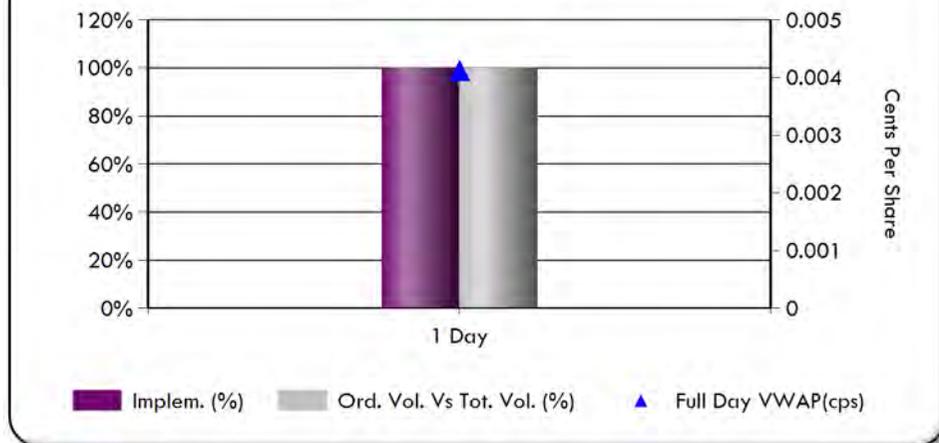
(+) = Cost

EXECUTIVE SUMMARY

IMPLEMENTATION DAYS BY TRADE

Period	Percent Traded (%)	Order Vol. Vs Total Vol. (%)	Full Day VWAP (cps)	E - Score (Rank)	E - Score
1 Day	100.00	100%	+0.00	76	0.30

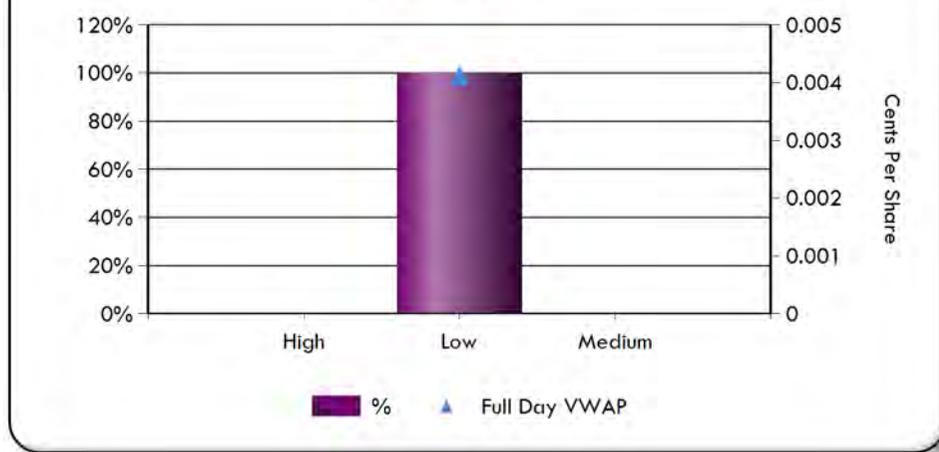
Implementation Days



TRADE DIFFICULTY

Methodology	Liquid. Cat.	Percent Traded (%)	Full Day VWAP (cps)	E - Score (Rank)	E - Score
0%~20% of daily vol.	L	100%	+0.00	76	0.30

Avg. % of Daily Volume





(+) = Cost

EXECUTIVE SUMMARY

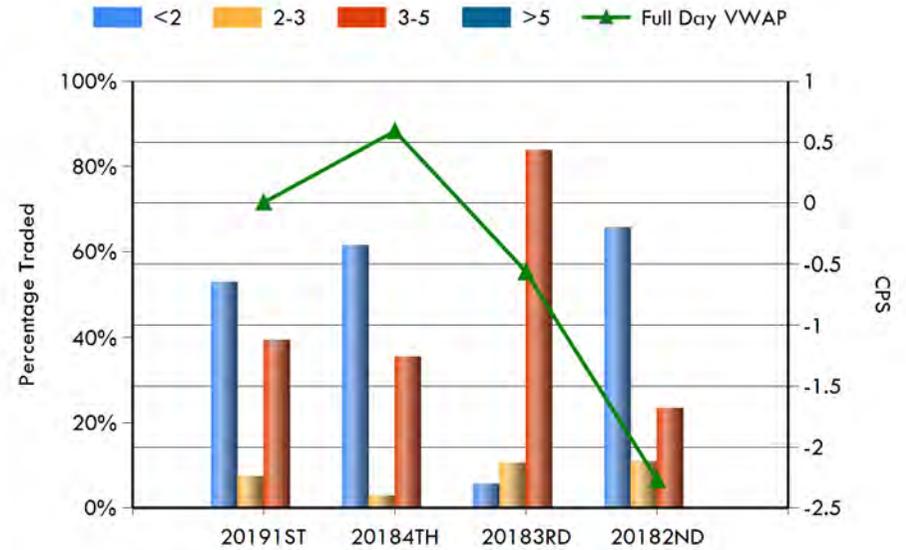
COMMISSION REVIEW

Top 10 Broker

Commission Trends

Broker	Total Commission (\$)	Commission 20191st (cps)	All Trading Universe (cps)	Bundled Universe (cps)	20184TH (cps)	20183RD (cps)	20182ND (cps)
CAPITAL IN	23,945	+3.10	+1.94	+3.88	+3.79	+3.31	+3.08
COWEN & CO	15,613	+3.62	+1.94	+3.88	+3.65	+3.78	+3.89
LIQUIDNET	10,886	+3.51	+1.94	+3.88	+3.51	+3.20	+2.26
THEMIS TRA	8,726	+3.42	+1.94	+3.88	+3.60	+3.60	+3.60
ITG	6,477	+3.60	+1.94	+3.88	+3.46	+3.60	+2.56
INSTINET	3,596	+3.00	+1.94	+3.88	+3.00	+3.00	+2.38
WILLIAM BL	2,307	+3.58	+1.94	+3.88	+3.60	+3.60	+3.64
RBC CAPITA	1,631	+2.80	+1.94	+3.88	N.A	+2.69	+2.82
RAYMOND JA	1,429	+3.59	+1.94	+3.88	+3.65	+3.60	+3.97
KEYBANC	1,407	+4.90	+1.94	+3.88	+4.50	+3.98	+4.00

Commission Category Trend



NOTES

(+) = Cost

TRADE CYCLE DETAIL

Manager Performance (Full Day VWAP)



Manager	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score Rank	E - Score	COMMISSION		MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
						Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP	Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)	20182ND (%)
AQR	105	3,767	1,702,682	87	0.16	+0.06	+1.94	+0.55	61 %	2.65	50	-	-
WEATHERBIE	38	1,718	831,492	65	0.45	+3.53	+1.94	+1.43	48 %	+1.70	18	18	4
DALTON, GREINER, HAR	26	4,137	1,104,608	64	0.47	+3.58	+1.94	3.78	95 %	3.46	99	92	93
EAGLE CAPITAL MANAGE	12	93,187	652,309	65	0.45	+2.99	+1.94	+0.05	68 %	0.21	96	98	97
ALLIANCE R 3000 CAPI	8	424	168,184	49	0.69	+0.54	+1.94	+12.10	1 %	+9.38	1	1	99

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.88	+1.94	+1.22	+1.55	+1.32

NOTES

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(+) = Cost

TRADE CYCLE DETAIL

Broker Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score	E - Score Rank	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
						Commission (USD)	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP		Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)
JP MORGAN CHASE	20	752	341,305	79	0.27	1,235	+0.36	+1.94	+2.39	34 %	0.51	49	99	30
GOLDMAN SACHS	18	4,089	343,438	88	0.15	1,393	+0.41	+1.94	+1.24	50 %	1.61	1	1	84
CITIGROUP	17	3,203	211,397	88	0.15	661	+0.31	+1.94	+2.31	35 %	0.64	10	63	99
MERRILL LYNCH	16	3,637	236,419	92	0.11	47	+0.02	+1.94	+0.36	64 %	2.88	99	99	75
DEUTSCHE BANK	15	5,584	312,712	91	0.12	207	+0.07	+1.94	+2.01	40 %	1.19	54	1	-
MORGAN STANLEY	14	3,848	250,120	73	0.34	323	+0.13	+1.94	+1.39	48 %	1.74	93	13	89
CAPITAL INSTL SVCS	13	48,237	771,797	64	0.47	23,945	+3.10	+1.94	1.94	88 %	2.10	99	99	33
CREDIT SUISSE	13	2,895	222,945	82	0.22	201	+0.09	+1.94	1.66	87 %	4.83	84	93	99
THEMIS TRADING LLC	11	1,917	254,904	70	0.39	8,726	+3.42	+1.94	+5.47	15 %	+5.63	1	20	1
ITG	10	1,565	180,024	58	0.55	6,477	+3.60	+1.94	+7.28	10 %	+7.62	14	1	99

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.88	+1.94	+1.22	+1.55	+1.32

NOTES

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(+) = Cost

TRADE CYCLE DETAIL

Broker Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score Rank	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
						Commission (USD)	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP	Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)	20182ND (%)
LIQUIDNET	10	1,940	310,323	69	0.41	10,886	+3.51	+1.94	5.68	99 %	5.43	93	92	96
COWEN & CO	8	4,270	431,296	62	0.49	15,613	+3.62	+1.94	0.89	80 %	0.53	87	92	40
INSTINET	4	2,854	119,877	52	0.64	3,596	+3.00	+1.94	3.72	95 %	3.98	99	32	1
WILLIAM BLAIR	3	2,799	64,379	74	0.33	2,307	+3.58	+1.94	1.93	88 %	1.60	99	99	98
RBC CAPITAL MARKETS	2	3,236	58,248	61	0.51	1,631	+2.80	+1.94	17.63	99 %	18.09	-	95	92
NEEDHAM & CO INC	2	1,910	28,645	77	0.30	1,015	+3.54	+1.94	5.08	98 %	4.79	99	10	7
KEYBANC	2	4,101	28,705	86	0.18	1,407	+4.90	+1.94	+0.49	62 %	+2.14	96	88	1
STEPHENS & CO INC	1	1,843	20,271	55	0.59	810	+4.00	+1.94	+1.32	50 %	+2.06	99	98	1
RAYMOND JAMES	1	1,991	39,815	78	0.28	1,429	+3.59	+1.94	+1.49	47 %	+1.82	1	1	77
UBS	1	9,997	9,997	47	0.71	60	+0.60	+1.94	+29.75	1 %	+27.09	99	99	95

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.88	+1.94	+1.22	+1.55	+1.32

NOTES

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(+) = Cost

TRADE CYCLE DETAIL

Broker Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score Rank	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
						Commission (USD)	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP	Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)	20182ND (%)
CRAIG - HALLUM	1	2,034	20,344	76	0.31	732	+3.60	+1.94	25.99	99 %	25.65	99	21	99
OPPENHEIMER & CO INC	<1	1,683	21,880	56	0.58	788	+3.60	+1.94	4.26	96 %	3.92	97	1	3
JANNEY MONTGOMERY	<1	4,764	19,054	69	0.39	857	+4.50	+1.94	4.57	98 %	3.33	-	-	-
PIPER JAFFRAY	<1	1,891	20,797	53	0.63	760	+3.65	+1.94	+1.84	42 %	+2.24	10	99	1
STIFEL NICOLAUS & CO	<1	861	6,029	56	0.58	217	+3.60	+1.94	20.04	99 %	19.69	99	99	1
CANACCORD GENUITY	<1	1,256	7,536	78	0.28	271	+3.60	+1.94	+12.29	1 %	+12.63	1	-	-
SANDLER ONEILL	<1	10,915	21,830	81	0.25	873	+4.00	+1.94	0.59	76 %	+0.15	-	98	-
KEEFE BRUYETTE WOODS	<1	4,774	14,321	33	0.95	611	+4.26	+1.94	16.99	99 %	15.99	-	99	99
ISI GROUP INC	<1	4,639	18,555	77	0.29	672	+3.62	+1.94	+2.90	30 %	+3.26	99	92	99
JEFFERIES & CO	<1	2,989	5,977	89	0.14	258	+4.31	+1.94	6.90	99 %	5.85	99	5	62

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.88	+1.94	+1.22	+1.55	+1.32

NOTES

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(+) = Cost

TRADE CYCLE DETAIL

Broker Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score Rank	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
						Commission (USD)	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP		Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)
BAIRD, ROBERT W	<1	6,005	12,009	66	0.44	424	+3.53	+1.94	+13.57	1 %	+13.85	39	17	84
AUTREPAT-DISTRIBUT	<1	1,188	3,564	3	2.19	0	+0.00	+1.94	+228.79	1 %	+225.53	-	1	8
WOLFE TRAHAN SECS	<1	3,142	6,283	31	0.98	283	+4.50	+1.94	19.02	99 %	17.78	81	88	99
NORTHCOAST RESEARCH	<1	3,065	6,129	79	0.27	276	+4.50	+1.94	+0.10	67 %	+1.34	-	-	98
WELLS FARGO	<1	3,190	3,190	76	0.30	115	+3.60	+1.94	13.56	99 %	13.22	-	-	-
CJS SECURITIES	<1	6,130	12,260	46	0.73	429	+3.50	+1.94	4.60	98 %	4.36	99	-	99
B.RILEY & CO	<1	8,430	8,430	59	0.54	295	+3.50	+1.94	+2.03	40 %	+2.27	-	-	74
LOOP CAPITAL MARKETS	<1	2,980	2,980	65	0.46	134	+4.50	+1.94	+6.28	12 %	+7.52	-	-	-
DAVIDSON D.A. & CO	<1	4,000	4,000	71	0.38	160	+4.00	+1.94	+2.24	36 %	+2.98	-	-	38
KING, CL, & ASSOC	<1	7,490	7,490	63	0.48	262	+3.50	+1.94	+3.11	29 %	+3.35	-	-	-

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.88	+1.94	+1.22	+1.55	+1.32

NOTES

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(+) = Cost

TRADE CYCLE DETAIL

ALLIANCE R 3000 CAPITAL MANAGEM Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score Rank	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
						Commission (USD)	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP	Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)	20182ND (%)
JP MORGAN CHASE	5	294	114,613	54	0.61	605	+0.53	+1.94	+4.41	19 %	+1.68	1	99	18
UBS	1	9,997	9,997	47	0.71	60	+0.60	+1.94	+29.75	1 %	+27.09	-	-	-
MORGAN STANLEY	<1	259	259	16	1.35	0	+0.00	+1.94	+651.72	1 %	+648.46	6	18	1
CITIGROUP	<1	8,151	16,302	63	0.48	98	+0.60	+1.94	+8.79	6 %	+6.13	-	-	99
DEUTSCHE BANK	<1	12,533	25,065	59	0.53	149	+0.60	+1.94	+18.92	1 %	+16.25	1	1	-
AUTREPAT-DISTRIBUT	<1	1,948	1,948	3	2.19	0	+0.00	+1.94	+228.79	1 %	+225.53	-	1	8
Grand Total	8	424	168,184	49	0.69	912	+0.54	+1.94	+12.10	1 %	+9.38	1	1	99



(+) = Cost

TRADE CYCLE DETAIL

AQR Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score Rank	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
						Commission (USD)	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP	Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)	20182ND (%)
GOLDMAN SACHS	17	4,273	316,170	89	0.14	411	+0.13	+1.94	+1.04	56 %	2.09	18	-	-
MERRILL LYNCH	16	3,637	236,419	92	0.11	47	+0.02	+1.94	+0.36	64 %	2.88	41	-	-
CITIGROUP	16	3,211	183,007	90	0.12	128	+0.07	+1.94	+0.92	57 %	2.27	16	-	-
DEUTSCHE BANK	15	5,327	287,647	91	0.11	58	+0.02	+1.94	+0.53	61 %	2.71	61	-	-
JP MORGAN CHASE	15	3,427	212,452	89	0.14	106	+0.05	+1.94	+1.61	45 %	1.60	61	-	-
MORGAN STANLEY	13	3,932	243,768	76	0.31	49	+0.02	+1.94	+0.70	59 %	2.54	75	-	-
CREDIT SUISSE	13	2,895	222,945	82	0.22	201	+0.09	+1.94	1.66	87 %	4.83	85	-	-
AUTREPAT-DISTRIBUT	<1	274	274	3	2.19	0	+0.00	+1.94	+228.79	1 %	+225.53	-	-	-
Grand Total	105	3,767	1,702,682	87	0.16	1,000	+0.06	+1.94	+0.55	61 %	2.65	50	-	-



(+) = Cost

TRADE CYCLE DETAIL

DALTON, GREINER, HARTMAN, MAHER Performance (Full Day VWAP)

						COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score Rank	E - Score	Commission (USD)	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP	Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)	20182ND (%)
COWEN & CO	7	4,678	407,005	63	0.49	14,738	+3.62	+1.94	1.16	83 %	0.80	87	92	66
LIQUIDNET	6	2,914	186,468	72	0.36	6,526	+3.50	+1.94	2.06	88 %	1.82	97	68	99
INSTINET	4	2,854	119,877	52	0.64	3,596	+3.00	+1.94	3.72	95 %	3.98	99	32	2
RBC CAPITAL MARKETS	2	3,236	58,248	61	0.51	1,631	+2.80	+1.94	17.63	99 %	18.09	-	95	92
CAPITAL INSTL SVCS	2	12,083	120,830	51	0.66	4,416	+3.66	+1.94	10.16	99 %	9.77	99	99	27
KEYBANC	2	4,101	28,705	86	0.18	1,407	+4.90	+1.94	+0.49	62 %	+2.14	96	88	1
JANNEY MONTGOMERY	<1	4,764	19,054	69	0.39	857	+4.50	+1.94	4.57	98 %	3.33	-	-	-
STEPHENS & CO INC	<1	1,614	6,455	62	0.49	313	+4.84	+1.94	19.82	99 %	18.24	99	80	17
SANDLER ONEILL	<1	10,915	21,830	81	0.25	873	+4.00	+1.94	0.59	76 %	+0.15	-	98	-
KEEFE BRUYETTE WOODS	<1	4,774	14,321	33	0.95	611	+4.26	+1.94	16.99	99 %	15.99	-	99	99
ISI GROUP INC	<1	4,639	18,555	77	0.29	672	+3.62	+1.94	+2.90	30 %	+3.26	99	-	99
MORGAN STANLEY	<1	3,047	6,093	59	0.54	274	+4.50	+1.94	+1.37	49 %	+2.61	-	-	45
JP MORGAN CHASE	<1	7,120	14,240	70	0.38	523	+3.68	+1.94	2.26	90 %	1.84	-	18	97
JEFFERIES & CO	<1	4,715	4,715	88	0.16	212	+4.50	+1.94	8.28	99 %	7.04	-	-	31
WOLFE TRAHAN SECS	<1	3,142	6,283	31	0.98	283	+4.50	+1.94	19.02	99 %	17.78	81	88	99
NORTHCOAST RESEARCH	<1	3,065	6,129	79	0.27	276	+4.50	+1.94	+0.10	67 %	+1.34	-	-	98
PIPER JAFFRAY	<1	3,607	10,820	55	0.60	401	+3.70	+1.94	4.06	95 %	3.62	-	96	71
CJS SECURITIES	<1	6,130	12,260	46	0.73	429	+3.50	+1.94	4.60	98 %	4.36	99	-	99
WILLIAM BLAIR	<1	10,700	10,700	45	0.74	375	+3.50	+1.94	1.75	87 %	1.51	-	-	99
B.RILEY & CO	<1	8,430	8,430	59	0.54	295	+3.50	+1.94	+2.03	40 %	+2.27	-	-	58
LOOP CAPITAL MARKETS	<1	2,980	2,980	65	0.46	134	+4.50	+1.94	+6.28	12 %	+7.52	-	-	-



(+) = Cost

TRADE CYCLE DETAIL

DALTON, GREINER, HARTMAN, MAHER Performance (Full Day VWAP)

						COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score Rank	E - Score	Commission (USD)	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP	Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)	20182ND (%)
DAVIDSON D.A. & CO	<1	4,000	4,000	71	0.38	160	+4.00	+1.94	+2.24	36 %	+2.98	-	-	38
KING, CL, & ASSOC	<1	7,490	7,490	63	0.48	262	+3.50	+1.94	+3.11	29 %	+3.35	-	-	-
BAIRD, ROBERT W	<1	8,020	8,020	90	0.13	281	+3.50	+1.94	+2.49	33 %	+2.73	39	17	99
RAYMOND JAMES	<1	1,000	1,000	78	0.28	40	+4.00	+1.94	2.27	90 %	1.52	1	-	79
ITG	<1	100	100	79	0.26	1	+1.20	+1.94	6.21	99 %	8.27	-	-	92
Grand Total	26	4,137	1,104,608	64	0.47	39,587	+3.58	+1.94	3.78	95 %	3.46	99	92	93



(+) = Cost

TRADE CYCLE DETAIL

EAGLE CAPITAL MANAGEMENT Performance (Full Day VWAP)

						COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score Rank	E - Score	Commission (USD)	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP	Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)	20182ND (%)
CAPITAL INSTL SVCS	12	108,495	650,967	66	0.44	19,529	+3.00	+1.94	0.42	74 %	0.68	-	-	89
AUTREPAT-DISTRIBUT	<1	1,342	1,342	3	2.19	0	+0.00	+1.94	+228.79	1 %	+225.53	-	-	-
Grand Total	12	93,187	652,309	65	0.45	19,529	+2.99	+1.94	+0.05	68 %	0.21	96	98	97



(+) = Cost

TRADE CYCLE DETAIL

WEATHERBIE Performance (Full Day VWAP)

						COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	RANK TREND - Full Day VWAP		
Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score Rank	E - Score	Commission (USD)	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP	Commission + Full Day VWAP Vs. Universe	20184TH (%)	20183RD (%)	20182ND (%)
THEMIS TRADING LLC	11	1,917	254,904	70	0.39	8,726	+3.42	+1.94	+5.47	15 %	+5.63	1	20	1
ITG	10	1,578	179,924	58	0.55	6,476	+3.60	+1.94	+7.29	10 %	+7.63	8	1	42
LIQUIDNET	4	1,290	123,855	64	0.47	4,360	+3.52	+1.94	11.13	99 %	10.87	96	99	1
WILLIAM BLAIR	3	2,440	53,679	75	0.32	1,932	+3.60	+1.94	1.96	88 %	1.62	99	99	98
NEEDHAM & CO INC	2	1,910	28,645	77	0.30	1,015	+3.54	+1.94	5.08	98 %	4.79	99	10	1
RAYMOND JAMES	1	2,043	38,815	78	0.28	1,389	+3.58	+1.94	+1.59	45 %	+1.91	1	1	21
CRAIG - HALLUM	1	2,034	20,344	76	0.31	732	+3.60	+1.94	25.99	99 %	25.65	99	21	99
OPPENHEIMER & CO INC	<1	1,683	21,880	56	0.58	788	+3.60	+1.94	4.26	96 %	3.92	97	1	95
GOLDMAN SACHS	<1	2,727	27,268	72	0.36	982	+3.60	+1.94	+3.59	24 %	+3.93	1	1	99
STEPHENS & CO INC	<1	1,974	13,816	50	0.67	497	+3.60	+1.94	+11.19	2 %	+11.54	99	99	1
PIPER JAFFRAY	<1	1,247	9,977	52	0.63	359	+3.60	+1.94	+8.25	8 %	+8.59	10	99	1
COWEN & CO	<1	1,735	24,291	58	0.55	874	+3.60	+1.94	+3.69	23 %	+4.03	-	1	55
STIFEL NICOLAUS & CO	<1	861	6,029	56	0.58	217	+3.60	+1.94	20.04	99 %	19.69	99	99	1
CITIGROUP	<1	1,727	12,088	49	0.68	435	+3.60	+1.94	+14.53	1 %	+14.87	1	-	-
CANACCORD GENUITY	<1	1,256	7,536	78	0.28	271	+3.60	+1.94	+12.29	1 %	+12.63	1	-	-
BAIRD, ROBERT W	<1	3,989	3,989	56	0.57	144	+3.60	+1.94	+35.86	1 %	+36.20	-	-	11
WELLS FARGO	<1	3,190	3,190	76	0.30	115	+3.60	+1.94	13.56	99 %	13.22	-	-	-
JEFFERIES & CO	<1	1,262	1,262	95	0.07	45	+3.60	+1.94	1.75	87 %	1.41	99	5	18
Grand Total	38	1,718	831,492	65	0.45	29,357	+3.53	+1.94	+1.43	48 %	+1.70	18	18	4



(+) = Cost

TRADE DETAIL ANALYSIS

Largest Shares Volume Traded

							Market Impact
Security	# Orders	Shares	US Dollars	Commission (cps)	% of Volume	E - Score	Full Day VWAP (cps)
GE	6	354,376	3,507,673	+2.35	0.08%	0.31	+2.64
BCS	1	229,100	1,983,823	+3.00	6.63%	0.31	0.63
MDRX	23	180,105	1,912,417	+3.41	0.27%	0.53	3.26
DERM	54	155,616	1,615,522	+3.24	0.04%	0.52	0.82
RMBS	25	117,573	1,038,235	+3.00	0.30%	0.44	0.47
MIK	3	100,748	1,198,288	+0.07	1.67%	0.07	+0.18
GPK	10	96,676	1,207,979	+3.40	0.30%	0.38	0.59
RDNT	23	84,890	1,177,048	+3.48	1.09%	0.34	1.12
CWST	68	81,655	2,715,017	+3.59	0.32%	0.38	+0.57
CNX	12	79,221	839,319	+3.50	0.20%	0.80	+0.62

Names Most Traded - Total Orders

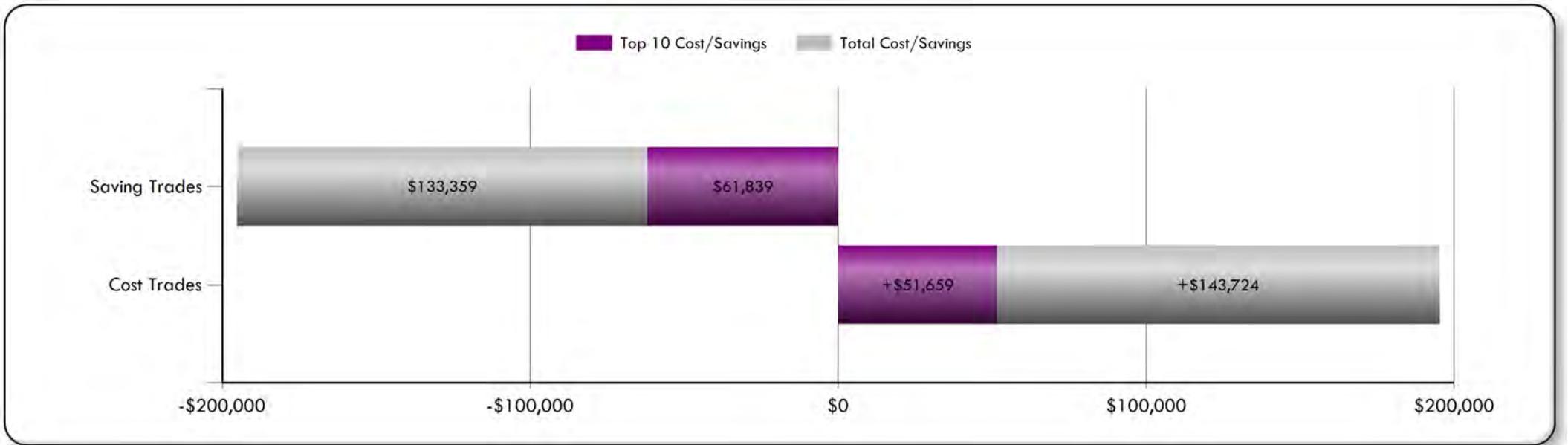
							Market Impact
Security	# Orders	Shares	US Dollars	Commission (cps)	% of Volume	E - Score	Full Day VWAP (cps)
CWST	68	81,655	2,715,017	+3.59	0.32%	0.38	+0.57
W	27	37,510	6,115,775	+3.59	0.05%	0.45	13.66
MDRX	23	180,105	1,912,417	+3.41	0.27%	0.53	3.26
EE	11	38,738	2,263,561	+4.76	1.53%	0.28	2.07
ULTI	10	7,032	2,332,447	+3.60	0.09%	0.61	0.66
GE	6	354,376	3,507,673	+2.35	0.08%	0.31	+2.64
WMT	5	19,956	1,917,983	+0.04	0.05%	0.14	3.83
CELG	3	26,833	2,318,060	+0.07	0.05%	0.03	1.37
BCS	1	229,100	1,983,823	+3.00	6.63%	0.31	0.63
ECL	1	18,800	2,813,584	+3.00	3.19%	0.44	17.33



(+) = Cost

TRADE CONTRIBUTIONS

Cost\Savings Performance				
Category	Principal USD	# of Trades	Avg. Market Impact (cps)	Percentage of all Cost/Savings
10 High Cost Trades	6,298,771	10	+57.60	26.44%
Cost Trades	97,985,940	855	+18.07	100.00%
Saving Trades	90,568,566	751	17.24	100.00%
10 Low Cost Trades	9,566,085	10	65.85	31.68%





(+) = Cost

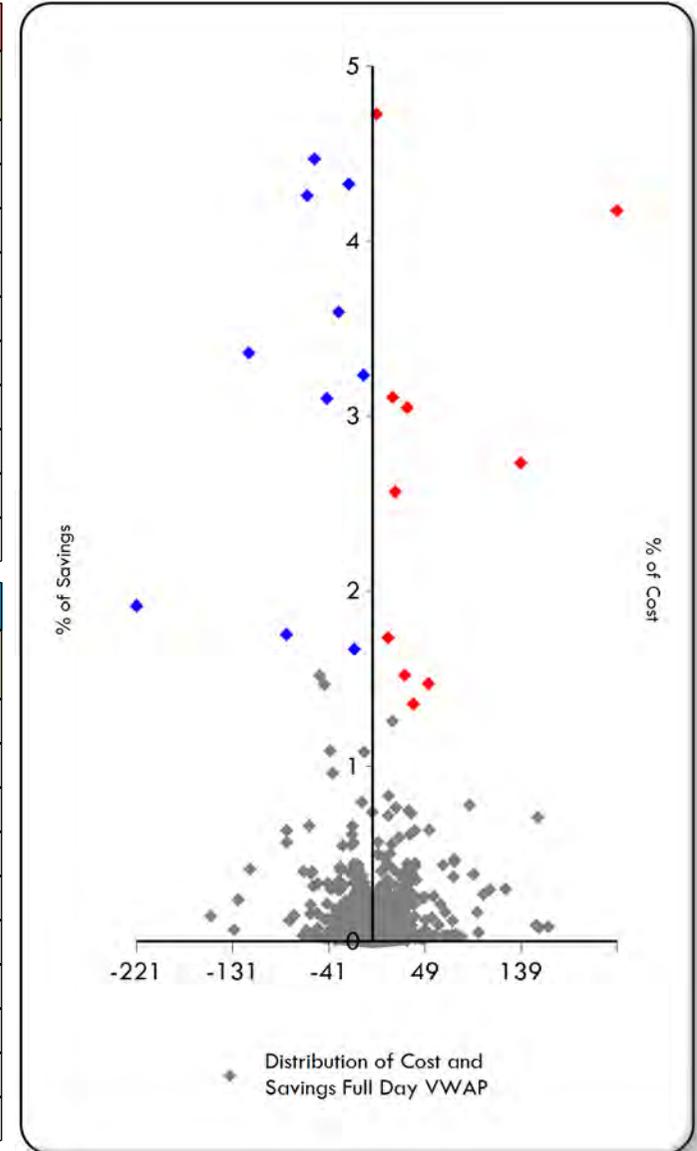
TRADE LEVEL DETAILS

10 High Cost Trades (Full Day VWAP)

Side	Security	Trade Date	Shares	Cost (%)	E - Score	Full Day VWAP (cps)	Manager	Broker
Buy	GE	2019/03/13	276,000	4.73	0.38	+3.35	EAGLE CAPI	CAPITAL IN
Buy	WAB	2019/02/26	3,564	4.17	2.19	+228.79	ALLIANCE R	AUTREPAT-D
Buy	FDC	2019/01/17	32,692	3.11	0.64	+18.56	EAGLE CAPI	CAPITAL IN
Buy	DERM	2019/03/18	18,524	3.05	0.36	+32.14	WEATHERBIE	THEMIS TRA
Sell	GOOS	2019/02/14	3,855	2.73	0.36	+138.49	WEATHERBIE	THEMIS TRA
Sell	PCG	2019/01/15	23,953	2.57	0.44	+20.93	ALLIANCE R	DEUTSCHE B
Buy	PCG	2019/03/01	23,953	1.74	0.50	+14.16	ALLIANCE R	JP MORGAN
Sell	DIS	2019/03/21	9,997	1.52	0.71	+29.75	ALLIANCE R	UBS
Buy	PBYI	2019/03/01	5,541	1.47	0.35	+51.97	WEATHERBIE	ITG
Sell	WAGE	2019/03/01	7,005	1.36	0.91	+37.84	WEATHERBIE	ITG

10 Low Cost Trades (Full Day VWAP)

Side	Security	Trade Date	Shares	Savings (%)	E - Score	Full Day VWAP (cps)	Manager	Broker
Buy	BBBY	2019/03/26	15,942	4.47	1.05	54.72	DALTON, GR	CAPITAL IN
Buy	BBBY	2019/03/26	37,500	4.33	0.43	22.51	DALTON, GR	RBC CAPITA
Buy	DERM	2019/03/18	13,509	4.26	0.69	61.53	WEATHERBIE	LIQUIDNET
Buy	FISV	2019/01/18	21,837	3.59	0.47	32.12	EAGLE CAPI	CAPITAL IN
Sell	STMP	2019/02/25	5,643	3.36	0.18	116.23	WEATHERBIE	CRAIG - HA
Sell	NBL	2019/03/15	72,538	3.23	0.56	8.70	EAGLE CAPI	CAPITAL IN
Buy	HFC	2019/02/07	14,015	3.10	0.64	43.17	AQR	CREDIT SUI
Sell	TTD	2019/02/25	1,691	1.92	1.27	221.29	WEATHERBIE	ITG
Sell	W	2019/03/25	4,237	1.75	0.45	80.85	WEATHERBIE	THEMIS TRA
Sell	ECL	2019/01/15	18,800	1.67	0.44	17.33	EAGLE CAPI	CAPITAL IN





(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

GE - 2019/03/13

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	EAGLE CAPITAL MANAGEMENT	CAPITAL INSTL SVCS	03/13/2019 09:30:00	03/13/2019 16:00:00	276,000	9.9367	9.9033	+9,232	+3.35	0.38	0.37



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 4.73% of your market impact cost.

