

9. Annual Presentation by Zeno Consulting Group – Trading Cost Analysis Provider



Transaction Cost Management

Water & Power Employees' Retirement Plan

July 8, 2020



Agenda

I. Introduction to Zeno AN Solutions

II. TCA Primer – Approach and Methodology

- Equity TCA
- Fixed Income TCA
- Foreign Exchange TCA
- Commission Recapture

III. Annual Review



Who is Zeno AN Solutions?

Industry thought leader that provides the most comprehensive suite of TCA products available exclusively to asset owners and takes trade cost management to the next level.

- *Servicing over 250 Institutional Asset Owner Clients!*
- Multi-Asset Class Analysis across Equity, Fixed Income, Foreign Exchange, Futures and Derivatives
- Stock Specific Peer Group Trade Universe, comprised of over \$7.2 trillion in Principal traded annually
- *Investment Mandate Peer Group Rankings* of over 2,000 Global Institutional Investment Mandates!
- *Industry Leading web-based drill-down and technology platform, Trade-Zoom*
- *Independent Conflict-free Consulting as a Registered Investment Advisor under the Investment Company Act of '40*
- *Team has over 242 years of Asset-owner Industry Experience!*

The Value of Transaction Cost Management

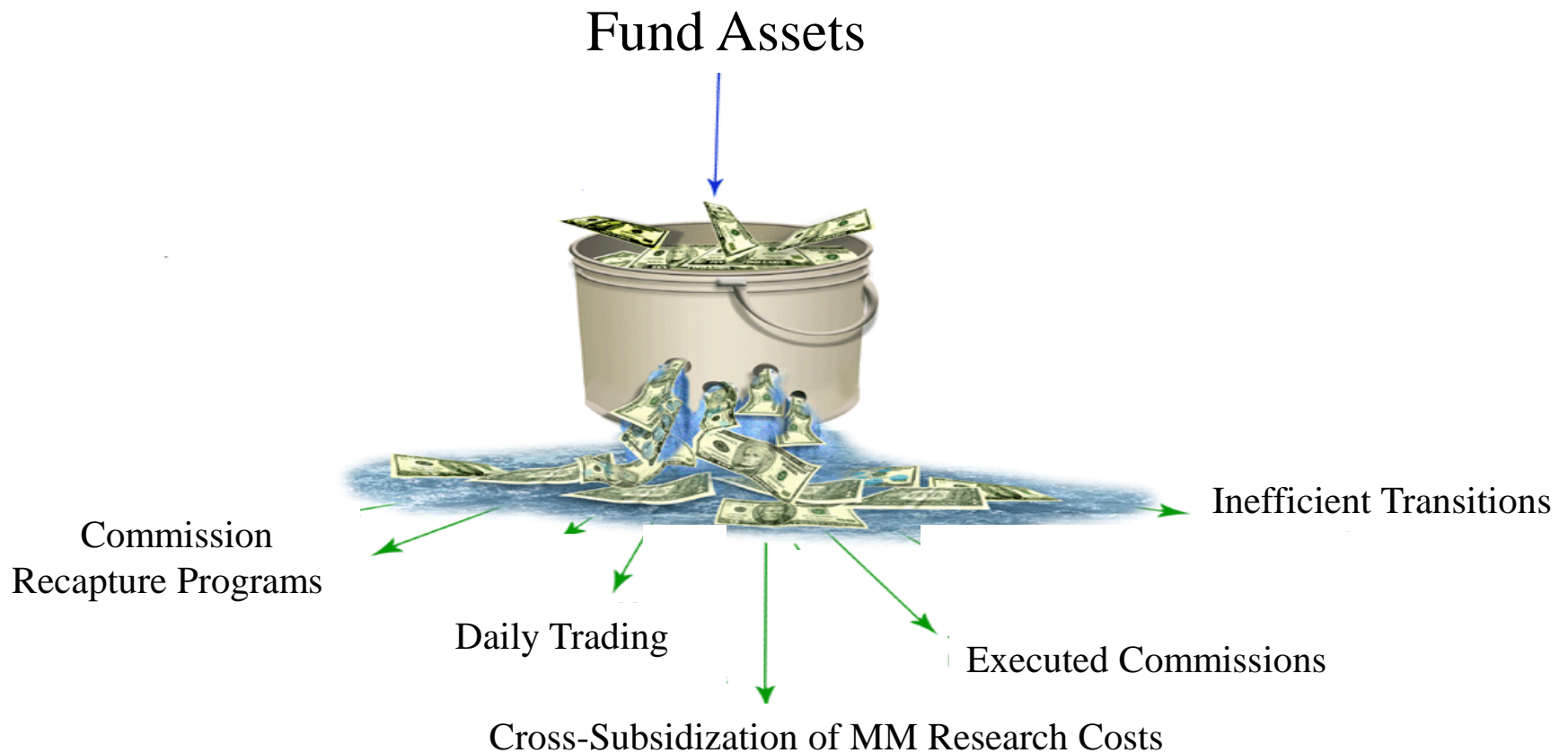
Four Reasons Why Funds Come to Us

Meaningful Trade Cost Analysis & Audits:

- Satisfies legal obligation, as fiduciaries, to monitor your managers' (and their brokers') *Equity, FX and Fixed Income* trading processes for Best Execution.
- Provides critical transparency, substantive due diligence, and insight into how your managers are handling Fund assets ("*What you don't know, can hurt you!*")
- Helps control excessive trade costs (often the single largest expense of the Fund!)
- Mitigates investment and fiduciary risk

Transaction Cost Management

A comprehensive suite of applications designed to both satisfy your fiduciary responsibilities and minimize the costs paid out of your Fund.



Transaction Cost Management

Minimizing the Impact to your Fund

indirect

direct



Daily Trading

Monitoring your Money Managers' daily equity, bond, & FX trading process and the impact it has on Fund performance.

Inefficient Transitions

Minimizing the risks (trading, market, political) associated with moving assets/ rebalancing your Fund.

Executed Commissions

Managing the explicit costs charged by brokers to execute your Money Manager's trade orders.

Commission Recapture

Ensuring that the program your board implemented is working as intended – not penny wise and pound foolish.

