

BAY COUNTY VOLUNTARY EMPLOYEES' BENEFICIARY ASSOCIATION
 AGENDA
 TUESDAY, FEBRUARY 13, 2018
 (Immediately Following the Retirement Board of Trustees' Meeting @ Approximately 2:30 P.M.)
COMMISSIONERS CHAMBERS
515 CENTER AVENUE - 4TH FLOOR
BAY CITY, MI 48708

PAGE	I.	CALL TO ORDER
	II.	ROLL CALL
	III.	MINUTES
1 - 5	1.	JANUARY 9, 2018 (APPROVE)
	IV.	PUBLIC INPUT
	A.	<u>ANDCO CONSULTING – 4Q 2017 REPORT</u>
6 – 8	B.	MONTHLY REPORTS - RES NO. 2018-2 (APPROVE)
	1.	PORTFOLIO VALUE 1/01/18 - 1/31 /18
	2.	CHANGE IN NET ASSETS – 1/31/18
9 - 25	3.	MONEY MANAGER REPORTS
	a.	CS MCKEE – ENDING 4Q 2017
	b.	DODGE & COX – ENDING 12/31/17; 4Q 2017; SHAREHOLDERS LETTERS (AVAILABLE UPON REQUEST)
	c.	LOOMIS SAYLES – ENDING 12/31/17
	d.	MFS – ENDING 12/31/17; 4Q 2017; PROXY VOTING REPORT 4Q 2017
26	4.	RECAPTURE SERVICES
	a.	CAPIS – 1/31/18
27	5.	NORTHERN TRUST SUMMARY EARNINGS - ENDING 12/31/17
28 – 31	6.	VEBA YTD BUDGET REPORT 12/31/17 & 1/31/18
32	7.	INVOICES APPROVED – 1/31/18
33 – 34	C.	CORRESPONDENCE LORD ABBETT – RETIREMENT AND APPOINTMENT (MOTION TO RECEIVE)
	V.	ANNOUNCEMENTS

BAY COUNTY VOLUNTARY EMPLOYEES' BENEFICIARY ASSOCIATION

AGENDA

TUESDAY, FEBRUARY 13, 2016

(Immediately Following the Retirement Board of Trustees' Meeting @ Approximately 2:30 P.M.)

**COMMISSIONERS CHAMBERS
515 CENTER AVENUE - 4TH FLOOR
BAY CITY, MI 48708**

A. NEXT REGULAR MEETING - TUESDAY, MARCH 13, 2018
IMMEDIATELY FOLLOWING THE RETIREMENT BOARD OF
TRUSTEES MEETING AT APPROXIMATELY 2:30 P.M. ,
COMMISSIONERS CHAMBERS, 515 CENTER AVENUE - 4TH
FLOOR, BAY CITY, MI 48708

35 – 62

VI. UNFINISHED BUSINESS

A. [VEBA ASSET ALLOCATION STUDY](#)

VII. NEW BUSINESS

VIII. MISCELLANEOUS BUSINESS

IX. ADJOURNMENT

**MINUTES BAY COUNTY VOLUNTARY EMPLOYEES' BENEFICIARY ASSOCIATION (VEBA)
JANUARY 9, 2018 – REGULAR MEETING**

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NOTE: In addition to these typed minutes, this Board meeting was also recorded. These recordings are available for review in the Retirement Office.

The meeting of the Board of Trustees was held on January 9, 2018 at 2:26 p.m. in the Commission Chambers, 4th Floor, Bay County Building, 515 Center Avenue, Bay City, Michigan. Roll was taken.

Trustees Present: Chairperson Gray, Mr. Brzezinski, Ms. Gonzales, Mr. Gromaski, Mr. Morse, Mr. Pett, Mr. Ryder, and Mr. Starkweather.

Trustees Absent: Mr. Herek

Also Present:

Consultant: AndCo Consulting - Howard Pohl and Peter Brown.

Secretary: Jan Histed

Retirement Administrator: Katie Meeth

Corporation Counsel: Shawna Walraven

The meeting was called to order by Chairman, Steve Gray at 2:26 p.m.

Chairman Gray turned the meeting over to the Secretary, Jan Histed, for the election of officers for 2018.

Ms. Histed opened the floor to nominations for Chairperson of the VEBA Board for 2018. Trustee Starkweather made a motion to re-elect the current officers for the VEBA Board for 2018 – Chairperson Steve Gray, Vice Chairperson Richard Brzezinski and Sergeant at Arms Matthew Pett. Trustee Gromaski seconded this motion. There was no discussion.

Trustee Herek entered the meeting at 2:31 p.m.

MOTION 1: Moved, supported and carried to cast a unanimous ballot to re-elect the officers of Steve Gray, Chairperson; Richard Brzezinski, Vice Chairperson, and Matthew Pett, Sergeant at Arms for 2018 to the VEBA Board of Trustees.

Ms. Histed turned the meeting back over to Chairperson Gray.

MOTION 2: Moved, supported and carried to approve the minutes, as printed, from the December 12, 2017 regular meeting.

Mr. Gray called for public input. As there was no public input, he moved on to petitions and communications.

RES. 2018-1:

Moved, supported and carried to adopt resolution 2018-1 to receive the monthly reports Portfolio Value ending 12/31/17 (Today's amount was unavailable), Monthly Change in Book and Market Value ending 12/31/17, C.S. McKee performance report ending 11/30/17, Dodge & Cox – Ending 11/30/17, MFS – Ending 11/30/17; Capis

**MINUTES BAY COUNTY VOLUNTARY EMPLOYEES' BENEFICIARY ASSOCIATION (VEBA)
JANUARY 9, 2018 – REGULAR MEETING**

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Recapture services ending 11/30/17, VEBA YTD Budget Report ending 12/31/17, and Approved Invoices Report ending 12/31/17.

ANNOUNCEMENTS:

- A. Next regularly scheduled meeting will be Tuesday, February 13, 2018 immediately following the Retirement Board of Trustees Meeting at approximately 2:30 p.m. in Commissioner's Chambers, 515 Center Avenue - 4th Floor, Bay City, MI 48708.

UNFINISHED BUSINESS:

Mr. Brown brought a handout for the Board to follow up on previous discussions of being more aggressive with the VEBA investments. He stated there had been discussion on funding the VEBA, change and increase. A year ago, the Board talked about the asset allocation of the Fund. The Fund had an allocation of 53% stocks and 47% fixed income which is appropriate for a VEBA type fund. AndCo provided an asset allocation model and it was decided to insert a 5% position in international, keep domestic the same at 53% and reduced the fixed income from 47% to 42% and that has recently been implemented. A new EuroPacific position was inserted and a position was carved out from CS McKee to Loomis. He apologized for not having more up-to-date information but his software program was just changed this week. He stated essentially they were all the same - the more risk you take, the more return you have and the more volatility. He reviewed the handout. When this was talked about last year, the assumption was a 7.3% return over roughly a 10-year time horizon with five various scenarios from 40/60% up to 60/40%. Right now the Fund is between the 55/45% and 60/40% at roughly 58% in equities. He reviewed the portfolio statistics including the risks. The Fund has had roughly 5% improvement in return but roughly almost 20% increase in risk. The VEBA is a short-term fund and not like the Pension where there is a 20 to 30-year horizon. We have to be able to be cognizant and be flexible to have money available to pay benefits. As funding improves, it is reasonable to take additional risk because you have a longer period of time to withstand that volatility. Mr. Pohl reviewed best case and worst case scenarios over the long term. Mr. Brown reviewed probability of return target. The theme being more risk more return. He then reviewed probability return target and the forecasts. He stated he will try to bring back more material as he now has a new software program.

Mr. Brzezinski commented on the legislation coming out of Lansing and stated that over the next few months we will be forced to look at this VEBA as an extremely underfunded pension fund. He stated the biggest change will be a steady flow of money going into the VEBA from the County and also the other employers which then changes how we should look at it. The Board of Commissioners approved a budget. The County was putting 8% in the Pension Fund made up of 4% from employer and 4% from employee. The employer portion will now be directed to the VEBA in 2018 which is about \$1 million. The County will be putting another approximately \$1.5 million into the VEBA as a lump sum. There will be a flow of money going into the VEBA and the State of Michigan is forcing us to look at it as an underfunded pension fund. Mr. Brzezinski stated we have this overfunded Pension that is 70% stocks. In the past, we put the "pedal to the metal" historically and always have. It served the Pension well and things are still going good. Now we have this underfunded VEBA plan and we are being conservative. He can't help but think this is backwards. He argues we should pull the Pension back to 60% or 65% and the VEBA should be "pedal to the metal." Mr. Brown stated that funding is the result of three things: inflows, outflows and returns. If there are inflows coming in on top of additional returns that is good news for additional funding. He stated they can take a

MINUTES BAY COUNTY VOLUNTARY EMPLOYEES' BENEFICIARY ASSOCIATION (VEBA)
JANUARY 9, 2018 – **REGULAR MEETING**

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look at different scenarios in terms of increasing asset allocation similar to the Pension Fund. They are still investigating how this works. He will show the impact of that as well as what would happen to the funding if there was a pullback. Mr. Brzezinski stated that because it is so underfunded we will not be able to pull money out where the Pension has money coming in and returns and money going out. The VEBA is so underfunded we will not be able to get money out of it. He believed it has \$46 million in assets and it (the General County) only had \$4 million so it was only 17% funded.

.....
Mr. Brzezinski stated if you look at the actuary reports, the importance of it wasn't stated. It has totally changed due to the state law passed at the end of the year. You almost have to look at the VEBA and say it is an underfunded pension. Mr. Brown asked about a temporary liability withdrawal abstention Mr. Brzezinski stated we would still have to pay the current retiree health care and then get to a certain funding level before we could take money out. All of the entities are underfunded except Bay Arenac Behavioral Health.

Ms. Walraven clarified that the amount in the VEBA trust amount needs to reach 7x the amount of the health care insurance premiums for the past two years before any money can be spent. Mr. Pohl asked if it is the average amount over two years and Ms. Walraven stated she believed so. She confirmed that Bay Arenac Behavioral Health was the only employer that was funded at that level. Mr. Pohl questioned if the entities were treated individually. Ms. Walraven stated each local unit will have to submit their own report.

Mr. Pohl gave an example of running an industry with a declining work force and a generally funded plan that was going downhill that would lead to a certain mix to protect assets verses a company, an opposite plan such as a Silicon Valley computer chip company, with 25-year-old employees and a pension fund where no one would retire for 40 years and he could "roll the dice" because the impact of big loss on a minimal base is less. He also gave an example of back in 2009 when companies were facing having to put money in low bond rates and somebody said let's put it all in equities and "roll the dice." They got lucky the last 8 years. It is a difficult situation when talking about a public fund because there are different fiduciary responsibilities for the VEBA Board, the Pension Board, and the Board of Commissioners. It is a difficult decision.

Mr. Brzezinski stated we have a pension that is overfunded. As Pension fiduciaries, we all know money goes in and it goes out the back but it doesn't go back to the employer. He stated that he is about to say something he never would have thought he would say – "We are overfunded in the Pension and the whole game of rules is changing in Lansing. We are extremely underfunded in the VEBA. I know we cannot do it legally today and I don't know what the ramifications are, but if you are overfunded in the Retiree Pension, then why can't we transfer money from the Pension to the VEBA to take care of retiree health care because it is still retiree benefits?" Mr. Pohl gave an example of Sioux Falls that is virtually fully funded on their pension and almost fully funded on their VEBA. He stated they did a lot of manipulation to basically try and capture some of the money in the pension plan to move it and it took a lot of work with attorneys and the IRS and so on. Mr. Brzezinski said he would never say take it out of the Pension and give it back to the employer, but if it is sitting in the Pension Fund for retiree benefits and the county you are still protecting retiree benefits by protecting retiree health care. He sees this as a huge issue going forward with political ramifications not only for the employer, but also it is our job to put the money in the necessary investments.

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JANUARY 9, 2018 – **REGULAR MEETING**

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Mr. Brown stated the shifting of assets from one fund to the other is probably the most complex thing with legalities. You end up setting up separate trusts for different entities. He stated one of the easiest ways is to just be able to manipulate the flows so instead of having inputs go to 50/50, you can adjust those inflows to the various bodies as needed. Mr. Brzezinski states that is what we are doing by the general county increasing their 4% contribution. He stated we will be filing reports at the end of the year and the state will either be approving the report or not.

