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Dear Shareholders, Friends of Needham and Prospective Shareholders,

We are pleased to report results for the second quarter and first half of 2016 for the Needham Growth Fund, Needham Aggressive Growth Fund, and Needham Small Cap Growth Fund. Our mission is to create wealth for long-term investors.

Needham Funds' Second Quarter and Semiannual Review

In the second quarter, the Needham Growth Fund (NEEGX) returned 0.61%, the Needham Aggressive Growth Fund (NEAGX) lost 0.80%, and the Needham Small Cap Growth Fund (NESGX) returned 0.90%. The Russell 2000 Total Return Index returned 3.79%, the S&P 500 Total Return Index returned 2.46%, and the NASDAQ Composite Index declined 0.22%.

For the half-year, the Needham Growth Fund returned 0.88%, the Needham Aggressive Growth Fund returned 1.43%, and the Needham Small Cap Growth Fund outperformed and returned 8.44%. The Russell 2000 Total Return Index returned 2.22%, the S&P 500 Total Return Index returned 3.84%, and the NASDAQ Composite Index declined 2.61%.

First Half 2016: Fears Overcome

Our theme for the first half of 2016 is "Fears Overcome." 2016 started with an unprecedented sell-off amidst fear of a stock market crash, devaluation in China, and a slowing world economy. Energy companies and their bankers were hurt as West Texas Intermediate oil hit a low of $26.21, down from $37.04 at year end. The oil industry was hurt by a slowing world economy and fears of extra supply coming on-line from Iran.

In late January, Japan announced a surprise interest rate cut, which placed rates at -0.1% for financial firms with deposits at the Bank of Japan. In late January, we learned that 4Q15 GDP growth was just 0.7%. At the low in mid-February, the Russell 2000 was down 16% and the S&P 500 was down 11%. On February 10, Janet Yellen reiterated to Congress the Federal Reserve's cautious stance in raising interest rates and wouldn't take negative rates off the table. On February 11, *The Guardian* called the bottom and wrote, "Global stocks enter bear market after another rout."[1] This was followed a few days later by Russia, Saudi Arabia, Venezuela and Qatar announcing an oil production cutback, which at the time appeared to have teeth. Oil closed the first quarter at $40 per barrel. The rebound was aided by the weak dollar, which fell 4.5% versus the DXY index, a basket of currencies. All three Needham Funds outperformed during the sell-off and trailed the averages on the rebound.

In the second quarter, the markets continued to overcome fear. In April, we learned that first quarter GDP growth was just 0.5%. The employment report for April showed just 160,000 jobs added. April ended with the markets down seven days in a row, including a big down day to close the month. Apple, Google and Microsoft reported disappointing first quarter earnings, and the Bank of Japan surprised by not easing further. The yen appreciated 5% vs. the dollar on one day. Japan instituted negative interest rates in January. Much more easing is hard to imagine.

Nonetheless, in mid-May, the Federal Reserve minutes read, "It likely would be appropriate to raise rates in June if the economy shows clear signs of a rebound."[2] The report for May showed a disastrous 32,000 jobs created. Just a few weeks later, *Barron's* wrote an article titled, "Watching for a Market Crash."[3]

[1] https://www.theguardian.com/business/live/2016/feb/11/market-turmoil-hong-kong-europe-ftse-banks-yellen-live
[2] http://www.nytimes.com/2016/05/19/business/economy/federal-reserve-interest-rates-meeting-minutes.html?_r=0
[3] http://www.barrons.com/video/barrons-buzz-watching-for-a-market-crash/781305DB-0706-4D4B-B87C-

Needless to say, a June interest rate hike seemed off the table.

While the market overcame the previous fears, Brexit was the unanticipated monster. On June 22, the people of the United Kingdom unexpectedly voted to leave the European Union and turmoil filled the markets… for all of two days. The CBOE Market Volatility Index spiked 49%. The S&P 500 fell 5.3%. By July 8, the S&P 500 had regained these losses. The one lasting impact may be that the devalued pound, which fell 10% in those 2 days to $1.315, will be good for companies with more expenses than revenues in the U.K.

To top it off, we had fears of terrorism from attacks in Brussels, Orlando, and Nice, to name a few. Finally, we had the unusual circumstances of two Presidential primary elections more befitting of reality TV shows.

