

November 2017

**Dear Shareholders, Friends of Needham and Prospective Shareholders,**

We are pleased to report results for the third quarter of 2017 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' Third Quarter Review**

The third quarter was a good one for the Needham Funds, and for equities on a broad basis. In the third quarter, the Needham Growth Fund Retail and Institutional classes returned 6.84% and 6.98%, respectively; the Needham Aggressive Growth Fund Retail and Institutional classes returned 10.78% and 10.92%, respectively; and the Needham Small Cap Growth Fund Retail and Institutional classes returned 5.88% and 6.05%, respectively. During the same period, the Russell 2000 Total Return Index returned 5.67% and the S&P 500 Total Return Index returned 4.48%.

July was a positive month for the markets and the Funds. The preliminary second quarter GDP came in at 2.6%, above the 1.2% from the first quarter. The Core Consumer Price Index showed a 1.7% year-over-year increase, which remains below the Federal Reserve's 2% target. Both of these indicate a goldilocks economy—not too hot and not too cold.

The markets flattened out in August. The S&P 500 eked out a small gain and the Russell 2000 was down. The Funds were down and slightly underperformed. August brought terrorism in Barcelona, violence in Charlottesville, a continuing, troubling North Korean situation, stalled healthcare and tax reform policies, and disappointing earnings from the likes of Cisco Systems (CSCO) and many retail companies.

September was a good month for the Funds and for the markets. The second quarter GDP estimate was revised higher to 3.1%, which is the strongest growth in over 2 years. As expected, the Federal Reserve left the target federal funds rate unchanged at 1-1.25% and announced its intention to begin normalizing its balance sheet by reducing holdings of Treasuries and mortgage-backed securities by \$10 billion per month in the October quarter. Each quarter thereafter the reduction will increase by \$10 billion per month. With \$4.2 trillion of holdings, this normalization will take about three years, assuming that no economic events change the pace. In late October, we learned that the preliminary third quarter 2017 GDP growth was 3.0%, providing a good backdrop for positive corporate earnings.

### **John Barr's Third Quarter Commentary — Compounders and the Process**

***"The process is about focusing on the steps to success rather than worrying about the result."***

*- Ben Bergeron, Chasing Excellence*

Ben Bergeron is coach and owner of CrossFit New England in Natick, MA. He has had extraordinary success training athletes to compete and win at the highest levels. In his book, *Chasing Excellence*, he emphasizes the importance of commitment, mindset and process.

It was a good quarter for the Needham Aggressive Growth Fund. My thesis on semiconductor capital equipment was positively reaffirmed on earnings calls and at Applied Materials' (AMAT) investor day.<sup>1</sup> As gratifying as the portfolio's quarterly performance was, it is important to remember that, in the short run, performance is out of our control. More importantly, it was also a good quarter for the Fund's investment process and gaining a deeper understanding of our companies.

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<sup>1</sup><http://phx.corporate-ir.net/phoenix.zhtml?c=112059&p=SafeHarborAnalystDay2017>

An investment process starts with a definition of one's investment philosophy. An investment philosophy provides a framework to make investment choices. As discussed in the paper *Rethinking Investment Philosophy*<sup>2</sup> by Dr. John Minahan and Thusith Mahanam, the fundamental question for an active manager is, "How do you outperform a passive alternative?" An investment philosophy needs to address how the securities pricing mechanism works and what skills are necessary to identify and exploit opportunities before prices move.

**My investment philosophy is that the market inefficiently evaluates the prospects of some companies beyond a one to two-year timeframe. There is opportunity to generate alpha over a multi-year period by investing in select small cap equities and letting them grow through the market cap ranges.**

Why are these stocks mispriced? For active managers, the mean holding period of a fund in the Cremers and Pareek study, *Patient Capital Outperformance: The Investment Skill of Managers Who Trade Infrequently*,<sup>3</sup> was 1.2 years. Passive investors have no ability to look beyond historical results and perhaps one year out based on Wall Street estimates. These investors are not focused on the long term. For small cap stocks, I believe there is more of an opportunity as large investors cannot even invest in them. They would have to own too much of the company.

Do I have a time advantage versus other investors? I do not react more quickly. In fact, it may take a year or more for my thesis to be proven or disproven. My time advantage comes from the ability to remain patient and stick with investments.

My investment philosophy translates to an investment strategy, an approach for practicing beliefs about internal skills, portfolio construction, and risk management. I seek to leverage my, and Needham's, long-time knowledge about domestic growth companies with fundamental research to create a mutual fund with a high Active Share<sup>4</sup> and low turnover. I also seek to find compounders.