Trustee Gromaski commented on Bay-Arenac Behavioral Health being fully funded, but they had opportunities for funding without cutting services to the people and they were able to fund it as they had extra dollars. The Road Commission is only 3% funded in the VEBA and they have no mechanism to create dollars at the Road Commission because they cannot levy taxes or get bonds. They have to go through the general county. The only place they can come up with the money is to not fix the roads. So, they are in a catch 22 because if they don't fix the roads then people will scream and want to know what is being done with the money and it is being stuck all into the VEBA to get up to the 40% funding as a whole. The Road Commission is in a tough position as they do not have the funds. The General County has that option because there are dollars out there because they do levy a tax county wide.

Mr. Brzezinski asked about the trustee education with regard to the legislation. Ms. Walraven stated Mr. Brzezinski brought forth the idea of having Thomas Michaud and/or Mr. VanOverbeke to come in and speak about OPEB legislation and give us an update on what they know, what is changing and answer questions. She stated they will also be inviting the individual employer groups and staff since they may have questions. Ms. Walraven stated she received a response from them and they stated the last week in February is available for them. So, instead of having two days of special presentation and trustee education she suggested it be combined into one day. Katie was going to send a poll out to see if anyone had any dates that didn't work for them but it is looking like March 1st or 2nd.

*Ms. Gonzales departed the meeting at 2:51 p.m.

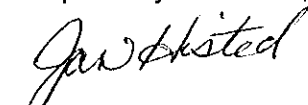
NEW BUSINESS: None

MISCELLANEOUS BUSINESS: None

ADJOURNMENT:

MOTION 3: Moved, supported and carried to adjourn the meeting at 3:00 p.m.

Respectfully submitted,



Jan Histed
Secretary

Transcribed by: Tracy Cederquist

MEETING OF THE **VEBA BOARD OF TRUSTEES COMMITTEE**
JANUARY 9, 2018

IN THE BOARD OF COMMISSIONER'S CHAMBERS, LOCATED AT 515 CENTER AVENUE, 4TH
 FLOOR, BAY CITY, MI 48708

MEETING CALLED TO ORDER BY: CHAIRPERSON STEVE GRAY AT 2:26 P.M.

***Trustee Herek entered the meeting at 2:31 p.m.**

***Trustee Gonzales departed the meeting at 2:51 p.m.**

MOTIONS

Trustee	1	2	3						
BRZEZINSKI	Y	Y	Y						
GONZALES	Y	S-Y	A						
GRAY	Y	Y	Y						
GROMASKI	S-Y	Y	Y						
HEREK	Y	Y	M-Y						
MORSE	Y	Y	Y						
PETT	Y	M-Y	S-Y						
RYDER	Y	Y	Y						
STARKWEATHER	M-Y	Y	Y						

RESOLUTIONS

Trustee	2018-1								
BRZEZINSKI	M-Y								
GONZALES	Y								
GRAY	Y								
GROMASKI	S-Y								
HEREK	Y								
MORSE	Y								
PETT	Y								
RYDER	Y								
STARKWEATHER	Y								

**BAY COUNTY VOLUNTARY EMPLOYEES' BENEFICIARY ASSOCIATION
02/13/2018
RESOLUTION**

BY: BAY COUNTY VOLUNTARY EMPLOYEES' BENEFICIARY ASSOCIATION BOARD

RESOLVED By the Bay County Voluntary Employees' Beneficiary Association Board that the following reports are received:

1. PORTFOLIO VALUE - 1/1/18 - 1/31/18
2. CHANGE IN BOOK AND MARKET VALUE –1/31/18
3. MONEY MANAGER REPORTS
 - a. C.S. MCKEE – ENDING 4Q 2017
 - b. DODGE & COX – ENDING 12/31/17; 4Q 2017; LETTERS TO SHAREHOLDERS (AVAILABLE UPON REQUEST)
 - c. LOOMIS SAYLES – ENDING 12/31/17
 - d. MFS GROWTH EQUITY – ENDING 12/31/17; 4Q 2017; PROXY VOTING REPORT 4Q 2017
4. RECAPTURES SERVICES
 - a. CAPIS - SUMMARY ENDING 12/31/17
5. COMERCA SUMMARY EARNINGS – ENDING 1/31/18
6. VEBA YTD BUDGET REPORT – ENDING 1/31/18
7. INVOICES APPROVED - 1/31/18

STEVE GRAY, CHAIR
AND BOARD

MONTHLY REPORTS - FEBRUARY

MOVED BY TRUSTEE _____

SUPPORTED BY TRUSTEE _____

TRUSTEE	Y	N	E	TRUSTEE	Y	N	E	TRUSTEE	Y	N	E
Richard Brzezinski				Richard Gromaski				Matthew Pett			
Kristal Gonzales				Thomas Herek				Thomas Ryder			
Steve Gray				Jon Morse				Thomas Starkweather			

Vote Totals:

Roll Call: Yeas _____ Nays _____ Excused _____

Voice: Yeas _____ Nays _____ Excused _____

Disposition: Adopted _____ Defeated _____ Withdrawn _____
Amended _____ Corrected _____ Referred _____

VEBA PORTFOLIO VALUE 2018

VEBA 2018	DODGE & COX	CASH	LORD ABBOTT	CS MCKEE	MFS	AMERICAN FUND	LOOMIS	TOTAL
Jan-18	9,216,495.21	297,191.85	10,662,863.79	16,468,728.52	9,674,923.21	2,677,502.74	5,000,000.00*	48,997,705.32
Feb-18								0.00
Mar-18								0.00
Apr-18								0.00
May-18								0.00
Jun-18								0.00
Jul-18								0.00
Aug-18								0.00
Sep-18								0.00
Oct-18								0.00
Nov-18								0.00
Dec-18								0.00

*As of 1/31/18 Loomis had not transferred to Comerica. Value from NT

Money Manager Fees

2017	CS MCKEE	MFS	LOOMIS	TOTAL
1ST QTR				0.00
2ND QTR				0.00
3RD QTR				0.00
4TH QTR				0.00

MFS

INVESTMENT LARGE CAP EQUITY
CS MCKEE FIXED INCOME - BONDS
DODGE & COX LARGE CAP EQUITY
LORD ABBETT SMALL MID CAP MUTUAL FUND
AMERICAN FUND INTERNATIONAL EQUITY
LOOMIS SAYLES DOMESTIC FIXED EQUITY

ACCOUNT STATEMENT

Statement Period
 Account Number

01/01/2018 through 01/31/2018
 M03380

043

Preliminary Changes In Net Assets

	COST VALUE	MARKET VALUE
BEGINNING BALANCE AS OF 01/01/2018	0.00	0.00
EARNINGS		
CASH INCOME	27,273.64	27,273.64
LESS PRIOR ACCRUED INCOME	0.00	0.00
PLUS CURRENT ACCRUED INCOME	95,149.24	95,149.24
REALIZED GAIN/LOSS ON SALE OF ASSETS	16,986.62	16,986.62
NET UNREALIZED GAIN OR LOSS	0.00	8,961,916.72
TOTAL EARNINGS	139,409.50	9,101,326.22
CONTRIBUTIONS & OTHER INCREASES		
ASSETS RECEIVED	39,061,889.37	39,061,889.37
EMPLOYER CONTRIBUTIONS	46,043.95	46,043.95
TRANSFERS	975,897.99	975,897.99
TOTAL CONTRIBUTIONS & OTHER INCREASES	40,083,831.31	40,083,831.31
DISTRIBUTIONS & OTHER DECREASES		
FEES & EXPENSES	147.08-	147.08-
TRANSFERS	94,383.00-	94,383.00-
TOTAL DISTRIBUTIONS & OTHER DECREASES	94,530.08-	94,530.08-
ENDING BALANCE AS OF 01/31/2018	40,128,710.73	49,090,627.45

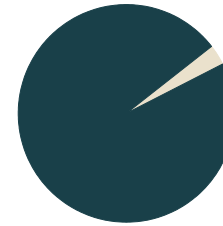
Account Statement - at 12/31/2017

90477

Portfolio Summary

	<i>QTD</i> 9/30/17 - 12/31/17	<i>YTD</i> 12/31/16 - 12/31/17
Beginning market value	\$19,018,778	\$18,453,642
Net additions and disbursements	-2,500,000	-2,500,000
Investment income	98,499	471,478
Portfolio appreciation / depreciation	-10,052	182,105
Ending market value	\$16,607,225	\$16,607,225

Allocation



- Fixed Income
- Cash

	<i>Actual</i>	<i>Target</i>	<i>Diff</i>
Fixed Income	97.0%	100.0%	(-3.0%)
Cash	3.0%	0.0%	+3.0%

Performance

(2/7/2012)*

	<i>QTD</i>	<i>YTD</i>	<i>3 yr</i>	<i>5 yr</i>	<i>ITD</i>
Fixed Income	0.55%	3.65%	2.78%	2.49%	2.79%
BC Aggregate	0.39%	3.54%	2.24%	2.10%	2.37%

Periods greater than 1 year are annualized

* Performance Start Date

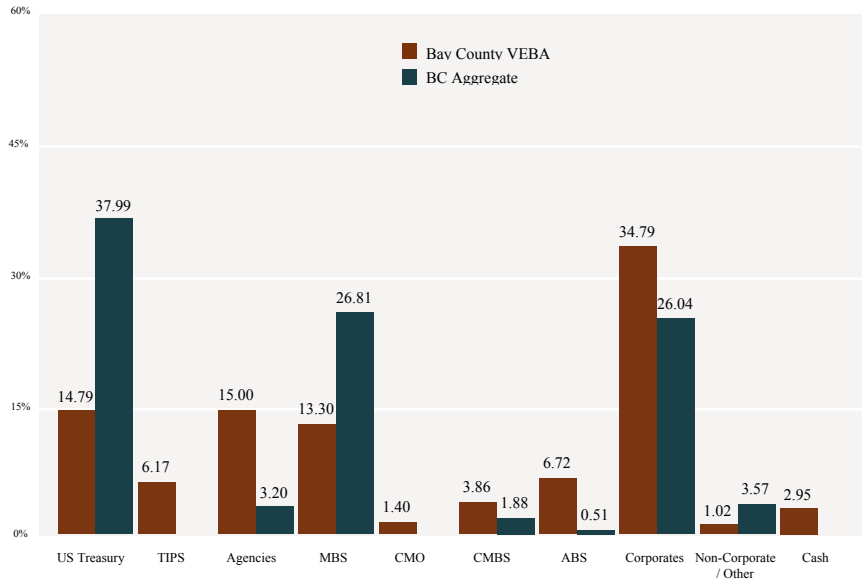
Bay County VEBA

Fixed Income Portfolio Characteristics - at 12/31/2017

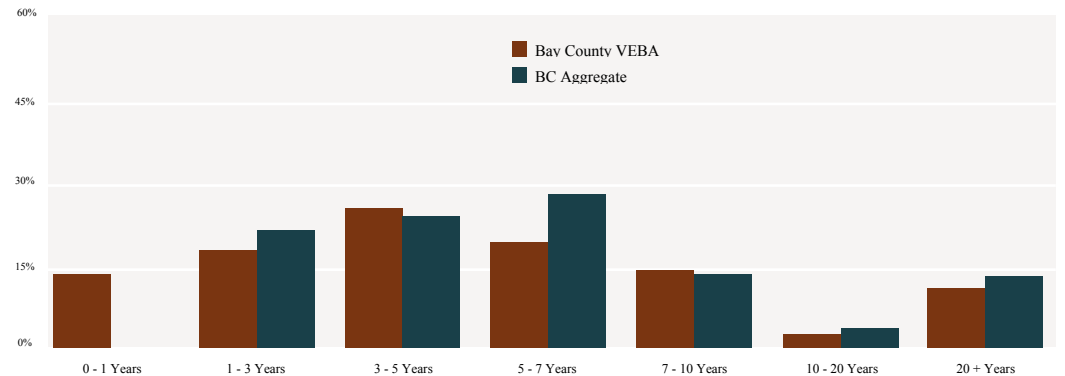
Benchmark Comparisons	Bay County VEBA	BC Aggregate	Variance
Effective Duration	5.32 yrs.	5.98 yrs.	-0.66 yrs.
Average Convexity	0.10	0.12	-0.02 yrs.
Average Maturity	6.88 yrs.	7.94 yrs.	-1.06
Yield to Maturity	2.71 %	2.69%	0.02 %
Average Coupon	2.74 %	3.06%	-0.32 %
Average Quality	Aa1	Aa2	N/A

Top 10 Largest Holdings	Coupon	Maturity	Sector	% of Portfolio
UNITED STATES TREAS	1.875	07/31/2022	US Treasuries	2.46
UNITED STATES TREAS	0.375	01/15/2027	US Treasuries	2.41
UNITED STATES TREAS	1.375	08/31/2020	US Treasuries	1.78
UNITED STATES TREAS	1.625	12/31/2019	US Treasuries	1.73
UNITED STATES TREAS	1.000	02/15/2046	US Treasuries	1.58
HSBC BANK USA NA	1.625	12/09/2020	US Agencies	1.48
AMERICAN EXPRESS CEN	2.300	04/05/2021	US Agencies	1.48
FNMA PASSTHRU AS7388	3.500	06/01/2046	Mortgage Backed	1.45
AMERICREDIT AUTO REC	1.900	03/18/2022	Asset Backed Sec	1.39
UNITED STATES TREAS	1.735	06/30/2022	US Treasuries	1.33

Sector Allocation



Term Structure



Risk Control Guidelines – at December 31, 2017

Portfolio Level

Duration/Yield Curve

- Duration constraints of 80%-120% of benchmark levels (but are typically within 95%-105%).
- Long/short the curve by +/-15%

Volatility Exposure

Negative convexity limit of benchmark -0.75 years.

