Needham Funds

Portfolio Manager:
John O. Barr

Investment Style:
Small Cap Growth

NEEDHAM AGGRESSIVE GROWTH FUND

2Q19 Quarterly Commentary

Needham Aggressive Growth Fund (NEAGX/NEAIX): Review of the 2nd Quarter & 1st Half 2019

Our mission is to create wealth for long-term investors and the second quarter of 2019 was a good step forward. In the second quarter, the Needham Aggressive Growth Fund Institutional and Retail classes returned 4.85% and 4.72%, respectively. The Russell 2000 Index returned 2.10% and the S&P 500 Index returned 4.30%. For the half year 2019, the Needham Aggressive Growth Fund Institutional and Retail classes returned 22.66% and 22.30%, respectively. The Russell 2000 Index returned 16.98% and the S&P 500 Index returned 18.54%.

For the second quarter, Amber Road Inc. (AMBR) was the top contributor and returned 50.2%. It was also a top contributor for the half. Amber Road supplies Global Trade Management software and it understands import and export regulations better than anyone. In May, the company agreed to be acquired for $13.05 per share cash by E2Open, which is owned by Insight Venture Partners. E2Open made a hostile bid for Amber Road in 2018 for $10.50 per share. The Fund owned Amber Road since 2015 and had opportunistically added shares through the years. E2Open provides supply chain management software and Amber Road is a good fit.

Returning 180% in the second quarter, Aspen Aerogels, Inc. (ASPN) was the second best contributor and also a top contributor for the half-year. Aspen rallied from $2.13 per share at the end of 2018 to $7.13 on June 30. We believe the market had been wrongly concerned about Aspen's liquidity and also missed its importance to partner BASF SE (BASF). In April, BASF and Aspen announced a second phase of their partnership, which included cash as a prepayment for the new SLENTEX aerogel used in construction. Aspen also announced first quarter and second quarter results and guidance consistent with a growing company. The Fund opportunistically added to its Aspen position in the fourth quarter of 2018.

For the first half, PDF Solutions, Inc. (PDFS) was the top contributor and returned 55.6%. The company made continued progress on its new initiatives, including a January announcement of a new agreement for Design-for-Inspection (DFI) with its lead customer, which we believe to be Taiwan Semiconductor Manufacturing Co., Ltd (TSM). DFI is used to detect electrical failures on semiconductors during the manufacturing process. PDF's business model is to provide e-beam testers, the Exensio Big Data Analytics platform and software-applications-as-a-service, which results in recurring revenue for PDF. Exensio revenue grew 43% in 2018 and could represent 40% of revenue in 2019. The Fund owns the stock in anticipation of addressing these markets and growing to a much larger company over the years ahead. PDF has been in a five-year investment period. We look forward to PDF's October investor day, which will be only its second in 18 years as a public company.

The second-leading contributor for the first half was nine-year-holding, Entegris, Inc. (ENTG), which returned 34.3%. Entegris supplies filters and chemicals used in semiconductor advanced manufacturing processes. On January 28, Entegris and Versum Materials (VSM) announced an agreement to merge and announced $75 million of expense savings. A month later, Merck (MRK) announced a competing bid for Versum. Merck's interest in Versum shows the value of Entegris, which is a similar business. In early April, Merck increased its bid for Versum and won the acquisition. Entegris walked away with a $140 million break-up fee. At a comparable multiple, Entegris would be valued at $52 per share, well above the $37.32 June 30 closing price.

The third-leading contributor for the first half was Apple Inc. (AAPL), a 13-year holding, which returned 26.5%. In the fourth quarter of 2018, Apple reported weakness in China, specifically with its new, high-end phones. It's hard to remember but 2018 brought the worst December for the U.S. stock market since 1931. Apple reported a March quarter with earnings per share, iPhone revenue and Services revenue, and gross margin above Wall Street estimates. It also increased its share buyback and raised its quarterly dividend.

GSE Systems (GVP) was the leading detractor for the second quarter, as the stock fell 16.4%. GSE's mission is to be a leader in training, consulting and technology-enabled engineering solutions for the power and process industries. In January 2019, GSE announced a $2.6 million contract with a U.S. nuclear operating company to deliver a Data Validation & Reconciliation (DVR) solution. GSE's True North Consulting division will deliver on this contract by building simulation models of reactor plants and integrating them with the plant information systems. This contract illustrates the potential for revenue and new product synergy across GSE's acquired companies.