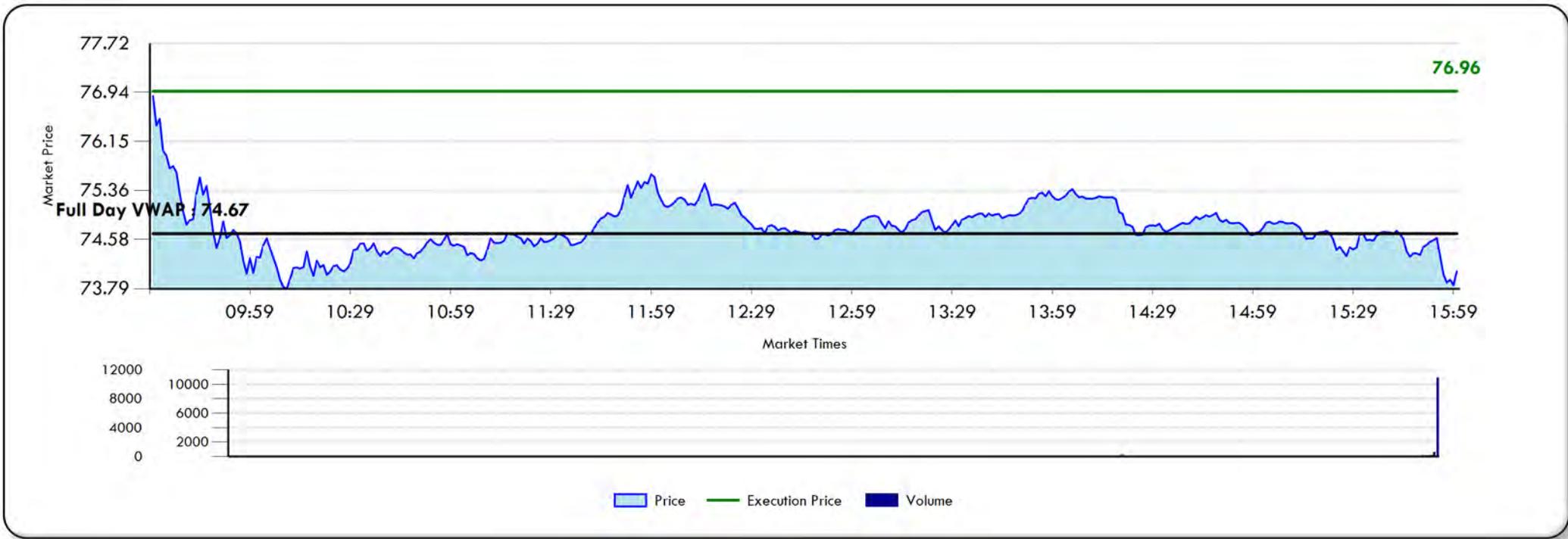


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

WAB - 2019/02/26

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	ALLIANCE R 3000 CAPITAL MANAGEM	AUTREPAT- DISTRIBUT	02/26/2019 09:30:00	02/26/2019 16:00:00	3,564	76.9550	74.6671	+8,154	+228.79	2.19	0.01



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 4.17% of your market impact cost.

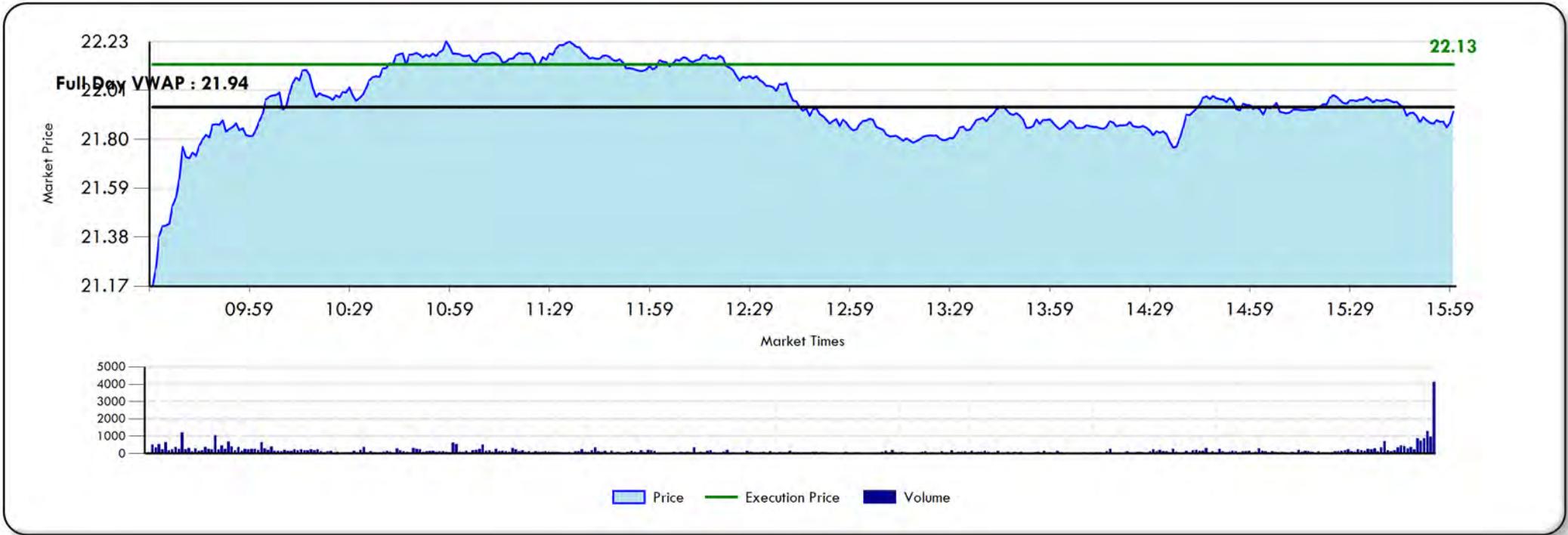


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

FDC - 2019/01/17

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	EAGLE CAPITAL MANAGEMENT	CAPITAL INSTL SVCS	01/17/2019 09:30:00	01/17/2019 16:00:00	32,692	22.1273	21.9417	+6,069	+18.56	0.64	0.05



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 3.11% of your market impact cost.

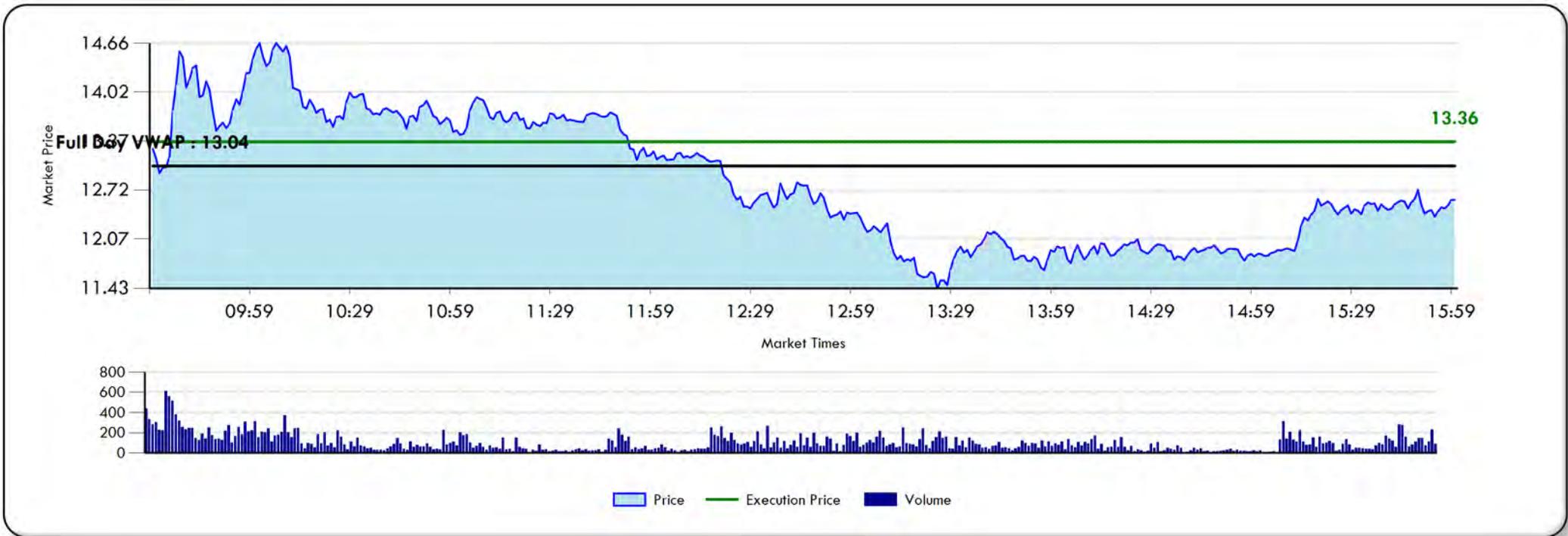


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

DERM - 2019/03/18

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	WEATHERBIE	THEMIS TRADING LLC	03/18/2019 09:30:00	03/18/2019 16:00:00	18,524	13.3589	13.0375	+5,954	+32.14	0.36	0.04



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 3.05% of your market impact cost.

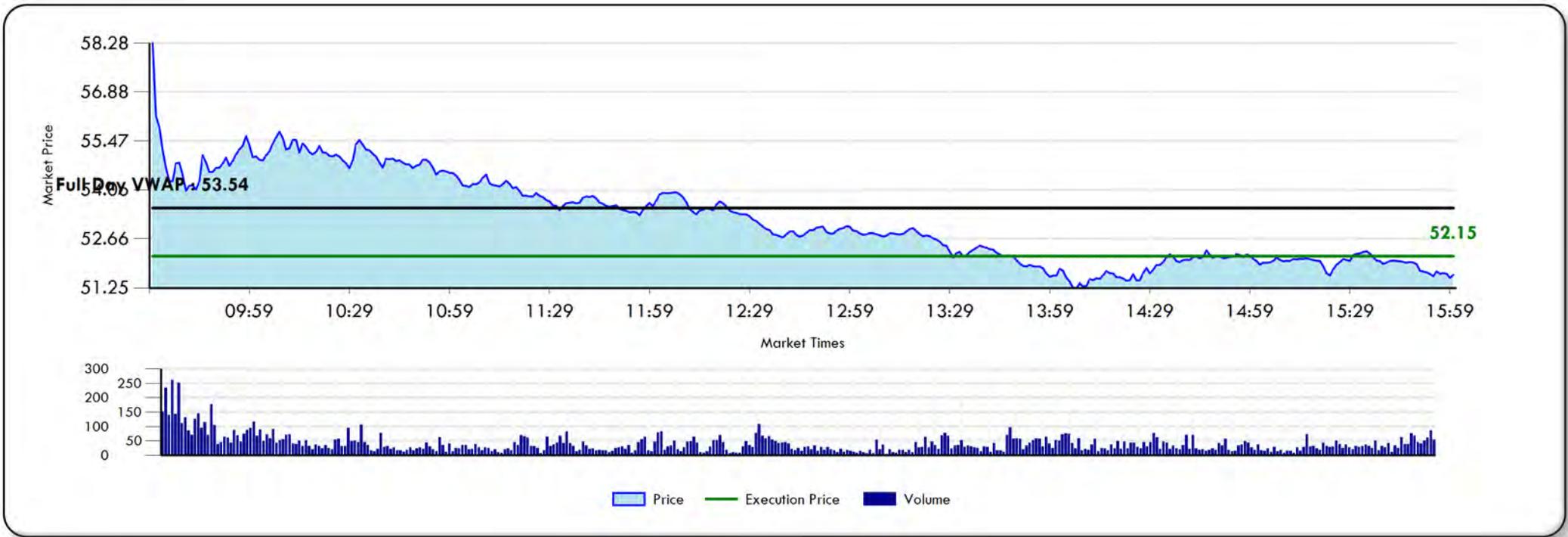


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

GOOS - 2019/02/14

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Sell	WEATHERBIE	THEMIS TRADING LLC	02/14/2019 09:30:00	02/14/2019 16:00:00	3,855	52.1526	53.5375	+5,339	+138.49	0.36	0.02



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 2.73% of your market impact cost.

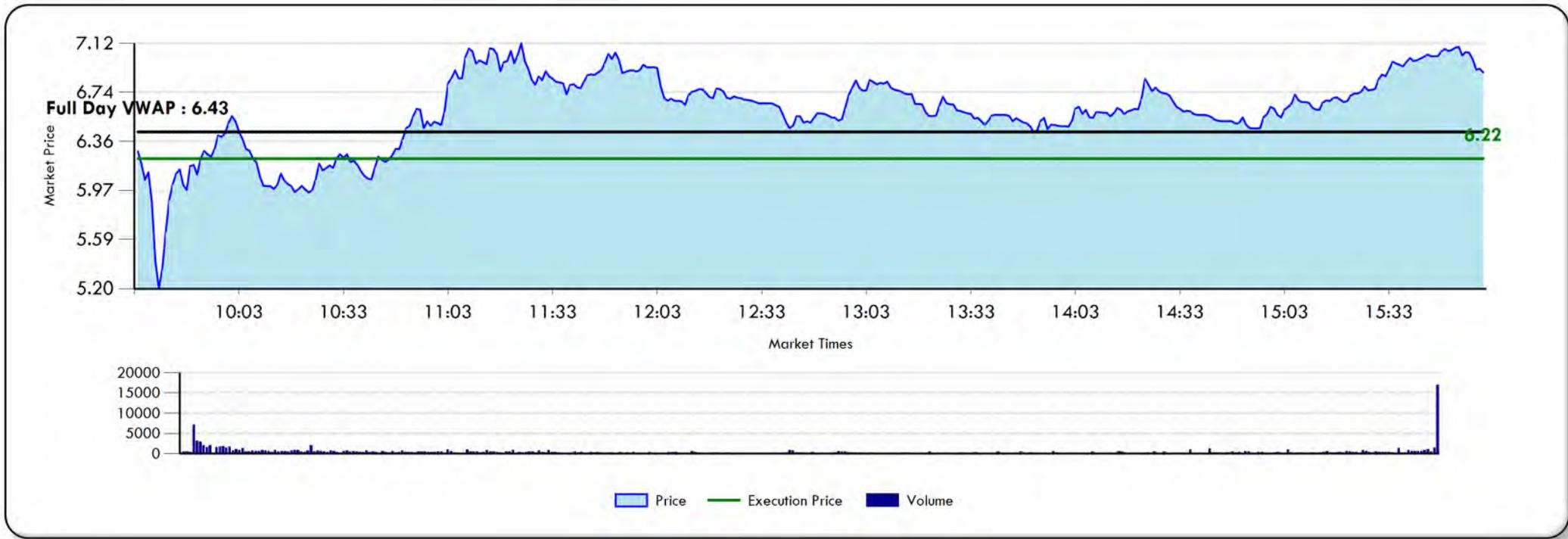


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

PCG - 2019/01/15

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Sell	ALLIANCE R 3000 CAPITAL MANAGEM	DEUTSCHE BANK	01/15/2019 09:30:00	01/15/2019 16:00:00	23,953	6.2190	6.4283	+5,014	+20.93	0.44	0.01



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 2.57% of your market impact cost.

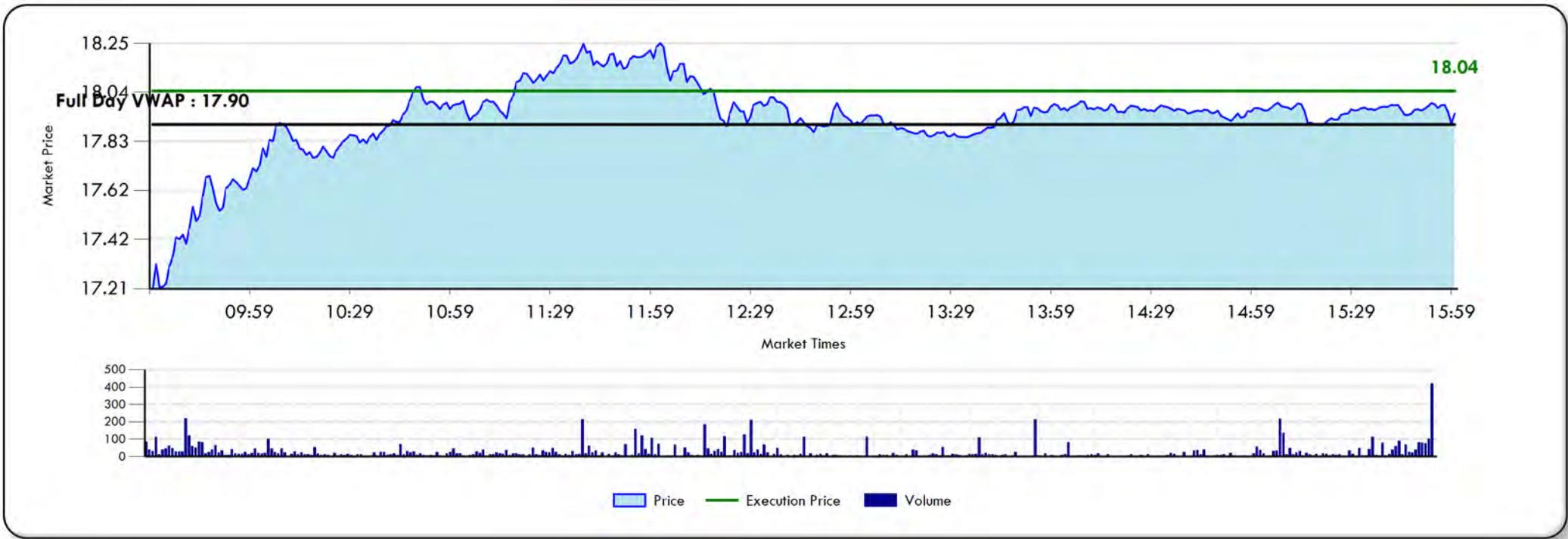


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

PCG - 2019/03/01

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	ALLIANCE R 3000 CAPITAL MANAGEM	JP MORGAN CHASE	03/01/2019 09:30:00	03/01/2019 16:00:00	23,953	18.0438	17.9022	+3,392	+14.16	0.50	0.21



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.74% of your market impact cost.

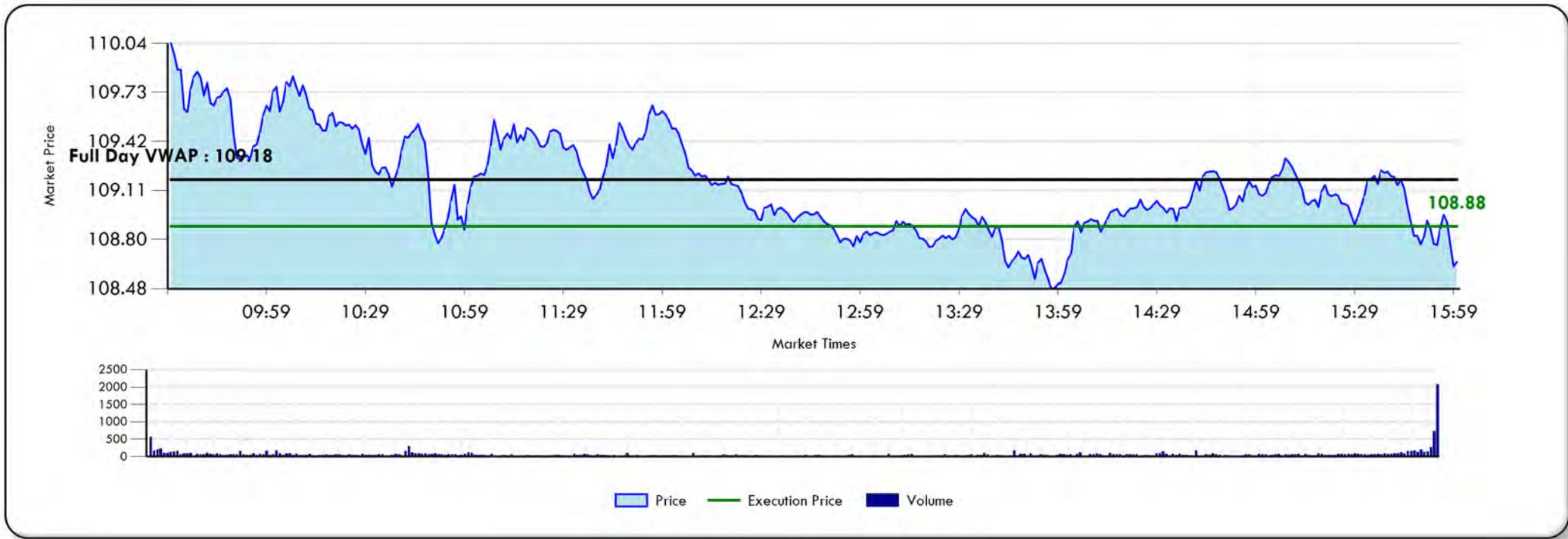


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

DIS - 2019/03/21

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Sell	ALLIANCE R 3000 CAPITAL MANAGEM	UBS	03/21/2019 09:30:00	03/21/2019 16:00:00	9,997	108.8794	109.1769	+2,974	+29.75	0.71	0.04



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.52% of your market impact cost.

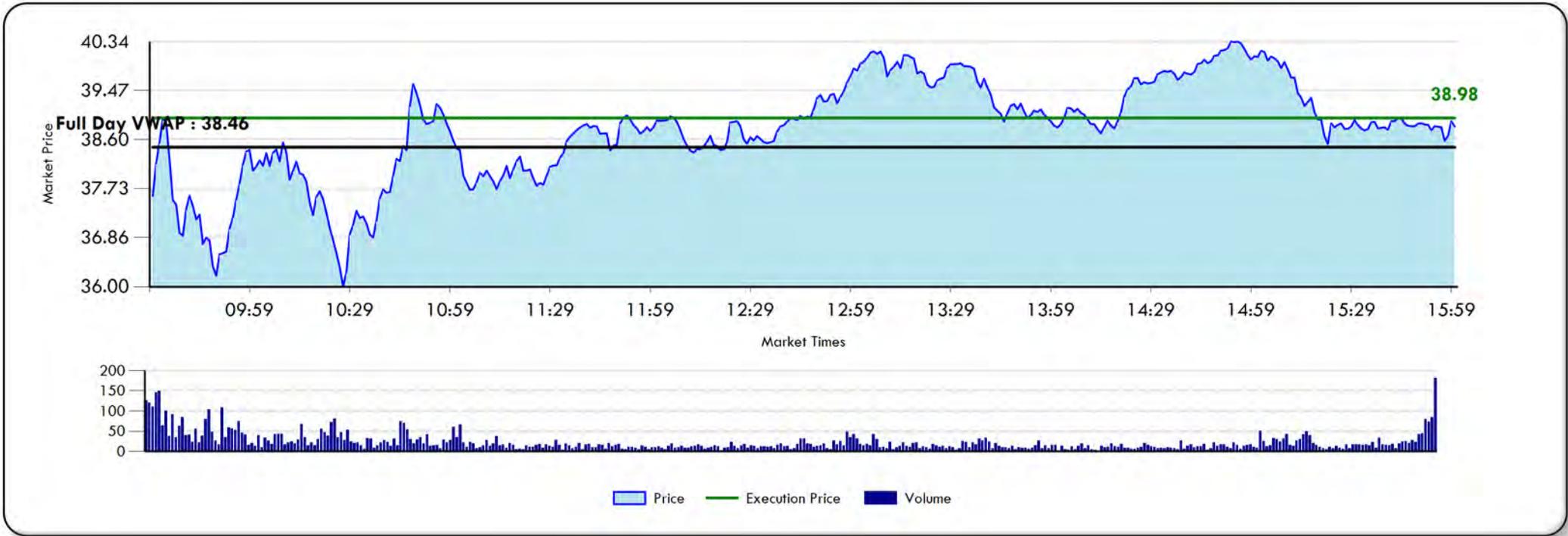


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

PBYI - 2019/03/01

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	WEATHERBIE	ITG	03/01/2019 09:30:00	03/01/2019 16:00:00	5,541	38.9832	38.4635	+2,880	+51.97	0.35	0.06



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.47% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

WAGE - 2019/03/01

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Sell	WEATHERBIE	ITG	03/01/2019 09:30:00	03/01/2019 16:00:00	7,005	32.0399	32.4183	+2,651	+37.84	0.91	0.47



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.36% of your market impact cost.

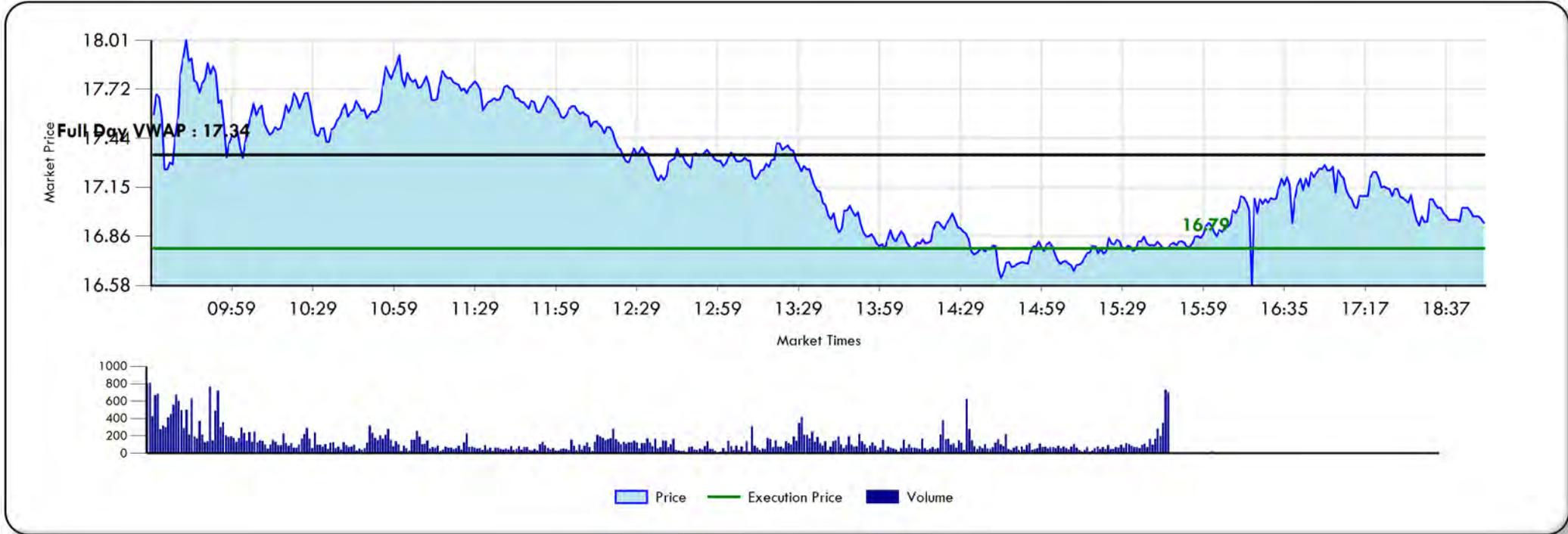


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

BBBY - 2019/03/26

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	DALTON, GREINER, HARTMAN, MAHER	CAPITAL INSTL SVCS	03/26/2019 09:30:00	03/26/2019 16:00:00	15,942	16.7932	17.3404	8,724	54.72	1.05	0.03



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 4.47% of your market impact savings.