Quality/Liquidity

Average quality of Aa3/AA- or better. Liquidity equal or better than the benchmark, as measured by weighted average bid/ask spread.

Sector Level

Benchmark-relative weighting limitations (versus Bloomberg Barclays Aggregate):

	<u>McKee</u>	<u>12/31/17</u> <u>Index</u>
Credit	10%-50%	29.3%
Agency	5%-70%	3.3%
Agency MBS/CMO	5%-60%	28.0%
Nominal Treasury	5%-60%	37.0%
TIPS	0%-35%	0.0%
CMBS/ABS	0%-10%	2.4%

Structured agency product allocation limited to 25% of portfolio.

Security Level

Quality:

Investment Grade by either S&P or Moody's ("AA" or better for structured product)

Liquidity:

- Corporate – Absolute issue size minimum of \$100 million, though holdings are typically \$500 million or more. No private placements (excluding 144A) allowed.
- Mortgage – Tranche size minimum of \$25 million, holdings limitation of 10% of a tranche.
- Agency – \$10 million minimum deal size, though typical holdings are \$100 million and above.

Diversification:

Maximum holding per non-government issuer:

AAA-rated	5%
AA-rated	4%
A-rated	3%
BBB-rated	3%

Typical credit holdings are 0.35% to 0.75% of the portfolio.

70% of the portfolio trades with less than 3/8 point bid/ask spread.

Over 90% of corporate holdings are top 100 issuers.

DODGE & COX FUNDS

Total Rates of Return

For Periods Ending December 31, 2017

	1 Mo. Ended	3 Mos. Ended	Year-to- Date	Annualized				
				1 Year	3 Years	5 Years	10 Years	20 Years
Dodge & Cox Stock Fund	2.44%	5.74%	18.32%	18.32%	11.09%	16.30%	7.71%	9.55%
Dodge & Cox Global Stock Fund	2.86%	3.45%	21.51%	21.51%	9.37%	13.26%	N.A.	N.A.
Dodge & Cox International Stock Fund	2.04%	1.21%	23.94%	23.94%	5.96%	8.50%	3.17%	N.A.
Dodge & Cox Balanced Fund	1.67%	3.61%	12.59%	12.59%	8.42%	12.24%	7.09%	8.46%
Dodge & Cox Income Fund	.41%	.48%	4.36%	4.36%	3.09%	3.07%	5.01%	5.50%
Dodge & Cox Global Bond Fund†	.17%	.53%	8.31%	8.31%	3.34%	2.86%	N.A.	N.A.
<u>Comparative Indices</u>								
S&P 500 Index	1.11%	6.64%	21.83%	21.83%	11.41%	15.79%	8.50%	7.20%
MSCI World Index	1.35%	5.51%	22.40%	22.40%	9.26%	11.64%	N.A.	N.A.
MSCI EAFE Index	1.61%	4.23%	25.03%	25.03%	7.80%	7.90%	1.94%	N.A.
Combined Index	.85%	4.12%	14.21%	14.21%	7.83%	10.27%	6.99%	6.62%
Bloomberg Barclays U.S. Aggregate Bond Index	.46%	.39%	3.54%	3.54%	2.24%	2.10%	4.01%	4.98%
Bloomberg Barclays Global Aggregate Bond Index	.35%	1.08%	7.39%	7.39%	2.02%	.79%	N.A.	N.A.

† A private fund managed by Dodge & Cox with proprietary assets was reorganized into the Dodge & Cox Global Bond Fund on April 30, 2014. Any Fund portfolio characteristics, performance, or attribution information for periods prior to May 1, 2014, are those of the private fund.

The Fund's total returns include the reinvestment of dividend and capital gain distributions, but have not been adjusted for any income taxes payable by shareholders on these distributions or on Fund share redemptions. Index returns include dividends and/or interest income but, unlike Fund returns, do not reflect fees or expenses. The S&P 500 Index is a market capitalization-weighted index of 500 large-capitalization stocks commonly used to represent the U.S. Equity market. The MSCI World Index is a broad-based unmanaged equity market index aggregated from 23 developed market country indices, including the United States. The MSCI EAFE (Europe, Australasia, Far East) Index is a broad-based, unmanaged equity market index aggregated from 22 developed market country indices, excluding the United States. The Combined Index reflects an unmanaged portfolio (rebalanced monthly) of 60% of the S&P 500, and 40% of the Bloomberg Barclays U.S. Agg. The Fund may, however, invest up to 75% of its total assets in stocks. The Bloomberg Barclays U.S. Aggregate Bond Index is a widely recognized, unmanaged index of U.S. dollar-denominated investment-grade fixed income securities. The Bloomberg Barclays Global Aggregate Bond Index is a widely recognized, unmanaged index of multi-currency, investment-grade fixed income securities. MSCI makes no express or implied warranties or representations and shall have no liability whatsoever with respect to any MSCI data contained herein. The MSCI data may not be further redistributed or used as a basis for other indices or any securities or financial products. This report is not approved, reviewed, or produced by MSCI.

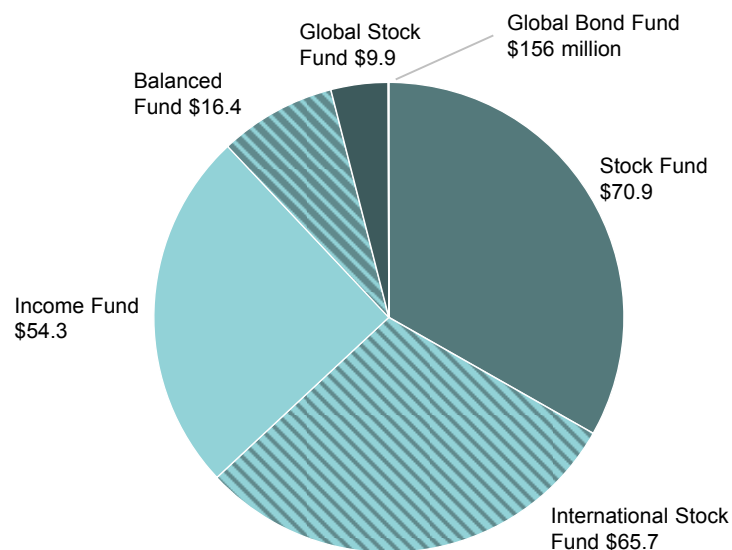
Returns represent past performance and do not guarantee future results. Investment return and share price will fluctuate with market conditions, and investors may have a gain or loss when shares are sold. Fund performance changes over time and currently may be significantly lower than stated above. Performance is updated and published monthly. Before investing in any Dodge & Cox Fund, you should carefully consider the Fund's investment objectives, risks, and management fees and other expenses. To obtain a Fund's prospectus and summary prospectus, which contain this and other important information, visit www.dodgeandcox.com or call 800-621-3979. Please read the prospectus and summary prospectus carefully before investing.

Dodge & Cox Assets Under Management (\$ in Billions)

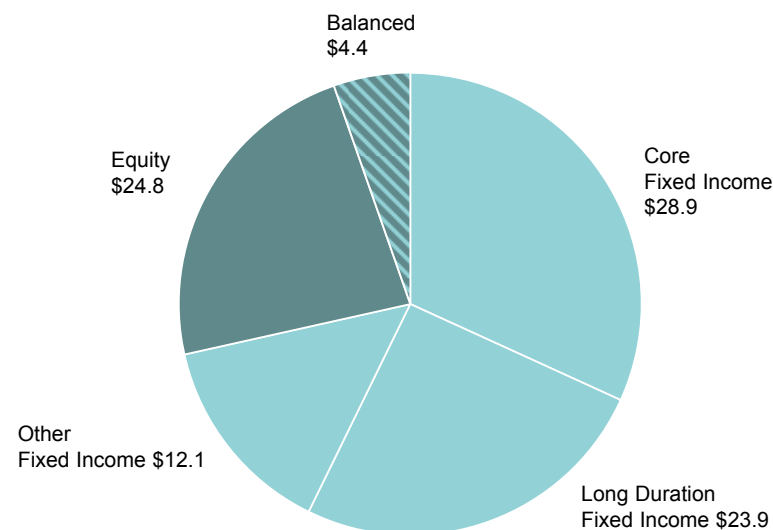
December 31, 2017

\$316.0 in Total Assets: \$190.8 in Equities / \$125.2 in Fixed Income

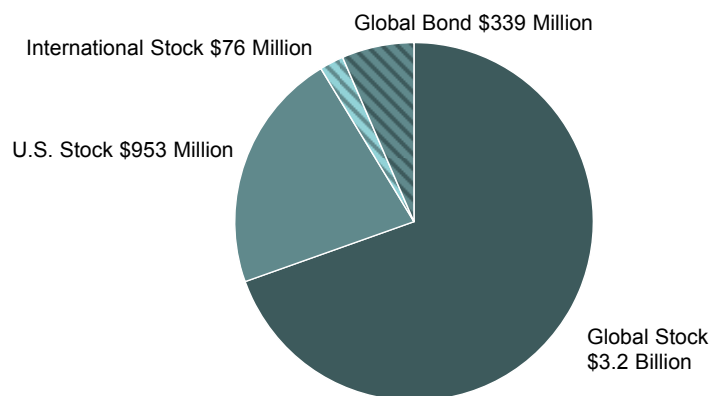
Dodge & Cox Funds: \$217.3 Billion



Separate Accounts: \$94.1 Billion



Non-U.S. Funds (Irish UCITS): \$4.6 Billion



Before investing in any Dodge & Cox Fund, you should carefully consider the Fund's investment objectives, risks, and charges and expenses. To obtain a Fund's prospectus and summary prospectus, which contain this and other important information, visit dodgeandcox.com or call 800-621-3979. Please read the prospectus and summary prospectus carefully before investing.

