

MuhlenkampMemorandum

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Quarterly Letter

By Ron Muhlenkamp and Jeff Muhlenkamp, Co-Managers

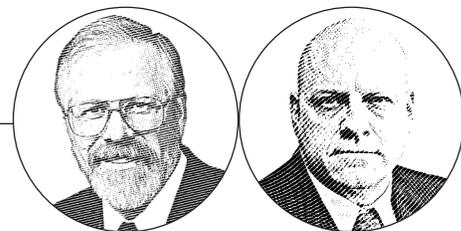
Fellow investors,

The first quarter of 2018 was marked by a sharp market correction and the unraveling of some very popular investment themes. The correction kicked off in February when wage data triggered inflation fears which caused bond yields to jump up (bond prices dropped) and equity prices to drop. The rapid drop in equity prices caused volatility to spike up, resulting in massive losses in several exchange traded notes that were short the VIX. [A brief aside is perhaps in order here: Volatility is a measure of how much market prices change on a day-to-day basis. Current Wall Street practice is to equate volatility with risk, which means there developed a need to measure volatility. The Chicago Board Options Exchange (CBOE) filled this need by creating the VIX index, which is their measure of expected overall market volatility based on options pricing information. Wall Street being Wall Street, they then developed ways to invest in volatility via exchange traded funds (ETFs), exchange traded notes (ETNs), futures, etc. To be “long volatility” is to profit if volatility increases—daily price swings become greater. To be “short volatility” is to profit if volatility declines—daily price swings become smaller.] Several of the affected exchange traded notes folded a week or two later. The unwinding of the short volatility trade just got the ball rolling. Allegations of misuse of data hit Facebook (FB) shortly thereafter, taking 20% out of the stock price over the course of two months, and the pain spread to other members of the FANGs (Facebook, Amazon, Netflix, and Google) which had been market leaders for over a year. President Trump’s tweets against Amazon (AMZN) hit that stock to the tune of 12%. An accident involving an Uber autonomous vehicle in Arizona that resulted in the death of a pedestrian hit NVIDIA (NVDA), Tesla (TSLA), and other companies that are involved in developing autonomous cars. The imposition of tariffs by the U.S. and retaliatory tariffs by China hit a broad swath of importers and exporters in the market.

Market corrections are a fact of life for the investor and, so far, this correction is pretty run of the mill at about a 9% drop from the late January peak. What makes it interesting, and what we were trying to point out in the opening paragraph, is that a number of very popular investments have all found their own reasons to unwind nearly simultaneously. When an investment becomes very popular and everybody is on the same side of the trade, it doesn’t take much to reverse the momentum. We think that’s what happened over the last month or two with these trades and we expect momentum to continue to come out of them. What we don’t know is the longer-term effect on the larger market. There is enough margin debt held by investors that forced selling could exacerbate the decline. We don’t think we’ve seen it yet, but the possibility remains.

We’ve spoken before about the difference between the *game of the stock market* and the *business of investing*. We consider betting on price changes of Bitcoin and whether volatility will increase or decrease to be stock market games—the item you are betting on has no value or economic meaning. Most companies produce real products and their stock prices reflect the value they add to their customers in the current investment climate. We consider these stocks as reflective of the business of investing. “FANG” type stocks are a mix. Though the companies and products are real, investing in these stocks at such high current valuations can take on the aspect of a game since their recent stock prices assume success into a far distant future, not based on their current earnings. We prefer the business of investing and generally try to avoid stock market games.

We continue to keep an eye on the economy and it continues to do well. Of all the indicators we watch, the only one that is concerning is the increase in auto loan delinquencies. It looks to us like the economy will continue to grow at around 2% [real GDP growth] for as far as the economic eye can see, but that’s only about 6-9 months into the future. During quarterly



earnings conference calls, most companies spoke about the effects of the tax cuts passed by Congress in December. In many cases, management indicated they were passing some of the savings to their employees, using some of it to accelerate business investments and increase capital spending, and passing some along to shareholders as dividends or via stock repurchases. We have highlighted previously that low capital spending was unique to this expansion and a drag on economic growth. We’ll be watching closely to see if managements follow through on their spending plans and what effect it has on the economy. We continue to believe the tax cuts are a net positive for the economy.