### **Compounders**

I believe that finding and holding investments in compounding stocks is the path to long-term wealth creation. With low turnover, I only need invest in a few new companies each year. I like to make the initial investments when companies are small or even micro-cap stocks. I look for companies with the potential to be 5-10x larger, with founders, family or long-tenured managers, and with proven ability or the potential to earn a high return on capital.

Compounders in the Needham Aggressive Growth Fund from investments made between 2009 and 2012 are shown in the adjacent table.<sup>5</sup> Only four of these companies still have market caps of less than \$2 billion.

During the third quarter, I visited the headquarters of CarMax and PDF Solutions, and I had meetings with all of the other companies' management teams. I was interested in how CarMax hires and predicts success for its sales personnel. At PDF, I was interested in how its new Design-for-Inspection is being applied.

**Needham Aggressive Growth Fund:  
Investing for Long-Term Wealth Creation, 2009-2012**

Company	Year Purchased	Purchase Price*	9/30/17 Price	Market Cap	IRR
CarMax, Inc. (KMX) Richmond, VA	2009	\$12	\$76	\$13.8B	24.5%
MKS Instruments, Inc. (MKS) Andover, MA	2009	\$18	\$94	\$5.1B	24.9%
Nova Measuring Instruments Ltd. (NVM) Tel Aviv, Israel	2009	\$2	\$28	\$0.8B	36.8%
PDF Solutions, Inc. (PDFS) San Jose, CA	2010	\$4	\$15	\$0.5B	19.0%
Entegris, Inc. (ENTG) Billerica, MA	2010	\$5	\$28	\$4.1B	25.9%
IPG Photonics Corp. (IPGP) Oxford, MA	2010	\$21	\$185	\$10.0B	36.7%
WageWorks, Inc. (WAGE) San Mateo, CA	2012	\$9	\$61	\$2.4B	42.5%
Form Factor Inc. (FORM) Livermore, CA	2012	\$6	\$17	\$1.2B	24.1%
Oil-Dri Corporation of America (ODC) Chicago, IL	2012	\$24	\$49	\$0.3B	20.3%

<sup>2</sup> <https://www.assette.com/newsreleases/Rethinking-Investment-Philosophy-John-Minahan-Thusith-Mahanama-Assette-Whitepaper.pdf>

<sup>3</sup> <http://ssrn.com/abstract=2498743>

<sup>4</sup> 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.

<sup>5</sup> Date of purchase and purchase price represent the oldest tax lot of the position as of 9/30/17. IRR measures the internal rate of return of the position as of 9/30/17 and does not include realized gains and losses, but does include dividends received on the position as of 9/30/17.

**Needham Aggressive Growth Fund:  
Investing for Long-Term Wealth Creation, 2014-2017**

Company	Year Purchased	Purchase Price	9/30/17 Price	Market Cap	IRR
GSE Systems, Inc. (GVP) Sykesville, MD	2014	\$2	\$3	\$70MM	21.0%
Q2 Holdings, Inc. (QTWO) Austin, TX	2014	\$13	\$42	\$1.7B	39.0%
Vicor Corporation (VICR) Andover, MA	2014	\$7	\$24	\$0.9B	42.5%
2U, Inc. (TWOU) Lanham, MD	2016	\$36	\$56	\$2.9B	66.3%
Trade Desk, Inc. (TTD) Ventura, CA	2016	\$29	\$62	\$2.5B	109.8%
DIRTT Environmental Solutions Ltd. (DRT-TSE) Calgary, Alberta	2017	\$5	\$4	\$0.4B	-24.7%
comScore, Inc. (SCOR) Reston, VA	2017	\$25	\$29	\$1.6B	24.2%
CryoPort, Inc. (CYRX) Irvine, CA	2017	\$2	\$10	\$0.2B	2,129.7%

Candidates for the next generation of compounders were purchased between 2014 and 2017, shown in the adjacent table. While all but one of these investments have high internal rates of return (IRRs), these results are early, as the Fund has only held these investments for up to three years. Earlier this year, I visited Q2 Holdings and comScore and met with CryoPort. During the third quarter, I attended investor days for Trade Desk and 2U, and I visited GSE Systems and met with DIRTT. I learned more about 2U's unit economics and profitability and the market potential for its GetSmarter acquisition.