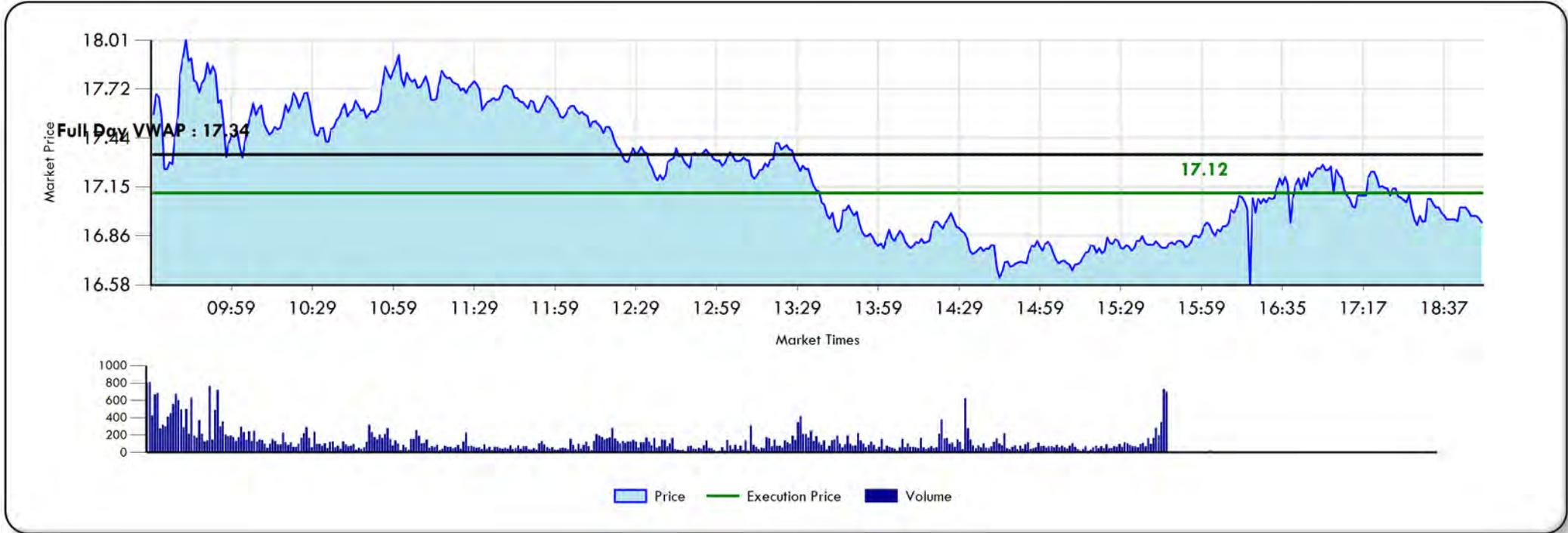


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

BBBY - 2019/03/26

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	DALTON, GREINER, HARTMAN, MAHER	RBC CAPITAL MARKETS	03/26/2019 09:30:00	03/26/2019 16:00:00	37,500	17.1153	17.3404	8,442	22.51	0.43	0.07



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 4.33% of your market impact savings.



(+) = Cost

TRADE LEVEL DETAIL - LOW COST

DERM - 2019/03/18

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	WEATHERBIE	LIQUIDNET	03/18/2019 09:30:00	03/18/2019 16:00:00	13,509	12.4222	13.0375	8,312	61.53	0.69	0.03



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 4.26% of your market impact savings.

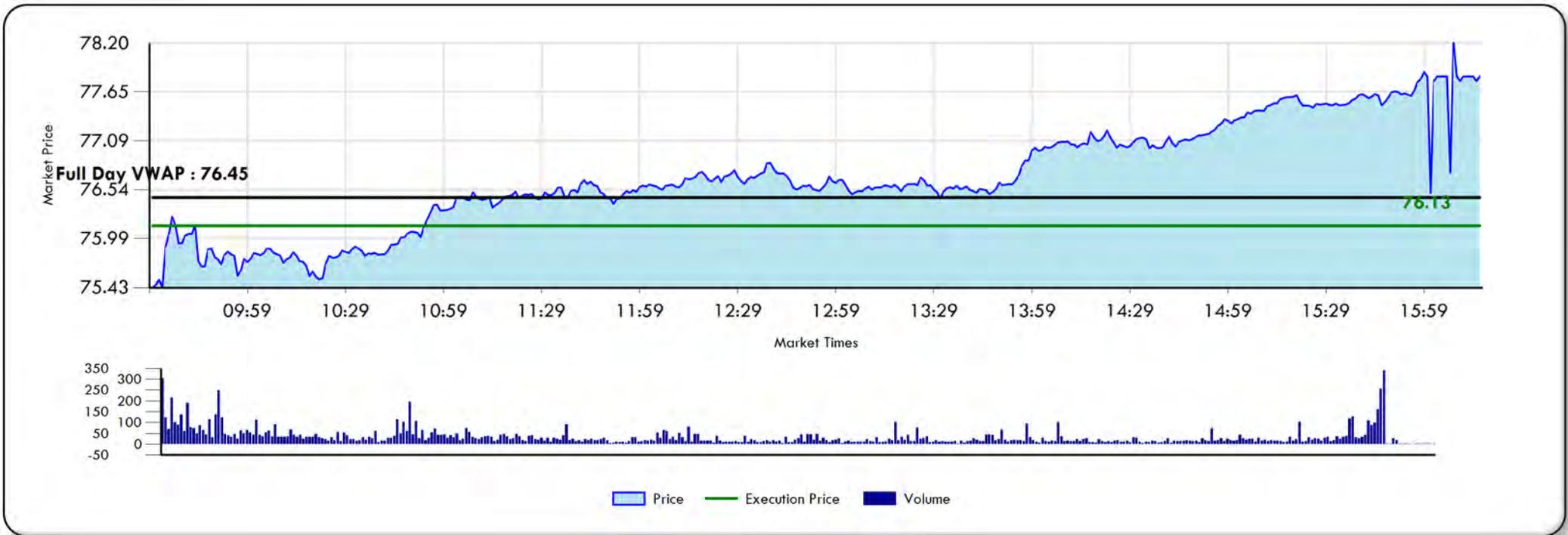


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

FISV - 2019/01/18

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	EAGLE CAPITAL MANAGEMENT	CAPITAL INSTL SVCS	01/18/2019 09:30:00	01/18/2019 16:00:00	21,837	76.1294	76.4507	7,015	32.12	0.47	0.16



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 3.59% of your market impact savings.

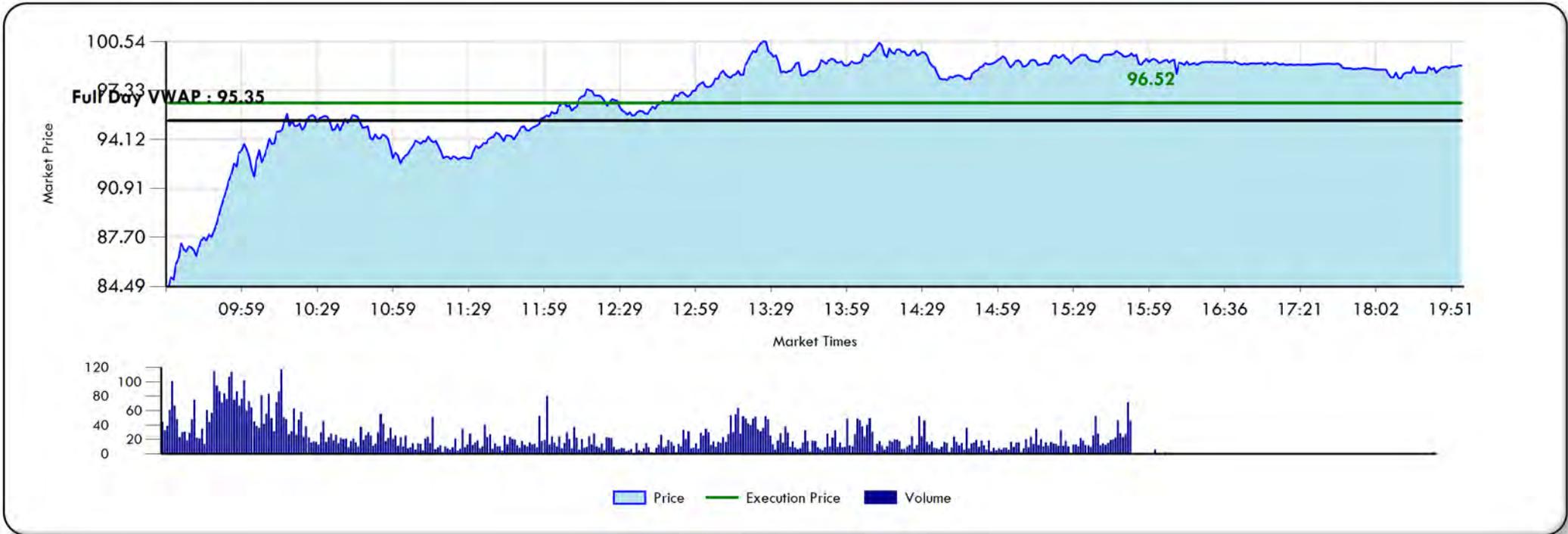


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

STMP - 2019/02/25

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Sell	WEATHERBIE	CRAIG - HALLUM	02/25/2019 09:30:00	02/25/2019 16:00:00	5,643	96.5153	95.3530	6,559	116.23	0.18	0.06



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 3.36% of your market impact savings.

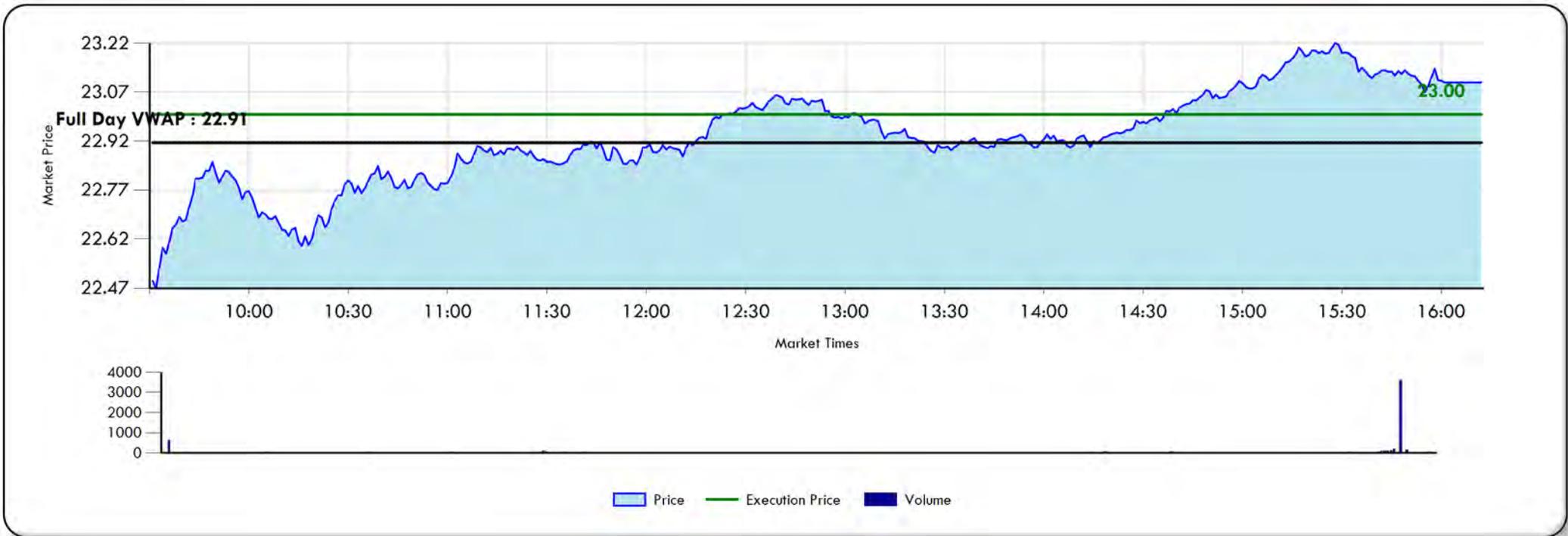


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

NBL - 2019/03/15

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Sell	EAGLE CAPITAL MANAGEMENT	CAPITAL INSTL SVCS	03/15/2019 09:30:00	03/15/2019 16:00:00	72,538	23.0018	22.9148	6,311	8.70	0.56	0.94



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 3.23% of your market impact savings.

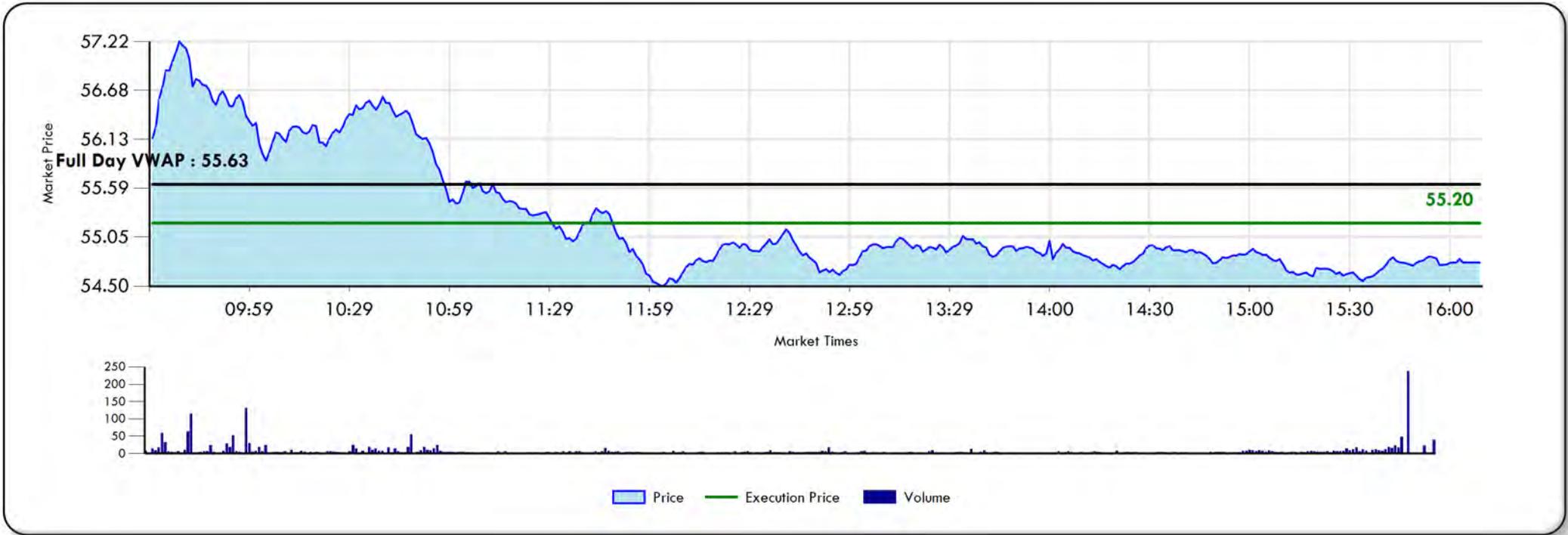


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

HFC - 2019/02/07

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Buy	AQR	CREDIT SUISSE	02/07/2019 09:30:00	02/07/2019 16:00:00	14,015	55.1997	55.6313	6,050	43.17	0.64	0.54



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 3.10% of your market impact savings.



(+) = Cost

TRADE LEVEL DETAIL - LOW COST

TTD - 2019/02/25

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Sell	WEATHERBIE	ITG	02/25/2019 09:30:00	02/25/2019 16:00:00	1,691	200.4963	198.2835	3,742	221.29	1.27	0.05



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.92% of your market impact savings.

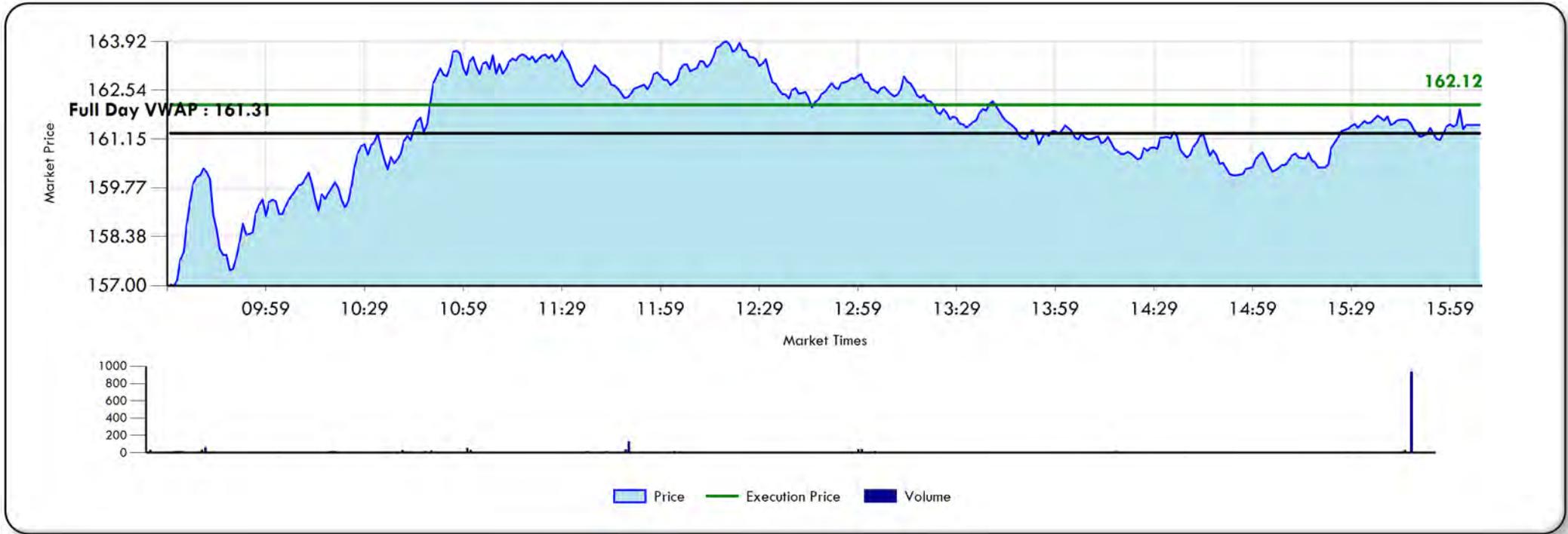


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

W - 2019/03/25

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Sell	WEATHERBIE	THEMIS TRADING LLC	03/25/2019 09:30:00	03/25/2019 16:00:00	4,237	162.1215	161.3130	3,425	80.85	0.45	0.15



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.75% of your market impact savings.

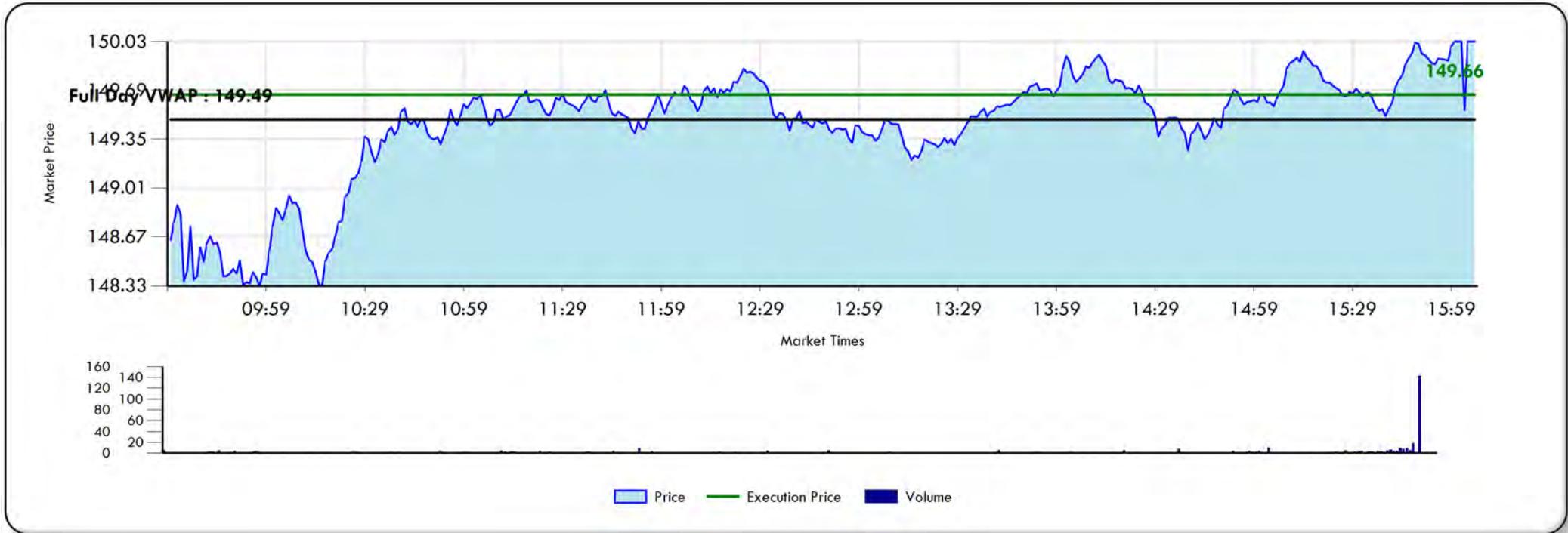


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

ECL - 2019/01/15

Side	Manager	Broker	Time In (EST)	Time Out (EST)	Shares	Client Price (USD)	Full Day VWAP (USD)	Cost Full Day VWAP (USD)	Cost Full Day VWAP (cps)	E - Score	Volume (%)
Sell	EAGLE CAPITAL MANAGEMENT	CAPITAL INSTL SVCS	01/15/2019 09:30:00	01/15/2019 16:00:00	18,800	149.6587	149.4854	3,259	17.33	0.44	3.19



NOTES

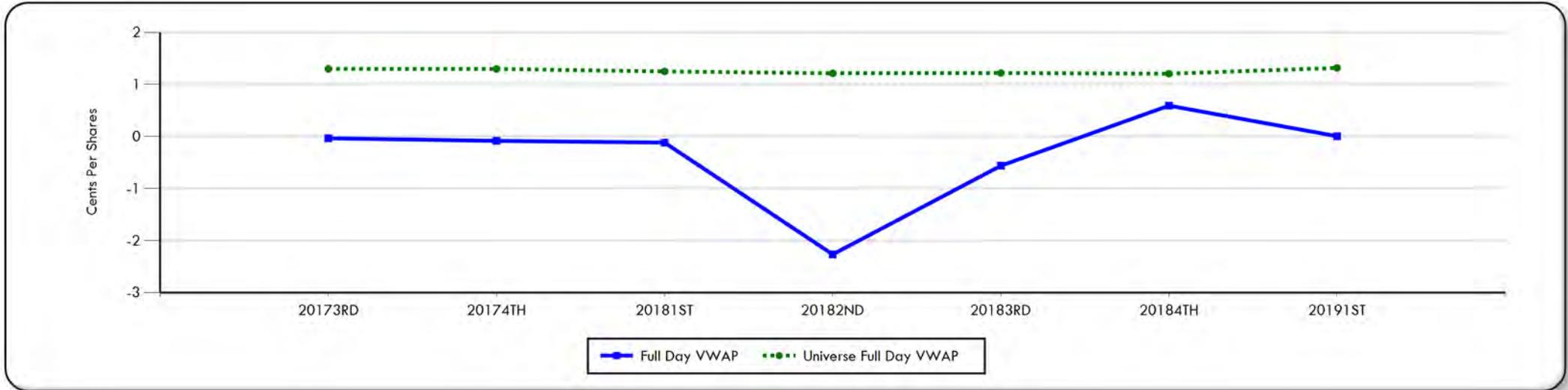
- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.67% of your market impact savings.



(+) = Cost

TRADE HISTORY

Trade History						
Period	Total Shares	Total Dollars Traded	Commission		Full Day VWAP	Full Day VWAP Universe Rank
			(cps)	(\$)	(cps)	(%)
20173RD	3,933,837	136,419,896	+2.71	106,661	0.04	82
20174TH	4,135,427	144,811,996	+2.63	108,628	0.09	80
20181ST	3,617,136	158,343,996	+2.72	98,459	0.12	81
20182ND	4,581,935	191,343,600	+2.09	95,937	2.27	93
20183RD	1,200,559	52,564,669	+3.35	40,162	0.56	80
20184TH	3,436,466	183,217,997	+1.71	58,637	+0.59	61
20191ST	4,459,275	188,723,176	+2.03	90,386	+0.00	69



Note on Universes:

Universes constructed of preferred securities are exclusive of fixed income transactions such as convertible bonds

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SACRAMENTO COUNTY

Trade Cost Summary - Global Equity Trading

Period End March 31, 2019





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(+) = Cost

EXECUTIVE SUMMARY

Elkins/McSherry has been providing trading cost analysis to institutional investors since 1991, serving many of the world's largest investment managers, pension funds, banks, and broker dealers. Using this vast experience combined with an unmatched collection of global equity market and Universe data, Elkins/McSherry has produced a Trading Cost Analysis on behalf of SACRAMENTO COUNTY. This study evaluates global equity executions from January 1, 2019 to March 31, 2019. The analysis included trading of 6,311,597 shares representing \$75.14 million in principal across 22 countries.

Methodology :

The Elkins/McSherry analysis measures trading efficiency by quantifying the cost of brokerage commission, fees, and execution quality versus an Full Day VWAP benchmark for each of the securities traded. These data have been separated to summarize results, by Buy/Sell, Commissions, Market Impact, Short Term Alpha, Market Cap, Country, Trade Difficulty, and Highest and Lowest Cost Trades. These results are quantified in \$ and Basis Points (BP) as well as being displayed graphically to highlight the outcomes.

Results :

BENCHMARK PERFORMANCE			E - Score
Commission	Fees	Full Day VWAP	
<ul style="list-style-type: none"> Your commission cost was +7.16 bp or \$ +\$53,831 (6.56 bp better than the Elkins/McSherry Universe) 	<ul style="list-style-type: none"> Your fee cost was +6.74 bp or \$ +50,612 (+1.00 bp worse than the Elkins/McSherry Universe) 	<ul style="list-style-type: none"> Your market impact cost was +2.95 bp or \$+22,162 (2.33 bp better than the Elkins/McSherry Universe) Your overall trading cost of +16.85 bp was 7.88 bp better than the Elkins/McSherry Universe. Sacramento County trading was higher than the Elkins/McSherry Universe in 8 countries and lower than the Elkins/McSherry Universe in 17 countries. 11 of your brokers had trading cost higher than summary universe of countries (principal weighted) in which they traded. 34 of your brokers had lower trading cost. 	<ul style="list-style-type: none"> E - Score : -0.03



(+) = Cost

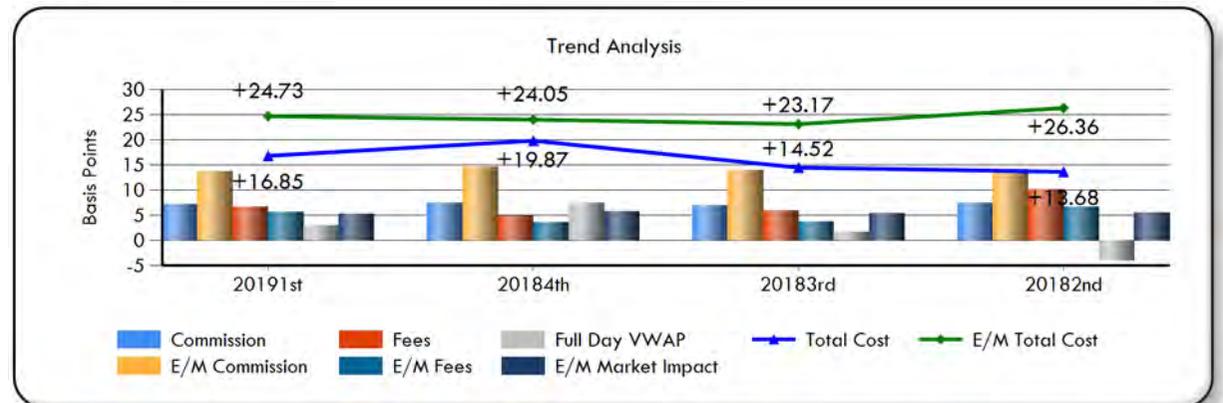
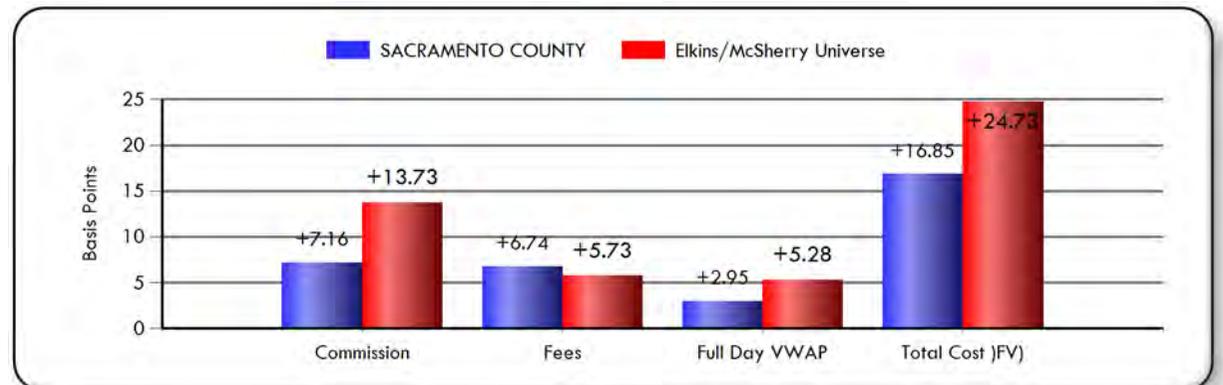
EXECUTIVE SUMMARY

TOTAL PORTFOLIO COST PERFORMANCE

Side	COMMISSION			Fees		MARKET IMPACT		Total Cost	Total Cost/Savings Vs. Universe	E - Score
	Your Avg. Commission	Bundled Universe	All Trading Universe	Fees	Universe	Full Day VWAP	Universe Full Day VWAP		Commission+Fees Full Day VWAP	
	(bp)	(bp)	(bp)	(bp)	(bp)	(bp)	(bp)	(bp)	(bp)	
Sell	+7.71	+14.12	+3.59	+0.13	+0.20	5.15	+6.98	+2.69	18.60	-0.02
Buy	+6.59	+13.31	+3.50	+13.65	+11.52	+11.43	+3.49	+31.67	+3.34	-0.04
Total	+7.16	+13.73	+3.55	+6.74	+5.73	+2.95	+5.28	+16.85	7.88	-0.03

TRADING COMPONENTS

	Buys	Sells
Trade Principal	36,723,835	38,413,372
Shares	1,973,058	4,338,539
Unique Names	46	50
Liquidity (% POV)	0.338	0.370
Avg. Order Size	6,469	8,359
Avg. Order Completion Time (min)	N/A	N/A
Total Number of Trades	305	519