In February 2019, GSE announced the acquisition of DP Engineering Ltd. for $13.5 million of cash. DP acts as "Engineer of Choice" in mechanical, civil, electrical, instrumentation and controls, cyber security and fire protection for projects in nuclear power plants. About a week after the DP acquisition, an adverse event occurred at a DP customer that affected plant operations. This is a procedural, but important event related to a prior plant modification performed by DP. As is customary, GSE presented a root cause analysis, which was accepted and all current projects with that customer were restarted. However, DP is restricted from bidding on new contracts with that customer until the end of October. Pro-forma the DP acquisition, GSE now has over $100 million of revenue and approximately $10 million of EBITDA, with a market cap of just $50 million. I believe GSE's stock performance is more an issue of being an ignored microcap. GSE is an investment which requires patience.

For the second quarter, MKS Instruments, Inc. (MKSI) was another detractor of note and fell 16.1%. MKS reported disappointing earnings and guidance at the end of April. The market was anticipating a broad second half 2019 recovery in semiconductor capital equipment, which has been pushed out to 2020. However, spending on some of the leading-edge semiconductor manufacturing equipment is anticipated to be strong in the second half of 2019, and MKS should benefit.

For the half year, the leading detractors were the short positions in Medallion Financial Corp. (MFIN) and Ubiquiti Networks, Inc. (UBNT). Ubiquiti was up 32.8% during the first half. Ubiquiti furthered its retreat from the public eye by stopping its investor conference calls in January. The head of Investor Relations left the company in the first quarter. The company hasn't had a CFO since April 2015. In October 2018, Ben Moore, long-time VP of Business Development and one of only three named officers, resigned.

In November 2018, Ubiquiti released earnings that showed ongoing tax audits in the U.S. and Hong Kong, and a Notice of Proposed Adjustment from the IRS relating to 2015 and 2016, indicating the company owes $50 million. Ubiquiti disagrees and hasn't recorded a tax liability. In November 2018, Ubiquiti announced a new $200 million stock repurchase program. Its previous buybacks have mostly been funded with bank debt.

Medallion Financial's shares were up 43.7% in the first half. We continue to believe that Medallion Financial has overstated earnings and the value of assets on its balance sheet, but the stock market has not cared. We have not changed our thesis on Ubiquiti or Medallion Financial. However, it's hard for a mutual fund to compound returns when a short position keeps requiring capital that can be used to buy positions, which we'd like to hold for years. Consequently, we reduced both of these short positions. Combined they were -7.14% of net assets on December 31, 2018 and down to -1.57% on June 30, 2019. They were a neutral contributor in the second quarter.

In the first half, the Needham Aggressive Growth Fund added a position in Wabtec (Westinghouse Air Brake Technologies Corp.) (WAB), a leading locomotive manufacturer. Wabtec closed its transformational acquisition of General Electric's locomotive business. We believe there is likely to be a strong market for new and retrofit locomotives over the next few years, as technology is more widely adopted and the cost of trucking and shortage of drivers makes rail an even more attractive shipping option. The Fund added to its positions in DIRTT Environmental Solutions (DRT:TSE), Taiwan Semiconductor Manufacturing ADR (TSM) and Vicor Corporation (VICR).

The Fund sold its position in Amber Road upon its acquisition. The Fund's largest sales in the first half were in Electronics for Imaging, Inc. (EFII), Entegris, Inc. (ENTG), FormFactor, Inc. (FORM) and Super Micro Computer, Inc. (SMCI).

At June 30, 2019, the Fund's top 10 positions were 63.85% of net assets. The Fund had an Active Share of 101.2% versus the Russell 2000 and had trailing 12-month turnover of 7%. The Fund was short 1.7% of total investments. Once again, the Fund looks nothing like the S&P 500 and its performance was not correlated.

We believe the U.S. remains the best place in the world to be investing, and we continue to see an opportunity to invest in small and mid-cap stocks. Most importantly, we see a revolution happening in technology that has created and continues to create investment opportunities. We see opportunity in our strategy of investing in companies that we know well and that we believe are positioned with secular growth drivers.