TradeDesk has a SaaS system used by ad agencies and brands to manage online

advertising programs. Brand marketers are concerned that millennials do not know, nor care, about their brands. Marketers believe it is important to reach these young consumers. Ads supported by over-the-top video are a big opportunity for TradeDesk and for marketers. Co-Founder and CEO Jeff Green made a great comment that the really good news in the world today is the significant increase in the middle class in emerging markets. These people will enjoy lives that their parents could only dream of. TradeDesk is present in emerging markets and is the vehicle to connect advertisers to this new consumer class.

I believe that each of these compounders and next-generation compounders have a long-term vision. I look forward to holding them in the Needham Aggressive Growth Fund for the long term.

**Needham Growth Fund (NEEGX/NEEIX)**

The Needham Growth Fund Retail class returned 6.84% and the Institutional class returned 6.98% in the third quarter.

For the quarter, FormFactor was the top contributor and returned 35.9%. FormFactor provides wafer probe cards used to test integrated circuits. The company reported strong second quarter results, including some mobile phone customers pulling in shipments. FormFactor's customers include Taiwan Semiconductor (TSM), which manufactures the processors for Apple's iPhones. Revenue from DRAM memory customers also grew. FormFactor also sees growing demand from the automotive market and from the RF (radio frequency) market.

In early July, we attended the annual [SEMICON West](#) manufacturing conference in San Francisco and met with many semiconductor equipment and services companies, including PDF Solutions, Inc., MKS Instruments, Inc., Nova Measuring Instruments, Ltd., Applied Materials, Inc., Entegris, Inc., and FormFactor.

The debate in semiconductor industry circles revolves around cyclical versus secular growth. Consensus is that the semiconductor equipment stocks will soon suffer in unison, owing to an over-build in capacity. It is always dangerous to say, "This time is different." However, among other market drivers, NAND memory is replacing disk drives in storage systems. Given the growth in data storage and the early stage of this replacement cycle, we believe the NAND memory and equipment makers could see growth for a number of years. Nonetheless, the stocks will have days or weeks when the "top is in" argument will rule.

KVH Industries (KVHI) was the second-leading contributor and returned 25.8% in the third quarter. KVH reported solid revenue and positive adjusted EBITDA for the second quarter of 2017. KVH's new AgilePlans bundle communications hardware, airtime, entertainment and operational content, and could increase customer additions in the second half of 2017. KVH continued its work on a low-cost fiber optic gyroscope (FOG) for the autonomous vehicle market. In July, Vintage Capital [filed a 13-G](#) with the SEC to disclose it had acquired 1.5 million shares of KVH, or about 9% of KVH's outstanding shares. Vintage has made successful investments in a number of small defense electronics companies, some of which were acquired.

CarMax was the Fund's third leading contributor and returned 20.2%. It reported a strong second quarter with comparable-store sales increasing 5.3% over last year. CarMax is the nation's leading seller of used cars. They offer a great dealership, with professional salespeople, and no price negotiation. With our long-term view, CarMax has the opportunity to grow from a single-digit national market share. CarMax has barriers to entry from its scale. It knows the logistics of moving cars and it knows more about what cars are worth than any other company. Consequently, CarMax can offer a fair price to the car seller and to the car buyer.

The Fund's largest detractor was Super Micro Computer Inc. (SMCI), which fell 10.3%. Super Micro reported 37% year-over-year revenue growth for the June quarter after 18.5% growth in the first quarter. However, gross margins were down owing to higher memory component costs, which had a negative impact for the second consecutive quarter. We believe gross margins could rebound in 2018. Super Micro also had higher R&D spending, citing new projects for AI (artificial intelligence) and autonomous driving.

In August, SuperMicro announced that it could not file its 10-K by the August 29<sup>th</sup> deadline. The company has yet to file and is incurring additional audit and accounting costs. We have owned Super Micro for over 8 years and believe in the company's long-term vision to reach \$5 billion of server and network equipment sales, up from \$500 million when we first invested.

The Needham Growth Fund added to existing positions in PDF Solutions, Super Micro Computer, Nutanix (NTNX) and Agile Therapeutics, Inc. (AGRX) on price weaknesses. The Needham Growth Fund exited its position in Cray, Inc. (CRAY). We sold over 40% of the Fund's long-term position in Express Scripts (ESRX), and we trimmed about 5% of our positions in top holdings CarMax, Thermo Fisher Scientific, Inc. (TMO), and Becton Dickinson & Co. (BDX) on price strengths. We also sold about one-third of our position in Varian Medical Systems, Inc. (VAR) also on its price strength.

