



Board of Retirement Regular Meeting

Sacramento County Employees' Retirement System

Agenda Item 8

MEETING DATE: August 21, 2019

SUBJECT: Trading Cost Analysis and Commission Recapture Report – Second Quarter 2019

SUBMITTED FOR: Consent Deliberation and Action Receive and File

RECOMMENDATION

Staff recommends the Board receive and file the Quarterly Trading Cost Analysis Reports for the quarter ending June 30, 2019.

PURPOSE

This agenda item does not specifically support the 2019-20 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:

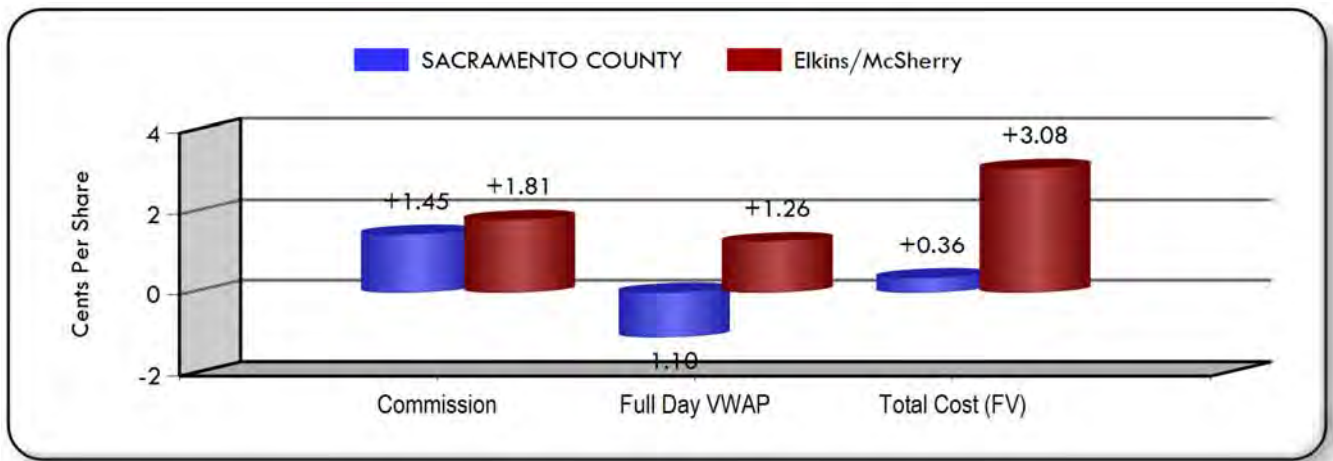
1. Commission costs, trade costs, and any soft dollar amounts.
2. Market Impact Cost, an industry performance metric, which measures the difference between a manager's trade price and the market's volume weighted average price (VWAP). VWAP is the average security price weighted by the share volume trade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

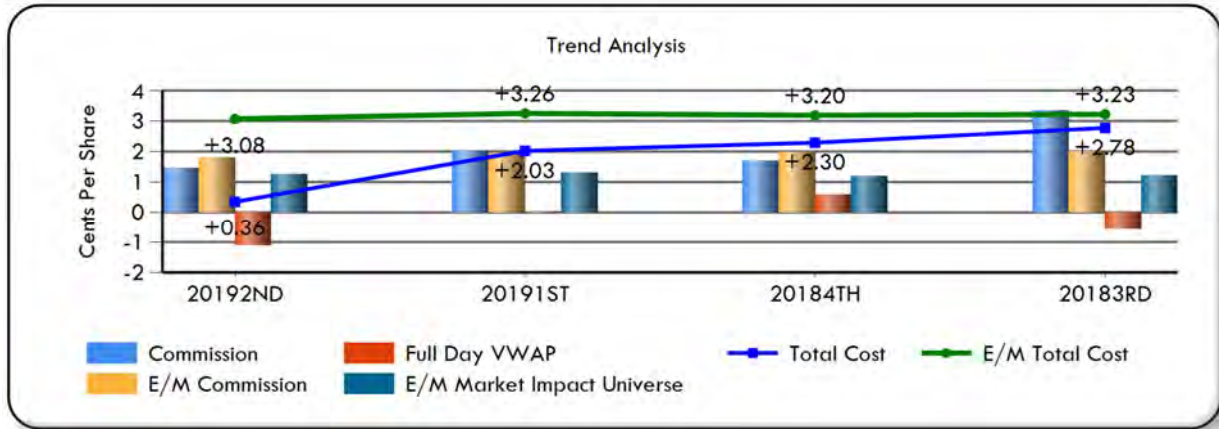
U.S. EQUITY

- SCERS’ U.S. equity managers traded 3.7 million shares across the AMEX, NASDAQ, and NYSE exchanges totaling \$171.8 million in principal. SCERS’ equity managers generated an E/M E-Score¹ of -0.07 during the quarter, which signifies that costs were slightly lower than the VWAP when considering the volatility of stocks traded.
- SCERS’ total trading costs equaled +0.36 cps, which is 2.72 cps lower than the peer group at +3.08 cps, as follows:
 - Commission cost of +1.45 cps versus peer group cost of +1.81 cps
 - Market impact savings of -1.10 cps versus peer group cost of +1.26 cps



- SCERS’ total trading costs were better than 85% 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 +1.81 cps include:
 - DGHM at +3.97 cps
 - Weatherbie at +3.42 cps
 - Eagle Capital at +2.52 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 1.33 cps over the past four quarters.
- SCERS’ total trading costs during the second quarter were driven lower by market impact costs versus the peer universe, with several of SCERS’ managers generating market savings compared to the full day volume weighted average price (VWAP)

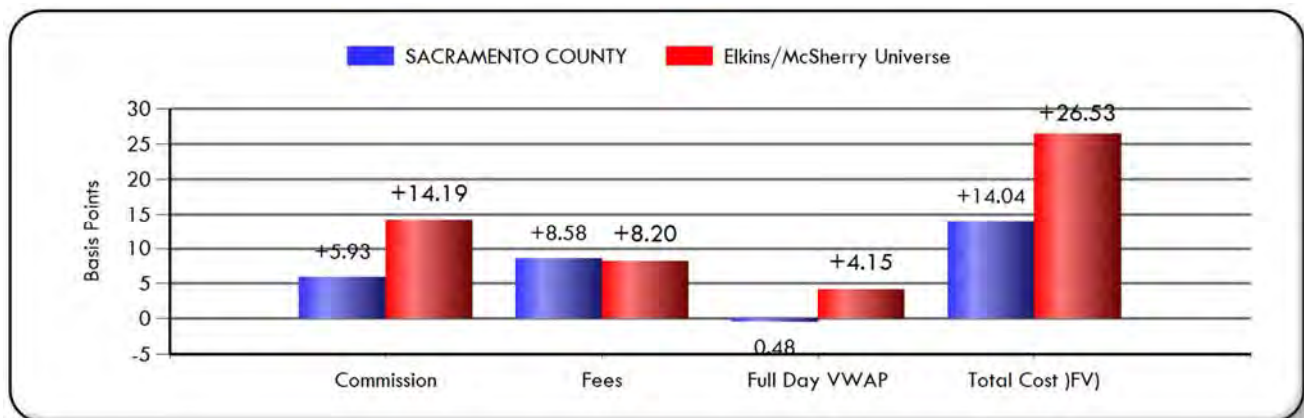
¹ E-Score measures trading costs as the difference from the VWAP in units of standard deviation. The E-Score removes the impact of stock price volatility when evaluating trading costs and market impact, with most trades ranging between -1 and +1, and a lower score representing lower costs and better trading execution.



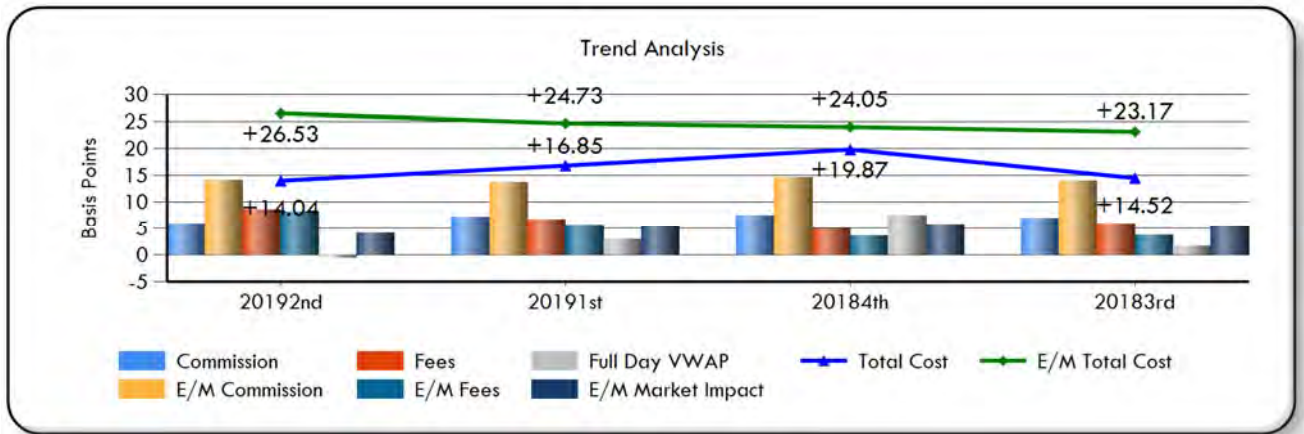
- The U.S. small cap managers (Weatherbie and DGHM) will typically incur additional commission costs in the form of a soft dollar relationship where, in return for conducting trades through a brokerage firm, the manager receives the brokerage firm’s research, generally an additional +2.0 cps.
- According to Elkins / McSherry, the average commission for the Bundled (Research Dollars) commission universe is +3.84 cps, which is higher than all of SCERS’ U.S. Small Cap managers in the fourth quarter except for manager DGHM, which averaged +3.97 cps.
- All of SCERS’ U.S. Equity managers generated market impact costs, or produced market impact savings, below the peer group average cost of +1.26 cps.

INTERNATIONAL EQUITY

- SCERS’ International Equity managers traded 5.3 million shares totaling \$70.8 million in principal across 22 countries.
- Total trading cost equaled +14.04 bps, which is 12.49 bps lower than the peer group at +26.53 bps, as follows:
 - Commission cost of +5.93 bps versus +14.18 bps
 - Fees (country taxes, tariffs) of +8.58 bps versus +8.19 bps
 - Market impact savings of -0.48 bps versus market impact costs of +4.14 bps



- All of SCERS’ International Equity managers analyzed generated commission costs (ranging from +4.58 bps to +6.38 bps), significantly less than the E/M peer group (ranging from +13.89 bps to +14.58 bps). This result is consistent with the previous quarters’ lower trade costs versus the peer group, as illustrated below (commission vs. E/M commission).
- All of SCERS’ International Equity managers generated lower market impact cost versus the peer group during the quarter (full day VWAP vs. E/M market impact):
- SCERS’ total international trading costs have been consistently below the total trading costs of the E/M universe, with the difference averaging 8.30 bps over the past four quarters.



U.S. FIXED INCOME

- SCERS’ U.S. Fixed Income managers conducted 355 trades totaling \$446 million in principal, as follows:
 - Governments: 292 trades totaling \$417 million
 - Corporates: 51 trades totaling \$23 million
 - Mortgages: 11 trades totaling \$7 million
 - Municipals: 1 trade for less than \$1 million
- Total trading cost equaled +0.74 bps, which is 8.80 bps lower than the E/M peer group cost of +9.54 bps, as follows:
 - Governments at +0.87 bps versus +9.27 bps
 - Corporates at -1.30 bps versus +16.35 bps
 - Mortgages at -1.02 bps versus +3.19 bps
 - Municipals at +4.52 bps versus +12.76 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 manager’s trade costs versus their peer group is as follows:
 - TCW / MetWest (Core Plus) at +0.61 bps versus +10.83 bps
 - NeubergerBerman (Treasury) at +1.42 bps versus +2.47 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 153 international trades totaling \$58 million in principal as follows:
 - Governments: 56 trades totaling \$32 million
 - Corporates: 89 trades totaling \$20 million
 - Mortgages: 8 trades totaling \$6 million
 - Total trading cost was -1.18 bps, which was 6.37 bps lower than the E/M peer group cost of +5.19 bps, as follows:
 - Governments at +1.06 bps versus +5.18 bps
 - Corporates at -1.00 bps versus +5.20 bps
 - Mortgages at -14.45 bps versus +5.20 bps
 - 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 51% of the commissions paid.
 - For the quarter ending June 30, 2019, the commission rebate totaled \$9,253.
 - For comparison, the commission rebate for the quarter ending June 30, 2018 totaled \$12,336.

ATTACHMENTS

- Elkins / McSherry Trading Cost Summary report for the quarter ending June 30, 2019 for U.S. equity, international equity, U.S. fixed income, and global fixed income.

Prepared by:

/S/

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 Investment Officer

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SACRAMENTO COUNTY

Trade Cost Summary - U.S. Equity Trading

Period End June 30, 2019





REPORT CONTENTS

Tab 1 : Executive Summary

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

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- **Manager Performance**
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- **10 High / Low Cost Trades**
- **10 High Cost Trade Graphs**
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(+) = 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 April 1 , 2019 to June 30, 2019. The analysis included trading of 3,647,786 shares representing \$171.84 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 +1.45 cps (+3.08 bp) or +\$52,944 (0.36 cps (0.77 bp) better than the Elkins/McSherry All Trading Universe) 	<ul style="list-style-type: none"> Your market impact savings was 1.10 cps (2.33 bp) or 2.36 cps (5.01 bp) better than the Elkins/McSherry Universe Your overall trading cost of +0.36 cps (+0.75 bp) was 2.72 cps (5.78 bp) better than the Elkins/McSherry Universe Full Day VWAP Universe Rank: 81% Total Cost Universe Rank: 85% 	<ul style="list-style-type: none"> E-Score : -0.07

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)	
Bundled	All Trading	Execution Only	Program	Median	Full Day VWAP
+3.84	+1.81	+1.26	+1.52	75 %	+1.26
				25 %	+3.46



(+) = Cost

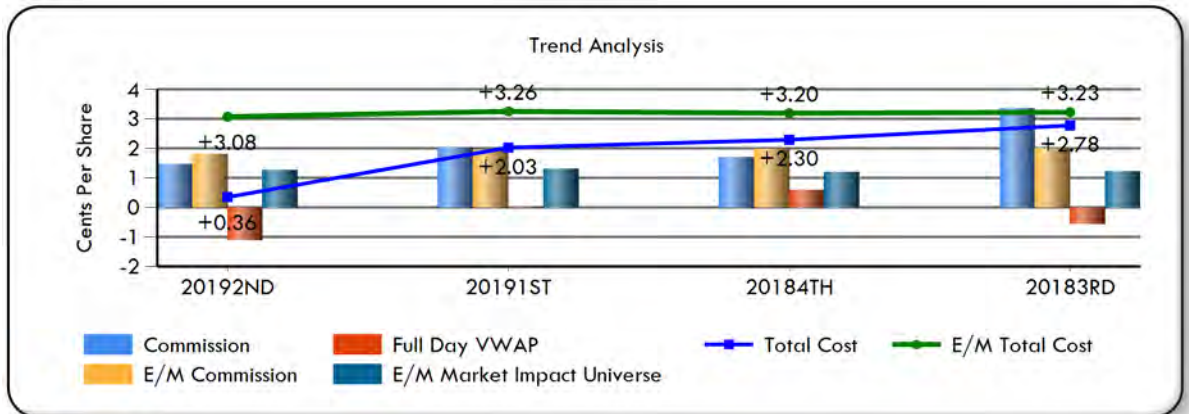
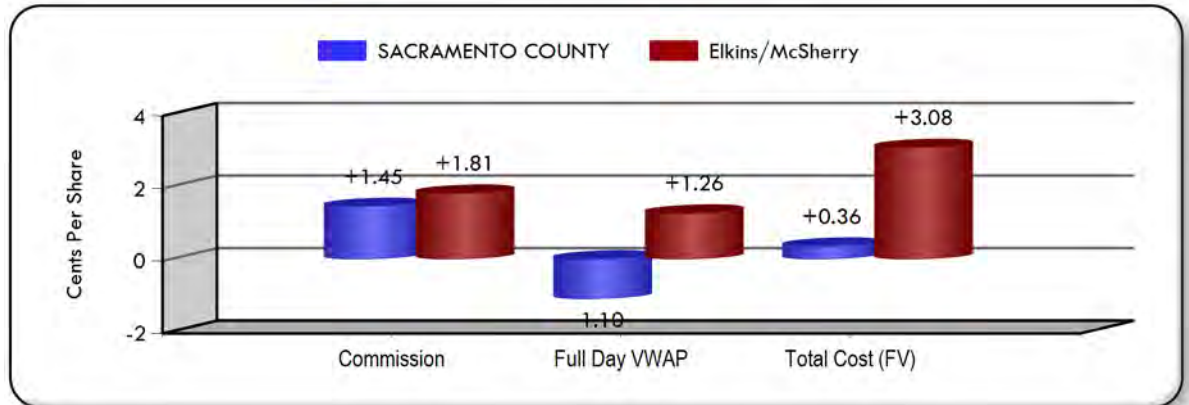
EXECUTIVE SUMMARY

TOTAL PORTFOLIO COST PERFORMANCE

Side	COMMISSION			MARKET IMPACT		Total Cost	Total Cost/Savings Vs. Universe	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	+1.33	+1.81	+3.84	1.90	+1.26	0.57	3.64	-0.11
Buys	+1.56	+1.81	+3.84	0.39	+1.26	+1.16	1.91	-0.03
Total	+1.45	+1.81	+3.84	1.10	+1.26	+0.36	2.72	-0.07

TRADING COMPONENTS

	Buys	Sells
Trade Principal	88,403,269	83,438,450
Shares	1,942,269	1,705,517
Unique Names	470	497
Liquidity (% ADV)	0.06	0.048
Avg. Execution Size	2,301	2,271
Avg. Order Completion Time (min)	N/A	N/A
Total Number of Trades	844	751



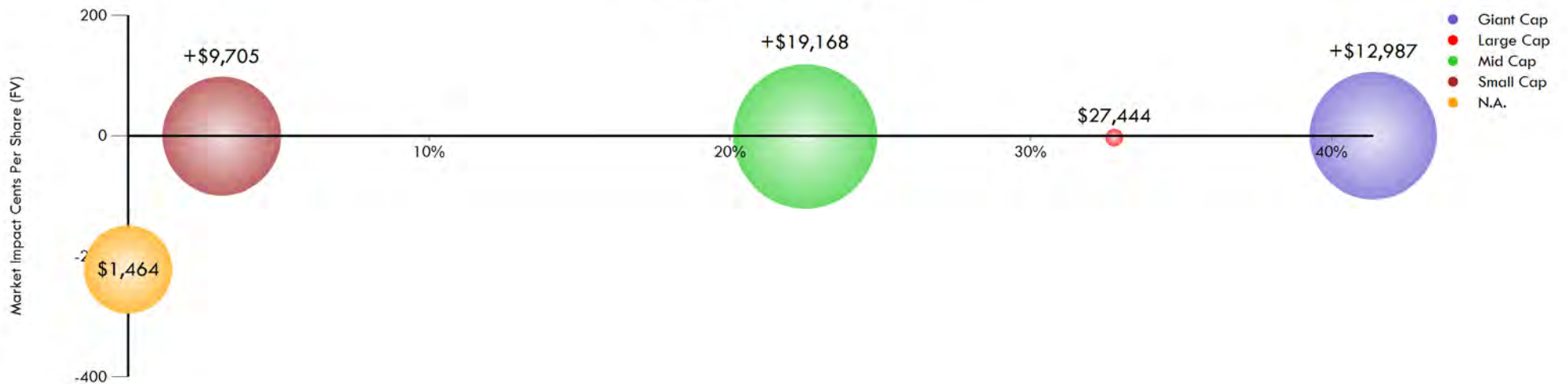
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EXECUTIVE SUMMARY

MARKET CAPITALIZATION

Market Cap	% Traded	Avg. Shares Per Order	COMMISSION		MARKET IMPACT			Total Cost	Total Cost/Savings	E - Score	Market Cap Definition
			Your Commission	All Trading Universe	Full Day VWAP	Universe Full Day VWAP	Rank Full Day VWAP	(cps)	Commission+ Full Day VWAP Vs. Universe		
	(\$)		(cps)	(cps)	(cps)	(cps)		(cps)			
Giant Cap	41.43 %	3,048	+0.76	+1.81	+0.41	+1.66	63 %	+1.16	2.31	-0.03	Over \$25 B
Large Cap	32.82 %	1,843	+0.53	+1.81	3.08	+1.51	84 %	2.55	5.88	-0.09	\$5 B To \$25 B
Mid Cap	22.55 %	2,104	+2.51	+1.81	0.80	+1.23	77 %	+1.70	1.34	-0.11	\$1 B To \$5 B
Small Cap	3.16 %	3,157	+3.21	+1.81	0.28	+1.12	72 %	+2.93	+0.00	-0.14	\$250 M To \$1 B
N.A.	0.04 %	110	+0.33	+1.81	221.82	+1.26	99 %	221.49	224.57	-1.07	

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	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	2	119,692	N/A	+2.68	+1.81	+1.01	+1.26	56 %	+3.70	+0.62	0.19	50K Or More
Med. Orders	67	15,870	N/A	+0.71	+1.81	+0.35	+1.26	63 %	+1.05	2.03	-0.07	10K-50K
Small Orders	1,526	1,537	N/A	+1.66	+1.81	1.97	+1.26	88 %	0.30	3.38	-0.07	10K Or Less



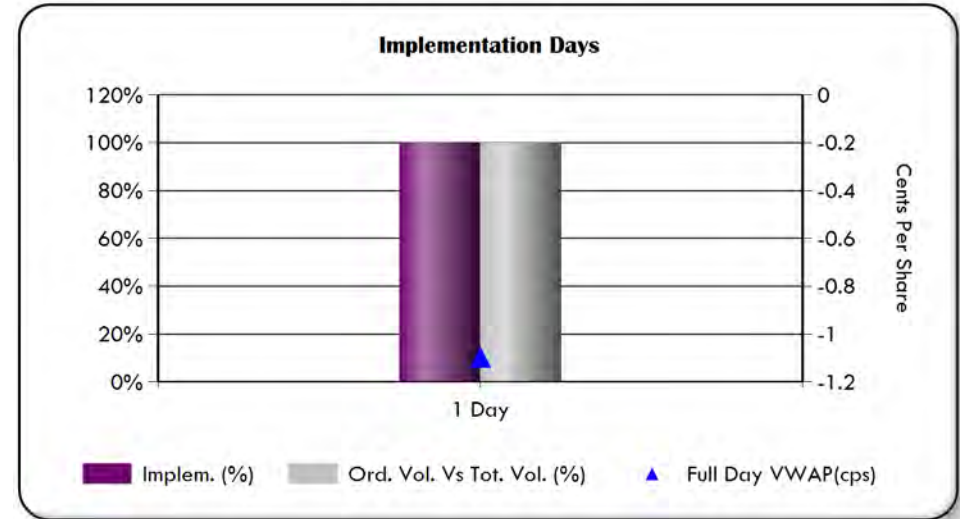


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EXECUTIVE SUMMARY

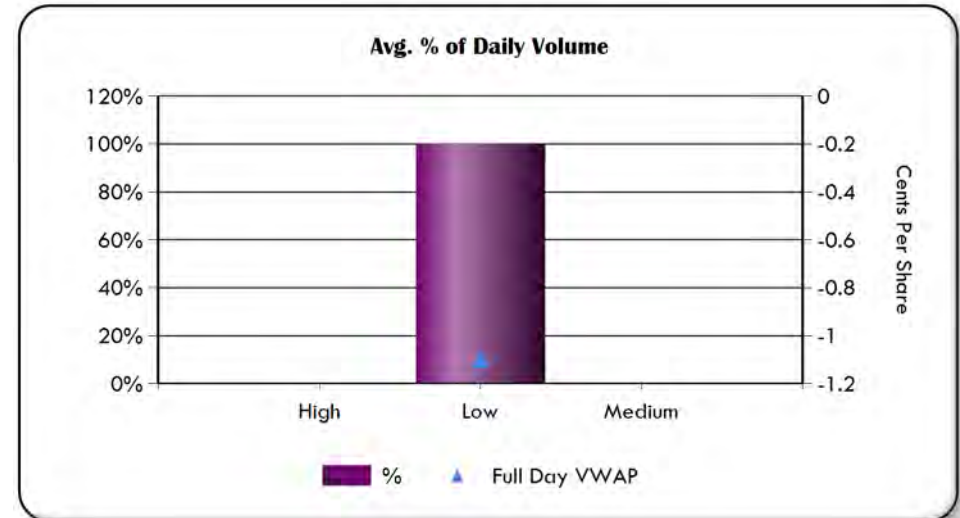
IMPLEMENTATION DAYS BY TRADE

Period	Percent Traded (%)	Order Vol. Vs Total Vol. (%)	Full Day VWAP (cps)	E - Score
1 Day	100.00	100%	1.10	-0.07



TRADE DIFFICULTY

Methodology	Liquid. Cat.	Percent Traded (%)	Full Day VWAP (cps)	E - Score
0%~20% of daily vol.	L	100%	1.10	-0.07



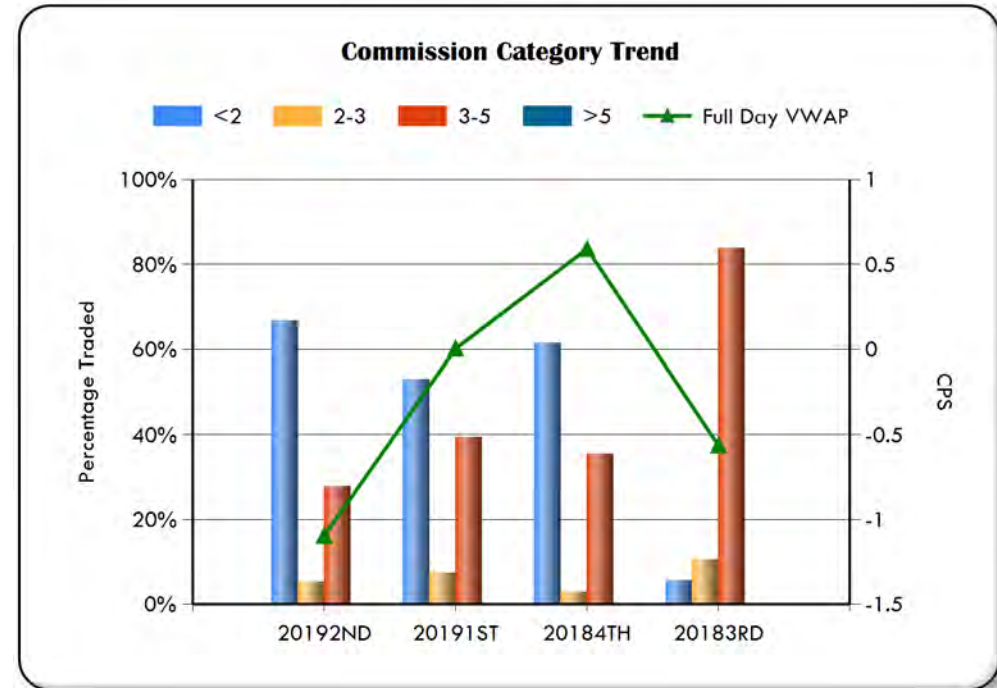


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EXECUTIVE SUMMARY

COMMISSION REVIEW

Top 10 Broker					Commission Trends		
Broker	Total Commission (\$)	Commission 20192nd (cps)	All Trading Universe (cps)	Bundled Universe (cps)	20191ST (cps)	20184TH (cps)	20183RD (cps)
COWEN & CO	10,212	+4.25	+1.81	+3.84	+3.62	+3.65	+3.78
CAPITAL IN	9,540	+3.28	+1.81	+3.84	+3.10	+3.79	+3.31
LIQUIDNET	6,440	+3.13	+1.81	+3.84	+3.51	+3.51	+3.20
ITG	4,983	+3.40	+1.81	+3.84	+3.60	+3.46	+3.60
THEMIS TRA	4,821	+3.41	+1.81	+3.84	+3.42	+3.60	+3.60
WOLFE TRAH	1,342	+4.32	+1.81	+3.84	+4.50	+3.00	+4.50
RBC CAPITA	1,190	+2.80	+1.81	+3.84	+2.80	N.A	+2.69
INSTINET	1,183	+3.00	+1.81	+3.84	+3.00	+3.00	+3.00
BAIRD, ROB	1,145	+4.41	+1.81	+3.84	+3.53	+4.00	+4.50
STEPHENS &	1,037	+4.08	+1.81	+3.84	+4.00	+3.23	+3.78



NOTES

(+) = Cost

TRADE CYCLE DETAIL

Manager Performance (Full Day VWAP)

					COMMISSION		MARKET IMPACT		TOTAL COST/SAVIN GS	RANK TREND - Full Day VWAP		
Manager	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	E - Score	Your Avg. Commission (cps)	All Trading Universe (cps)	Full Day VWAP (cps)	Rank Full Day VWAP	Commission + Full Day VWAP Vs. Universe	20191ST (%)	20184TH (%)	20183RD (%)
AQR	78	4,525	1,411,650	0.01	+0.06	+1.81	+0.68	59 %	2.34	61	50	-
ALLIANCE R 3000 CAPI	37	984	731,826	-0.13	+0.00	+1.81	1.71	86 %	4.79	1	1	1
DALTON, GREINER, HAR	24	2,728	676,656	-0.22	+3.97	+1.81	3.65	96 %	2.76	95	99	92
WEATHERBIE	21	1,724	484,506	0.09	+3.42	+1.81	+0.83	57 %	+1.17	48	18	18
EAGLE CAPITAL MANAGE	12	34,315	343,148	-0.37	+2.52	+1.81	4.78	98 %	5.33	68	96	98

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.84	+1.81	+1.26	+1.52	+1.26

NOTES

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TRADE CYCLE DETAIL

Broker Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	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	20191ST (%)	20184TH (%)	20183RD (%)
MERRILL LYNCH	44	1,111	855,366	-0.10	69	+0.01	+1.81	1.34	82 %	4.41	64	99	99
CREDIT SUISSE	17	5,251	304,585	0.06	274	+0.09	+1.81	+2.01	40 %	0.97	87	84	93
DEUTSCHE BANK	15	5,243	288,356	-0.02	58	+0.02	+1.81	0.57	73 %	3.62	40	54	1
GOLDMAN SACHS	13	3,873	255,625	-0.01	967	+0.38	+1.81	+2.44	34 %	0.26	50	1	1
MORGAN STANLEY	12	4,870	170,459	-0.29	225	+0.13	+1.81	5.28	99 %	8.22	48	93	13
LIQUIDNET	10	2,391	205,646	-0.21	6,440	+3.13	+1.81	7.25	99 %	7.19	99	93	92
JP MORGAN CHASE	9	3,752	161,339	-0.02	424	+0.26	+1.81	2.41	91 %	5.22	34	49	99
CITIGROUP	9	3,663	153,866	0.06	226	+0.15	+1.81	+2.32	35 %	0.62	35	10	63
COWEN & CO	8	2,244	240,140	-0.28	10,212	+4.25	+1.81	4.48	98 %	3.31	80	87	92
ITG	7	1,452	146,693	0.01	4,983	+3.40	+1.81	6.84	99 %	6.52	10	14	1

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.84	+1.81	+1.26	+1.52	+1.26

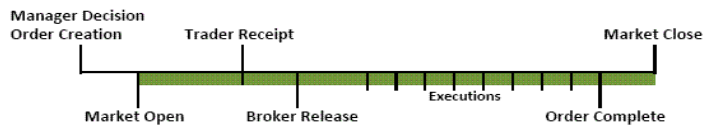
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TRADE CYCLE DETAIL

