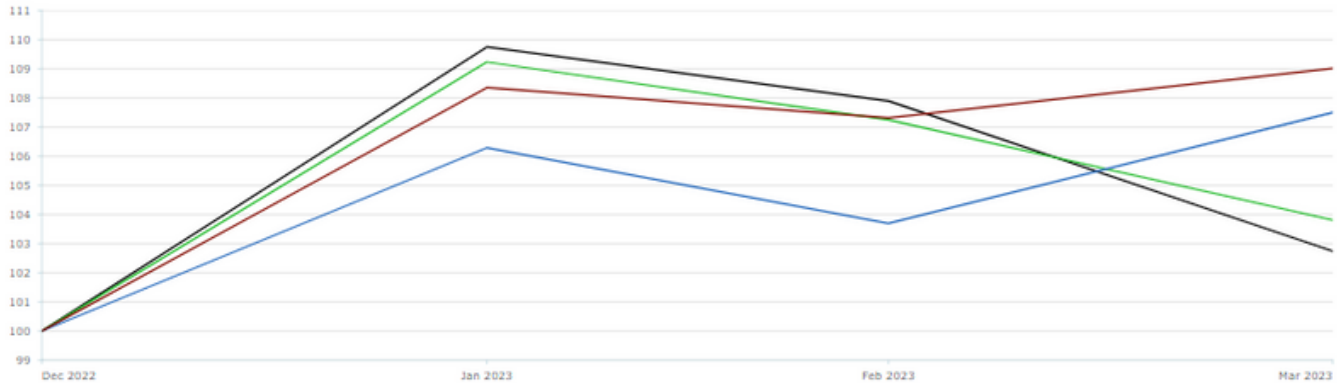


MARKET REVIEW

- In 1Q23, the Russell 2000 returned 2.74% and the S&P 500 returned 7.50%. Despite the worry, the markets have been positive over the last nine months.
- As anticipated, the Federal Reserve raised interest rates by 25 bps to 4.50% - 4.75% on February 1. General consensus of the Fed predicts another 25 bps increase before the end of the year. ¹



	RETURN
Needham Growth Institutional	9.01
S&P 500	7.50
S&P 400	3.81
Russell 2000	2.74

Source: Zephyr Informais

MACRO OBSERVATIONS

- In early March, the market's focus shifted to a banking crisis. Silicon Valley Bank (SVB) and Signature Bank (SBNY) failed and, consequently, were seized by the FDIC. SVB was brought down by the classic failure of mismatched assets and liabilities. SVB had invested in 10-year Treasuries but was funded with overnight, uninsured deposits. With the Fed rate hikes, the Treasuries lost value, and corporate clients with deposits over the insured limit of \$250,000 rapidly withdrew funds, creating a bank run. The Federal Reserve, Treasury Department, and FDIC issued a joint statement insuring all deposits of SVB, and SVB reopened under new management after a long weekend.² Pressure on the banking system persists as deposits flow to the largest banks.

IMPACTS ON PORTFOLIO PERFORMANCE

- The Fund's Institutional (NEEIX) and Retail (NEEGX) classes returned 9.01% and 8.92%, respectively, in 1Q23, outperforming the S&P MidCap 400 and the S&P 500.
- Just as in 4Q22, PDF Solutions, Inc. (PDFS) and Super Micro Computer, Inc. (SMCI) were the Fund's top contributors. PDF Solutions remains the largest position in the Fund at 9.52% of net assets. Once again, PDF Solutions saw strong orders for its Exensio® big data analytics software. Exensio® helps customers across the electronics manufacturing industry improve manufacturing yield. PDF Solutions is benefitting from the resurgence of activity in building semiconductor manufacturing plants in the United States.
- Super Micro designs and manufactures servers. It reported strong 4Q results sustained by growth from the large internet

IMPACTS ON PORTFOLIO PERFORMANCE (cont.)

- companies that operate their own data centers. We believe Artificial Intelligence (AI) training and inference applications are a reason for Super Micro's strong growth.
- The ChatGPT AI product had its public release in November 2022. Within five days, over one million users tried it. In the first quarter, the world became aware of AI's potential impact when Microsoft Corp. (MSFT) invested \$10 billion in OpenAI, the company behind ChatGPT. Microsoft plans to utilize ChatGPT as the engine behind Bing search and as a key part of its cloud, consumer and corporate products. Alphabet, Inc. (GOOGL) and others followed with significant announcements about AI initiatives. We discussed AI and its potential impact on the Needham Aggressive Growth Fund in Growth Factor 36, AI and Needham Funds' Investments.³
- Nova, Ltd. (NVMI) was also a top contributor. Nova makes metrology equipment used to measure parameters throughout the semiconductor manufacturing process. It expects to gain market share in 2023 based on new optical, materials, and chemical metrology products.
- Aspen Aerogels, Inc. (ASPN) was the Fund's top detractor in 1Q23. The company's aerogel insulation is used to insulate pipelines and refinery pipes. The aerogel also prevents thermal runaway in lithium-ion batteries, a major cause of fires in electric vehicles (EVs). Aspen has agreements with General Motors Co. (GM), Toyota Motor Corp. (TM), and other EV makers to supply its thermal barriers for use in EV batteries. The EV battery market has the potential to increase Aspen's revenues from \$100 million to over \$1 billion. Aspen is building a plant in Statesboro, GA to meet this potential increase in demand. The first products are expected off the production lines in 2024. We believe the stock was weak because Aspen may not achieve profitability for a few years.
- 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.