Dodge & Cox Investment Vehicles

December 31, 2017

Dodge & Cox Funds ^(a)	Status	Account Minimum	Annual Expense Ratio / Fee Schedule
Stock Fund (DODGX)	Open		.52%
Global Stock Fund (DODWX)	Open		.63%
International Stock Fund (DODFX)	Closed to New Investors	\$2,500 (all Funds)	.64%
Balanced Fund (DODBX)	Open		.53%
Income Fund (DODIX)	Open		.43%
Global Bond Fund (DODLX)	Open		.45% ^(e)
Institutional Separately Managed Accounts^(b)			
Domestic Equity and Balanced	Open	\$60 million	.60% on the first \$25 million .40% thereafter
Core Fixed Income	Open	\$200 million	.35% on the first \$25 million .25% on the next \$75 million .15% on the next \$150 million .12% thereafter
Long Duration Fixed Income	Open	\$100 million	.35% on the first \$25 million .25% on the next \$75 million .15% on the next \$150 million .13% thereafter
Intermediate Fixed Income ^(c)	Open	\$100 million	.30% on the first \$50 million .25% on the next \$50 million .14% on the next \$100 million .11% thereafter
Private Client Accounts^(d)			
Individuals, Local Foundations and Endowments Domestic Equity and Balanced	Open	Based on client circumstances	.60% on the first \$25 million .40% thereafter
Tax-Exempt Municipal Bond			
	Open	\$10 million	.35% on the first \$10 million .25% on the next \$20 million .20% on the next \$20 million .15% thereafter
Non-U.S. Dodge & Cox Funds (Irish UCITS)			
Global Stock Fund	Open		.68%/.70% (unhedged/hedged) ^(f)
International Stock Fund	Open	\$50,000 outside the U.S. only	.70% ^(f)
U.S. Stock Fund	Open	(all Funds)	.70% ^(f)
Global Bond Fund	Open		.45% ^(g)

^(a)For defined contribution plan assets, when a record keeper's aggregate client assets in the Dodge & Cox Funds reach \$5 million, a service fee may be paid by Dodge & Cox to the record keeper at the annual rate of 10 basis points for the Stock Fund, Global Stock Fund, International Stock Fund and Balanced Fund, and 8 basis points for the Income Fund and Global Bond Fund. ^(b)Prospective separate account relationships are considered on a case-by-case basis. Institutional fixed income accounts are subject to a minimum quarterly fee of \$37,500. ^(c)Dodge & Cox also manages stable value fixed income portfolios. ^(d)Private Client accounts are subject to a minimum quarterly fee of \$10,000. ^(e)Effective May 1, 2017, Dodge & Cox has contractually agreed to reimburse the Fund for all ordinary expenses to the extent necessary to maintain Total Annual Fund Operating Expenses at 0.45% through April 30, 2018. The term of the agreement renews annually thereafter unless terminated with 30 days' written notice by either party prior to the end of the term. For periods prior to May 1, 2017, the Fund's Net Expense Ratio was 0.60%. ^(f)January 1, 2017 to December 31, 2017. Dodge & Cox has voluntarily agreed to reimburse the Fund for all ordinary expenses to the extent necessary to maintain aggregate annual ordinary expenses at 0.70% of the average daily net assets of each share class. Dodge & Cox may terminate or modify this agreement upon 30 days' notice to shareholders. ^(g)Effective May 1, 2017, Dodge & Cox has voluntarily agreed to reimburse the Fund for all ordinary expenses to the extent necessary to maintain aggregate annual ordinary expenses at 0.45% of the average daily net assets of each share class. Dodge & Cox may terminate or modify this agreement upon 30 days' notice to shareholders. For periods prior to May 1, 2017, the expense ratio was 0.60% for all share classes. Before investing in any Dodge & Cox Fund, you should carefully consider the Fund's investment objectives, risks, and charges and expenses. To obtain a Fund's prospectus and summary prospectus, which contain this and other important information, visit dodgeandcox.com or call 800-621-3979. Please read the prospectus and summary prospectus carefully before investing.

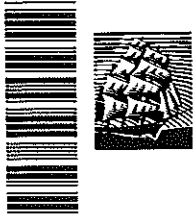
Dodge & Cox Funds Performance Results

December 31, 2017

	3 Months Ended ^(a)	Average Annual Total Returns for periods ending December 31, 2017				
		1 Year	3 Years	5 Years	10 Years	20 Years
Stock Fund	5.74%	18.32%	11.09%	16.30%	7.71%	9.55%
S&P 500 Index	6.64%	21.83%	11.41%	15.79%	8.50%	7.20%
Russell 1000 Value Index	5.33%	13.66%	8.65%	14.04%	7.10%	7.39%
Global Stock Fund	3.45%	21.51%	9.37%	13.26%	N.A. ^(a)	N.A.
MSCI World Index	5.51%	22.40%	9.26%	11.64%	N.A. ^(a)	N.A.
MSCI ACWI Index	5.73%	23.97%	9.30%	10.80%	N.A. ^(a)	N.A.
International Stock Fund	1.21%	23.94%	5.96%	8.50%	3.17%	N.A. ^(b)
MSCI EAFE Index	4.23%	25.03%	7.80%	7.90%	1.94%	N.A. ^(b)
MSCI ACWI ex USA	5.00%	27.19%	7.83%	6.80%	1.84%	N.A. ^(b)
Balanced Fund	3.61%	12.59%	8.42%	12.24%	7.09%	8.46%
Combined Index	4.12%	14.21%	7.83%	10.27%	6.99%	6.62%
Income Fund	0.48%	4.36%	3.09%	3.07%	5.01%	5.50%
Bloomberg Barclays U.S. Aggregate Bond Index	0.39%	3.54%	2.24%	2.10%	4.01%	4.98%
Global Bond Fund^(c)	0.53%	8.31%	3.34%	2.86%	N.A. ^(d)	N.A.
Bloomberg Barclays Global Aggregate Bond Index	1.08%	7.39%	2.02%	0.79%	N.A. ^(d)	N.A.

^(a)Since Global Stock Fund's inception on May 1, 2008 through December 31, 2017: 6.40% vs. 5.69% MSCI World Index vs. 5.28% MSCI ACWI Index. ^(b)Since International Stock Fund's inception on May 1, 2001 through December 31, 2017: 8.07% vs. 5.14% MSCI EAFE Index vs. 5.88% MSCI ACWI free ex USA. ^(c)A private fund managed by Dodge & Cox with proprietary assets was reorganized into the Dodge & Cox Global Bond Fund on April 30, 2014. Any Fund portfolio characteristics, performance, or attribution information for periods prior to May 1, 2014, are those of the private fund. ^(d)Since Global Bond Fund's inception on December 5, 2012 through December 31, 2017: 2.86% compared to 0.64% for the Bloomberg Barclays Global Aggregate Bond Index.

The Combined Index reflects an unmanaged portfolio (rebalanced monthly) of 60% of the S&P 500 Index, which is market capitalization-weighted index of 500 large-capitalization stocks commonly used to represent the U.S. equity market, and 40% of the Bloomberg Barclays U.S. Aggregate Bond Index (BBG Barclays U.S. Agg), which is a widely recognized, unmanaged index of U.S. dollar-denominated, investment-grade, taxable fixed income securities. Returns represent past performance and do not guarantee future results. Investment return and share price will fluctuate with market conditions, and investors may have a gain or loss when shares are sold. Fund performance changes over time and currently may be significantly lower than stated above. Performance is updated and published monthly. Before investing in any Dodge & Cox Fund, you should carefully consider the Fund's investment objectives, risks, and charges and expenses. To obtain a Fund's prospectus and summary prospectus, which contain this and other important information, or for current month-end performance figures, visit dodgeandcox.com or call 800-621-3979. Please read the prospectus and summary prospectus carefully before investing.



STATE STREET.

Box 5493
Boston, MA 02206

Loomis, Sayles & Company L.P.

Account Statement
10/01/2017 - 12/31/2017
Page 1 of 2

Shareholder Inquiries: (617) 662-7100
Registration: BAY COUNTY VOLUNTARY EMPLOYEES'
BENEFICIARY ASSOCIATION
Account Number: 1107

281568 F001 428 10Z 1/1 1----- 415
BAY COUNTY VOLUNTARY EMPLOYEES'
BENEFICIARY ASSOCIATION
515 CENTER AVENUE, SUITE 706
BAY CITY, MI 48708

Account Summary - Period

Fund Name	12/31/2017 NAV	Beginning Market Value	Period Purchases	Period Redemptions	Period Distributions	Ending Shares	Ending Market Value	Average Value
NHIT: INVESTMENT GRADE CORPORATE BOND TRUST CL B	\$19.30	\$0.00	\$5,000,000.00	(\$0.00)		261,506.276	\$5,047,071.13	N/A
Account Total		\$0.00					\$5,047,071.13	

Account Summary - YTD

Fund Name	YTD Purchases	YTD Redemptions	YTD Distributions	Dividend Option	LT Cap Gain Option	ST Cap Gain Option	Account Inception
NHIT: INVESTMENT GRADE CORPORATE BOND TRUST CL B	\$5,000,000.00	(\$0.00)		Reinvest	Reinvest	Reinvest	11/30/17

Transaction History

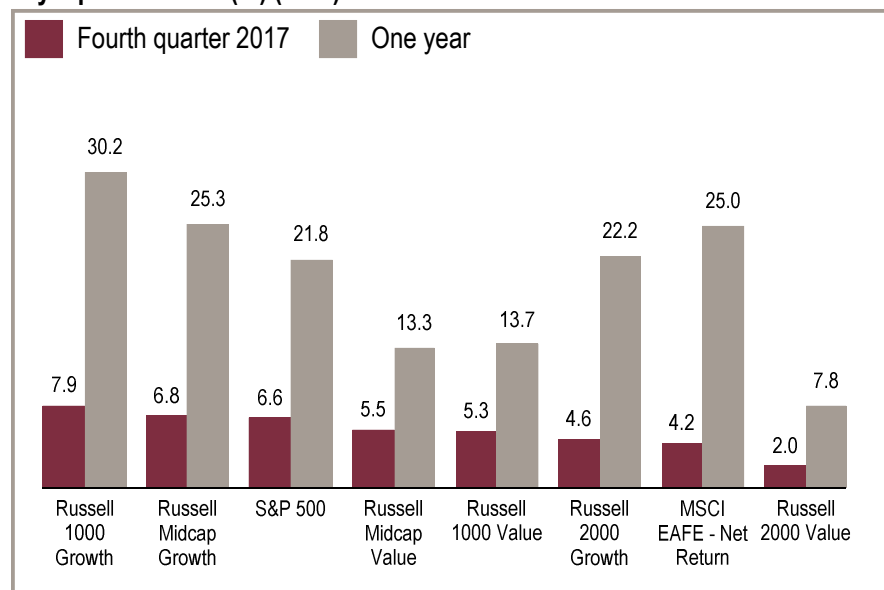
Trade Date	Transaction Type	Gross Amount	Net Amount	NAV	Transaction Shares	Total Shares
11/30/2017	PURCHASE BY WIRE	\$5,000,000.00	\$5,000,000.00	\$19.12	261,506.276	261,506.276

1107

BAY COUNTY VOLUNTARY EMPLOYEES'

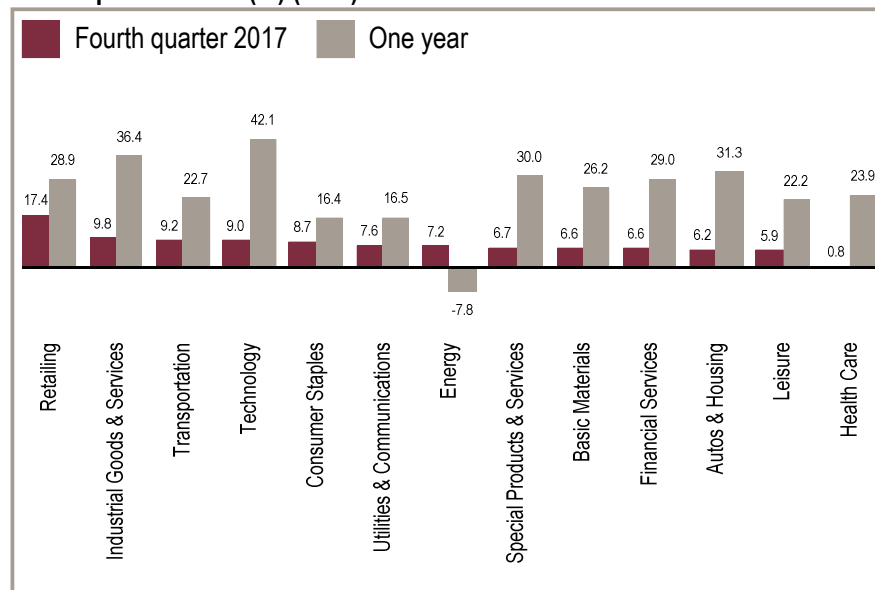
Market overview

Style performance (%) (USD) as of 31-Dec-17



Source for benchmark performance SPAR, FactSet Research Systems Inc. All indices represent total return unless otherwise noted.