Research Spend: Cross-Subsidization

Understanding your Money Manager's use of Fund commissions to purchase research and its value-add.

Current Tools Utilized by Our Clients

SPONSOR/FUND REVIEW – Equity TCA

Assists asset owners and general consultants in meeting legal and fiduciary obligations to ensure managers receive Best Execution and pay reasonable commission rates.

SPONSOR/FUND MONITOR – Equity TCA

Goes beyond basic due diligence and provides asset owners greater transparency into their managers' internal trading processes, enables constructive dialogue with managers, and provides consultative follow-up to reduce excessive transaction costs.

FX MONITOR – TCA

Provides Fund fiduciaries with an accurate assessment of their managers' foreign currency transactions; and consulting to help conduct follow-up on cost outliers and address potential trading abuses.

FIXED INCOME MONITOR - TCA

Provides Fund fiduciaries with an accurate quantitative assessment of their managers' fixed income transactions; and consulting to help conduct follow-up on cost outliers and address potential trading abuses.

Current Tools Utilized by Our Clients (continued)

SOFT-DOLLAR & RESEARCH BUDGET AUDIT

Helps asset owners appraise the soft-dollar and research budgets of their managers. The service provides the critical qualitative and quantitative tools necessary for assessing the reasonableness of those costs, in addition to the oversight necessary to address your new fiduciary responsibility. The Audit encourages managers to use a bottom-up approach (which to date has been eschewed by the industry) for determining their research needs and to ensure compliance with the new MiFID II Directives in Europe.

DIRECTED BROKERAGE AND COMMISSION RECAPTURE AUDIT

Offers asset owners an independent assessment of their underlying managers' and funds' execution efficiency, with particular emphasis on whether directed trades achieved Best Execution or incurred unnecessary hidden costs.

MANAGER RESEARCH/SEARCH SUPPLEMENT

Supplemental tools to assist in the annual due diligence research on manager stables, or in the context of reviewing finalists in a manager search. This service acts as a early warning system, flagging the risks associated with a manager's: trading process, commission levels, broker/dealer counterparties, and systematic impact on overall performance.



Current Tools Utilized by Our Clients (continued)

TRANSITION REPORTING and TRANSITION CONSULTING SERVICES

Assists asset owners in navigating the complex marketplace known as Transition Management. As a Registered Investment Advisor, we offer several levels of service that range from pre-trade and post-trade analytics to strategic planning and transition manager selection. Additional services include Broker Universe Subscriptions.

TCA Primer – Approach and Methodology

Equity TCA Service: *Sponsor Monitor*

As prudent fiduciaries, more than ever before, asset owners should understand their managers' trading process, what they pay to execute trades, whether they obtained best execution, and its impact on performance. The *Sponsor Monitor* service was designed for this specific purpose.

The *Sponsor Monitor* service assists pension funds in meeting their fiduciary obligations by providing greater transparency in how investment managers handle their assets, and helping minimize excessive trading costs (often the single greatest expense of the Fund). It is also designed to highlight the impact trading has on fund performance.

Sponsor Monitor enables funds to monitor and evaluate their managers' trading process in meaningful ways by answering the following questions:

- What were your trading costs at the: fund, manager, broker, and commission levels?
- Were those costs reasonable relative to each trades' "difficulty", and your Peers?
- What were the reasons behind those costs?
- What potential follow-up is required with your managers?

What are “trading costs?”

Trade cost analysis should reflect the needs of the Asset Owner

If there's a reason for asset owners to monitor trading costs (other than as a legal CYA), it is to understand the impact those costs have on the returns of their Funds.

Common Sense Definition for Trading Costs :

The loss of asset value, incurred by your Fund, as a result of a manager building or unwinding a position in their portfolio.

- Whether it takes 1, 3, or 10 days for a manager to sell a certain number of shares, if the shares were selling for \$X when trading began, and the manager ultimately sold all the shares at an average price of \$Y per share, then the Fund paid \$X-Y. This is called “Implementation Shortfall.”
- Defining costs as “Implementation Shortfall” on the total decision size, is consistent with how we calculate overall Fund performance, and helps Fund fiduciaries better understand the true impact trading has on their Fund.

An Inconvenient Truth: Trading & Capacity Influence Performance

Some equity managers' trade costs are dramatically worse than their peers.

Why is that...?

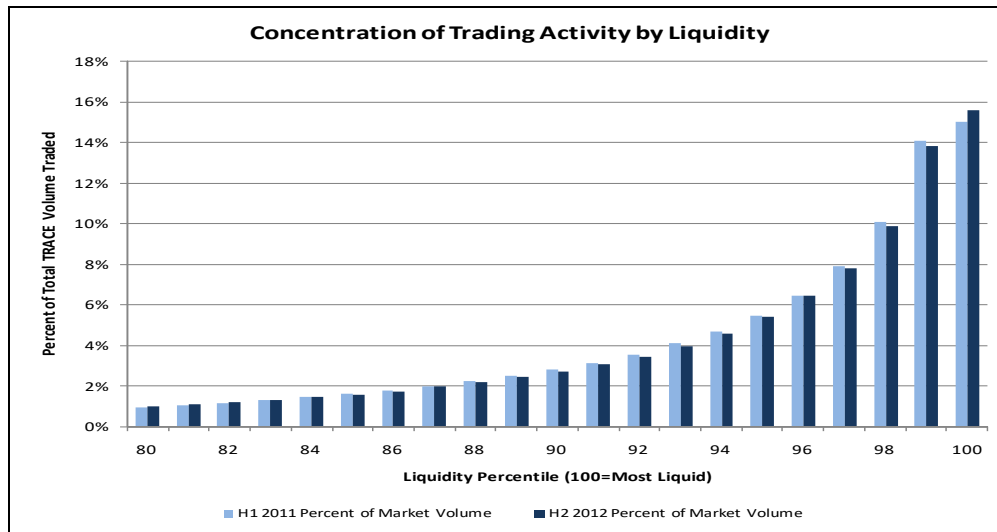
Total Trading Costs (one way)*				Impact on Performance (Costs X Turnover)*			
	Small Cap Growth	Large Cap Growth	Developed Mkts (ex-US)		Small Cap Growth	Large Cap Growth	Developed Mkts (ex-US)
25th Percentile (Least Expensive)	-37 bp	-19 bp	-17 bp	25th Percentile (Least Impact)	-20 bp	-14 bp	-8 bp
Universe Mean (Avg. Cost)	-62 bp	-48 bp	-27 bp	Universe Mean (Avg. Impact)	-71 bp	-46 bp	-21 bp
75th Percentile (Most Expensive)	-118 bp	-72 bp	-63 bp	75th Percentile (Most Impact)	-140 bp	-84 bp	-64 bp
25% vs. 75% Managers	162 bp	106 bp	92 bp	25% vs. 75% Managers	120 bp	70 bp	56 bp
("Round Trip" Costs)							