PORTFOLIO CHANGES

- The Fund added three new positions in 1Q23. Unisys Corp. (UIS) was the largest. Unisys is the renaissance of the old-line computer company with roots back to Sperry Corporation, Burroughs Corporation, and Remington Typewriter. Unisys provides digital workplace solutions, cloud & infrastructure, and enterprise computing. We believe ClearPath Forward, Unisys' high-volume transaction processing operating system, alone could be worth multiples of the current stock price.
- We highlight two large additions to existing holdings:
 - Marvel Technology, Inc. (MRVL) supplies semiconductor solutions for data centers, 5G communications, enterprise networks, and the automotive market.
 - Vicor Corp. (VICR) supplies power conversion devices. Many artificial intelligence and machine learning applications require sophisticated power conversion, and Vicor is uniquely positioned to meet these needs. Vicor was supply-constrained throughout 2022, and the stock suffered due to these supply constraints, followed by slower orders in the second half. It opened a new manufacturing facility in May 2022 in Andover, MA.
- The Fund exited three small positions. Q2 Holdings, Inc. (QTWO) was the most significant. We bought Q2 in its 2013 IPO. We believe its small bank customer base may be challenged to fund digital initiatives.

PORTFOLIO CHANGES (cont.)

- We reduced the sizes of approximately ten holdings. Most notably, we reduced PDF Solutions and Thermo Fisher Scientific, Inc. (TMO), which are the Fund's two largest positions, to manage position size.

LOOKING AHEAD & OPPORTUNITIES

- We continue to see opportunities in the reshoring of manufacturing in the United States. We recommend reading [The Titanium Economy: How Industrial Technology Can Create a Better, Faster, Stronger America](#) by Asutosh Padhi, Gaurav Batra, and Nick Santhaman of McKinsey & Company.⁴ Portfolio holding Clean Harbors, Inc. (CLH) is featured in the book.

[1] <https://www.federalreserve.gov/newsevents/pressreleases/monetary20230201a1.htm>

[2] <https://www.federalreserve.gov/newsevents/pressreleases/monetary20230312b.htm>

[3] <https://www.needhamfunds.com/wp-content/uploads/2023/03/GF-36-Artificial-Intelligence-and-Needham-Funds-Investments.pdf>

[4] Padhi, Asutosh, et al. The Titanium Economy How Industrial Technology Can Create a Better, Faster, Stronger America. PublicAffairs, 2022

	3 MO	YTD	1YR	3YR	5YR	10YR	SINCE INCEPT.
Needham Growth Fund Inst Class**	9.01%	9.01%	-15.56%	17.63%	11.53%	10.30%	12.66%
After Taxes on Distributions	9.01%	9.01%	-15.89%	16.34%	9.48%	8.60%	11.25%
After Taxes on Distributions & Redemptions	5.34%	5.34%	-9.00%	14.05%	8.87%	8.09%	10.82%
Needham Growth Fund Retail Class	8.92%	8.92%	-15.94%	17.15%	11.00%	9.80%	12.17%
After Taxes on Distributions	8.92%	8.92%	-16.29%	15.82%	8.92%	8.09%	10.76%
After Taxes on Distributions and Redemptions	5.28%	5.28%	-9.22%	13.66%	8.45%	7.67%	10.37%
S&P 500 Index	7.50%	7.50%	-7.73%	18.60%	11.19%	12.24%	9.24%
S&P 400 Index	3.81%	3.81%	-5.12%	22.10%	7.67%	9.80%	10.94%
Russell 2000 Index	2.74%	2.74%	-11.61%	17.51%	4.71%	8.04%	8.03%

Average Annual Returns as of March 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 1.78% for the Retail Class and 1.50% for the Institutional Class. The Needham Growth Fund's Net Expense Ratio is 1.78% for the Retail Class and 1.40% 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 April 29, 2023 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.

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

Definitions and Disclosures

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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 March 31, 2023: SBNY: 0.00%, PDFS: 9.52%, SMCI: 4.62%, MSFT: 0.00%, GOOGL: 0.41%, NVMI: 3.70%, ASPN: 2.35%, GM: 0.00%, TM: 0.00%, UIS: 1.02%, MRVL: 1.06%, VICR: 3.20%, QTWO: 0.00%, TMO: 7.72% and CLH: 1.34%.

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