Sector performance (%) (USD) as of 31-Dec-17



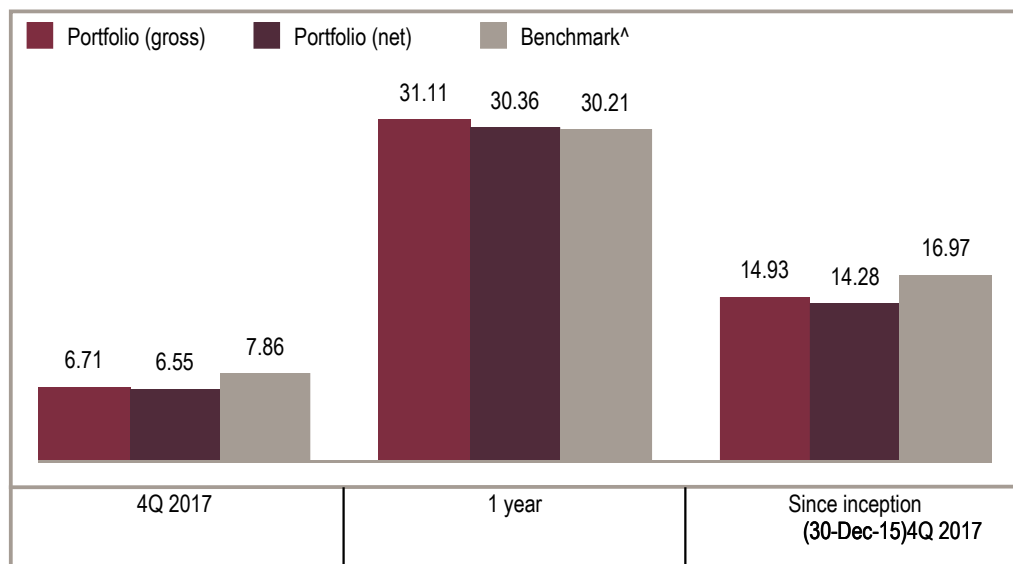
Source: FactSet. Sector performance based on MFS sector classification. The analysis of Russell 1000® Growth Index constituents are broken out by MFS defined sectors.

US market review as of 31-December 2017

- The US market, as measured by the S&P 500 Index, continued to move higher throughout the fourth quarter, accelerating from its pace during Q3. Investors pushed the S&P 500 to near an all-time high on excitement over upcoming tax changes after the tax reform bill was passed by Congress and signed by the president at the end of December. However, a strong probability of higher interest rates, the unwinding of the US Federal Reserve's balance sheet and ongoing geopolitical concerns bear watching.
- US economic growth (GDP) increased slightly from last quarter, with a final reading of 3.2% for Q3. Robust business spending was the key driver of growth during the period. As expected, the Fed raised interest rates in December and signaled that it expected three rate increases in 2018.
- The growth style of investing outperformed the value style of investing during Q4, which continued a yearlong trend. Growth's outperformance for the quarter was driven mostly by the technology sector, which has led throughout 2017, as well as the consumer discretionary sector. Weaker relative returns from the utilities and real estate sectors held back value. In addition, small caps were weaker on a relative basis than large and mid-caps during the quarter, which was consistent with how they had performed for most of the year.

Executive summary

Performance results (%) gross and net of fees (USD) as of 31-Dec-17



Source for benchmark performance SPAR, FactSet Research Systems Inc. All periods greater than one year are annualized.

Past performance is no guarantee of future results.

[^] Russell 1000® Growth Index

Asset summary (USD)

Beginning value as of 30-Sep-17	10,387,934
Contributions	0
Withdrawals	-2,200,000
Change in market value	+686,549
Ending value as of 31-Dec-17	8,874,483

Sector weights (%) as of 31-Dec-17

	Portfolio	Benchmark ^{^^}
Top overweights		
Financial Services	11.8	6.7
Special Products & Services	7.9	5.8
Leisure	10.0	9.0
Top underweights		
Industrial Goods & Services	4.6	8.1
Basic Materials	0.8	4.2
Retailing	6.9	9.4

^{^^} Russell 1000® Growth Index

Portfolio and benchmark data shown is based on MFS' sector/industry classification methodology, which differs from the benchmark's.

The Growth Equity portfolio underperformed the Russell 1000® Growth Index in the fourth quarter of 2017.

Contributors

- Technology – Stock selection and an underweight position
- Individual stocks:
 - Amazon.Com Inc
 - Gilead Sciences Inc (not held)
 - General Electric Co (not held)

Detractors

- Health Care – Stock selection
- Leisure – Stock selection
- Industrial Goods & Services – Stock selection and an underweight position
- Special Products & Services – Stock selection
- Individual stocks:
 - Aon Plc



Performance results

Performance results (%) gross and net of fees (USD) as of 31-Dec-17

Period	Portfolio gross (%)	Portfolio net (%)	Benchmark [^] (%)	Excess return net vs benchmark (%)
4Q 2017	6.71	6.55	7.86	-1.31
3Q 2017	5.09	4.94	5.90	-0.96
2Q 2017	6.47	6.32	4.67	1.65
1Q 2017	9.81	9.65	8.91	0.74
2017	31.11	30.36	30.21	0.15
2016	2.59	2.01	7.08	-5.07
1 year	31.11	30.36	30.21	0.15
Since client inception (30-Dec-15)	14.93	14.28	16.97	-2.69

Source for benchmark performance SPAR, FactSet Research Systems Inc. All periods greater than one year are annualized.

Past performance is no guarantee of future results.

[^] Russell 1000® Growth Index

Bay County Voluntary Employees' Beneficiary Association Trust

Growth Equity



Q4 | 31 December 2017

Performance results (%) gross and net of fees (USD)	Portfolio		Benchmark [^]	Excess returns Net vs benchmark
	Gross of fees	Net of fees		
4Q 2017	6.71	6.55	7.86	-1.31
1 year	31.11	30.36	30.21	0.15
Since client inception (30-Dec-15)	14.93	14.28	16.97	-2.69

Source for benchmark performance SPAR, FactSet Research Systems Inc. All periods greater than one year are annualized.

Past performance is no guarantee of future results.

[^] Russell 1000® Growth Index

Characteristics	Portfolio	Benchmark ^{^^}
Fundamentals - weighted average		
IBES long-term EPS growth ¹	16.0%	14.4%
Price/earnings (12 months forward ex-negative earnings)	24.9x	21.9x
Market capitalization		
Market capitalization (USD) ²	219.9 bn	227.9 bn
Diversification		
Top ten holdings	39%	30%
Number of holdings	82	551
Turnover		
Trailing 1 year turnover ³	21%	–
Risk profile (current)		
Barra predicted tracking error ⁴	2.50%	–

¹ Source: Thomson Reuters

² Weighted average.

³ (Lesser of Purchase or Sales)/Average Month End Market Value

⁴ Source: Barra

No forecasts can be guaranteed.

Portfolio characteristics are based on equivalent exposure, which measures how a portfolio's value would change due to price changes in an asset held either directly or, in the case of a derivative contract, indirectly. The market value of the holding may differ.

^{^^} Russell 1000® Growth Index

Asset summary (USD)	
Beginning value as of 30-Sep-17	10,387,934
Contributions	0
Withdrawals	-2,200,000
Change in market value	+686,549
Ending value as of 31-Dec-17	8,874,483

Top 10 issuers	Sector	% of Portfolio
VISA INC	Financial Services	6.9
ALPHABET INC	Technology	6.7
FACEBOOK INC	Technology	5.3
MICROSOFT CORP	Technology	5.2
AMAZON.COM INC	Retailing	4.7
ADOBE SYSTEMS INC	Technology	3.4
THERMO FISHER SCIENTIFIC INC	Health Care	2.3
T-MOBILE US INC	Utilities & Communications	2.2
SALESFORCE.COM INC	Technology	2.0
DANAHER CORP	Health Care	1.8

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FOR MORE INFORMATION CONTACT

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 Email: tshanley@mfs.com

Bay County Voluntary Employees' Beneficiary Association Trust

Growth Equity



Q4 | 31 December 2017

Sectors (%)	Portfolio	Benchmark^^
Technology	29.7	30.1
Health Care	12.9	12.7
Financial Services	11.8	6.7
Leisure	10.0	9.0
Special Products & Services	7.9	5.8
Retailing	6.9	9.4
Consumer Staples	5.9	5.9
Industrial Goods & Services	4.6	8.1
Autos & Housing	2.8	2.2
Utilities & Communications	2.2	2.2
Transportation	2.0	3.0
Basic Materials	0.8	4.2
Energy	0.6	0.6

2.2% Cash & cash equivalents

^^ Russell 1000® Growth Index

Portfolio and benchmark data shown is based on MFS' sector/industry classification methodology, which differs from the benchmark's.

MFS Institutional Advisors, Inc.
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Phone: +1 617 954 7492
Email: tshanley@mfs.com

Vote Summary Report

Date range covered: 10/01/2017 to 12/31/2017

Location(s): Massachusetts Financial Services

Institution Account(s): Bay County Voluntary Employees' Beneficiary Association Trust

The Estee Lauder Companies Inc.

Meeting Date: 11/14/2017	Country: USA	Primary Security ID: 518439104	Meeting ID: 1177599
Record Date: 09/15/2017	Meeting Type: Annual	Ticker: EL	
Primary CUSIP: 518439104	Primary ISIN: US5184391044	Primary SEDOL: 2320524	

Voting Policy: MFS

Proposal Number	Proposal Text	Proponent	Mgmt Rec	Vote Instruction
1.1	Elect Director Charlene Barshefsky	Mgmt	For	For
1.2	Elect Director Wei Sun Christianson	Mgmt	For	For
1.3	Elect Director Fabrizio Freda	Mgmt	For	For
1.4	Elect Director Jane Lauder	Mgmt	For	For
1.5	Elect Director Leonard A. Lauder	Mgmt	For	For
2	Ratify KPMG LLP as Auditors	Mgmt	For	For
3	Advisory Vote to Ratify Named Executive Officers' Compensation	Mgmt	For	For
4	Advisory Vote on Say on Pay Frequency	Mgmt	One Year	One Year

Microsoft Corporation

Meeting Date: 11/29/2017	Country: USA	Primary Security ID: 594918104	Meeting ID: 1181140
Record Date: 09/29/2017	Meeting Type: Annual	Ticker: MSFT	
Primary CUSIP: 594918104	Primary ISIN: US5949181045	Primary SEDOL: 2588173	

Voting Policy: MFS

Proposal Number	Proposal Text	Proponent	Mgmt Rec	Vote Instruction
1.1	Elect Director William H. Gates, III	Mgmt	For	For
1.2	Elect Director Reid G. Hoffman	Mgmt	For	For
1.3	Elect Director Hugh F. Johnston	Mgmt	For	For
1.4	Elect Director Teri L. List-Stoll	Mgmt	For	For
1.5	Elect Director Satya Nadella	Mgmt	For	For
1.6	Elect Director Charles H. Noski	Mgmt	For	For
1.7	Elect Director Helmut Panke	Mgmt	For	For
1.8	Elect Director Sandra E. Peterson	Mgmt	For	For
1.9	Elect Director Penny S. Pritzker	Mgmt	For	For

Vote Summary Report

Date range covered: 10/01/2017 to 12/31/2017

Location(s): Massachusetts Financial Services

Institution Account(s): Bay County Voluntary Employees' Beneficiary Association Trust

Microsoft Corporation

Proposal Number	Proposal Text	Proponent	Mgmt Rec	Vote Instruction
1.10	Elect Director Charles W. Scharf	Mgmt	For	For
1.11	Elect Director Arne M. Sorenson	Mgmt	For	For
1.12	Elect Director John W. Stanton	Mgmt	For	For
1.13	Elect Director John W. Thompson	Mgmt	For	For
1.14	Elect Director Padmasree Warrior	Mgmt	For	For
2	Advisory Vote to Ratify Named Executive Officers' Compensation	Mgmt	For	For
3	Advisory Vote on Say on Pay Frequency	Mgmt	One Year	One Year
4	Ratify Deloitte & Touche LLP as Auditors	Mgmt	For	For
5	Amend Executive Incentive Bonus Plan	Mgmt	For	For
6	Approve Omnibus Stock Plan	Mgmt	For	For

Medtronic plc

Meeting Date: 12/08/2017	Country: Ireland	Primary Security ID: G5960L103	Meeting ID: 1171276
Record Date: 10/10/2017	Meeting Type: Annual	Ticker: MDT	
Primary CUSIP: 585055106	Primary ISIN: IE00BTN1Y115	Primary SEDOL: BTN1Y11	

Voting Policy: MFS

Proposal Number	Proposal Text	Proponent	Mgmt Rec	Vote Instruction
1a	Elect Director Richard H. Anderson	Mgmt	For	For
1b	Elect Director Craig Arnold	Mgmt	For	For
1c	Elect Director Scott C. Donnelly	Mgmt	For	For
1d	Elect Director Randall J. Hogan, III	Mgmt	For	For
1e	Elect Director Omar Ishrak	Mgmt	For	For
1f	Elect Director Shirley Ann Jackson	Mgmt	For	For
1g	Elect Director Michael O. Leavitt	Mgmt	For	For
1h	Elect Director James T. Lenehan	Mgmt	For	For
1i	Elect Director Elizabeth G. Nabel	Mgmt	For	For
1j	Elect Director Denise M. O'Leary	Mgmt	For	For
1k	Elect Director Kendall J. Powell	Mgmt	For	For

Vote Summary Report

Date range covered: 10/01/2017 to 12/31/2017

Location(s): Massachusetts Financial Services

Institution Account(s): Bay County Voluntary Employees' Beneficiary Association Trust

Medtronic plc

Proposal Number	Proposal Text	Proponent	Mgmt Rec	Vote Instruction
1	Elect Director Robert C. Pozen	Mgmt	For	For
2	Approve PricewaterhouseCoopers LLP as Auditors and Authorize Audit Committee to Fix Their Remuneration	Mgmt	For	For
3	Advisory Vote to Ratify Named Executive Officers' Compensation	Mgmt	For	For
4	Amend Omnibus Stock Plan	Mgmt	For	For

Bay County Voluntary Employees' Beneficiary Association Trust
Growth Equity
Report as of 31 December 2017

Performance results (%) gross and net of fees (USD)

Period	Portfolio gross	Portfolio net	Benchmark[^]	Excess^{^^}
December	0.50	0.45	0.78	-0.33
November	1.89	1.85	3.04	-1.19
October	4.21	4.16	3.87	0.28
4Q 2017	6.71	6.55	7.86	-1.31
3Q 2017	5.09	4.94	5.90	-0.96
2Q 2017	6.47	6.32	4.67	1.65
1Q 2017	9.81	9.65	8.91	0.74
1 year	31.11	30.36	30.21	0.15
Since client inception (30-Dec-15)	14.93	14.28	16.97	-2.70

Source for benchmark performance SPAR, FactSet Research Systems Inc.