The possibility of higher inflation remains a concern of ours and was clearly front of mind for investors in early February. The potential for higher inflation certainly exists, but that’s been true for ten years now, and neither we nor anyone else we’ve read has accurately predicted the low inflation and

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Announcements

Register for our Upcoming Webcast

Please join us for our webcast with Tony, Ron, and Jeff Muhlenkamp.

Thursday, May 24, 2018
4:00 pm – 5:00 pm ET

Register at www.muhlenkamp.com or call us at (877)935-5520 extension 4.

Webcast Archive Available on Website

During the webcast on February 22, 2018, Ron and Jeff Muhlenkamp explained that recent tax cuts and deregulation should help keep the economy moving. Asset markets, on the other hand, could be affected by monetary tightening as the Federal Reserve and other central banks reduce or reverse their easy money policies. Tightening of the money supply could cause bond yields to increase and some market disruptions. Visit www.muhlenkamp.com for the webcast archive and to access other videos and essays available in our Library collection. 



Muhlenkamp & Company, Inc.
Intelligent Investment Management

Volatility and the VIX Collapse

By Jeff Muhlenkamp

I was asked to provide more detail on volatility, the VIX, and the demise of a couple of inverse-VIX exchange-traded notes that I touched on in the quarterly letter. This is my attempt to both give more detail and explain it in plain English. After writing it, we've had some internal debate about its appropriateness for our audience. Our debates were inconclusive. So I would ask you, Dear Reader, to let us know if you found it useful or a massive waste of your time and brainpower. I'd love to hear your opinion!

At a high level, interest in measures of the change in stock prices really began with the development of Modern Portfolio Theory (MPT) in 1952 by Harry Markowitz. The key ideas in MPT for our purposes today is that it defines risk as the variance of stock prices (which later morphed into volatility of prices) and the idea that risk should be managed.

In other words, part of the decision criteria for an investment should now include risk, where risk is defined as price volatility. As MPT gained traction in the investing community, there developed a need to measure the volatility of the overall market. The Chicago Board Options Exchange (CBOE) met this need by developing the CBOE Volatility Index (the VIX) in 1993. It has since become widely used as a proxy for the volatility of the S&P 500 Index and a couple of additional indices have been developed for other market indices as well.

The VIX isn't a company so you can't buy shares in it or sell its shares short. There remained a desire by some investors to be able to increase or decrease exposure to market volatility directly. So in 2004, the CBOE introduced VIX futures contracts (agreements traded on an organized exchange to buy or sell assets at a fixed price to be delivered and paid for at a later date). Then in 2006, the CBOE introduced VIX options (contracts granting the right, but not the obligation, to buy or sell an underlying asset at a set price on or before a certain date).

These tools (futures and options) allowed investors to add or reduce their exposure to volatility as measured by the VIX. The next step was to package these relatively esoteric investment tools into something that could be more easily sold to retail investors. That was done via Exchange Traded Funds (ETFs) and Exchange Traded Notes (ETNs) which were developed and marketed by a variety of financial institutions.