Broker Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	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	20191ST (%)	20184TH (%)	20183RD (%)
CAPITAL INSTL SVCS	6	24,268	291,220	-0.04	9,540	+3.28	+1.81	+0.32	63 %	+0.51	88	99	99
THEMIS TRADING LLC	5	2,021	141,475	0.17	4,821	+3.41	+1.81	+5.87	12 %	+6.20	15	1	20
JEFFERIES & CO	3	4,361	30,528	-0.04	889	+2.91	+1.81	+3.59	24 %	+3.42	99	99	5
RBC CAPITAL MARKETS	2	1,328	42,496	-0.24	1,190	+2.80	+1.81	4.90	98 %	5.17	99	-	95
INSTINET	2	3,585	39,440	-0.16	1,183	+3.00	+1.81	3.81	96 %	3.89	95	99	32
WILLIAM BLAIR	1	1,600	23,994	0.52	926	+3.86	+1.81	+17.23	1 %	+18.01	88	99	99
STEPHENS & CO INC	1	3,635	25,442	-0.11	1,037	+4.08	+1.81	+4.60	18 %	+5.60	50	99	98
BAIRD, ROBERT W	1	3,711	25,978	-0.41	1,145	+4.41	+1.81	6.74	99 %	5.41	1	39	17
WOLFE TRAHAN SECS	<1	2,823	31,052	-0.27	1,342	+4.32	+1.81	2.38	91 %	1.13	99	81	88
STIFEL NICOLAUS & CO	<1	5,634	16,902	-0.01	748	+4.43	+1.81	11.11	99 %	9.76	99	99	99

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.84	+1.81	+1.26	+1.52	+1.26

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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	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	20191ST (%)	20184TH (%)	20183RD (%)
NEEDHAM & CO INC	<1	1,955	23,458	-0.40	862	+3.68	+1.81	13.64	99 %	13.04	98	99	10
CRAIG - HALLUM	<1	2,364	21,276	0.06	722	+3.39	+1.81	0.04	68 %	+0.28	99	99	21
CONVERGEX	<1	50,560	50,560	0.36	758	+1.50	+1.81	+1.34	49 %	0.24	-	1	12
PIPER JAFFRAY	<1	2,957	8,871	-0.93	387	+4.36	+1.81	5.86	99 %	4.58	42	10	99
ISI GROUP INC	<1	2,854	11,415	-0.13	406	+3.56	+1.81	+1.68	45 %	+2.15	30	99	92
CORNERSTONE MACRO LL	<1	1,734	8,669	0.50	294	+3.39	+1.81	+11.32	3 %	+11.63	-	-	-
RAYMOND JAMES	<1	3,078	12,312	-0.36	478	+3.88	+1.81	3.23	94 %	2.43	47	1	1
JANNEY MONTGOMERY	<1	1,143	2,286	-0.13	82	+3.60	+1.81	8.85	99 %	8.33	98	-	-
KEEFE BRUYETTE WOODS	<1	6,155	12,310	-0.13	492	+4.00	+1.81	1.25	82 %	0.33	99	-	99
CANACCORD GENUITY	<1	2,206	11,032	0.39	389	+3.53	+1.81	+4.93	16 %	+5.38	1	1	-

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.84	+1.81	+1.26	+1.52	+1.26

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	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	20191ST (%)	20184TH (%)	20183RD (%)
NORTHLAND SECURITIES	<1	2,713	10,850	-0.72	434	+4.00	+1.81	3.54	96 %	2.62	-	99	-
DAVIDSON D.A. & CO	<1	10,960	10,960	0.16	384	+3.50	+1.81	+1.14	52 %	+1.56	36	-	-
SEAPORT GROUP SECS	<1	3,490	3,490	0.45	157	+4.50	+1.81	+13.51	1 %	+14.93	-	18	-
ALARIS TRADING PARTN	<1	2,769	2,769	0.49	125	+4.50	+1.81	+5.18	15 %	+6.60	-	-	88
B.RILEY & CO	<1	4,846	4,846	-1.19	194	+4.00	+1.81	7.32	99 %	6.40	40	-	-
JNK SECURITIES	<1	1,700	1,700	0.52	68	+4.00	+1.81	+8.69	7 %	+9.61	-	99	-
WEEDEN & CO	<1	380	380	-1.29	13	+3.50	+1.81	8.43	99 %	8.00	-	80	95

ELKINS/MCSHERRY UNIVERSE VALUES

Commission (cps)				Market Impact (cps)
Bundled	All Trading	Execution Only	Program	Full Day VWAP
+3.84	+1.81	+1.26	+1.52	+1.26

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	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	20191ST (%)	20184TH (%)	20183RD (%)
MERRILL LYNCH	37	965	715,887	-0.13	0	+0.00	+1.81	1.73	87 %	4.81	-	-	-
GOLDMAN SACHS	<1	7,970	15,939	0.00	0	+0.00	+1.81	0.61	74 %	3.69	-	1	1
Grand Total	37	984	731,826	-0.13	0	+0.00	+1.81	1.71	86 %	4.79	1	1	1



(+) = Cost

TRADE CYCLE DETAIL

AQR Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	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	20191ST (%)	20184TH (%)	20183RD (%)
CREDIT SUISSE	17	5,251	304,585	0.06	274	+0.09	+1.81	+2.01	40 %	0.97	87	85	-
DEUTSCHE BANK	15	5,243	288,356	-0.02	58	+0.02	+1.81	0.57	73 %	3.62	61	61	-
GOLDMAN SACHS	12	3,874	220,804	-0.01	287	+0.13	+1.81	+2.70	31 %	0.24	56	18	-
MORGAN STANLEY	9	4,775	157,587	-0.05	32	+0.02	+1.81	1.38	83 %	4.44	59	75	-
JP MORGAN CHASE	9	3,751	153,784	-0.02	77	+0.05	+1.81	1.25	82 %	4.28	45	61	-
CITIGROUP	9	3,655	149,846	0.05	105	+0.07	+1.81	+1.79	43 %	1.21	57	16	-
MERRILL LYNCH	7	5,063	136,688	0.03	27	+0.02	+1.81	+0.38	62 %	2.68	64	41	-
Grand Total	78	4,525	1,411,650	0.01	860	+0.06	+1.81	+0.68	59 %	2.34	61	50	-



(+) = Cost

TRADE CYCLE DETAIL

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



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	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	20191ST (%)	20184TH (%)	20183RD (%)
COWEN & CO	8	2,276	232,128	-0.29	9,923	+4.27	+1.81	4.60	98 %	3.40	83	87	92
LIQUIDNET	4	2,430	106,939	-0.13	3,743	+3.50	+1.81	3.26	94 %	2.84	88	97	68
RBC CAPITAL MARKETS	2	1,328	42,496	-0.24	1,190	+2.80	+1.81	4.90	98 %	5.17	99	-	95
CAPITAL INSTL SVCS	2	6,868	61,813	-0.09	2,658	+4.30	+1.81	0.62	74 %	+0.61	99	99	99
INSTINET	2	3,585	39,440	-0.16	1,183	+3.00	+1.81	3.81	96 %	3.89	95	99	32
BAIRD, ROBERT W	1	3,711	25,978	-0.41	1,145	+4.41	+1.81	6.74	99 %	5.41	33	39	17
WOLFE TRAHAN SECS	<1	2,823	31,052	-0.27	1,342	+4.32	+1.81	2.38	91 %	1.13	99	81	88
STEPHENS & CO INC	<1	6,974	20,921	-0.30	874	+4.18	+1.81	4.20	96 %	3.10	99	99	80
STIFEL NICOLAUS & CO	<1	7,776	15,551	-0.02	700	+4.50	+1.81	4.32	97 %	2.90	-	99	-
JP MORGAN CHASE	<1	3,778	7,555	-0.05	347	+4.60	+1.81	25.96	99 %	24.44	90	-	18
ISI GROUP INC	<1	2,854	11,415	-0.13	406	+3.56	+1.81	+1.68	45 %	+2.15	30	99	-
PIPER JAFFRAY	<1	3,750	7,500	-1.21	338	+4.50	+1.81	6.77	99 %	5.34	95	-	96
KEEFE BRUYETTE WOODS	<1	6,155	12,310	-0.13	492	+4.00	+1.81	1.25	82 %	0.33	99	-	99
WILLIAM BLAIR	<1	4,473	4,473	0.43	224	+5.00	+1.81	+4.53	20 %	+6.45	87	-	-
NORTHLAND SECURITIES	<1	2,713	10,850	-0.72	434	+4.00	+1.81	3.54	96 %	2.62	-	99	-
NEEDHAM & CO INC	<1	1,767	5,300	-0.40	231	+4.36	+1.81	6.41	99 %	5.13	-	-	-
RAYMOND JAMES	<1	4,350	8,700	-0.43	348	+4.00	+1.81	2.38	91 %	1.46	90	1	-
DAVIDSON D.A. & CO	<1	10,960	10,960	0.16	384	+3.50	+1.81	+1.14	52 %	+1.56	36	-	-
SEAPORT GROUP SECS	<1	3,490	3,490	0.45	157	+4.50	+1.81	+13.51	1 %	+14.93	-	18	-
JEFFERIES & CO	<1	8,090	8,090	0.26	324	+4.00	+1.81	+1.61	45 %	+2.53	99	-	-
ALARIS TRADING PARTN	<1	2,769	2,769	0.49	125	+4.50	+1.81	+5.18	15 %	+6.60	-	-	88



(+) = Cost

TRADE CYCLE DETAIL

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



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	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	20191ST (%)	20184TH (%)	20183RD (%)
B.RILEY & CO	<1	4,846	4,846	-1.19	194	+4.00	+1.81	7.32	99 %	6.40	40	-	-
JNK SECURITIES	<1	1,700	1,700	0.52	68	+4.00	+1.81	+8.69	7 %	+9.61	-	99	-
WEEDEN & CO	<1	380	380	-1.29	13	+3.50	+1.81	8.43	99 %	8.00	-	80	95
Grand Total	24	2,728	676,656	-0.22	26,842	+3.97	+1.81	3.65	96 %	2.76	95	99	92



(+) = Cost

TRADE CYCLE DETAIL

EAGLE CAPITAL MANAGEMENT Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	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	20191ST (%)	20184TH (%)	20183RD (%)
CAPITAL INSTL SVCS	4	76,469	229,407	0.00	6,882	+3.00	+1.81	+0.57	59 %	+0.49	74	-	-
MORGAN STANLEY	3	6,436	12,872	-1.11	193	+1.50	+1.81	52.98	99 %	54.55	-	99	10
LIQUIDNET	2	18,898	37,796	-0.62	586	+1.55	+1.81	30.07	99 %	31.60	-	1	23
JEFFERIES & CO	2	9,722	9,722	-0.11	194	+2.00	+1.81	6.70	99 %	7.78	-	-	-
MERRILL LYNCH	<1	2,791	2,791	0.13	42	+1.50	+1.81	+16.55	1 %	+14.97	-	99	99
CONVERGEX	<1	50,560	50,560	0.36	758	+1.50	+1.81	+1.34	49 %	0.24	-	1	12
Grand Total	12	34,315	343,148	-0.37	8,656	+2.52	+1.81	4.78	98 %	5.33	68	96	98



(+) = Cost

TRADE CYCLE DETAIL

WEATHERBIE Performance (Full Day VWAP)



Broker	Principal Traded (USD/Mil)	Shares Per Order	Total Shares	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	20191ST (%)	20184TH (%)	20183RD (%)
ITG	7	1,452	146,693	0.01	4,983	+3.40	+1.81	6.84	99 %	6.52	10	8	1
THEMIS TRADING LLC	5	2,021	141,475	0.17	4,821	+3.41	+1.81	+5.87	12 %	+6.20	15	1	20
LIQUIDNET	3	1,523	60,911	0.01	2,111	+3.47	+1.81	0.08	69 %	+0.31	99	96	99
WILLIAM BLAIR	1	1,394	19,521	0.53	703	+3.60	+1.81	+20.14	1 %	+20.66	88	99	99
NEEDHAM & CO INC	<1	2,018	18,158	-0.40	631	+3.48	+1.81	15.75	99 %	15.35	98	99	10
CRAIG - HALLUM	<1	2,364	21,276	0.06	722	+3.39	+1.81	0.04	68 %	+0.28	99	99	21
STEPHENS & CO INC	<1	1,130	4,521	0.08	163	+3.60	+1.81	+45.33	1 %	+45.85	2	99	99
GOLDMAN SACHS	<1	2,697	18,882	0.12	680	+3.60	+1.81	+1.92	41 %	+2.44	24	1	1
COWEN & CO	<1	1,602	8,012	0.01	288	+3.60	+1.81	1.13	82 %	0.60	23	-	1
CORNERSTONE MACRO LL	<1	1,734	8,669	0.50	294	+3.39	+1.81	+11.32	3 %	+11.63	-	-	-
JANNEY MONTGOMERY	<1	1,143	2,286	-0.13	82	+3.60	+1.81	8.85	99 %	8.33	-	-	-
CANACCORD GENUITY	<1	2,206	11,032	0.39	389	+3.53	+1.81	+4.93	16 %	+5.38	1	1	-
STIFEL NICOLAUS & CO	<1	1,351	1,351	0.00	49	+3.60	+1.81	89.27	99 %	88.74	99	99	99
JEFFERIES & CO	<1	2,543	12,716	0.45	371	+2.92	+1.81	+12.71	1 %	+12.55	87	99	5
RAYMOND JAMES	<1	1,806	3,612	-0.29	130	+3.60	+1.81	5.29	99 %	4.77	45	1	1
PIPER JAFFRAY	<1	1,371	1,371	-0.02	49	+3.60	+1.81	0.90	78 %	0.38	8	10	99
CITIGROUP	<1	4,020	4,020	0.92	121	+3.00	+1.81	+21.81	1 %	+21.73	1	1	-
Grand Total	21	1,724	484,506	0.09	16,587	+3.42	+1.81	+0.83	57 %	+1.17	48	18	18



(+) = 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	284,915	2,672,292	+2.26	0.08%	0.18	+0.91
TLRA	39	115,978	845,377	+2.96	0.35%	0.04	+0.56
EXEL	5	103,494	2,233,860	+0.07	0.43%	0.12	+1.23
WFC	6	93,596	4,458,345	+1.34	0.05%	-0.04	+0.16
OII	19	66,462	1,147,574	+4.00	0.31%	-0.42	6.92
CNO	19	56,847	953,546	+4.00	0.35%	-0.41	2.34
CNP	2	48,350	1,390,034	+0.02	0.34%	0.27	+3.27
TTMI	11	46,356	510,050	+3.56	0.42%	-0.13	1.64
POL	11	44,375	1,338,655	+4.38	0.51%	-0.11	3.05
PFE	3	41,485	1,722,611	+0.06	0.06%	-0.11	1.62

Names Most Traded - Total Orders

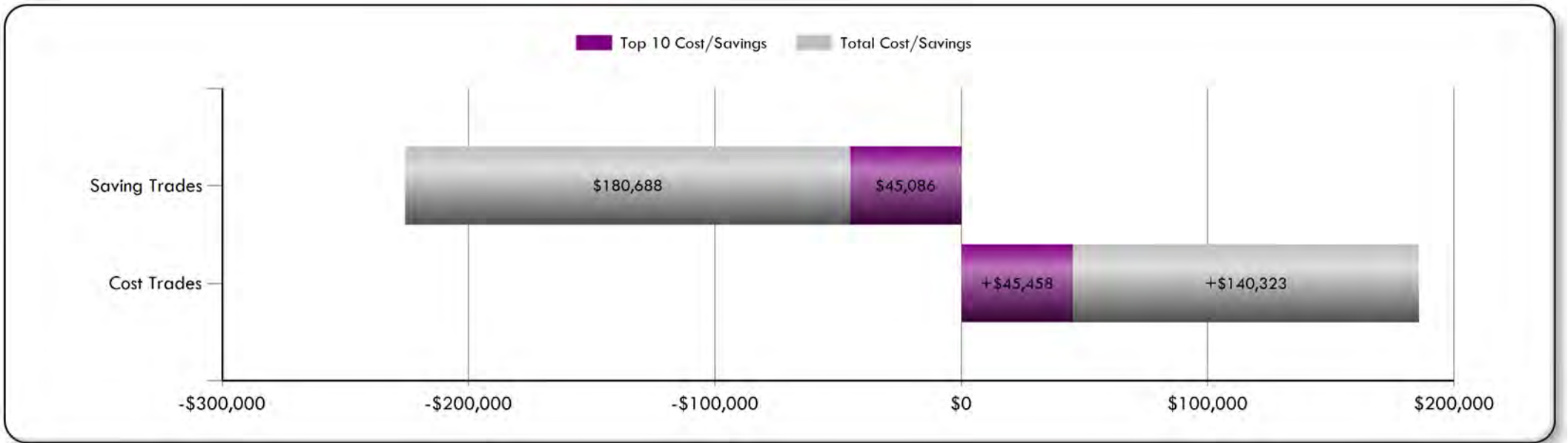
							Market Impact
Security	# Orders	Shares	US Dollars	Commission (cps)	% of Volume	E - Score	Full Day VWAP (cps)
W	12	12,519	1,882,574	+3.54	0.07%	0.07	+18.84
TTD	11	9,401	2,113,651	+2.99	0.05%	-0.28	124.78
SERV	10	36,652	1,744,974	+4.50	0.67%	-0.41	3.89
WFC	6	93,596	4,458,345	+1.34	0.05%	-0.04	+0.16
GE	6	284,915	2,672,292	+2.26	0.08%	0.18	+0.91
EXEL	5	103,494	2,233,860	+0.07	0.43%	0.12	+1.23
UNH	4	14,007	3,496,028	+1.68	0.07%	-0.22	19.17
WAB	3	38,996	2,583,491	+1.50	0.49%	-0.56	26.96
XOM	3	28,923	2,155,590	+0.07	0.07%	-0.11	2.67
GS	3	13,806	2,779,262	+1.41	0.15%	-0.94	36.47



(+) = Cost

TRADE CONTRIBUTIONS

Cost\Savings Performance				
Category	Principal USD	# of Trades	Avg. Market Impact (cps)	Percentage of all Cost/Savings
10 High Cost Trades	3,258,249	10	+121.23	24.47%
Cost Trades	80,179,128	772	+28.13	100.00%
Saving Trades	91,662,591	823	30.14	100.00%
10 Low Cost Trades	5,572,925	10	147.88	19.97%





(+) = Cost

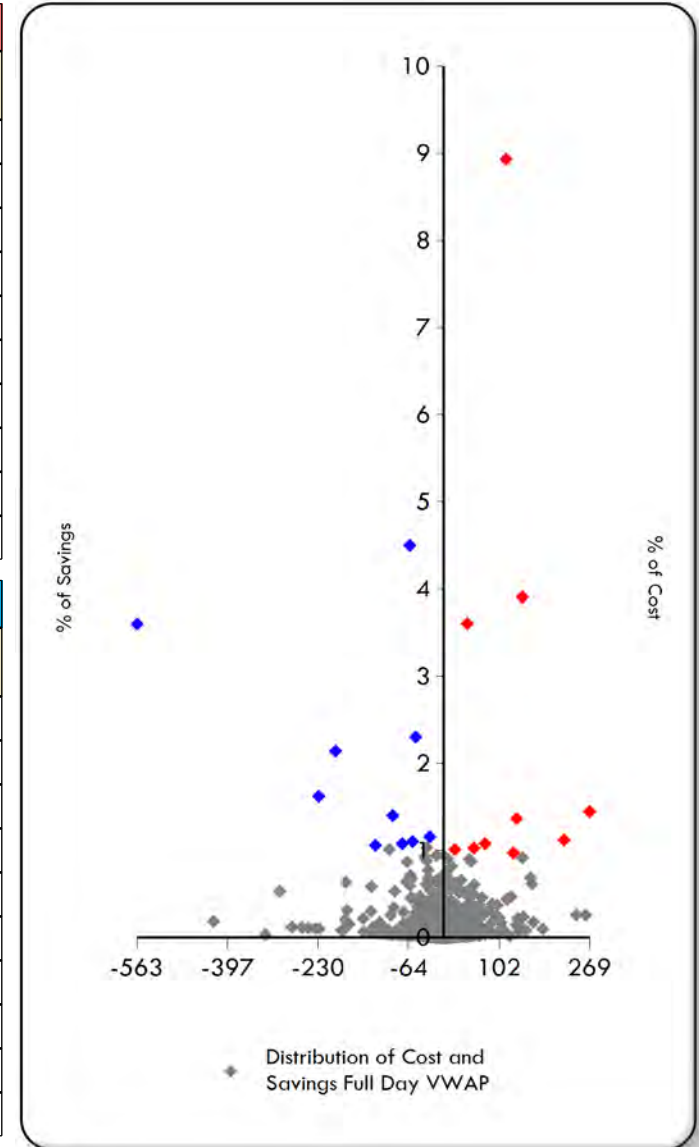
TRADE LEVEL DETAILS

10 High Cost Trades (Full Day VWAP)

Side	Security	Trade Date	Shares	Cost (%)	E - Score	Full Day VWAP (cps)	Manager	Broker
Sell	NXPI	2019/06/28	14,400	8.93	1.58	+115.22	ALLIANCE R	MERRILL LY
Buy	SPOT	2019/06/28	5,000	3.91	1.60	+145.14	ALLIANCE R	MERRILL LY
Sell	CNDT	2019/05/09	15,286	3.60	0.63	+43.81	AQR	GOLDMAN SA
Buy	MDB	2019/06/28	1,000	1.45	1.44	+268.85	ALLIANCE R	MERRILL LY
Buy	PODD	2019/05/03	1,887	1.37	0.95	+134.64	WEATHERBIE	ITG
Sell	SITE	2019/05/03	939	1.12	2.54	+221.90	WEATHERBIE	WILLIAM BL
Sell	STMP	2019/05/09	2,622	1.08	0.26	+76.50	WEATHERBIE	THEMIS TRA
Buy	PLAN	2019/06/28	3,400	1.03	1.28	+56.17	ALLIANCE R	MERRILL LY
Buy	DBX	2019/06/28	8,900	1.01	1.27	+21.10	ALLIANCE R	MERRILL LY
Buy	GH	2019/06/28	1,400	0.97	2.35	+128.99	ALLIANCE R	MERRILL LY

10 Low Cost Trades (Full Day VWAP)

Side	Security	Trade Date	Shares	Savings (%)	E - Score	Full Day VWAP (cps)	Manager	Broker
Buy	WAB	2019/05/09	16,435	4.50	-1.11	61.77	EAGLE CAPI	LIQUIDNET
Sell	TTD	2019/06/04	1,444	3.60	-0.87	563.06	WEATHERBIE	ITG
Buy	GS	2019/05/08	10,215	2.30	-1.24	50.91	EAGLE CAPI	MORGAN STA
Buy	PCTY	2019/06/04	2,440	2.14	-1.45	198.29	WEATHERBIE	ITG
Buy	TTD	2019/06/28	1,600	1.62	-1.24	229.18	ALLIANCE R	MERRILL LY
Buy	ROKU	2019/06/28	3,400	1.40	-0.86	93.01	ALLIANCE R	MERRILL LY
Sell	ORCL	2019/06/28	10,400	1.16	-1.51	25.13	ALLIANCE R	MERRILL LY
Buy	CREE	2019/06/28	4,400	1.10	-0.63	56.62	ALLIANCE R	MERRILL LY
Sell	STMP	2019/05/10	3,217	1.08	-0.58	75.75	WEATHERBIE	THEMIS TRA
Sell	PCTY	2019/05/09	1,913	1.06	-1.18	125.10	WEATHERBIE	NEEDHAM &



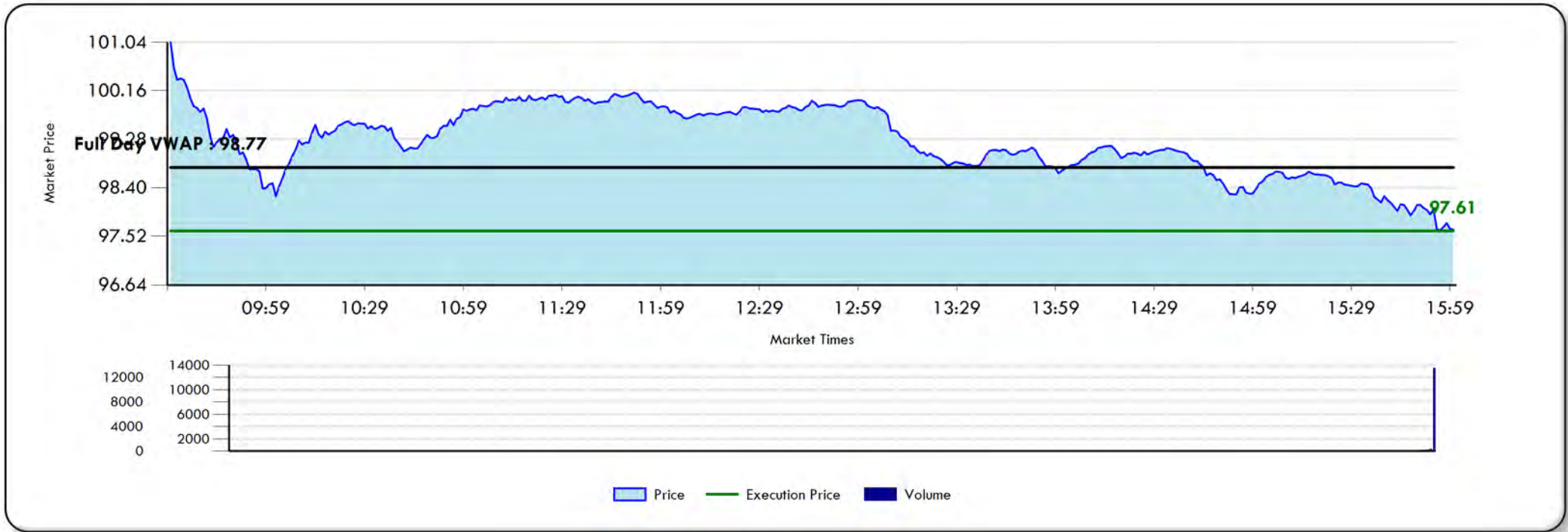


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

NXPI - 2019/06/28

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	MERRILL LYNCH	06/28/2019 09:30:00	06/28/2019 16:00:00	14,400	97.6129	98.7651	+16,591	+115.22	1.58	0.06



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 8.93% of your market impact cost.

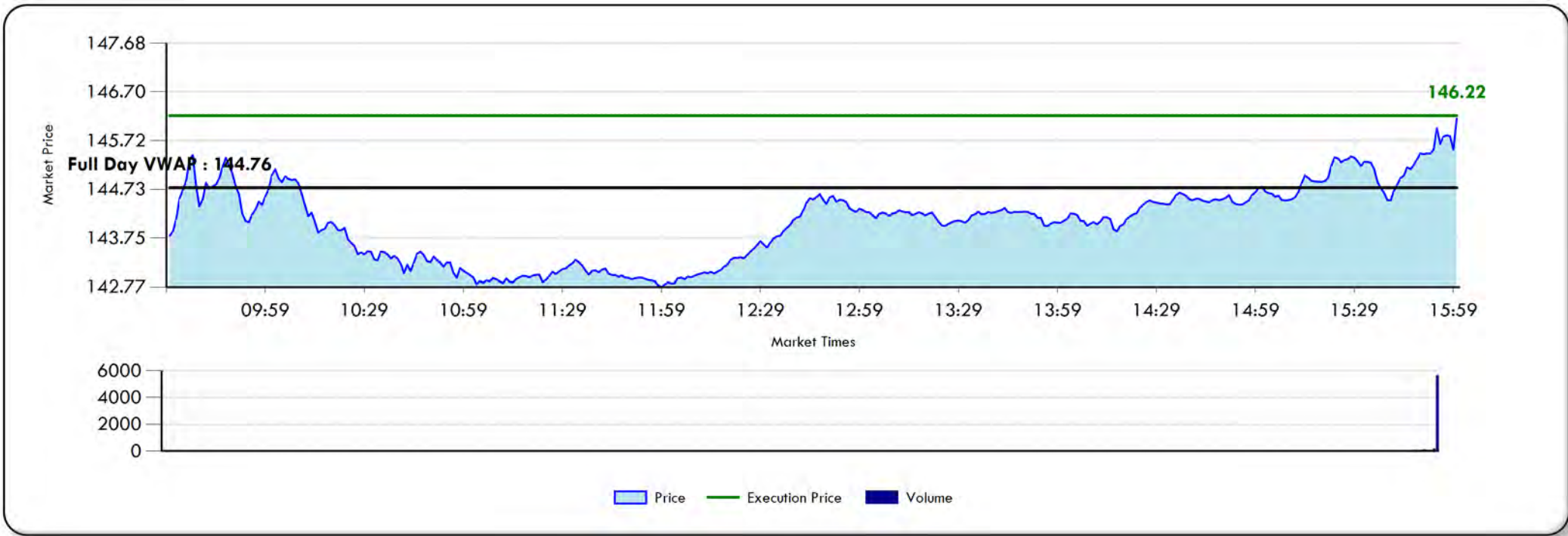


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TRADE LEVEL DETAIL - HIGH COST

SPOT - 2019/06/28

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	MERRILL LYNCH	06/28/2019 09:30:00	06/28/2019 16:00:00	5,000	146.2156	144.7642	+7,257	+145.14	1.60	0.05



NOTES

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

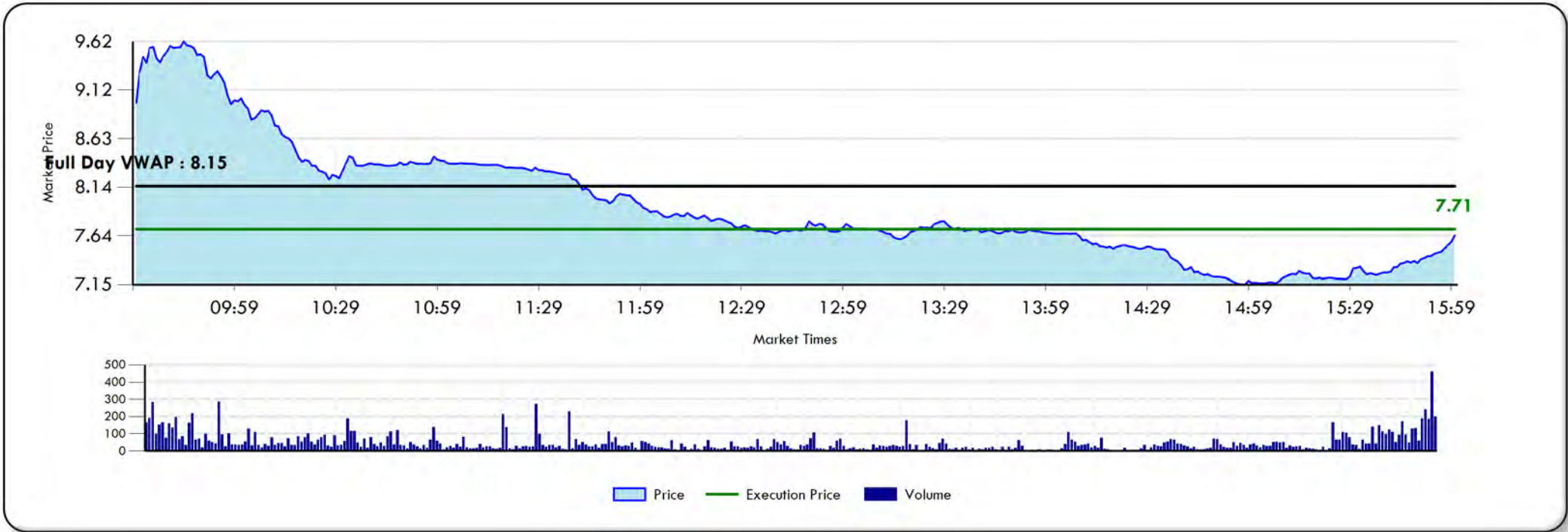


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

CNDT - 2019/05/09

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	AQR	GOLDMAN SACHS	05/09/2019 09:30:00	05/09/2019 16:00:00	15,286	7.7075	8.1456	+6,697	+43.81	0.63	0.08



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 3.60% of your market impact cost.