* Total Cost and Performance Impact Ranking Universes as of 4Q17

Bond TCA Service: *Fixed Income Monitor*

Unique Characteristics of Bond Market = Risk to you!

- Unlike Equities, the Bond market is a dealer-driven market, with limited transparency.
- While there are many more Bonds than Stocks, the overall Bond market is much less liquid – with some securities not trading for weeks or months.
- The top 20% of bonds currently account for over 90% of all fixed income trading!
- Someone owns the other 80%. What happens when those bonds need to be traded?



What are we finding?

- A seminal study in 2011 calculated the cost of trading *Investment Grade* bonds in an Implementation Shortfall context (i.e. loss of asset value incurred by the fund).*

Trade Size	Under \$100K	\$100K - \$1 M	\$1M - \$5 M	\$5+ M
Average Trade Costs	-78 bp	-46 bp	-21 bp	-19 bp

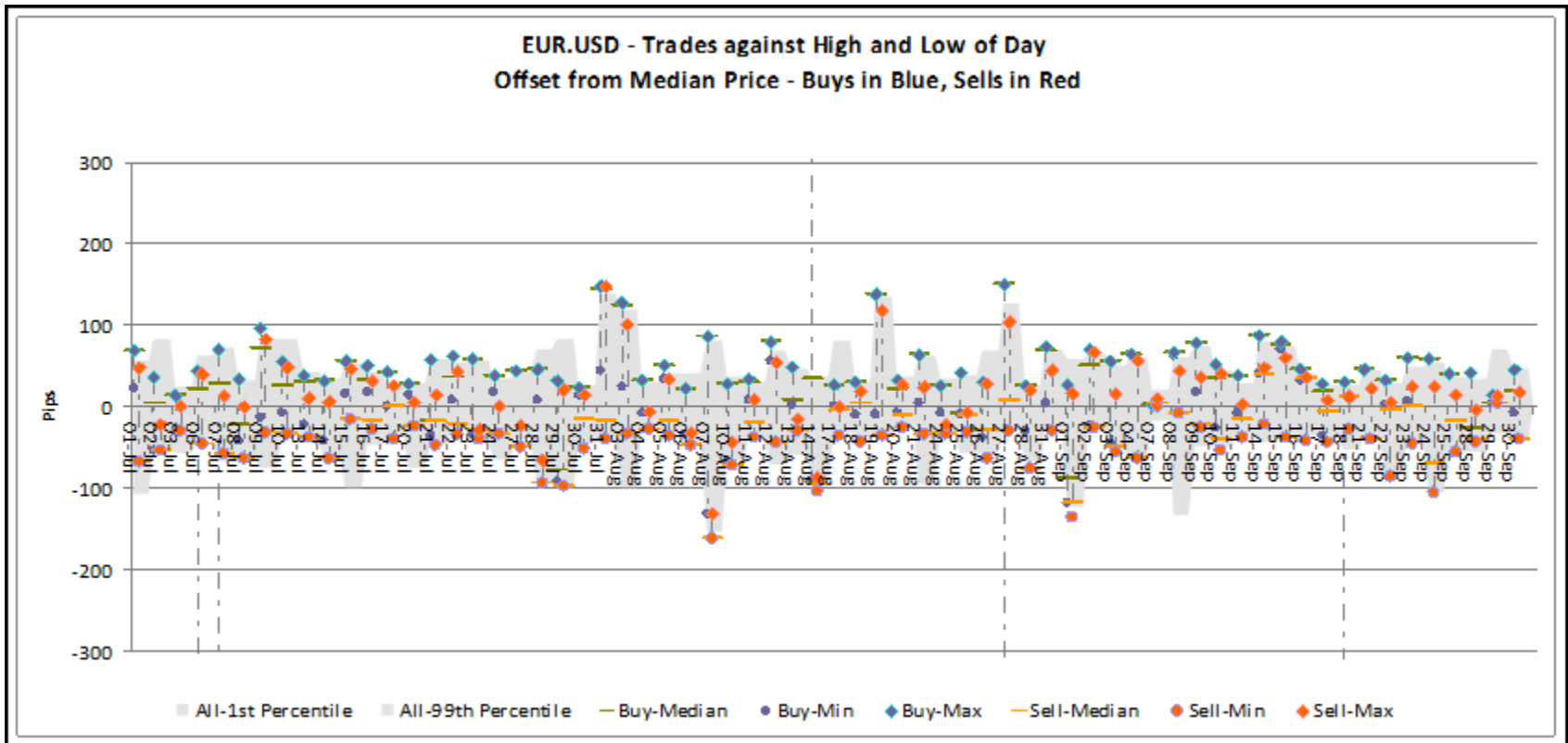
- Double these numbers to calculate the full impact on Fund performance.
- Trading costs for *High Yield, Emerging Markets* etc. would be even higher!

* Hendershott and Madhavan, *Click or Call? Auction versus Search in the Over-the-Counter Market*, October 2011.

Foreign Exchange TCA Service: *FX Monitor*

Interests are inherently adverse!