All periods greater than one year are annualized.

Past performance is no guarantee of future results.

[^] Russell 1000® Growth Index

^{^^} Excess return net vs benchmark (%)

The Growth Equity portfolio underperformed Russell 1000® Growth Index in the fourth quarter of 2017.

Detractors

Health Care – Stock selection

Leisure – Stock selection

Industrial Goods & Services – Stock selection and an underweight position

Special Products & Services – Stock selection

Cash

Individual stocks - Detractors

Aon Plc

Bay County Employees' VEBA

CAPIS Account: 10250

Settlement Month Ending: 12/31/2017

TOTAL COMMISSION
COMMISSION ALLOCATION
Beginning Balance

 U.S. Equity
 International Equity
 Fixed Income
 International Fixed Income
 New Issues
 Options
 Futures
 Foreign Currency
 Syndicates

Recapture Subtotals
Execution
Directed
Correspondent Broker/Dealer
Total

	<u>December</u>	<u>YTD</u>
Beginning Balance		
U.S. Equity	-	-
International Equity	-	-
Fixed Income	-	-
International Fixed Income	-	-
New Issues	-	-
Options	-	-
Futures	-	-
Foreign Currency	-	-
Syndicates	-	-
Recapture Subtotals	\$ 0.00	\$ 0.00
Execution	\$ 0.00	\$ 0.00
Directed	\$ 0.00	\$ 0.00
Correspondent Broker/Dealer	\$ 0.00	\$ 0.00
Total	\$ 0.00	\$ 0.00

Execution
Recapture

	<u>December</u>	<u>YTD</u>	<u>December</u>	<u>YTD</u>
			\$0.00	\$0.00
U.S. Equity	-	-	-	-
International Equity	-	-	-	-
Fixed Income	-	-	-	-
International Fixed Income	-	-	-	-
New Issues	-	-	-	-
Options	-	-	-	-
Futures	-	-	-	-
Foreign Currency	-	-	-	-
Syndicates	-	-	-	-
	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00

Total Earned \$ 0.00 \$ 0.00

Total Redeemed \$ 0.00 \$ 0.00

Balance as of 12/31/2017 \$ 0.00 \$ 0.00

◆ Summary Earnings Report for MR

Message: No information found for request.

User Selection:

Account number = BCVEBA
From date = 12/01/2017
Through date = 12/31/2017
Run report for selected Account or for Sponsor Cod = S
Drop down List for the Reported or Earning currenc = AAA
Drop Down List for Report Type = D

Although this report has been prepared using information believed to be reliable, it may contain information provided by third parties or derived from third party information, and/or information that may have been obtained from, categorized or otherwise reported based upon client direction. The Northern Trust Company does not guarantee the accuracy, timeliness or completeness of any such information. The information included in this report is intended to assist clients with their financial reporting needs, but you must consult with your accountants, auditors and/or legal counsel to ensure your accounting and financial reporting complies with applicable laws, regulations and accounting guidance. The Northern Trust Company and its affiliates shall have no responsibility for the consequences of investment decisions made in reliance on information contained in this report.

**Generated by Northern Trust at 07 Feb 18 09:43*

2017 VEBA YTD BUDGET REPORT

ACCOUNT DESCRIPTION	ORIGINAL APPROP	TRANFRS/ADJSMTS	REVISED BUDGET	YTD ACTUAL	ENCUMBRANCES	AVAILABLE BUDGET	% USED
FUND BALANCE	-	-	-	-	-	-	0%
NET ASSETS - RESERVES	1,740,320.00	-	1,740,320.00	-	-	1,740,320.00	0%
Total RA FUND BALANCE, NET AS	1,740,320.00	-	1,740,320.00	-	-	1,740,320.00	0%
ER CONTR-BEHAVE.HEALTH	(250,000.00)	-	(250,000.00)	-	-	(250,000.00)	0%
ER CONTR-MOSQUITO CONT	-	-	-	-	-	-	0%
ER CONTR-HEALTH FUND	-	-	-	-	-	-	0%
ER CONTR-ROAD COMMISS.	-	-	-	-	-	-	0%
ER CONTR-LIBRARY	(48,000.00)	-	(48,000.00)	(25,000.00)	-	(23,000.00)	52%
ER CONTR-GOLF COURSE	-	-	-	-	-	-	0%
ER CONTR-GENERAL FUND	-	-	-	-	-	-	0%
ER CONTR-DWS	(32,000.00)	-	(32,000.00)	(98,760.51)	-	66,760.51	309%
ER CONTR-911 SERVICE	-	-	-	-	-	-	0%
ER CONTR-CHILD CARE	-	-	-	-	-	-	0%
ER CONTR-DIV ON AGING	-	-	-	-	-	-	0%
ER CONTR-RETIRE SYSTEM	-	-	-	-	-	-	0%
ER CONTR-GYPSY MOTH	-	-	-	-	-	-	0%
ER CONTR-HOME REHABIL.	-	-	-	-	-	-	0%
ER CONTR-100% TAX PYMT	-	-	-	-	-	-	0%
ER CONTR-MED CARE FAC.	(250,000.00)	-	(250,000.00)	(174,686.22)	-	(75,313.78)	70%
ER CONTR-SELF INSURANC	-	-	-	-	-	-	0%
ER CONTR-COMM.CORRECT.	-	-	-	-	-	-	0%
ER CONTR-F.O.C. FUND	-	-	-	-	-	-	0%
ER CONTR-HOUSING FUND	-	-	-	-	-	-	0%
ER CONTR-SOLDIER RELIE	-	-	-	-	-	-	0%
ER CONTR-SHERIFF DEPT	-	-	-	-	-	-	0%
Total RJ LOCAL UNIT CONTRIBUT	(580,000.00)	-	(580,000.00)	(298,446.73)	-	(281,553.27)	51%
INVESTMENT INTEREST/DIVIDENDS	(500,000.00)	-	(500,000.00)	(499,334.73)	-	(665.27)	100%
GAIN ON SALE OF INVESTMENTS	(1,200,000.00)	-	(1,200,000.00)	(477,701.18)	-	(722,298.82)	40%
UNREALIZED GAIN ON INVESTMENTS	-	-	-	-	-	-	0%
SECURITIES LENDING EARNINGS	-	-	-	(1,434.59)	-	1,434.59	0%
Total RP INTEREST & RENTALS	(1,700,000.00)	-	(1,700,000.00)	(978,470.50)	-	(721,529.50)	58%
MISCELLANOUS REVENUES	-	-	-	-	-	-	0%
COMMISSION RECAPTURE	(6,900.00)	-	(6,900.00)	-	-	(6,900.00)	0%
Total RR OTHER REVENUE	(6,900.00)	-	(6,900.00)	-	-	(6,900.00)	0%
PER DIEM	360.00	-	360.00	-	-	360.00	0%
Total XE WAGES & SALARIES	360.00	-	360.00	-	-	360.00	0%
OFFICE SUPPLIES	100.00	-	100.00	-	-	100.00	0%
PRINTING AND BINDING	150.00	-	150.00	-	-	150.00	0%
POSTAGE	100.00	-	100.00	49.64	-	50.36	50%

2017 VEBA YTD BUDGET REPORT

ACCOUNT DESCRIPTION	ORIGINAL APPROP	TRANFRS/ADJSMTS	REVISED BUDGET	YTD ACTUAL	ENCUMBRANCES	AVAILABLE BUDGET	% USED
COMPUTER SUPPLIES	50.00	-	50.00	-	-	50.00	0%
Total XI SUPPLIES	400.00	-	400.00	49.64	-	350.36	12%
PROFESSIONAL SERVICES	130,000.00	-	130,000.00	95,453.62	-	34,546.38	73%
ACTUARIAL SERVICES	-	-	-	44,330.00	-	(44,330.00)	0%
INVESTMENT/BANK SERVICE CHARGE	30,000.00	-	30,000.00	49,359.46	-	(19,359.46)	165%
LEGAL FEES	-	-	-	-	-	-	0%
CONSULTANTS	30,000.00	-	30,000.00	16,000.00	-	14,000.00	53%
LOCAL TRAVEL MILEAGE	-	-	-	-	-	-	0%
EQUIPMENT RENTAL-COPY MACHINES	55.00	-	55.00	-	-	55.00	0%
INDIRECT COST EXPENSE	1,765.00	-	1,765.00	1,765.00	-	-	100%
LOSS ON DISPOSAL OF ASSET	350,000.00	-	350,000.00	249,127.89	-	100,872.11	71%
UNREALIZED LOSS ON INVESTMENTS	-	-	-	-	-	-	0%
INSURANCE AND BONDS	4,000.00	-	4,000.00	3,200.85	-	799.15	80%
Total XL OTHER SERVICES AND C	545,820.00	-	545,820.00	459,236.82	-	86,583.18	84%
Revenue Total	(546,580.00)	-	(546,580.00)	(1,276,917.23)			
Expense Total	546,580.00	-	546,580.00	459,286.46			
Grand Total	-	-	-	(817,630.77)			

2018 VEBA YTD BUDGET REPORT

ACCOUNT DESCRIPTION	ORIGINAL APPROP	TRANFRS/ADJSMTS	REVISED BUDGET	YTD ACTUAL	ENCUMBRANCES	AVAILABLE BUDGET	% USED
FUND BALANCE	-	-	-	-	-	-	0%
NET ASSETS - RESERVES	3,204,320.00	-	3,204,320.00	-	-	3,204,320.00	0%
Total RA FUND BALANCE, NET AS	3,204,320.00	-	3,204,320.00	-	-	#N/A	0%
ER CONTR-BEHAVE.HEALTH	-	-	-	-	-	-	#DIV/0!
ER CONTR-MOSQUITO CONT	-	-	-	-	-	-	0%
ER CONTR-HEALTH FUND	-	-	-	-	-	-	0%
ER CONTR-ROAD COMMISS.	-	-	-	-	-	-	0%
ER CONTR-LIBRARY	-	-	-	-	-	-	#DIV/0!
ER CONTR-GOLF COURSE	-	-	-	-	-	-	0%
ER CONTR-GENERAL FUND	-	-	-	-	-	-	0%
ER CONTR-DWS	(90,000.00)	-	(90,000.00)	-	-	(90,000.00)	0%
ER CONTR-911 SERVICE	-	-	-	-	-	-	0%
ER CONTR-CHILD CARE	-	-	-	-	-	-	0%
ER CONTR-DIV ON AGING	-	-	-	-	-	-	0%
ER CONTR-RETIRE SYSTEM	-	-	-	-	-	-	0%
ER CONTR-GYPSY MOTH	-	-	-	-	-	-	0%
ER CONTR-HOME REHABIL.	-	-	-	-	-	-	0%
ER CONTR-100% TAX PYMT	-	-	-	-	-	-	0%
ER CONTR-MED CARE FAC.	(200,000.00)	-	(200,000.00)	-	-	(200,000.00)	0%
ER CONTR-SELF INSURANC	-	-	-	-	-	-	0%
ER CONTR-COMM.CORRECT.	-	-	-	-	-	-	0%
ER CONTR-F.O.C. FUND	-	-	-	-	-	-	0%
ER CONTR-HOUSING FUND	-	-	-	-	-	-	0%
ER CONTR-SOLDIER RELIE	-	-	-	-	-	-	0%
ER CONTR-SHERIFF DEPT	-	-	-	-	-	-	0%
Total RJ LOCAL UNIT CONTRIBUT	(290,000.00)	-	(290,000.00)	-	-	(290,000.00)	0%
INVESTMENT INTEREST/DIVIDENDS	(500,000.00)	-	(500,000.00)	-	-	(500,000.00)	0%
GAIN ON SALE OF INVESTMENTS	(1,457,870.00)	-	(1,457,870.00)	-	-	(1,457,870.00)	0%
UNREALIZED GAIN ON INVESTMENTS	-	-	-	-	-	-	0%
SECURITIES LENDING EARNINGS	-	-	-	-	-	-	0%
Total RP INTEREST & RENTALS	(1,957,870.00)	-	(1,957,870.00)	-	-	(1,957,870.00)	0%
MISCELLANEOUS REVENUES	-	-	-	-	-	-	0%
COMMISSION RECAPTURE	(5,000.00)	-	(5,000.00)	-	-	(5,000.00)	0%
Total RR OTHER REVENUE	(5,000.00)	-	(5,000.00)	-	-	(5,000.00)	0%
PER DIEM	360.00	-	360.00	-	-	360.00	0%
Total XE WAGES & SALARIES	360.00	-	360.00	-	-	360.00	0%