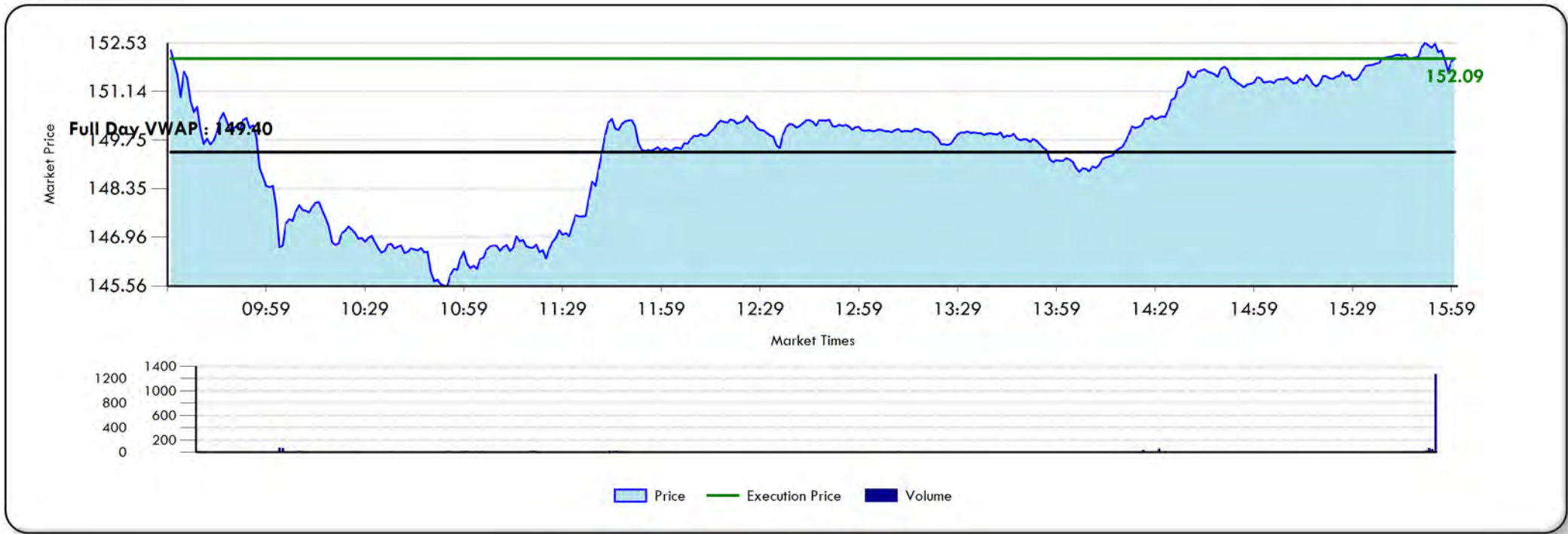


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

MDB - 2019/06/28

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	MERRILL LYNCH	06/28/2019 09:30:00	06/28/2019 16:00:00	1,000	152.0854	149.3969	+2,689	+268.85	1.44	0.03



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.45% of your market impact cost.

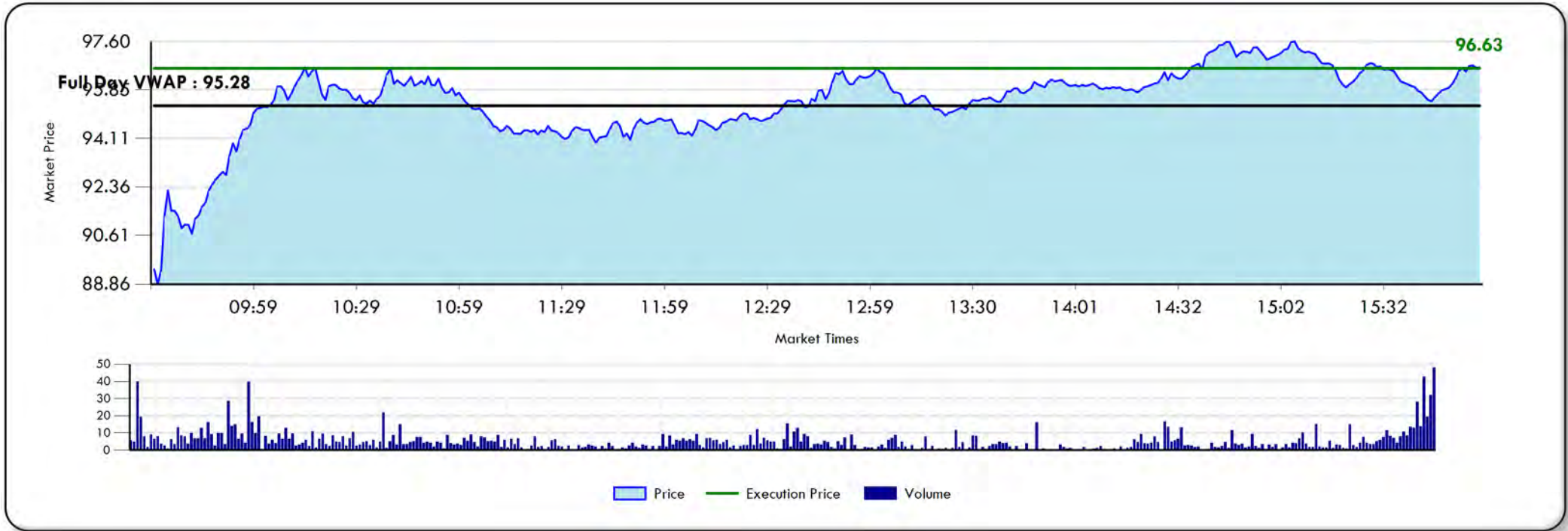


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

PODD - 2019/05/03

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	05/03/2019 09:30:00	05/03/2019 16:00:00	1,887	96.6277	95.2813	+2,541	+134.64	0.95	0.10



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.37% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

SITE - 2019/05/03

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	WILLIAM BLAIR	05/03/2019 09:30:00	05/03/2019 16:00:00	939	60.3909	62.6099	+2,084	+221.90	2.54	0.17



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.12% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

STMP - 2019/05/09

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	05/09/2019 09:30:00	05/09/2019 16:00:00	2,622	37.0750	37.8400	+2,006	+76.50	0.26	0.02



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.08% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

PLAN - 2019/06/28

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	MERRILL LYNCH	06/28/2019 09:30:00	06/28/2019 16:00:00	3,400	50.4685	49.9068	+1,910	+56.17	1.28	0.05



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.03% of your market impact cost.

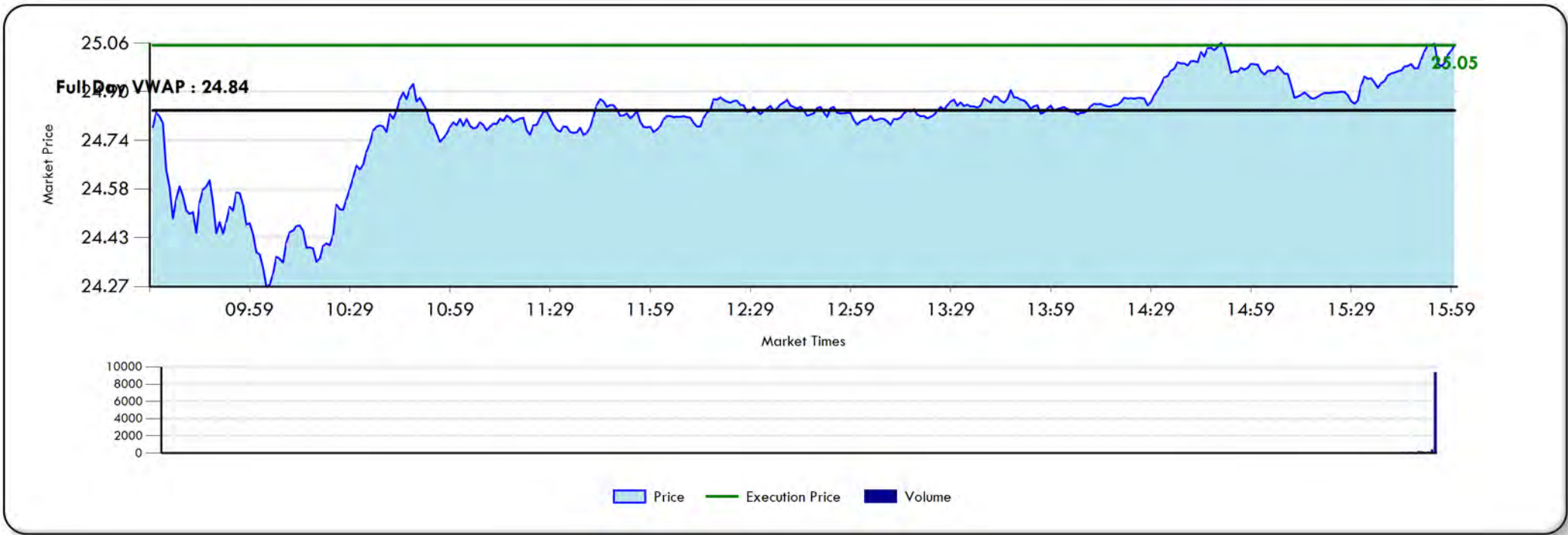


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

DBX - 2019/06/28

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	MERRILL LYNCH	06/28/2019 09:30:00	06/28/2019 16:00:00	8,900	25.0492	24.8382	+1,878	+21.10	1.27	0.05



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.01% of your market impact cost.

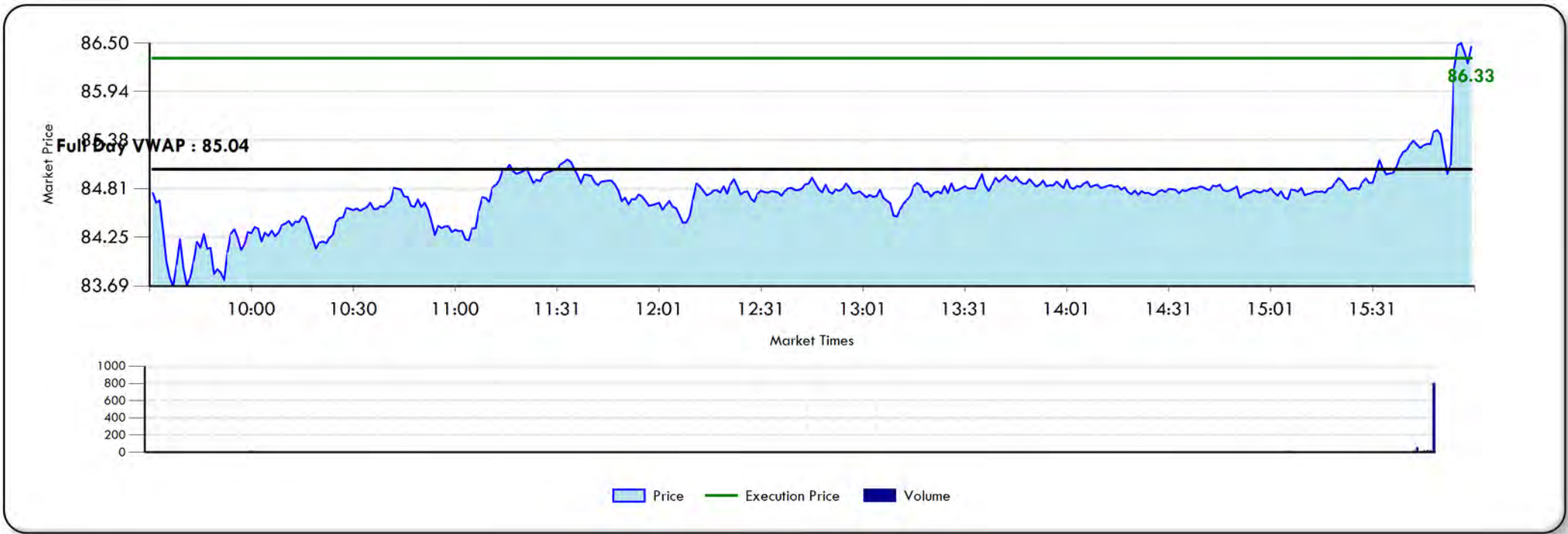


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

GH - 2019/06/28

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	MERRILL LYNCH	06/28/2019 09:30:00	06/28/2019 16:00:00	1,400	86.3274	85.0375	+1,806	+128.99	2.35	0.05



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 0.97% of your market impact cost.

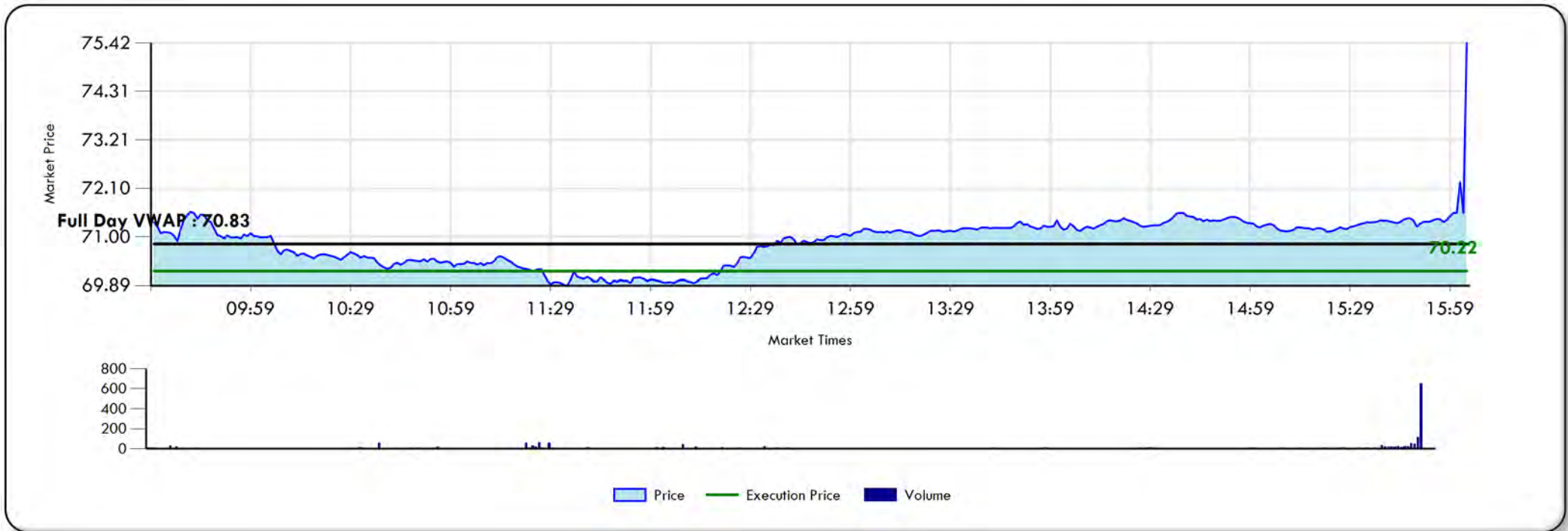


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

WAB - 2019/05/09

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	LIQUIDNET	05/09/2019 09:30:00	05/09/2019 16:00:00	16,435	70.2154	70.8331	10,152	61.77	-1.11	0.50



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 4.50% of your market impact savings.

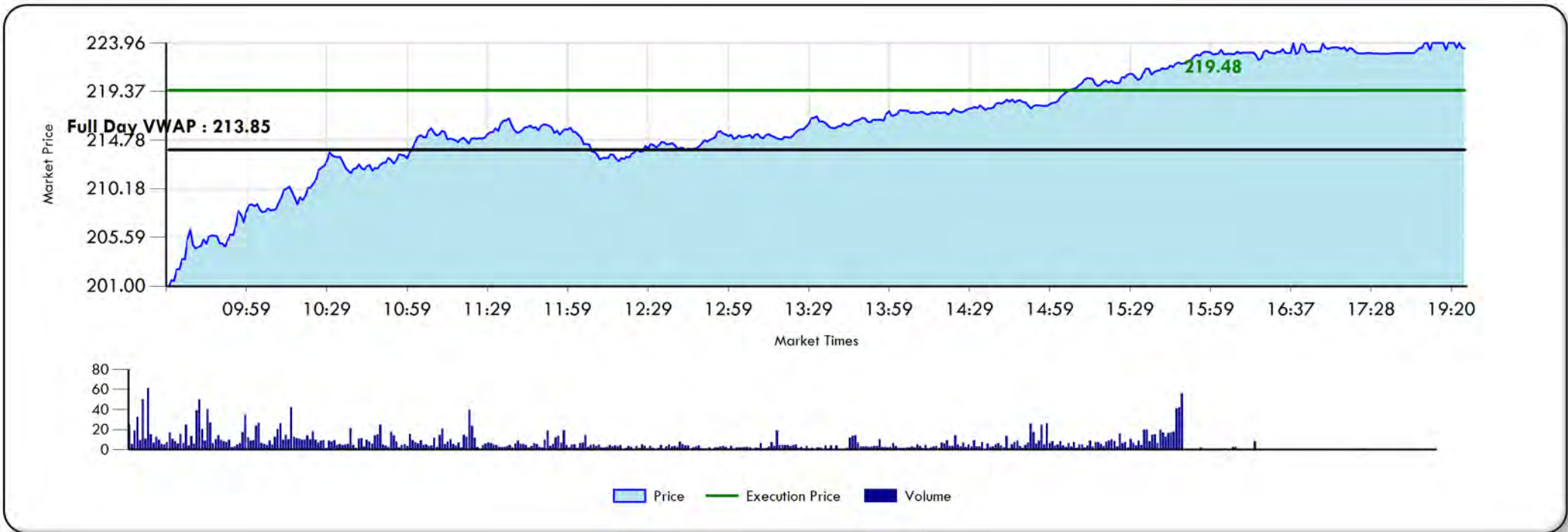


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

TTD - 2019/06/04

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	06/04/2019 09:30:00	06/04/2019 16:00:00	1,444	219.4826	213.8520	8,131	563.06	-0.87	0.05



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 3.60% of your market impact savings.

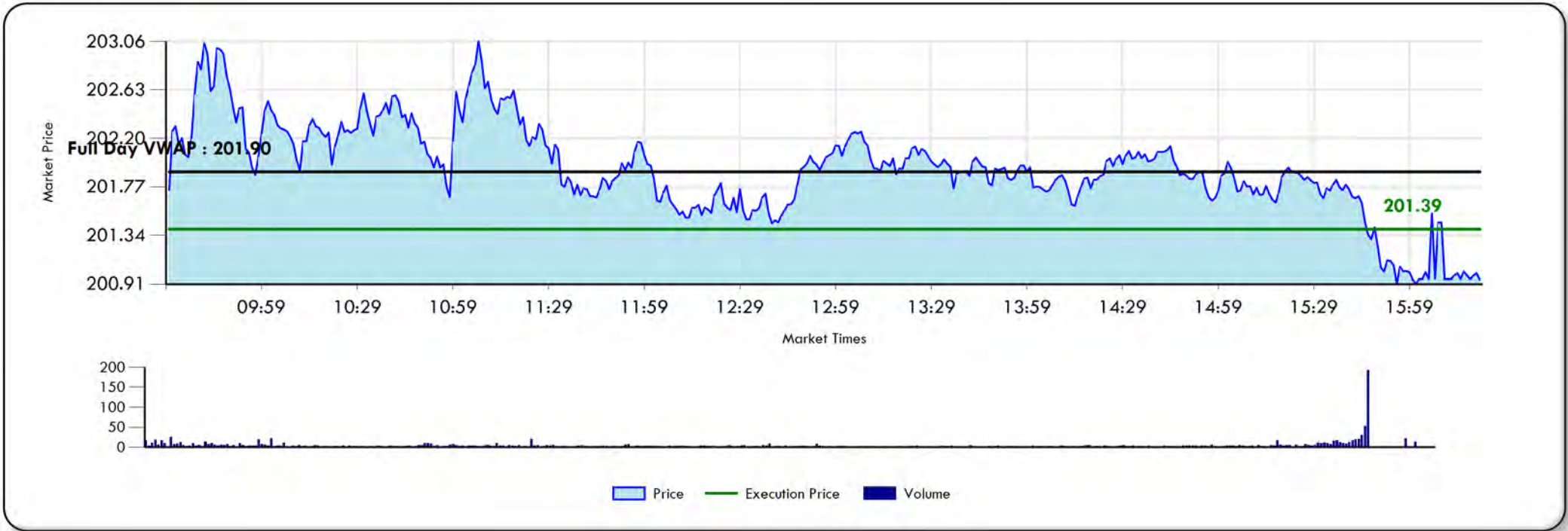


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

GS - 2019/05/08

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	MORGAN STANLEY	05/08/2019 09:30:00	05/08/2019 16:00:00	10,215	201.3904	201.8995	5,201	50.91	-1.24	0.56



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 2.30% of your market impact savings.

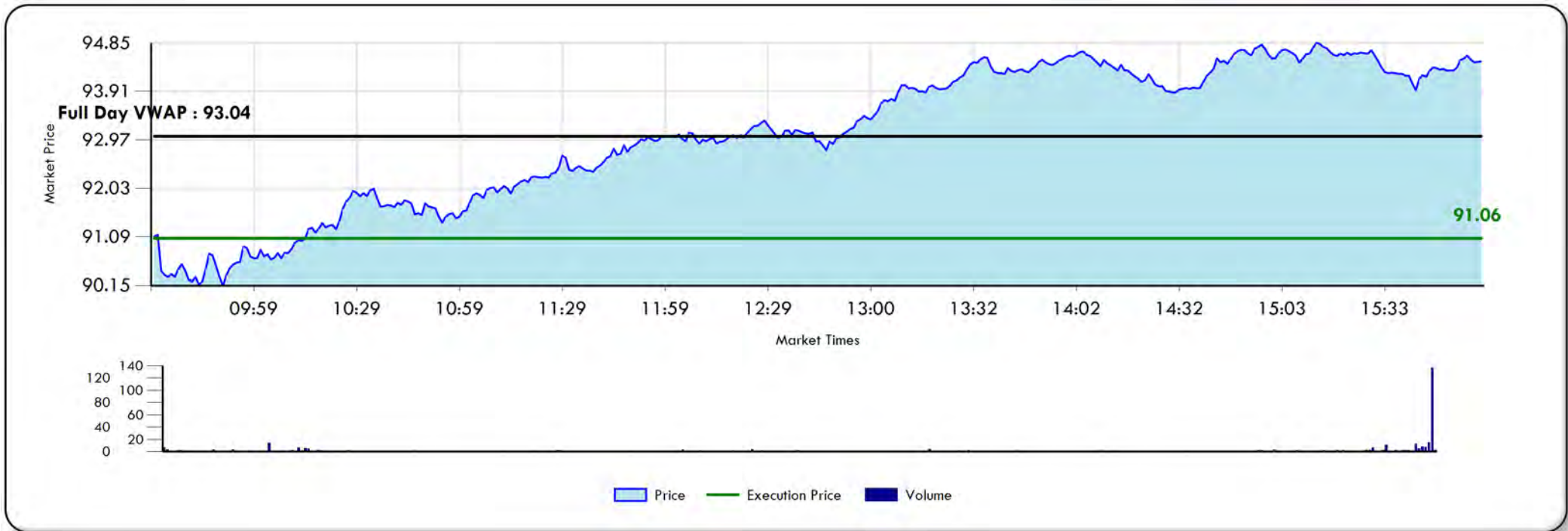


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

PCTY - 2019/06/04

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	06/04/2019 09:30:00	06/04/2019 16:00:00	2,440	91.0558	93.0387	4,838	198.29	-1.45	0.47



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 2.14% of your market impact savings.

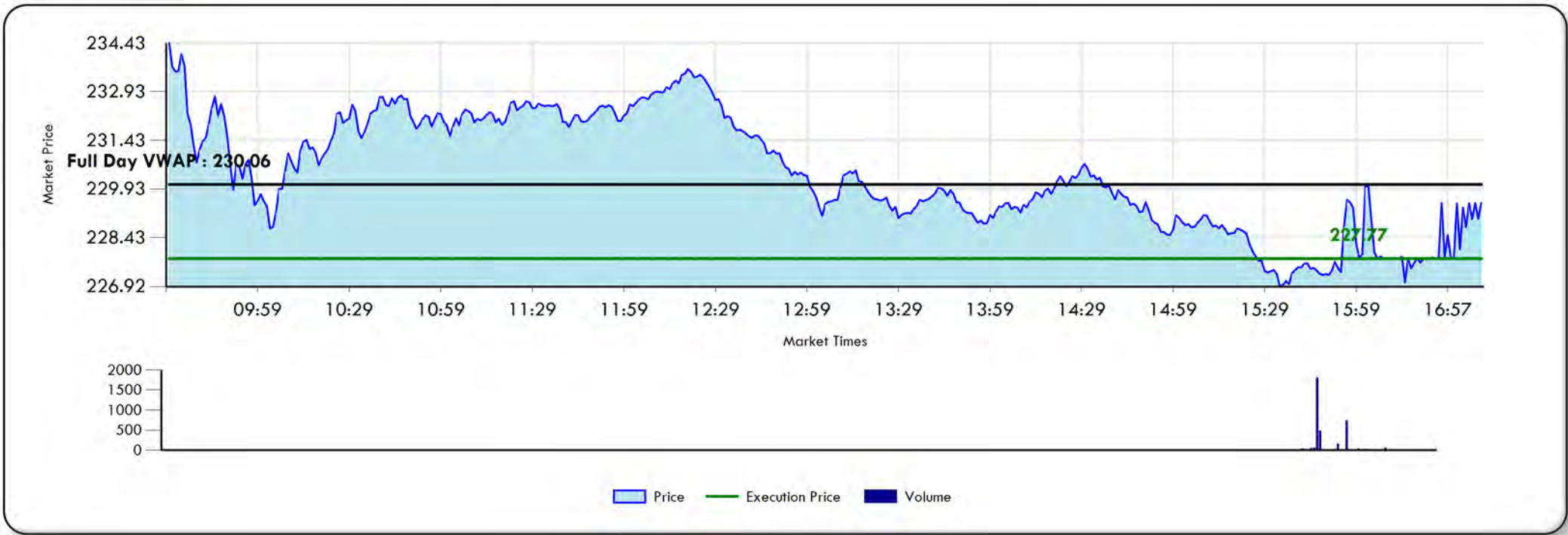


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

TTD - 2019/06/28

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	MERRILL LYNCH	06/28/2019 09:30:00	06/28/2019 16:00:00	1,600	227.7732	230.0650	3,667	229.18	-1.24	0.03



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.62% of your market impact savings.

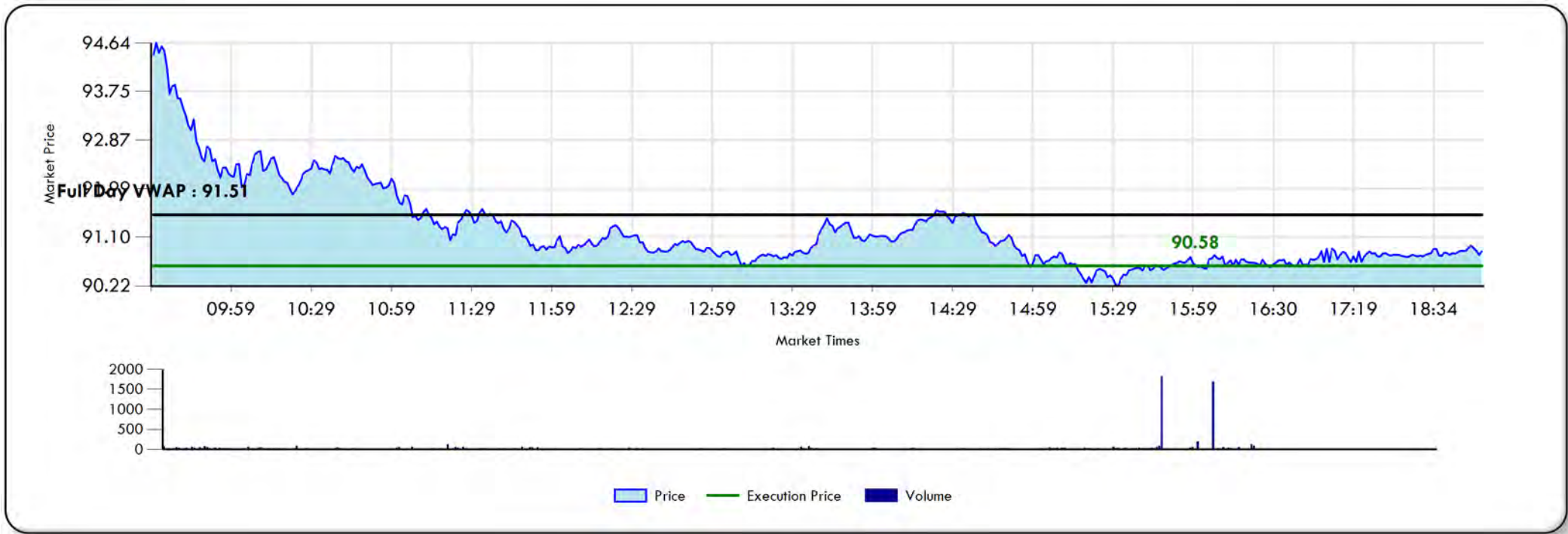


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

ROKU - 2019/06/28

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	MERRILL LYNCH	06/28/2019 09:30:00	06/28/2019 16:00:00	3,400	90.5773	91.5074	3,162	93.01	-0.86	0.03



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.40% of your market impact savings.

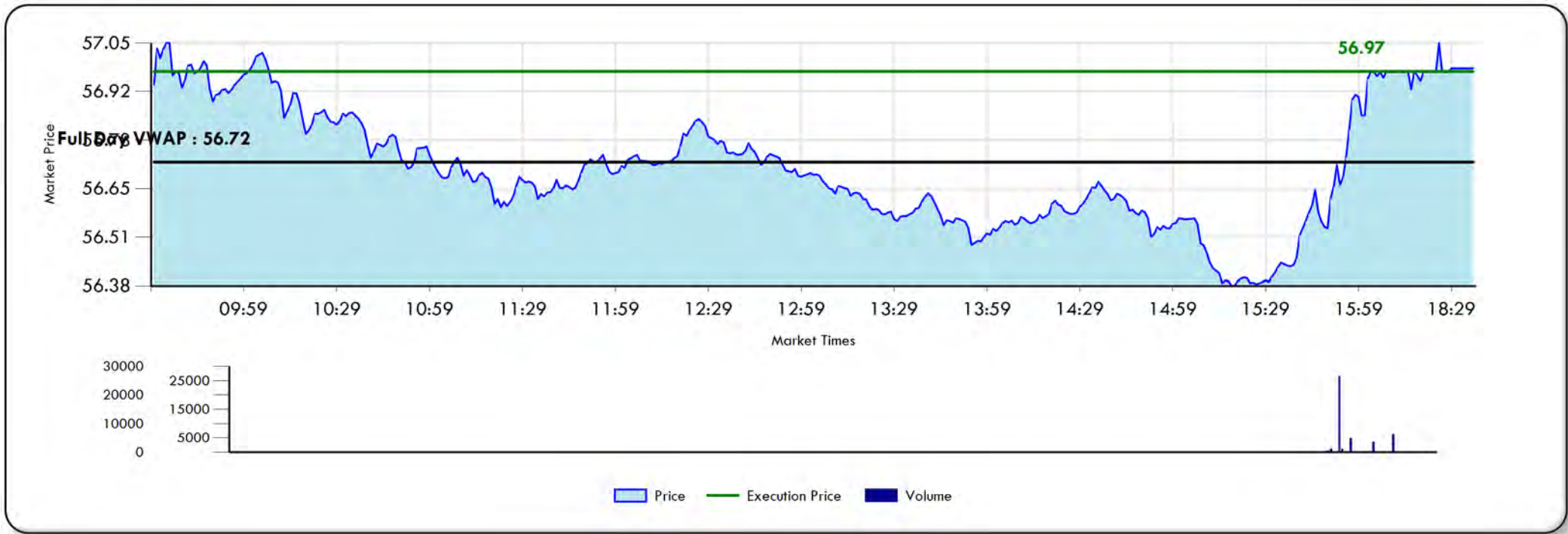


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

ORCL - 2019/06/28

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	MERRILL LYNCH	06/28/2019 09:30:00	06/28/2019 16:00:00	10,400	56.9717	56.7204	2,614	25.13	-1.51	0.02



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.16% of your market impact savings.