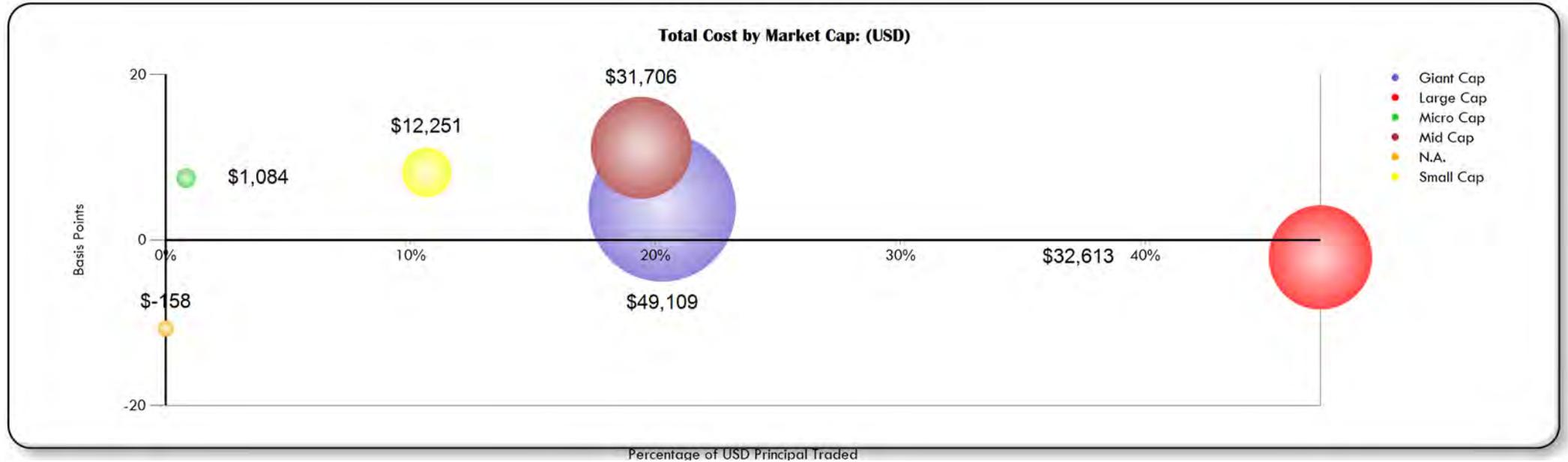


(+) = Cost

EXECUTIVE SUMMARY

MARKET CAPITALIZATION

Market Cap	% Traded	Avg. Principal Per Order	COMMISSION		MARKET IMPACT		Total Cost	Total Cost/Savings	E - Score	Market Cap Definition
			Your Commission	Bundled Universe	Full Day VWAP	Universe Full Day VWAP				
	(%)	(\$)	(bp)	(bp)	(bp)	(bp)	(bp)	(bp)		
Large Cap	47.43 %	111,356	+7.96	+13.32	2.10	+5.98	+9.15	13.16	-0.13	\$5 Billion To \$25 Billion
Giant Cap	20.55 %	186,015	+7.39	+14.93	+3.95	+4.69	+31.81	4.43	0.14	Over \$25 Billion
Mid Cap	19.69 %	71,834	+5.68	+13.44	+11.14	+4.51	+21.45	0.56	0.06	\$1 Billion To \$5 Billion
Small Cap	10.94 %	49,516	+6.26	+13.69	+8.17	+4.58	+14.90	4.17	-0.09	\$250 Million To \$1 Billion
Micro Cap	1.11 %	69,602	+5.53	+13.91	+7.45	+4.80	+12.98	5.74	-0.06	Under \$250 Million
N.A.	0.28 %	5,706	+3.00	+14.64	10.70	+12.61	7.51	34.76	0.00	





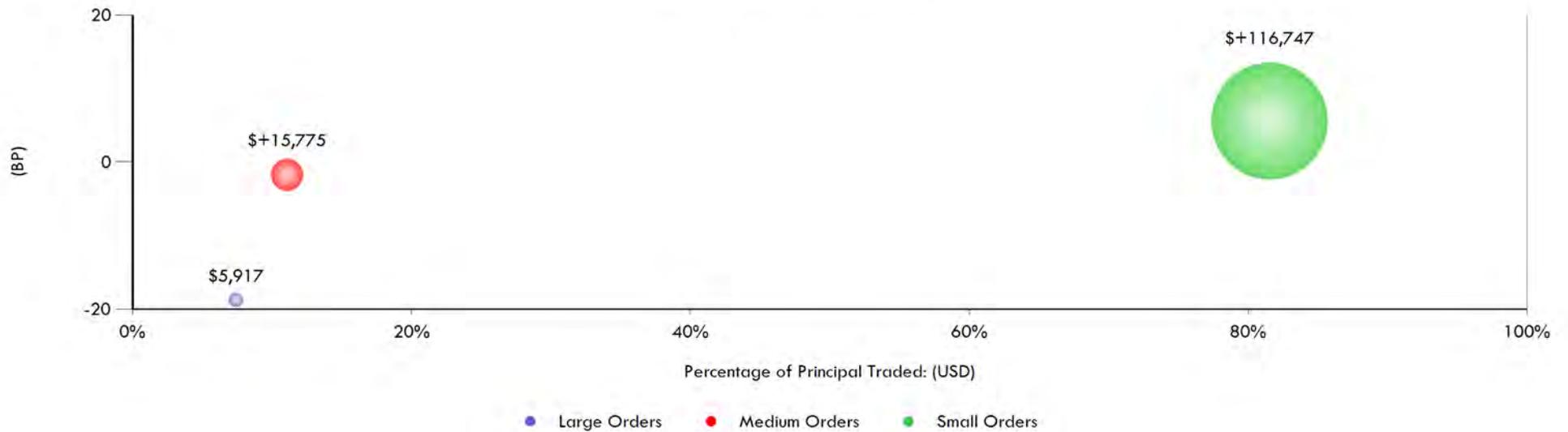
(+) = Cost

EXECUTIVE SUMMARY

ORDER SIZE EVALUATION

Order Size	Total # Of Orders	Avg. Principal Per Order (\$)	Avg. Order Completion Time (min)	COMMISSION		MARKET IMPACT		Total Cost	Total Cost/Savings	E - Score	Absolute Size (Principal)
				Your Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	(bp)	Commission+Fees +Full Day VWAP Vs. Universe (bp)		
Large Orders	4	1,390,428	N/A	+8.06	+14.52	18.75	+13.61	10.68	38.81	-0.18	1M or Greater
Medium Orders	13	639,755	N/A	+8.33	+12.90	1.77	+4.68	+18.97	9.64	0.05	Between 500k - 1M
Small Orders	807	75,909	N/A	+6.92	+13.76	+5.56	+4.60	+19.05	4.85	-0.03	500K or Less

Total Cost By Order Size: (USD)



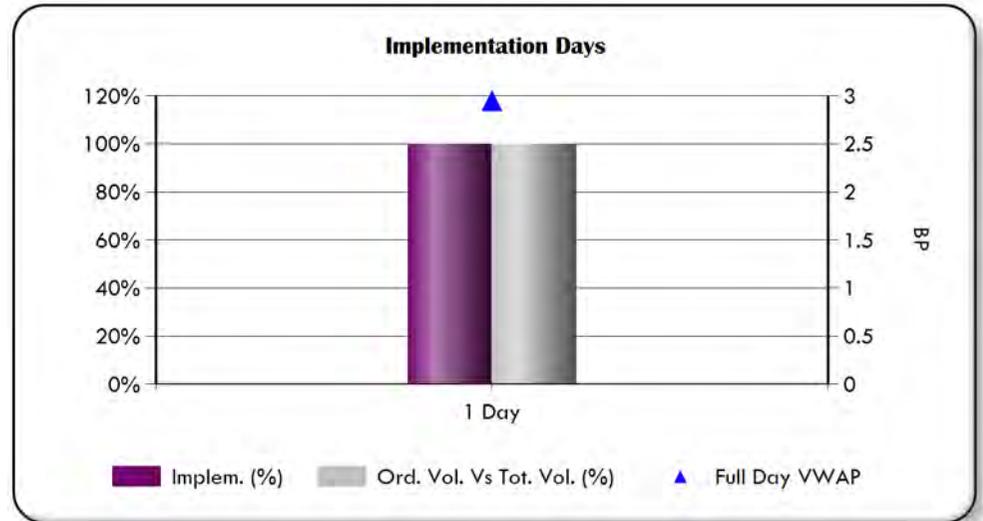


(+) = Cost

EXECUTIVE SUMMARY

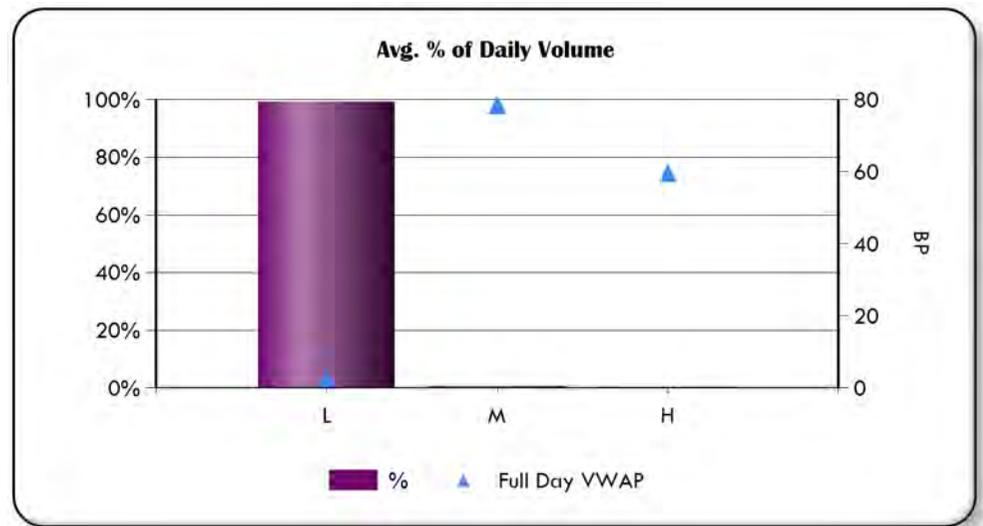
IMPLEMENTATION DAYS BY TRADE

Period	Percent Traded (%)	Order Vol. Vs Total Vol. (%)	Full Day VWAP (bp)	E - Score
1 Day	100.00	100%	+2.95	-0.03



TRADE DIFFICULTY

Methodology	Liquid. Cat.	Percent Traded (%)	Full Day VWAP (bp)	E - Score
0%~20% of daily vol.	L	99%	+2.42	-0.03
20%~50% of daily vol.	M	0%	+78.58	-0.61
50%+ of daily vol.	H	0%	+59.73	1.54



EXECUTIVE SUMMARY

COUNTRY PERFORMANCE

Country	Principal (\$ Millions)	Total Principal Traded (%)	COMMISSION		FEES		MARKET IMPACT		Total Cost Diff. From Universe (bp)	E - Score
			Commission (bp)	Bundled Universe Commission (bp)	Fees (bp)	Universe Fees (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)		
HIGHEST COST COUNTRIES - Total Cost Universe Difference										
DENMARK	<1	1.28%	+6.60	+14.43	+0.00	+0.01	+221.44	+5.49	+208.10	0.81
NETHERLANDS	2	2.08%	+8.32	+14.16	+0.00	+0.10	+61.23	+3.55	+51.74	0.57
IRELAND - SELLS	2	2.20%	+9.00	+14.24	+0.01	+0.00	+60.15	+15.98	+38.94	1.42
CANADA	2	2.92%	+24.67	+13.81	+0.00	+0.02	+12.36	+3.76	+19.44	-0.01
AUSTRALIA	5	6.30%	+4.82	+13.32	+0.00	+1.34	+18.09	+3.44	+4.82	-0.09
U.K. - BUYS	4	5.97%	+5.86	+16.18	+50.12	+31.94	1.28	+1.96	+4.62	-1.22
U.S.	3	3.76%	+2.80	+0.00	+0.00	+0.09	+2.78	+2.18	+3.31	0.38
FRANCE - BUYS	9	11.87%	+8.21	+13.93	+30.00	+30.00	+9.08	+2.95	+0.40	0.37

EXECUTIVE SUMMARY

COUNTRY PERFORMANCE

Country	Principal (\$ Millions)	Total Principal Traded (%)	COMMISSION		FEES		MARKET IMPACT		Total Cost Diff. From Universe (bp)	E - Score
			Commission (bp)	Bundled Universe Commission (bp)	Fees (bp)	Universe Fees (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)		
LOWEST COST COUNTRIES - Total Cost Universe Difference										
ITALY - SELLS	1	1.40%	+5.48	+13.92	+0.00	+0.00	70.02	+7.06	85.53	-0.36
U.K. - SELLS	10	13.49%	+7.32	+14.64	+0.10	+0.00	26.67	+12.61	46.50	-0.06
INDIA	<1	0.43%	+12.00	+14.41	+12.16	+10.78	21.29	+2.44	24.76	-0.96
HONG KONG	<1	0.13%	+4.03	+19.39	+10.83	+10.18	8.22	+1.38	24.31	-0.47
AUSTRIA	<1	1.05%	+3.07	+14.00	+0.00	+0.01	2.23	+6.33	19.50	0.22
NORWAY	2	2.79%	+5.46	+13.43	+0.00	+0.06	4.79	+5.89	18.71	-0.09
ITALY - BUYS	<1	0.26%	+5.01	+13.80	+10.00	+12.00	3.81	+2.45	17.04	-0.06
FINLAND	2	2.35%	+6.07	+13.96	+0.00	+0.01	2.75	+6.10	16.75	-0.01
SPAIN	5	6.20%	+6.59	+13.91	+0.00	+0.00	5.17	+3.46	15.95	-0.26
THAILAND	<1	0.27%	+11.20	+19.06	+0.37	+0.76	4.98	+2.69	15.93	0.19
SWITZERLAND	2	2.35%	+5.06	+13.80	+0.00	+0.01	3.28	+3.38	15.41	-0.05
JAPAN	15	20.25%	+7.62	+13.93	+0.00	+0.02	1.16	+5.09	12.57	-0.17
NEW ZEALAND	<1	0.51%	+8.00	+14.06	+0.00	+0.00	+0.35	+5.81	11.52	0.24
FRANCE - SELLS	2	2.14%	+4.96	+15.39	+0.00	+0.00	+3.10	+3.04	10.37	0.07
SWEDEN	2	2.23%	+5.75	+13.98	+0.00	+0.02	0.12	+1.28	9.65	0.01
GERMANY	4	5.86%	+5.51	+13.80	+0.00	+0.03	+4.95	+3.72	7.09	0.03
SINGAPORE	1	1.91%	+5.00	+18.19	+3.81	+3.70	+8.21	+1.95	6.81	-0.32



(+) = Cost

TRADE CYCLE DETAIL

1 HIGHEST COST MANAGER (Full Day VWAP)



Manager	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION		MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission +Fees+Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
WILLIAM BLAIR & COMP	13	184	17.11%	69,881	0.08	+6.87	+13.38	+14.86	+4.31	+4.81	5.07	7.29	17.99

NOTES

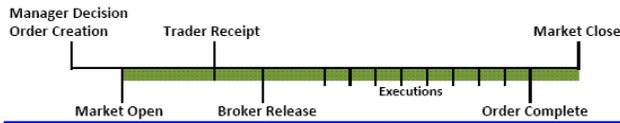
- Managers above made up 17.11 % of principal traded.



(+) = Cost

TRADE CYCLE DETAIL

2 LOWEST COST MANAGER (Full Day VWAP)



Manager	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION		MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission +Fees+Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
LSV ASSET MANAGEMENT	28	417	37.91%	68,308	-0.07	+4.31	+14.41	+5.63	+4.78	7.85	5.96	16.52	17.28
LAZARD ASSET MANAGEM	34	223	44.98%	151,545	-0.04	+9.68	+13.28	3.82	+6.06	12.73	3.45	+1.71	5.39

NOTES

- Manager above made up 82.89 % of principal traded.



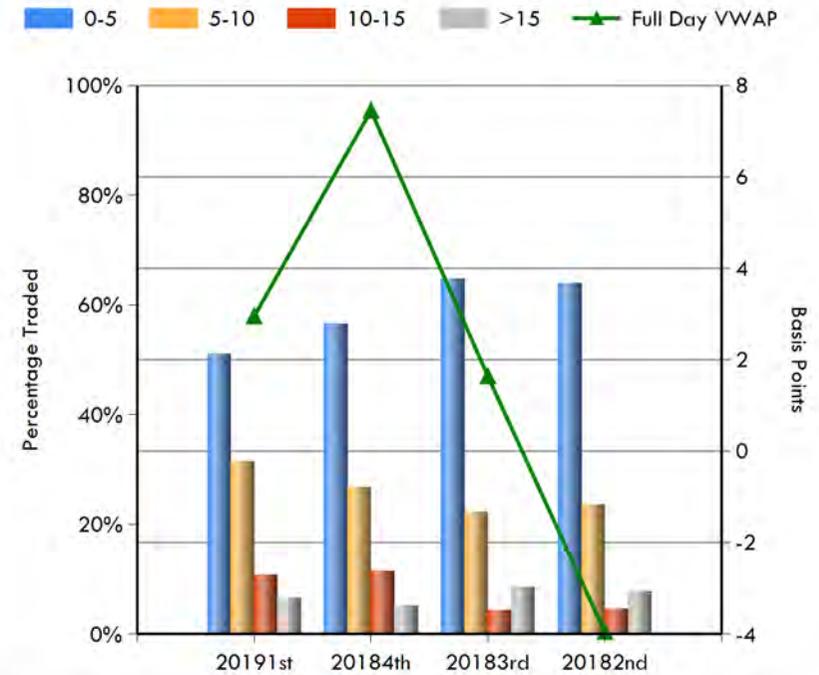
(+) = Cost

COMMISSION REVIEW

COMMISSION REVIEW - Top 20 Brokers (Commission \$)

Broker	Total Commission	Commission (bp)	Bundled Universe (bp)	All Trading Universe (bp)	Commission Trends		
					20184th (bp)	20183rd (bp)	20182nd (bp)
CREDIT SUI	7,764	+8.13	+14.03	+3.61	+7.06	+8.08	+6.94
JP MORGAN	7,648	+11.77	+14.12	+3.53	+7.28	+11.04	+9.53
SOCIETE GE	5,058	+5.08	+14.47	+3.38	+4.59	+4.33	+4.67
MORGAN STA	4,524	+10.73	+10.25	+3.89	+5.52	+6.87	+10.67
MERRILL LY	3,066	+6.43	+14.14	+3.54	+7.86	+6.91	+8.45
CITIGROUP	2,657	+5.04	+13.73	+3.59	+10.47	+6.51	+7.04
GOLDMAN SA	2,645	+11.49	+14.37	+3.45	+8.20	+7.08	+12.71
UBS	2,388	+5.10	+14.74	+3.46	+8.70	+6.61	+7.60
DEUTSCHE B	2,324	+8.43	+14.19	+3.29	+7.34	+7.32	+9.24
BNP PARIBA	2,044	+5.68	+13.84	+3.56	+8.23	+7.42	+9.28
CREDIT AGR	1,264	+11.30	+14.27	+3.78	+10.37	+12.04	+8.14
MIZUHO	1,169	+7.45	+13.93	+3.69	+11.29	+6.55	+9.64
HSBC BANK	1,135	+3.00	+14.57	+3.33	+4.14	+3.63	+5.55
RBC DOMINI	981	+47.03	+13.81	+4.96	+24.39	+8.27	+4.47
PAREL	817	+7.84	+13.85	+3.77	-	+6.95	+5.00
BARCLAYS	815	+7.01	+15.57	+3.17	+5.21	+5.51	+3.48
ITG	747	+5.06	+14.01	+3.49	+4.67	+4.69	+5.71
JEFFERIES	651	+5.02	+13.97	+3.70	+5.07	+3.57	+6.81
SKANDINAVI	646	+7.00	+14.38	+3.02	-	+7.00	-
DAIWA SECU	580	+7.06	+13.93	+3.69	+9.45	+7.64	+7.37

Commission Category Trend





(+) = Cost

TRADE CYCLE DETAIL

MANAGER PERFORMANCE (FULL DAY VWAP)



Manager	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION		MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission +Fees+Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
LAZARD ASSET MANAGEM	34	223	44.98%	151,545	-0.04	+9.68	+13.28	3.82	+6.06	12.73	3.45	+1.71	5.39
LSV ASSET MANAGEMENT	28	417	37.91%	68,308	-0.07	+4.31	+14.41	+5.63	+4.78	7.85	5.96	16.52	17.28
WILLIAM BLAIR & COMP	13	184	17.11%	69,881	0.08	+6.87	+13.38	+14.86	+4.31	+4.82	5.07	7.29	17.99

NOTES

- Manager above made up 100.00 % of principal traded.



(+) = Cost

TRADE CYCLE DETAIL

BROKER PERFORMANCE (FULL DAY VWAP)



Broker	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (\$)	Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission +Fees+Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
SOCIETE GENERALE	10	81	13.24%	122,852	-0.30	5,058	+5.08	+14.47	18.31	+4.74	30.94	16.55	26.56	15.47
CREDIT SUISSE	10	92	12.70%	103,754	0.20	7,764	+8.13	+14.03	+4.57	+4.05	5.40	11.98	2.02	8.08
JP MORGAN CHASE	6	37	8.65%	175,576	-0.44	7,648	+11.77	+14.12	12.01	+6.43	20.82	+4.20	14.92	+1.91
CITIGROUP	5	73	7.02%	72,204	0.04	2,657	+5.04	+13.73	+3.25	+4.79	10.72	12.99	8.80	7.16
MERRILL LYNCH	5	50	6.35%	95,415	0.28	3,066	+6.43	+14.14	+11.70	+6.70	2.71	11.57	4.39	21.37
UBS	5	52	6.23%	90,074	-0.26	2,388	+5.10	+14.74	+1.75	+4.61	8.26	1.42	11.24	19.26
MORGAN STANLEY	4	38	5.61%	110,989	0.11	4,524	+10.73	+10.25	+9.64	+3.42	+6.62	13.79	+14.41	+6.42
HSBC BANK	4	112	5.03%	33,775	-0.07	1,135	+3.00	+14.57	+1.14	+7.42	14.89	21.64	31.30	17.39
BNP PARIBAS	4	24	4.79%	149,919	-0.28	2,044	+5.68	+13.84	+10.29	+4.43	2.41	31.96	34.30	13.93
DEUTSCHE BANK	3	15	3.67%	183,658	0.69	2,324	+8.43	+14.19	+10.08	+7.82	3.50	15.78	1.40	+2.57

NOTES

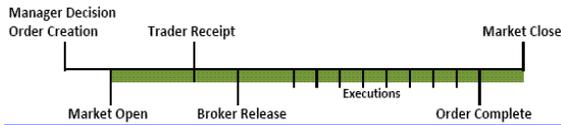
- Brokers above made up 73.29 % of principal traded.



(+) = Cost

TRADE CYCLE DETAIL

BROKER PERFORMANCE (FULL DAY VWAP)



Broker	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (\$)	Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission +Fees+Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
GOLDMAN SACHS	2	13	3.06%	177,044	1.10	2,645	+11.49	+14.37	+41.65	+13.25	+25.51	+14.04	13.23	36.48
MIZUHO	2	14	2.09%	112,083	-0.12	1,169	+7.45	+13.93	3.20	+5.09	14.79	+4.39	10.16	10.73
ITG	1	31	1.96%	47,573	-0.08	747	+5.06	+14.01	7.78	+5.45	21.98	7.24	21.76	9.03
JEFFERIES & CO	1	19	1.73%	68,270	0.04	651	+5.02	+13.97	2.59	+5.82	17.38	27.79	+16.48	20.44
BARCLAYS	1	30	1.55%	38,740	-0.96	815	+7.01	+15.57	+3.19	+6.19	0.51	+17.05	21.25	19.86
CREDIT AGRICOLE	1	5	1.49%	223,704	0.22	1,264	+11.30	+14.27	1.57	+4.93	9.51	16.45	5.38	16.99
PAREL	1	8	1.39%	130,333	-0.43	817	+7.84	+13.85	47.50	+5.16	58.82	-	+57.59	42.88
CANTOR FITZGERALD	1	7	1.38%	148,164	0.17	413	+3.98	+0.00	2.59	+2.18	0.88	23.10	-	29.73
SKANDINAVISKA ENSKIL	<1	5	1.23%	184,660	0.78	646	+7.00	+14.38	+226.02	+5.55	+213.08	-	+14.27	-
DAIWA SECURITIES	<1	8	1.09%	102,658	0.10	580	+7.06	+13.93	+12.33	+5.09	+0.35	23.28	+28.04	4.54

NOTES

- Brokers above made up 16.97 % of principal traded.



(+) = Cost

TRADE CYCLE DETAIL

BROKER PERFORMANCE (FULL DAY VWAP)



Broker	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (\$)	Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission +Fees+Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
REDBURN PARTNERS LLP	<1	2	1.06%	398,376	-1.29	398	+5.00	+16.18	21.21	+1.96	16.23	13.58	-	-
EXANE	<1	7	0.93%	99,529	0.25	488	+7.00	+13.94	+6.51	+3.60	4.03	56.62	11.61	21.32
INSTINET	<1	11	0.75%	51,200	-0.38	196	+3.48	+13.87	8.20	+4.40	23.01	+2.32	11.80	23.48
SCOTIA CAPITAL	<1	10	0.73%	54,601	-0.27	33	+0.61	+13.81	+1.11	+3.76	15.87	124.03	27.06	23.58
MACQUARIE	<1	3	0.68%	170,082	0.18	408	+8.00	+13.32	+45.82	+3.44	+35.72	10.94	50.89	19.44
CARNEGIE	<1	7	0.67%	71,478	-0.42	350	+7.00	+13.43	24.35	+5.89	36.73	15.75	-	-
LIQUIDNET	<1	6	0.67%	83,298	0.41	310	+6.21	+3.02	+40.64	+2.48	+41.28	20.01	52.88	11.47
D CARNEGIE AG	<1	4	0.54%	102,299	0.02	286	+7.00	+13.98	3.96	+1.28	12.24	31.14	-	25.85
JOH BERENBERG GOSSLE	<1	5	0.48%	72,395	0.44	253	+7.00	+14.19	+23.17	+3.43	+15.50	82.52	+20.10	18.38
SMBC SECURITIES INC	<1	3	0.42%	105,613	0.23	175	+5.54	+13.93	+7.20	+5.09	6.30	11.50	12.06	15.72

NOTES

- Brokers above made up 6.92 % of principal traded.



(+) = Cost

TRADE CYCLE DETAIL

BROKER PERFORMANCE (FULL DAY VWAP)



Broker	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (\$)	Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission +Fees+Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
SC BERNSTEIN	<1	6	0.42%	52,486	-0.49	126	+4.00	+13.81	29.00	+4.10	43.17	+19.54	+5.34	9.74
ENSKILDA SECURITIES	<1	2	0.39%	147,001	-0.32	206	+7.00	+13.98	30.95	+1.28	39.23	-	-	95.69
INVESTEC BANK	<1	5	0.38%	57,558	-0.56	201	+7.00	+16.18	+9.46	+1.96	+16.64	62.54	-	33.72
NUMIS SECURITIES	<1	5	0.34%	51,372	N/A	180	+7.00	+14.64	21.84	+12.61	41.83	10.89	-	1.25
RBC DOMINION SECS	<1	10	0.28%	20,851	0.16	981	+47.03	+13.81	+6.42	+3.76	+35.86	+75.90	11.24	22.33
MOTILAL OSWAL SECURI	<1	3	0.21%	53,354	-0.40	192	+12.00	+14.41	6.12	+2.44	9.59	-	-	+12.48
BANK J. VONTOBEL	<1	4	0.18%	33,541	-0.45	94	+7.00	+13.80	25.10	+3.38	35.29	9.79	-	+8.31
SVENSKA HANDELSBANKE	<1	2	0.16%	58,970	0.49	83	+7.00	+13.98	+157.56	+1.28	+149.28	26.45	10.95	2.04
JM FINN & COMPANY	<1	5	0.15%	22,287	-1.20	134	+12.00	+14.41	19.57	+2.44	23.04	-	-	-
ODDO SECS	<1	2	0.11%	41,736	-0.39	58	+7.00	+13.93	54.96	+2.95	64.84	+13.10	-	-

NOTES

- Brokers above made up 2.62 % of principal traded.



(+) = Cost

TRADE CYCLE DETAIL

BROKER PERFORMANCE (FULL DAY VWAP)



Broker	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (\$)	Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission +Fees+Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
AXIS CAPITAL LTD	<1	2	0.07%	26,312	-2.13	63	+12.00	+14.41	71.40	+2.44	74.87	+30.40	-	-
PAVILION GLOBAL MKT	<1	1	0.06%	44,466	-0.35	13	+3.00	+13.81	4.29	+3.76	18.88	-	-	24.16
CANACCORD GENUITY	<1	3	0.05%	11,585	-0.62	243	+69.86	+13.81	32.66	+3.76	+19.61	-	-	-
TD WATERHOUSE	<1	1	0.01%	8,444	-0.72	2	+1.87	+13.81	35.97	+3.76	51.68	66.28	27.52	15.69
CONVERGEX	<1	1	0.01%	7,575	-0.22	3	+3.30	+13.32	14.54	+3.44	29.34	-	-	-

NOTES

- Brokers above made up 0.20 % of principal traded.



