

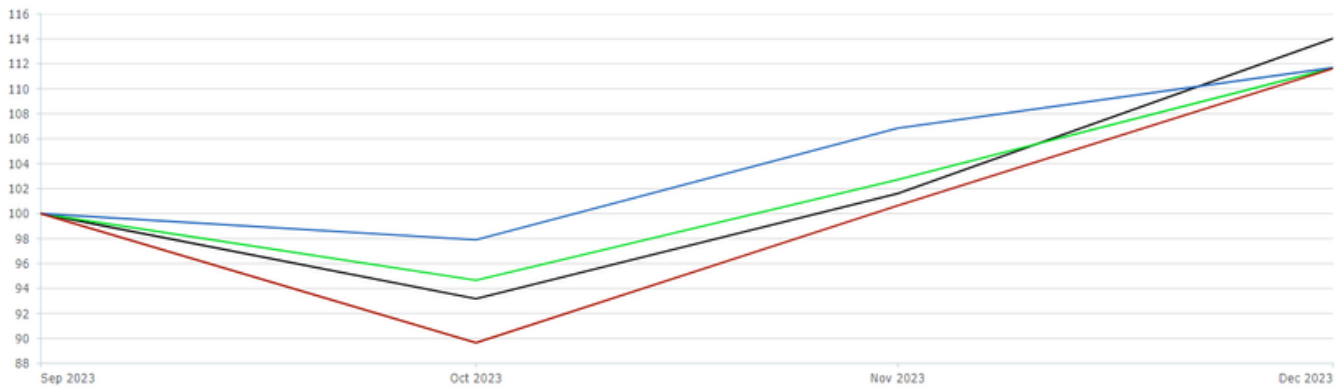
4Q23 Quarterly Commentary

Portfolio Managers: John O. Barr & Christopher J. Retzler

Investment Style: Mid Cap Growth

MARKET REVIEW AND MACRO OBSERVATIONS

- In 4Q23, the S&P MidCap 400 returned 11.67%, the Russell 2000 returned 14.03%, and the S&P 500 returned 11.69%.
- In September, the Federal Reserve indicated the possibility of one more rate increase in 2023,¹ and the markets were weak in October. Markets rallied after the November Fed meeting when rates remained at 5.25% - 5.50%. At the December meeting, the Fed indicated the possibility of multiple rate cuts in 2024 and the markets rallied.
- 10-year Treasury yields decreased to 3.9% from 4.6% on September 30, which was the highest level since 2007.
- The economy continued to move forward with an estimated 4Q23 GDP growth of 1.5%, well below 3Q23's 5.2%, but positive.
- 4Q23 is estimated to be the sixth quarter of 3-4% consumer price index inflation, after 5-7% the preceding four quarters.



	RETURN
Needham Growth Institutional	11.62
S&P 500	11.69
S&P 400	11.67
Russell 2000	14.03

Source: Zephyr Informais

IMPACTS ON PORTFOLIO PERFORMANCE

- In 4Q23, the Needham Growth Fund's Institutional (NEEIX) and Retail (NEEGX) classes returned 11.62% and 11.53%. For the year NEEIX, returned 27.30% and NEEGX returned 26.85% outperforming the S&P MidCap 400's 16.44%, the Russell 2000's 16.93%, and the S&P 500's 26.29%
- The Fund's top contributors in 4Q23 were:
 - Aspen Aerogels, Inc. (ASPN) - Aspen makes aerogel-based insulation used by the energy industry and by the electric-vehicle industry to prevent combustion in Lithium-ion batteries. Aspen had a very eventful quarter. It announced revenue and a forecast ahead of expectations. It also announced winning Stellantis N. V. (STLA) and Audi AG (VOW3-DE) as customers. Finally, Aspen raised \$75 million at \$12.38 per share, which fully funds the company through what we believe could be positive cash flow.
 - Entegris, Inc. (ENTG) - Entegris supplies filters and chemicals used in advanced semiconductor manufacturing processes. We believe semiconductors will continue to increase as a percentage of industrial output, and that Entegris' filtration and specialty materials products will grow faster than the semiconductor industry.² The stock

suffered through the semiconductor downturn in 2023, and reported mediocre third quarter results. However, the stock appreciated as the market anticipated the end of the downturn.