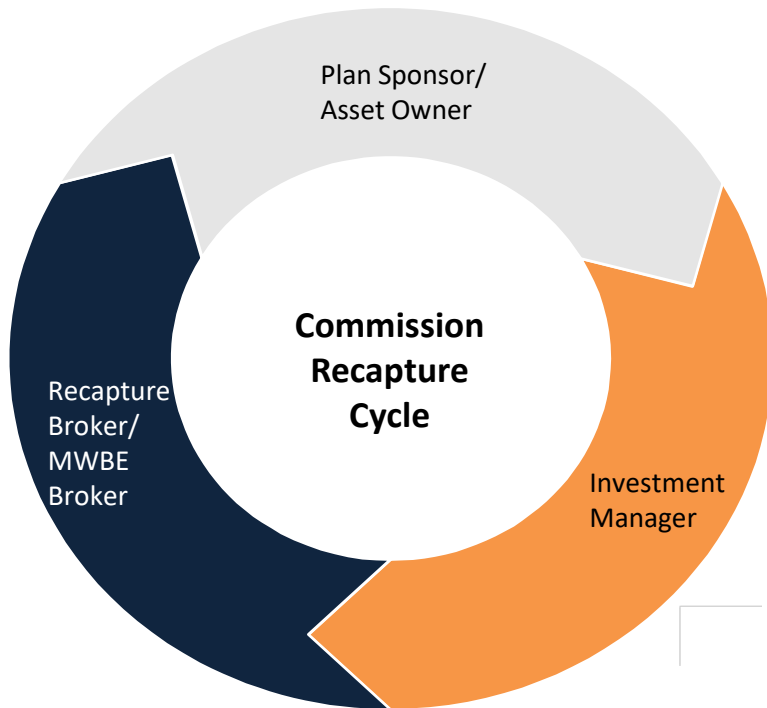
What's Wrong With This Picture?



Source: Client 3Q10 analysis, powered by FXAll

Commission Recapture & MWBE Programs:

Plan directed programs that enable fund's to recoup a part of their commission dollars (normally used by the asset manager) back to the fund to offset approved internal expenditures. These programs can also assist in meeting minority and woman-owned business enterprise programs.



The Asset Owner sends a letter to its Investment Managers requesting a portion of the trading on the Fund's behalf to be executed with a designated recapture broker.

Managers trade with the broker at the "going rate" they pay their other brokers.

The broker keeps a low, execution-only rate and returns the rest of the commissions back to the Asset Owner on a monthly basis.

Example: Manager X trades 100,000 shares of IBM on an Asset Owner's behalf with Broker ABC at 4¢/share for a total commission of \$4,000. ABC keeps 1.0¢/share to clear the trade and refunds \$3,000 back to the Asset Owner.

Commission Recapture & MWBE Programs: *Considerations*

Choosing a Vendor Matters

- *Are they established in the space?*
- *Can they manage the program effectively?*
- *Will they monitor for best execution?*

Monitoring of the Program is Critical!

- *Ensure Managers are meeting best execution on directed and non-directed trades!*
- *Review manager's use of brokers and established commission rates (avoid pennywise/pound foolish programs).*
- *Analyze managers' overall trading process to determine appropriate levels of direction based on capitalization and trade process*

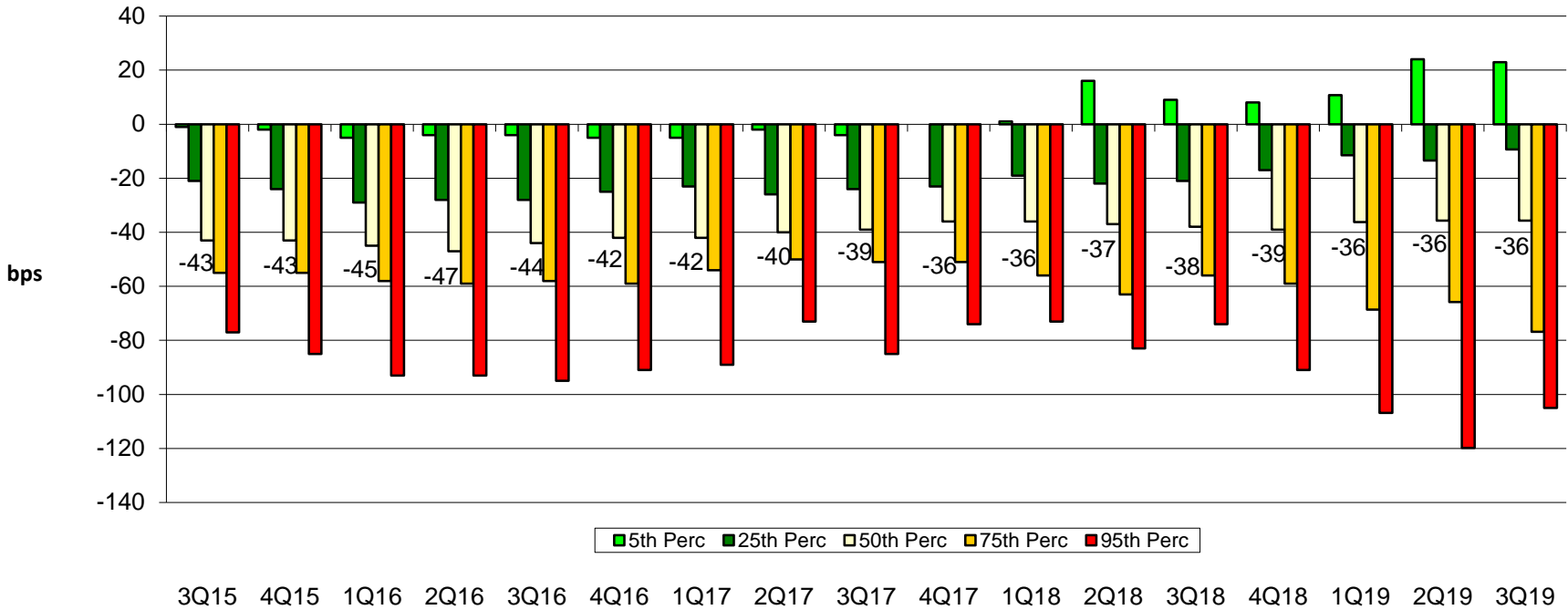
Zeno AN Solutions Oversight Program: A Three Step Process

Satisfy fiduciary obligations to monitor, achieve deeper understanding of (and comfort with) manager trade processes, better manage/control excessive costs, and custom due-diligence/research as needed.