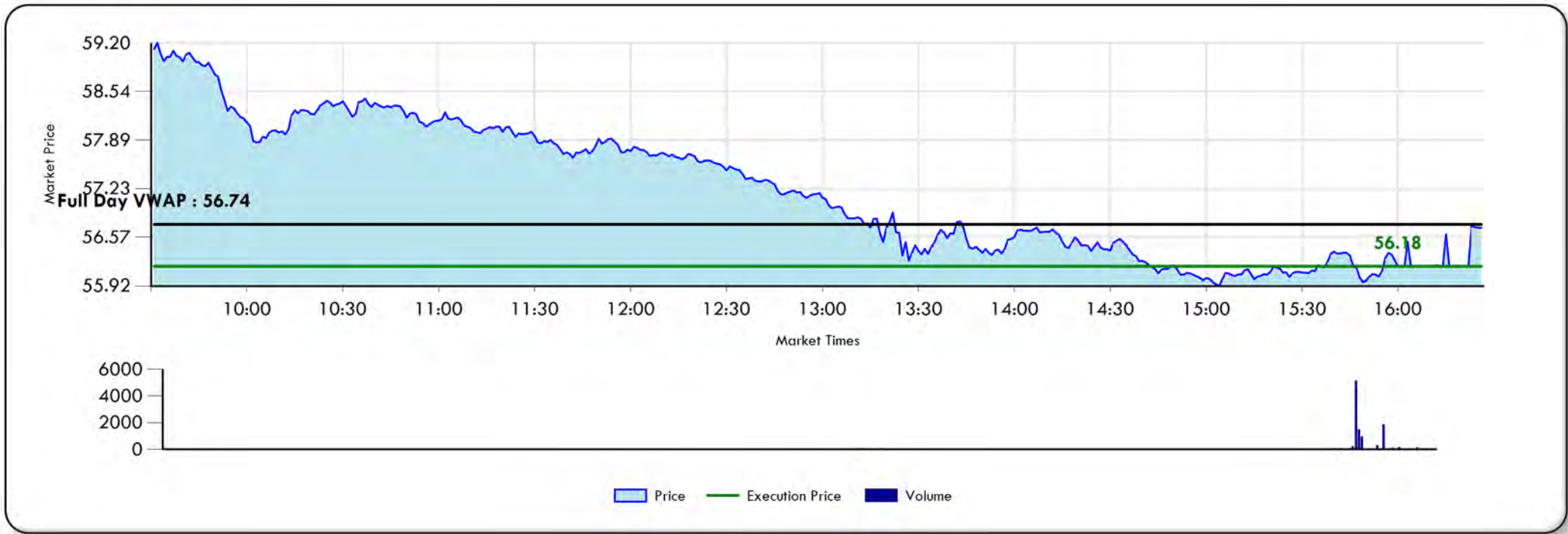


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

CREE - 2019/06/28

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	MERRILL LYNCH	06/28/2019 09:30:00	06/28/2019 16:00:00	4,400	56.1783	56.7445	2,491	56.62	-0.63	0.03



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.10% of your market impact savings.



(+) = Cost

TRADE LEVEL DETAIL - LOW COST

STMP - 2019/05/10

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	05/10/2019 09:30:00	05/10/2019 16:00:00	3,217	39.8942	39.1367	2,437	75.75	-0.58	0.05



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.08% of your market impact savings.



(+) = Cost

TRADE LEVEL DETAIL - LOW COST

PCTY - 2019/05/09

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	NEEDHAM & CO INC	05/09/2019 09:30:00	05/09/2019 16:00:00	1,913	95.2396	93.9886	2,393	125.10	-1.18	0.55



NOTES

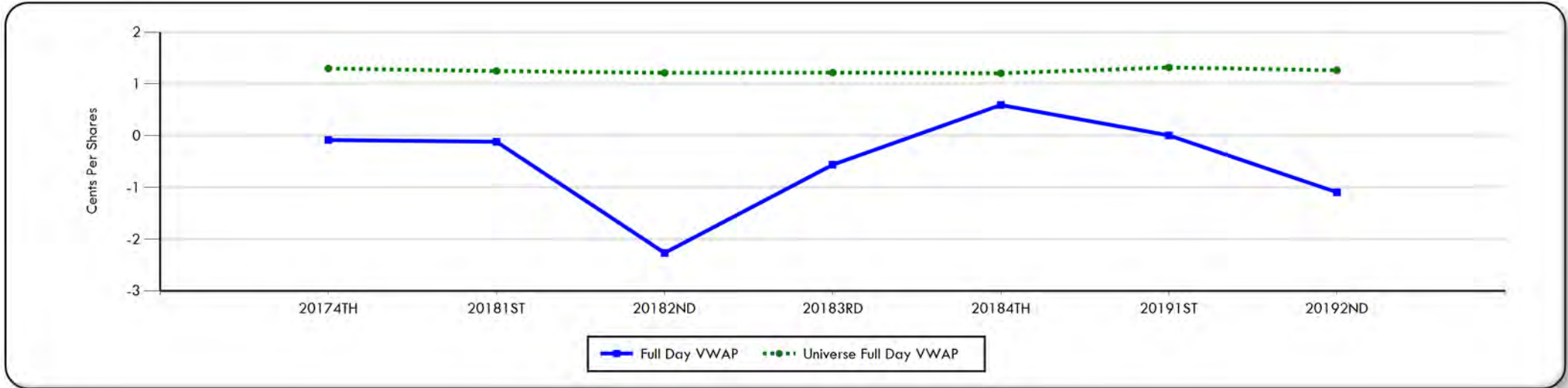
- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.06% of your market impact savings.



(+) = Cost

TRADE HISTORY

Trade History						
Period	Total Shares	Total Dollars Traded	Commission		Full Day VWAP	Full Day VWAP Universe Rank
			(cps)	(\$)		
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
20192ND	3,647,786	171,841,719	+1.45	52,944	1.10	81



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 June 30, 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 April 1, 2019 to June 30, 2019. The analysis included trading of 5,286,402 shares representing \$70.81 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.

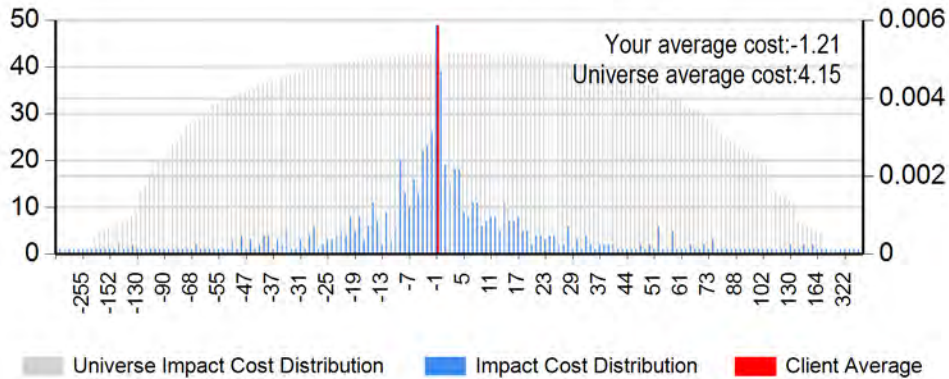
Results :

BENCHMARK PERFORMANCE			E - Score
Commission	Fees	Full Day VWAP	
<ul style="list-style-type: none"> Your commission cost was +5.93 bp or \$ +\$42,006 (8.25 bp better than the Elkins/McSherry Universe) 	<ul style="list-style-type: none"> Your fee cost was +8.58 bp or \$ +60,781 (+0.39 bp worse than the Elkins/McSherry Universe) 	<ul style="list-style-type: none"> Your market impact savings was 0.48 bp or \$3,383 (4.62 bp better than the Elkins/McSherry Universe) Your overall trading cost of +14.04 bp was 12.50 bp better than the Elkins/McSherry Universe. Sacramento County trading was higher than the Elkins/McSherry Universe in 6 countries and lower than the Elkins/McSherry Universe in 18 countries. 8 of your brokers had trading cost higher than summary universe of countries (principal weighted) in which they traded. 29 of your brokers had lower trading cost. 	<ul style="list-style-type: none"> E - Score : -0.03

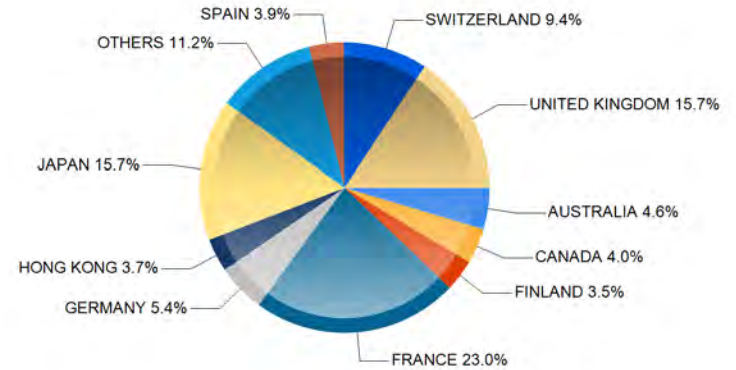
(+) = Cost

EXECUTIVE SUMMARY

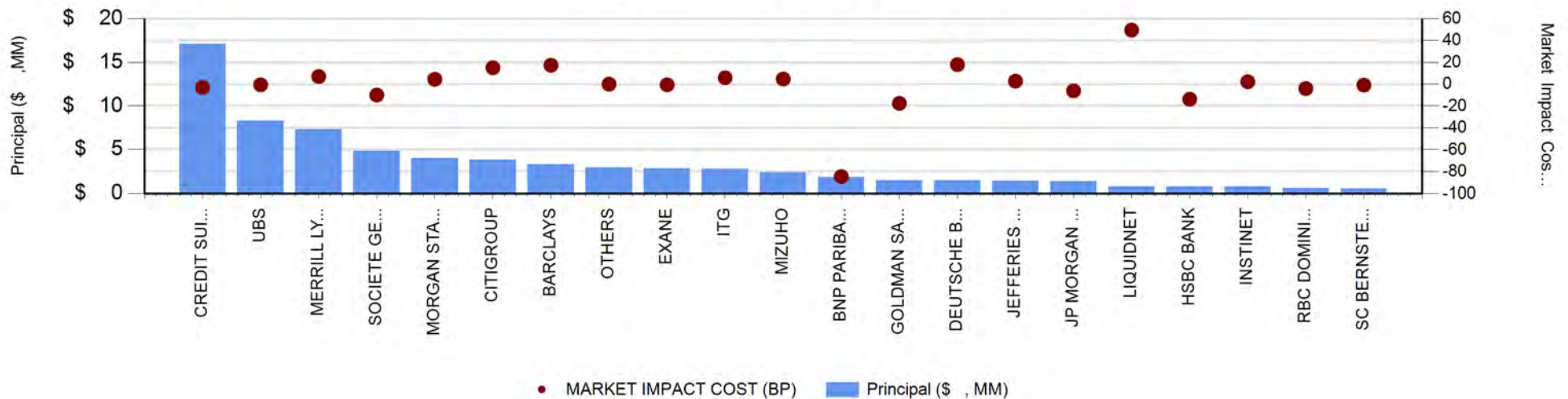
Cost Distribution



Principal Across Country



Top 20 Brokers in Principal Traded





(+) = Cost

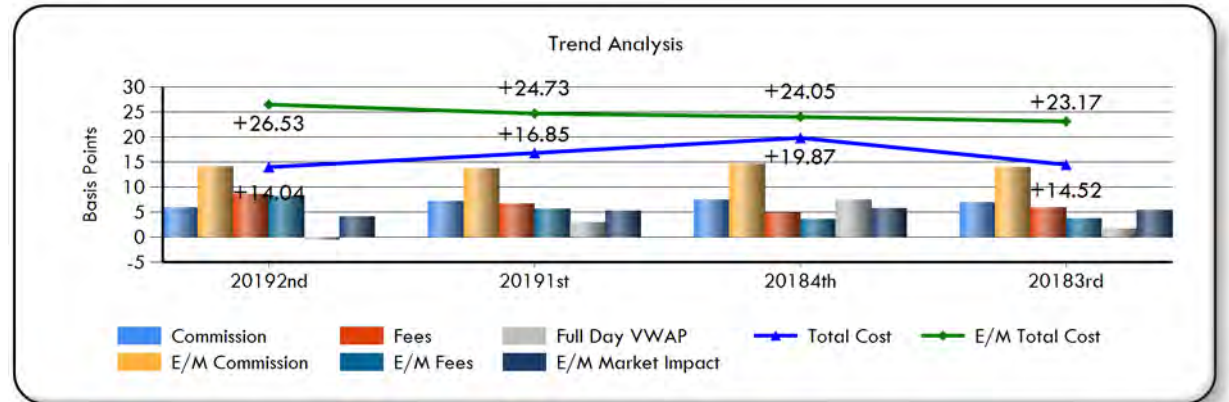
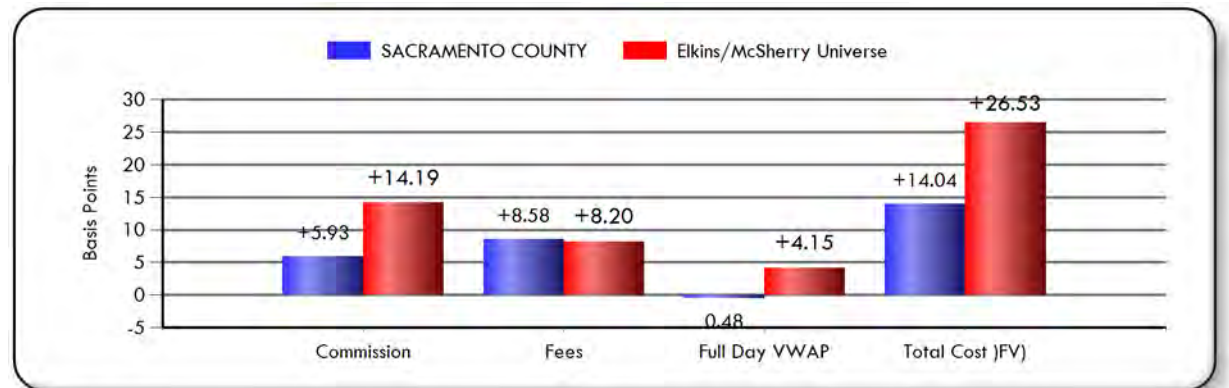
EXECUTIVE SUMMARY

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	+6.67	+14.41	+3.11	+0.83	+0.88	4.14	+5.58	+3.35	17.52	-0.16
Buy	+5.39	+14.02	+3.21	+14.28	+13.57	+2.21	+3.10	+21.89	8.81	0.06
Total	+5.93	+14.19	+3.17	+8.58	+8.20	0.48	+4.15	+14.04	12.50	-0.03

TRADING COMPONENTS

	Buys	Sells
Trade Principal	40,825,589	29,987,504
Shares	1,997,105	3,289,297
Unique Names	83	37
Liquidity (% POV)	0.221	0.262
Avg. Order Size	4,931	10,376
Avg. Order Completion Time (min)	N/A	N/A
Total Number of Trades	405	317





(+) = Cost

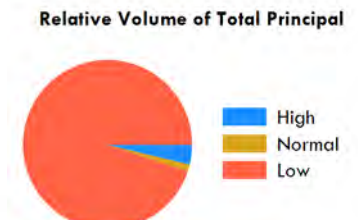
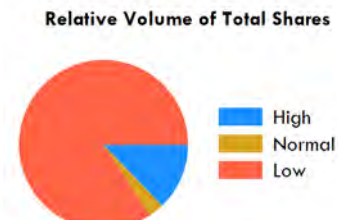
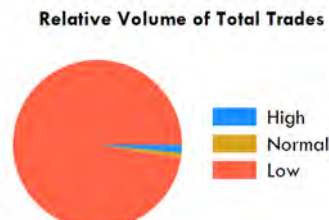
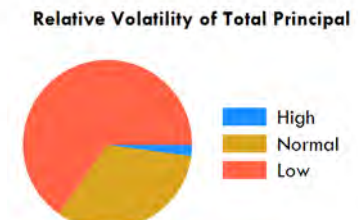
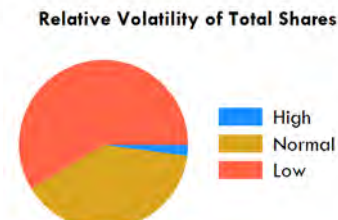
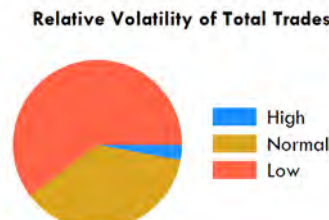
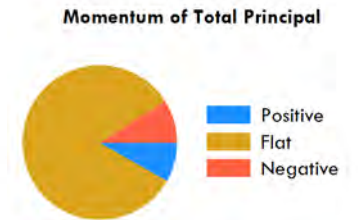
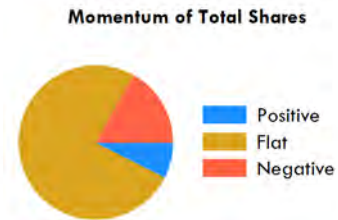
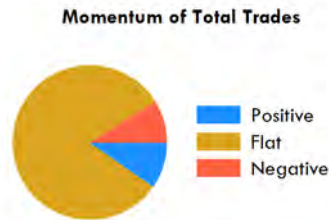
EXECUTIVE SUMMARY

Market Metrics Summary

Momentum	Positive			Flat			Negative		
	Trades	Shares	Principal	Trades	Shares	Principal	Trades	Shares	Principal
% Of Total									
Buys	6%	2%	5%	48%	34%	50%	3%	2%	3%
Sells	4%	5%	3%	34%	42%	33%	6%	15%	6%
Total	10%	7%	8%	81%	76%	83%	9%	17%	9%

Relative Volatility	High			Normal			Low		
	Trades	Shares	Principal	Trades	Shares	Principal	Trades	Shares	Principal
% Of Total									
Buys	3%	1%	2%	17%	9%	16%	37%	28%	40%
Sells	0%	1%	0%	20%	30%	17%	24%	31%	25%
Total	3%	2%	2%	37%	39%	33%	60%	59%	65%

Relative Volume	High			Normal			Low		
	Trades	Shares	Principal	Trades	Shares	Principal	Trades	Shares	Principal
% Of Total									
Buys	1%	4%	2%	1%	3%	1%	55%	31%	55%
Sells	1%	9%	2%	0%	0%	0%	43%	53%	40%
Total	2%	13%	4%	1%	3%	1%	98%	84%	95%



NOTES

MOMENTUM: One-day open to close pricing trend of a security

Positive - Greater than +2%

Flat - Within a +2% and -2% range

Negative - Price decrease is more negative than -2%

RELATIVE VOLATILITY: The standard deviation of price relative to the one-day average price

High - Greater than 20%

Normal - Between 5% and 20%

Low - Less than 5%

RELATIVE VOLUME: Executed shares relative to the one-day total market volume

High - Greater than 10%

Normal - Between 5% and 10%

Low - Less than 5%



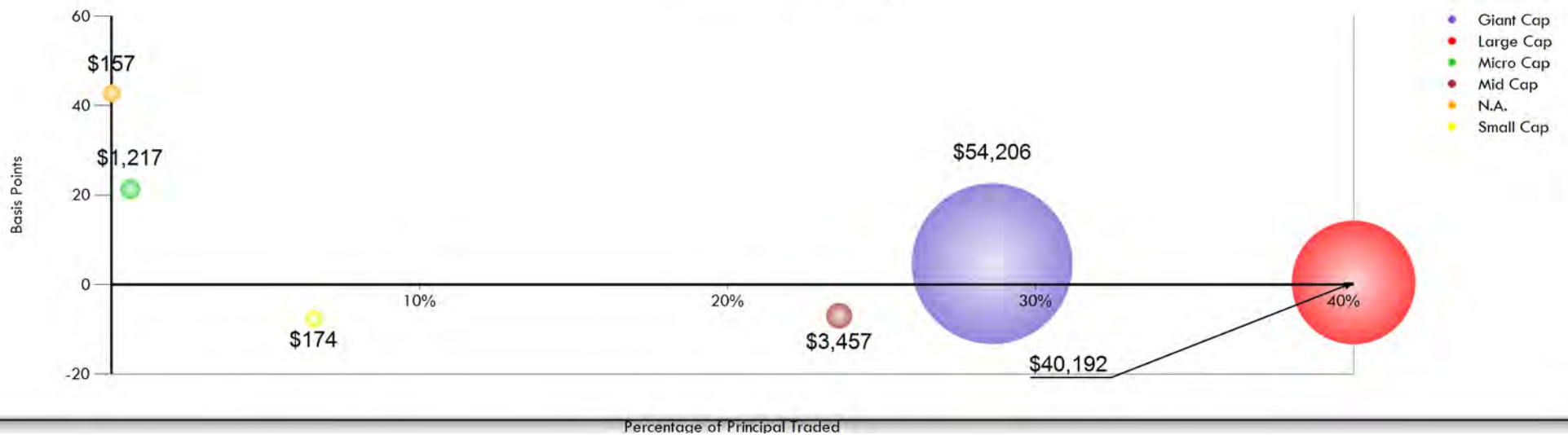
(+) = Cost

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	40.37 %	109,953	+6.20	+14.08	+0.46	+4.15	+14.06	11.53	-0.01	\$5 Billion To \$25 Billion
Giant Cap	28.64 %	196,892	+5.67	+14.03	+4.66	+4.79	+26.73	7.39	0.09	Over \$25 Billion
Mid Cap	23.67 %	62,776	+5.66	+14.55	6.98	+3.61	+2.06	19.12	-0.19	\$1 Billion To \$5 Billion
Small Cap	6.61 %	55,756	+6.51	+14.24	7.65	+3.65	+0.38	19.44	-0.16	\$250 Million To \$1 Billion
Micro Cap	0.66 %	66,600	+4.84	+13.89	+21.31	+1.15	+26.15	+11.09	0.30	Under \$250 Million
N.A.	0.05 %	34,536	+3.00	+13.76	+42.73	+3.04	+45.73	+28.92	0.59	

Total Cost by Market Cap





(+) = 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	5	1,181,778	N/A	+5.10	+14.78	12.90	+2.83	+6.24	25.22	-0.28	1M or Greater
Medium Orders	17	645,310	N/A	+6.86	+13.94	8.75	+5.77	+7.46	21.70	-0.17	Between 500k - 1M
Small Orders	700	77,048	N/A	+5.83	+14.17	+2.56	+3.96	+16.21	9.25	0.02	500K or Less

Total Cost By Order Size





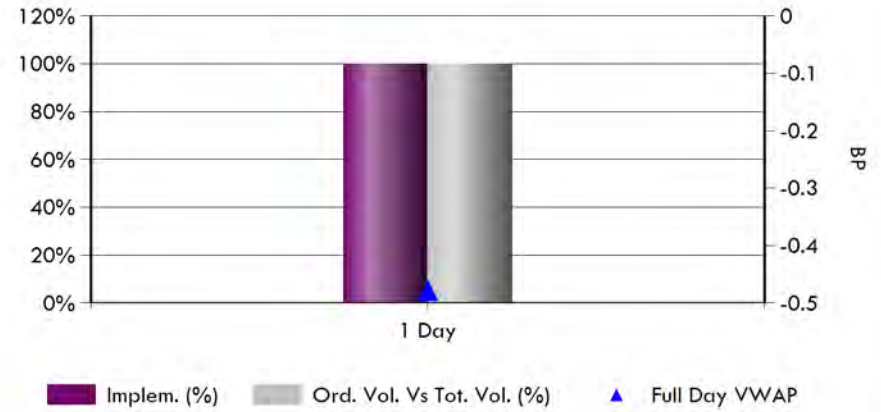
(+) = Cost

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%	0.48	-0.03

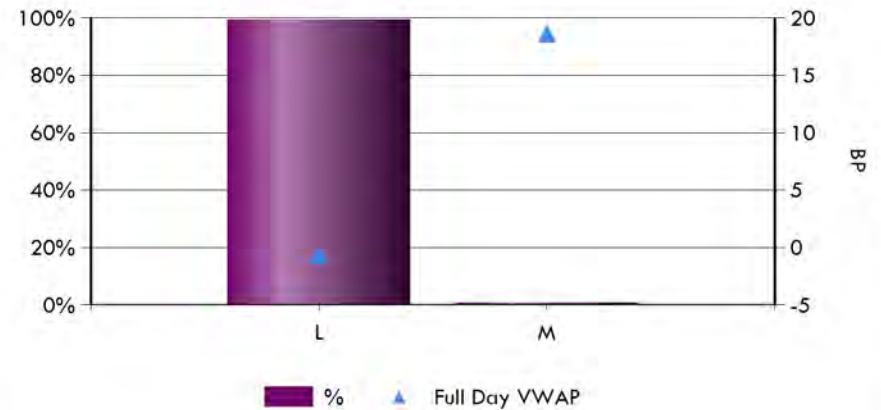
Implementation Days



TRADE DIFFICULTY

Methodology	Liquid. Cat.	Percent Traded (%)	Full Day VWAP (bp)	E - Score
0%~20% of daily vol.	L	99%	0.61	-0.03
20%~50% of daily vol.	M	1%	+18.67	0.27

Avg. % of Daily Volume



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										
PHILIPPINES - BUYS	<1	0.46%	+15.00	+24.42	+4.00	+4.46	+73.32	+1.82	+61.62	0.76
IRELAND - BUYS	<1	0.27%	+3.00	+16.17	+100.16	+100.00	+31.67	+2.39	+16.27	0.77
SWEDEN	1	1.57%	+3.92	+13.89	+0.00	+0.02	+24.83	+1.15	+13.69	0.42
U.K. - BUYS	3	4.36%	+4.55	+15.29	+44.80	+34.64	+10.30	+1.77	+7.94	0.29
FINLAND	2	3.53%	+6.26	+13.96	+0.00	+0.01	+17.76	+5.49	+4.56	0.12
AUSTRALIA	3	4.60%	+6.74	+13.23	+0.00	+1.60	+14.06	+3.09	+2.89	0.29

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										
HONG KONG	3	3.72%	+6.61	+18.29	+10.77	+9.85	63.01	+1.24	75.01	-1.35
ITALY - BUYS	<1	0.53%	+10.42	+13.68	+10.00	+12.00	41.46	+2.20	48.92	-1.61
AUSTRIA	<1	0.66%	+6.83	+13.79	+0.00	+0.00	23.20	+5.70	35.87	-0.29
BELGIUM	<1	0.34%	+3.62	+13.55	+0.00	+0.00	14.88	+3.36	28.17	0.48
ISRAEL	<1	0.14%	+10.00	+14.18	+0.00	+0.08	17.33	+3.32	24.91	-0.56
U.S.	2	2.30%	+0.94	+12.34	+0.00	+0.07	7.06	+1.96	20.49	0.17
SPAIN	3	3.85%	+7.41	+13.93	+0.00	+0.00	9.20	+3.11	18.84	-0.28
DENMARK	1	1.51%	+4.54	+13.91	+0.00	+0.01	+0.12	+4.94	14.19	-0.03
GERMANY	4	5.39%	+6.74	+13.70	+0.00	+0.03	3.71	+3.35	14.06	-0.12
FRANCE - BUYS	14	19.59%	+6.00	+13.80	+30.00	+30.00	3.47	+2.66	13.93	-0.06
U.K. - SELLS	8	11.33%	+6.99	+14.37	+0.06	+0.00	+4.93	+11.35	13.74	0.02
SWITZERLAND	7	9.41%	+5.83	+13.76	+0.00	+0.01	2.74	+3.04	13.72	0.04
NORWAY	<1	1.30%	+5.95	+13.33	+0.00	+0.05	0.13	+5.30	12.86	0.08
JAPAN	11	15.71%	+4.91	+13.78	+0.00	+0.02	+0.70	+4.58	12.77	0.03
SINGAPORE	<1	0.18%	+5.00	+17.94	+3.25	+3.61	+6.51	+1.76	8.55	0.22
FRANCE - SELLS	2	3.38%	+8.84	+15.23	+0.00	+0.00	+1.81	+2.73	7.31	-0.10
CANADA	3	3.97%	+4.57	+14.75	+0.00	+0.03	+11.96	+3.39	1.64	-0.07
NETHERLANDS	1	1.93%	+5.30	+14.15	+0.01	+0.10	+10.65	+3.20	1.49	0.25



(+) = Cost

TRADE CYCLE DETAIL

3 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)	20191st (bp)	20184th (bp)	20183rd (bp)
LAZARD ASSET MANAGEM	42	266	59.96%	159,622	-0.06	+6.36	+14.20	+0.69	+4.43	10.97	12.73	3.45	+1.71
WILLIAM BLAIR & COMP	11	180	15.80%	62,159	-0.04	+6.38	+14.58	+0.52	+3.60	11.86	+4.82	5.07	7.29
LSV ASSET MANAGEMENT	17	276	24.24%	62,192	0.03	+4.58	+13.89	4.01	+3.81	16.69	7.85	5.96	16.52

NOTES

- Manager above made up 100.00 % of principal traded.