- Photronics, Inc. (PLAB) - Photronics makes photomasks used to manufacture semiconductors and flat panel displays. It reported a strong quarter, and we believe the market viewed these results as indicative of the end of the semiconductor downturn.
- Nova, Ltd. (NVMI) - Nova makes metrology equipment used throughout the semiconductor manufacturing process. We believe it gained market share in 2023 based on new optical, materials, and chemical metrology products. Nova reported strong 3Q23 earnings.
- The Fund had one acquisition announced in the quarter - Alteryx, Inc. (AYX) agreed to go private for \$4.4 billion. The company offers data analytics software that we believe is undergoing a misunderstood transition to SaaS. We appreciate the short-term premium, but had only purchased Alteryx in 3Q23.
- The Fund's top detractor in 4Q23 was Vicor Corp. (VICR). Vicor manufactures power conversion chips used in data centers, cars, and other industrial products. We have been awaiting the opening of Vicor's new plant in Andover, MA, and we believe it will start to contribute in 2024. The plant delays limited capacity and hurt earnings over the last year. In 4Q23, Vicor reported disappointing guidance and the loss of an important customer. We believe the market is moving in Vicor's direction with the high-power requirements of EVs and data centers. Thus, we wait with patience for Vicor to produce better results.
- With 9% turnover, the Fund does not rotate into or out of sectors but invests in companies we believe can outperform over the long term.

OPPORTUNITIES & LOOKING FORWARD

- Our major investment theme remains the importance of U.S. infrastructure—the lesser known “pick and shovel” providers. Our companies sell into data centers, life sciences labs, semiconductor and other manufacturing plants, roads, airports, airbases, power plants, and more. The U.S. has underinvested in these areas, so there could be long tail winds.
- I'd like to highlight four areas present throughout our investments:
 1. Semiconductor manufacturing
 2. Data Centers/AI processing
 3. U.S. Manufacturing
 4. Defense technology
- We believe the AI buildout is still in an early stage. Economic returns on AI projects could be a big deal for productivity and the economy. We are hearing from companies about increases in sales from the application of AI.
- In past quarters, we've written about Super Micro Computer, Inc. (SMCI). Super Micro sells AI server racks and was one of the Funds' top contributors in 2023. Super Micro was co-founded in 1993 by Charles Liang, who still owns roughly 12% of the shares and is the Chairman and CEO. The Fund first bought the stock in 2009, when it was still trading around the IPO price of \$8 per share.

- The server market has always been dominated by a few very large competitors, but Super Micro has been innovative, agile and willing to invest for the long term, so we thought it could eventually carve out a nice position in a secular-growth market.
- About three years ago, Super Micro's AI/Data center revenue started to grow rapidly. Total revenue has grown over 40% for each of the last two years. AI/data center is now over half of the business and next year's earnings are projected at over \$20 per share.
- Super Micro has grown to the largest position in the Fund at 9.55% of assets. It closed the year at \$284 per share making those first shares a 30-bagger.
- Once again, I think it's a great time to be an entrepreneur and we are lucky to go along for the ride as their financial partners.

[1] <https://www.barrons.com/livecoverage/fed-september-meeting-rate-decision-powell-speech-today/card/fed-s-dot-plot-points-to-one-more-rate-increase-this-year-VVkoDxho88cfLq15BdOY>

[2] <https://www.regions.com/-/media/pdfs/AssetManagement-The-Semiconductor-Cycle.pdf?revision=1da76437-de80-4ebd-96f3-dc8ab8257328&la=en&hash=414BE463A90E72789127F9AB4D334AAA>

	3 MO	YTD	1YR	3YR	5YR	10YR	SINCE INCEPT.
Needham Growth Fund Inst Class**	11.62%	27.30%	27.30%	2.84%	17.24%	9.68%	12.92%
After Taxes on Distributions	11.62%	27.30%	27.30%	2.20%	15.87%	8.01%	11.54%
After Taxes on Distributions & Redemptions	6.88%	16.16%	16.16%	2.23%	13.78%	7.42%	11.04%
Needham Growth Fund Retail Class	11.53%	26.85%	26.85%	2.42%	16.71%	9.18%	12.44%
After Taxes on Distributions	11.53%	26.85%	26.85%	1.76%	15.31%	7.50%	11.06%
After Taxes on Distributions and Redemptions	6.83%	15.89%	15.89%	1.92%	13.34%	7.01%	10.59%
S&P 500 Index	11.69%	26.29%	26.29%	10.00%	15.69%	12.03%	9.61%
S&P 400 Index	11.67%	16.44%	16.44%	8.09%	12.62%	9.27%	11.08%
Russell 2000 Index	14.03%	16.93%	16.93%	2.22%	9.97%	7.16%	8.30%

Average Annual Returns as of December 31, 2023. The Needham Growth Fund inception date is January 1, 1996.

**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.

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.

The Needham Growth Fund's Gross Expense Ratio is 1.86% for the Retail Class and 1.59% for the Institutional Class. The Needham Growth Fund's Net Expense Ratio is 1.86% for the Retail Class and 1.41% 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, 2024 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), respectively. 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.

[Needham Growth Fund Fact Sheet Link](#) [Prospectus Link](#)

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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. Portfolio holdings are subject to change. Needham Growth Fund's ownership as a percentage of net assets in the stated securities as of December 31, 2023: ASPN: 4.55%, STLA: 0.00%, VOW3-DE: 0.00%, ENTG: 7.68%, PLAB: 3.09%, NVMI: 4.17%, AYY: 0.67%, VICR: 2.74% and SMCI: 9.55%.

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