- **Step One: Quantitative review of report analytics**
Top-down approach maximizes staff time and resources. Basic metrics reviewed:
 - Aggregate Fund costs, benchmark, ranking, commissions, brokers, traded returns
 - Which managers are driving overall: costs, commission rates, and broker usage
 - Individual manager: costs, benchmark, ranking, commissions, brokers, traded returns
 - Any other Compliance items of specific interest to your Fund
- **Step Two: Identify specific issues that may drive manager’s costs and suggest specific questions for follow-up. For example:**
 - What resources does the manager use to manage and trade portfolios?
 - What are the manager’s trading policies and procedures?
 - Is asset under management causing “capacity” issues?
 - Are Client-specific instructions potentially affecting execution quality?
- **Step Three: Consultative communication and follow-up with managers**
Engage managers in focused meaningful discussions to gain comfort in their process.
 - In general, share manager-specific pages (in the spirit of open communication)
 - Where appropriate, identify “Significant Issues” that warrant follow-up
 - Schedule calls with relevant managers to discuss “Significant Issues”
 - Senior Consultant available for in-depth research projects

Annual Review

Total Implementation Shortfall Costs (Costs in basis points per share)

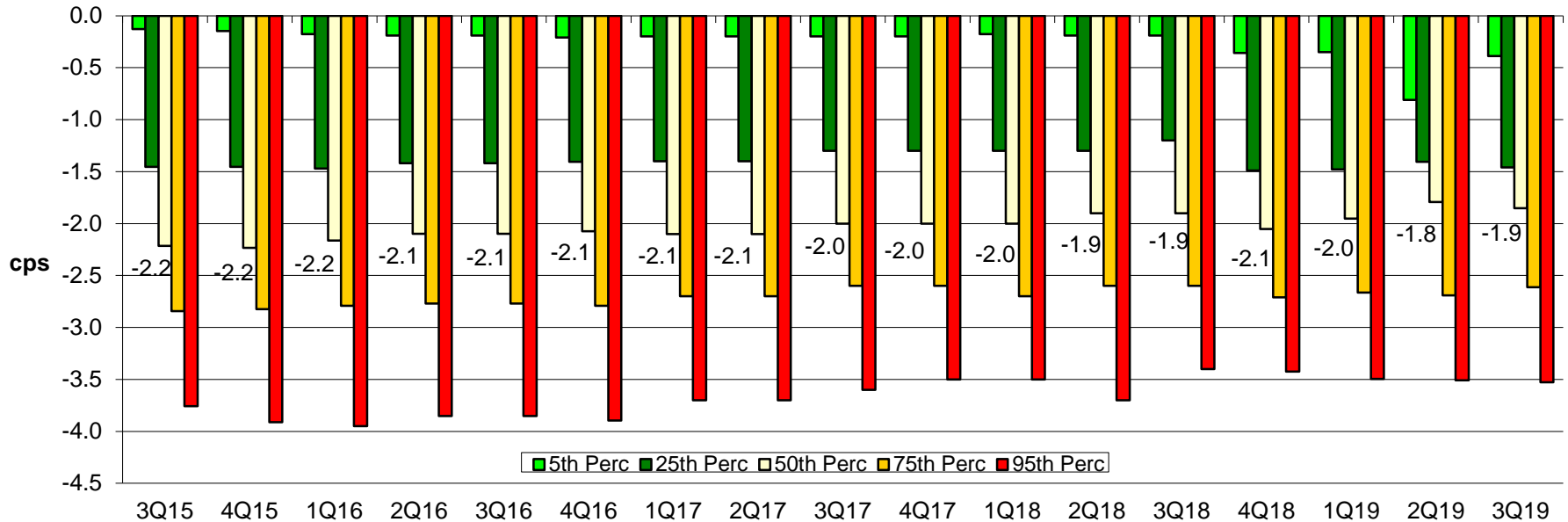


- Volatility trend began to spike over most recent 4 quarters; this will be interesting to see in coming quarters.
- Median costs have been range bound between -36 bps and -43bps.
- Very efficient costs for the 5% rankings in 2Q18- 3Q19!.

Quarterly costs are reflective of a rolling 4-quarters worth of data.

Client Commission Trends in Domestic Markets

(Commissions in cents per share)



- Commission rates have mostly remained consistent.
- Median US commission rates improved annually since 3Q 2015.

Quarterly costs are reflective of a rolling 4-quarters worth of data.

Structure of Commission Recapture Program

WPERP Commission Recapture Program Construction

- In January 24, 2018, WPERP approved the extension of Russell Implementation Services for Commission Recapture for three years from April 1, 2018 through March 31, 2021. The contract can be terminated early by the Plan with a 30-day termination notice.
- The contract also includes at no cost a concurrent subscription to Zeno's Sponsor Monitor and FX Monitor.
- Broker list: Russell Implementation Services, Bank of America, Barclays Capital, CAPIS, CastleOak, CF Global, CIBC, Cowen, Deutsche Bank, Fidelity, HSBC, Instinet, Virtu, Liquidnet, Loop Capital, Macquarie, Piper Jaffray, Scotia Capital, Societe Generale, and Weeden.