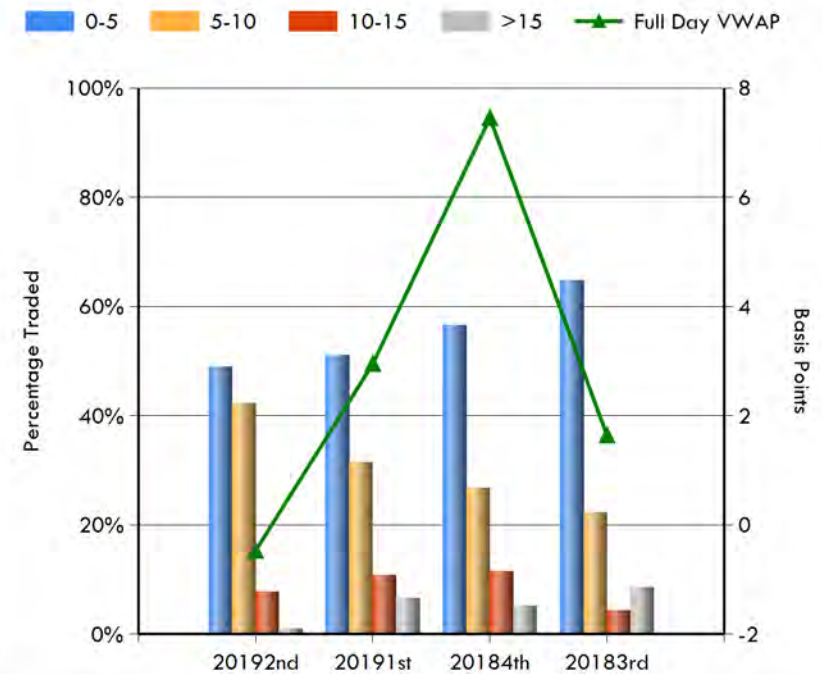
(+) = Cost

COMMISSION REVIEW

COMMISSION REVIEW - Top 20 Brokers (Commission \$)

Broker	Total Commission	Commission (bp)	Bundled Universe (bp)	All Trading Universe (bp)	Commission Trends		
					20191st (bp)	20184th (bp)	20183rd (bp)
CREDIT SUI	10,538	+6.17	+14.03	+3.11	+8.13	+7.06	+8.08
UBS	5,598	+6.73	+13.75	+3.12	+5.10	+8.70	+6.61
MERRILL LY	4,965	+6.81	+14.06	+3.14	+6.43	+7.86	+6.91
MORGAN STA	3,137	+7.77	+14.18	+2.92	+10.73	+5.52	+6.87
SOCIETE GE	2,423	+4.98	+14.10	+3.08	+5.08	+4.59	+4.33
DEUTSCHE B	1,832	+12.31	+15.00	+3.29	+8.43	+7.34	+7.32
CITIGROUP	1,732	+4.52	+13.71	+3.25	+5.04	+10.47	+6.51
BNP PARIBA	1,459	+7.99	+17.04	+3.01	+5.68	+8.23	+7.42
ITG	1,406	+5.04	+14.22	+3.09	+5.06	+4.67	+4.69
GOLDMAN SA	1,292	+8.64	+15.41	+3.42	+11.49	+8.20	+7.08
BARCLAYS	1,194	+3.58	+14.39	+3.04	+7.01	+5.21	+5.51
MIZUHO	1,176	+4.99	+13.78	+3.32	+7.45	+11.29	+6.55
JEFFERIES	863	+5.94	+14.27	+3.60	+5.02	+5.07	+3.57
EXANE	851	+3.00	+13.80	+3.06	+7.00	+6.67	+6.75
LIQUIDNET	457	+5.68	+14.37	+4.05	+6.21	+3.51	+3.17
JP MORGAN	423	+3.09	+13.38	+3.43	+11.77	+7.28	+11.04
INSTINET	289	+3.77	+16.15	+3.41	+3.48	+3.63	+4.35
RBC DOMINI	276	+4.65	+14.75	+4.46	+47.03	+24.39	+8.27
SMBC SECUR	260	+6.00	+13.78	+3.32	+5.54	+10.75	+9.16
CARNEGIE	259	+7.53	+13.96	+3.19	+7.00	+7.00	-

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)	20191st (bp)	20184th (bp)	20183rd (bp)
LAZARD ASSET MANAGEM	42	266	59.96%	159,622	-0.06	+6.36	+14.20	+0.69	+4.43	10.97	12.73	3.45	+1.71
LSV ASSET MANAGEMENT	17	276	24.24%	62,192	0.03	+4.58	+13.89	4.01	+3.81	16.69	7.85	5.96	16.52
WILLIAM BLAIR & COMP	11	180	15.80%	62,159	-0.04	+6.38	+14.58	+0.52	+3.60	11.86	+4.82	5.07	7.29

NOTES

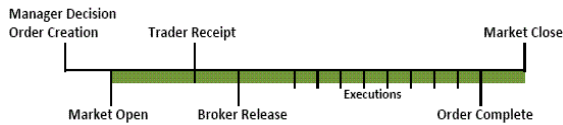
- Manager above made up 100.00 % of principal traded.



(+) = 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)	20191st (bp)	20184th (bp)	20183rd (bp)
CREDIT SUISSE	17	149	24.10%	114,557	0.04	10,538	+6.17	+14.03	3.00	+3.93	14.25	5.40	11.98	2.02
UBS	8	66	11.75%	126,062	-0.05	5,598	+6.73	+13.75	0.62	+4.16	12.04	8.26	1.42	11.24
MERRILL LYNCH	7	56	10.30%	130,236	-0.07	4,965	+6.81	+14.06	+6.97	+4.91	4.72	2.71	11.57	4.39
SOCIETE GENERALE	5	61	6.87%	79,724	-0.25	2,423	+4.98	+14.10	10.00	+2.95	20.98	30.94	16.55	26.56
MORGAN STANLEY	4	10	5.70%	403,653	0.04	3,137	+7.77	+14.18	+4.46	+8.01	10.02	+6.62	13.79	+14.41
CITIGROUP	4	63	5.41%	60,800	0.28	1,732	+4.52	+13.71	+15.05	+3.73	+1.50	10.72	12.99	8.80
BARCLAYS	3	48	4.72%	69,571	0.40	1,194	+3.58	+14.39	+17.35	+3.50	+7.46	0.51	+17.05	21.25
EXANE	3	3	4.01%	945,799	-0.01	851	+3.00	+13.80	0.62	+2.66	14.08	4.03	56.62	11.61
ITG	3	36	3.94%	77,419	-0.01	1,406	+5.04	+14.22	+5.83	+5.58	8.91	21.98	7.24	21.76
MIZUHO	2	38	3.33%	61,990	0.03	1,176	+4.99	+13.78	+4.70	+4.58	8.69	14.79	+4.39	10.16

NOTES

- Brokers above made up 80.12 % 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)	20191st (bp)	20184th (bp)	20183rd (bp)
BNP PARIBAS	2	16	2.58%	114,047	-2.03	1,459	+7.99	+17.04	85.30	+1.95	95.73	2.41	31.96	34.30
GOLDMAN SACHS	1	10	2.11%	149,524	-0.25	1,292	+8.64	+15.41	17.58	+2.85	24.61	+25.51	+14.04	13.23
DEUTSCHE BANK	1	9	2.10%	165,366	0.21	1,832	+12.31	+15.00	+17.89	+5.54	+9.61	3.50	15.78	1.40
JEFFERIES & CO	1	21	2.05%	69,256	0.14	863	+5.94	+14.27	+2.75	+3.20	15.15	17.38	27.79	+16.48
JP MORGAN CHASE	1	11	1.93%	124,470	-0.37	423	+3.09	+13.38	6.11	+3.11	19.56	20.82	+4.20	14.92
LIQUIDNET	<1	14	1.14%	57,450	0.41	457	+5.68	+14.37	+49.81	+3.22	+37.87	+41.28	20.01	52.88
HSBC BANK	<1	28	1.12%	28,264	-0.02	237	+3.00	+14.75	13.85	+3.78	25.76	14.89	21.64	31.30
INSTINET	<1	11	1.08%	69,758	0.02	289	+3.77	+16.15	+2.22	+2.71	12.45	23.01	+2.32	11.80
RBC DOMINION SECS	<1	6	0.84%	99,028	-0.25	276	+4.65	+14.75	4.08	+3.39	17.59	+35.86	+75.90	11.24
SC BERNSTEIN	<1	4	0.78%	138,900	0.55	176	+3.17	+16.44	0.89	+1.46	15.00	43.17	+19.54	+5.34

NOTES

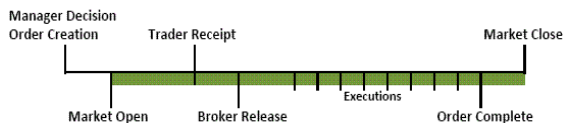
- Brokers above made up 15.74 % of principal traded.



(+) = 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)	20191st (bp)	20184th (bp)	20183rd (bp)
SCOTIA CAPITAL	<1	12	0.64%	37,621	-0.22	68	+1.50	+14.75	7.61	+3.39	24.28	15.87	124.03	27.06
SMBC SECURITIES INC	<1	4	0.61%	108,182	0.00	260	+6.00	+13.78	0.64	+4.58	13.02	6.30	11.50	12.06
MAINFIRSTBANK	<1	18	0.52%	20,456	-0.27	258	+7.00	+13.79	21.85	+5.70	34.34	-	-	-
CARNEGIE	<1	2	0.49%	171,928	0.02	259	+7.53	+13.96	+35.32	+5.49	+23.39	36.73	15.75	-
BANK J. VONTOBEL	<1	5	0.48%	67,715	-0.10	237	+7.00	+13.76	5.73	+3.04	15.54	35.29	9.79	-
LIBERUM CAPITAL LTD	<1	5	0.36%	51,482	0.00	180	+7.00	+14.37	+0.09	+11.35	18.39	-	47.57	37.56
CITATION FINL GROUP	<1	2	0.31%	109,494	1.96	27	+1.23	+12.34	+28.79	+1.96	+15.66	-	69.27	-
ENSKILDA SECURITIES	<1	4	0.18%	32,590	-0.24	91	+7.00	+13.89	14.66	+1.15	22.72	39.23	-	-
INVESTEC BANK	<1	1	0.18%	124,437	-0.17	87	+7.00	+13.96	7.86	+5.49	20.32	+16.64	62.54	-
NUMIS SECURITIES	<1	2	0.11%	40,332	0.00	56	+7.00	+14.37	32.69	+11.35	51.09	41.83	10.89	-

NOTES

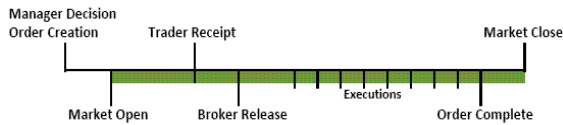
- Brokers above made up 3.88 % of principal traded.



(+) = 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)	20191st (bp)	20184th (bp)	20183rd (bp)
JOH BERENBERG GOSSLE	<1	1	0.11%	75,142	-0.68	53	+7.00	+13.96	5.95	+5.49	18.41	+15.50	82.52	+20.10
CREDIT AGRICOLE	<1	1	0.04%	27,587	-0.44	41	+15.00	+24.42	9.68	+1.82	21.38	9.51	16.45	5.38
DANSKE BANK	<1	1	0.04%	25,451	1.43	18	+7.00	+13.91	+63.48	+4.94	+51.62	-	45.71	-
ATR KIM ENG SECS	<1	1	0.03%	23,574	-0.13	35	+15.00	+24.42	1.73	+1.82	13.43	-	-	-
AUTREPAT-STK	<1	1	0.03%	22,682	N/A	0	+0.00	+13.55	387.97	+3.36	404.88	-	-	-
D CARNEGIE AG	<1	1	0.02%	13,242	1.22	9	+7.00	+13.89	+100.24	+1.15	+92.18	12.24	31.14	-
MITSUBISHI UFJ SECS	<1	1	0.00%	2,195	-0.16	1	+3.99	+13.78	6.90	+4.58	21.29	-	-	0.62

NOTES

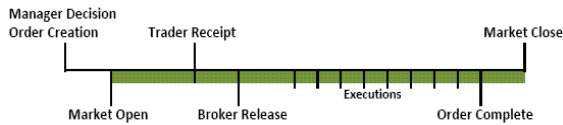
- Brokers above made up 0.27 % of principal traded.



(+) = Cost

TRADE CYCLE DETAIL

LAZARD ASSET MANAGEMENT PERFORMANCE (FULL DAY VWAP)



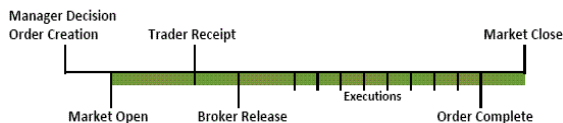
Broker	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (\$)	Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission + Fees + Full Day VWAP Vs. Universe (bp)	20191st (bp)	20184th (bp)	20183rd (bp)
GRAND TOTAL	42	266	59.96%	159,622	-0.06	27,010	+6.36	+14.20	+0.69	+4.43	10.97	12.73	3.45	+1.71
CREDIT SUISSE	10	69	13.71%	140,753	0.16	6,990	+7.20	+14.26	+6.83	+4.12	3.38	+6.10	+5.81	+24.16
MERRILL LYNCH	7	45	9.75%	153,484	-0.07	4,811	+6.97	+14.07	+7.02	+4.94	4.52	17.42	12.73	28.10
UBS	6	29	8.51%	207,752	-0.04	4,338	+7.20	+13.84	0.63	+4.51	11.81	29.50	8.89	+3.79
MORGAN STANLEY	3	8	4.71%	417,089	0.00	2,307	+6.91	+14.35	+4.79	+9.06	11.46	+38.64	16.89	18.02
BARCLAYS	3	27	4.22%	110,635	0.45	1,089	+3.64	+14.32	+20.78	+3.31	+10.52	+39.91	+20.23	-
EXANE	3	3	4.01%	945,799	-0.01	851	+3.00	+13.80	0.62	+2.66	14.08	-	+3.02	-
SOCIETE GENERALE	3	27	3.99%	104,740	-0.36	1,485	+5.25	+14.03	14.97	+3.24	26.99	70.71	38.71	46.70
ITG	2	22	3.12%	100,427	-0.09	1,105	+5.00	+14.20	+5.30	+5.30	9.19	38.99	10.68	48.49
BNP PARIBAS	1	3	2.04%	481,435	-2.40	1,139	+7.89	+17.85	99.50	+1.44	110.08	20.27	55.98	+10.79
DEUTSCHE BANK	1	7	1.88%	190,687	0.10	1,602	+12.00	+13.92	+3.98	+5.96	3.91	6.27	18.04	+22.92



(+) = Cost

TRADE CYCLE DETAIL

LSV ASSET MANAGEMENT PERFORMANCE (FULL DAY VWAP)



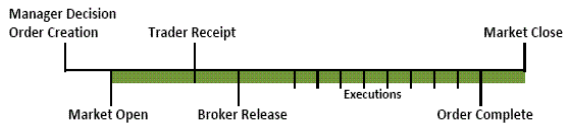
Broker	Principal Traded (\$ Millions)	Total Orders Traded	% Principal	Avg. Principal (\$)	E - Score	COMMISSION			MARKET IMPACT		TOTAL COST/SAVINGS	Commission+Fees+Full Day VWAP Vs. Universe TREND		
						Commission (\$)	Commission (bp)	Bundled Universe (bp)	Full Day VWAP (bp)	Universe Full Day VWAP (bp)	Commission+Fees+Full Day VWAP Vs. Universe (bp)	20191st (bp)	20184th (bp)	20183rd (bp)
GRAND TOTAL	17	276	24.24%	62,192	0.03	7,856	+4.58	+13.89	4.01	+3.81	16.69	7.85	5.96	16.52
CREDIT SUISSE	7	70	9.73%	98,425	-0.11	3,428	+4.98	+13.78	14.87	+3.72	27.40	18.00	28.23	19.09
CITIGROUP	4	62	5.06%	57,743	0.45	1,432	+4.00	+13.71	+19.89	+3.84	+5.80	9.52	+3.27	10.12
MIZUHO	2	38	3.33%	61,990	0.03	1,176	+4.99	+13.78	+4.70	+4.58	8.69	2.52	-	-
UBS	<1	6	1.30%	152,896	-0.14	459	+5.00	+13.46	20.32	+3.07	32.75	4.17	2.99	16.77
HSBC BANK	<1	28	1.12%	28,264	-0.02	237	+3.00	+14.75	13.85	+3.78	25.76	14.89	20.08	32.66
SOCIETE GENERALE	<1	10	1.00%	70,603	-0.02	407	+5.76	+14.37	+0.32	+2.32	4.66	2.11	13.60	21.52
INSTINET	<1	9	0.65%	50,887	0.05	152	+3.31	+14.71	+3.74	+3.70	11.27	39.15	+24.35	6.94
SCOTIA CAPITAL	<1	11	0.60%	38,479	-0.34	43	+1.01	+14.75	20.27	+3.39	37.44	15.87	124.03	28.62
MERRILL LYNCH	<1	11	0.55%	35,129	0.04	155	+4.00	+13.90	+6.21	+4.43	8.15	+23.41	16.03	5.68
BARCLAYS	<1	21	0.50%	16,773	0.02	106	+3.00	+14.97	11.63	+5.06	18.37	33.01	62.15	41.06



(+) = 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)	20191st (bp)	20184th (bp)	20183rd (bp)
GRAND TOTAL	11	180	15.80%	62,159	-0.04	7,141	+6.38	+14.58	+0.52	+3.60	11.86	+4.82	5.07	7.29
JEFFERIES & CO	1	21	2.05%	69,256	0.14	863	+5.94	+14.27	+2.75	+3.20	15.15	22.19	21.95	+19.81
UBS	1	31	1.95%	44,450	-0.02	801	+5.81	+13.54	+12.47	+3.36	+0.70	6.66	+17.90	4.39
SOCIETE GENERALE	1	24	1.88%	55,382	-0.13	532	+4.00	+14.10	4.87	+2.67	16.83	51.57	1.54	25.47
GOLDMAN SACHS	<1	6	1.08%	127,883	-0.51	637	+8.30	+16.81	31.78	+2.61	37.84	+68.62	+14.45	21.63
LIQUIDNET	<1	10	1.06%	75,387	0.35	430	+5.71	+14.41	+50.90	+3.23	+38.94	+41.28	24.23	60.07
MORGAN STANLEY	<1	2	0.99%	349,911	0.26	830	+11.86	+13.40	+2.88	+3.03	3.20	+7.27	+16.60	+61.58
ITG	<1	14	0.82%	41,264	0.28	301	+5.21	+14.30	+7.83	+6.65	7.87	3.15	1.75	22.34
CREDIT SUISSE	<1	10	0.66%	46,726	-0.21	120	+2.57	+12.99	32.21	+3.02	46.10	+2.92	2.25	5.27
SMBC SECURITIES INC	<1	4	0.61%	108,182	0.00	260	+6.00	+13.78	0.64	+4.58	13.02	1.88	13.12	15.56
SC BERNSTEIN	<1	3	0.61%	142,883	-0.11	157	+3.66	+17.65	14.37	+1.32	28.86	63.81	1.47	+5.34



(+) = Cost **TRADE DETAIL ANALYSIS**

Largest Principal Volume Traded

							Market Impact
Name	# Orders	Shares	Net Principal (\$)	Principal (\$)	% of Volume	E - Score	Full Day VWAP (bp)
ENGIE COMMON STOCK EUR1.0	26	295,348	-4,383,690	4,383,690	0.30%	-0.13	3.54
SANOFI COMMON STOCK EUR2.0	9	45,312	-3,902,080	3,902,080	0.29%	0.13	+4.61
ATOS SE COMMON STOCK EUR1.0	16	38,177	-3,527,033	3,527,033	0.55%	-0.28	10.83
RED ELECTRICA CORPORACION SA C	25	124,791	2,727,998	2,727,998	0.91%	-0.28	9.20
BEIERSDORF AG COMMON STOCK	23	25,179	-2,721,852	2,721,852	0.18%	-0.10	2.97
BRITISH AMERICAN TOBACCO PLC C	7	70,798	2,610,733	2,610,733	0.22%	0.05	+12.24
ABB LTD REG COMMON STOCK CHF.1	14	126,863	-2,531,863	2,531,863	0.21%	0.00	+0.82
SWISS LIFE HOLDING AG REG COMM	6	5,100	2,293,239	2,293,239	0.80%	0.08	7.96
TOKYO ELECTRON LTD COMMON STOC	22	14,200	2,061,182	2,061,182	0.04%	-0.06	7.83
UBISOFT ENTERTAINMENT COMMON S	14	23,200	1,870,650	1,870,650	0.20%	0.07	+11.26

Names Most Traded - Total Orders (\$)

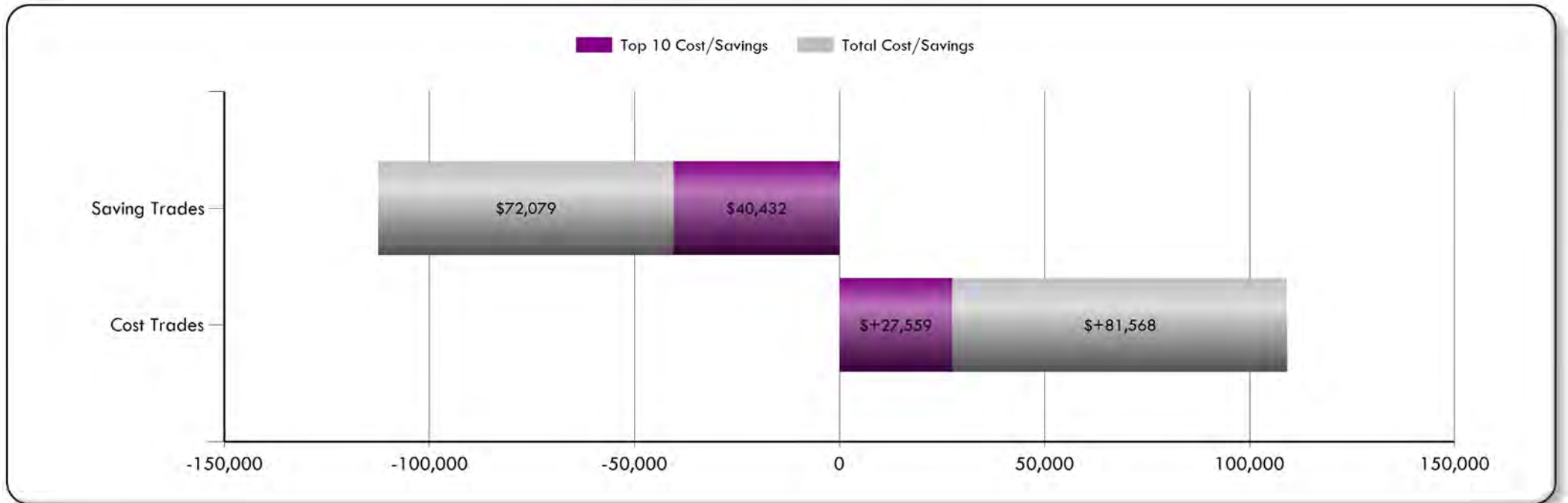
							Market Impact
Name	# Orders	Shares	Net Principal (\$)	Commission (bp)	% of Volume	E - Score	Full Day VWAP (bp)
ENGIE COMMON STOCK EUR1.0	26	295,348	-4,383,690	+6.85	0.30%	-0.13	3.54
RED ELECTRICA CORPORACION SA C	25	124,791	2,727,998	+7.41	0.91%	-0.28	9.20
SCHOELLER BLECKMANN OILFIELD C	23	5,641	468,164	+6.83	0.86%	-0.29	23.20
MYER HOLDINGS LTD COMMON STOCK	23	368,600	163,150	+4.10	1.06%	-0.06	+5.46
BEIERSDORF AG COMMON STOCK	23	25,179	-2,721,852	+7.70	0.18%	-0.10	2.97
TOKYO ELECTRON LTD COMMON STOC	22	14,200	2,061,182	+4.70	0.04%	-0.06	7.83
VP BANK AG REG COMMON STOCK CH	19	4,677	712,983	+4.86	4.27%	-0.02	6.18
HITACHI CAPITAL CORP COMMON ST	19	12,800	-270,118	+5.56	0.16%	-0.46	15.20
ASTELLAS PHARMA INC COMMON STO	18	98,500	-1,343,924	+4.87	0.08%	-0.01	+2.92
BRP INC/CA SUB VOTING COMMON	17	22,300	-654,569	+1.78	0.66%	-0.40	23.84



(+) = Cost

TRADE CONTRIBUTIONS

Cost/Savings Performance				
Category	Principal (\$)	# of Trades	Avg. Market Impact (bp)	Percentage of all Cost/Savings
10 High Cost Trades	4,287,935	10	+135.72	25.25%
Cost Trades	33,963,589	345	+37.73	100.00%
Saving Trades	36,822,808	374	36.93	100.00%
10 Low Cost Trades	3,932,250	10	118.40	35.94%





(+) = Cost

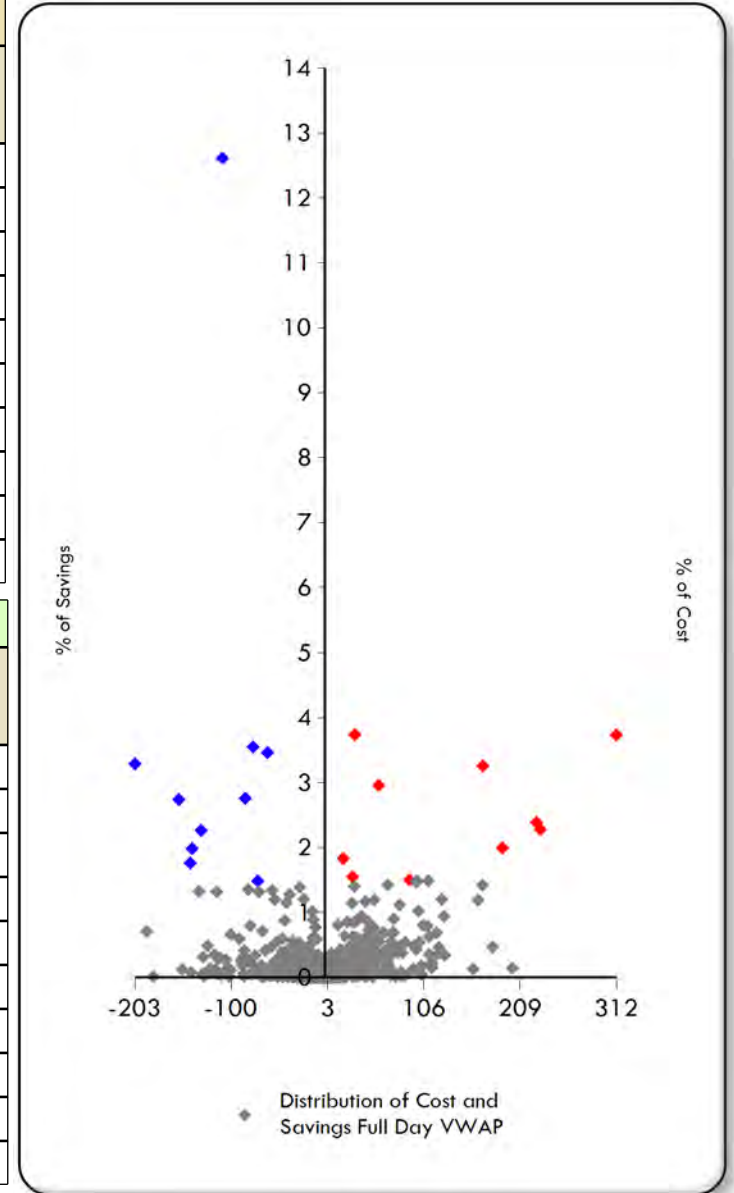
TRADE LEVEL DETAILS

10 High Cost Trades (Full Day VWAP)

Side	Country	Security	Trade Date	Principal (\$)	Cost (%)	E - Score	Full Day VWAP (bp)	Manager	Exbroker
Buy	JAP	ORIX CORP	20190510	1,279,554	3.74%	0.68	+32.01	LSV A	CITIG
Buy	CAN	KINAXIS IN	20190510	134,824	3.74%	1.68	+311.90	WILLI	LIQUI
Sell	FRA	UBISOFT EN	20190516	206,914	3.26%	1.77	+169.09	LAZAR	ITG
Sell	UK	BRITISH AM	20190612	558,544	2.96%	0.63	+57.49	LAZAR	CREDI
Sell	FIN	HUHTAMAKI	20190425	112,506	2.39%	1.21	+226.47	LAZAR	MERRI
Sell	CAN	ENERPLUS C	20190617	105,511	2.28%	1.33	+230.59	WILLI	JEFFE
Buy	PHI	JOLIBEE F	20190412	116,990	2.00%	1.79	+189.90	WILLI	DEUTS
Buy	SWI	ABB LTD RE	20190621	1,024,662	1.83%	0.80	+19.54	LAZAR	UBS
Sell	UK	RIO TINTO	20190605	568,856	1.55%	0.59	+29.66	LAZAR	MORGA
Sell	JAP	TOKYO ELEC	20190515	179,572	1.50%	1.27	+90.58	LSV A	CREDI

10 Low Cost Trades (Full Day VWAP)

Side	Country	Security	Trade Date	Principal (\$)	Savings (%)	E - Score	Full Day VWAP (bp)	Manager	Exbroker
Sell	HKG	TECHTRONIC	20190527	1,307,003	12.61%	-2.63	109.78	LAZAR	BNP P
Sell	JAP	TOKYO ELEC	20190510	523,429	3.55%	-0.88	76.95	LSV A	CREDI
Sell	JAP	NOMURA HOL	20190510	638,223	3.47%	-1.02	61.48	LSV A	CREDI
Buy	FRA	ATOS SE CO	20190412	178,486	3.29%	-3.14	203.31	LAZAR	CREDI
Sell	SWI	SWISS LIFE	20190516	367,380	2.76%	-1.11	85.32	LSV A	UBS
Buy	FRA	TRIGANO SA	20190409	194,298	2.74%	-1.01	156.39	LSV A	CREDI
Buy	HKG	NAGACORP L	20190628	189,861	2.27%	-1.93	132.48	WILLI	GOLDM
Sell	FRA	WORLDLINE	20190513	159,417	1.99%	-2.76	142.18	LAZAR	ITG
Sell	CAN	FINNING IN	20190514	139,742	1.77%	-1.09	144.16	WILLI	LIQUI
Sell	FRA	UBISOFT EN	20190517	234,410	1.49%	-0.78	71.90	LAZAR	CREDI



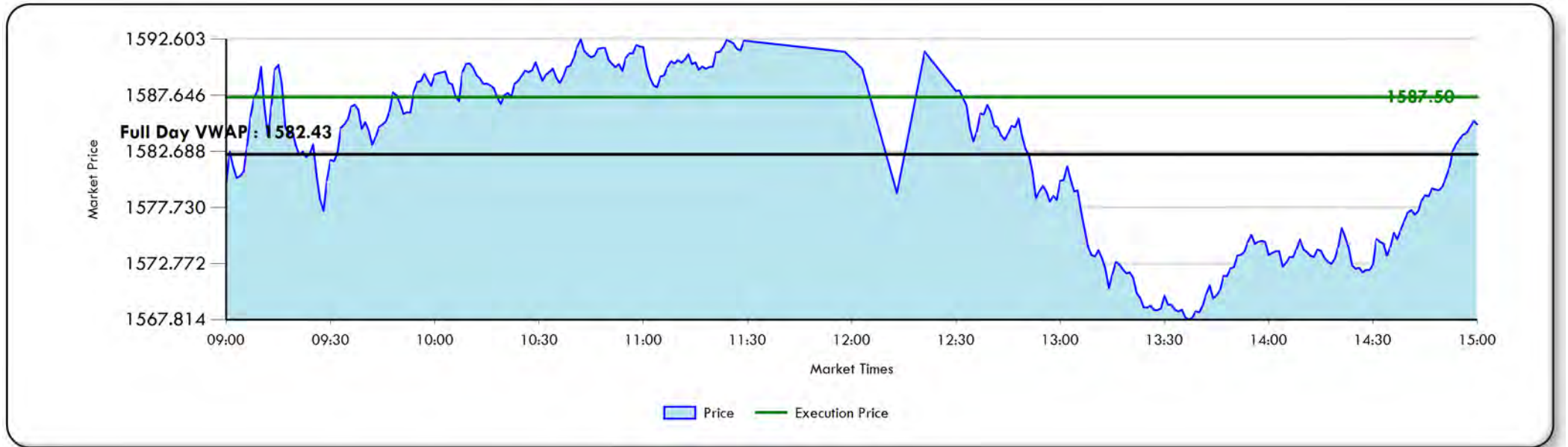


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TRADE LEVEL DETAIL - HIGH COST

ORIX CORP COMMON STOCK - 20190510

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	JAP	JPY	6661144	05/10/2019 09:00:00	05/10/2019 15:00:00	1,279,554	1587.50	1582.43	+4,083	+32.01	0.68	1.35



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 3.74% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

KINAXIS INC COMMON STOCK - 20190510

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	CAN	CAD	BN85P68	05/10/2019 09:30:00	05/10/2019 16:00:00	134,824	80.37	77.94	+4,078	+311.89	1.68	0.41



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 3.74% of your market impact cost.