The Fund had trailing 12-month turnover of just 12% and Active Share of 102.73% vs. the S&P 500 Index.

#### **Needham Aggressive Growth Fund (NEAGX/NEAIX)**

The Needham Aggressive Growth Fund Retail class returned 10.78% and the Institutional class returned 10.92% in the third quarter, compared to a 5.67% return for the Russell 2000.

Entegris was the Fund's top contributor, returning 31.4%, and is now the largest position in the Fund. Entegris supplies filters and chemicals used in advanced manufacturing processes, particularly for semiconductors. Semiconductor manufacturing plants require filters capable of capturing one contaminated drop of water in a day's worth of water flowing over Niagara Falls, which is filtering one part in a quadrillion. Over 80% of Entegris' revenue is from consumables used in the manufacturing process. Entegris reported strong March and June quarter results after a strong 2016. In October, Entegris announced that it would be paying its first dividend.

KVH Industries was the second leading contributor and FormFactor was third.

MKS Instruments was the fourth leading contributor in the quarter and returned 40.7%. MKS provides instruments and subsystems that measure, control and power advanced processes, with semiconductor manufacturing being its largest market. MKS reported strong June quarter results. MKS is benefitting from the strength of its customers, including Lam Research Corp. (LRCX) and Applied Materials. MKS also saw strong results from its Light and Motion segment, most of which it acquired last year as Newport Corporation.

The top detractor was Reis, Inc. (REIS), which fell 14.5%. Reis licenses information to real estate investors. In the second quarter Reis' subscription revenue grew just 1% compared with the second quarter of 2016. Reis had over 10% growth for many years prior to 2016. We continue to believe that Reis will return to accelerated growth in the second half of 2017. Longer term, we believe the new products and the additional sales resources could help Reis return to long-term, double-digit revenue growth and 40% operating margins.

The Fund added to top positions GSE Systems, PDF Solutions and KVH Industries, and also added to Aspen Aerogels, Inc. (ASPN), DIRTT Environmental, and Clean Harbors, Inc. (CLH) on price weaknesses. Two of the Fund's holdings, Norsat International Inc. (NSAT) and ARI Network Services, Inc. (ARIS), were acquired. Exa Corporation (EXA) announced an agreement to be acquired by Dassault Systemes (DSY.EPA). I am sorry to see all three go. The Fund also exited long-

time holdings Bottomline Technologies, Inc. (EPAY), Express Scripts, Financial Engines, Inc. (FNGN), Ladder Capital Corporation (LADR), and Analogic Corporation (ALOG).

The Fund had an Active Share of 108.3% vs. the Russell 2000 and trailing 12-months turnover of just 18%.

### **Needham Small Cap Growth Fund (NESGX/NESIX)**

The Needham Small Cap Growth Fund Retail class returned 5.88% and the Institutional class returned 6.05% in the quarter ended September 30, 2017. Year to date, the Fund's Retail class returned 13.31% and the Institutional class returned 13.77%.

We are very pleased with the Fund's year-to-date performance. After a short-lived correction in the early part of 2017, the market for small cap companies rallied as the expectation for pro-growth policies drives the expectation of a better economy. The Fund continued its lean toward a concentrated portfolio of stocks, with the top 10 holdings representing 56.38% of the Fund. We would like to reiterate from our last quarterly letter that mergers and acquisitions continued in the small cap universe but have slowed since 2016. We believe this trend is a pause until tax reforms are established and repatriation of cash occurs. We look forward to the final quarter of the year as we expect economic growth to improve and benefit our portfolio of stocks.

With the exception of a brief pause in the slow summer month of August, the Fund continued to show strength into the third quarter. Fear of an economic slowdown along with geopolitical headline risks quickly subsided into the end of the quarter and the portfolio recovered from the summer lows. The Trump reflation trade returned as attention toward tax reform accelerated. While tax reform has taken longer than the markets had anticipated last December, we believe the full benefits of reforms have yet to be priced into the market completely. Top holdings at September 30 included Pure Storage (PSTG), PDF Solutions, Invuity (IVTY), and Amber Road (AMBR). The Fund's top quarterly contributors included Pure Storage, Corium International (CORI), Invuity, Agile Therapeutics, and FireEye (FEYE). Our largest detractors were Reis Inc., Amber Road, NeoPhotonics (NPTN), and PDF Solutions. There were no significant additions or deletions from the portfolio, but we trimmed some of our holdings as they achieved our price targets after significant appreciation. In August, we added to several of our best ideas on price weakness. The Fund ended the quarter with a cash position of 3.9%. We remain excited about the composition of the portfolio as we enter earnings season, and we look forward to learning about company prospects going into 2018.