Again, we see no hope for a growth-oriented domestic policy built on an internationally competitive corporate tax regime, lower regulatory and policy barriers to private sector hiring, lower marginal tax rates, and a lower rate of increase of government spending. At best, we believe the economy will muddle along.

These continuing fears make us continue to believe that monetary policy will remain accommodative across the world. The market has climbed a wall of worry that we believe will return with the slightest of market drawdowns.

Even the much-publicized Brexit came to near no impact on the markets. As our investors know, we believe our time is better spent researching companies than worrying about most macro factors, over which we have no control. We continue to see opportunity in our small and mid-cap universe.

<u>Why Small Caps and Why Now?</u>

1. **Small caps complement other equity and fixed income positions**, which can lead to lower correlation and positive risk-adjusted returns. Professor Harry Markowitz of the University of Chicago posited this thesis and won the 1990 Nobel Prize for his Modern Portfolio Theory.[4]

2. **Over time, small caps can outperform.** Eugene S. Fama (University of Chicago, Nobel Prize 2013) and Kenneth R. French (Tuck School of Business, Dartmouth) compared the performance of the average small-cap value stock to the average large-cap growth stock and found that the small caps outperformed by 2.4% per year since 1926.

3. **"You pay a very high price in the stock market for a cheery consensus" was the headline of an article written for *Forbes* by Warren Buffett in 1974 in the midst of the market crash.** It was republished on November 9, 2008.[5] The macro-environment seems chaotic, but then doesn't it always?

4. **Small caps have lagged the S&P 500 for the last year**. The Russell 2000 has underperformed the S&P 500 by about 8% for the year starting May 31, 2015. Mean reversion alone would suggest outperformance relative to the S&P 500.

5. **The Needham Funds and small caps can provide growth at attractive valuations.** As shown in Table 1, the Needham Funds have lower average valuations than the indices, with the exception of NEAGX having a slightly higher multiple to sales than the Russell 2000. NEAGX and NEEGX have superior cash flow growth relative to their benchmark indices. They also have superior sales growth compared to the S&P 500.

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[4] A well diversified portfolio is still subject to various risks, including but not limited to investment risk, which could result in a loss of principal.

[5] http://www.forbes.com/2008/11/08/buffett-forbes-article-markets-cx_pm-1107stocks.html

Table 1: Superior Growth at Attractive Valuations
*(*Forward-looking based on historical data as of 6/30/16. Source: Morningstar.)*

	Price/Book*	Price/Sales*	Price/Cash Flow*	Sales Growth	Cash Flow Growth
NEEGX	2.22	1.13	4.99	5.79%	17.19%
NEAGX	2.28	1.44	4.79	9.23%	19.26%
S&P 500	2.57	1.80	10.04	1.54%	1.39%
Russell 2000	1.69	1.03	6.46	(0.25)%	3.90%

6. Advice from Warren Buffett, Charlie Munger and Philip Fisher:

a. Pay little attention to the macro. "If you find yourself discussing and debating … STOP."[6]
b. "Does the company have products or services with sufficient market potential to make possible a sizable increase in sales for at least several years?"[7]
c. "Hold a small piece of an outstanding business with the same tenacity that an owner would exhibit if he owned all of that business." [8]

<u>Second Quarter and First Half Contributors Across All Three Needham Funds</u>

For the second quarter, the leading contributor across the Needham Funds was FormFactor, Inc. (FORM), which closed its accretive acquisition of Cascade Microtech, Inc. (formerly CSCD) and returned 24%. Cascade makes wafer probe cards for the radio frequency semiconductor market and will further diversify FormFactor's business away from the DRAM memory market. The acquisition is estimated to increase FormFactor's 2017 earnings per share by 25%. The market gave little credit for this acquisition until a month before closing. Since the bottom on May 19, Form Factor's stock is up 59% as of August 9.

Amber Road, Inc. (AMBR), which returned 43%, was another leading contributor across all three Needham Funds. Amber Road had a difficult year in 2015, as it struggled to get major customers up and running. The company's new Quick Start program contributed to improved results in the first quarter and an improved outlook for 2016.