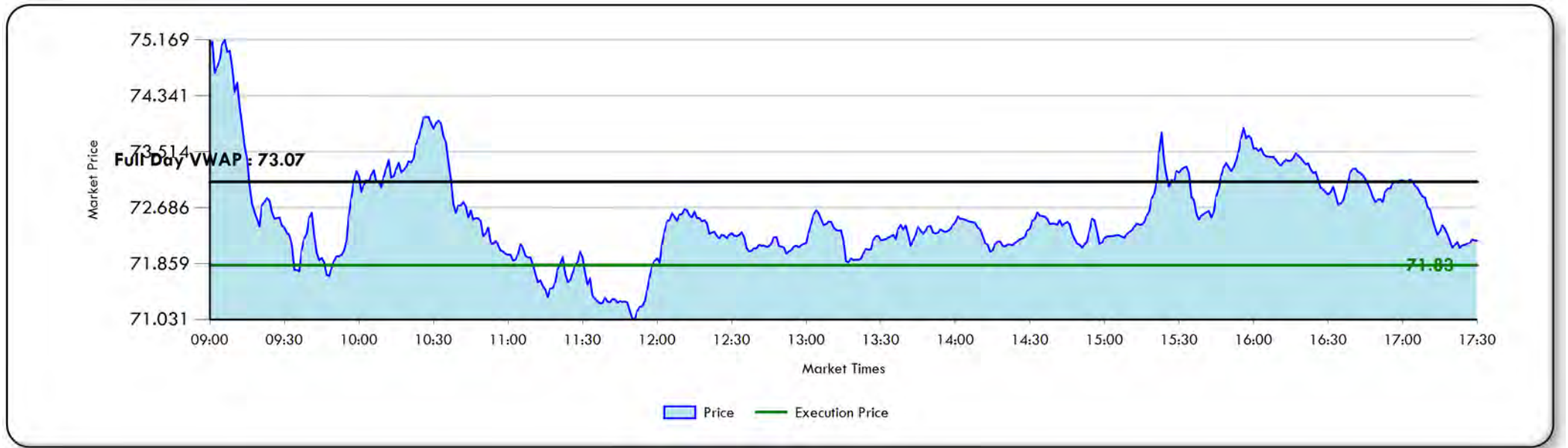


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

UBISOFT ENTERTAINMENT COMMON S - 20190516

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	FRA	EUR	B1L3CS6	05/16/2019 09:00:00	05/16/2019 17:30:00	206,914	71.83	73.07	+3,559	+169.08	1.77	0.13



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 3.26% of your market impact cost.

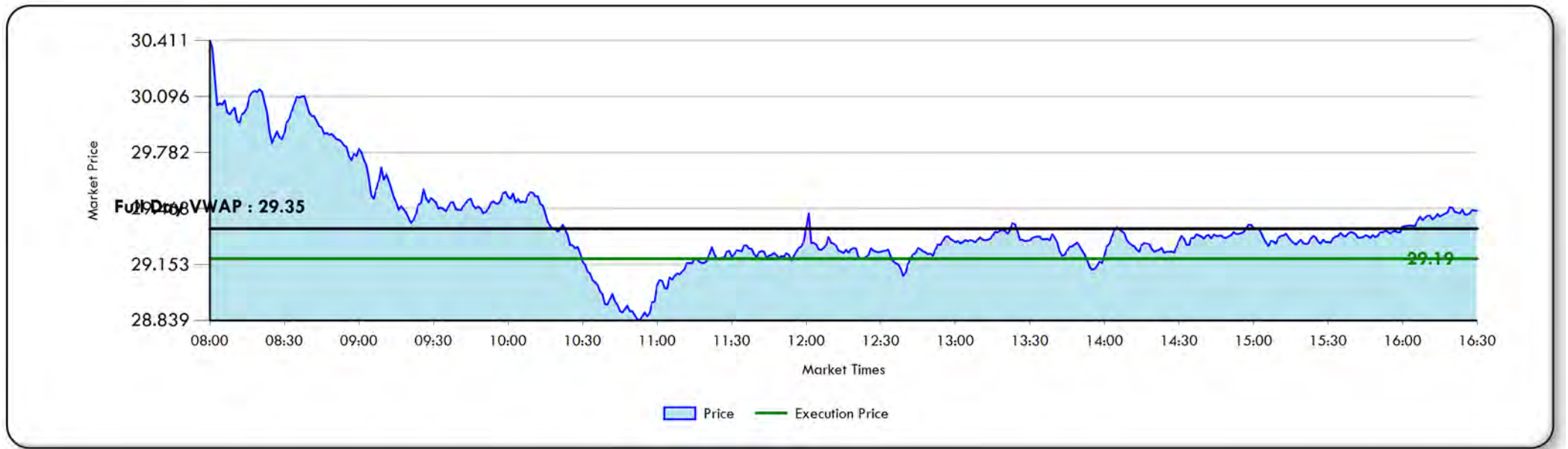


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

BRITISH AMERICAN TOBACCO PLC C - 20190612

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	CREDIT SUISSE	UK	GBP	0287580	06/12/2019 08:00:00	06/12/2019 16:30:00	558,544	29.19	29.35	+3,230	+57.48	0.63	0.25



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 2.96% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

HUHTAMAKI OYJ COMMON STOCK - 20190425

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	MERRILL LYNCH	FIN	EUR	4447476	04/25/2019 09:00:00	04/25/2019 17:30:00	112,506	33.45	34.22	+2,607	+226.46	1.21	0.85



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 2.39% of your market impact cost.

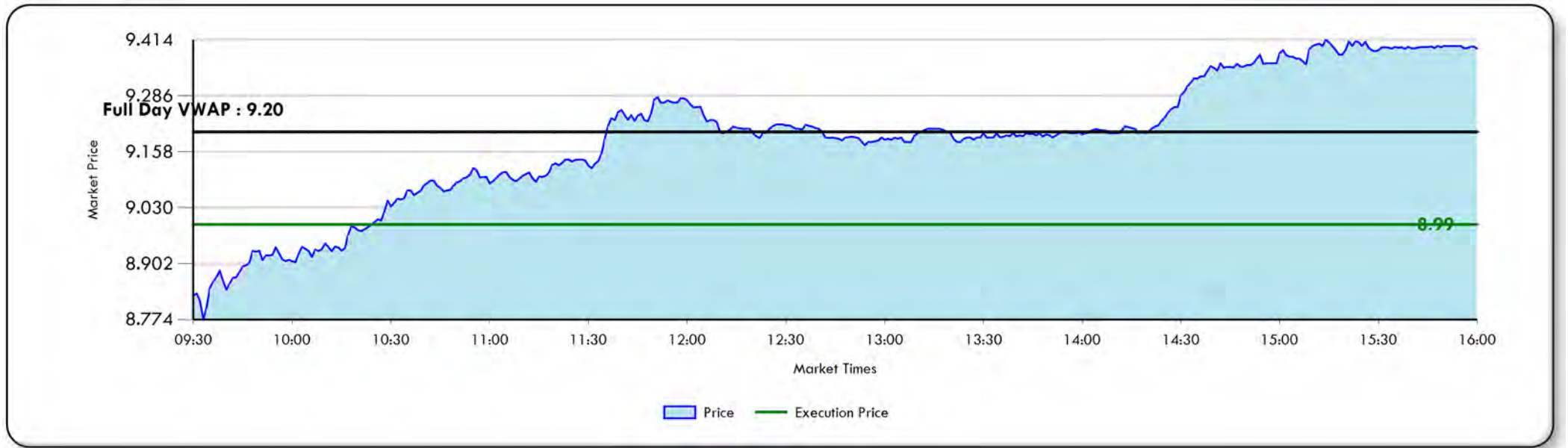


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

ENERPLUS CORP COMMON STOCK - 20190617

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	JEFFERIES & CO	CAN	CAD	B584T89	06/17/2019 09:30:00	06/17/2019 16:00:00	105,511	8.99	9.20	+2,490	+230.58	1.33	1.25



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 2.28% of your market impact cost.

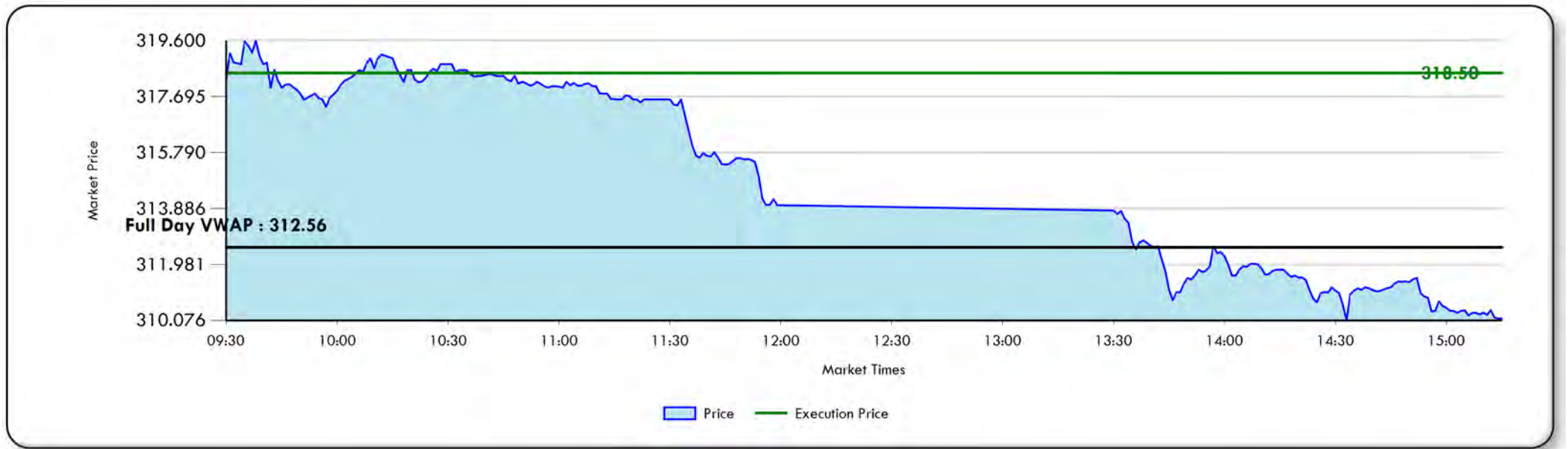


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

JOLIBEE FOODS CORP COMMON STO - 20190412

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	DEUTSCHE BANK	PHI	PHP	6474494	04/12/2019 09:30:00	04/12/2019 15:15:00	116,990	318.50	312.56	+2,180	+189.90	1.79	2.33



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 2.00% of your market impact cost.

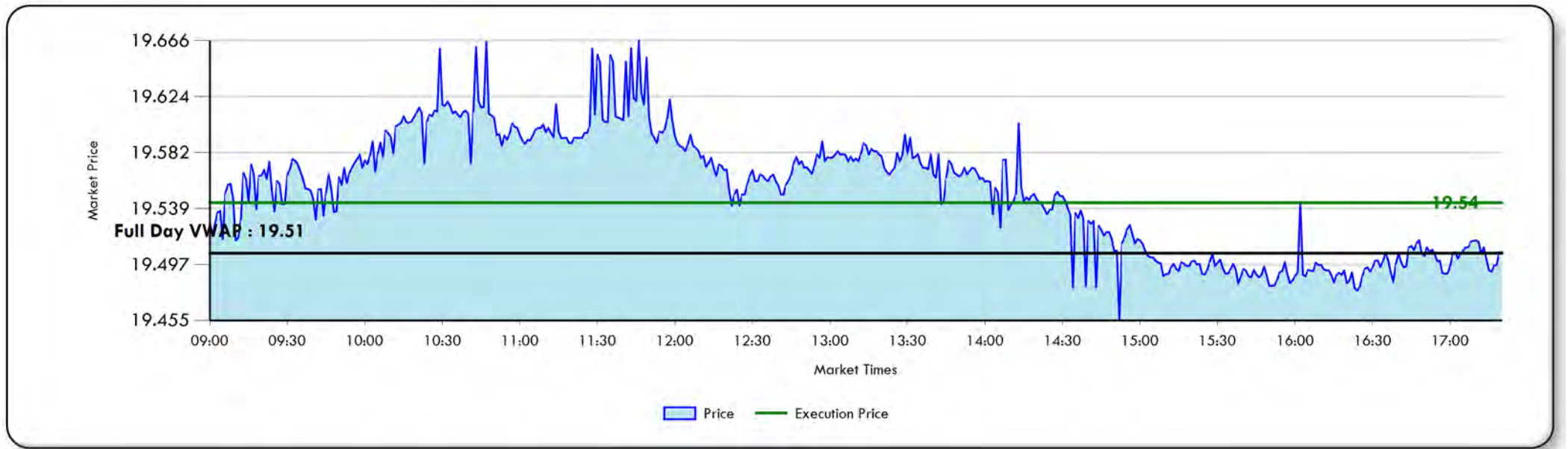


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

ABB LTD REG COMMON STOCK CHF.1 - 20190621

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	UBS	SWI	CHF	7108899	06/21/2019 09:00:00	06/21/2019 17:20:00	1,024,662	19.54	19.51	+1,998	+19.53	0.80	0.63



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.83% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

RIO TINTO PLC COMMON STOCK GBP - 20190605

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	MORGAN STANLEY	UK	GBP	0718875	06/05/2019 08:00:00	06/05/2019 16:30:00	568,856	45.41	45.54	+1,692	+29.65	0.59	0.31



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.55% of your market impact cost.

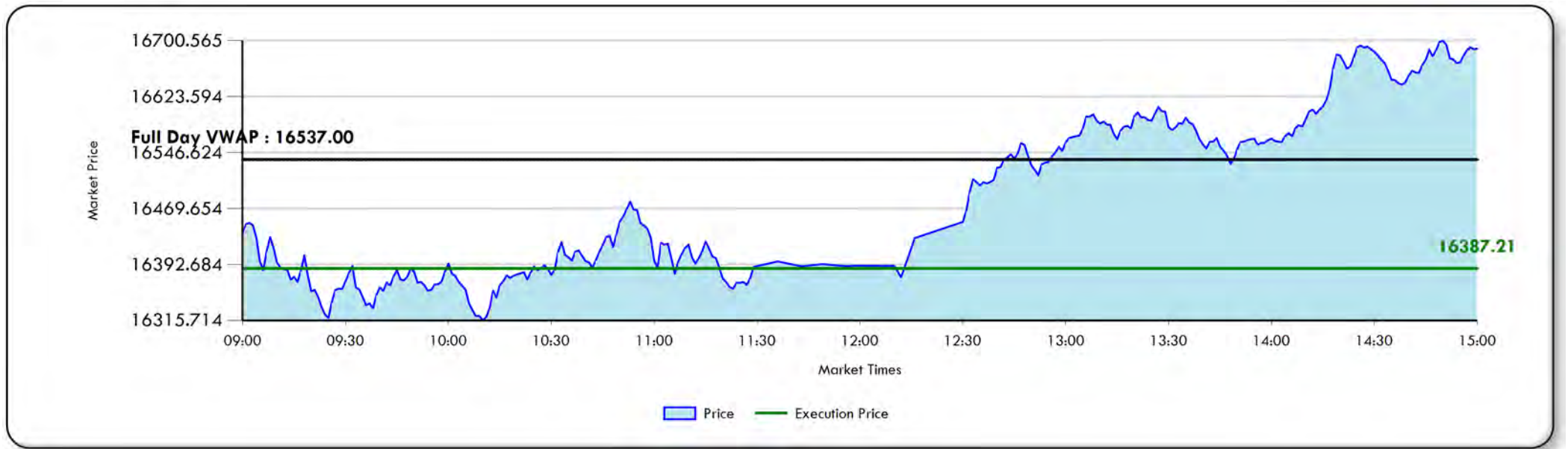


(+) = Cost

TRADE LEVEL DETAIL - HIGH COST

TOKYO ELECTRON LTD COMMON STOC - 20190515

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	CREDIT SUISSE	JAP	JPY	6895675	05/15/2019 09:00:00	05/15/2019 15:00:00	179,572	16387.21	16537.00	+1,641	+90.57	1.27	0.11



NOTES

- Out of all your high cost trades that lost to Full Day VWAP, this order made up 1.50% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - LOW COST

TECHTRONIC INDUSTRIES CO LTD C - 20190527

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	BNP PARIBAS	HKG	HKD	B0190C7	05/27/2019 09:30:00	05/27/2019 16:00:00	1,307,003	50.41	49.86	14,192	109.77	-2.63	10.03



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 12.61% of your market impact cost.

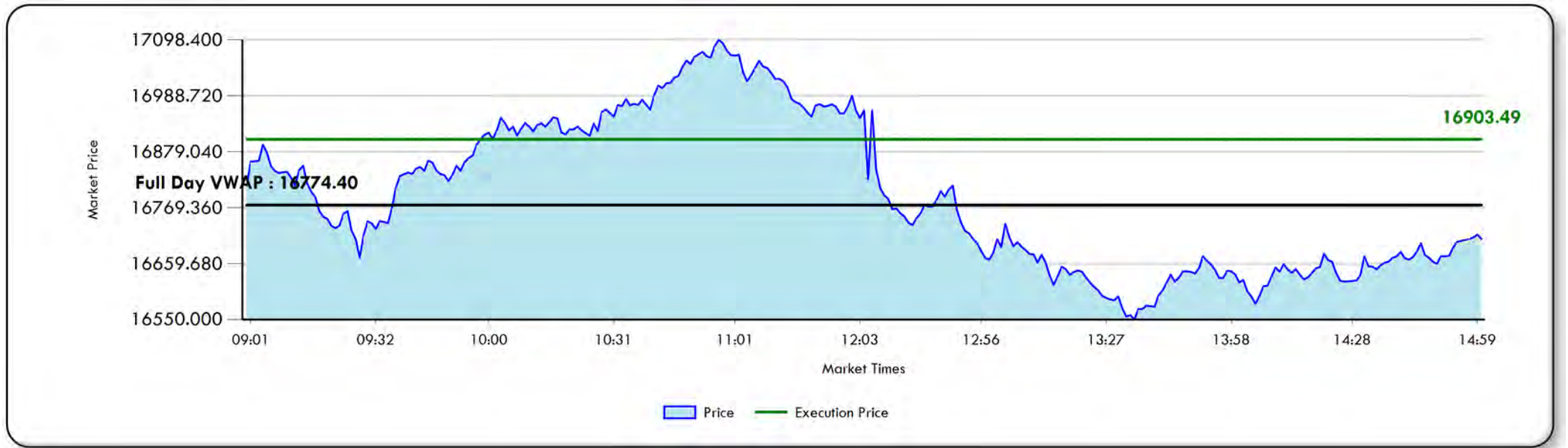


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

TOKYO ELECTRON LTD COMMON STOC - 20190510

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	CREDIT SUISSE	JAP	JPY	6895675	05/10/2019 09:00:00	05/10/2019 15:00:00	523,429	16903.49	16774.40	3,997	76.95	-0.88	0.21



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 3.55% of your market impact cost.

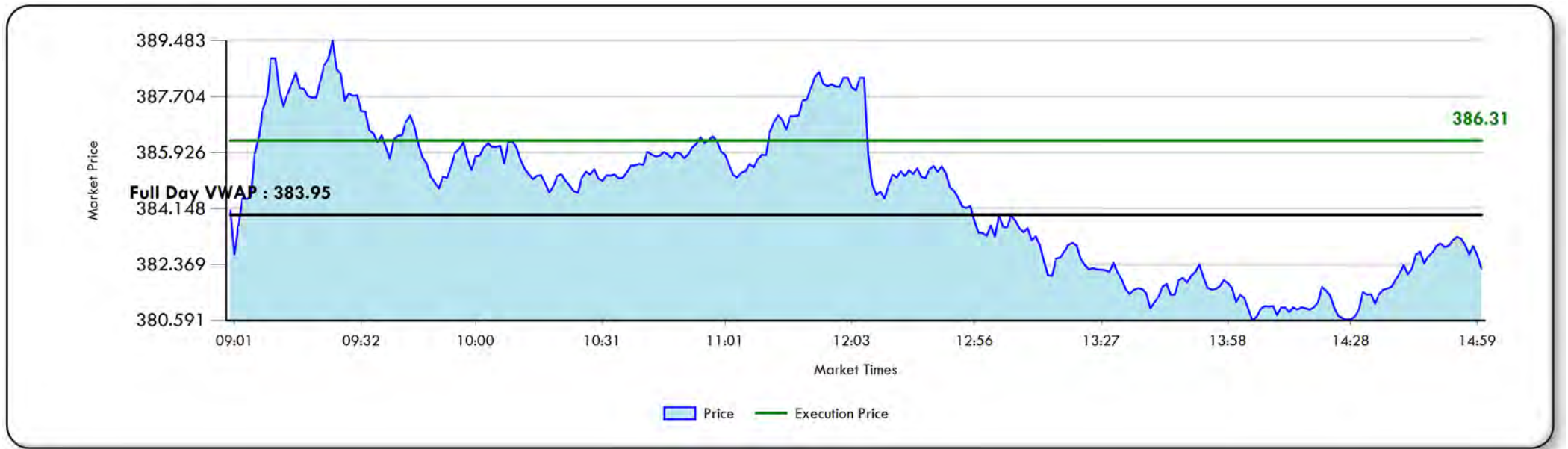


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

NOMURA HOLDINGS INC COMMON STO - 20190510

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	CREDIT SUISSE	JAP	JPY	6643108	05/10/2019 09:00:00	05/10/2019 15:00:00	638,223	386.31	383.95	3,900	61.48	-1.02	0.98



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 3.47% of your market impact cost.

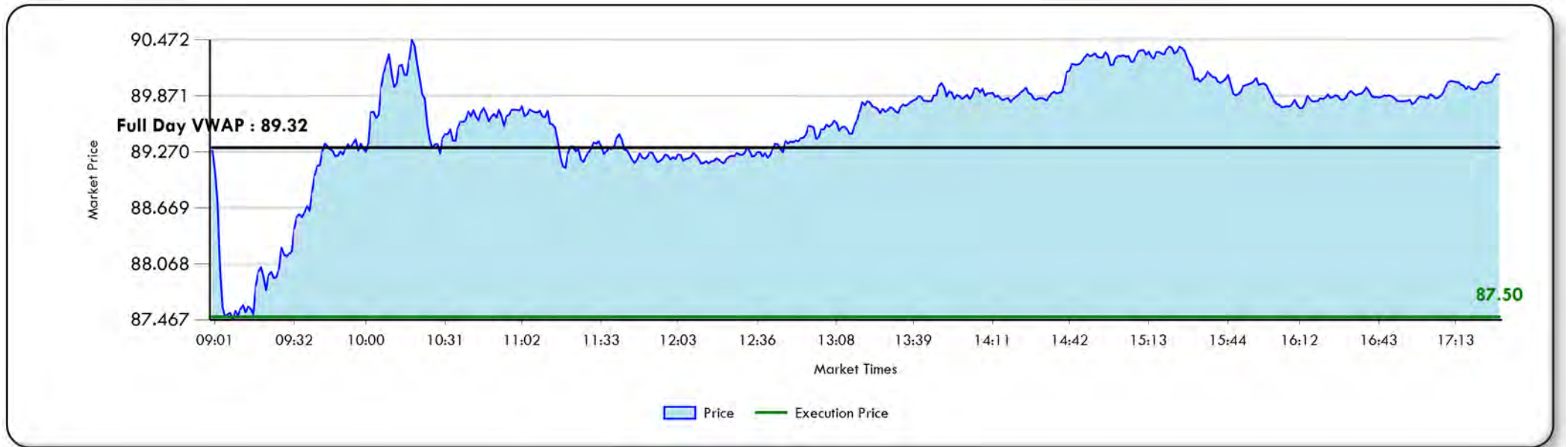


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

ATOS SE COMMON STOCK EUR1.0 - 20190412

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	5654781	04/12/2019 09:00:00	04/12/2019 17:30:00	178,486	87.50	89.32	3,704	203.31	-3.14	0.37



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 3.29% of your market impact cost.

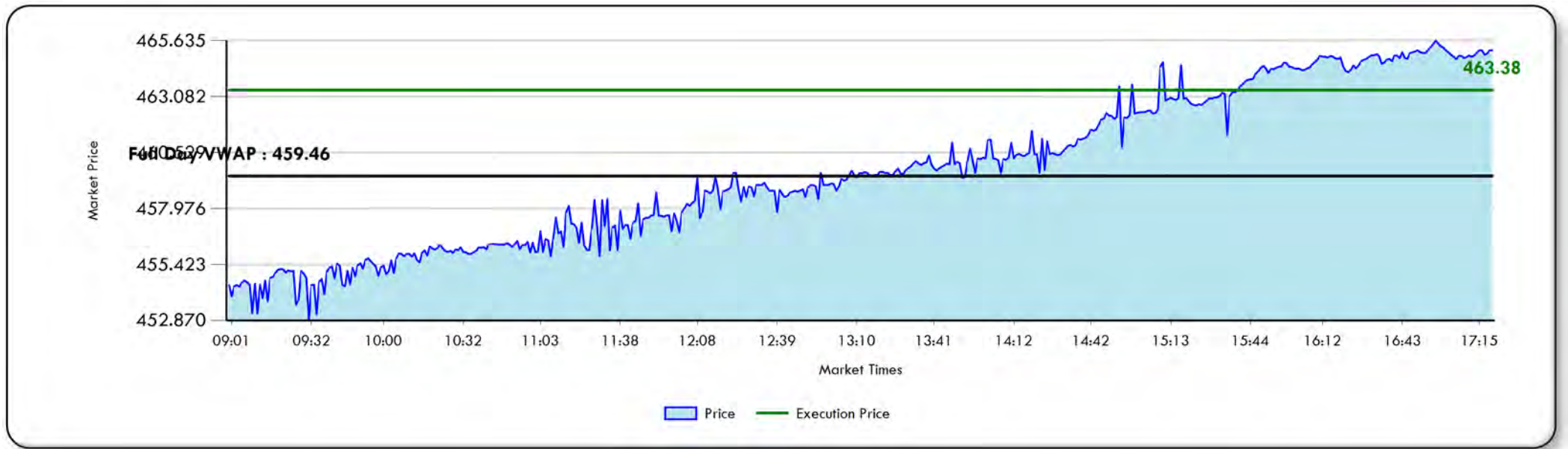


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

SWISS LIFE HOLDING AG REG COMM - 20190516

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	UBS	SWI	CHF	7437805	05/16/2019 09:00:00	05/16/2019 17:20:00	367,380	463.38	459.46	3,108	85.31	-1.11	0.76



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 2.76% of your market impact cost.

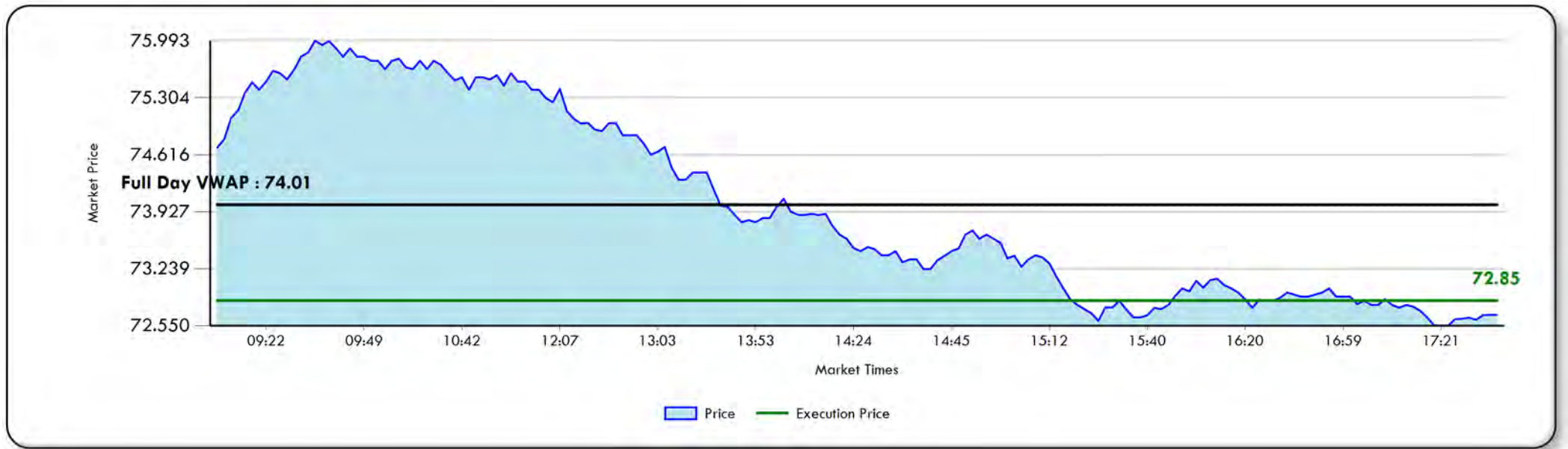


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

TRIGANO SA COMMON STOCK EUR4.2 - 20190409

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	CREDIT SUISSE	FRA	EUR	4457624	04/09/2019 09:00:00	04/09/2019 17:30:00	194,298	72.85	74.01	3,087	156.38	-1.01	8.76



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 2.74% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - LOW COST

NAGACORP LTD COMMON STOCK USD. - 20190628

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	GOLDMAN SACHS	HKG	HKD	B1FSSM3	06/28/2019 09:30:00	06/28/2019 16:00:00	189,861	9.51	9.64	2,549	132.47	-1.93	2.74



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 2.27% of your market impact cost.

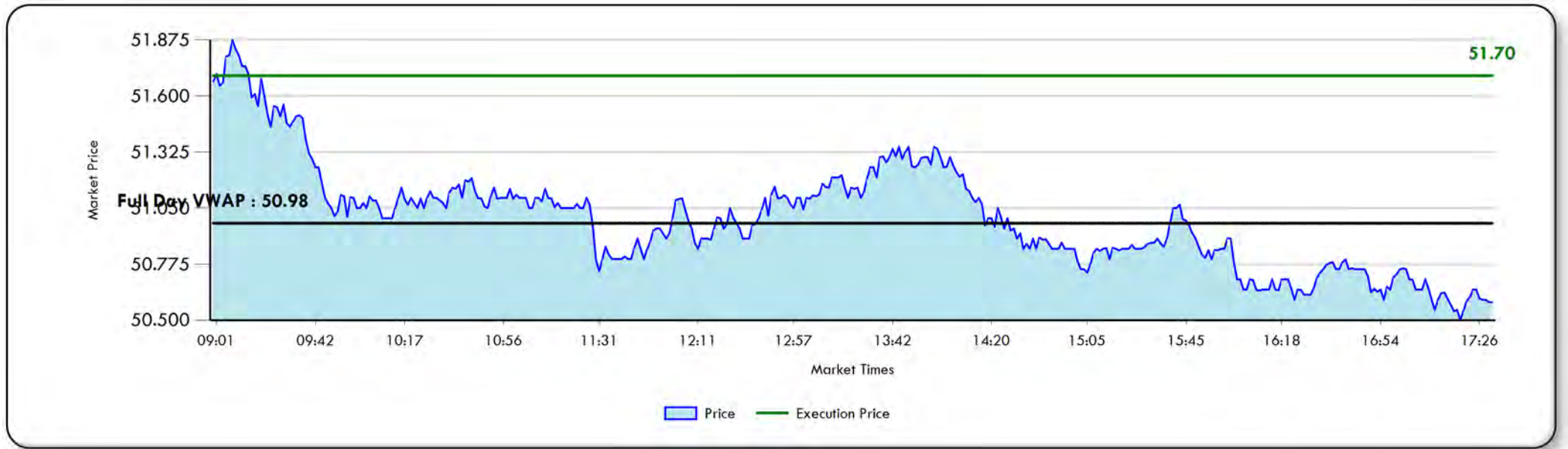


(+) = Cost

TRADE LEVEL DETAIL - LOW COST

WORLDLINE SA COMMON STOCK EUR. - 20190513

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	FRA	EUR	BNFWR44	05/13/2019 09:00:00	05/13/2019 17:30:00	159,417	51.70	50.98	2,235	142.18	-2.76	1.07



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.99% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - LOW COST

FINNING INTERNATIONAL INC COMM - 20190514

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	LIQUIDNET	CAN	CAD	2339177	05/14/2019 09:30:00	05/14/2019 16:00:00	139,742	22.63	22.31	1,986	144.16	-1.09	0.55



NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.77% of your market impact cost.



