

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 (so as to minimize the impact their trading has on their clients' portfolio returns) and 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.

Our featured universe highlights the range of trading costs, commissions, turnover, and impact to performance incurred by managers in our **US Small Cap Value Peer Group Universe**.

FALL 2021 Featured Universe: Q1 2020 US SMALL CAP VALUE MANAGERS

Consistent with historical averages, **Q2 2021 Small Cap Value stocks** tended to incur lower trading costs than most growth strategies (both Small and Large Cap). Interesting, while the median trading cost has increased about 10% from a year ago, the range of costs has tightened slightly.

As shown in the table below, over the trailing four quarters ending June 30th, 2021, the median trading costs incurred by US Small Cap Value managers was -71 bp; approximately 11% more expensive than a year ago (-64 bp). In contrast, the difference between the top and bottom quartile trading processes was relatively stable at 154 bp, and the spread between the most efficient and least efficient trading processes (i.e., the 5th and 95th percentiles) tightened by almost 10% from a year ago, to 484 bp.

It should also be noted that the average commission rate paid during this period by US Small Cap Value managers was -1.7¢, with 4th Quartile commission rates averaging about 2.3¢. These rates are relatively flat compared to prior years.

From an investment perspective, after taking into account turnover rates, the median impact that trading had on annual returns was -63 bp; and managers ranking in the 4th Quartile of Zeno's Trade Cost Universe incurred a performance hit of more than -1% (-117 bp)! Equally important, the difference between the top quartile and bottom quartile managers (in terms of the impact that trading

had on their annual performance), was 139bp. The size of this spread has remained remarkably consistent over the past several years, averaging 142 bp over the trailing 3-year period.

What is most striking about these numbers is that the median Small Cap Value manager's overall net return during the three-year period ending December 31, 2020, was only 1.9%, and the difference between the top quartile and bottom quartile manager was only 336 bp.¹ This suggests that the trading costs incurred by many Small Cap Value managers ate up almost 30% of their gross investment return (i.e., before trading costs). It also supports the notion that an efficient trading process can be a significant contributor to investment success.

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.

	US Small Cap Value						
Ranking	Total Costs (bp)Impact on Annual Returns (bp)Turnover (%)Commissions (¢)Execution Price VWAP (bp)						
Top (25%)	+25	+22	29%	-1.21	+2		
Median (50%)	-71	-63	37%	-1.74	-8		
Bottom (75%)	-129	-117	50%	-2.26	-13		

ADDITIONAL ZENO AN SOLUTIONS UNIVERSE DATA

Q2 2019 Equity Transaction Cost Peer Summary

An asset manager's trading process is often a significant component of their overall investment performance. Managers have a fiduciary obligation to both obtain best execution (so as to minimize the impact their trading has on their clients' portfolio returns) and avoid paying excessive commissions. Asset owners, in turn, have a fiduciary obligation to monitor their managers to ensure those managers are in fact receiving best execution and paying reasonable commission rates.

The tables below show the range of trading costs, commissions, and impact to performance, incurred by managers within each Peer Group Universe. In addition, key observations regarding each Peer Group Universe are provided in bullet-points. The tables cover the four-quarter average as of June 30, 2019. A glossary of terms is provided at the end.

¹ Based on SPIVA US Scorecard 2020 Year-end Research report

US Large Cap Growth

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (¢)	Execution Price vs. VWAP (bp)
Тор (25%)	-28	-24	32%	-1.46	-2
Median (50%)	-73	-61	49%	-1.85	-7
Bottom (75%)	-116	-124	79%	-2.79	-13

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 -73 bps; and the difference between the Top and Bottom quartile manager was 88 bps.
- The median "Execution Price vs. VWAP" in Zeno's US Large Cap Growth Peer Universe was -7 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 Growth Peer Universe was -1.9 ¢; and the difference between the Top and Bottom quartile manager was 1.3 ¢.
- The average Turnover rate over the trailing four-quarter period in Zeno's US Large Cap Growth Peer Universe was 49 %; 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 -61 bps; and the difference between the Top and Bottom quartile manager was 100 bps.

US Large Cap Value

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (¢)	Execution Price vs. VWAP (bp)
Тор (25%)	+11	0	23%	-0.87	+2
Median (50%)	-24	-10	35%	-1.46	-5
Bottom (75%)	-72	-49	49%	-2.19	-11

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 -24 bps; and the difference between the Top and Bottom quartile manager was 83 bps.
- The median "Execution Price vs. VWAP" in Zeno's US Large Cap Value Peer Universe was -5 bps; and the difference between the Top and Bottom quartile manager was 13 bps.
- The average Commission rate over the trailing four-quarter period in Zeno's US Large Cap Value Peer Universe was -1.5 ¢; and the difference between the Top and Bottom quartile manager was 1.3 ¢.
- The average Turnover rate over the trailing four-quarter period in Zeno's US Large Cap Value Peer Universe was 35 %; and the difference between the Top and Bottom quartile manager was 26%.
- 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 -10 bps; and the difference between the Top and Bottom quartile manager was 49 bps.