(+) = Cost

TRADE CYCLE DETAIL

LAZARD ASSET MANAGEMENT PERFORMANCE (FULL DAY VWAP)



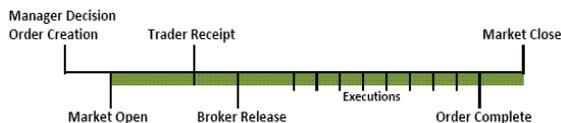
Broker	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (\$)	Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission + Fees + Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
GRAND TOTAL	34	223	44.98%	151,545	-0.04	32,728	+9.68	+13.28	3.82	+6.06	12.73	3.45	+1.71	5.39
JP MORGAN CHASE	6	36	8.61%	179,745	-0.44	7,637	+11.80	+14.12	11.83	+6.43	20.60	0.43	19.41	+2.50
CREDIT SUISSE	5	17	6.18%	273,008	0.56	5,257	+11.33	+13.97	+12.33	+3.59	+6.10	+5.81	+24.16	3.78
SOCIETE GENERALE	3	21	4.35%	155,716	-0.88	1,717	+5.25	+14.33	54.14	+7.97	70.71	38.71	46.70	4.88
MERRILL LYNCH	3	37	4.06%	82,414	-0.13	2,268	+7.44	+13.98	5.64	+5.25	17.42	12.73	28.10	1.00
BNP PARIBAS	3	19	4.04%	159,610	-0.50	1,623	+5.35	+13.87	7.29	+4.44	20.27	55.98	+10.79	13.84
GOLDMAN SACHS	2	7	2.73%	292,685	1.18	1,900	+9.27	+14.24	+42.76	+14.42	+23.40	+13.73	9.58	2.04
MORGAN STANLEY	2	8	2.36%	221,778	0.50	3,402	+19.18	+5.28	+27.60	+2.79	+38.64	16.89	18.02	0.84
DEUTSCHE BANK	1	7	1.84%	197,486	1.07	1,659	+12.00	+14.53	+7.62	+11.39	6.27	18.04	+22.92	+13.30
CREDIT AGRICOLE	1	4	1.39%	261,214	0.24	1,205	+11.54	+13.93	0.69	+5.09	8.19	18.71	21.97	15.20
CANTOR FITZGERALD	1	7	1.38%	148,164	0.17	413	+3.98	+0.00	2.59	+2.18	0.88	23.10	-	29.73



(+) = Cost

TRADE CYCLE DETAIL

LSV ASSET MANAGEMENT PERFORMANCE (FULL DAY VWAP)



Broker	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (\$)	Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission + Fees + Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
GRAND TOTAL	28	417	37.91%	68,308	-0.07	12,275	+4.31	+14.41	+5.63	+4.78	7.85	5.96	16.52	17.28
SOCIETE GENERALE	5	34	7.19%	158,826	0.07	2,829	+5.24	+14.57	+8.29	+2.93	2.11	13.60	21.52	47.82
CREDIT SUISSE	4	67	5.99%	67,158	-0.16	2,250	+5.00	+14.10	4.40	+4.44	18.00	28.23	19.09	11.37
CITIGROUP	4	68	5.79%	63,955	-0.20	1,696	+3.90	+13.53	+4.89	+3.78	9.52	+3.27	10.12	9.96
HSBC BANK	4	112	5.03%	33,775	-0.07	1,135	+3.00	+14.57	+1.14	+7.42	14.89	20.08	32.66	21.54
UBS	3	23	3.90%	127,299	-0.62	1,464	+5.00	+16.52	+4.64	+4.21	4.17	2.99	16.77	19.68
MORGAN STANLEY	2	23	2.49%	81,309	-0.29	748	+4.00	+13.87	10.46	+3.66	24.00	17.36	9.06	+1.42
MERRILL LYNCH	2	13	2.29%	132,416	0.94	798	+4.64	+14.42	+42.49	+9.27	+23.41	16.03	5.68	34.85
DEUTSCHE BANK	<1	5	1.32%	198,288	0.45	397	+4.00	+13.80	+19.03	+3.72	+5.48	14.71	20.53	39.95
JEFFERIES & CO	<1	12	1.02%	63,675	0.29	229	+3.00	+14.00	0.28	+6.33	17.62	18.30	6.14	-
BARCLAYS	<1	27	0.86%	23,851	-0.81	193	+3.00	+15.08	16.69	+9.59	33.01	62.15	41.06	44.77



(+) = Cost

TRADE CYCLE DETAIL

WILLIAM BLAIR & COMPANY PERFORMANCE (FULL DAY VWAP)



Broker	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (\$)	Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission + Fees + Full Day VWAP Vs. Universe (bp)	20184th (bp)	20183rd (bp)	20182nd (bp)
GRAND TOTAL	13	184	17.11%	69,881	0.08	8,827	+6.87	+13.38	+14.86	+4.31	+4.82	5.07	7.29	17.99
SOCIETE GENERALE	1	26	1.70%	49,264	-0.41	512	+4.00	+14.37	39.53	+4.15	51.57	1.54	25.47	18.84
UBS	1	16	1.47%	69,257	0.30	537	+4.85	+10.37	+2.94	+3.71	6.66	+17.90	4.39	10.13
SKANDINAVISKA ENSKIL	<1	5	1.23%	184,660	0.78	646	+7.00	+14.38	+226.02	+5.55	+213.08	-	+14.27	-
EXANE	<1	7	0.93%	99,529	0.25	488	+7.00	+13.94	+6.51	+3.60	4.03	60.66	11.61	21.32
ITG	<1	14	0.92%	49,144	0.37	356	+5.18	+13.92	+9.58	+4.39	3.15	1.75	22.34	+2.64
MORGAN STANLEY	<1	7	0.76%	81,896	0.25	373	+6.51	+13.80	+19.47	+4.58	+7.27	+16.60	+61.58	+13.75
PAREL	<1	5	0.72%	108,456	-0.14	380	+7.00	+13.91	73.05	+6.50	86.70	-	+57.59	-
MACQUARIE	<1	3	0.68%	170,082	0.18	408	+8.00	+13.32	+45.82	+3.44	+35.72	10.96	50.89	15.45
CARNEGIE	<1	7	0.67%	71,478	-0.42	350	+7.00	+13.43	24.35	+5.89	36.73	15.75	-	-
LIQUIDNET	<1	6	0.67%	83,298	0.41	310	+6.21	+3.02	+40.64	+2.48	+41.28	24.23	60.07	7.30



(+) = Cost

TRADE DETAIL ANALYSIS

Largest Principal Volume Traded

							Market Impact
Name	# Orders	Shares	Net Principal (\$)	Principal (\$)	% of Volume	E - Score	Full Day VWAP (bp)
KOMATSU LTD COMMON STOCK	37	226,600	-5,560,123	5,560,123	0.10%	-0.06	0.54
SANOFI COMMON STOCK EUR2.0	17	55,063	-4,901,147	4,901,147	0.27%	0.54	+9.83
IMPERIAL BRANDS PLC COMMON STO	22	72,200	-2,464,922	2,464,922	0.29%	-1.21	3.44
BOUYGUES SA COMMON STOCK EUR1.	9	60,500	-2,246,900	2,246,900	1.17%	0.26	+13.83
RYANAIR HOLDINGS PLC SP ADR AD	9	29,404	-2,132,494	2,132,494	0.16%	0.34	+4.35
SUZUKI MOTOR CORP COMMON STOCK	16	39,200	-2,005,291	2,005,291	0.12%	-0.97	14.96
SSE PLC COMMON STOCK GBP.5	18	113,400	1,802,538	1,802,538	0.38%	-0.01	9.68
IBERDROLA SA COMMON STOCK EUR.	19	208,400	1,756,730	1,756,730	0.16%	-0.25	5.76
BEIERSDORF AG COMMON STOCK	17	16,957	-1,737,387	1,737,387	0.12%	0.03	+2.05
KERRY GROUP PLC A COMMON STOCK	1	15,749	1,656,088	1,656,088	0.29%	1.42	+60.15

Names Most Traded - Total Orders (\$)

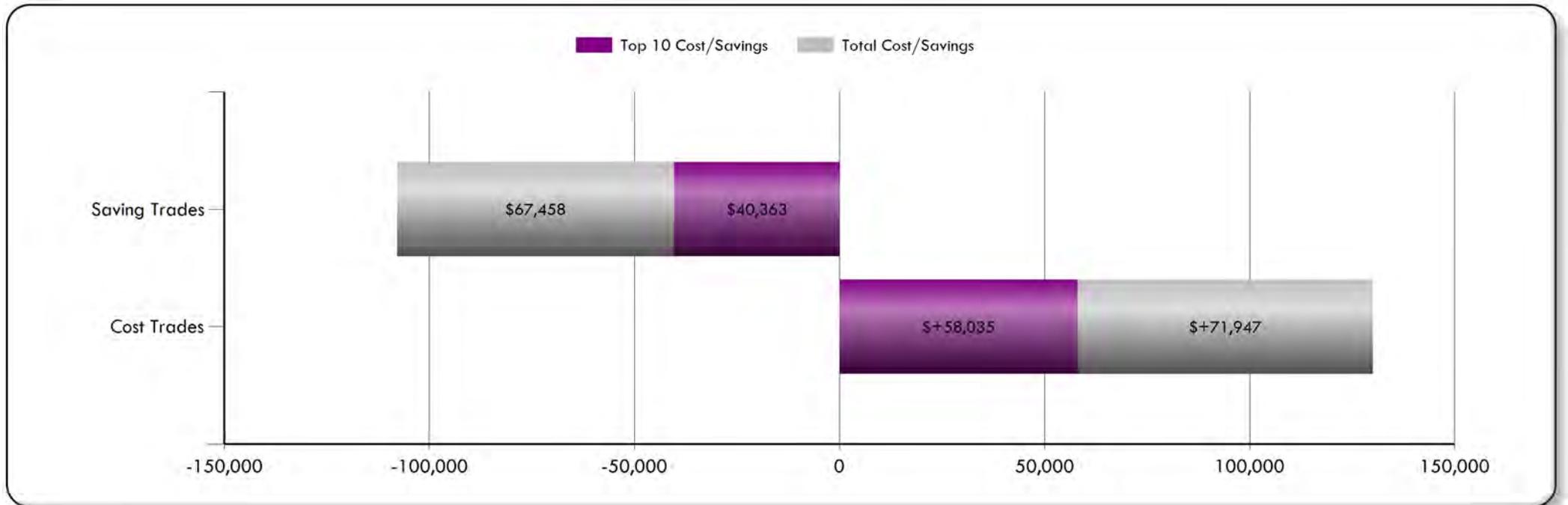
							Market Impact
Name	# Orders	Shares	Net Principal (\$)	Commission (bp)	% of Volume	E - Score	Full Day VWAP (bp)
KOMATSU LTD COMMON STOCK	37	226,600	-5,560,123	+8.73	0.10%	-0.06	0.54
OLD MUTUAL LTD COMMON STOCK	37	128,300	211,136	+3.00	0.10%	N/A	10.70
SAINSBURY (J) PLC COMMON STOCK	30	167,600	604,800	+3.00	0.17%	0.12	16.00
KAKEN PHARMACEUTICAL CO LTD CO	24	7,700	367,682	+4.58	0.41%	-0.01	5.42
HEIWADO CO LTD COMMON STOCK	24	37,400	850,240	+3.98	1.32%	-0.39	9.46
BENDIGO AND ADELAIDE BANK COMM	24	142,400	986,825	+3.83	0.31%	-0.28	3.73
DCM HOLDINGS CO LTD COMMON STO	24	94,900	924,479	+4.37	0.77%	-0.16	3.67
MELROSE INDUSTRIES PLC COMMON	23	341,309	741,360	+7.76	0.21%	N/A	37.56
IMPERIAL BRANDS PLC COMMON STO	22	72,200	-2,464,922	+4.79	0.29%	-1.21	3.44
DNA OY COMMON STOCK NPV	22	29,982	66,604	+5.96	1.42%	0.00	1.43



(+) = Cost

TRADE CONTRIBUTIONS

Cost/Savings Performance				
Category	Principal (\$)	# of Trades	Avg. Market Impact (bp)	Percentage of all Cost/Savings
10 High Cost Trades	4,787,839	10	+159.22	44.65%
Cost Trades	37,140,979	367	+30.56	100.00%
Saving Trades	37,996,229	457	32.03	100.00%
10 Low Cost Trades	5,565,550	10	89.49	37.44%





(+) = Cost

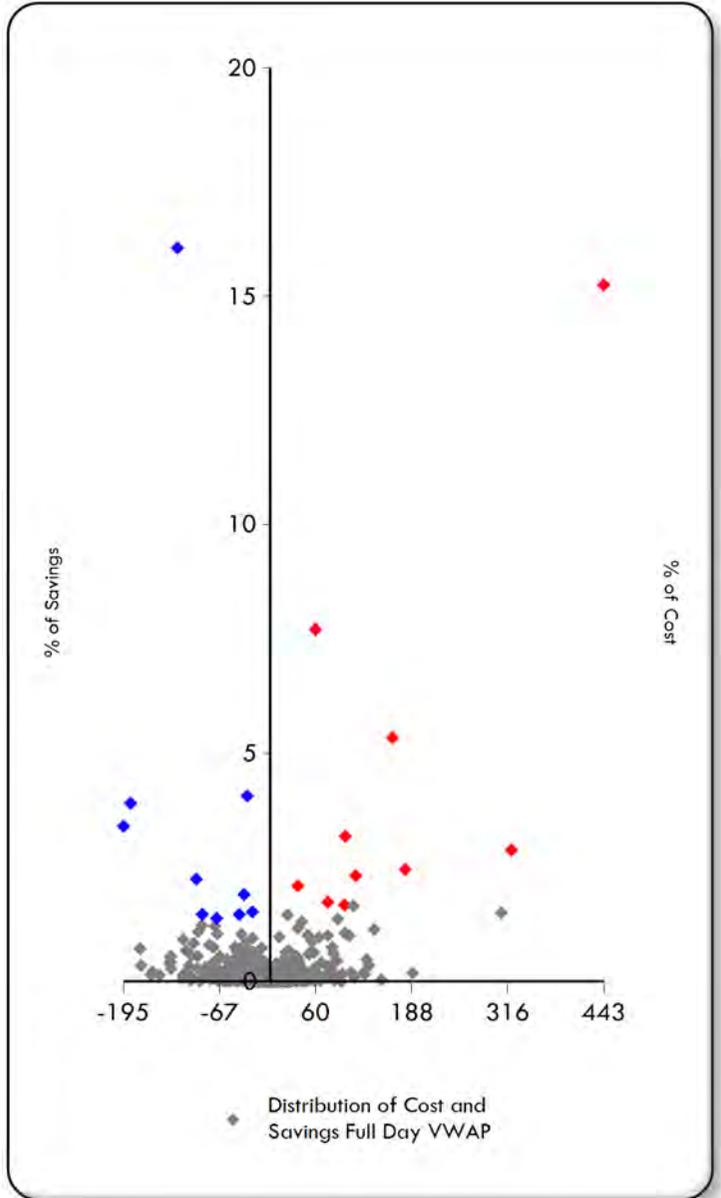
TRADE LEVEL DETAILS

10 High Cost Trades (Full Day VWAP)

Side	Country	Security	Trade Date	Principal (\$)	Cost (%)	E - Score	Full Day VWAP (bp)	Manager	Exbroker
Buy	DEN	NETCOMPANY	20190206	466,721	15.25%	1.28	+443.49	WILLI	SKAND
Sell	IRE	KERRY GROU	20190306	1,656,088	7.71%	1.42	+60.15	LAZAR	GOLDM
Buy	NTH	AEGON NV C	20190215	434,059	5.34%	1.57	+162.62	LSV A	MERRI
Buy	AST	SUPER RETA	20190220	418,319	3.18%	0.82	+99.87	LSV A	CITIG
Sell	AST	ASALEO CAR	20190220	112,962	2.88%	0.60	+320.78	LSV A	BNP P
Buy	SGP	WILMAR INT	20190227	180,901	2.45%	0.95	+179.47	LSV A	UBS
Sell	JAP	EN JAPAN I	20190212	262,145	2.32%	1.65	+113.62	WILLI	BNP P
Buy	FRA	SANOFI COM	20190315	740,643	2.10%	1.58	+36.92	LAZAR	CREDI
Sell	AST	RELIANCE W	20190225	293,183	1.74%	0.11	+76.60	WILLI	MACQU
Buy	US	HUAZHU GRO	20190304	222,820	1.68%	1.08	+98.72	WILLI	LIQUI

10 Low Cost Trades (Full Day VWAP)

Side	Country	Security	Trade Date	Principal (\$)	Savings (%)	E - Score	Full Day VWAP (bp)	Manager	Exbroker
Sell	UK	ASHTD GR	20190110	1,418,556	16.06%	-2.09	123.58	LAZAR	SOCIE
Sell	UK	RENTOKIL I	20190110	1,436,747	4.07%	-0.95	30.60	LAZAR	JP MO
Sell	ITA	CERVED GRO	20190306	230,960	3.91%	-1.45	185.75	WILLI	PAREL
Sell	ITA	CERVED GRO	20190306	191,701	3.40%	-1.47	195.12	WILLI	SOCIE
Buy	US	HUAZHU GRO	20190315	244,019	2.25%	-0.01	98.25	WILLI	UBS
Buy	JAP	SUZUKI MOT	20190222	586,547	1.91%	-2.60	34.93	LAZAR	BNP P
Buy	UK	PRUDENTIAL	20190320	689,078	1.53%	-1.17	23.82	LAZAR	REDBU
Sell	UK	ASHTD GR	20190110	176,992	1.47%	-1.59	90.43	LAZAR	ITG
Buy	SGP	WILMAR INT	20190225	383,272	1.47%	-0.75	41.12	LSV A	UBS
Buy	FRA	TRIGANO SA	20190320	207,679	1.38%	-0.96	71.34	LSV A	SOCIE





(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

NETCOMPANY GROUP AS COMMON STO - 20190206

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	WILLIAM BLAIR & COMPANY	SKANDINAVISKA ENSKIL	DEN	DKK	BFYDWS1	02/06/2019 09:00:00	02/06/2019 17:00:00	466,721	220.62	211.26	+19,820	+443.48	1.28	4.24



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 15.25% of your market impact cost.

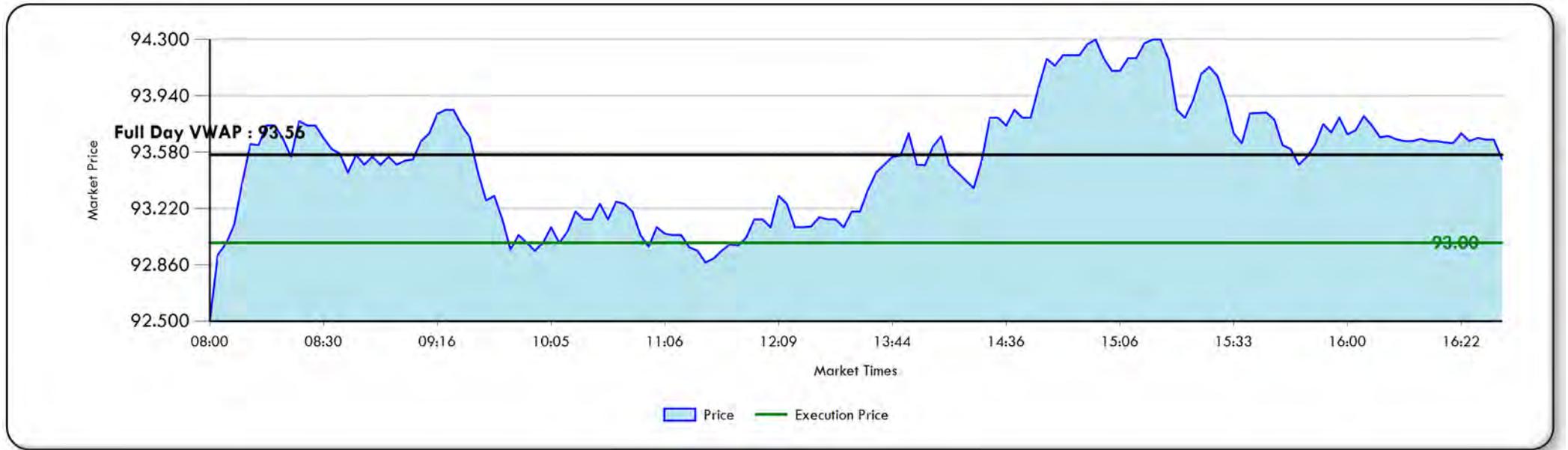


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TRADE LEVEL DETAIL - HIGH COST

KERRY GROUP PLC A COMMON STOCK - 20190306

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
S	LAZARD ASSET MANAGEMENT	GOLDMAN SACHS	IRE	EUR	4519579	03/06/2019 08:00:00	03/06/2019 16:30:00	1,656,088	93.00	93.56	+10,022	+60.15	1.42	0.29



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 7.71% of your market impact cost.

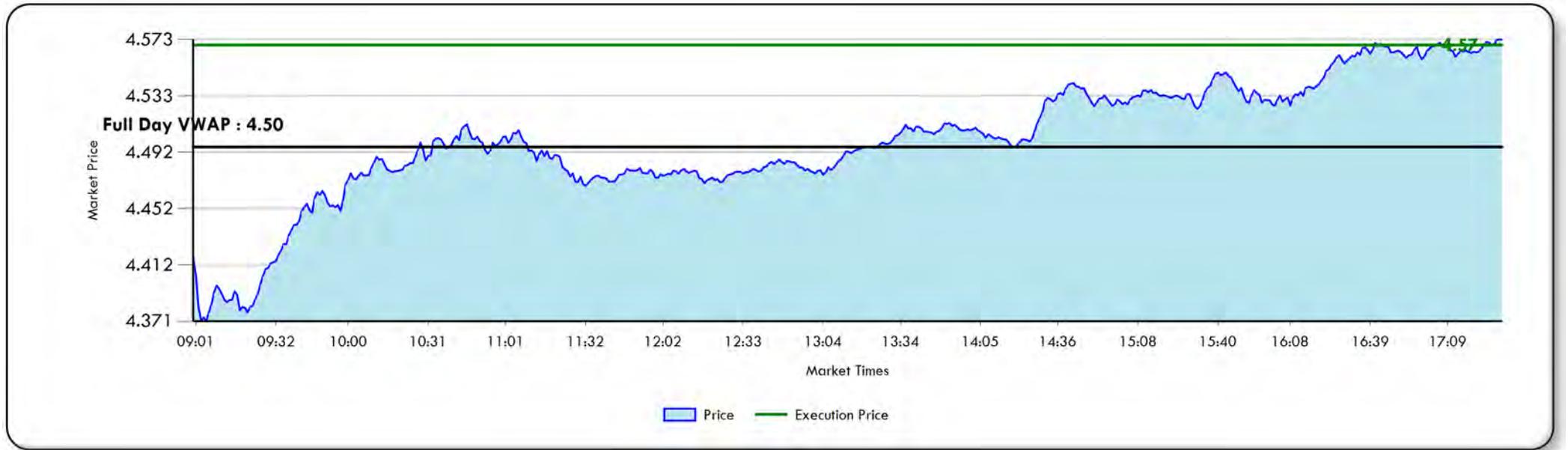


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

AEGON NV COMMON STOCK EUR.12 - 20190215

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	LSV ASSET MANAGEMENT	MERRILL LYNCH	NTH	EUR	5927375	02/15/2019 09:00:00	02/15/2019 17:30:00	434,059	4.57	4.50	+6,946	+162.61	1.57	0.79



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 5.34% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

SUPER RETAIL GROUP LTD COMMON - 20190220

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	LSV ASSET MANAGEMENT	CITIGROUP	AST	AUD	B01C7R0	02/20/2019 10:00:00	02/20/2019 16:12:00	418,319	7.81	7.73	+4,136	+99.86	0.82	7.55



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 3.18% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

ASALEO CARE LTD COMMON STOCK - 20190220

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
S	LSV ASSET MANAGEMENT	BNP PARIBAS	AST	AUD	BNKVHC4	02/20/2019 10:00:00	02/20/2019 16:12:00	112,962	0.95	0.98	+3,744	+320.77	0.60	21.33



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 2.88% of your market impact cost.

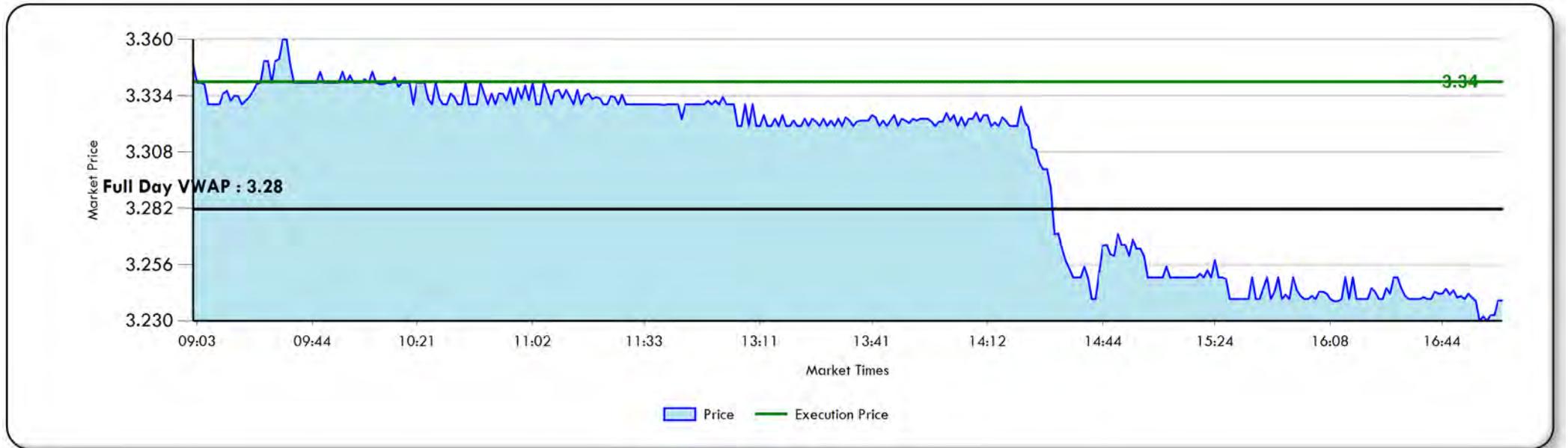


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

WILMAR INTERNATIONAL LTD COMMO - 20190227

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	LSV ASSET MANAGEMENT	UBS	SGP	SGD	B17KC69	02/27/2019 09:00:00	02/27/2019 17:00:00	180,901	3.34	3.28	+3,189	+179.46	0.95	0.77



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 2.45% of your market impact cost.

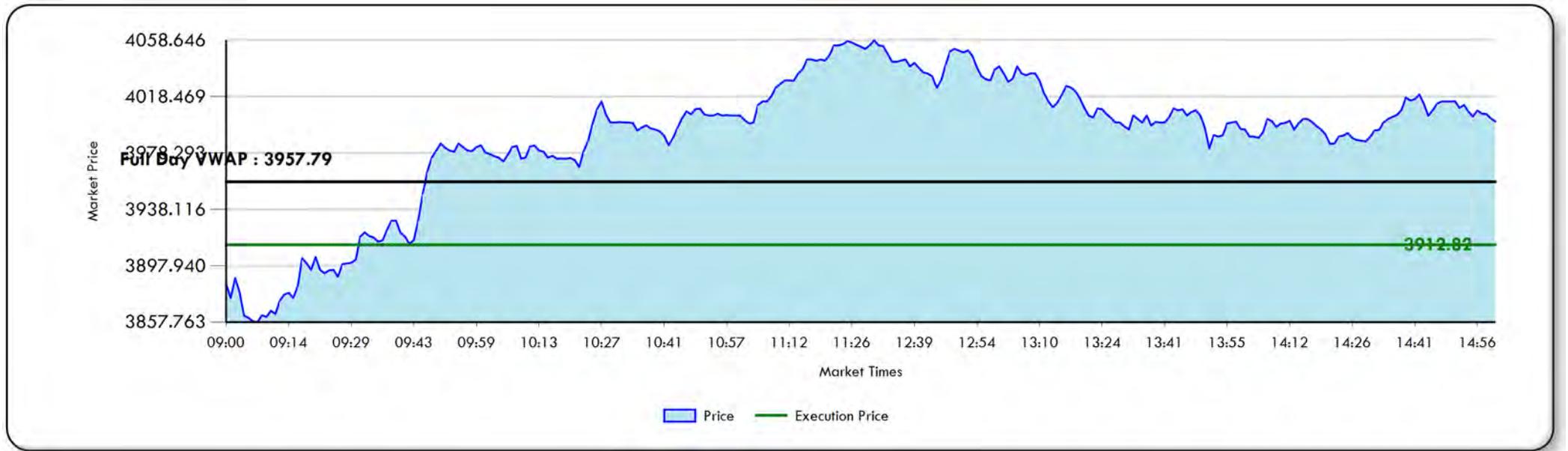


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

EN JAPAN INC COMMON STOCK - 20190212

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
S	WILLIAM BLAIR & COMPANY	BNP PARIBAS	JAP	JPY	6352750	02/12/2019 09:00:00	02/12/2019 15:00:00	262,145	3912.82	3957.79	+3,013	+113.61	1.65	0.79



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 2.32% of your market impact cost.

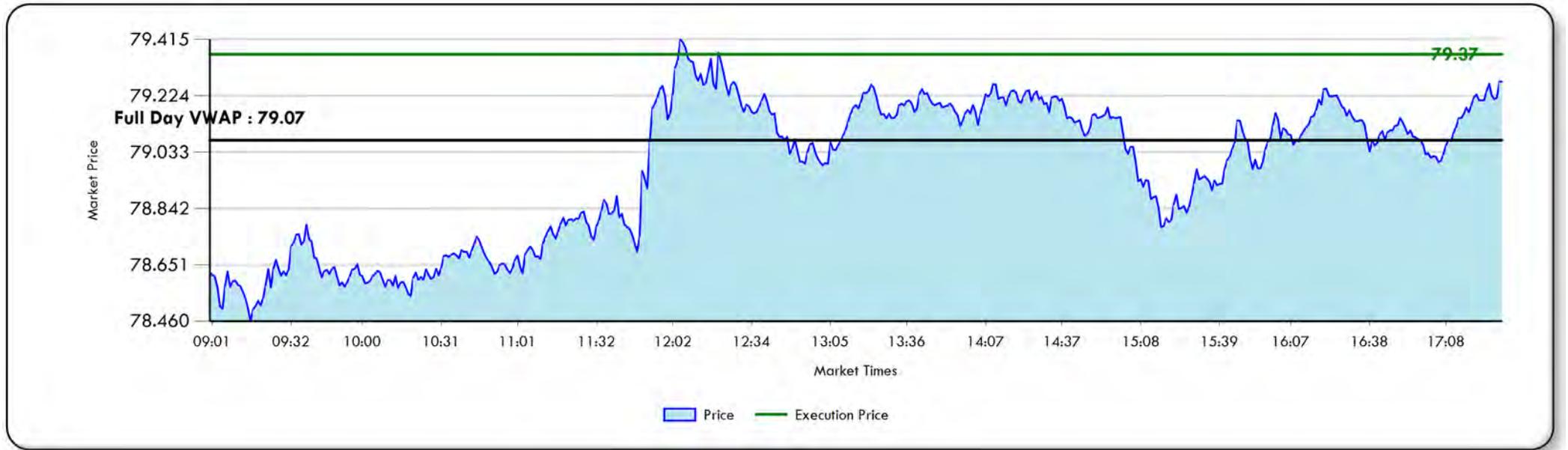


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TRADE LEVEL DETAIL - HIGH COST

SANOFI COMMON STOCK EUR2.0 - 20190315

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	LAZARD ASSET MANAGEMENT	CREDIT SUISSE	FRA	EUR	5671735	03/15/2019 09:00:00	03/15/2019 17:30:00	740,643	79.37	79.07	+2,725	+36.92	1.58	0.22



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 2.10% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

RELiance WORLDWIDE CORP LTD CO - 20190225

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
S	WILLIAM BLAIR & COMPANY	MACQUARIE	AST	AUD	BD1DM79	02/25/2019 10:00:00	02/25/2019 16:12:00	293,183	4.72	4.75	+2,263	+76.59	0.11	1.82



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.74% of your market impact cost.

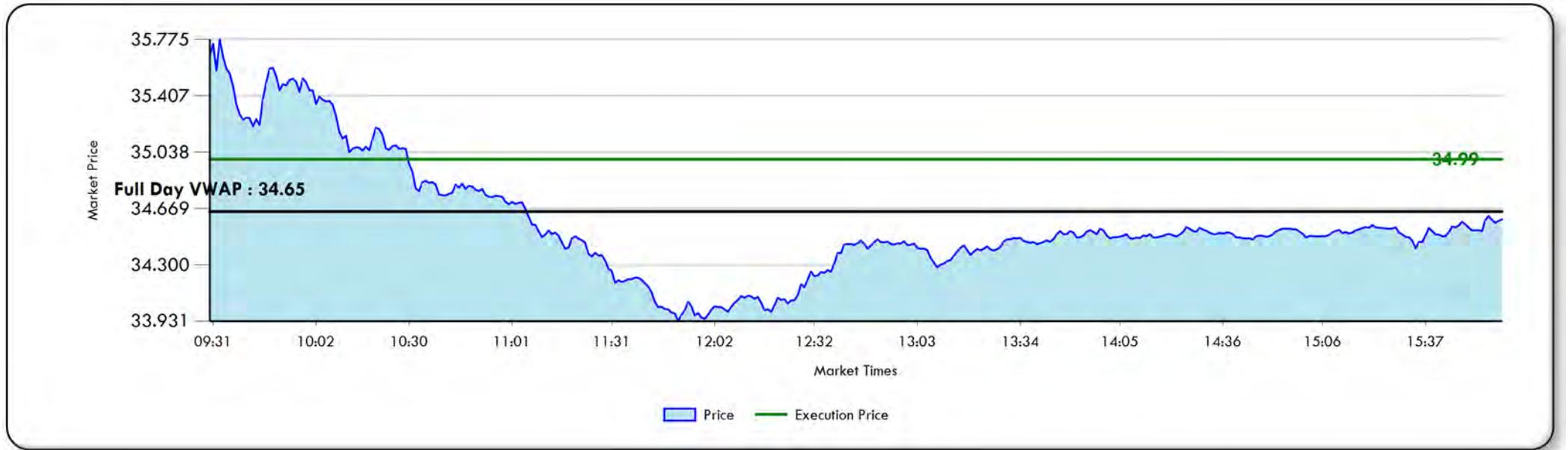


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TRADE LEVEL DETAIL - HIGH COST

HUAZHU GROUP LTD ADR ADR - 20190304

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	WILLIAM BLAIR & COMPANY	LIQUIDNET	US	USD	BFMFKK7	03/04/2019 09:30:00	03/04/2019 16:00:00	222,820	34.99	34.65	+2,178	+98.72	1.08	0.62



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.68% of your market impact cost.