(+) = Cost

TRADE LEVEL DETAIL - LOW COST

UBISOFT ENTERTAINMENT COMMON S - 20190517

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	CREDIT SUISSE	FRA	EUR	B1L3CS6	05/17/2019 09:00:00	05/17/2019 17:30:00	234,410	71.86	71.35	1,673	71.90	-0.78	0.47



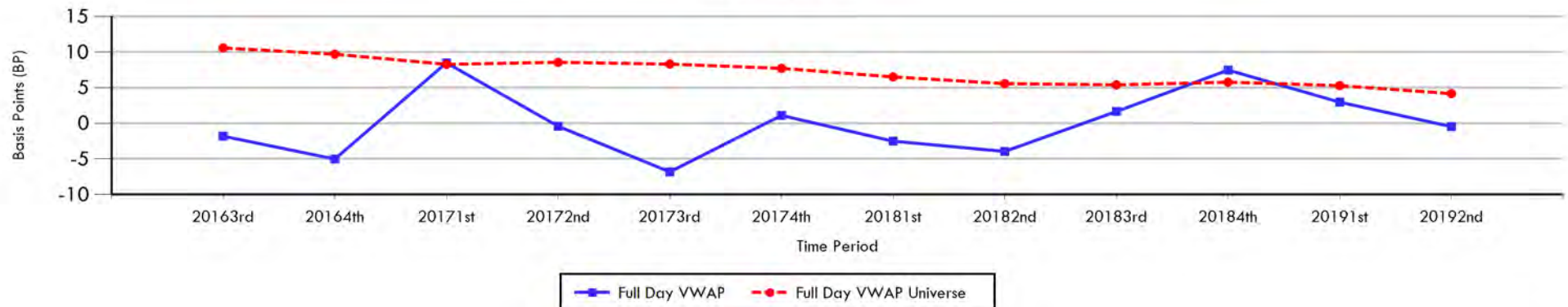
NOTES

- Out of all your low cost trades that beat to Full Day VWAP, this order made up 1.49% 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)
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
20192nd	70,813,093	+5.93	+14.19	+8.58	+8.20	0.48	+4.15	12.50

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	6.66 BP	13.23 BP	1.60 BP	3.09 BP	17.92 BP
AUSTRIA	30.77 BP	13.79 BP	0.00 BP	5.70 BP	19.49 BP
BELGIUM	55.69 BP	13.55 BP	0.00 BP	3.36 BP	16.91 BP
BRAZIL	7.16 BP	14.59 BP	2.35 BP	5.98 BP	22.92 BP
CANADA	15.95 BP	14.75 BP	0.03 BP	3.39 BP	18.17 BP
CHILE	0.27 BP	17.62 BP	0.69 BP	3.36 BP	21.67 BP
CHINA	4.46 BP	15.00 BP	4.40 BP	1.62 BP	21.02 BP
COLOMBIA	2.02 BP	21.58 BP	1.09 BP	9.18 BP	31.85 BP
CZECH REPUBLIC	10.62 BP	13.90 BP	0.00 BP	2.78 BP	16.68 BP
DENMARK	52.05 BP	13.91 BP	0.01 BP	4.94 BP	18.86 BP
EGYPT	1.46 BP	25.62 BP	13.19 BP	6.66 BP	45.47 BP
FINLAND	23.62 BP	13.96 BP	0.01 BP	5.49 BP	19.46 BP
FRANCE - BUYS	51.00 BP	13.80 BP	30.00 BP	2.66 BP	46.46 BP
FRANCE - SELLS	54.41 BP	15.23 BP	0.00 BP	2.73 BP	17.96 BP
GERMANY	52.58 BP	13.70 BP	0.03 BP	3.35 BP	17.08 BP
GREECE	1.30 BP	15.11 BP	2.50 BP	11.66 BP	29.27 BP
HONG KONG	2.05 BP	18.29 BP	9.85 BP	1.24 BP	29.38 BP
HUNGARY	12.48 BP	13.06 BP	0.08 BP	2.35 BP	15.49 BP
INDONESIA	0.29 BP	16.52 BP	8.69 BP	3.00 BP	28.21 BP

Elkins/McSherry Global Universe

Country	Price	Commission	Fees	Market Impact	Total
INDIA	7.12 BP	15.96 BP	10.82 BP	2.20 BP	28.98 BP
IRELAND - BUYS	13.80 BP	16.17 BP	100.00 BP	2.39 BP	118.56 BP
IRELAND - SELLS	13.17 BP	14.41 BP	0.00 BP	14.38 BP	28.79 BP
ISRAEL	3.94 BP	14.18 BP	0.08 BP	3.32 BP	17.58 BP
ITALY - BUYS	6.60 BP	13.68 BP	12.00 BP	2.20 BP	27.88 BP
ITALY - SELLS	9.26 BP	13.07 BP	0.00 BP	6.35 BP	19.42 BP
JAPAN	20.71 BP	13.78 BP	0.02 BP	4.58 BP	18.38 BP
KOREA - BUYS	54.75 BP	19.54 BP	0.00 BP	4.61 BP	24.15 BP
KOREA - SELLS	53.91 BP	17.04 BP	28.89 BP	2.60 BP	48.53 BP
LUXEMBOURG	143.38 BP	0.00 BP	0.08 BP	27.61 BP	27.69 BP
MALAYSIA	1.33 BP	17.46 BP	3.37 BP	1.35 BP	22.18 BP
MEXICO	2.20 BP	14.20 BP	0.00 BP	1.21 BP	15.41 BP
NORWAY	12.29 BP	13.33 BP	0.05 BP	5.30 BP	18.68 BP
NETHERLANDS	31.29 BP	14.15 BP	0.10 BP	3.20 BP	17.45 BP
NEW ZEALAND	3.30 BP	13.91 BP	0.00 BP	5.23 BP	19.14 BP
PERU	0.56 BP	27.27 BP	5.38 BP	4.84 BP	37.49 BP
PHILIPPINES - BUYS	0.99 BP	24.42 BP	4.46 BP	1.82 BP	30.70 BP
PHILIPPINES - SELLS	0.76 BP	15.06 BP	63.05 BP	1.00 BP	79.11 BP
POLAND	10.22 BP	14.90 BP	0.00 BP	3.77 BP	18.67 BP
PORTUGAL	5.47 BP	13.99 BP	0.01 BP	5.76 BP	19.76 BP

Elkins/McSherry Global Universe

Country	Price	Commission	Fees	Market Impact	Total
RUSSIA	0.05 BP	14.78 BP	0.00 BP	14.22 BP	29.00 BP
SOUTH AFRICA - BUYS	20.79 BP	13.32 BP	23.11 BP	4.17 BP	40.60 BP
SOUTH AFRICA - SELLS	12.37 BP	14.94 BP	0.05 BP	3.12 BP	18.11 BP
SINGAPORE	2.34 BP	17.94 BP	3.61 BP	1.76 BP	23.31 BP
SPAIN	7.10 BP	13.93 BP	0.00 BP	3.11 BP	17.04 BP
SWEDEN	12.56 BP	13.89 BP	0.02 BP	1.15 BP	15.06 BP
SWITZERLAND	59.12 BP	13.76 BP	0.01 BP	3.04 BP	16.81 BP
TAIWAN - BUYS	2.48 BP	17.75 BP	0.05 BP	1.48 BP	19.28 BP
TAIWAN - SELLS	2.06 BP	18.09 BP	28.73 BP	2.82 BP	49.64 BP
THAILAND	2.32 BP	17.00 BP	0.66 BP	2.42 BP	20.08 BP
TURKEY	1.52 BP	14.63 BP	0.00 BP	3.62 BP	18.25 BP
U.K. - BUYS	7.03 BP	15.29 BP	34.64 BP	1.77 BP	51.70 BP
U.K. - SELLS	7.08 BP	14.37 BP	0.00 BP	11.35 BP	25.72 BP
U.S.	52.02 BP	12.34 BP	0.07 BP	1.96 BP	14.37 BP
VENEZUELA	10.50 BP	43.22 BP	9.10 BP	31.03 BP	83.35 BP
TOTAL: 55	17.86 BP	16.38 BP	7.33 BP	5.42 BP	29.13 BP

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SACRAMENTO COUNTY

US Fixed Income Analysis

Period End June 30, 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 April 01,2019 to June 30,2019. The analysis included trading of 355 trades in 107 different issues representing \$446,470,847 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	Q1 2019	Q4 2018	Q3 2018	Q2 2018
BUYS	223	184	77	+26.77	+1.20	+8.26	157.54	7.06	+2.14	+8.56	+10.48	+11.14
SELLS	223	171	67	+6.21	+0.28	+10.82	235.34	10.54	2.58	7.18	10.05	4.57
GRAND TOTAL	446	355	107	+32.98	+0.74	+9.54	392.87	8.80	0.25	+0.33	+0.04	+2.62

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	Q1 2019	Q4 2018	Q3 2018	Q2 2018
Governments	417	292	55	+36.44	+0.87	+9.27	349.63 8.40	0.12	0.29	0.10	+1.22
Corporates	23	51	43	2.94	1.30	+16.35	40.04 17.65	0.97	+1.54	+0.71	1.77
Mortgages	7	11	8	.70	1.02	+3.19	2.88 4.21	0.64	+2.32	+0.15	+6.46
Municipals	<1	1	1	+0.18	+4.52	+12.76	0.32 8.24	+0.75	-	+3.33	-

Bonds by Principal Traded



5.00 % 93.00 % 2.00 % 0.00 %

Historical Trade Cost Trend



EXECUTIVE SUMMARY

EXECUTION PERFORMANCE SUMMARY

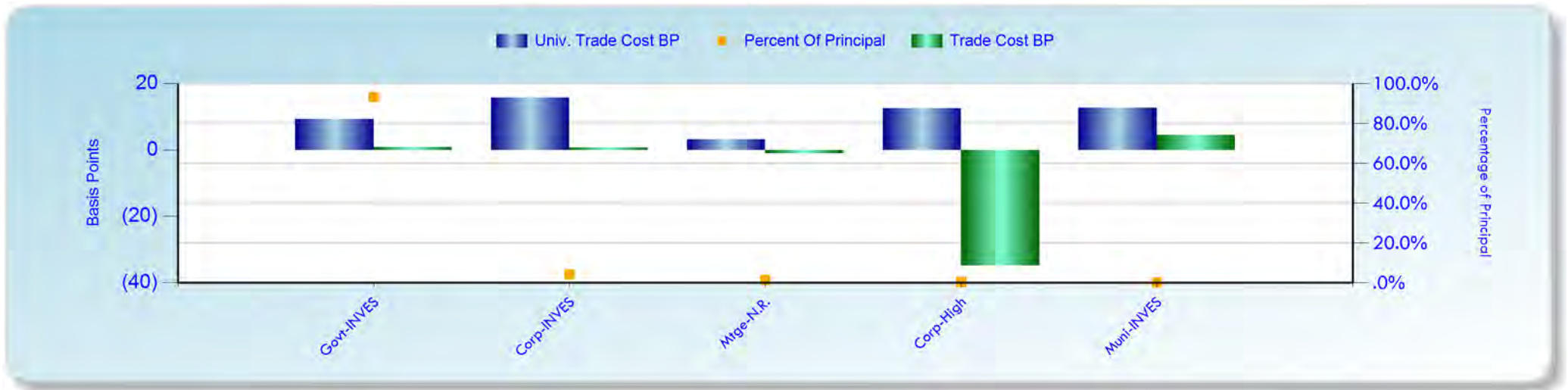
Trade Size (Millions)	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous. \$)	BP
0~2	201	305	99	6.83	0.34	+8.60	179.88	8.94
2~5	130	41	18	2.27	0.17	+8.22	109.14	8.39
10~50	80	5	5	+36.49	+4.55	+11.02	51.95	6.47
5~10	35	4	3	+5.58	+1.60	+16.50	51.90	14.90



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	417	292	55	+36.44	+0.87	+9.27	349.63	8.40
Corp-INVESTMENT GRADE	19	41	35	+1.16	+0.62	+15.82	28.60	15.20
Mtge-N.R.	7	11	8	0.70	1.02	+3.19	2.88	4.21
Corp-High Yield	2	6	5	5.25	34.94	+12.53	7.14	47.47
Muni-INVESTMENT GRADE	<1	1	1	+0.18	+4.52	+12.76	0.32	8.24



EXECUTIVE SUMMARY

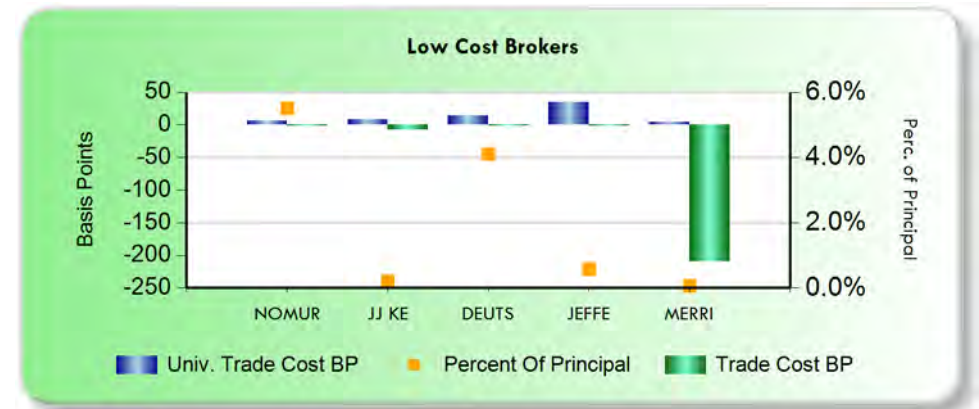
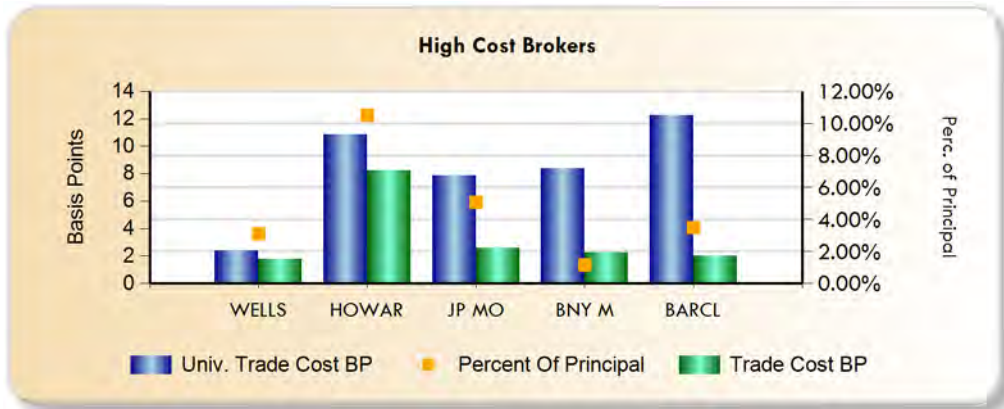
RATING SUMMARY

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	416.93	293	56	+36.62	+0.88	+9.27	349.96	8.39
NR	6.85	11	8	0.70	1.02	+3.19	2.88	4.21
BBB-	6.51	12	11	3.37	5.17	+8.33	8.80	13.50
BBB+	5.48	14	12	+0.80	+1.46	+14.74	7.28	13.28
A-	2.35	5	5	+0.81	+3.46	+12.60	2.15	9.14
BBB	1.87	3	3	+1.02	+5.43	+49.86	8.32	44.43
AA-	1.69	5	2	+1.75	+10.39	+15.65	0.89	5.26
A+ *-	1.64	3	2	+0.74	+4.50	+12.68	1.34	8.18
A- *-	<1	1	1	+0.41	+5.59	+46.08	2.96	40.49
BB-	<1	2	1	+0.70	+10.16	+2.52	+0.52	+7.64



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)								
WELLS FARGO	14	3	3	+2.49	+1.80	+2.38	0.80	0.58
HOWARD TAYLOR & COMP	47	12	10	+38.59	+8.22	+10.85	12.33	2.63
JP MORGAN CHASE	23	30	22	+5.89	+2.60	+7.87	11.93	5.27
BNY MELLON	5	5	3	+1.18	+2.27	+8.39	3.20	6.12
BARCLAYS	16	23	19	+3.14	+2.02	+12.28	15.97	10.26
5 LOWEST COST BROKERS (Sorted By Trade Cost BP)								
NOMURA	25	32	20	3.92	1.59	+6.21	19.21	7.80
JJ KENNY DRAKE INC	<1	2	2	0.72	7.67	+7.76	1.44	15.43
DEUTSCHE BANK	18	17	6	3.32	1.81	+13.69	28.41	15.50
JEFFERIES & CO	3	10	7	0.48	1.87	+34.66	9.45	36.53
MERRILL LYNCH	<1	1	1	6.63	208.89	+4.35	6.77	213.24





COUNTRY PERFORMANCE BASED ON BUYS AND SELLS

Country									
		Principal	No. of	No. of	Trade Cost	Trade Cost	Univ. Trade	Cost Diff. from Universe	
	Side	(Mil. \$)	Trades	Issues	(Thous. \$)	BP	Cost BP	(Thous. \$)	BP
UNITED STATES	SELLS	223	171	67	+6.21	+0.28	+10.82	235.34	10.54
	BUYS	223	184	77	+26.77	+1.20	+8.26	157.54	7.06

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	Q1 2019	Q4 2018	Q3 2018	Q2 2018
METROPOLITAN WEST MG	372	290	73	+22.53	+0.61	+10.83	380.28	10.22	0.75	+0.28	+0.03	+2.61
NEUBERGER BERMAN	54	10	7	+7.65	+1.42	+2.47	5.70	1.05	+0.54	+1.09	+0.92	+2.73
BARCLAYS 1-10 YR TIP	20	55	30	+2.79	+1.36	+4.72	6.89	3.36	0.09	0.35	1.52	+2.58

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		Q1 2019	Q4 2018	Q3 2018	Q2 2018
GOLDMAN SACHS	91	46	28	4.56	0.50	+16.24	151.88	16.74	+2.30	+0.53	+0.08	+3.42
HOWARD TAYLOR & COMP	47	12	10	+38.59	+8.22	+10.85	12.33	2.63	+2.20	8.02	+3.81	-
CITIGROUP	42	27	14	+2.26	+0.54	+3.17	11.10	2.63	+2.05	0.11	+1.08	+0.26
RBC CAPITAL MARKETS	32	31	16	2.15	0.68	+5.84	20.67	6.52	2.81	2.44	2.76	+3.38
BANK OF AMERICA	31	24	13	0.24	0.08	+12.59	39.86	12.67	5.66	3.04	1.19	0.05
CITADEL SECURITIES	30	18	6	0.53	0.18	+3.16	10.06	3.34	+0.03	1.63	0.17	+0.42
NOMURA	25	32	20	3.92	1.59	+6.21	19.21	7.80	+2.68	+3.57	+1.03	+0.77
JP MORGAN CHASE	23	30	22	+5.89	+2.60	+7.87	11.93	5.27	+2.00	+1.99	1.01	+2.09
BMO CAPITAL MARKETS	21	5	5	+0.63	+0.30	+2.99	5.72	2.69	1.28	5.31	0.27	-
HSBC BANK	19	23	12	+1.47	+0.77	+9.17	15.99	8.40	4.00	1.31	+0.43	+3.88
MORGAN STANLEY	18	20	16	1.05	0.57	+10.84	21.08	11.41	5.45	+1.64	2.98	+10.21
DEUTSCHE BANK	18	17	6	3.32	1.81	+13.69	28.41	15.50	2.53	1.34	+0.20	+0.75
BARCLAYS	16	23	19	+3.14	+2.02	+12.28	15.97	10.26	+1.48	1.02	+0.35	1.25
WELLS FARGO	14	3	3	+2.49	+1.80	+2.38	0.80	0.58	4.58	0.34	+1.76	+1.98
BNY MELLON	5	5	3	+1.18	+2.27	+8.39	3.20	6.12	7.98	1.73	+1.12	+5.38
CREDIT SUISSE	4	6	6	+0.58	+1.45	+5.05	1.44	3.60	2.28	+4.26	+0.47	+6.51
UBS	4	13	13	+0.12	+0.32	+8.12	2.85	7.80	+2.20	0.45	+2.88	1.29
WACHOVIA BANK	3	7	7	+0.22	+0.77	+10.37	2.72	9.60	1.63	2.38	0.98	-
JEFFERIES & CO	3	10	7	0.48	1.87	+34.66	9.45	36.53	+13.62	+28.32	-	-
JJ KENNY DRAKE INC	<1	2	2	0.72	7.67	+7.76	1.44	15.43	0.24	-	-	-

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	9128286S US TREASURY N/B 04/26 2.375	Govt	05/29/2019 04/30/2026	METROPOLITAN WE HOWARD TAYLOR &	US	USD	19,485,925	101.516	101.611	+9.39	+18,295
B	9128286X US TREASURY N/B 05/26 2.125	Govt	05/29/2019 05/31/2026	METROPOLITAN WE HOWARD TAYLOR &	US	USD	19,139,554	99.867	99.773	+9.39	+17,975
B	912810SH US TREASURY N/B 05/49 2.875	Govt	05/13/2019 05/15/2049	METROPOLITAN WE GOLDMAN SACHS	US	USD	3,503,240	100.813	100.534	+27.60	+9,671
B	912828XT US TREASURY N/B 05/24 2	Govt	05/30/2019 05/31/2024	METROPOLITAN WE JP MORGAN CHASE	US	USD	2,771,892	99.891	99.680	+20.86	+5,781
S	912828Y3 TSY INFL IX N/B 07/28 0.75	Govt	05/31/2019 07/15/2028	METROPOLITAN WE HSBC BANK	US	USD	1,626,489	103.250	103.570	+31.02	+5,046
S	912810SF US TREASURY N/B 02/49 3	Govt	05/09/2019 02/15/2049	METROPOLITAN WE GOLDMAN SACHS	US	USD	4,453,625	102.500	102.613	+11.05	+4,922
S	912810SF US TREASURY N/B 02/49 3	Govt	05/16/2019 02/15/2049	METROPOLITAN WE GOLDMAN SACHS	US	USD	1,733,881	103.207	103.500	+28.37	+4,918
B	9128286S US TREASURY N/B 04/26 2.375	Govt	05/03/2019 04/30/2026	METROPOLITAN WE GOLDMAN SACHS	US	USD	19,126,018	99.641	99.617	+2.35	+4,499
B	912828XB US TREASURY N/B 05/25 2.125	Govt	06/27/2019 05/15/2025	NEUBERGER BERMA JP MORGAN CHASE	US	USD	6,092,367	101.539	101.486	+5.27	+3,211
B	912810SH US TREASURY N/B 05/49 2.875	Govt	06/18/2019 05/15/2049	METROPOLITAN WE DEUTSCHE BANK	US	USD	1,155,600	107.000	106.714	+26.72	+3,088
S	9128286B US TREASURY N/B 02/29 2.625	Govt	04/29/2019 02/15/2029	METROPOLITAN WE HOWARD TAYLOR &	US	USD	1,994,927	100.754	100.909	+15.43	+3,078
S	912828P4 US TREASURY N/B 02/26 1.625	Govt	04/08/2019 02/15/2026	NEUBERGER BERMA BANK OF AMERICA	US	USD	2,516,247	94.953	95.063	+11.56	+2,909
B	912810SH US TREASURY N/B 05/49 2.875	Govt	05/15/2019 05/15/2049	METROPOLITAN WE BANK OF AMERICA	US	USD	3,171,400	101.000	100.913	+8.66	+2,748
B	912810QX US TREASURY N/B	Govt	06/03/2019 08/15/2042	NEUBERGER BERMA JP MORGAN CHASE	US	USD	2,555,474	104.305	104.208	+9.33	+2,383



B	912810SH US TREASURY N/B 05/49 2.875	Govt	05/13/2019 05/15/2049	METROPOLITAN WE HSBC BANK	US	USD	1,072,987	100.750	100.534	+21.40	+2,296
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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	912810SF US TREASURY N/B 02/49 3	Govt	05/13/2019 02/15/2049	METROPOLITAN WE GOLDMAN SACHS	US	USD	3,550,453	103.361	103.073	27.83	9,881
B	77340RAM ROCKIES EXPRESS PIPELINE	Corp	06/14/2019 04/15/2040	METROPOLITAN WE MERRILL LYNCH	US	USD	317,319	107.566	109.813	208.89	6,628
S	912828W7 US TREASURY N/B 03/24 2.125	Govt	05/30/2019 03/31/2024	METROPOLITAN WE JP MORGAN CHASE	US	USD	2,869,197	100.392	100.193	19.76	5,671
B	912810SH US TREASURY N/B 05/49 2.875	Govt	05/09/2019 05/15/2049	METROPOLITAN WE GOLDMAN SACHS	US	USD	4,392,955	99.953	100.064	11.08	4,868
B	912810SH US TREASURY N/B 05/49 2.875	Govt	05/16/2019 05/15/2049	METROPOLITAN WE GOLDMAN SACHS	US	USD	1,706,388	100.672	100.956	28.25	4,820
B	9128286V US TREASURY N/B 05/21 2.125	Govt	05/28/2019 05/31/2021	METROPOLITAN WE RBC CAPITAL MAR	US	USD	5,918,455	99.974	100.055	8.08	4,782
B	9128285W TSY INFL IX N/B 01/29 0.875	Govt	05/31/2019 01/15/2029	METROPOLITAN WE HSBC BANK	US	USD	1,548,687	104.257	104.578	30.84	4,777
S	9128286F US TREASURY N/B 02/26 2.5	Govt	05/03/2019 02/28/2026	METROPOLITAN WE GOLDMAN SACHS	US	USD	19,625,856	100.439	100.417	2.21	4,338
B	404119BY HCA INC SR SECURED 06/39 5.1	Corp	06/05/2019 06/15/2039	METROPOLITAN WE BANK OF AMERICA	US	USD	307,166	99.086	100.194	111.82	3,435
S	912810SF US TREASURY N/B 02/49 3	Govt	06/18/2019 02/15/2049	METROPOLITAN WE DEUTSCHE BANK	US	USD	1,172,912	109.516	109.223	26.68	3,129
S	9128286R US TREASURY N/B 04/24 2.25	Govt	05/23/2019 04/30/2024	METROPOLITAN WE GOLDMAN SACHS	US	USD	1,168,654	100.746	100.501	24.30	2,840
S	9128286R US TREASURY N/B 04/24 2.25	Govt	05/23/2019 04/30/2024	METROPOLITAN WE NOMURA	US	USD	1,163,482	100.734	100.501	23.14	2,692
B	912810FT US TREASURY N/B	Govt	05/31/2019 02/15/2036	NEUBERGER BERMA GOLDMAN SACHS	US	USD	3,208,772	130.438	130.547	8.35	2,681
S	912810SF US TREASURY N/B 02/49 3	Govt	05/15/2019 02/15/2049	METROPOLITAN WE BANK OF AMERICA	US	USD	3,215,130	103.547	103.470	7.39	2,377
S	912810SF US TREASURY N/B 02/49 3	Govt	05/13/2019 02/15/2049	METROPOLITAN WE HSBC BANK	US	USD	1,089,790	103.298	103.073	21.71	2,366



AGENCIES



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
CORPORATES	23	51	43	2.94	1.30	+16.35	40.04	17.65

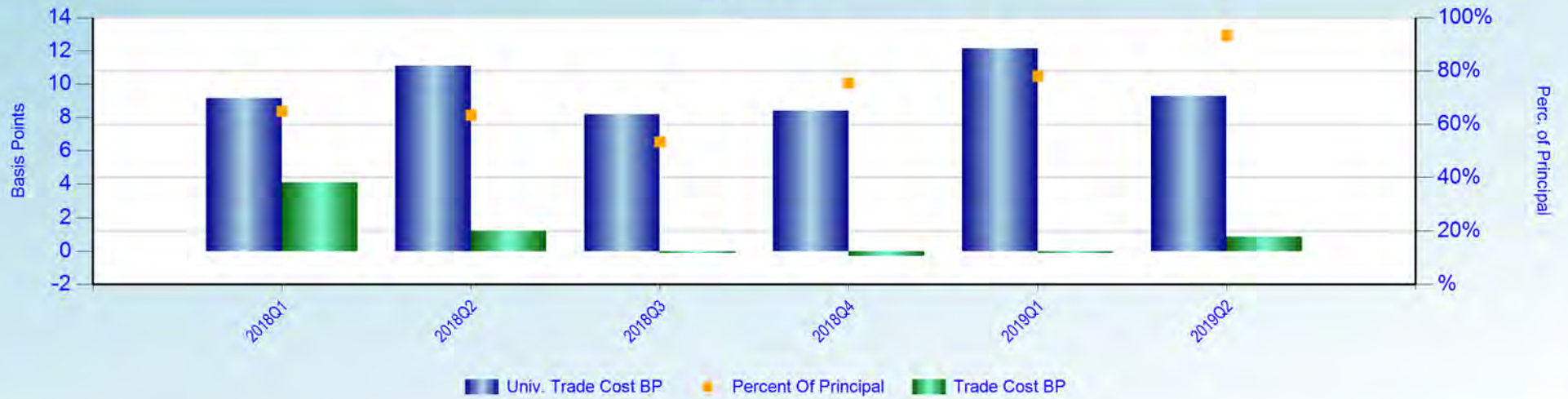
CORPORATES



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	417	292	55	+36.44	+0.87	+9.27	349.63	8.40

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	7	11	8	0.70	1.02	+3.19	2.88	4.21

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	+0.18	+4.52	+12.76	0.32	8.24

MUNICIPALS





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	417	292	55	+36.44	+0.87	+9.27	349.63	8.39

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-	7	12	11	3.37	5.17	+8.33	8.80	13.50
BBB+	5	14	12	+0.80	+1.46	+14.74	7.28	13.27
A-	2	5	5	+0.81	+3.46	+12.60	2.15	9.14
BBB	2	3	3	+1.02	+5.43	+49.86	8.32	44.43
AA-	2	5	2	+1.75	+10.39	+15.65	0.89	5.26
A+ *-	2	3	2	+0.74	+4.50	+12.68	1.34	8.18
A- *-	<1	1	1	+0.41	+5.59	+46.08	2.96	40.49
BB-	<1	2	1	+0.70	+10.16	+2.52	+0.52	+7.64
AA+	<1	1	1	+0.00	+0.00	+13.71	0.92	13.71
BB+	<1	1	1	6.63	208.89	+4.35	6.77	213.24
CCC+	<1	2	2	+0.39	+13.22	+48.71	1.04	35.49
A	<1	1	1	+0.15	+6.13	+16.42	0.24	10.29
BB	<1	1	1	+0.29	+14.04	+7.13	+0.14	+6.91



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
NR	7	11	8	0.70	1.02	+3.19	2.88	4.21



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
AAA	<1	1	1	+0.18	+4.52	+12.76	0.32	8.24

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
04/01/2019-06/30/2019	446,471	355	107	+32.98	+0.74	+9.54	392.87	8.80
01/01/2019-03/31/2019	777,794	441	181	19.31	0.25	+11.49	913.04	11.74
Year-Ending 2019	1,224,265	796		+13.67	+0.11	+10.78	1,305.91	10.67
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	1608	992	+113.13	+0.68	+8.88	1,367.40	8.20
Year-Ending 2018	3,738,566	2665		+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	2989		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	1117	262	193.39	2.72	+6.08	625.45	8.80
Year-Ending 2016	2,631,505	3248		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	1625	204	225.86	2.27	+3.74	596.77	6.01
04/01/2015-06/30/2015	1,141,971	1504	246	310.14	2.72	+7.36	1,150.64	10.08
01/01/2015-03/31/2015	944,141	1100	191	8.38	0.09	+6.57	628.26	6.66
Year-Ending 2015	3,899,478	5209		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

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	
07/01/2014-09/30/2014	905,295	785	133	+534.89	+5.91	+6.85	85.46	0.94
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	37	31	MARKETAXESS-TRADES	77.54 %
	10	9	BVAL	15.57 %
	3	3	ISSUE PRICE	6.10 %
	1	1	MARKETAXESS-EMQUOTES	0.79 %
GOVERNMENTS	286	54	TULLET PREBON	97.02 %
	6	5	BVAL	2.98 %
MORTGAGES	7	5	BLOOMBERGTERMINAL	72.28 %
	4	3	TULLET PREBON	27.72 %
MUNICIPALS	1	1	MSRB-TRADES	100.00 %

DISCLAIMER

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SACRAMENTO COUNTY

Global Fixed Income Analysis

Period End June 30, 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 April 01,2019 to June 30,2019. The analysis included trading of 153 trades in 87 different issues representing \$58,137,605 in principal across 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.