¹ Source: www.cboe.com/micro/vix/pdf/vix-fut-and-options-cboe-vix-fact-sheet.pdf

Figure 1

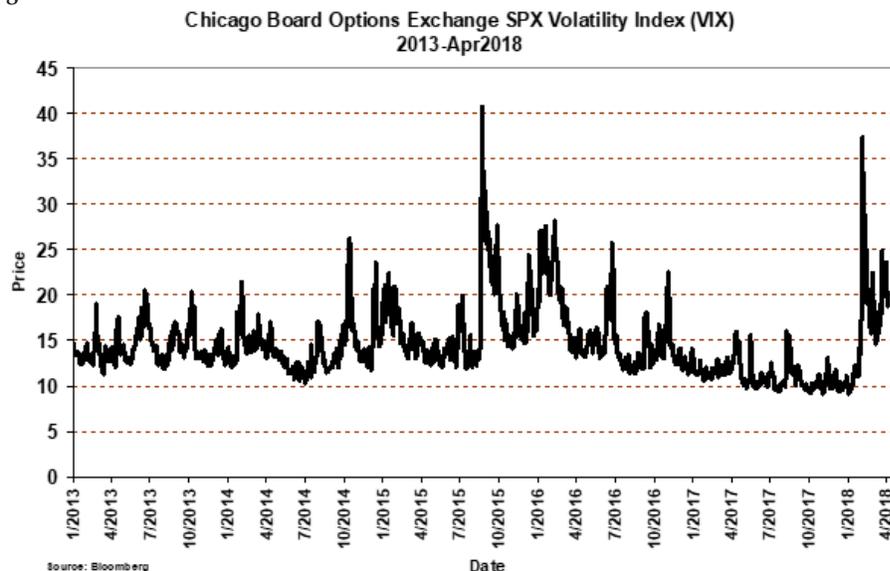


These ETFs and ETNs came in a variety of flavors—some tracked the daily movement of the VIX to include multiples of the daily movement (1X, 2X, 3X, etc.) and some tracked the inverse of the daily movement (again, some tracked multiples of the inverse). All of them used futures and options to track the VIX or replicate the inverse of the VIX. To give you an idea of the growth in the use of VIX futures: In 2006, the average daily volume of VIX futures traded was \$1.7 million. In 2017, it was \$294.3 million. Trading in VIX options has similarly exploded, going from an average

daily volume of \$2.3 million in 2006 to \$72.2 million in 2017.¹

In order to replicate the performance of the VIX, what many of these exchange traded products did is they bought a long-dated VIX future contract (30 or 60 days) then sold the contracts as they neared maturity and bought other long-dated contracts (this is called "rolling the contract"). Most of the time long-dated VIX futures are more expensive than short-dated contracts, so this constant rolling activity produced losses. As a result, while this construct was a reasonable approximation of

Figure 2



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VIX movement on a daily basis, over the long term, it was a huge loser. For evidence, I give you a chart of the price of the iPATH S&P 500 VIX Short-Term Futures ETN (VXX) for the last 5 years (See Figure 1).

Of course, for every buyer there is a seller. If buying and rolling futures contracts was a losing proposition, wouldn't selling those same contracts create a winner? That was the premise of the short VIX products. My guess is the short VIX products had to be created and sold to generate the seller for the VIX buyers—or perhaps the other way around, given the long-term losses suffered by the long VIX products. Either way, the short VIX products replicated the inverse performance of the VIX over short periods of time. Over longer periods, they were not expected to make money. In fact, reading through the prospectus of the VelocityShares Inverse VIX short-term ETN (XIV) sponsored by Credit Suisse, I found they advised their investors that their expectation was that the approximate value of the note after 20 years (the expiration date of the note) was \$0. The inverse products were expected to make money steadily during periods of stable or declining volatility, but if volatility spiked, their value would drop in a non-linear fashion. Many of the products had clauses in their founding documents that if they lost over 85% of their value, they would be liquidated.

What happened in February 2018, was that volatility spiked as shown in the chart of the VIX (See Figure 2). It doesn't really matter why it spiked, sooner or later something would cause it to happen, and it did.

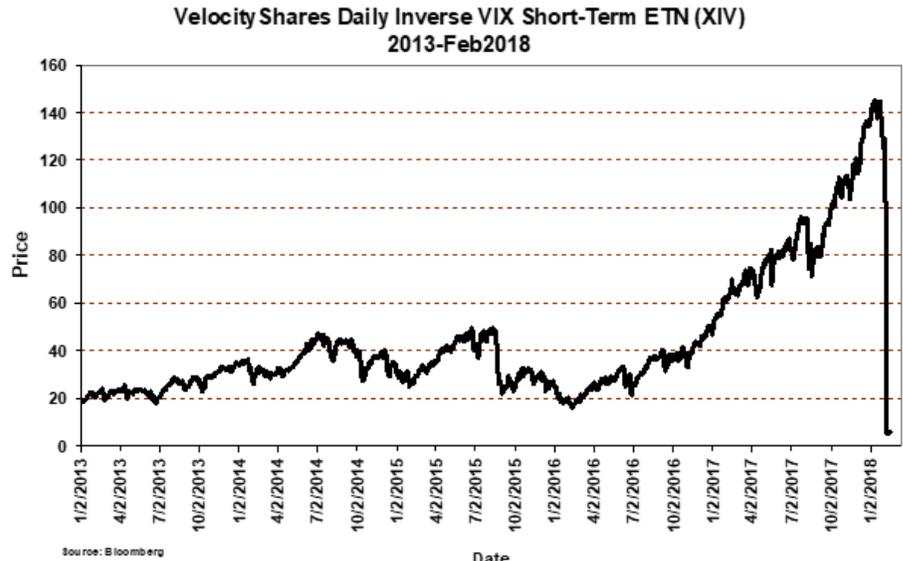
And the XIV inverse ETN collapsed, as predicted by its creators and the logic of its investment mechanism (See Figure 3).