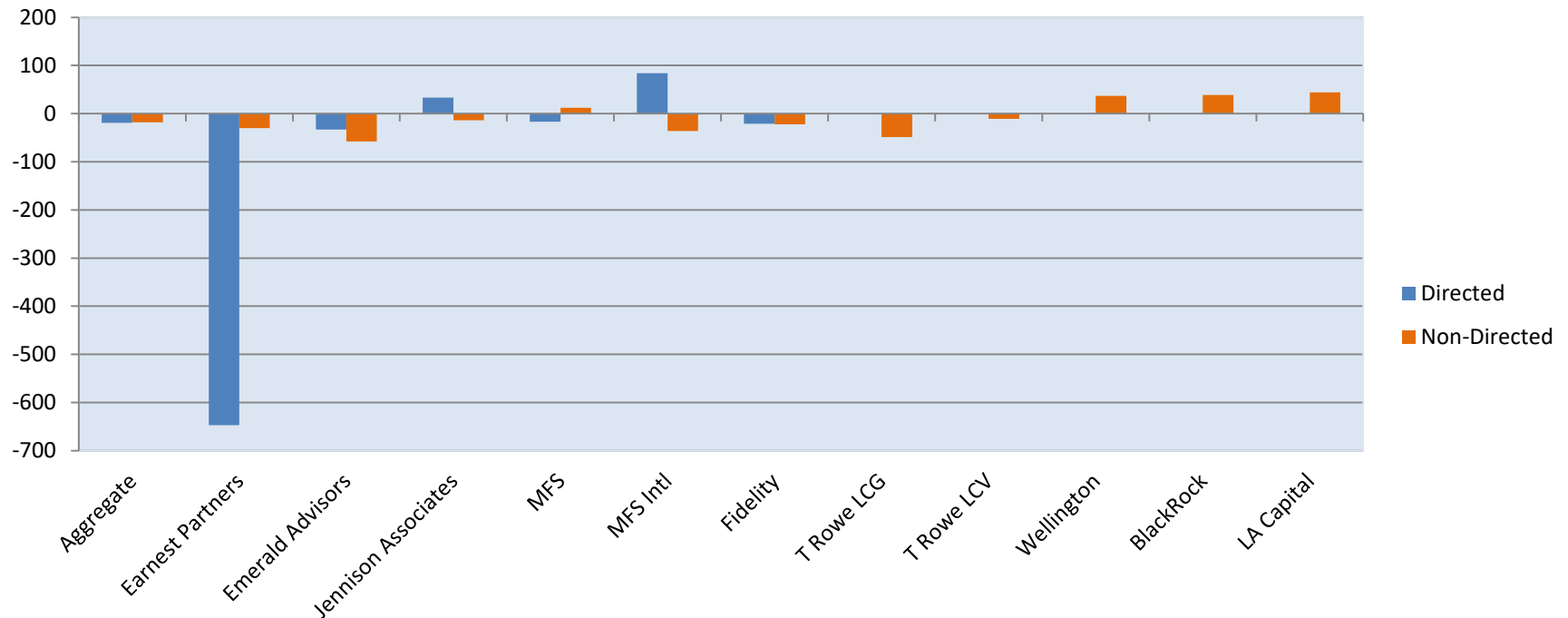
Fee Structure of WPERP Equity Commission Recapture Program

- Russell agreed to rebate all equity commissions over 1¢ on all USD trades executed directly through Russell. Developed international equities 100% of Net after 5 bps. Emerging Markets 100% payout after 9 bps.
- 85% payout of net commissions on all trades (including non-USD) executed through Russell's brokerage network.
- Zeno's fee of \$25,000 contingent upon Russell achieving \$50,000 in annual revenue.

Trading Review of External Equity Portfolios

- Trading volume for the aggregate fund (excluding comingled) of \$3.9 billion decreased over the prior year of \$5.3 billion. Gross commission dollars decreased to \$1.6 million from \$2.4 million from the prior year.
- Total costs for WPERP as a fund in aggregate increased when compared to the prior year period.
 - In general, the majority of individual portfolios were traded efficiently and comparably with peer strategies. Earnest Partners, Pyramis, T.Rowe Price LCG and T.Rowe Price LCV displayed costs that were greater than average.
 - Trade executions for directed portfolios were similar or better than non-directed portfolios
 - Comingled portfolios BlackRock and LA Capital were efficient.
- Costs for trades which participated in the commission recapture program were generally inline or better than the non-recapture trades. In general, we find that the commission recapture program did not materially affect manager's trade execution processes.
 - In total, 4% of all trading activity was sent to the recapture program run by Russell Investments. This was an decrease from the prior year of 8%.
 - The majority of commission recapture trading activity (57%) was executed by Russell Investments. Eleven other correspondent brokers were used to facilitate the remaining (43%) commission recapture trades. When compared to last year, Russell Investments executed (61%) of recaptured trades.
 - The top three managers that provided the greatest revenues/credits from the program were Jennison Partners (36%), Pyramis (35%), and Emerald Advisors (25%).

Executions vs Zeno Benchmark 2Q19-1Q20



- Overall, the Fund's trade executions saw directed trades outperforming non-directed trades.
- Earnest Partners saw poor relative directed/non-directed underperformance
- T Rowe Price, Wellington and comingled managers BlackRock, LA Capital did not participate in directed trades.

