

Taking a closer look at our data Equity Transaction Cost Peer Universe Summary

Asset manager trading processes often significantly impact overall investment performance. To this end, managers have a fiduciary obligation to both obtain best execution (to minimize the impact their trading has on their clients' portfolio returns), and to avoid paying excessive commissions. Asset owners, in turn, have a fiduciary obligation to monitor their managers to ensure these legal requirements are achieved.

Our company views these universes as the next step in the evolution of trade cost analysis; and an important tool in evaluating the degree to which a manager's trading process contributes or detracts from bottom-line performance. Just as fund fiduciaries use investment performance peer group universes to help identify managers with superior stock picking ability, Zeno's peer group universes help evaluate the skill and efficiency with which managers implement those stock picks.

FALL 2020 Featured Universe: Q1 2020 US LARGE CAP GROWTH MANAGERS

Consistent with historical averages, **Q1 2020 Large Cap Growth stocks** tended to incur higher trading costs than Large Cap Value and even many Small Cap Value securities. No surprise, given the extreme volatility experienced in March, Q1 2020 Large Cap Growth stocks incurred significantly higher trading costs than Q1 of last year. Not only was the median trading cost more expensive, but the spread between the most efficient and least efficient trading processes widened as well.

	US Large Cap Growth					
Ranking	Total Costs (bp)	Impact on Annual Returns (bp)	Turnover (%)	Commissions (¢)	Execution Price vs. VWAP (bp)	
Top (25%)	-25	-32	35%	-1.50	-1	
Median (50%)	-76	-81	53%	-2.24	-6	
Bottom (75%)	-131	-184	82%	-2.92	-11	

Total Costs (Implementation Shortfall) Quarterly Review

- The average trading costs over the trailing four quarter period in Zeno's US Large Cap Growth Peer Universe was -76 bps; and the difference between the top and bottom quartile manager was 106 bps.
- The median "Execution Price vs. VWAP" in Zeno's US Large Cap Growth Peer Universe was -6 bps; and the difference between the top and bottom quartile manager was 10 bps.
- The average commission rate over the trailing four quarter period in Zeno's US Large Cap Growth Peer Universe was -2.24 ¢; and the difference between the top and bottom quartile manager was 1.42 ¢.
- The average turnover rate over the trailing four-quarter period in Zeno's US Large Cap Growth Peer Universe was 53%; and the difference between the Top and Bottom quartile manager was 47%.

• The average "Impact on Annual Returns" (caused by the combination of trading costs and turnover rates) over the trailing four quarter period in Zeno's US Large Cap Growth Peer Universe was -81 bps; and the difference between the top and bottom quartile manager was 152 bps.

As shown in the table above, over the trailing four quarters ending March 31st, 2020, the median trading costs incurred by US Large Cap Growth managers was -76 bp; approximately 25 bp more expensive than a year ago. While the difference between the top and bottom quartile trading processes was relatively stable at 106 bp, the spread between the most efficient and least efficient trading processes (i.e. the 5th and 95th percentiles) widened by over 25% from a year ago, to 268 bp.

Perhaps most importantly, from an investment perspective, given that Large Cap Growth manager turnover rates also increased in this period, the median impact that trading had on annual returns increased to -81 bp; and managers ranking in the 4th Quartile of Zeno's Trade Cost Universe incurred a performance hit of almost - 2% (-184 bp)! The difference in the impact that trading had on annual performance, between the top quartile and bottom quartile managers was over 1.5% (152 bp).

To put these numbers into context, the median Large Cap Growth manager's one-year net return during this period was approximately -1.0%. Longer term, over the trailing five and ten-year periods, Large Cap Growth was the highest performing asset class, with average annual returns of 9.1% and 12.4% respectively.¹

Clearly, the trading costs incurred by most Large Cap Growth managers eat up a significant portion of the managers' annual investment performance – often exceeding 20% of their gross return. From a performance attribution analysis, this is an example of why we encourage clients not to ignore or underestimate the impact that trading can have on returns.

Equally important, the difference between the median and top-quartile investment returns over those five and ten-year periods was only 1.7% and 0.9%, respectively. Accordingly, the efficiency of a manager's trading process could easily mean the difference between average and superior performance relative to that manager's peers.