The XIV was liquidated in March 2018.

Apparently, shorting the VIX had gotten pretty popular. In August 2017, Business Insider ran a story on Seth Golden, a former Target manager who made a fortune over the previous 5 years shorting volatility.

While just an anecdote, it is indicative of the widespread popularity shorting the VIX had achieved, and reinforces the idea that by the time an investment idea hits the cover of a magazine, it's probably over. Similarly, I've read anecdotes from February of a hedge fund or two that spent 48 hours selling positions day and night in response to the collapse in the short volatility trade in February. Stories like this one and others lead us to believe that the short VIX unwind contributed to the further decline of equities in February and March (though we can't prove it or quantify it). If you've read George Soros, he calls that kind of influence "reflexivity", I prefer to think

Figure 3



of it as a "feedback loop." Either way, the idea that changes in asset prices can fuel even larger changes in asset prices is how you get to irrationally-high or irrationally-low price levels. 

The comments made in this commentary are opinions and are not intended to be investment advice or a forecast of future events.

Investing in stocks, mutual funds, and other assets involves risk. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Principal loss is possible. Past performance does not guarantee future results.

Glossary

Exchange-Traded Fund (ETF) is an investment fund that tracks a commodity,

Date

a basket of securities, or an index (e.g. S&P 500, MSCI EAFE), but trades like a stock on an exchange. ETFs experience price changes throughout the day as they are bought and sold.

Exchange-Traded Notes (ETN) is a type of unsecured, unsubordinated debt security. The value of an ETN can be affected by the credit rating of the issuer and not just changes in the underlying index.

Gross Domestic Product (GDP) is the total market value of all goods and services produced within a country in a given period of time (usually a calendar year).

VIX (CBOE Volatility Index) is an index created by the Chicago Board Options Exchange (CBOE) to measure expected overall market volatility based on options pricing information.

Quarterly Letter

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intermittent deflation we've actually gotten. Instead of guessing, we'll let the facts inform us. Right now, we are seeing inflation on the order of one to two percent.

As advertised, the Federal Reserve has begun to very slowly reduce the financial assets it holds on its balance sheet. We discussed in our last newsletter that we thought this would put downward pressure on asset markets even as the tax cuts and resultant economic activity put upward pressure on the markets. What we've seen this quarter, as described in the first paragraph, is a number

of areas that were perhaps a bit bubbly, start to deflate. Our expectation of the impact of the shrinking Fed balance sheet is beginning to be realized. What will be important now is whether the declines start to reinforce each other and create a larger, general decline, or not.

We've raised a bit of cash recently as several holdings became overly large and/or their price reflected what we believed was the value of the company. As always, we are looking for good companies to invest in and will do so when we find them. 

The comments made by Ron and Jeff Muhlenkamp in this commentary are opinions and are not intended to be investment advice or a forecast of future events.



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Inside this issue:

- Quarterly Letter
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Upcoming Webcast

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MuhlenkampSMA

All-Cap Value

For the period ended 3/31/18

Muhlenkamp & Company's All-Cap Value SMA (Separately Managed Account) is designed for investors' accounts over \$100,000. We employ full discretion, applying fundamental analysis.

Investment Objective

We seek to maximize total after-tax return through capital appreciation, and income from dividends and interest, consistent with reasonable risk.

Investment Strategy

We invest in undervalued assets wherever they may be found. Typically, this results in holding a portfolio of companies we believe are materially undervalued by the market. Bonds may be included in the portfolio if they are a good investment.

Investment Process

We start with a bottom-up scan of domestic companies, typically looking at most U.S. companies at least four times per year. We add to that an understanding of the sector dynamics in which companies are operating, an assessment of the business cycle, and a review of macroeconomic conditions.

Our primary screening metric is return on shareholder equity (ROE). We are looking for companies with stable returns that can be purchased cheaply, or for companies with improving returns that have not yet been recognized by the market.