In the first half of 2016, the leading contributors were Newport Corporation (formerly NEWP), which returned 45% on its takeover by MKS Instruments (MKSI), which will diversify MKS's product line and markets. Newport sells photonics, lasers and optics products and systems to scientific research, microelectronics, security, life and health sciences, and industrial markets. MKS was also a leading contributor, returning 21%, as it sees an opportunity to improve Newport's margins through manufacturing and other efficiencies. Amber Road returned 52% during the first half and PDF Solutions (PDFS) returned 29%. In January at the Needham Growth Conference, PDF Solutions discussed its new product, Design For Inspection. We believe Design For Inspection has the potential to double the size of PDF's available market.

<u>Second Quarter and First Half Detractors Across All Three Needham Funds</u>

In the second quarter 2016, the leading detractors were Super Micro Computer, Inc. (SMCI), down 27%, and KVH Industries, down 19%. In mid-April, Super Micro preannounced a revenue shortfall from its large data center customers. KVH supplies communications services, equipment and media content to the maritime industry. Segments of the maritime industry are suffering due to the oil and gas exploration slowdown, slowing international trade, and overcapacity in shipping; KVH has suffered along with these customers. Nonetheless, we believe it is an undervalued stock.

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[6] Robert Hagstron, Jr., *The Warren Buffett Way: Investment Strategies of the World's Greatest Investor* (1995).
[7] Philip Fisher, *Common Stocks and Uncommon Profits* (2003).
[8] Berkshire Hathaway*, Annual Report, 1993.*

For the first half of 2016, the leading detractors in the Funds were KVH Industries, down 18%, and Photronics (PLAB), down 28%. Photronics makes photomasks, which are used on new designs by semiconductor manufacturers. Photronics saw a pause in spending as its logic and memory customers prepare for their next generation of technology.

<u>Needham Growth Fund</u>

The Needham Growth Fund returned 0.61% in the second quarter ending June 30, 2016 and returned 0.88% in the first six months of 2016.

During the second quarter, FormFactor was the top contributor followed by Amber Road. Express Scripts Holding Corporation (ESRX), the second largest holding of the Fund, returned 10% as it filed a counterclaim to the lawsuit filed against it by Anthem, Inc. (ANTM). Anthem sued Express Scripts in an attempt to extract better commercial terms. Express Scripts purchased Anthem's pharmacy benefit management business in 2009 and the two entered into a supply agreement. We believe Express Scripts' counterclaim places the dispute in the proper perspective and the stock market agreed.

A number of NEEGX's other large-cap, long-term holdings were top second quarter contributors. The Fund's largest holding at 8.3% of net assets, Thermo Fisher Scientific, Inc. (TMO), returned 4%; other positions contributing included Hess Corporation (HES), up 14%, Medtronic Plc. (MDT), up 16%, and Comcast Corporation Class A (CMCSA), up 7%.

In the second quarter, Super Micro Computer and KVH Industries were the largest detractors.

For the first half of 2016, the leading contributors were Newport Corporation, up 45%, and Amber Road, up 52%. ViaSat, Inc. (VSAT) returned 17% and was the third-leading contributor. ViaSat announced additional details about its next-generation ViaSat-3 ultra-high-bandwidth satellites.

The Fund's leading detractor for the half-year was Express Scripts, down 13%, followed by Gilead Sciences, Inc. (GILD), down 17%. Gilead manufactures and sells market-leading AIDS/HIV and hepatitis C drugs, and the company's stock price declined over concerns regarding maturity of the hepatitis C drug market.

During the second quarter, Needham Growth Fund added three new positions, all equities already held by the other Needham Funds. Apple, Inc. (AAPL) was purchased on its price drop after the March quarter results. With its loyal customer base, high return on equity, and trading at 8x earnings, after deducting cash, we are believers in Apple. We were recently asked about the fates of Nokia, Motorola, and Blackberry Limited (BB-Canada) as examples of what could happen to Apple. We believe Apple has a culture of innovation, a software and services business, and loyal customers, which will prevent its commoditization.

The Fund also added Vicor Corporation (VICR). Vicor has worked with Alphabet Inc.'s Google (GOOGL) on its Open Compute data centers to distribute DC (direct current) power throughout the data center rather than go through the inefficient conversions to AC (alternating current) and back again to DC.