It should also be noted that the average commission rate paid during this period by US Large Cap Growth managers was -2.24¢, with 4th Quartile commission rates averaging over 2.92¢. This represents a slight tick higher than prior years.

ADDITIONAL Q1 2020 ZENO UNIVERSE DATA

The remaining tables below also show the range of trading costs, commissions, and impact to performance incurred by managers within each peer group universe. Like above, the tables cover the four-quarter average as of March 31, 2020.

US Large Cap Value

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (¢)	Execution Price vs. VWAP (bp)
Тор (25%)	+26	+20	30%	-1.02	+1
Median (50%)	-20	-15	50%	-1.75	-4
Bottom (75%)	-52	-61	84%	-2.16	-10

¹ Based on eV US Large Cap Growth Equity Gross Universe

Total Costs (Implementation Shortfall) Quarterly Review

- The average trading costs over the trailing four quarter period in Zeno's US Large Cap Value Peer Universe was -20 bps; and the difference between the top and bottom quartile manager was 78 bps.
- The median "Execution Price vs. VWAP" in Zeno's US Large Cap Value Peer Universe was -4 bps; and the difference between the top and bottom quartile manager was 11 bps.
- The average commission rate over the trailing four quarter period in Zeno's US Large Cap Value Peer Universe was -1.75 ¢; and the difference between the top and bottom quartile manager was 1.14 ¢.
- The average turnover rate over the trailing four quarter period in Zeno's US Large Cap Value Peer Universe was 50%; and the difference between the top and bottom quartile manager was 54%.
- The average "Impact on Annual Returns" (caused by the combination of trading costs and turnover rates) over the trailing four quarter period in Zeno's US Large Cap Value Peer Universe was -15 bps; and the difference between the top and bottom quartile manager was 81 bps.

US Small Cap Growth

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (¢)	Execution Price vs. VWAP (bp)
Тор (25%)	-72	-120	61%	-1.57	-3
Median (50%)	-136	-210	80%	-2.24	-8
Bottom (75%)	-189	-394	141%	-2.60	-12

Total Costs (Implementation Shortfall) Quarterly Review

- The average trading costs over the trailing four quarter period in Zeno's US Small Cap Growth Peer Universe was -136 bps; and the difference between the top and bottom quartile manager was 117 bps.
- The median "Execution Price vs. VWAP" in Zeno's US Small Cap Growth Peer Universe was -8 bps; and the difference between the top and bottom quartile manager was 9 bps.
- The average commission rate over the trailing four quarter period in Zeno's US Small Cap Growth Peer Universe was -2.24 ¢; and the difference between the top and bottom quartile manager was 1.03 ¢.
- The average turnover rate over the trailing four-quarter period in Zeno's US Small Cap Growth Peer Universe was 80%; and the difference between the top and bottom quartile manager was 80%.
- The average "Impact on Annual Returns" (caused by the combination of trading costs and turnover rates) over the trailing four quarter period in Zeno's US Small Cap Growth Peer Universe was -210 bps; and the difference between the top and bottom quartile manager was 274 bps.

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (¢)	Execution Price vs. VWAP (bp)
Тор (25%)	+10	+27	40%	-1.32	+5
Median (50%)	-64	-84	65%	-1.76	-3
Bottom (75%)	-148	-181	92%	-2.46	-9

US Small Cap Value

Total Costs (Implementation Shortfall) Quarterly Review

- The average trading costs over the trailing four-quarter period in Zeno's US Small Cap Value Peer Universe was -64 bps; and the difference between the top and bottom quartile manager was 158 bps.
- The median "Execution Price vs. VWAP" in Zeno's US Small Cap Value Peer Universe was -3 bps; and the difference between the top and bottom quartile manager was 14 bps.