We don't believe that a holding period of "forever" is appropriate in all cases, but are comfortable holding companies as long as they continue to meet expectations.

Investment Risk

We define investment risk as the probability of losing purchasing power over long periods of time, which is quite different from Wall Street's definition of price volatility in very short periods of time. Taxes, inflation, and spending will ALL impact the purchasing power of your assets.



Muhlenkamp & Company, Inc.
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All-Cap Value Composite Performance (Net of Fees)

	Year to Date	One Year	Annualized			
			Past 3 Years	Past 5 Years	Past 10 Years	Past 15 Years
Return	-5.41%	3.78%	-0.66%	5.64%	3.30%	6.04%
S&P 500 Total Return*	-0.76%	13.99%	10.78%	13.31%	9.49%	10.10%
Consumer Price Index**	1.00%	2.21%	1.99%	1.41%	1.64%	2.07%

* The S&P 500 is a widely recognized, unmanaged index of common stock prices. The figures for the S&P 500 reflect all dividends reinvested but do not reflect any deductions for fees, expenses, or taxes. One cannot invest directly in an index.

** Consumer Price Index (CPI) – As of February 2018 – U.S. CPI Urban Consumers NSA (Non-Seasonally Adjusted), Index. The Consumer Price Index tracks the prices paid by urban consumers for goods and services and is generally accepted as a measure of price inflation. Price inflation affects consumers' purchasing power.

Consolidated performance with dividends and other earnings reinvested. Performance figures reflect the deduction of broker commission expenses and the deduction of investment advisory fees. Such fees are described in Part II of the adviser's Form ADV. The advisory fees and any other expenses incurred in the management of the investment advisory account will reduce the client's return. It should not be assumed that recommendations made in the future will be profitable or will equal the performance of the above accounts. A list of all security recommendations made within the past twelve months is available upon request.

Top Twenty Holdings

Company	Industry	% of Net Asset
Alliance Data Systems Corporation	IT Services	4.68%
ON Semiconductor Corporation	Semiconductors & Semiconductor Equipment	4.68%
Apple Computer Inc.	Technology Hardware, Storage & Peripherals	4.68%
Gilead Sciences, Inc.	Biotechnology	4.42%
Microsoft Corporation	Software	3.71%
Microchip Technology	Semiconductors & Semiconductor Equipment	3.69%
Tencent Holdings Ltd. ADR	Internet Software & Services	3.66%
UnitedHealth Group Inc.	Healthcare Providers & Services	3.33%
Celanese Corporation - Series A	Chemicals	3.10%
DowDuPont, Inc.	Chemicals	3.01%
Express Scripts Holding Company	Healthcare Providers & Services	2.92%
Annaly Capital Management Inc.	Real Estate Investment Trusts	2.90%
Biogen Idec Inc.	Biotechnology	2.81%
McKesson Corporation	Health Care Providers & Services	2.80%
PowerShares Buyback Achievers Portfolio	Exchange Traded Funds	2.76%
SPDR Gold Shares	Exchange Traded Funds	2.76%
Cognizant Technology Solutions Corp.	IT Services	2.59%
Federated Investors, Inc. - Class B	Capital Markets	2.51%
Bristol-Myers Squibb Company	Pharmaceuticals	2.46%
Cameco Corporation	Oil, Gas, & Consumable Fuels	2.41%

Composite holdings are subject to change and are not recommendations to buy or sell any security.

Composite Top Twenty Holdings are presented as supplemental information to the fully compliant presentation on the next page.

Return on Equity (ROE) is a company's net income (earnings), divided by the owner's equity in the business (book value).

Portfolio Managers

Ronald H. Muhlenkamp, Portfolio Manager, CFA, has been active in professional investment management since 1968. He is a graduate of both M.I.T. and the Harvard Business School.



SMA Facts

Average Number of Equity Holdings 30
Cash & Cash Equivalents 12.01%
Portfolio Turnover 17.52%†

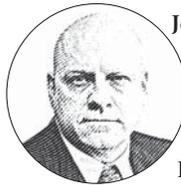
† Trailing 12 months

SMA Information

The All-Cap Value Composite was created in December 2003 and includes fee-paying accounts over \$100,000, full discretion, under management for at least one full quarter which are invested in the All-Cap Value strategy. The composite excludes the Muhlenkamp Fund and any wrap fee account.