US Small Cap Growth

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (¢)	Execution Price vs. VWAP (bp)
Тор (25%)	+44	+23	41%	-1.42	+2
Median (50%)	-62	-19	48%	-2.30	-5
Bottom (75%)	-131	-158	74%	-2.64	-13

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 -62 bps; and the difference between the Top and Bottom quartile manager was 175 bps.
- The median "Execution Price vs. VWAP" in Zeno's US Small Cap Growth Peer Universe was -5 bps; and the difference between the Top and Bottom quartile manager was 15 bps.
- The average Commission rate over the trailing four-quarter period in Zeno's US Small Cap Growth Peer Universe was -2.3 ¢; and the difference between the Top and Bottom quartile manager was 1.2 ¢.
- The average Turnover rate over the trailing four-quarter period in Zeno's US Small Cap Growth Peer Universe was 48%; and the difference between the Top and Bottom quartile manager was 33%.
- 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 -19 bps; and the difference between the Top and Bottom quartile manager was 181 bps.

US Small Cap Value

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (¢)	Execution Price vs. VWAP (bp)
Тор (25%)	+25	+22	29%	-1.21	+2
Median (50%)	-71	-63	37%	-1.74	-8
Bottom (75%)	-129	-117	50%	-2.26	-13

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 -71 bps; and the difference between the Top and Bottom quartile manager was 154 bps.
- The median "Execution Price vs. VWAP" in Zeno's US Small Cap Value Peer Universe was -8 bps; and the difference between the Top and Bottom quartile manager was 15 bps.
- The average Commission rate over the trailing four-quarter period in Zeno's US Small Cap Value Peer Universe was -1.7¢; and the difference between the Top and Bottom quartile manager was 1.1¢.
- The average Turnover rate over the trailing four-quarter period in Zeno's US Small Cap Value Peer Universe was 37%; and the difference between the Top and Bottom quartile manager was 21%.
- 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 -63 bps; and the difference between the Top and Bottom quartile manager was 139 bps.

Non-US Developed Markets

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (bp)	Execution Price vs. VWAP (bp)
Тор (25%)	-20	-11	18%	-4	+1
Median (50%)	-48	-32	30%	-4	-2
Bottom (75%)	-88	-70	54%	-7	-7

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 -48 bps; and the difference between the Top and Bottom quartile manager was 68 bps.
- The median "Execution Price vs. VWAP" in Zeno's Non-US Developed Markets Peer Universe was -2 bps; and the difference between the Top and Bottom quartile manager was 8 bps.
- The average Commission rate over the trailing four-quarter period in Zeno's Non-US Developed Markets Peer Universe was -4 bp; and the difference between the Top and Bottom quartile manager was 3 bp.
- The average Turnover rate over the trailing four-quarter period in Zeno's Non-US Developed Markets Peer Universe was 30 %; and the difference between the Top and Bottom quartile manager was 36 %.
- 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 -32 bps; and the difference between the Top and Bottom quartile manager was 59 bps.

Emerging Markets

Ranking	Total Costs (bp)	Impact on Annual Return (bp)	Turnover (%)	Commissions (¢)	Execution Price vs. VWAP (bp)
Тор (25%)	-16	-5	24%	-5	-1
Median (50%)	-56	-41	36%	-7	-5
Bottom (75%)	-110	-98	98%	-9	-13

Total Costs (Implementation Shortfall) Quarterly Review

- The average trading costs over the trailing four-quarter period in Zeno's Emerging Markets Peer Universe was -56 bps; and the difference between the Top and Bottom quartile manager was 94 bps.
- The median "Execution Price vs. VWAP" in Zeno's Emerging Markets Peer Universe was -5 bps; and the difference between the Top and Bottom quartile manager was 12 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 4 bp.
- The average Turnover rate over the trailing four-quarter period in Zeno's Emerging Markets Peer Universe was 36%; and the difference between the Top and Bottom quartile manager was 74%.
- 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 -41 bps; and the difference between the Top and Bottom quartile manager was 93 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.

Zeno AN Solutions helps institutional asset owners to proactively monitor and manage the trading costs and processes of their asset managers. Our clients are solely plan sponsors/pension funds and other asset owners. Our transaction cost analysis services are therefore provided by an independent third party, free from conflicts of interest.

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Zeno AN Solutions is an industry pioneer offering multi-asset TCA, transition analytics, and program audits for asset owners. We specialize in proactively monitoring and measuring all aspects of the trading process.

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