2018 VEBA YTD BUDGET REPORT

ACCOUNT DESCRIPTION	ORIGINAL APPROP	TRANFRS/ADJSMTS	REVISED BUDGET	YTD ACTUAL	ENCUMBRANCES	AVAILABLE BUDGET	% USED
OFFICE SUPPLIES	100.00	-	100.00	-	-	100.00	0%
PRINTING AND BINDING	150.00	-	150.00	-	-	150.00	0%
POSTAGE	70.00	-	70.00	-	-	70.00	0%
COMPUTER SUPPLIES	50.00	-	50.00	-	-	50.00	0%
Total XI SUPPLIES	370.00	-	370.00	-	-	370.00	0%
PROFESSIONAL SERVICES	130,000.00	-	130,000.00	-	-	130,000.00	0%
ACTUARIAL SERVICES	719.00	-	719.00	-	-	719.00	0%
INVESTMENT/BANK SERVICE CHARGE	10,000.00	-	10,000.00	-	-	10,000.00	0%
LEGAL FEES	-	-	-	-	-	-	0%
CONSULTANTS	16,000.00	-	16,000.00	4,000.00	-	12,000.00	25%
LOCAL TRAVEL MILEAGE	-	-	-	-	-	-	0%
EQUIPMENT RENTAL-COPY MACHINES	55.00	-	55.00	-	-	55.00	0%
INDIRECT COST EXPENSE	1,046.00	-	1,046.00	87.17	-	958.83	8%
LOSS ON DISPOSAL OF ASSET	350,000.00	-	350,000.00	-	-	350,000.00	0%
UNREALIZED LOSS ON INVESTMENTS	-	-	-	-	-	-	0%
INSURANCE AND BONDS	4,000.00	-	4,000.00	-	-	4,000.00	0%
Total XL OTHER SERVICES AND C	511,820.00	-	511,820.00	4,087.17	-	507,732.83	1%
Revenue Total	956,450.00	-	956,450.00	-	-		
Expense Total	512,190.00	-	512,190.00	4,087.17	-		
Grand Total	1,468,640.00	-	1,468,640.00	4,087.17	-		

VEBA Invoices Approved: Jan-18

Invoice Date	Vendor	Amount	Description
1/19/2018	ANDCO CONSULTING	\$ 4,000.00	1Q 2018 FEES
1/10/2018	CS MCKEE	12.455.42	4Q 2017 FEES

LORD ABBETT ANNOUNCES NEW MANAGING PARTNER
Appointment of 10th Managing Partner in the Firm's History
Ushers in the Next Generation of Leadership

JERSEY CITY, NJ – January 23, 2018 – Lord Abbett & Co. LLC (“Lord Abbett”) an independent, privately held investment firm, has announced the appointment of a new Managing Partner to lead the organization.

At the quarterly Lord Abbett’s Partners’ meeting on January 18, 2018, Daria L. Foster, Managing Partner, stated her intention to retire on March 31, 2018, after 28 years at the firm and announced that Douglas B. Sieg will assume the position of Managing Partner, effective April 1, 2018.

Ms. Foster has been Lord Abbett’s Managing Partner for the past 11 years, the ninth in the history of the firm, and the first woman to hold the position. Under Ms. Foster’s strong and very capable leadership, the firm achieved significant growth and expansion. As a result, Lord Abbett currently has more than \$160.4 billion in assets under management, a leadership position in the U.S. retail market, a dedicated focus on the U.S. institutional market, and a growing presence in key international markets.* Today, the firm continues to successfully navigate the challenging industry landscape, while upholding its commitment to putting clients’ interest first.

As Mr. Sieg assumes the role of Managing Partner, he inherits an organization with a strong foundation that will enhance the ability of partners and employees to effectively serve the next generation of clients. Over the last several years, he has worked closely with Ms. Foster to strengthen various functions of the firm—spanning Investments, Client Services and Core Services—and improve the ways in which they interact and support one another.

Noting Ms. Foster’s legacy, Mr. Sieg said, “Daria intensified our focus on the issues that made us better every day. She shaped and transformed Lord Abbett into a strategically driven, professionally managed, investment-led organization and has done so in a thoughtful, deliberate, and caring way.”

Mr. Sieg most recently held the title of Partner, Client Services and was responsible for overseeing the U.S. Retail, U.S. Institutional, and International markets, as well as the Product Strategy, Marketing, and Corporate Communications teams. Throughout Mr. Sieg’s 24-year career at Lord Abbett, he has been involved in numerous strategic and management initiatives that have given him a deep understanding of every aspect of the firm—among them developing products, building the firm’s U.S. institutional business, and expanding into key international markets, including the opening of a London office.

Remarking on the appointment of Mr. Sieg, Ms. Foster said, “Having worked closely with Doug for over fifteen years, I know he has the intelligence, energy, creativity, and determination to successfully steer the firm forward. In all of his previous roles, he has demonstrated a commitment to excellence, recognizing that the success of the firm is dependent upon the success of our clients. As he becomes the tenth managing partner in Lord Abbett’s history, I am confident he will ensure that our clients’ long-term interests remain at the forefront of all the firm’s activities.”

For more information about Lord Abbett, please visit lordabbett.com.

*Assets under management include approximately \$1.6 billion for which Lord Abbett provides investment models to managed account sponsors.

About Lord Abbett

Lord, Abbett & Co. LLC is an independent, privately held firm with a singular focus on the management of money. Founded in 1929, Lord Abbett is one of the oldest money management firms in the United States, and has forged a culture that is investment-led and investor-focused.

Lord Abbett manages approximately \$160.4 billion in assets (as of January 22, 2018) across a full range of mutual funds, institutional and separately managed accounts, including \$1.6 billion for which Lord Abbett provides investment models to managed account sponsors.

Investors should carefully consider the investment objectives, risks, charges, and expenses of the Lord Abbett Funds. This and other important information is contained in a fund's summary prospectus and/or prospectus. To obtain a prospectus or summary prospectus on any Lord Abbett mutual fund, contact your investment professional or Lord Abbett Distributor LLC at 888-522-2388, or visit us at lordabbett.com. Read the prospectus carefully before investing.

Lord Abbett mutual fund shares are distributed by Lord Abbett Distributor LLC.

Shares of Lord Abbett mutual funds are not deposits or obligations of any bank, are not guaranteed by any bank, and are not insured by the FDIC or any other agency, and involve investment risks, including the possible loss of principal amount invested.

Media Inquiries:

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jsansevero@lordabbett.com

Asset Allocation Analysis
February 2018

Bay County – VEBA





ASSET ALLOCATION ANALYSIS



Introduction

This report provides a brief summary of the Asset Allocation modeling process.

Asset allocation is an effective tool to manage portfolio risk. However, the modeling process is an imperfect science that depends on forecasts and assumptions.

This report illustrates the Fund's current investment policies and a proposed portfolio mix. Our objective is to balance the Trustees' collective performance targets and risk tolerances.

Additional modeling may be performed to evaluate other asset allocation polices.

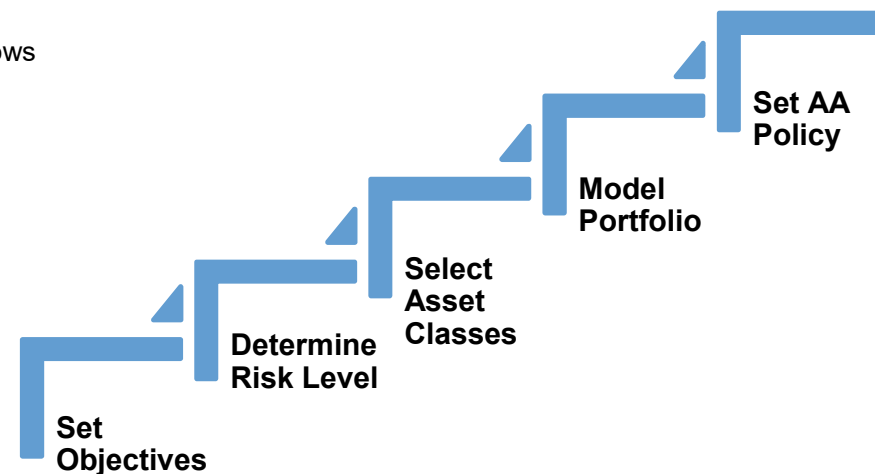


Introduction

- Asset allocation is a tool employed to manage a portfolio's risk. Risk may be defined as the standard deviation of returns, the probability of achieving a target return, or other measures of variability. In theory there is a positive relationship between risk and returns – the greater the risk, the greater the returns. However, the capital markets do not always behave in this manner.
- The modeling process is imperfect, relying on forecasts for the asset classes. Accurately predicting the performance of the capital markets is nearly impossible. Therefore, we utilize several models to help assist with the evaluation process. Additional modeling may be performed to evaluate other asset allocation policies.

- Key Steps In Conducting An Asset Allocation Study:

1. Identify and define the objectives.
 - a) Assess liquidity needs – current and future cash flows
 - b) Assess investment time horizon
 - c) Assess return target
2. Assess risk tolerance
3. Determine appropriate asset classes
4. Model investment portfolio alternatives
 - a) Historical model
 - b) Forecasting model
 - c) Monte Carlo simulations
 - d) Allocation to alternatives
 - e) Human overlay
5. Select an appropriate target asset allocation policy



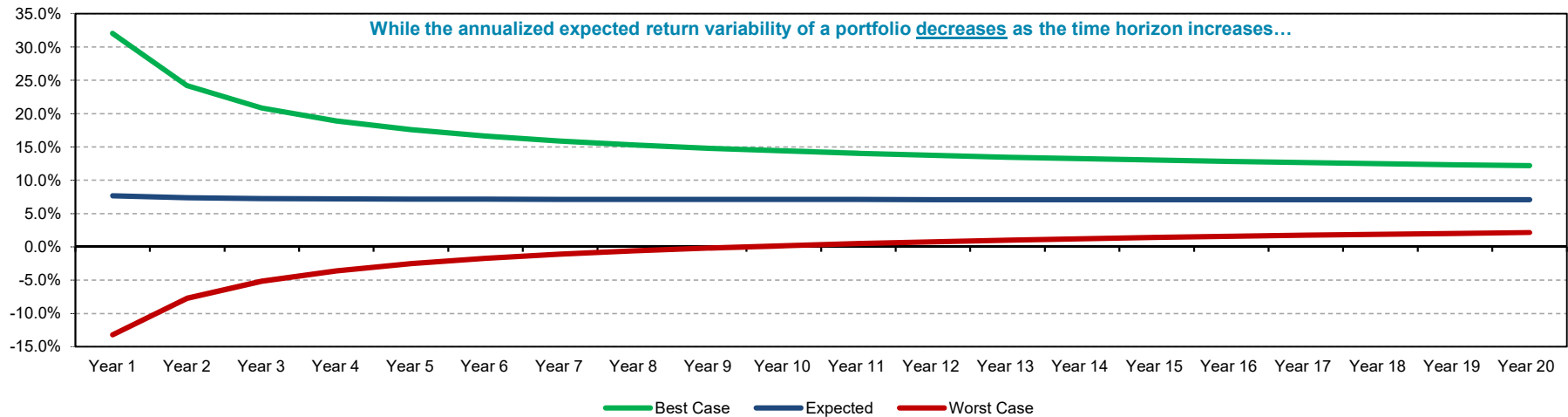
Limitation of Asset Allocation Models

- **Limitations of Asset Allocation Models:**
 - The model output is based on the capital market assumptions; accurately predicting the expected return, standard deviation, and correlation coefficients for each asset class is very difficult.
 - Many asset classes have historically exhibited non-normal return distributions (fat-tails and/or skewness); models generally assume normal distributions.
 - Correlation coefficients change over time and may potentially overestimate the diversification benefits of combining asset classes (particularly during periods of market stress).
 - Alternative asset classes introduce risk factors that are not captured in their standard deviation.
- **The return, risk, and correlation forecasts utilized in this report were developed by JP Morgan Asset Management. These projections are based on its expectations over the next 10 to 15 years.**