We thank our investors for your continued support. If you have any questions, thoughts or concerns, please contact me at jbarr@needhamco.com. For information about the Needham Aggressive Growth Fund, please visit our website at www.needhamfunds.com.

Sincerely,

John O. Barr

John Barr, Portfolio Manager

AVERAGE ANNUAL RETURNS AS OF 6/30/19

	3 MO	YTD	1YR	3YR	5YR	10YR	SINCE INCEPT.
Needham Aggressive Growth Fund Inst Class**	4.85%	22.66%	-2.64%	11.10%	6.48%	12.18%	9.47%
After Taxes on Distributions	4.85%	22.66%	-5.66%	8.93%	4.54%	11.11%	8.51%
After Taxes on Distributions & Redemptions	2.87%	13.41%	0.16%	8.40%	4.82%	10.02%	7.90%
Needham Aggressive Growth Fund Retail Class	4.72%	22.30%	-3.15%	10.49%	5.90%	11.57%	8.87%
After Taxes on Distributions	4.72%	22.30%	-6.20%	8.31%	3.96%	10.50%	7.92%
After Taxes on Distributions and Redemptions	2.80%	13.20%	-0.13%	7.92%	4.37%	9.49%	7.36%
Russell 2000 Index	2.10%	16.98%	-3.31%	12.30%	7.06%	13.45%	8.47%
S&P 500 Index	4.30%	18.54%	10.42%	14.19%	10.71%	14.70%	7.64%

The Needham Aggressive Growth Fund inception date is 9/4/01.
**Performance for any periods prior to the inception date of Institutional Class Shares are based on the historical performance of the Retail Class Shares adjusted to assume the expenses associated with Institutional Class Shares.

The Needham Aggressive Growth Fund's Gross Expense Ratio is 2.97% for the Retail Class and 2.79% for the Institutional Class. The Needham Aggressive Growth Fund's Net Expense Ratio is 2.91% for the Retail Class and 2.35% for the Institutional Class. The Net Expense Ratio reflects a contractual agreement by the Fund's investment adviser to waive its fee and/or reimburse the Fund through May 1, 2020 to the extent the Gross Expense Ratio exceeds 1.95% and 1.40% of the average daily net assets of Retail Class Shares and Institutional Class Shares (Expense Cap). The Expense Cap excludes taxes, interest, brokerage, dividends on short positions, fees and expenses of "acquired funds," extraordinary items and shareholder redemption fees but includes the management fee. Fact Sheet Link: Needham Aggressive Growth Fund

The information presented in this commentary is not intended as personalized investment advice and does not constitute a recommendation to buy or sell a particular security or other investments.

This message is not an offer of the Needham Growth Fund, the Needham Aggressive Growth Fund or the Needham Small Cap Growth Fund. Shares are sold only through the currently effective prospectus. Please read the prospectus or summary prospectus and consider the investment objectives, risks and charges and expenses of the Funds carefully before you invest. The prospectus and summary prospectus contain this and other information about the Funds and can be obtained on our website, www.needhamfunds.com.

Investment returns and principal value will fluctuate, and when redeemed, shares may be worth more or less than their original cost. Performance data quoted represents past performance, and does not guarantee future results. Current performance may be higher or lower than these results. Performance current to the most recent month-end may be obtained by calling our transfer agent at 1-800-625-7071. Total return figures include reinvestment of all dividends and capital gains.

All three of the Needham Funds have substantial exposure to small and micro capitalized companies. Funds holding smaller capitalized companies are subject to greater price fluctuation than those of larger companies.

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Portfolio holdings are subject to change. The Needham Aggressive Growth Fund's ownership as a percentage of net assets in the stated securities as of 6/30/19: AMBR: 0.00%; ASPN: 1.91%; BASF: 0.00%; PDFS: 10.53%; TSM: 0.60%; ENTG: 9.84%; VSM: 0.00%; MRK: 0.00%; AAPL: 8.69%; GVP: 5.76%; MKSI: 3.93%; MFIN: -0.70%; UBNT: -0.87%; WAB: 1.10%; DRT: 3.90%; VICR: 4.33%; EFII: 0.36%; ENTG: 9.84%; FORM: 1.03%; SMCI: 2.76%.