Minimum Initial Investment \$100,000.00
Management Fee* 1% (first \$1 million);
0.5% on the remainder

* May vary by account.



Jeffrey P. Muhlenkamp, Portfolio Manager, CFA, has been active in professional investment management since 2008. He is a graduate of both the United States Military Academy and Chapman University.

SMA Facts are presented as supplemental information.

Investment Adviser

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Muhlenkamp & Company serves individual and institutional investors through our no-load mutual fund and separately managed accounts.

Muhlenkamp & Company, Inc. All-Cap Value Composite Annual Disclosure Presentation

Year End	Total Firm Assets (USD) (millions)	Composite Assets (USD) (millions)	Number of Accounts	ANNUAL PERFORMANCE			THREE-YEAR ANNUALIZED STANDARD DEVIATION*		
				Composite Gross	Composite Net	S&P 500 Total Return Index	Composite	S&P 500 Total Return Index	Composite Dispersion**
2017	342	40	53	15.25	14.31	21.83	8.70	9.92	2.14
2016	339	39	52	(1.86)	(2.68)	11.96	9.73	10.59	1.17
2015	422	48	67	(4.66)	(5.45)	1.38	10.41	10.47	0.68
2014	541	51	67	10.27	9.37	13.69	9.55	8.97	2.06
2013	585	50	60	35.50	34.39	32.39	11.29	11.94	3.13
2012	491	41	66	11.29	10.34	16.00	12.02	15.09	1.14
2011	555	45	74	(2.84)	(3.67)	2.11	16.60	18.70	0.85
2010	724	59	82	2.96	2.15	15.06			1.45
2009	839	90	107	32.68	31.72	26.46			2.80
2008	759	112	155	(40.53)	(40.94)	(37.00)			1.97
2007	1886	327	289	(7.61)	(8.19)	5.49			3.77
2006	3393	371	337	6.09	5.34	15.79			3.70
2005	3471	287	289	10.04	9.22	4.91			3.38
2004	2261	197	206	24.54	23.56	10.88			3.33
2003	1350	132	167	43.36	42.10	28.68			5.57

The objective of this All-Cap Value Composite is to maximize total after-tax return, consistent with reasonable risk—using a strategy of investing in highly profitable companies, as measured by Return on Equity (ROE), that sell at value prices, as measured by Price-to-Earnings Ratios (P/E).

Muhlenkamp & Company, Inc. (“Muhlenkamp”) claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Muhlenkamp has been independently verified for the periods December 31, 1993 through December 31, 2016 by ACA Performance Services, LLC.

Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm’s policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The All-Cap Value Composite has been examined for the periods December 31, 1993 through December 31, 2016. The verification and performance examination reports are available upon request.

Muhlenkamp is an independent registered investment advisory firm registered with the Securities and Exchange Commission. The firm’s list of composite descriptions is available upon request.

Returns are based on fully discretionary accounts under management, including those accounts no longer with the firm. Composite may invest in American Depositary Receipts (ADRs).*** Accounts may be shown gross or net of withholding tax on foreign dividends based on the custodian. Past performance is not indicative of future results.

The U.S. dollar is the currency used to express performance. Returns are expressed as percentages and are presented gross and net of management fees and include the reinvestment of all income. Net of fee performance was calculated using actual management fees. The annual Composite dispersion presented is an asset-weighted standard deviation calculated for the accounts in the Composite the entire year. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.

* **Three-Year Annualized Standard Deviation** is a measure of volatility, calculated by taking the standard deviation of 36 monthly returns, then multiplying the result by the square root of 12 to annualize it. Since standard deviation measures the dispersion of a set of numbers from its mean, higher results indicate more variation in monthly returns over the trailing three years.

** **Composite Dispersion** is a measure of the similarity of returns among accounts in the Composite. It is the standard deviation of the annual returns for all accounts which were in the Composite for the entire year.

*** **American Depositary Receipts (ADRs)** are shares that trade in U.S. markets, but represent shares of a foreign company. A bank (the depository) purchases a number of the foreign shares and holds them in a trust or similar account; in turn, the bank issues shares tradable in the U.S. that represent an interest in the foreign company. The ratio of ADRs to foreign shares is set by the bank. ADRs do not mitigate currency risk, but can reduce transaction costs and simplify trading compared to buying the local shares in the foreign markets.