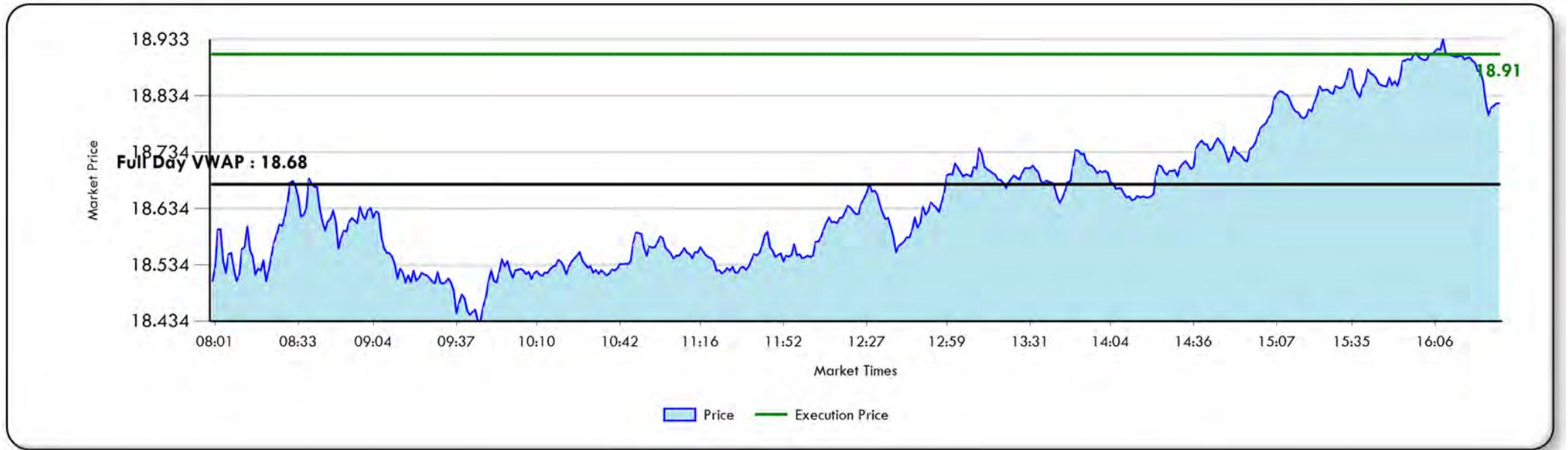


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TRADE LEVEL DETAIL - LOW COST

ASSTEAD GROUP PLC COMMON STOCK - 20190110

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
S	LAZARD ASSET MANAGEMENT	SOCIETE GENERALE	UK	GBP	0053673	01/10/2019 08:00:00	01/10/2019 16:30:00	1,418,556	18.91	18.68	17,316	123.57	-2.09	4.29



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 16.06% of your market impact cost.

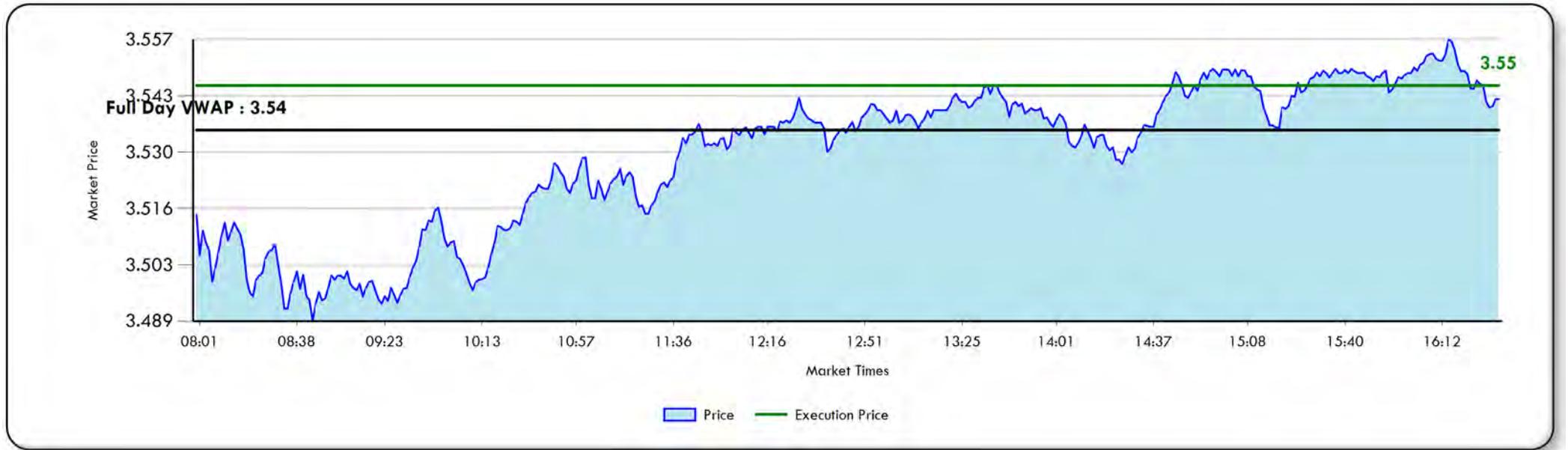


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

RENTOKIL INITIAL PLC COMMON ST - 20190110

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
S	LAZARD ASSET MANAGEMENT	JP MORGAN CHASE	UK	GBP	B082RF1	01/10/2019 08:00:00	01/10/2019 16:30:00	1,436,747	3.55	3.54	4,383	30.60	-0.95	13.25



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 4.07% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - LOW COST

CERVED GROUP SPA COMMON STOCK - 20190306

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
S	WILLIAM BLAIR & COMPANY	PAREL	ITA	EUR	BNGN809	03/06/2019 09:00:00	03/06/2019 17:30:00	230,960	9.34	9.17	4,212	185.74	-1.45	0.53



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 3.91% of your market impact cost.

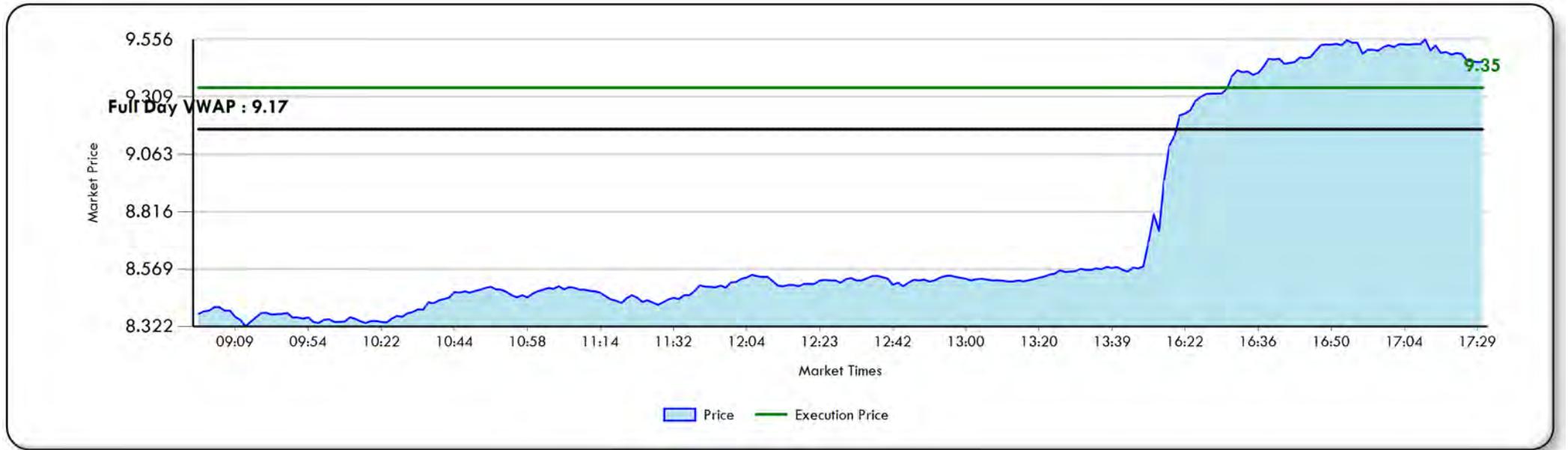


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

CERVED GROUP SPA COMMON STOCK - 20190306

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
S	WILLIAM BLAIR & COMPANY	SOCIETE GENERALE	ITA	EUR	BNGN809	03/06/2019 09:00:00	03/06/2019 17:30:00	191,701	9.35	9.17	3,669	195.12	-1.47	0.44



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 3.40% of your market impact cost.

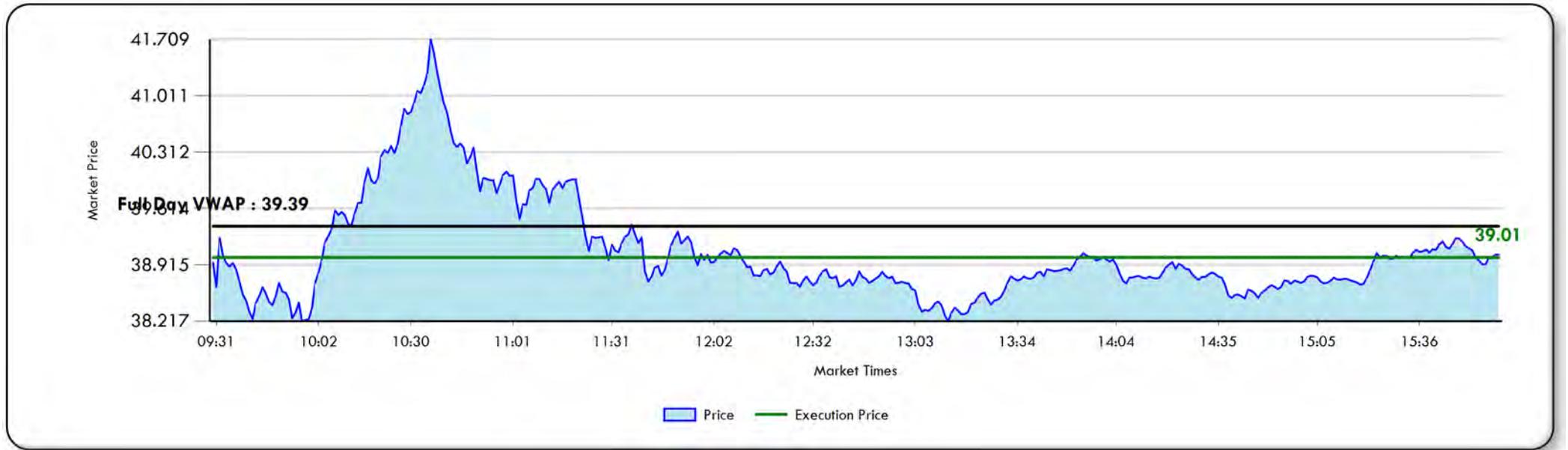


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

HUAZHU GROUP LTD ADR ADR - 20190315

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	WILLIAM BLAIR & COMPANY	UBS	US	USD	BFMFKK7	03/15/2019 09:30:00	03/15/2019 16:00:00	244,019	39.01	39.39	2,421	98.24	-0.01	0.08



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 2.25% of your market impact cost.

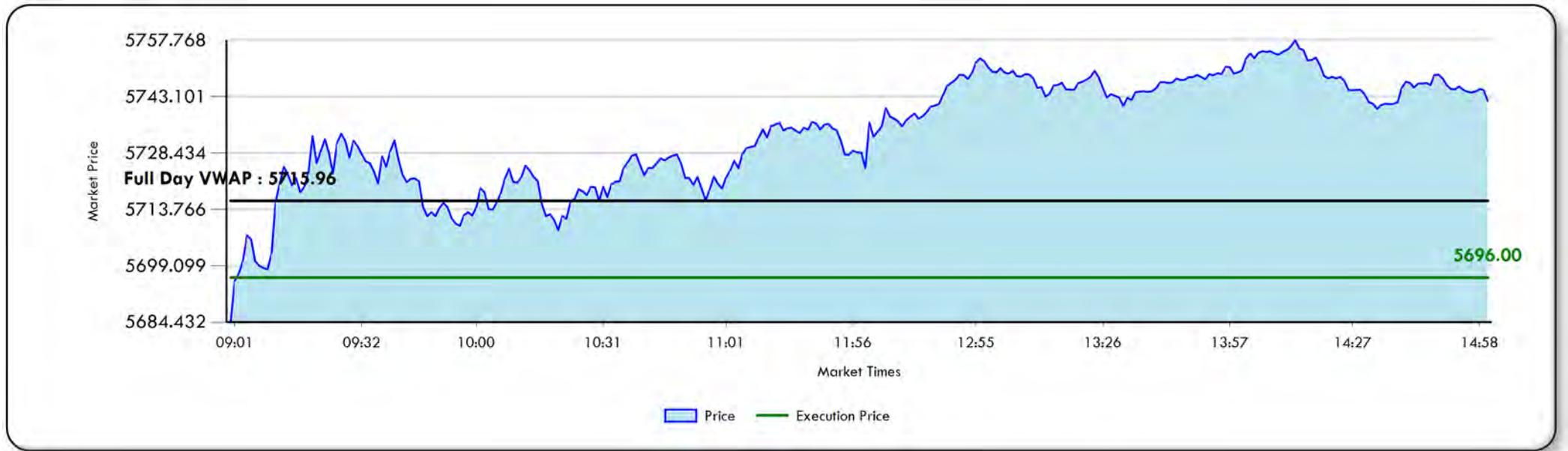


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

SUZUKI MOTOR CORP COMMON STOCK - 20190222

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	LAZARD ASSET MANAGEMENT	BNP PARIBAS	JAP	JPY	6865504	02/22/2019 09:00:00	02/22/2019 15:00:00	586,547	5696.00	5715.96	2,056	34.92	-2.60	0.63



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.91% of your market impact cost.

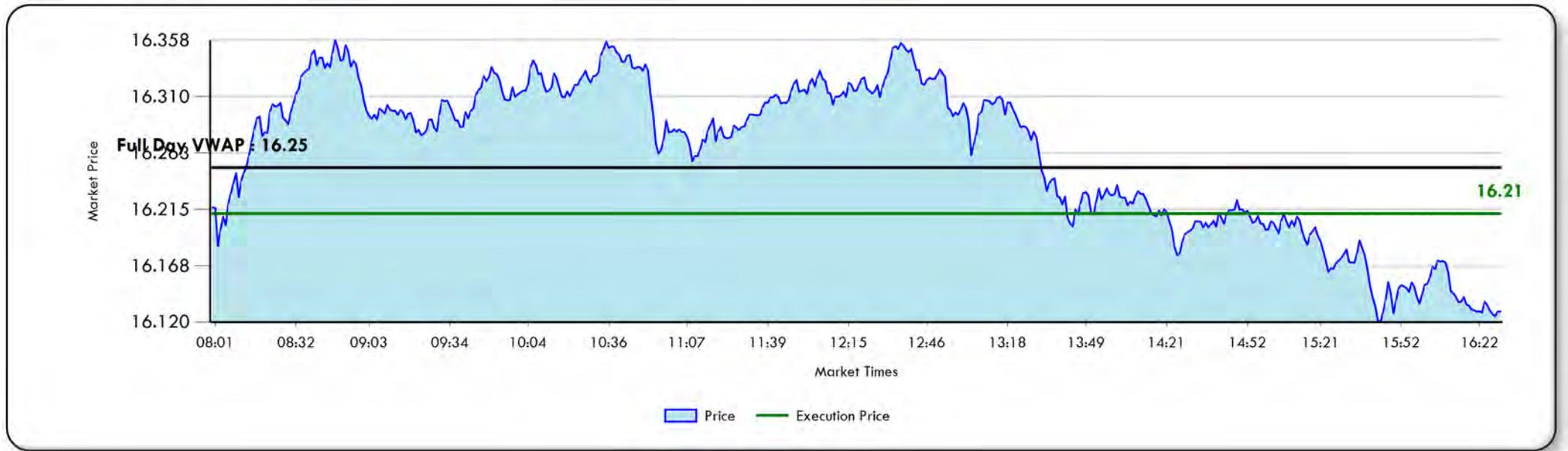


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

PRUDENTIAL PLC COMMON STOCK GB - 20190320

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	LAZARD ASSET MANAGEMENT	REDBURN PARTNERS LLP	UK	GBP	0709954	03/20/2019 08:00:00	03/20/2019 16:30:00	689,078	16.21	16.25	1,645	23.81	-1.17	0.97



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.53% of your market impact cost.

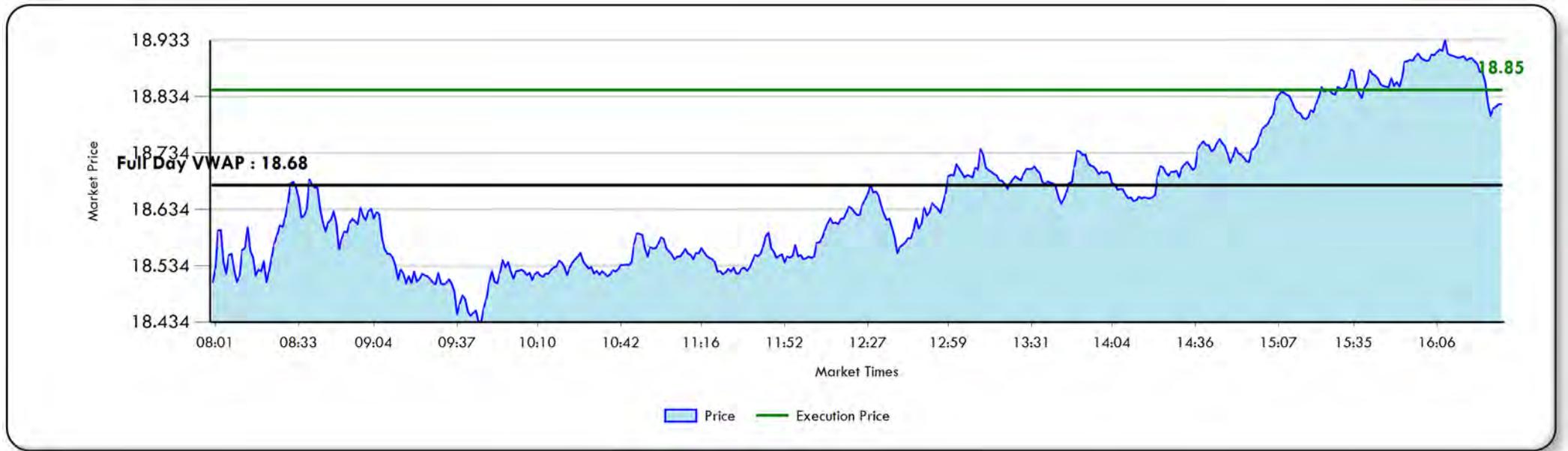


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

ASSTEAD GROUP PLC COMMON STOCK - 20190110

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
S	LAZARD ASSET MANAGEMENT	ITG	UK	GBP	0053673	01/10/2019 08:00:00	01/10/2019 16:30:00	176,992	18.85	18.68	1,586	90.43	-1.59	0.54



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.47% of your market impact cost.

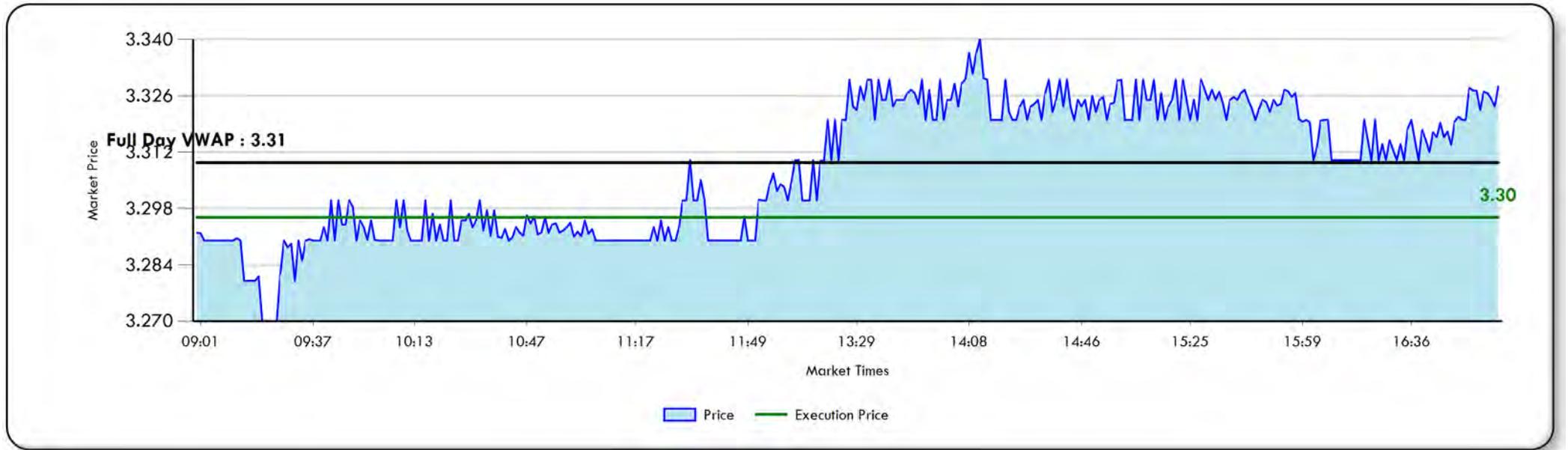


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

WILMAR INTERNATIONAL LTD COMMO - 20190225

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	LSV ASSET MANAGEMENT	UBS	SGP	SGD	B17KC69	02/25/2019 09:00:00	02/25/2019 17:00:00	383,272	3.30	3.31	1,583	41.12	-0.75	1.80



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.47% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - LOW COST

TRIGANO SA COMMON STOCK EUR4.2 - 20190320

Side	Manager	Broker	Country	Currency	CUSIP	Time In	Time Out	Principal	Client Price	Full Day VWAP	Cost Full Day VWAP	Cost Full Day VWAP	E - Score	Volume
								(\$)			(\$)	(bp)		(%)
B	LSV ASSET MANAGEMENT	SOCIETE GENERALE	FRA	EUR	4457624	03/20/2019 09:00:00	03/20/2019 17:30:00	207,679	82.20	82.79	1,492	71.33	-0.96	11.28



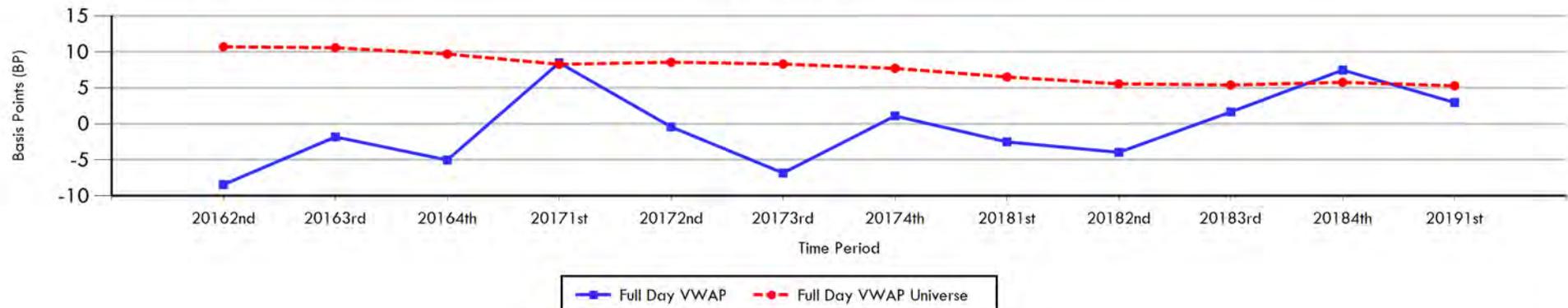
NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.38% of your market impact cost.

TRADE HISTORY

Period	Total Principal (\$)	Commission (bp)	Commission Universe (bp)	Fees (bp)	Fees Universe (bp)	Full Day VWAP (bp)	Full Day VWAP Universe (bp)	Total Cost/Savings Vs. Universe (bp)
20162nd	188,544,188	+7.40	+16.20	+5.32	+5.52	8.45	+10.68	28.14
20163rd	170,434,065	+7.69	+16.36	+6.62	+6.96	1.82	+10.56	21.39
20164th	200,915,200	+7.12	+16.08	+5.97	+6.25	5.02	+9.68	23.94
20171st	193,287,065	+8.16	+15.81	+6.67	+6.60	+8.47	+8.26	7.37
20172nd	199,438,944	+6.90	+14.86	+4.37	+4.99	0.43	+8.55	17.56
20173rd	186,109,779	+7.65	+14.45	+5.00	+5.31	6.83	+8.29	22.23
20174th	198,018,280	+7.13	+14.19	+3.98	+4.19	+1.09	+7.70	13.88
20181st	207,232,838	+8.30	+14.33	+5.34	+5.43	2.52	+6.50	15.12
20182nd	152,374,616	+7.46	+14.16	+10.17	+6.65	3.96	+5.55	12.69
20183rd	84,663,286	+6.92	+13.97	+5.95	+3.81	+1.64	+5.39	8.65
20184th	132,282,303	+7.47	+14.63	+4.94	+3.67	+7.46	+5.76	4.18
20191st	75,137,208	+7.16	+13.73	+6.74	+5.73	+2.95	+5.28	7.88

TRADE HISTORY



Elkins/McSherry Global Universe

Country	Price	Commission	Fees	Market Impact	Total
ARGENTINA	2.97 BP	42.15 BP	0.00 BP	24.97 BP	67.12 BP
AUSTRALIA	6.76 BP	13.32 BP	1.34 BP	3.44 BP	18.10 BP
AUSTRIA	29.23 BP	14.00 BP	0.01 BP	6.33 BP	20.34 BP
BELGIUM	63.07 BP	13.66 BP	0.00 BP	3.73 BP	17.39 BP
BRAZIL	6.27 BP	14.46 BP	1.49 BP	6.65 BP	22.60 BP
CANADA	15.75 BP	13.81 BP	0.02 BP	3.76 BP	17.59 BP
CHILE	0.29 BP	17.62 BP	0.78 BP	3.74 BP	22.14 BP
CHINA	5.16 BP	15.00 BP	3.95 BP	1.80 BP	20.75 BP
COLOMBIA	1.88 BP	21.40 BP	0.94 BP	10.20 BP	32.54 BP
CZECH REPUBLIC	12.08 BP	16.89 BP	0.00 BP	3.09 BP	19.98 BP
DENMARK	57.16 BP	14.43 BP	0.01 BP	5.49 BP	19.93 BP
EGYPT	1.78 BP	25.93 BP	13.24 BP	7.40 BP	46.57 BP
FINLAND	23.43 BP	13.96 BP	0.01 BP	6.10 BP	20.07 BP
FRANCE - BUYS	58.04 BP	13.93 BP	30.00 BP	2.95 BP	46.88 BP
FRANCE - SELLS	59.15 BP	15.39 BP	0.00 BP	3.04 BP	18.43 BP
GERMANY	56.32 BP	13.80 BP	0.03 BP	3.72 BP	17.55 BP
GREECE	1.09 BP	14.04 BP	2.26 BP	12.95 BP	29.25 BP
HONG KONG	2.37 BP	19.39 BP	10.18 BP	1.38 BP	30.95 BP
HUNGARY	10.85 BP	13.43 BP	0.07 BP	2.61 BP	16.11 BP
INDONESIA	0.29 BP	16.86 BP	9.88 BP	3.33 BP	30.07 BP

Elkins/McSherry Global Universe

Country	Price	Commission	Fees	Market Impact	Total
INDIA	8.08 BP	14.41 BP	10.78 BP	2.44 BP	27.63 BP
IRELAND - BUYS	17.40 BP	15.77 BP	100.00 BP	2.65 BP	118.42 BP
IRELAND - SELLS	13.47 BP	14.24 BP	0.00 BP	15.98 BP	30.22 BP
ISRAEL	4.10 BP	14.35 BP	0.08 BP	3.69 BP	18.12 BP
ITALY - BUYS	6.64 BP	13.80 BP	12.00 BP	2.45 BP	28.25 BP
ITALY - SELLS	8.09 BP	13.92 BP	0.00 BP	7.06 BP	20.98 BP
JAPAN	20.76 BP	13.93 BP	0.02 BP	5.09 BP	19.04 BP
KOREA - BUYS	75.10 BP	18.59 BP	0.00 BP	5.12 BP	23.71 BP
KOREA - SELLS	61.93 BP	15.82 BP	29.20 BP	2.89 BP	47.91 BP
LUXEMBOURG	86.69 BP	0.00 BP	0.09 BP	30.68 BP	30.77 BP
MALAYSIA	1.46 BP	19.19 BP	2.94 BP	1.49 BP	23.62 BP
MEXICO	2.14 BP	14.18 BP	0.00 BP	1.34 BP	15.52 BP
NORWAY	12.33 BP	13.43 BP	0.06 BP	5.89 BP	19.38 BP
NETHERLANDS	27.68 BP	14.16 BP	0.10 BP	3.55 BP	17.81 BP
NEW ZEALAND	3.24 BP	14.06 BP	0.00 BP	5.81 BP	19.87 BP
PERU	0.92 BP	22.48 BP	4.73 BP	5.38 BP	32.59 BP
PHILIPPINES - BUYS	0.68 BP	17.42 BP	4.01 BP	2.03 BP	23.46 BP
PHILIPPINES - SELLS	0.85 BP	19.19 BP	62.16 BP	1.11 BP	82.46 BP
POLAND	10.04 BP	14.81 BP	0.00 BP	4.19 BP	19.00 BP
PORTUGAL	5.42 BP	13.88 BP	0.01 BP	6.40 BP	20.29 BP

Elkins/McSherry Global Universe

Country	Price	Commission	Fees	Market Impact	Total
RUSSIA	0.06 BP	0.00 BP	0.00 BP	15.80 BP	15.80 BP
SOUTH AFRICA - BUYS	17.31 BP	12.48 BP	23.91 BP	4.63 BP	41.02 BP
SOUTH AFRICA - SELLS	9.81 BP	14.28 BP	0.07 BP	3.47 BP	17.82 BP
SINGAPORE	2.77 BP	18.19 BP	3.70 BP	1.95 BP	23.84 BP
SPAIN	8.46 BP	13.91 BP	0.00 BP	3.46 BP	17.37 BP
SWEDEN	12.24 BP	13.98 BP	0.02 BP	1.28 BP	15.28 BP
SWITZERLAND	64.06 BP	13.80 BP	0.01 BP	3.38 BP	17.19 BP
TAIWAN - BUYS	2.77 BP	15.73 BP	0.03 BP	1.64 BP	17.40 BP
TAIWAN - SELLS	2.27 BP	18.46 BP	29.23 BP	3.13 BP	50.82 BP
THAILAND	1.92 BP	19.06 BP	0.76 BP	2.69 BP	22.51 BP
TURKEY	2.14 BP	15.57 BP	0.00 BP	4.02 BP	19.59 BP
U.K. - BUYS	7.22 BP	16.18 BP	31.94 BP	1.96 BP	50.08 BP
U.K. - SELLS	7.83 BP	14.64 BP	0.00 BP	12.61 BP	27.25 BP
U.S.	53.69 BP	0.00 BP	0.09 BP	2.18 BP	2.27 BP
VENEZUELA	10.50 BP	43.22 BP	9.10 BP	31.03 BP	83.35 BP
TOTAL: 55	17.89 BP	15.83 BP	7.26 BP	5.91 BP	29.00 BP

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SACRAMENTO COUNTY

US Fixed Income Analysis

Period End March 31, 2019



EXECUTIVE SUMMARY

Elkins/McSherry has been providing trading cost analyses to institutional investors since 1991. During that time we have produced Post-Trade Cost Analyses for many of the worlds largest investment managers, pension funds, banks, and broker dealers. Using this vast experience combined with an un-matched collection of global fixed income market and Universe data, Elkins/McSherry has recently produced a Trading Cost Analysis on behalf of Sacramento County. This study evaluates U.S. fixed income executions from January 01,2019 to March 31,2019. The analysis included trading of 441 trades in 181 different issues representing \$777,794,424 in principal across municipals, mortgages, governments And corporates.