- The average commission rate over the trailing four quarter period in Zeno's US Small Cap Value Peer Universe was -1.76 ¢; and the difference between the top and bottom quartile manager was 1.14 ¢.
- The average turnover rate over the trailing four quarter period in Zeno's US Small Cap Value Peer Universe was 65%; and the difference between the top and bottom quartile manager was 52%.
- The average "Impact on Annual Returns" (caused by the combination of trading costs and turnover rates) over the trailing four quarter period in Zeno's US Small Cap Value Peer Universe was -84 bps; and the difference between the top and bottom quartile manager was 208 bps

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (bp)	Execution Price vs. VWAP (bp)	
Тор (25%)	-16	-9	21%	-4	0	
Median (50%)	-40	-38	42%	-5	-3	
Bottom (75%)	-82	-76	59%	-8	-7	

Non-US Developed Markets

Total Costs (Implementation Shortfall) Quarterly Review

- The average trading costs over the trailing four quarter period in Zeno's Non-US Developed Markets Peer Universe was -40 bps; and the difference between the top and bottom quartile manager was 66 bps.
- The median "Execution Price vs. VWAP" in Zeno's Non-US Developed Markets Peer Universe was -3 bps; and the difference between the top and bottom quartile manager was 7 bps.
- The average commission rate over the trailing four quarter period in Zeno's Non-US Developed Markets Peer Universe was 5 bp; and the difference between the top and bottom quartile manager was 4 bp.
- The average turnover rate over the trailing four quarter period in Zeno's Non-US Developed Markets Peer Universe was 42%; and the difference between the top and bottom quartile manager was 38 %.
- The average "Impact on Annual Returns" (caused by the combination of trading costs and turnover rates) over the trailing four quarter period in Zeno's Non-US Developed Markets Peer Universe was -38 bps; and the difference between the top and bottom quartile manager was 67 bps.

Emerging Markets

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (bp)	Execution Price vs. VWAP (bp)
Тор (25%)	-21	-10	32%	-5	0
Median (50%)	-40	-57	53%	-7	-4
Bottom (75%)	-100	-116	80%	-11	-7

Total Costs (Implementation Shortfall) Quarterly Review

- The average trading costs over the trailing four quarter period in Zeno's Emerging Markets Peer Universe was -40 bps; and the difference between the top and bottom quartile manager was 79 bps.
- The median "Execution Price vs. VWAP" in Zeno's Emerging Markets Peer Universe was -4 bps; and the difference between the top and bottom quartile manager was 7 bps.
- The average commission rate over the trailing four quarter period in Zeno's Emerging Markets Peer Universe was -7 bp; and the difference between the top and bottom quartile manager was 6 bp.
- The average turnover rate over the trailing four quarter period in Zeno's Emerging Markets Peer Universe was 53%; and the difference between the top and bottom quartile manager was 48%.
- The average "Impact on Annual Returns" (caused by the combination of trading costs and turnover rates) over the trailing four quarter period in Zeno's Emerging Markets Peer Universe was -57 bps; and the difference between the top and bottom quartile manager was 106 bps

Background

In early 2014, **Zeno AN Solutions** ("Zeno"), then known as Zeno Consulting Group, introduced its trade cost Peer Group Universes. Unlike most other trade cost comparisons, Zeno's Peer Group Universes rank managers against other managers charged with the same investment mandate (e.g. Small Cap Growth, Large Cap Value, Non-US Developed Markets, etc.). Further, the costs tracked in the universes include not just broker-related costs, but also the trading costs incurred by asset managers "working" their orders over multiple days. Equally important, the universes measure turnover rates, thereby enabling the quantification of how much each manager's trading process impacts their annual investment return.

Glossary of Terms

Ranking - Displays the results of the managers who ranked in the 25th, 50th, and 75th percentile of their respective peer group universes.

Total Costs - The four-quarter average of total execution costs (sum of multi-day delay, daily market impact and commission costs) paid in order to build/unwind trade orders. The difference between the more efficient vs. more expensive managers can often exceed 100 bp in trading costs.

Performance Impact - The loss of asset value incurred as a result of a manager's trading activity (calculated by multiplying the manager's "total cost" by that manager's turnover). In evaluating the factors contributing to manager returns (i.e. "performance attribution"), "performance impact" describes the impact that trading costs had on a manager's overall performance.

Commissions – Commissions (the explicit fees paid to brokers to execute trades) are typically the smallest, but most controllable part of a manager's total execution costs – "*The tip of the iceberg*."

Execution Price vs. VWAP - The difference between the execution price of a manager's trade, versus the average price paid for that security in the marketplace throughout the full day ("VWAP"). Negative figures indicate that the manager's executed price was worse than that day's VWAP.

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