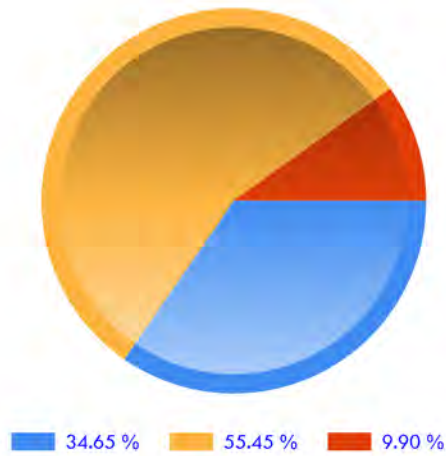
Results:

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. \$)	BP	Q1 2019	Q4 2018	Q3 2018	Q2 2018
BUYS	32	88	56	12.44	3.89	+5.18	29.01	9.07	1.20	3.06	1.18	1.41
SELLS	26	65	37	+5.60	+2.14	+5.20	8.01	3.06	+4.01	+7.57	+1.14	+6.60
GRAND TOTAL	58	153	87	6.84	1.18	+5.19	37.02	6.37	+1.53	+1.45	+0.05	+1.62

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	Q1 2019	Q4 2018	Q3 2018	Q2 2018
Governments	32	56	20	+3.43	+1.06	+5.18	13.34 4.12	+5.06	+2.78	0.61	+1.62
Corporates	20	89	60	2.01	1.00	+5.20	12.46 6.20	1.10	1.30	+5.88	+0.01
Mortgages	6	8	7	8.25	14.45	+5.20	11.22 19.65	40.89	20.02	24.86	+28.04

Bonds by Principal Traded



Historical Trade Cost Trend

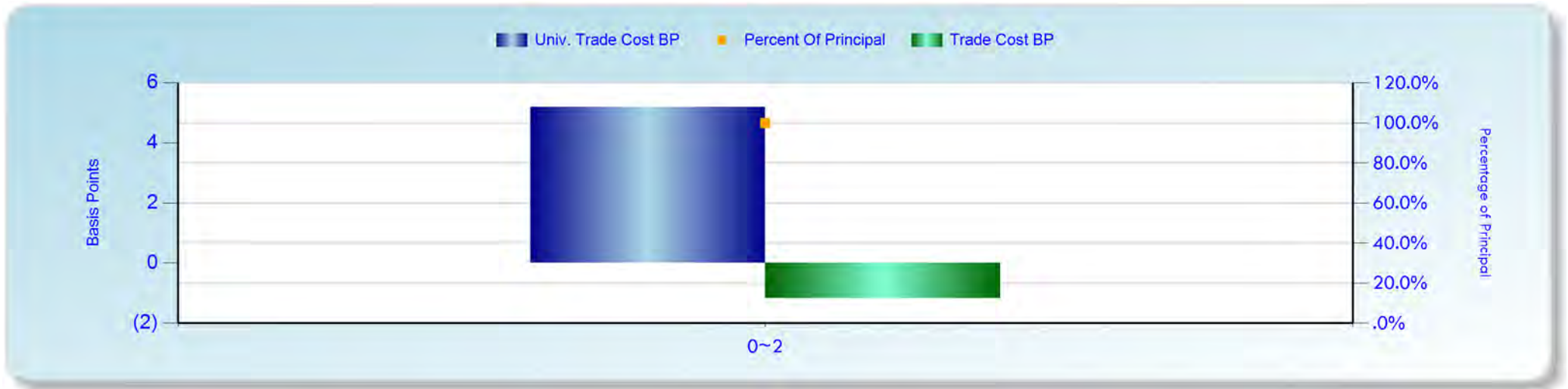




EXECUTIVE SUMMARY

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	58	153	87	6.84	1.18	+5.19	37.02	6.37



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	32	55	19	+3.18	+0.99	+5.20	13.44	4.21
Corp-High Yield	10	55	38	1.43	1.43	+5.20	6.63	6.63
Corp-INVESTMENT GRADE	8	29	19	+1.13	+1.40	+5.20	3.08	3.80
Mtge-INVESTMENT GRADE	3	3	3	1.97	6.40	+5.20	3.57	11.60
Mtge-High Yield	2	4	3	6.01	26.15	+5.20	7.21	31.35
Corp-N.R.	<1	2	1	+0.99	+10.78	+5.20	+0.51	+5.58
Govt-High Yield	<1	1	1	+0.25	+6.46	+3.94	+0.10	+2.52
Mtge-N.R.	<1	1	1	0.27	8.20	+5.20	0.44	13.40



EXECUTIVE SUMMARY

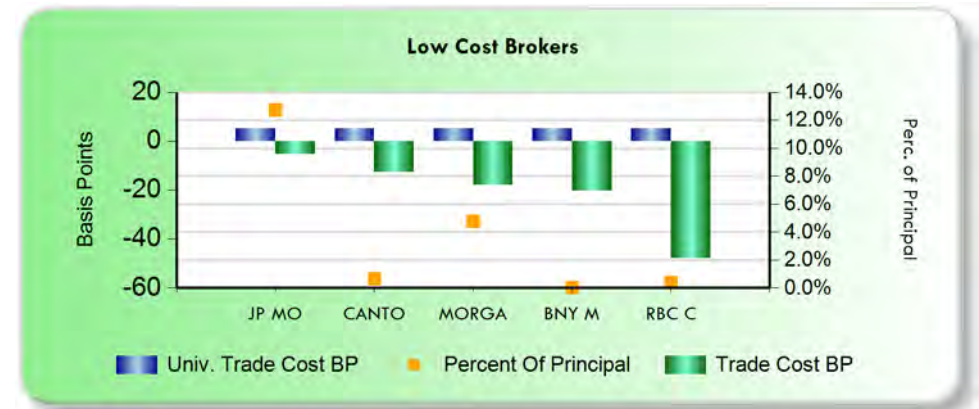
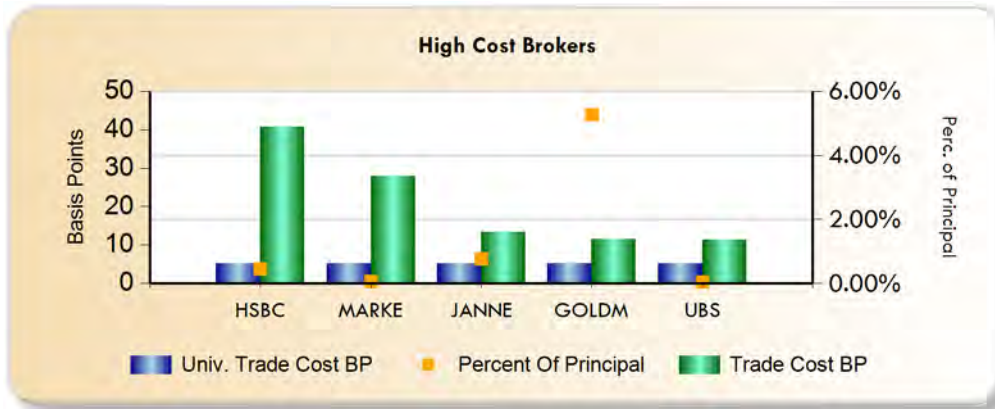
RATING SUMMARY

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	35.03	58	22	+1.20	+0.34	+5.20	17.01	4.86
BB	3.34	13	9	1.09	3.26	+5.20	2.83	8.46
BBB	2.70	8	5	+1.45	+5.37	+5.20	+0.05	+0.17
BB+	2.53	6	5	+1.81	+7.15	+5.00	+0.54	+2.15
BBB-	2.34	9	7	+1.81	+7.72	+5.20	+0.59	+2.52
B+	2.01	9	7	3.15	15.66	+5.20	4.20	20.86
BB-	1.88	10	8	1.04	5.54	+5.20	2.02	10.74
A-	1.57	2	2	2.43	15.46	+5.20	3.24	20.66
NR	1.25	3	2	+0.72	+5.78	+5.20	+0.07	+0.58
A+ *-	1.07	3	2	2.71	25.23	+5.20	3.27	30.43



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)								
HSBC BANK	<1	2	2	+1.07	+40.75	+5.20	+0.93	+35.55
MARKETAXESS CORP	<1	2	2	+0.11	+27.85	+5.20	+0.09	+22.65
JANNEY MONTGOMERY	<1	1	1	+0.60	+13.42	+5.20	+0.37	+8.22
GOLDMAN SACHS	3	9	8	+3.54	+11.54	+5.20	+1.94	+6.34
UBS	<1	1	1	+0.03	+11.36	+5.20	+0.02	+6.16
5 LOWEST COST BROKERS (Sorted By Trade Cost BP)								
JP MORGAN CHASE	7	21	17	3.91	5.28	+5.20	7.76	10.48
CANTOR FITZGERALD	<1	4	3	0.49	12.61	+5.20	0.69	17.81
MORGAN STANLEY	3	18	13	4.99	17.96	+5.20	6.44	23.16
BNY MELLON	<1	1	1	0.05	20.19	+5.20	0.07	25.39
RBC CAPITAL MARKETS	<1	4	2	1.14	47.90	+5.20	1.26	53.10



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	Q1 2019	Q4 2018	Q3 2018	Q2 2018
UNITED STATES	58	152	86	7.09	1.23	+5.20	37.12 6.43	+1.51	0.27	+0.05	+1.62
GERMANY	<1	1	1	+0.25	+6.46	+3.94	+0.10 +2.52	-	+12.01	-	-

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	SELLS	26	65	37	+5.60	+2.14	+5.20	8.01	3.06
	BUYS	32	87	55	12.69	4.02	+5.20	29.11	9.22
GERMANY	BUYS	<1	1	1	+0.25	+6.46	+3.94	+0.10	+2.52

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	Q1 2019	Q4 2018	Q3 2018	Q2 2018
PRUDENTIAL INVESTMEN	58	153	87	6.84	1.18	+5.19	37.02 6.37	+1.53	+1.45	+0.05	+1.62

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. \$)		Q1 2019	Q4 2018	Q3 2018	Q2 2018
JP MORGAN CHASE	7	21	17	3.91	5.28	+5.20	7.76	10.48	+22.64	2.43	+1.70	+9.53
DEUTSCHE BANK	7	12	12	2.65	3.78	+5.20	6.29	8.98	23.87	1.46	1.93	+6.20
BANK OF AMERICA	6	16	14	2.91	4.57	+5.20	6.22	9.77	13.76	+0.83	67.01	+3.35
BARCLAYS	6	15	14	+1.64	+2.61	+5.20	1.62	2.59	+6.57	7.88	+6.03	0.62
TD SECURITIES	6	4	4	0.03	0.04	+5.20	2.98	5.24	0.04	+0.30	+0.02	+0.19
JEFFERIES & CO	5	9	8	+0.66	+1.42	+5.20	1.75	3.78	+3.98	+3.19	+14.52	+2.35
GOLDMAN SACHS	3	9	8	+3.54	+11.54	+5.20	+1.94	+6.34	+0.89	+0.56	4.71	+3.01
CITIGROUP	3	9	8	0.97	3.25	+5.03	2.47	8.28	+10.15	+3.54	+4.60	2.64
MORGAN STANLEY	3	18	13	4.99	17.96	+5.20	6.44	23.16	+1.39	+4.23	+2.80	+0.85
MIZUHO	3	3	3	+0.90	+3.36	+5.20	0.49	1.84	-	-	-	+9.67
NOMURA	3	3	3	+0.31	+1.21	+5.20	1.01	3.99	+0.91	9.12	+0.68	+1.32
CITADEL SECURITIES	2	6	5	+0.01	+0.06	+5.20	1.09	5.14	0.21	0.33	+0.16	+0.17
CREDIT SUISSE	2	4	4	+1.04	+5.67	+5.20	+0.09	+0.47	+6.19	+8.78	0.28	+4.94
PERSHING	<1	1	1	+0.49	+9.42	+5.20	+0.22	+4.22	-	7.40	-	9.02
JANNEY MONTGOMERY	<1	1	1	+0.60	+13.42	+5.20	+0.37	+8.22	-	-	-	-
CANTOR FITZGERALD	<1	4	3	0.49	12.61	+5.20	0.69	17.81	-	-	8.17	-
SCOTIA CAPITAL	<1	1	1	0.11	3.62	+5.20	0.27	8.82	-	+0.47	-	-
HSBC BANK	<1	2	2	+1.07	+40.75	+5.20	+0.93	+35.55	+4.35	+12.01	6.15	26.96
CIBC WORLD MARKETS	<1	2	2	0.08	3.14	+5.20	0.20	8.34	-	+0.97	-	-
RBC CAPITAL MARKETS	<1	4	2	1.14	47.90	+5.20	1.26	53.10	+0.31	0.92	1.25	+0.25
BNP PARIBAS	<1	4	3	+0.00	+0.08	+5.20	0.10	5.12	19.38	+0.40	-	-
BMO CAPITAL MARKETS	<1	1	1	+0.10	+9.66	+5.20	+0.05	+4.46	+1.41	+0.04	-	4.94

Sacramento County
Period End June 30, 2019
(Global Fixed Income Analysis)

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		Q1 2019	Q4 2018	Q3 2018	Q2 2018
MARKETAXESS CORP	<1	2	2	+0.11	+27.85	+5.20	+0.09	+22.65	1.86	-	-	-
BNY MELLON	<1	1	1	0.05	20.19	+5.20	0.07	25.39	+0.00	+0.00	-	+13.93
UBS	<1	1	1	+0.03	+11.36	+5.20	+0.02	+6.16	+10.00	0.92	-	+2.82

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	9128286B US TREASURY N/B 02/29 2.625	Govt	04/12/2019 02/15/2029	PRUDENTIAL INVE GOLDMAN SACHS	US	USD	835,706	100.688	100.900	+21.14	+1,767
S	9128286G US TREASURY N/B 02/24 2.375	Govt	04/01/2019 02/29/2024	PRUDENTIAL INVE TD SECURITIES	US	USD	1,399,904	100.352	100.466	+11.37	+1,591
S	912810SE US TREASURY N/B 11/48 3.375	Govt	05/08/2019 11/15/2048	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	351,200	109.750	110.188	+39.86	+1,400
B	29646AAB ESKOM HOLDINGS SOC LTD SR UN	Corp	05/20/2019 02/11/2025	PRUDENTIAL INVE GOLDMAN SACHS	US	USD	203,800	101.900	101.310	+57.90	+1,180
S	836205AR REPUBLIC OF SOUTH AFRICA SR	Govt	04/30/2019 09/16/2025	PRUDENTIAL INVE HSBC BANK	US	USD	231,275	105.125	105.610	+46.14	+1,067
S	9128286G US TREASURY N/B 02/24 2.375	Govt	04/01/2019 02/29/2024	PRUDENTIAL INVE BARCLAYS	US	USD	1,661,723	100.406	100.466	+5.91	+983
S	9128286F US TREASURY N/B 02/26 2.5	Govt	04/01/2019 02/28/2026	PRUDENTIAL INVE JEFFERIES & CO	US	USD	800,818	100.732	100.848	+11.57	+927
B	9128286S US TREASURY N/B 04/26 2.375	Govt	04/30/2019 04/30/2026	PRUDENTIAL INVE CREDIT SUISSE	US	USD	1,199,109	99.926	99.854	+7.23	+867
B	BHZL0J5 PETROBRAS GLOBAL FINANCE COM	Corp	05/30/2019 01/16/2034	PRUDENTIAL INVE JP MORGAN CHASE	US	GBP	276,718	109.700	109.380	+29.19	+808
B	912810SF US TREASURY N/B 02/49 3	Govt	05/30/2019 02/15/2049	PRUDENTIAL INVE BARCLAYS	US	USD	107,277	107.277	106.500	+72.46	+777
S	345370CQ FORD MOTOR COMPANY SR UNSECU	Corp	06/21/2019 01/15/2043	PRUDENTIAL INVE DEUTSCHE BANK	US	USD	280,670	86.360	86.598	+27.57	+774
S	912810RY US TREASURY N/B 08/47 2.75	Govt	04/17/2019 08/15/2047	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	528,724	95.266	95.388	+12.85	+679
S	912810SC US TREASURY N/B 05/48 3.125	Govt	04/17/2019 05/15/2048	PRUDENTIAL INVE BANK OF AMERICA	US	USD	512,500	102.500	102.633	+12.96	+664
S	836205AR REPUBLIC OF SOUTH AFRICA SR	Govt	04/24/2019 09/16/2025	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	221,287	105.375	105.690	+29.89	+662



S	9128286R US TREASURY N/B 04/24 2.25	Govt	06/03/2019 04/30/2024	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	1,137,981	101.605	101.664	+5.77	+656
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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	00165CAB AMC ENTERTAINMENT HOLDIN COM	Corp	05/16/2019 11/15/2026	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	374,850	88.200	89.618	160.80	6,028
S	3622MDAA GSAMP TRUST GSAMP 2007 HE1 A	Mtge	04/05/2019 03/25/2047	PRUDENTIAL INVE MORGAN STANLEY	US	USD	460,800	95.332	94.400	97.77	4,505
B	110122CD BRISTOL MYERS SQUIBB CO SR U	Corp	05/08/2019 10/26/2049	PRUDENTIAL INVE JP MORGAN CHASE	US	USD	393,870	99.714	100.400	68.79	2,709
B	06051GHU BANK OF AMERICA CORP SR UNSE	Corp	04/17/2019 04/23/2040	PRUDENTIAL INVE BANK OF AMERICA	US	USD	1,370,000	100.000	100.165	16.50	2,260
B	912828W7 US TREASURY N/B 03/24 2.125	Govt	04/01/2019 03/31/2024	PRUDENTIAL INVE TD SECURITIES	US	USD	1,368,282	99.151	99.272	12.20	1,670
S	29445FCQ EQUIFIRST MORTGAGE LOAN TRUS	Mtge	04/10/2019 04/25/2035	PRUDENTIAL INVE CITIGROUP	US	USD	1,704,985	100.023	99.940	8.34	1,422
B	912810SE US TREASURY N/B 11/48 3.375	Govt	04/17/2019 11/15/2048	PRUDENTIAL INVE BANK OF AMERICA	US	USD	1,051,190	107.594	107.733	12.95	1,361
B	912810SF US TREASURY N/B 02/49 3	Govt	06/21/2019 02/15/2049	PRUDENTIAL INVE DEUTSCHE BANK	US	USD	184,742	108.672	109.436	70.27	1,298
B	00687YAA ADIANT GLOBAL HOLDINGS COMPA	Corp	05/02/2019 08/15/2026	PRUDENTIAL INVE RBC CAPITAL MAR	US	USD	160,000	80.000	80.631	78.84	1,261
S	9128286S US TREASURY N/B 04/26 2.375	Govt	05/14/2019 04/30/2026	PRUDENTIAL INVE DEUTSCHE BANK	US	USD	1,608,937	100.559	100.489	6.91	1,112
B	12594CBF COMM MORTGAGE TRUST COMM 201	Mtge	05/14/2019 02/10/2049	PRUDENTIAL INVE DEUTSCHE BANK	US	USD	1,799,287	104.246	104.310	6.13	1,103
B	912828W7 US TREASURY N/B 03/24 2.125	Govt	04/01/2019 03/31/2024	PRUDENTIAL INVE BARCLAYS	US	USD	1,626,978	99.206	99.272	6.64	1,080
S	61766NBB MORGAN STANLEY BAML TRUST MS	Mtge	04/30/2019 09/15/2049	PRUDENTIAL INVE DEUTSCHE BANK	US	USD	1,180,687	98.391	98.310	8.19	968
B	9128286L US TREASURY N/B 03/26 2.25	Govt	04/01/2019 03/31/2026	PRUDENTIAL INVE JEFFERIES & CO	US	USD	788,292	99.156	99.272	11.66	919
B	911365BL UNITED RENTALS NORTH AM COMP	Corp	04/26/2019 01/15/2030	PRUDENTIAL INVE MORGAN STANLEY	US	USD	150,000	100.000	100.591	59.14	887



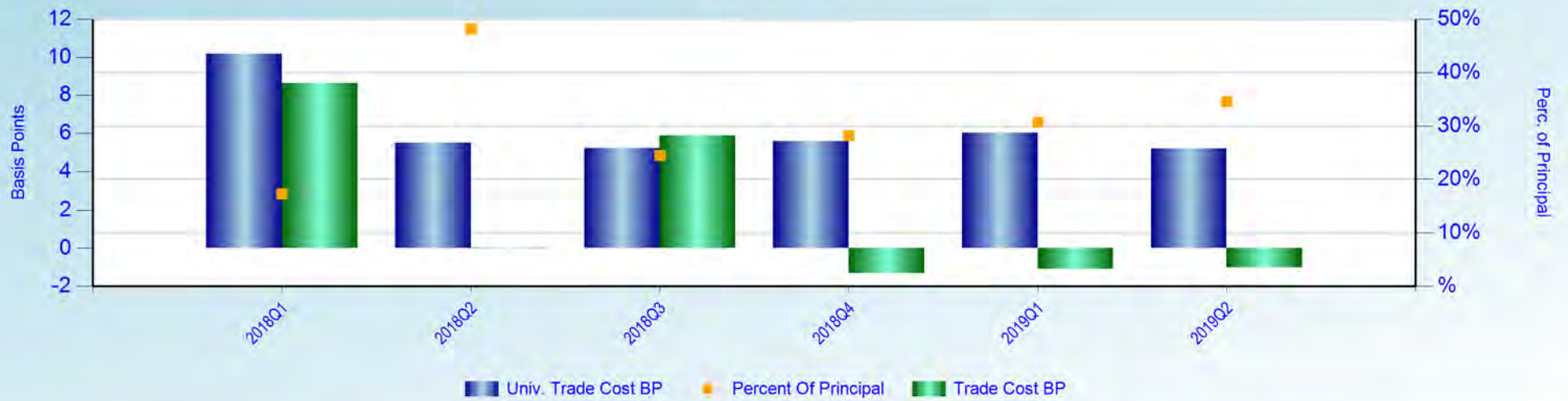
AGENCIES



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
CORPORATES	20	89	60	2.01	1.00	+5.20	12.46	6.20

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	32	56	20	+3.43	+1.06	+5.18	13.34	4.12

GOVERNMENTS



BOND TYPE PERFORMANCE

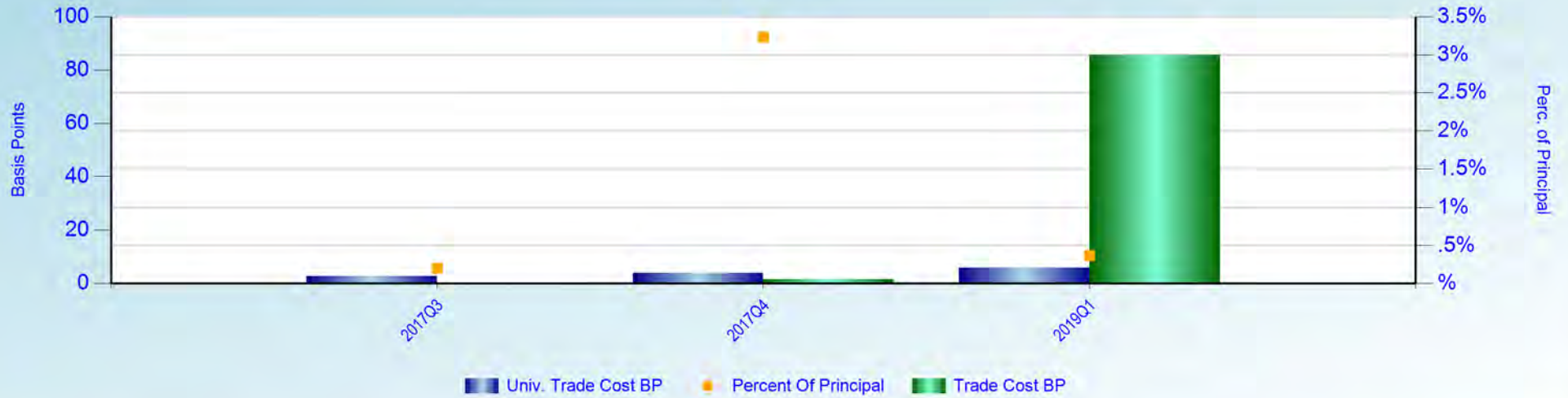
Bond Type	Principal (Mil. \$)	No. of Trades	No. of Issues	Trade Cost (Thous. \$)	Trade Cost BP	Univ. Trade Cost BP	Cost Diff. from Universe (Thous.\$)	BP
MORTGAGES	6	8	7	8.25	14.45	+5.20	11.22	19.65

MORTGAGES



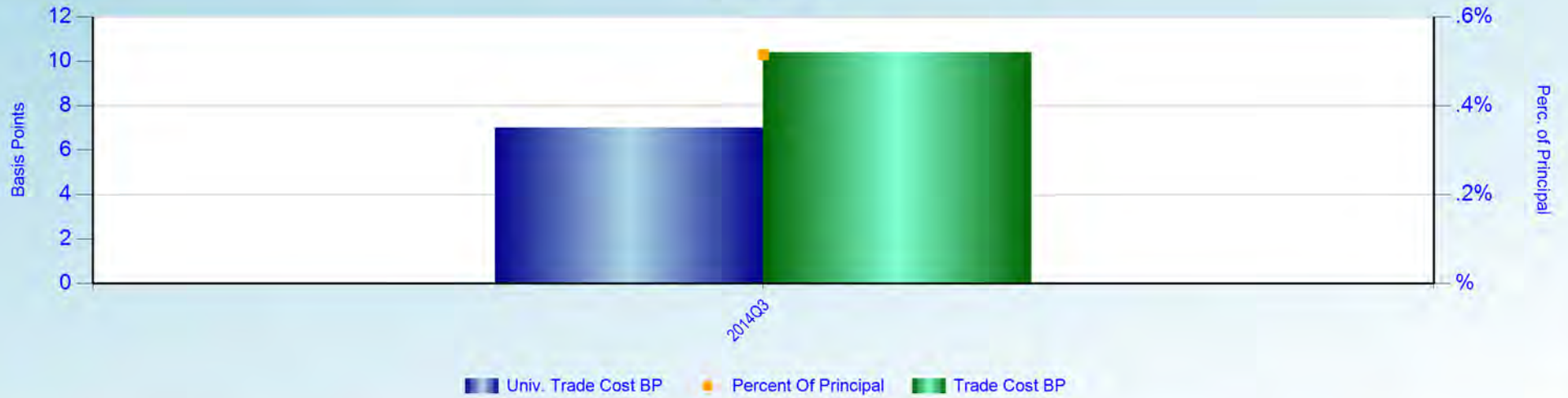


MUNICIPALS





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	32	55	19	+3.18	+0.99	+5.20	13.44	4.21
BB+	<1	1	1	+0.25	+6.46	+3.94	+0.10	+2.52

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	3	8	5	+1.45	+5.37	+5.20	+0.05	+0.17
BBB-	2	9	7	+1.81	+7.72	+5.20	+0.59	+2.52
BB+	2	5	4	+1.56	+7.28	+5.20	+0.44	+2.08
BB-	2	10	8	1.04	5.54	+5.20	2.02	10.74
B+	2	7	6	3.07	16.32	+5.20	4.05	21.52
BB	2	12	8	+0.33	+2.03	+5.20	0.52	3.17
A-	2	2	2	2.43	15.46	+5.20	3.24	20.66
A+ *-	1	3	2	2.71	25.23	+5.20	3.27	30.43
NR	<1	2	1	+0.99	+10.78	+5.20	+0.51	+5.58
B	<1	6	3	+0.21	+2.50	+5.20	0.23	2.70
B-	<1	13	7	+0.20	+2.38	+5.20	0.24	2.82
CCC+	<1	2	2	+0.38	+4.96	+5.20	0.02	0.24
A	<1	2	2	+0.00	+0.00	+5.20	0.33	5.20
AA	<1	1	1	0.53	10.27	+5.20	0.80	15.47
BBB+	<1	7	2	+0.84	+24.67	+5.20	+0.66	+19.47

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
AAA	3	3	3	1.97	6.40	+5.20	3.57	11.60
BB	2	1	1	1.42	8.34	+5.20	2.31	13.54
CCC	<1	1	1	4.51	97.77	+5.20	4.74	102.97
NR	<1	1	1	0.27	8.20	+5.20	0.44	13.40
B+	<1	2	1	0.08	6.26	+5.20	0.15	11.46

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	32	55	19	+3.18	+0.99	+5.20	13.44	4.21
GERMANY	<1	1	1	+0.25	+6.46	+3.94	+0.10	+2.52



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	20	89	60	2.01	1.00	+5.20	12.46	6.20

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	6	8	7	8.25	14.45	+5.20	11.22	19.65

HISTORICAL DATA

Quarter	Principal (Thous. \$)	No. of Trades	No. of Issues	Trade Cost		Univ. Trade Cost BP	Cost Diff. from Universe	
				(Thous. \$)	BP		(Thous. \$)	BP
04/01/2019-06/30/2019	58,138	153	87	6.84	1.18	+5.19	37.02	6.37
01/01/2019-03/31/2019	93,964	228	119	+14.36	+1.53	+6.02	42.17	4.49
Year-Ending 2019	152,102	381		+7.52	+0.49	+5.70	79.19	5.21
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

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
07/01/2014-09/30/2014	266,740	204	99	216.37	8.11	+7.08	405.13	15.19
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	45	29	MARKETAXESS-TRADES	58.52 %
	31	19	BVAL	29.53 %
	9	9	ISSUE PRICE	8.65 %
	2	2	BLOOMBERGTERMINAL	2.01 %
	2	2	MARKETAXESS-EMQUOTES	1.30 %
GOVERNMENTS	48	14	TULLET PREBON	94.88 %
	3	2	BLOOMBERGTERMINAL	2.61 %
	4	3	BVAL	2.46 %
	1	1	MARKETAXESS-EMQUOTES	0.04 %
MORTGAGES	8	7	BLOOMBERGTERMINAL	100.00 %

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