In the first quarter, the Needham Growth Fund reduced its long-time successful position in Becton Dickinson (BDX) by almost 20% to manage position size. We trimmed other top holdings, including Thermo Fisher Scientific, Express Scripts, Gilead, and ViaSat. In the first quarter, the Fund also reduced its long-time position in Honeywell International, Inc. (HON) due to valuation.

In the second quarter, the Fund exited its long-time positions in Electro Scientific Industries, Inc. (ESIO) and Newport Corporation, through its acquisition by MKS Instruments.

Needham Growth Fund had an Active Share of 103.9% vs. the S&P 500 TR Index, and trailing 12-month turnover of just 9%. Active share is a measure of the differentiation of the holdings of a portfolio from the holdings of its appropriate passive benchmark index. Active Share is calculated by taking the sum of the absolute value of the differences of the weight of each holding in the manager's portfolio versus the weight of each holding in the benchmark index and dividing by two. It is possible for funds that hold short positions to have an Active Share of over 100%.

On June 30, 2016, the Fund had 54% of net assets in the top 10 positions. 51% of Needham Growth Fund's net assets were invested in companies with market capitalizations of over $8 billion, 20% between $2 billion and $8 billion, and 29% under $2 billion. During the second quarter, long-time holdings Entegris (ENTG), Electronics for Imaging (EFII), MKS Instruments (MKSI) and WageWorks, Inc. (WAGE) crossed above the $2 billion market cap level. The Fund had a 5% short position and 4% in cash.

Needham Aggressive Growth Fund

The Needham Aggressive Growth Fund lost 0.80% in the second quarter ending June 30, 2016 and returned 1.43% in the first six months of 2016.

In the second quarter, FormFactor, Amber Road and FEI Company (FEIC) were the leading contributors. FEI announced its acquisition by Thermo Fisher Scientific on May 27. FEI's science and biotech product lines could benefit from the combination, while the quarterly volatility of the semiconductor and other industrial businesses will no longer be significant due to Thermo Fisher's size.

Another top contributor in the second quarter was WageWorks (WAGE), which returned 18% with a strong quarter and expansion of their business managing the flexible spending accounts for the U.S. Office of Personnel Management, the largest employer in the United States. This partnership will provide nearly 1.8 million eligible employees access to WageWorks' proprietary platform to manage healthcare and dependent care spending.

In the second quarter, the leading detractors were Super Micro Computer and FormFactor. GSE Systems, Inc. (GVP), down 18%, was the third detractor due to selling pressure on the stock. We added 215,000 shares to the portfolio in the second quarter.

For the half-year, PDF Solutions, Inc. returned 29% and was the top contributor. On May 24, PDF announced its new Design For Inspection solution along with the first two customer orders. These orders were not expected for another two or three quarters. PDF also has growth opportunities to provide its yield ramping software and services to the growing Chinese semiconductor manufacturing market and its Exsensio big-data analytics solution to a range of fabless and fab customers. Amber Road was the second-leading contributor, and WageWorks, which returned 32%, was the third.

The first half 2016 leading detractors were FormFactor and Medallion Financial (MFIN, formerly known as TAXI). Medallion Financial, a short position of NEAGX, originates, acquires and services loans that finance taxicab medallions. The stock was up 35%, from $7 to over $9 per share, and cost the Fund in the first quarter. However, loan delinquencies accelerated, taxicab medallions continued to lose value, and the market ignored the data. As we write this letter in early August, Medallion Financial announced on August 2 a cut to its dividend to $0.05 per share from $0.25 per share; the stock is down over 25% and trading under $6. We believe a number of Medallion's assets, most obviously its Chicago medallions, are worth far less than reported on the company's balance sheet.

During the first half of 2016, we added to several positions, including Amber Road, IPG Photonics (IPGP), KVH Industries, PDF Solutions and Vicor Corp. We also reduced positions, including TheStreet, Inc. (TST), Hess Corp., FEI Company, Financial Engines (FNGN), Oil-Dri Corporation of America (ODI), and Photronics (PLAB). In the second quarter, we exited small positions in GSV Capital Corp (GSVC), Newport Corporation, Barracuda Networks (CUDA), Panera Bread Co. (PNRA), and FedEx (FDX).

The Fund had an Active Share of 114.3% versus the Russell 2000 and a trailing 12-month turnover of 12%.