We continue to believe that a good environment remains for investment in equities. Market volatility has remained low and continues to support valuations at these levels. The Federal Reserve continues to raise short-term interest rates but at a very gradual pace. We expect one more rate increase this year in December. The expectation of pro-growth policies has boosted confidence for both individuals and corporations, and this should ultimately translate into higher economic activity for many of our portfolio companies. The high-yield markets remain strong and that is also supportive of the small cap asset class valuations.

### **Closing**

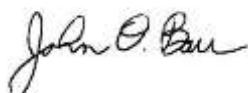
We believe the U.S. remains the best place in the world to be investing and we continue to see an opportunity to invest in small and mid-cap stocks. Monetary policy remains accommodative. Most importantly, we see a revolution happening in technology that has created and continues to create investment 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 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 at [cretzler@needhamco.com](mailto:cretzler@needhamco.com) or [jbarr@needhamco.com](mailto:jbarr@needhamco.com). For information about the funds, please visit our website at [www.needhamfunds.com](http://www.needhamfunds.com).

Sincerely,



Chris Retzler  
Portfolio Manager



John O. Barr  
Portfolio Manager

Needham Funds Fact Sheet Links:

[Needham Growth Fund](#)

[Needham Aggressive Growth Fund](#)

[Needham Small Cap 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. Past performance is no guarantee of future results. Not all investments have been profitable.*

*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 carefully and consider the investment objectives, risks, and charges and expenses of the Fund carefully before you invest. The prospectus contains this and other information about the Fund. A copy of the prospectus is available at [www.needhamfunds.com](http://www.needhamfunds.com) or by contacting the Fund's transfer agent, U.S. Bancorp Fund Services, LLC at 1-800-625-7071.*

*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.*

Needham & Company, LLC, member FINRA/SIPC, is the distributor of The Needham Funds, Inc.

*Portfolio holdings are subject to change. The Needham Funds ownership as a percentage of net assets in the stated securities as of 9/30/17:*

SECURITY	NEEGX	NEAGX	NESGX	SECURITY	NEEGX	NEAGX	NESGX
AMAT	0.32%	0.00%	0.00%	CRAY	0.00%	0.00%	0.00%
KMX	5.74%	2.47%	0.00%	ESRX	2.98%	0.00%	0.20%
NVMI	1.50%	3.00%	0.00%	TMO	7.74%	0.00%	0.00%
PDFS	4.18%	7.68%	7.48%	BDX	4.49%	1.04%	0.00%
ENTG	3.83%	8.30%	0.00%	VAR	0.61%	0.00%	0.00%
IPGP	0.91%	2.10%	0.00%	LCRX	0.00%	0.00%	0.00%
WAGE	1.12%	2.57%	0.00%	REIS	1.21%	3.27%	3.76%
FORM	4.90%	4.40%	0.98%	ASPN	0.32%	0.73%	2.94%
ODC	0.87%	3.66%	0.00%	CLH	0.23%	0.52%	0.00%
GVP	0.00%	6.02%	0.00%	NSAT	0.00%	0.00%	0.00%
QTWO	0.68%	0.79%	0.00%	ARIS	0.00%	0.00%	0.00%
VICR	0.39%	2.59%	0.00%	EXA	0.00%	0.00%	0.00%
TWOU	0.28%	0.51%	0.90%	DSY.EPA	0.00%	0.00%	0.00%
TTD	0.50%	0.47%	0.00%	EPAY	0.00%	0.00%	0.00%
DRTTF	0.00%	0.67%	0.00%	FNGN	1.42%	0.00%	0.00%
SCOR	1.65%	2.27%	2.80%	LADR	0.09%	0.00%	0.00%
CYRX	0.00%	1.08%	0.00%	ALOG	0.21%	0.00%	1.00%
TSM	0.00%	0.00%	0.00%	PSTG	0.65%	0.36%	9.76%
KVHI	5.20%	6.79%	4.36%	IVTY	0.84%	0.68%	6.29%
SMCI	3.62%	2.89%	4.61%	AMBR	2.81%	2.00%	5.33%
NTNX	0.40%	0.10%	3.96%	CORI	1.92%	2.09%	3.94%
AGRX	0.55%	0.68%	3.60%	FEYE	0.00%	0.00%	5.12%
				NPTN	0.00%	0.00%	3.21%