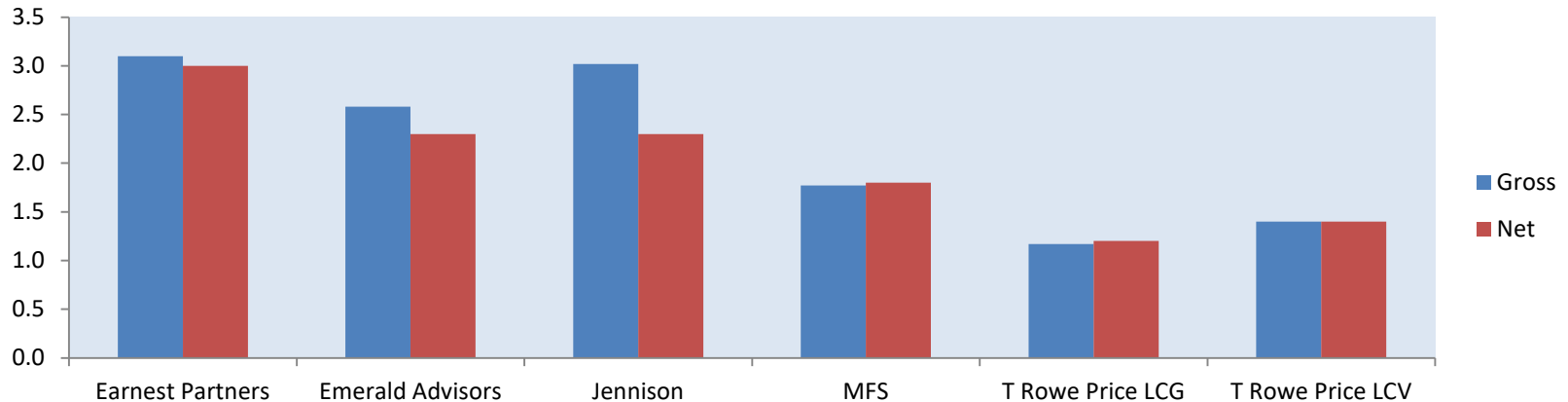


Commission, Trading Volume, and Participation Rates 2Q19-1Q20

	Commission Dollars		Trading Volume (MM)		Participation Rates			Russell Network	
	Gross	Credited	Non-Directed	Directed	2020	2019	2018	Volume (MM)	% Total Volume
Earnest Partners	\$ 86,090	\$3,874	78	7	8%	5%	3%	20	24%
Emerald Advisors	\$ 183,930	\$21,377	182	19	9%	14%	9%	40	20%
Jennison Associates	\$ 128,040	\$31,349	341	84	20%	5%	NA	147	35%
MFS	\$ 62,920	\$54	229	8	3%	1%	15%	37	16%
MFS International	\$ 83,260	\$54	225	1	<1%	1%	1%	55	24%
Fidelity	\$ 565,850	\$30,223	930	28	3%	16%	4%	233	25%
T Rowe Price LCG	\$ 89,640	\$0	803	0	0%	0%	1%	159	21%
T Rowe Price LCV	\$ 125,070	\$0	414	0	0%	0%	1%	95	23%
Wellington	\$ 238,040	\$0	564	0	0%	0%	0%	94	17%
Total	\$ 1,562,834	\$86,932	3,767	146	4%	8%	3%	891	23%

- Directed participation volume through 1Q20 declined to 4%.
- Commission dollars credited 2Q19 through 1Q20 was \$86,932 as compared to 2019 of \$164,804.
- Comingled managers Los Angeles Capital and BlackRock did not participate in any directed trades.
- 23% of all trades could have potentially been directed through Russell's network.

US Manager Commission Rates in cps 2Q19-1Q20



- Net commissions (after rebates) of US portfolios improved marginally. Net commissions for Earnest appear high.
- Wellington, T.Rowe and comingled managers BlackRock and LA Capital did not direct any trades.
- International commission rates (after rebates) were inline: MFS Intl (-1bps), Fidelity (-9 bps), Wellington (-4 bps), and LA Capital (-7bps).

Trading Review of External Equity Portfolios

Portfolio	Strategy	Metric	Observations
Earnest Partners	Small Cap Value	Total Costs	Poor when compared to peer portfolios. Costs had improved slightly the first three quarters but deteriorated due to Q1 volatility.
		Execution Efficiency	Poor when compared to peer portfolios. Efficiency improved slightly the first three quarters but deteriorated due to Q1 volatility
		Commission Recapture	Participation rate (8%). \$3,874 in credits which increased from \$656 the prior year.
		Commission Rates	Gross rates (3.1 cps, 4 th qtile). Net of commission (recapture) savings, commission rates (3.0 cps, 4 th qtile). Used Cowen, Liquidnet and Piper Jaffray for recapture exclusively.
Emerald Advisors	Large Cap Growth	Total Costs	Average when compared to peer portfolios. Costs improved slightly from last year.
		Execution Efficiency	Average when compared with peer portfolios. Improved relative performance of non-recaptured trades.
		Commission Recapture	Third largest participant in the program. Participation rate (9%). \$21,337 in credits.
		Commission Rates	Gross rates (2.6 cps, 3 rd qtile) . Net of commission (recapture) savings, commission rates (2.3 cps, 2 nd qtile). Used Cowen for recapture exclusively.

Trading Review of External Equity Portfolios

Portfolio	Strategy	Metric	Observations
Jennison Associates	Large Cap Growth	Total Costs	Average when compared to peer portfolios. First complete year of analysis
		Execution Efficiency	Average when compared to peer portfolios. First complete year of analysis
		Commission Recapture	Largest participant in the program. Participation rate (20%). \$26,988 in credits.
		Commission Rates	Gross commission rates (3.0 cps, 2 nd qtile). Estimated net of commission (recapture) savings, commission rates of (2.3 cps, 2 nd qtile). Used Frank Russell for recapture exclusively
MFS	Large Cap Value	Total Costs	Average when compared to peer portfolios. Costs deteriorated slightly over the prior year.
		Execution Efficiency	Efficient when when compared with peer portfolios.
		Commission Recapture	Low participation rate of (<1%). \$108 in credits (both portfolios combined).
		Commission Rates	Gross commission rates (1.8 cps, 2 nd qtile). Estimated net of commission (recapture) savings, commission rates of (1.8 cps, 2 nd qtile). Used Liquidnet for recapture exclusively.

Trading Review of External Equity Portfolios

Portfolio	Strategy	Metric	Observations
MFS Intl' Dev Val	Non-US All Country	Total Costs	Average when compared to peer portfolios. Costs improved from last year.
		Execution Efficiency	Average when compared to peer portfolios. Efficiency improved from last year.
		Commission Recapture	Low participation rate of (<1%). \$108 in credits (both portfolios combined).
		Commission Rates	Gross commission rates (4 bps, 1 st qtile). Estimated net of commission (recapture) savings (4 bps, 1 st qtile).
Fidelity	Non-US All Country	Total Costs	Poor when compared to peer portfolios. Costs deteriorated over the prior year.
		Execution Efficiency	Poor when compared with peer portfolios. Efficiency deteriorated from last year
		Commission Recapture	Second largest participant in the program in terms of \$. Participation rate 3%. \$25,854 in credits.
		Commission Rates	Commission rates (6 bps, 2 nd qtile). Net of commission (recapture) savings, commission rates of (6 bps, 2 nd qtile). Virtu/ITG (52%), Soc Gen (24%), and Macquarie (17%) were the largest recapture brokers used.