Needham Aggressive Growth Fund exited the quarter with 43% of assets in companies over $2 billion in market cap, up from 31% last quarter. Like the Needham Growth Fund, four of the portfolio's long-term positions crossed the bar to over $2 billion. The Fund remained concentrated with the top 10 positions at 54% of net assets. The Fund had an 8% short position and was once again fully invested.

<u>Needham Small Cap Growth Fund</u>

The Needham Small Growth Fund returned 0.90% in the second quarter and 8.44% in the first half of 2016, while the Russell 2000 Total Return Index returned 3.79% in the second quarter and 2.22% in the first half of 2016.

The Fund saw the completion of the acquisition of Newport Corp. (NEWP) to MKS Instruments (MKSI), and we saw a significant cash increase due partly to this deal closing. Ruckus Wireless (RKUS) agreed to sell itself to Brocade Communications (BRCD) for a slight premium and, as a result, we sold the position.

Semiconductor capital equipment was a highlight in the second quarter for the Fund, and we expect to see continued strength from the industry in the second half of 2016 and into 2017. The summer 2015 delays that significantly impacted the Fund's performance last year are now flowing through many of our investments in the sector. Ultra Clean Holdings (UCTT), NESGX's second-largest holding, is strongly leveraged to this cycle and ramp of increased capital intensity in the fabrication of semiconductors. Although the long-time Chief Financial Officer, Casey Eichler, decided to leave the company at the end of July, we believe he leaves the company at a time when fundamentals are very strong.

Our investment in Amber Road recovered nicely in the quarter. Amber Road provides cloud-based global trade management solutions. After a substantial correction in 2015 and early in 2016, we added significantly to the position. The cash burn was largely reduced, removing the overhang of a potential equity offering that the market feared. We believe the company is now on firm ground and is able to continue to pursue its long-term financial goals.

We are very pleased with the performance of Needham Small Cap Growth Fund in the first half of the year; many of our long-term holdings performed nicely as their fundamental stories delivered results. Although January and early February was a difficult start to the year, we were able to make valuable investments during this period, which ultimately recovered from their lows. Our investments in the semiconductor capital equipment industry saw greater visibility after a disappointing second half of 2015. We also benefited from an increased trend in consolidation of small cap stocks. Global central banks continued to provide accommodative monetary support to risk assets and this helped the markets to recover. We also saw a recovery in the energy markets that helped to boost the high yield markets off their lows. This recovery provided a tailwind to small cap stocks in the first half, as high yield investment opportunities trade less like equity investments as they trade closer to par. We continued to balance the Fund as our concentrated top ideas achieved price targets and a higher percentage of the Fund.

<u>Closing</u>

The second quarter saw a nice return in the equity markets, as global Central Banks continued to offer accommodative monetary policy, and this continued investor appetite for risk assets. We saw an increase in negative interest rates around the world, which pressured U.S. interest rates lower. The fundamental economic growth story remained slow but the consistency of the growth allowed companies to recover from the significant sell-off in the early months of the year.

The suspense of the Brexit vote in the United Kingdom escalated throughout the quarter and the final decision to leave the EU was a surprise to the markets. The initial negative impact of the Brexit vote on the markets turned out to be short-lived, and during it, we were able to acquire some new additions to our portfolios. While the long-term implications of leaving the EU are not completely known at this time, the markets recovered quite quickly as the actual leave will not occur for at least two years. We expect some companies to expose risk to the Brexit decision but the U.S. markets, in general, are large and strong enough to work through these risks.

We believe the U.S. is still facing sub-par economic growth, but it remains the best place in the world to be investing and working. Asia and Europe are facing difficult economic times. We believe there is opportunity in small and mid-cap stocks in this difficult market. We are particularly excited that this market may give us a chance to add to positions already in the portfolio.

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 believe the remainder of 2016 will bring a modest rebound for equities. As it already has this year, we believe the markets will experience more volatility and that our ability to short could dampen the possible volatility.

To reiterate our overall thesis: monetary policy remains accommodative. Most importantly, we see a revolution happening in technology that has created and continues to create investment opportunities.

We welcome our new investors and thank all of our investors for their continued support. If you have any questions, thoughts or concerns, please contact us at (800) 625-7071 or send us an email at cretzler@needhamco.com or jbarr@needhamco.com. For information about the funds, please visit our website at www.needhamfunds.com.

Sincerely,

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