Methodology:

The Elkins/McSherry analysis measures trading efficiency by quantifying the cost of each trade by comparing your executed price to the average price or benchmark price on the day of the trade and to the Elkins/McSherry U.S. Fixed Income Trading Cost Universe. Daily prices are calculated from Market Axess, Tullett Prebon, Bloomberg and Reuters. For comparison purposes, Elkins/McSherry establishes average institutional trading costs quarterly for the most actively traded U.S.treasury, corporates, agencies, mortgages and municipal issues. The "Universe" is the average trading cost incurred by pension funds, investment managers, banks and brokers for Treasuries, Corporates, Agencies, Mortgages and Municipals. Benchmark prices are calculated by using the following methodologies: Government Bonds – Average of six indicative prices received from Tullett Prebon. Municipal Bonds – Average of institutional sized execution prices from MSRB. If actual trade prices are not available the Elkins/McSherry analysis defaults to a fair value price from Reuters or Bloomberg. Corporate Bonds – Average of execution prices where available, from TRACE and Market Axess. If actual trade prices are not available the Elkins/McSherry analysis defaults to a fair value price from Reuters or Bloomberg. Mortgage Bonds – Reuters or Bloomberg fair value prices.

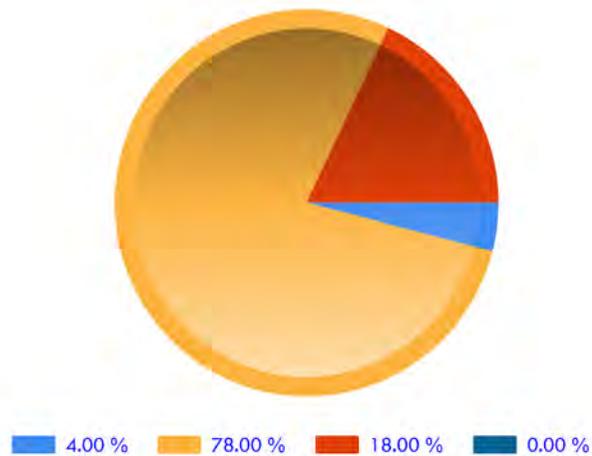
Results:

GRAND TOTAL PERFORMANCE								TRADE COST HISTORICAL PERFORMANCE				
Buy/Sell	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP	Q4 2018	Q3 2018	Q2 2018	Q1 2018
BUYS	384	227	117	+82.37	+2.14	+11.70	367.29	9.56	+8.56	+10.48	+11.14	+8.36
SELLS	394	214	109	101.68	2.58	+11.28	545.74	13.86	7.18	10.05	4.57	8.91
GRAND TOTAL	778	441	181	19.31	0.25	+11.49	913.04	11.74	+0.33	+0.04	+2.62	+0.68

EXECUTIVE SUMMARY

BOND TYPES PERFORMANCE								TRADE COST HISTORICAL PERFORMANCE			
Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$) BP	Q4 2018	Q3 2018	Q2 2018	Q1 2018
Governments	607	305	85	7.40	0.12	+12.13	743.81 12.25	0.29	0.10	+1.22	+4.09
Mortgages	137	78	46	8.74	0.64	+9.15	134.13 9.79	+2.32	+0.15	+6.46	1.82
Corporates	33	57	49	3.22	0.97	+9.40	34.37 10.37	+1.54	+0.71	1.77	17.49
Municipals	<1	1	1	+0.05	+0.75	+12.48	0.73 11.73	-	+3.33	-	+3.87

Bonds by Principal Traded



Historical Trade Cost Trend





EXECUTIVE SUMMARY

EXECUTION PERFORMANCE SUMMARY

Trade Size (Millions)	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP
0~2	237	339	142	36.80	1.55	+12.72	338.55	14.27
5~10	209	28	22	0.02	+0.00	+10.82	225.67	10.82
2~5	208	67	43	+15.18	+0.73	+10.53	203.96	9.80
10~50	124	7	7	+2.32	+0.19	+11.89	144.85	11.70





EXECUTIVE SUMMARY

GRADING SUMMARY

Grading	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP
Govt-INVESTMENT GRADE	607	305	85	7.40	0.12	+12.13	743.81	12.25
Mtge-High Yield	135	75	43	7.50	0.55	+9.11	130.92	9.66
Corp-INVESTMENT GRADE	31	51	45	+2.31	+0.75	+8.70	24.66	7.95
Mtge-INVESTMENT GRADE	2	3	3	1.24	7.33	+11.72	3.21	19.05
Muni-INVESTMENT GRADE	<1	1	1	+0.05	+0.75	+12.48	0.73	11.73
Corp-High Yield	<1	3	2	+0.14	+3.09	+47.56	2.07	44.47



EXECUTIVE SUMMARY

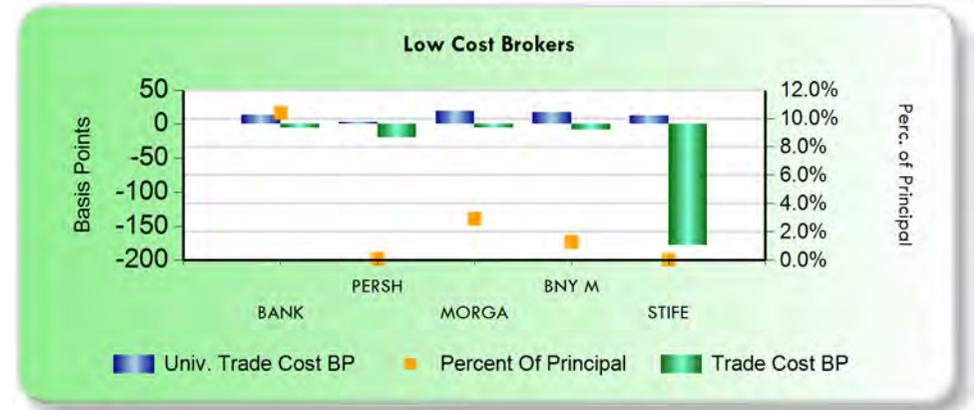
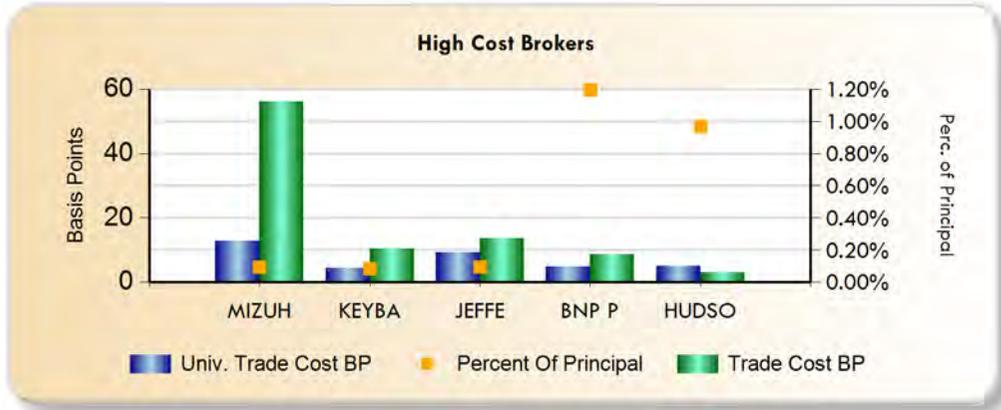
RATING SUMMARY

Rating	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous.\$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP
AAA	608.31	307	87	8.63	0.14	+12.13	746.61	12.27
NR	132.98	74	42	46.40	3.49	+9.06	166.86	12.55
A+	8.50	8	8	+4.32	+5.08	+3.25	+1.56	+1.83
BBB-	6.00	10	9	6.45	10.76	+15.18	15.56	25.94
BBB	5.99	12	8	0.28	0.47	+13.82	8.57	14.29
BBB+	4.66	8	8	+1.21	+2.60	+3.75	0.54	1.15
A-	2.77	7	7	+2.21	+7.98	+7.53	+0.12	+0.45
B	2.43	1	1	+38.90	+159.85	+12.17	+35.94	+147.68
A	2.13	4	4	+1.04	+4.87	+12.76	1.68	7.89
BBB- *+	1.01	2	1	+0.00	+0.00	+11.26	1.14	11.26



EXECUTIVE SUMMARY

BROKER	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous.\$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP
5 HIGHEST COST BROKERS (Sorted By Trade Cost BP)								
MIZUHO	<1	1	1	+4.12	+56.17	+12.95	+3.17	+43.22
KEYBANC	<1	1	1	+0.68	+10.38	+4.43	+0.39	+5.95
JEFFERIES & CO	<1	2	2	+1.01	+13.62	+9.29	+0.32	+4.33
BNP PARIBAS	9	6	6	+8.01	+8.61	+4.83	+3.52	+3.78
HUDSON VALLEY PLANNI	8	2	2	+2.24	+2.97	+5.11	1.61	2.14
5 LOWEST COST BROKERS (Sorted By Trade Cost BP)								
BANK OF AMERICA	81	45	25	45.83	5.66	+13.41	154.29	19.07
PERSHING	<1	1	1	1.70	19.39	+3.55	2.01	22.94
MORGAN STANLEY	23	13	13	12.48	5.45	+19.69	57.56	25.14
BNY MELLON	10	12	11	8.07	7.98	+17.64	25.91	25.62
STIFEL NICOLAUS & CO	<1	1	1	7.14	178.37	+12.77	7.66	191.14





COUNTRY PERFORMANCE BASED ON BUYS AND SELLS

Country	Side	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
								(Thous. \$)	BP
								UNITED STATES	BUYS
	SELLS	394	214	109	101.68	2.58	+11.28	545.74	13.86

Manager PERFORMANCE

Manager PERFORMANCE									TRADE COST HISTORICAL PERFORMANCE			
Manager	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$) BP		Q4 2018	Q3 2018	Q2 2018	Q1 2018
METROPOLITAN WEST MG	472	349	118	35.18	0.75	+13.62	677.83	14.37	+0.28	+0.03	+2.61	+0.45
NEUBERGER BERMAN	293	49	36	+15.99	+0.54	+8.30	227.42	7.76	+1.09	+0.92	+2.73	+1.39
BARCLAYS 1-10 YR TIP	13	43	29	.12	0.09	+6.07	7.78	6.16	0.35	1.52	+2.58	4.70

BROKER PERFORMANCE

BROKER PERFORMANCE									TRADE COST HISTORICAL PERFORMANCE			
BROKER	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$) BP		Q4 2018	Q3 2018	Q2 2018	Q1 2018
NOMURA	108	34	25	+29.00	+2.68	+14.99	133.44	12.31	+3.57	+1.03	+0.77	+2.12
JP MORGAN CHASE	96	61	44	+19.07	+2.00	+7.67	54.21	5.67	+1.99	1.01	+2.09	+8.71
GOLDMAN SACHS	92	45	35	+21.21	+2.30	+11.05	80.68	8.75	+0.53	+0.08	+3.42	+0.59
BANK OF AMERICA	81	45	25	45.83	5.66	+13.41	154.29	19.07	3.04	1.19	0.05	+5.91
CITIGROUP	71	32	20	+14.54	+2.05	+12.02	70.63	9.97	0.11	+1.08	+0.26	4.25
DEUTSCHE BANK	57	30	18	14.38	2.53	+14.35	96.01	16.88	1.34	+0.20	+0.75	+5.10
CREDIT SUISSE	56	31	22	12.74	2.28	+9.60	66.28	11.88	+4.26	+0.47	+6.51	1.77
BMO CAPITAL MARKETS	48	4	4	6.11	1.28	+0.77	9.78	2.05	5.31	0.27	-	+1.17
BARCLAYS	35	15	15	+5.14	+1.48	+6.57	17.60	5.09	1.02	+0.35	1.25	2.81
MORGAN STANLEY	23	13	13	12.48	5.45	+19.69	57.56	25.14	+1.64	2.98	+10.21	+1.11
RBC CAPITAL MARKETS	19	18	12	5.21	2.81	+17.29	37.31	20.10	2.44	2.76	+3.38	0.32
WELLS FARGO	18	17	13	8.45	4.58	+16.68	39.22	21.26	0.34	+1.76	+1.98	6.97
HSBC BANK	16	23	13	6.36	4.00	+16.95	33.32	20.95	1.31	+0.43	+3.88	1.29
HOWARD TAYLOR & COMP	16	13	10	+3.43	+2.20	+17.07	23.19	14.87	8.02	+3.81	-	0.11
BNY MELLON	10	12	11	8.07	7.98	+17.64	25.91	25.62	1.73	+1.12	+5.38	+1.80
BNP PARIBAS	9	6	6	+8.01	+8.61	+4.83	+3.52	+3.78	1.63	-	-	5.72
HUDSON VALLEY PLANNI	8	2	2	+2.24	+2.97	+5.11	1.61	2.14	-	28.73	-	-
UBS	4	13	12	+0.83	+2.20	+6.65	1.69	4.45	0.45	+2.88	1.29	8.52
JJ KENNY DRAKE INC	3	4	4	0.07	0.24	+9.25	2.78	9.49	-	-	-	53.66
CITADEL SECURITIES	3	6	6	+0.01	+0.03	+13.87	3.89	13.84	1.63	0.17	+0.42	+3.54

TRADE DETAILS

Buy/Sell	Security	Bond Type	Trade Date/ Maturity	Manager/ Broker	Cty	Local Curr.	Principal (\$)	Price	Benchmark Price	Trade Cost BP	Trading Cost
15 Highest Cost Trades											
B	46630LBA JP MORGAN MORTGAGE ACQUISITI	Mtge	03/13/2019 11/25/2036	METROPOLITAN WE NOMURA	US	USD	2,433,633	98.688	97.110	+159.85	+38,901
S	912810QK US TREASURY N/B	Govt	01/15/2019 08/15/2040	NEUBERGER BERMA CITIGROUP	US	USD	14,254,345	114.035	114.245	+18.46	+26,319
B	01F05064 FNCL 5 4/09	Mtge	03/07/2019 12/31/2099	METROPOLITAN WE CREDIT SUISSE	US	USD	3,222,504	104.797	104.275	+49.77	+16,039
B	01F05062 FNCL 5 2/09	Mtge	01/29/2019 12/30/1899	METROPOLITAN WE CREDIT SUISSE	US	USD	2,335,728	104.977	104.303	+64.18	+14,991
B	02R04262 FGLMC 4.5 2/10	Mtge	01/09/2019 12/30/1899	METROPOLITAN WE CITIGROUP	US	USD	4,939,140	103.438	103.151	+27.75	+13,704
B	912810SF US TREASURY N/B 02/49 3	Govt	02/08/2019 02/15/2049	METROPOLITAN WE BANK OF AMERICA	US	USD	7,689,088	100.445	100.280	+16.49	+12,678
B	01F04062 FNCL 4 2/10	Mtge	01/08/2019 12/30/1899	METROPOLITAN WE CREDIT SUISSE	US	USD	2,078,250	101.875	101.275	+58.90	+12,240
S	912828S3 US TREASURY N/B 06/23 1.375	Govt	02/01/2019 06/30/2023	NEUBERGER BERMA BARCLAYS	US	USD	5,047,818	95.242	95.465	+23.41	+11,818
S	912828B6 US TREASURY N/B 02/24 2.75	Govt	01/16/2019 02/15/2024	NEUBERGER BERMA GOLDMAN SACHS	US	USD	9,074,853	100.832	100.936	+10.34	+9,382
S	912810FP US TREASURY N/B	Govt	01/15/2019 02/15/2031	NEUBERGER BERMA JP MORGAN CHASE	US	USD	7,758,388	126.668	126.802	+10.58	+8,207
B	912828WJ US TREASURY N/B 05/24 2.5	Govt	03/06/2019 05/15/2024	NEUBERGER BERMA JP MORGAN CHASE	US	USD	8,832,093	99.911	99.822	+8.88	+7,839
B	02R04263 FGLMC 4.5 3/11	Mtge	02/07/2019 12/30/1899	METROPOLITAN WE CREDIT SUISSE	US	USD	1,736,765	103.688	103.221	+44.99	+7,814
B	01F03262 FNCL 3.5 2/11	Mtge	01/07/2019 12/30/1899	METROPOLITAN WE JP MORGAN CHASE	US	USD	5,565,000	100.000	99.863	+13.72	+7,635
B	9128285U US TREASURY N/B 12/23 2.625	Govt	01/17/2019 12/31/2023	METROPOLITAN WE BANK OF AMERICA	US	USD	3,552,675	100.500	100.296	+20.34	+7,227



B	01F05063 FNCL 5 3/10	Mtge	02/08/2019 12/30/1899	METROPOLITAN WE CREDIT SUISSE	US	USD	3,230,671	105.063	104.838	+21.37	+6,903
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TRADE DETAILS

Buy/Sell	Security	Bond Type	Trade Date/ Maturity	Manager/ Broker	Cty	Local Curr.	Principal (\$)	Price	Benchmark Price	Trade Cost BP	Trading Cost
15 Lowest Cost Trades											
B	912810RT US TREASURY N/B 08/46 2.25	Govt	01/15/2019 08/15/2046	NEUBERGER BERMA BANK OF AMERICA	US	USD	8,455,509	84.555	84.747	22.68	19,179
S	02R04261 FGLMC 4.5 1/09	Mtge	01/09/2019 12/30/1899	METROPOLITAN WE CITIGROUP	US	USD	4,944,456	103.549	103.189	34.72	17,168
S	01F05063 FNCL 5 3/10	Mtge	03/07/2019 12/30/1899	METROPOLITAN WE CREDIT SUISSE	US	USD	3,223,765	104.838	104.304	50.90	16,408
S	912810SE US TREASURY N/B 11/48 3.375	Govt	02/08/2019 11/15/2048	METROPOLITAN WE BANK OF AMERICA	US	USD	7,925,226	107.973	107.770	18.78	14,886
S	01F04061 FNCL 4 1/11	Mtge	01/08/2019 12/30/1899	METROPOLITAN WE CREDIT SUISSE	US	USD	2,079,724	101.947	101.291	64.37	13,388
B	9128286F US TREASURY N/B 02/26 2.5	Govt	02/26/2019 02/28/2026	METROPOLITAN WE NOMURA	US	USD	19,490,487	99.747	99.805	5.82	11,349
B	9128283F US TREASURY N/B 11/27 2.25	Govt	01/15/2019 11/15/2027	NEUBERGER BERMA DEUTSCHE BANK	US	USD	9,651,993	96.520	96.622	10.56	10,195
B	912810SF US TREASURY N/B 02/49 3	Govt	02/07/2019 02/15/2049	METROPOLITAN WE BANK OF AMERICA	US	USD	1,885,616	99.768	100.305	53.79	10,142
B	912828V9 US TREASURY N/B 02/27 2.25	Govt	01/15/2019 02/15/2027	NEUBERGER BERMA CREDIT SUISSE	US	USD	9,698,478	96.985	97.084	10.27	9,959
S	02R04262 FGLMC 4.5 2/10	Mtge	02/07/2019 12/30/1899	METROPOLITAN WE CREDIT SUISSE	US	USD	1,738,990	103.820	103.258	54.21	9,427
S	01F03262 FNCL 3.5 2/11	Mtge	02/07/2019 12/30/1899	METROPOLITAN WE BARCLAYS	US	USD	5,579,564	100.262	100.098	16.35	9,122
S	02R03242 FGCI 3.5 2/11	Mtge	02/11/2019 12/30/1899	METROPOLITAN WE BARCLAYS	US	USD	1,917,104	101.703	101.234	46.10	8,837
S	02R04262 FGLMC 4.5 2/10	Mtge	01/29/2019 12/30/1899	METROPOLITAN WE CREDIT SUISSE	US	USD	2,304,439	103.570	103.175	38.22	8,807
B	912810FE US TREASURY N/B	Govt	01/15/2019 08/15/2028	NEUBERGER BERMA BANK OF AMERICA	US	USD	15,663,218	123.332	123.402	5.61	8,780
S	02R03242 FGCI 3.5 2/11	Mtge	02/05/2019 12/30/1899	METROPOLITAN WE WELLS FARGO	US	USD	2,235,062	101.594	101.197	39.05	8,729



AGENCIES



BOND TYPE PERFORMANCE

Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous.\$)	BP
CORPORATES	33	57	49	3.22	0.97	+9.40	34.37	10.37

CORPORATES



BOND TYPE PERFORMANCE

Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
							(Thous.\$)	BP
GOVERNMENTS	607	305	85	7.40	0.12	+12.13	743.81	12.25

GOVERNMENTS



BOND TYPE PERFORMANCE

Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost	Trade Cost	Univ. Trade	Cost Diff. from Universe	
				(Thous. \$)	BP	Cost BP	(Thous.\$)	BP
MORTGAGES	137	78	46	8.74	0.64	+9.15	134.13	9.79

MORTGAGES



BOND TYPE PERFORMANCE

Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous.\$)	BP
MUNICIPALS	<1	1	1	+0.05	+0.75	+12.48	0.73	11.73





RATING BY EACH BOND TYPE

GOVERNMENTS - RATING DETAILS

Rating	Principal	No. of	No. of Issues	Trade Cost	Trade Cost	Univ. Trade	Cost Diff. from Universe	
	(Mil. \$)	Trades		(Thous. \$)	BP	Cost BP	(Thous. \$)	BP
AAA	607	305	85	7.40	0.12	+12.13	743.81	12.25

RATING BY EACH BOND TYPE

MORTGAGES - RATING DETAILS

Rating	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost	Trade Cost	Univ. Trade	Cost Diff. from Universe	
				(Thous. \$)	BP	Cost BP	(Thous. \$)	BP
NR	133	74	42	46.40	3.49	+9.06	166.86	12.55
B	2	1	1	+38.90	+159.85	+12.17	+35.94	+147.68
AAA	1	2	2	1.24	9.08	+11.52	2.80	20.60
AA+	<1	1	1	+0.00	0.01	+12.54	0.41	12.55

RATING BY EACH BOND TYPE

CORPORATES - RATING DETAILS

Rating	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost	Trade Cost	Univ. Trade	Cost Diff. from Universe	
				(Thous. \$)	BP	Cost BP	(Thous. \$)	BP
A+	9	8	8	+4.32	+5.08	+3.25	+1.56	+1.84
BBB-	6	10	9	6.45	10.76	+15.18	15.56	25.94
BBB	6	12	8	0.28	0.47	+13.82	8.57	14.29
BBB+	5	8	8	+1.21	+2.60	+3.75	0.54	1.15
A-	3	7	7	+2.21	+7.98	+7.53	+0.12	+0.45
A	2	4	4	+1.04	+4.87	+12.76	1.68	7.88
BBB- *+	1	2	1	+0.00	+0.00	+11.26	1.14	11.26
AA	<1	2	1	+0.26	+2.74	+2.80	0.01	0.06
A- *-	<1	1	1	5.68	86.94	+12.60	6.50	99.54
BB+	<1	1	1	+0.45	+17.70	+63.87	1.18	46.17
CCC+	<1	2	1	0.31	14.57	+27.86	0.89	42.43



RATING BY EACH BOND TYPE

MUNICIPALS - RATING DETAILS

Rating	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost		Univ. Trade Cost BP	Cost Diff. from Universe	
				(Thous. \$)	BP		(Thous. \$)	BP
AA+	<1	1	1	+0.05	+0.75	+12.48	0.73	11.72

HISTORICAL DATA

Quarter	Principal (Thous. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP
01/01/2019-03/31/2019	777,794	441	181	19.31	0.25	+11.49	913.04	11.74
Year-Ending 2019	777,794	441		19.31	0.25	+11.49	913.04	11.74
10/01/2018-12/31/2018	713,870	364	137	+23.27	+0.33	+8.75	601.62	8.42
07/01/2018-09/30/2018	578,565	315	150	+2.45	+0.04	+7.31	420.64	7.27
04/01/2018-06/30/2018	779,482	378	169	+203.86	+2.62	+9.58	542.73	6.96
01/01/2018-03/31/2018	1,666,649	1,608	992	+113.13	+0.68	+8.88	1,367.40	8.20
Year-Ending 2018	3,738,566	2,665		+342.70	+0.92	+8.76	2,932.39	7.84
10/01/2017-12/31/2017	624,736	649	254	37.30	0.60	+6.59	448.75	7.19
07/01/2017-09/30/2017	733,365	712	245	70.43	0.96	+7.13	593.40	8.09
04/01/2017-06/30/2017	789,018	849	277	11.21	0.14	+6.26	504.99	6.40
01/01/2017-03/31/2017	710,311	779	281	+88.61	+1.25	+7.07	413.59	5.82
Year-Ending 2017	2,857,429	2,989		30.32	0.11	+6.76	1,960.73	6.86
10/01/2016-12/31/2016	711,667	646	221	68.72	0.97	+6.26	514.24	7.23
07/01/2016-09/30/2016	589,731	684	203	14.71	0.25	+6.35	389.30	6.60
04/01/2016-06/30/2016	619,130	801	269	67.81	1.10	+8.74	608.75	9.84
01/02/2016-03/31/2016	710,978	1,117	262	193.39	2.72	+6.08	625.45	8.80
Year-Ending 2016	2,631,505	3,248		344.62	1.31	+6.81	2,137.74	8.12
10/01/2015-12/31/2015	820,526	980	212	138.86	1.69	+8.52	837.57	10.21
07/01/2015-09/30/2015	992,841	1,625	204	225.86	2.27	+3.74	596.77	6.01
04/01/2015-06/30/2015	1,141,971	1,504	246	310.14	2.72	+7.36	1,150.64	10.08
01/01/2015-03/31/2015	944,141	1,100	191	8.38	0.09	+6.57	628.26	6.66
Year-Ending 2015	3,899,478	5,209		683.23	1.75	+6.49	3,213.25	8.24
10/01/2014-12/31/2014	676,216	885	213	+41.55	+0.61	+5.86	354.40	5.25
07/01/2014-09/30/2014	905,295	785	133	+534.89	+5.91	+6.85	85.46	0.94

HISTORICAL DATA

Quarter	Principal (Thous. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$) BP	
04/01/2014-06/30/2014	727,152	957	240	48.64	0.67	+7.04	560.46	7.71
01/02/2014-03/31/2014	920,513	1033	210	131.04	1.42	+6.54	733.34	7.96
Year-Ending 2014	3,229,176	3660		+396.76	+1.23	+6.60	1,733.66	5.37
10/01/2013-12/31/2013	804,252	799	216	45.80	0.57	+5.50	487.92	6.07
07/01/2013-09/30/2013	778,379	825	214	+21.56	+0.28	+6.25	465.02	5.97
04/01/2013-06/30/2013	937,180	803	217	51.74	0.55	+7.82	784.80	8.37
01/02/2013-03/31/2013	635,964	613	190	+89.06	+1.40	+8.12	427.14	6.72
Year-Ending 2013	3,155,775	3040		+13.07	+0.04	+6.90	2,164.88	6.86
10/01/2012-12/31/2012	528,034	613	192	215.02	4.07	+7.49	610.46	11.56
07/01/2012-09/30/2012	567,084	722	230	+18.83	+0.33	+8.56	466.39	8.23
04/01/2012-06/30/2012	520,106	739	204	+102.98	+1.98	+8.39	333.44	6.41
01/02/2012-03/31/2012	136,055	131	54	+29.91	+2.20	+7.08	66.46	4.88
Year-Ending 2012	1,751,279	2205		63.30	0.36	+8.07	1,476.76	8.43
10/01/2011-12/31/2011	91,474	88	43	18.39	2.01	+6.04	73.67	8.05
07/01/2011-09/30/2011	101,872	106	49	47.22	4.64	+4.74	95.51	9.38
04/01/2011-06/30/2011	100,523	97	54	4.28	0.43	+4.90	53.56	5.33
01/02/2011-03/31/2011	205,267	171	56	143.81	7.01	+7.08	289.08	14.09
Year-Ending 2011	499,136	462		213.70	4.28	+5.97	511.82	10.25
10/01/2010-12/31/2010	184,240	138	57	8.71	0.47	+5.73	114.34	6.20
07/01/2010-09/30/2010	219,586	151	60	20.80	0.95	+4.97	129.88	5.92
04/01/2010-06/30/2010	161,213	123	50	+101.24	+6.28	+7.34	17.15	1.06
01/02/2010-03/31/2010	221,701	181	70	+60.21	+2.72	+11.49	194.49	8.77
Year-Ending 2010	786,740	593		+131.95	+1.68	+7.47	455.85	5.79

BENCHMARK VENDOR REPORT

Bonds	Number of Trades	Number of Issues	Vendor Benchmark	Percent Of Principal
CORPORATES	50	43	MARKETAXESS-TRADES	84.11 %
	6	6	BVAL	12.03 %
	1	1	ISSUE PRICE	3.86 %
GOVERNMENTS	302	82	TULLET PREBON	99.46 %
	3	3	BVAL	0.54 %
	MORTGAGES	42	19	TULLET PREBON
35		29	BLOOMBERGTERMINAL	33.36 %
1		1	MSRB-TRADES	0.24 %
MUNICIPALS	1	1	BLOOMBERGTERMINAL	100.00 %

DISCLAIMER

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SACRAMENTO COUNTY

Global Fixed Income Analysis

Period End March 31, 2019



EXECUTIVE SUMMARY

Elkins/McSherry has been providing trading cost analyses to institutional investors since 1991. During that time we have produced Post-Trade Cost Analyses for many of the worlds largest investment managers, pension funds, banks, and broker dealers. Using this vast experience combined with an un-matched collection of global fixed income market and Universe data, Elkins/McSherry has recently produced a Trading Cost Analysis on behalf of Sacramento County. This study evaluates global fixed income executions from January 01,2019 to March 31,2019. The analysis included trading of 228 trades in 119 different issues representing \$93,963,960 in principal across municipals, mortgages, governments And corporates.

Methodology:

The cost of each trade will be determined by comparing your executed price to the average or benchmark price of the issue on the day of the trade and to the Elkins/McSherry Fixed Income Trading Cost Universe. For comparison purposes, Elkins/McSherry establishes average institutional trading costs quarterly for governments, corporates and agency issues. The Universe is the average trading cost incurred by pension funds, investment managers, banks and brokers.