Trading Review of External Equity Portfolios

Portfolio	Strategy	Metric	Observations
T. Rowe Price	Large Cap Growth	Total Costs	Poor when compared with peer portfolios. Costs deteriorated from last year.
		Execution Efficiency	Poor when compared with peer portfolios. Execution Efficiency deteriorated from last year.
		Commission Recapture	No participation in program.
		Commission Rates	Gross rates (1.2 cps, 1 st qtile) are above peer averages. Net of commission (recapture) savings, commission rates (1.2 cps, 1 st qtile) are efficient.
T. Rowe Price	Large Cap Value	Total Costs	Poor when compared with peer portfolios. Costs deteriorated from last year.
		Execution Efficiency	Below average when compared with peer portfolios.
		Commission Recapture	No participation in program.
		Commission Rates	Gross rates (1.4 cps, 2 nd qtile) are better than peer averages. Net of commission (recapture) savings, commission rates (1.4 cps, 2 nd qtile) are efficient.

Trading Review of External Equity Portfolios

Portfolio	Strategy	Metric	Observations
Wellington	Emerging Market	Total Costs	Efficient when compared to peer portfolios. Costs increased slightly over the prior year.
		Execution Efficiency	Efficient when when compared with peer portfolios.
		Commission Recapture	Did not participate.
		Commission Rates	Gross rates (4 bps, 1 st qtile). JP Morgan (15%), CitiGroup Global Markets (13%), and Morgan Stanley (13%) were the top 3 brokers used.

Trading Review of Comingled Equity Portfolios

Portfolio	Strategy	Metric	Observations
BlackRock	Large Cap Passive	Total Costs	Costs efficient versus the Close
		Execution Efficiency	Efficient quarterly executions.
		Commission Recapture	Did not participate.
		Commission Rates	Efficient commission rates of (0.4 cps, 1 st qtile).
LA Capital	Emerging Market	Total Costs	Average when compared with peer portfolios. Costs deteriorated from last year.
		Execution Efficiency	Average, when compared with peer portfolios.
		Commission Recapture	Did not participate.
		Commission Rates	Efficient commission rates (7 bps, 2 nd qtile).

Aggregate Separate Account Portfolios - FX 2Q19-1Q20

Summary

Total FX Dollars Traded: US\$ 1,567 MM

Total Costs/Savings

vs. Avg Daily Mid-Point : 0 bp

FX Dollars Traded through Non-Custodian: US\$ 1,283 MM

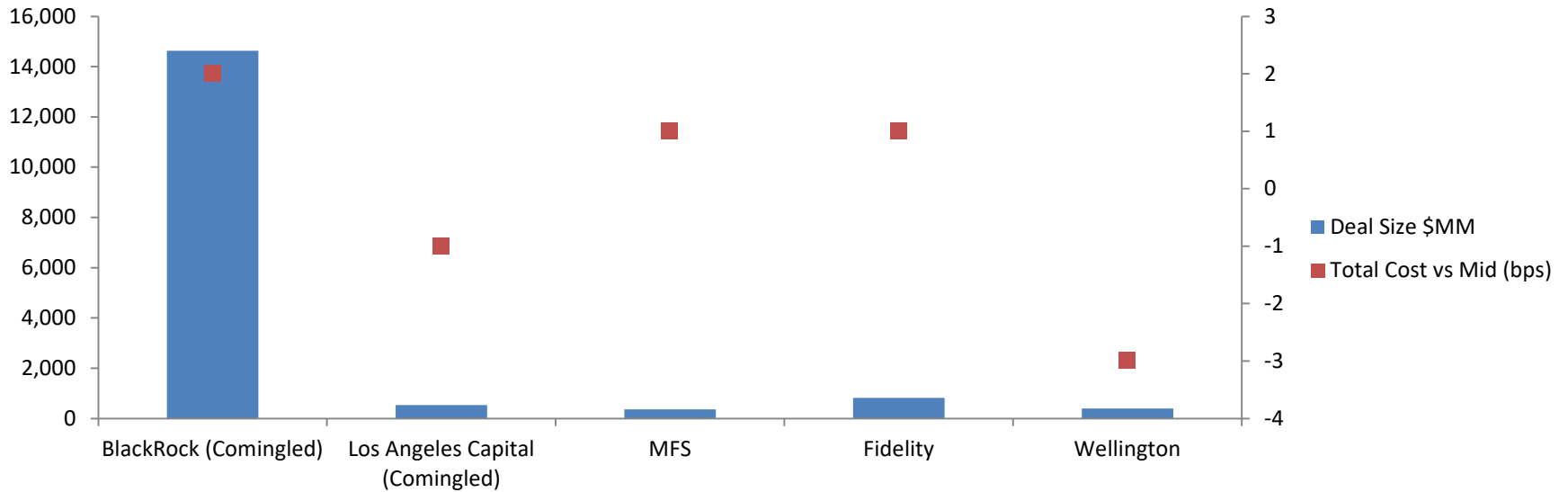
Total Costs/Savings

vs. Avg Daily Mid-Point : +1 bp

Review

- \$1,567 MM of FX Trading activity occurred during the review period. This was a significant increase from the prior review period of \$1,202 MM. The Northern Trust the custodian share of the FX trades was at 18%.
- FX Execution Rates were inline with industry benchmarks during the review period. Trades executed by the custodian and other counterparties were inline. In aggregate, Buys and Sells were randomly distributed, and within their respective daily range.
- Citigroup(21%), State Street (19%), and Northern Trust (18%) were allocated the largest amount of overall volume during the review period. 26% of all transactions were Forwards.
- Top 5 Currency Pairs (EUR.USD, 0 bp; EUR.JPY, +1bp; USD.JPY, 0 bp; GBP.USD, 0 bp, USD.TWD, - 1 bp) represented 60% of total volume during the review period. Overall, 14% of FX activity occurred in restricted markets.

Manager FX Executions 2Q19-1Q20



Review

- FX Execution Rates were in line or better than industry benchmarks during the review period.

Conclusions and Recommendations

- Trading costs and manager's overall trading processes were not materially affected by the Commission Recapture program.
- LADWP's commission recapture program has been implemented in a prudent manner.
- Recommend the continuation of the Commission Recapture program as long as it is fiscally viable. Staff may consider sending direction letters to all managers to remind them of the program.
- FX trading costs were generally inline.



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