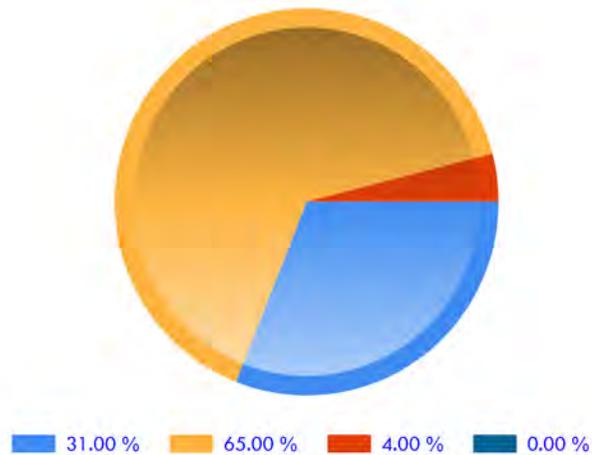
Results:

GRAND TOTAL PERFORMANCE								TRADE COST HISTORICAL PERFORMANCE				
Buy/Sell	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)		Q4	Q3	Q2	Q1
								BP	2018	2018	2018	2018
BUYS	45	101	63	5.36	1.20	+6.02	32.31	7.22	3.06	1.18	1.41	1.88
SELLS	49	127	69	+19.72	+4.01	+6.01	9.86	2.00	+7.57	+1.14	+6.60	+1.58
GRAND TOTAL	94	228	119	+14.36	+1.53	+6.02	42.17	4.49	+1.45	+0.05	+1.62	0.20

EXECUTIVE SUMMARY

BOND TYPES PERFORMANCE								TRADE COST HISTORICAL PERFORMANCE				
Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP	Q4 2018	Q3 2018	Q2 2018	Q1 2018
Governments	61	104	38	+30.77	+5.06	+6.02	5.84	0.96	+2.78	0.61	+1.62	+2.21
Corporates	29	115	73	3.19	1.10	+6.02	20.55	7.12	1.30	+5.88	+0.01	+8.64
Mortgages	4	8	7	16.19	40.89	+5.91	18.53	46.80	20.02	24.86	+28.04	54.51
Municipals	<1	1	1	+2.96	+85.70	+6.02	+2.75	+79.68	-	-	-	-

Bonds by Principal Traded



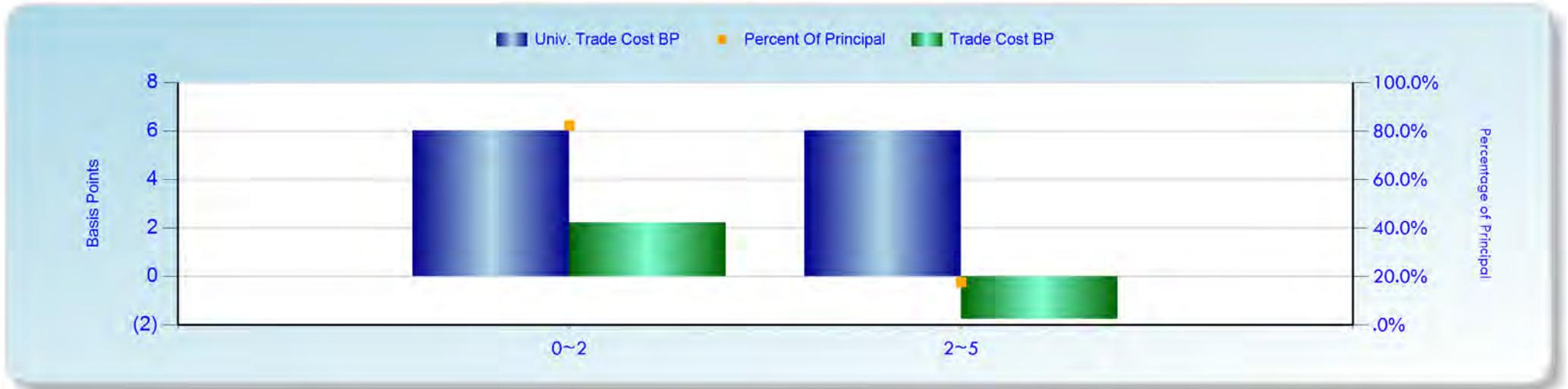
Historical Trade Cost Trend



EXECUTIVE SUMMARY

EXECUTION PERFORMANCE SUMMARY

Trade Size (Millions)	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP
0~2	77	222	117	+17.26	+2.23	+6.02	29.30	3.79
2~5	17	6	5	2.90	1.75	+6.02	12.87	7.77

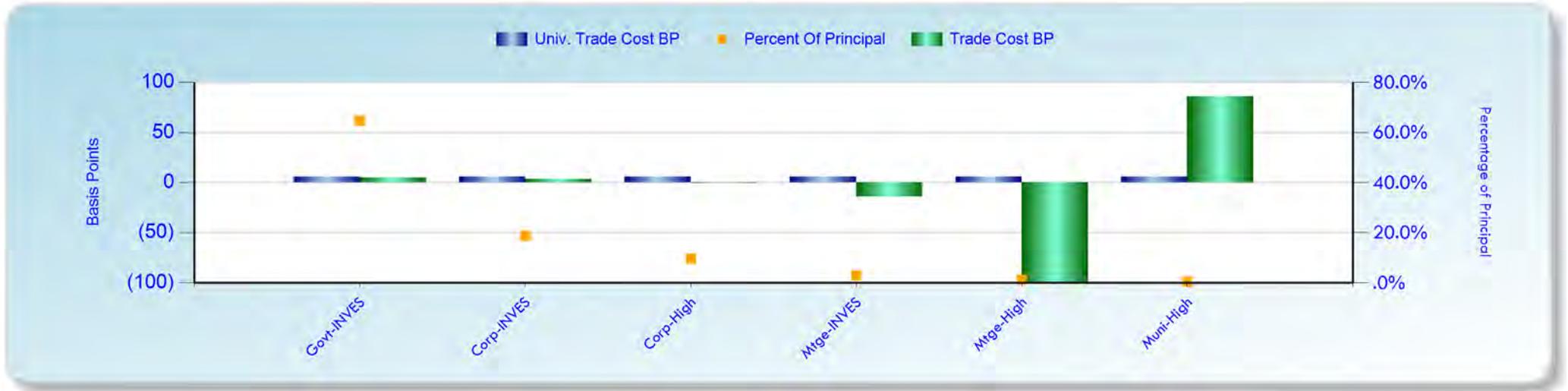




EXECUTIVE SUMMARY

GRADING SUMMARY

Grading	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP
Govt-INVESTMENT GRADE	61	104	38	+30.77	+5.06	+6.02	5.84	0.96
Corp-INVESTMENT GRADE	18	65	48	+6.20	+3.52	+6.02	4.40	2.50
Corp-High Yield	9	45	24	0.52	0.58	+6.02	5.94	6.60
Mtge-INVESTMENT GRADE	3	3	3	3.88	14.22	+5.86	5.48	20.08
Mtge-High Yield	1	5	4	12.31	99.96	+6.02	13.05	105.98
Muni-High Yield	<1	1	1	+2.96	+85.70	+6.02	+2.75	+79.68



EXECUTIVE SUMMARY

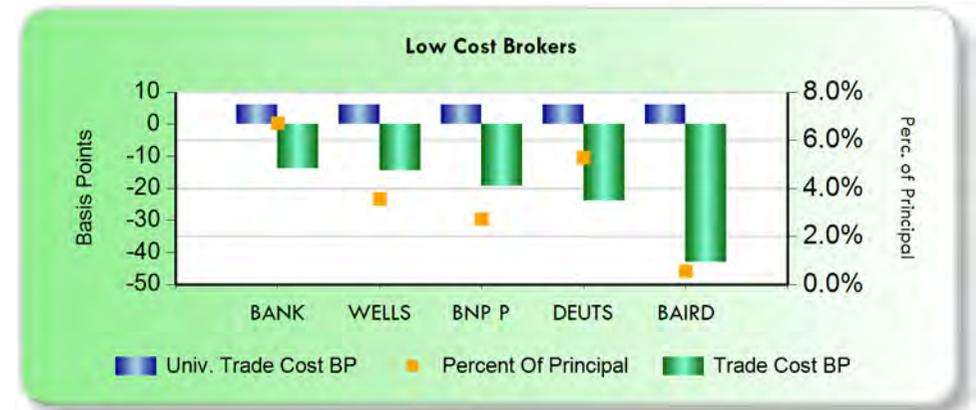
RATING SUMMARY

Rating	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous.\$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	Cost Diff. from Universe BP
AAA	64.58	107	43	+28.15	+4.36	+6.01	10.68	1.65
BBB-	5.23	21	14	+1.27	+2.43	+6.04	1.89	3.61
BBB	4.23	22	13	+5.41	+12.77	+6.02	+2.86	+6.75
A	3.00	7	7	5.84	19.44	+6.02	7.65	25.46
B+	2.51	11	6	10.65	42.49	+6.02	12.16	48.51
A- *-	2.23	5	1	8.87	39.74	+6.02	10.21	45.76
BB-	2.21	11	8	+1.13	+5.09	+6.02	0.21	0.93
BBB+	1.95	9	6	+2.63	+13.45	+6.02	+1.45	+7.43
BB	1.62	9	3	+1.18	+7.28	+6.02	+0.20	+1.26
CCC	1.36	6	2	1.41	10.39	+6.02	2.23	16.41



EXECUTIVE SUMMARY

BROKER	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous.\$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP
5 HIGHEST COST BROKERS (Sorted By Trade Cost BP)								
JP MORGAN CHASE	13	41	22	+28.56	+22.64	+6.02	+20.97	+16.62
CITIGROUP	7	23	18	+6.76	+10.15	+6.02	+2.75	+4.13
UBS	<1	2	2	+0.25	+10.00	+6.02	+0.10	+3.98
BARCLAYS	4	14	14	+2.39	+6.57	+6.02	+0.20	+0.55
CREDIT SUISSE	3	7	7	+2.09	+6.19	+6.02	+0.06	+0.17
5 LOWEST COST BROKERS (Sorted By Trade Cost BP)								
BANK OF AMERICA	6	15	12	8.68	13.76	+6.02	12.48	19.78
WELLS FARGO	3	5	3	4.81	14.37	+6.02	6.82	20.39
BNP PARIBAS	3	7	6	4.96	19.38	+6.05	6.51	25.43
DEUTSCHE BANK	5	7	7	11.82	23.87	+6.02	14.80	29.89
BAIRD, ROBERT W	<1	5	2	2.21	43.14	+6.02	2.52	49.16



COUNTRY PERFORMANCE

COUNTRY SUMMARY									TRADE COST HISTORICAL PERFORMANCE			
Country	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$) BP		Q4 2018	Q3 2018	Q2 2018	Q1 2018
UNITED STATES	94	224	117	+14.14	+1.51	+6.02	42.24	4.51	0.27	+0.05	+1.62	0.57
LUXEMBOURG	<1	3	1	+0.09	+4.55	+6.45	0.04	1.90	-	-	-	-
UNITED KINGDOM	<1	1	1	+0.13	+12.06	+1.94	+0.11	+10.12	-	-	-	-

COUNTRY PERFORMANCE BASED ON BUYS AND SELLS

Country	Side	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
								(Thous. \$)	BP
UNITED STATES	BUYS	45	98	62	5.45	1.22	+6.02	32.27	7.24
	SELLS	49	126	68	+19.59	+3.99	+6.02	9.97	2.03
LUXEMBOURG	BUYS	<1	3	1	+0.09	+4.55	+6.45	0.04	1.90
UNITED KINGDOM	SELLS	<1	1	1	+0.13	+12.06	+1.94	+0.11	+10.12

Manager PERFORMANCE

Manager PERFORMANCE								TRADE COST HISTORICAL PERFORMANCE				
Manager	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP	Q4 2018	Q3 2018	Q2 2018	Q1 2018
PRUDENTIAL INVESTMEN	94	228	119	+14.36	+1.53	+6.02	42.17	4.49	+1.45	+0.05	+1.62	0.20

BROKER PERFORMANCE

BROKER PERFORMANCE									TRADE COST HISTORICAL PERFORMANCE			
BROKER	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$) BP		Q4 2018	Q3 2018	Q2 2018	Q1 2018
JP MORGAN CHASE	13	41	22	+28.56	+22.64	+6.02	+20.97	+16.62	2.43	+1.70	+9.53	+2.71
GOLDMAN SACHS	11	24	20	+0.96	+0.89	+6.02	5.55	5.13	+0.56	4.71	+3.01	14.92
MORGAN STANLEY	8	22	15	+1.14	+1.39	+5.97	3.75	4.58	+4.23	+2.80	+0.85	0.17
CITIGROUP	7	23	18	+6.76	+10.15	+6.02	+2.75	+4.13	+3.54	+4.60	2.64	1.53
BANK OF AMERICA	6	15	12	8.68	13.76	+6.02	12.48	19.78	+0.83	67.01	+3.35	+6.51
HSBC BANK	6	6	6	+2.65	+4.35	+6.02	1.02	1.67	+12.01	6.15	26.96	+20.55
NOMURA	6	10	7	+0.53	+0.91	+6.02	2.95	5.11	9.12	+0.68	+1.32	+0.57
DEUTSCHE BANK	5	7	7	11.82	23.87	+6.02	14.80	29.89	1.46	1.93	+6.20	+1.73
TD SECURITIES	4	4	3	0.02	0.04	+6.02	2.50	6.06	+0.30	+0.02	+0.19	0.16
RBC CAPITAL MARKETS	4	8	8	+0.12	+0.31	+6.02	2.14	5.71	0.92	1.25	+0.25	+2.92
BARCLAYS	4	14	14	+2.39	+6.57	+6.02	+0.20	+0.55	7.88	+6.03	0.62	+5.09
JEFFERIES & CO	4	7	6	+1.42	+3.98	+6.02	0.73	2.04	+3.19	+14.52	+2.35	+5.71
CREDIT SUISSE	3	7	7	+2.09	+6.19	+6.02	+0.06	+0.17	+8.78	0.28	+4.94	22.22
WELLS FARGO	3	5	3	4.81	14.37	+6.02	6.82	20.39	9.45	8.57	2.15	13.27
CITADEL SECURITIES	3	4	4	0.07	0.21	+6.02	2.01	6.23	0.33	+0.16	+0.17	-
BNP PARIBAS	3	7	6	4.96	19.38	+6.05	6.51	25.43	+0.40	-	-	4.02
BMO CAPITAL MARKETS	2	6	6	+0.21	+1.41	+6.02	0.69	4.61	+0.04	-	4.94	4.46
SEAPORT GROUP SECS	1	3	3	+0.09	+0.83	+6.02	0.58	5.19	-	-	-	-
MERRILL LYNCH	<1	3	2	0.10	1.35	+6.02	0.55	7.37	+25.76	4.02	+20.27	-
BAIRD, ROBERT W	<1	5	2	2.21	43.14	+6.02	2.52	49.16	-	+0.00	+2.90	-
BNY MELLON	<1	1	1	+0.00	+0.00	+6.02	0.20	6.02	+0.00	-	+13.93	+15.49
UBS	<1	2	2	+0.25	+10.00	+6.02	+0.10	+3.98	0.92	-	+2.82	-



BROKER PERFORMANCE

BROKER PERFORMANCE									TRADE COST HISTORICAL PERFORMANCE			
BROKER	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$) BP		Q4 2018	Q3 2018	Q2 2018	Q1 2018
BBVA SECURITIES	<1	1	1	0.14	8.20	+6.02	0.25	14.22	-	-	-	-
ROYAL BANK OF CANADA	<1	1	1	+0.01	+0.65	+6.02	0.06	5.37	-	-	-	-
MARKETAXESS CORP	<1	1	1	0.02	1.86	+6.02	0.08	7.88	-	-	-	-
US BANCORP	<1	1	1	+0.00	+0.00	+6.02	0.04	6.02	-	+3.39	-	-

TRADE DETAILS

Buy/Sell	Security	Bond Type	Trade Date/ Maturity	Manager/ Broker	Cty	Local Curr.	Principal (\$)	Price	Benchmark Price	Trade Cost BP	Trading Cost
15 Highest Cost Trades											
S	912810SD US TREASURY N/B 08/48 3	Govt	02/11/2019 08/15/2048	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	1,148,148	100.188	101.949	+175.84	+20,189
B	912810SE US TREASURY N/B 11/48 3.375	Govt	03/12/2019 11/15/2048	PRUDENTIAL INVE GOLDMAN SACHS	US	USD	867,104	107.715	106.913	+74.49	+6,459
B	9128285Z US TREASURY N/B 01/24 2.5	Govt	01/31/2019 01/31/2024	PRUDENTIAL INVE NOMURA	US	USD	2,649,384	100.355	100.164	+19.07	+5,053
S	9128285M US TREASURY N/B 11/28 3.125	Govt	02/01/2019 11/15/2028	PRUDENTIAL INVE CITIGROUP	US	USD	1,255,167	103.733	104.082	+33.66	+4,225
S	9128286B US TREASURY N/B 02/29 2.625	Govt	02/28/2019 02/15/2029	PRUDENTIAL INVE CREDIT SUISSE	US	USD	1,904,924	99.215	99.397	+18.35	+3,495
B	00206RHK AT+T INC SR UNSECURED 03/39	Corp	03/12/2019 03/01/2039	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	514,447	97.990	97.349	+65.44	+3,367
B	912810SD US TREASURY N/B 08/48 3	Govt	01/03/2019 08/15/2048	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	868,359	101.563	101.184	+37.31	+3,240
S	9128285M US TREASURY N/B 11/28 3.125	Govt	01/10/2019 11/15/2028	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	1,089,534	103.273	103.568	+28.49	+3,105
B	74529JPX PUERTO RICO SALES TAX FING C	Muni	03/28/2019 07/01/2058	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	345,229	98.637	97.792	+85.70	+2,959
S	912810SD US TREASURY N/B 08/48 3	Govt	01/09/2019 08/15/2048	PRUDENTIAL INVE HSBC BANK	US	USD	396,734	99.184	99.659	+47.97	+1,903
B	903724BW UKRAINE GOVERNMENT SR UNSECU	Govt	01/24/2019 02/01/2024	PRUDENTIAL INVE GOLDMAN SACHS	US	USD	200,000	100.000	99.200	+80.00	+1,600
B	912810SE US TREASURY N/B 11/48 3.375	Govt	02/11/2019 11/15/2048	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	1,168,940	107.736	107.594	+13.25	+1,549
B	260543CP DOW CHEMICAL CO/THE SR UNSEC	Corp	01/10/2019 11/30/2048	PRUDENTIAL INVE MORGAN STANLEY	US	USD	351,472	103.986	103.555	+41.40	+1,455
S	594918CB MICROSOFT CORP SR UNSECURED	Corp	03/28/2019 02/06/2057	PRUDENTIAL INVE MORGAN STANLEY	US	USD	522,249	114.780	115.091	+27.10	+1,415



B	912810RC US TREASURY N/B 08/43 3.625	Govt	03/06/2019 08/15/2043	PRUDENTIAL INVE HSBC BANK	US	USD	2,460,150	109.828	109.766	+5.69	+1,400
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TRADE DETAILS

Buy/Sell	Security	Bond Type	Trade Date/ Maturity	Manager/ Broker	Cty	Local Curr.	Principal (\$)	Price	Benchmark Price	Trade Cost BP	Trading Cost
15 Lowest Cost Trades											
S	61744CUT MORGAN STANLEY CAPITAL INC M	Mtge	03/28/2019 09/25/2035	PRUDENTIAL INVE GOLDMAN SACHS	US	USD	870,015	99.910	98.630	128.13	11,148
B	035240AQ ANHEUSER BUSCH INBEV WOR COM	Corp	01/10/2019 01/23/2029	PRUDENTIAL INVE DEUTSCHE BANK	US	USD	1,096,535	99.685	100.552	86.94	9,533
S	912810SC US TREASURY N/B 05/48 3.125	Govt	03/12/2019 05/15/2048	PRUDENTIAL INVE BANK OF AMERICA	US	USD	862,115	102.633	101.848	76.42	6,589
S	96221TAE WF RBS COMMERCIAL MORTGAGE T	Mtge	01/31/2019 03/15/2047	PRUDENTIAL INVE WELLS FARGO	US	USD	2,518,586	103.816	103.650	16.03	4,037
B	9128286B US TREASURY N/B 02/29 2.625	Govt	02/28/2019 02/15/2029	PRUDENTIAL INVE DEUTSCHE BANK	US	USD	1,238,720	99.098	99.397	30.19	3,740
B	9128286B US TREASURY N/B 02/29 2.625	Govt	02/13/2019 02/15/2029	PRUDENTIAL INVE MORGAN STANLEY	US	USD	3,266,096	99.273	99.377	10.39	3,393
S	912810SD US TREASURY N/B 08/48 3	Govt	01/03/2019 08/15/2048	PRUDENTIAL INVE BNP PARIBAS	US	USD	761,718	101.563	101.184	37.31	2,842
S	912810SE US TREASURY N/B 11/48 3.375	Govt	03/12/2019 11/15/2048	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	339,363	107.734	106.913	76.29	2,589
B	491674BL KENTUCKY UTILITIES CO 1ST MO	Corp	03/18/2019 10/01/2045	PRUDENTIAL INVE BANK OF AMERICA	US	USD	1,028,634	101.845	102.087	23.72	2,440
B	9128285M US TREASURY N/B 11/28 3.125	Govt	02/01/2019 11/15/2028	PRUDENTIAL INVE NOMURA	US	USD	721,008	103.742	104.082	32.76	2,362
B	29365TAH ENERGY TEXAS INC 1ST MORTGA	Corp	01/03/2019 03/30/2039	PRUDENTIAL INVE BNP PARIBAS	US	USD	1,131,935	99.730	99.933	20.37	2,305
S	12543DAV CHS/COMMUNITY HEALTH SYS COM	Corp	01/08/2019 02/01/2022	PRUDENTIAL INVE BAIRD, ROBERT W	US	USD	291,720	51.000	50.615	75.55	2,204
B	9128285M US TREASURY N/B 11/28 3.125	Govt	01/10/2019 11/15/2028	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	604,058	103.258	103.568	30.01	1,813
S	912810SD US TREASURY N/B 08/48 3	Govt	01/03/2019 08/15/2048	PRUDENTIAL INVE CREDIT SUISSE	US	USD	254,375	101.750	101.184	55.67	1,416
B	00206RHK AT+T INC SR UNSECURED 03/39	Corp	02/13/2019 03/01/2039	PRUDENTIAL INVE WELLS FARGO	US	USD	409,751	95.291	95.602	32.62	1,337

Sacramento County
Period End March 31, 2019
(Global Fixed Income Analysis)



AGENCIES



BOND TYPE PERFORMANCE

Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
							(Thous.\$)	BP
CORPORATES	29	115	73	3.19	1.10	+6.02	20.55	7.12

CORPORATES



BOND TYPE PERFORMANCE

Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
							(Thous.\$)	BP
GOVERNMENTS	61	104	38	+30.77	+5.06	+6.02	5.84	0.96

GOVERNMENTS



BOND TYPE PERFORMANCE

Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost	Trade Cost	Univ. Trade	Cost Diff. from Universe	
				(Thous. \$)	BP	Cost BP	(Thous.\$)	BP
MORTGAGES	4	8	7	16.19	40.89	+5.91	18.53	46.80

MORTGAGES



BOND TYPE PERFORMANCE

Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous.\$)	BP
MUNICIPALS	<1	1	1	+2.96	+85.70	+6.02	+2.75	+79.68





UNCLASSIFIED



RATING BY EACH BOND TYPE

GOVERNMENTS - RATING DETAILS

Rating	Principal	No. of	No. of Issues	Trade Cost	Trade Cost	Univ. Trade	Cost Diff. from Universe	
	(Mil. \$)	Trades		(Thous. \$)	BP	Cost BP	(Thous. \$)	BP
AAA	61	101	37	+30.69	+5.06	+6.02	5.81	0.96
BBB-	<1	3	1	+0.09	+4.55	+6.45	0.04	1.90

RATING BY EACH BOND TYPE

CORPORATES - RATING DETAILS

Rating	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost		Univ. Trade Cost BP	Cost Diff. from Universe	
				(Thous. \$)	BP		(Thous. \$)	BP
BBB-	5	18	13	+1.18	+2.35	+6.02	1.85	3.67
BBB	4	22	13	+5.41	+12.77	+6.02	+2.86	+6.75
A	3	7	7	5.84	19.44	+6.02	7.65	25.46
A- *-	2	5	1	8.87	39.74	+6.02	10.21	45.76
BB-	2	11	8	+1.13	+5.09	+6.02	0.21	0.93
BBB+	2	9	6	+2.63	+13.45	+6.02	+1.45	+7.43
BB	2	9	3	+1.18	+7.28	+6.02	+0.20	+1.26
B+	2	9	4	+0.77	+4.86	+6.02	0.18	1.16
CCC	1	6	2	1.41	10.39	+6.02	2.23	16.41
AAA	1	3	3	+1.35	+10.88	+6.02	+0.60	+4.86
A-	1	2	2	+0.98	+9.27	+6.02	+0.35	+3.25
B-	1	3	3	0.95	9.05	+6.02	1.58	15.07
BB+	<1	4	2	1.46	16.37	+6.02	1.99	22.39
A+	<1	2	2	+0.16	+3.51	+6.02	0.11	2.51
AA-	<1	1	1	+0.34	+8.85	+6.02	+0.11	+2.83
AA	<1	1	1	+0.00	+0.00	+6.02	0.15	6.02
NR	<1	1	1	+0.00	+0.00	+6.02	0.12	6.02
B	<1	2	1	+0.22	+23.19	+6.02	+0.17	+17.17

RATING BY EACH BOND TYPE

MORTGAGES - RATING DETAILS

Rating	Principal	No. of	No. of Issues	Trade Cost	Trade Cost	Univ. Trade	Cost Diff. from Universe	
	(Mil. \$)	Trades		(Thous. \$)	BP	Cost BP	(Thous. \$)	BP
AAA	3	3	3	3.88	14.22	+5.86	5.48	20.08
B+	<1	2	2	11.42	122.64	+6.02	11.98	128.66
NR	<1	3	2	0.89	29.63	+6.02	1.07	35.65

RATING BY EACH BOND TYPE

MUNICIPALS - RATING DETAILS

Rating	Principal	No. of	No. of Issues	Trade Cost	Trade Cost	Univ. Trade	Cost Diff. from Universe	
	(Mil. \$)	Trades		(Thous. \$)	BP	Cost BP	(Thous. \$)	BP
NR	<1	1	1	+2.96	+85.70	+6.02	+2.75	+79.68

COUNTRIES BY EACH BOND TYPE

GOVERNMENTS								
Country	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
							(Thous. \$)	BP
UNITED STATES	61	101	37	+30.69	+5.06	+6.02	5.81	0.96
LUXEMBOURG	<1	3	1	+0.09	+4.55	+6.45	0.04	1.90

COUNTRIES BY EACH BOND TYPE

CORPORATES								
Country	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
							(Thous. \$)	BP
UNITED STATES	29	115	73	3.19	1.10	+6.02	20.55	7.12

COUNTRIES BY EACH BOND TYPE

MORTGAGES								
Country	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
							(Thous. \$)	BP
UNITED STATES	4	7	6	16.32	42.37	+6.02	18.63	48.39
UNITED KINGDOM	<1	1	1	+0.13	+12.06	+1.94	+0.11	+10.12

COUNTRIES BY EACH BOND TYPE

MUNICIPALS								
Country	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
							(Thous. \$)	BP
UNITED STATES	<1	1	1	+2.96	+85.70	+6.02	+2.75	+79.68

HISTORICAL DATA

Quarter	Principal (Thous. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
							(Thous. \$)	BP
01/01/2019-03/31/2019	93,964	228	119	+14.36	+1.53	+6.02	42.17	4.49
Year-Ending 2019	93,964	228		+14.36	+1.53	+6.02	42.17	4.49
10/01/2018-12/31/2018	66,814	146	75	+9.69	+1.45	+7.24	38.71	5.79
07/01/2018-09/30/2018	37,664	102	50	+0.18	+0.05	+5.24	19.56	5.19
04/01/2018-06/30/2018	77,479	217	112	+12.54	+1.62	+5.51	30.15	3.89
01/01/2018-03/31/2018	51,291	127	70	1.01	0.20	+10.09	52.77	10.29
Year-Ending 2018	233,248	592		+21.40	+0.92	+6.97	141.19	6.05
10/01/2017-12/31/2017	47,359	119	46	21.97	4.64	+4.00	40.93	8.64
07/01/2017-09/30/2017	74,271	178	73	+11.09	+1.49	+2.75	9.35	1.26
04/01/2017-06/30/2017	65,905	139	61	+10.87	+1.65	+3.17	10.02	1.52
01/01/2017-03/31/2017	88,323	207	89	+24.27	+2.75	+3.32	5.07	0.57
Year-Ending 2017	275,858	643		+24.27	+0.88	+3.25	65.38	2.37
10/01/2016-12/31/2016	59,762	110	50	5.73	0.96	+3.49	26.57	4.45
07/01/2016-09/30/2016	44,927	135	53	+9.79	+2.18	+3.58	6.28	1.40
04/01/2016-06/30/2016	76,455	102	58	+22.49	+2.94	+5.97	23.17	3.03
01/02/2016-03/31/2016	91,594	125	57	42.69	4.66	+4.69	85.61	9.35
Year-Ending 2016	272,738	472		16.14	0.59	+4.60	141.63	5.19
10/01/2015-12/31/2015	43,193	60	34	29.83	6.91	+7.18	60.85	14.09
07/01/2015-09/30/2015	20,663	41	24	68.34	33.07	+4.30	77.22	37.37
04/01/2015-06/30/2015	143,060	122	71	98.11	6.86	+5.55	177.48	12.41
01/01/2015-03/31/2015	116,093	109	56	60.79	5.24	+5.51	124.75	10.75
Year-Ending 2015	323,008	332		257.06	7.96	+5.67	440.30	13.63
10/01/2014-12/31/2014	48,315	72	50	+9.25	+1.91	+5.72	18.39	3.81
07/01/2014-09/30/2014	266,740	204	99	216.37	8.11	+7.08	405.13	15.19

HISTORICAL DATA

Quarter	Principal (Thous. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe	
							(Thous. \$)	BP
04/01/2014-06/30/2014	244,265	204	138	+42.48	+1.74	+8.55	166.48	6.81
01/02/2014-03/31/2014	187,634	187	128	+186.20	+9.92	+8.13	+33.59	+1.79
Year-Ending 2014	746,953	667		+21.55	+0.29	+7.74	556.41	7.45
10/01/2013-12/31/2013	143,798	142	84	+56.51	+3.93	+8.36	63.70	4.43
07/01/2013-09/30/2013	187,166	136	90	+47.79	+2.55	+6.68	77.19	4.13
04/01/2013-06/30/2013	157,154	129	98	+104.81	+6.67	+1.44	+82.21	+5.23
01/02/2013-03/31/2013	281,064	206	156	+366.87	+13.05	+1.56	+323.04	+11.49
Year-Ending 2013	769,183	613		+575.98	+7.49	+4.05	+264.35	+3.44
10/01/2012-12/31/2012	132,722	116	90	+470.95	+35.48	+2.11	+442.94	+33.37
07/01/2012-09/30/2012	120,859	101	77	+125.20	+10.36	+2.09	+99.92	+8.27
04/01/2012-06/30/2012	85,150	85	60	+71.84	+8.44	+2.27	+52.54	+6.17
01/02/2012-03/31/2012	31,666	13	9	0.75	0.24	+7.38	24.12	7.62
Year-Ending 2012	370,398	315		+667.24	+18.01	+2.59	+571.28	+15.42
10/01/2011-12/31/2011	54,456	22	11	+249.88	+45.89	+3.18	+232.57	+42.71
07/01/2011-09/30/2011	45,561	26	10	+31.66	+6.95	+4.14	+12.80	+2.81
04/01/2011-06/30/2011	40,214	15	6	+83.99	+20.88	+4.01	+67.86	+16.87
01/02/2011-03/31/2011	45,680	23	3	+2.18	+0.48	+5.21	21.63	4.73
Year-Ending 2011	185,912	86		+367.70	+19.78	+4.09	+291.59	+15.68
10/01/2010-12/31/2010	57,022	27	11	152.30	26.71	+8.46	200.51	35.17
Year-Ending 2010	57,022	27		152.30	26.71	+8.46	200.51	35.16

BENCHMARK VENDOR REPORT

Bonds	Number of Trades	Number of Issues	Vendor Benchmark	Percent Of Principal
CORPORATES	62	39	MARKETAXESS-TRADES	54.59 %
	37	19	BVAL	29.17 %
	14	14	ISSUE PRICE	14.85 %
	2	1	MARKETAXESS-EMQUOTES	1.39 %
GOVERNMENTS	84	23	TULLET PREBON	92.46 %
	12	9	BVAL	3.73 %
	6	5	BLOOMBERGTERMINAL	2.40 %
	2	2	ISSUE PRICE	1.41 %
MORTGAGES	8	7	BLOOMBERGTERMINAL	100.00 %
MUNICIPALS	1	1	MSRB-TRADES	100.00 %

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