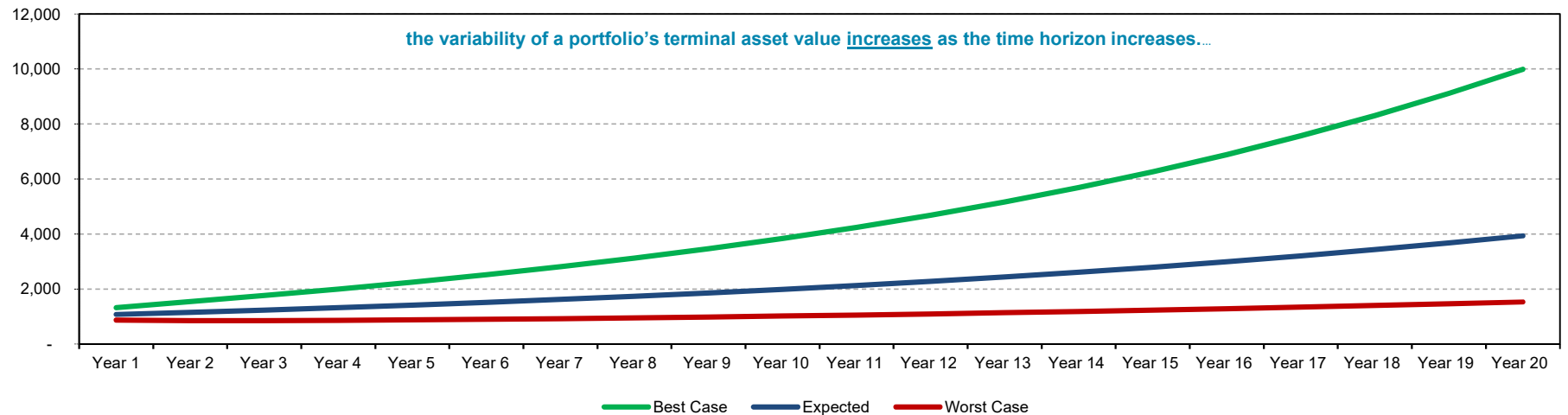


Asset Allocation and Investment Policy

Projected Annualized Return Expectations (%)



Projected Growth of \$1 million (,000)



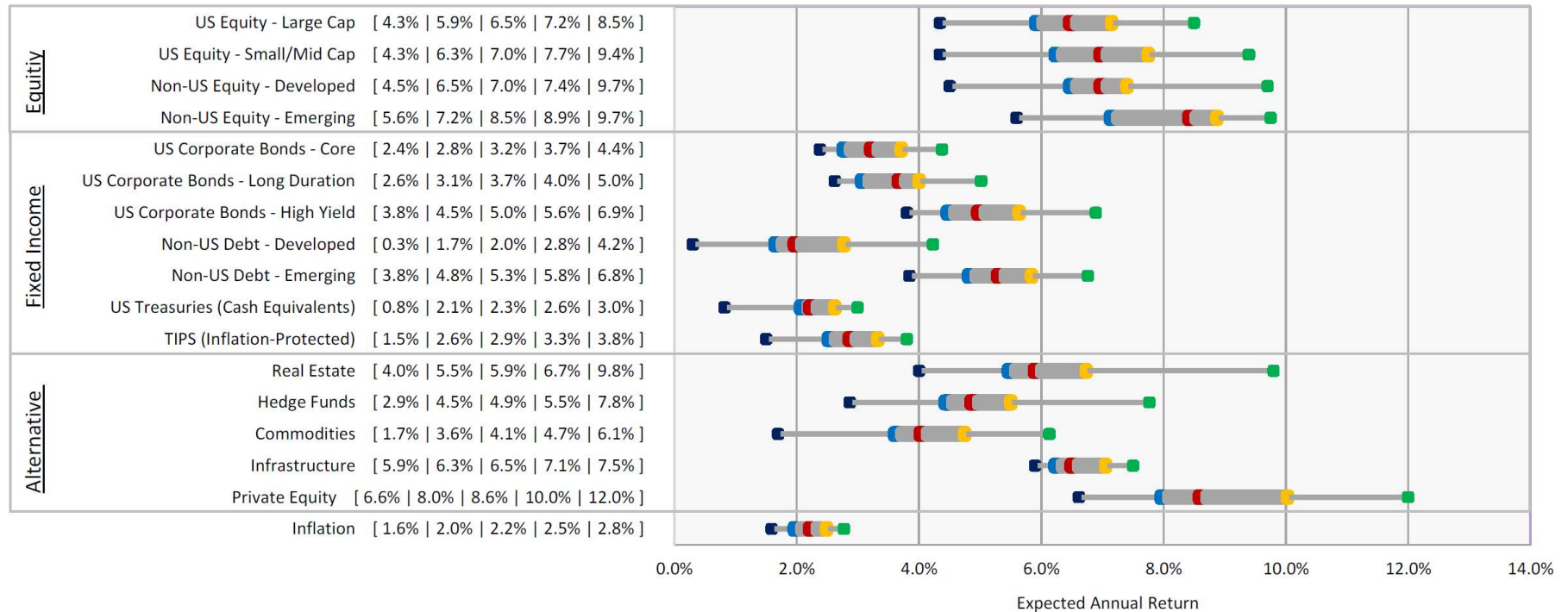
As a result, it is important to understand that you cannot “time diversify” away a portfolio’s risk.



Asset Allocation and Educated Guesses

10-Year Expected Return Ranges (Geometric Assumptions) Long-Term Survey Respondents - 35 Assumption Sets

Asset Class [Min | 25th | 50th | 75th | Max]



- While there is no shortage of forward-looking educated guesses for return, standard deviation, and correlation assumptions, practitioners do not:
 - Forecast the same asset classes.
 - Forecast the same time horizons.
 - Use the same tools and/or methodologies to develop their assumptions.

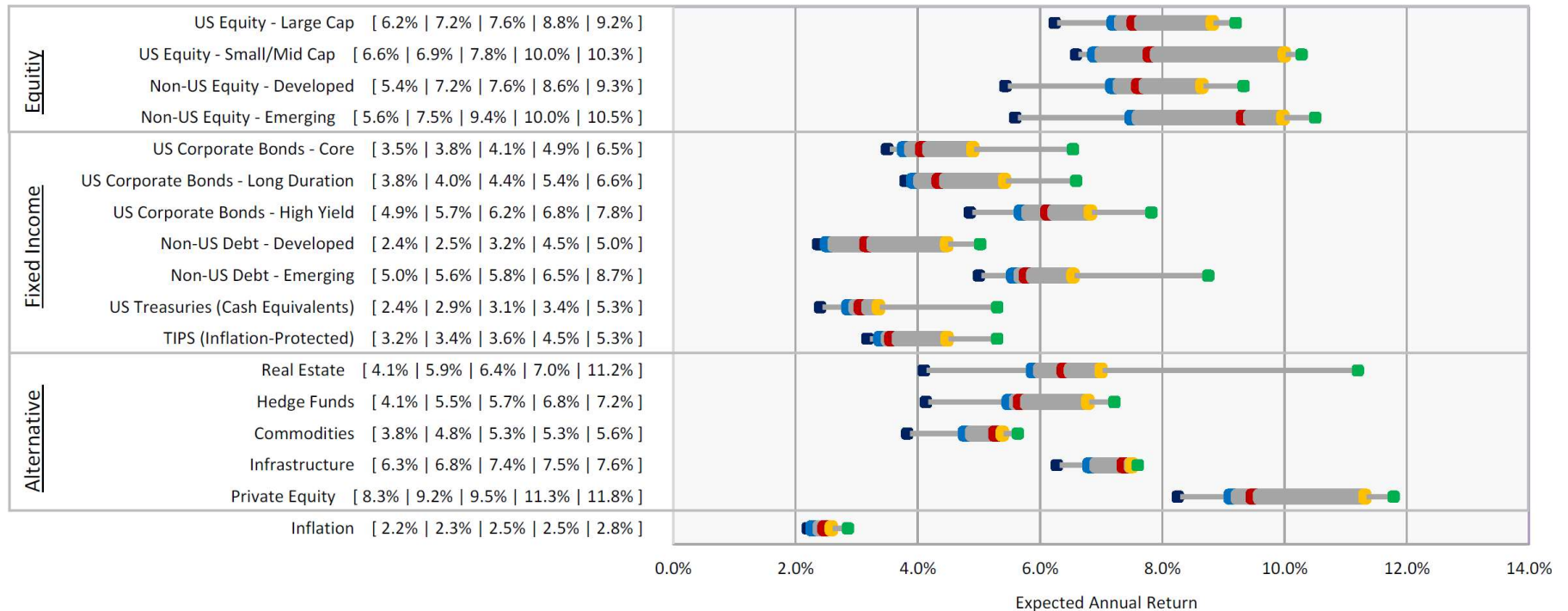
Source: Horizon Actuarial 2017 Survey of Capital Market Assumptions.



Asset Allocation and Educated Guesses

Long-Term (20-Years or More) Expected Return Ranges (Geometric Assumptions) Long-Term Survey Respondents - 12 Assumption Sets

Asset Class [Min | 25th | 50th | 75th | Max]



- **While there is no shortage of forward-looking educated guesses for return, standard deviation, and correlation assumptions, practitioners do not:**
 - Forecast the same asset classes.
 - Forecast the same time horizons.
 - Use the same tools and/or methodologies to develop their assumptions.

Source: Horizon Actuarial 2017 Survey of Capital Market Assumptions.



Asset Allocation and Investment Policy

- **Developing an investment strategy is based on four decisions:**
 - What asset classes should be considered for potential investment?
 - What strategic (long-term) weights should be assigned to each asset class?
 - What are the appropriate allocation ranges (+/-) around the strategic weight of each asset class?
 - What are the most appropriate managers/vehicles to implement and retain for each asset class?

- **While manager and investment vehicle selection is an important part of implementing and maintaining an investment strategy, approximately 90% of a portfolio's variability over time is determined by the first two investment strategy decisions.**



Long Term Asset Allocation Model Inputs

- The first two columns in the table on the preceding slide shows the long-term (10-15 year) expected return and risk (standard deviation) for each of the 13 asset classes that will be modeled in this analysis as well as a more general description for each asset class that will be modeled.
- The expected return of a blended asset mix can be determined by simply multiplying each asset class allocation by its expected return using the following formula:

$$E(R_p) = \sum_{i=1}^n w_i E(R_i)$$

- The same basic multiplication methodology cannot be used to calculate an asset mix's standard deviation (risk). In order to model a portfolio's risk, we have to take correlation into account.
- The remainder of the table shows the model's correlation matrix. This matrix represents the degree of co-movement between each pair of asset classes when they are combined together to construct portfolios. The correlation coefficient ranges from +1.00 to -1.00. As the table illustrates, the correlation between an asset class and itself is +1.00 or perfect co-movement. Taken one step further, combining different asset classes together, with less than perfect or even negative correlation, will increase a portfolio's level of diversification.
- The variance of a blended asset mix is determined by the following formula where ρ_{ij} is the correlation coefficient between the returns on assets i and j . The standard deviation is then calculated by taking the square root of this variance calculation.

$$\sigma_p^2 = \sum_{i=1}^n w_i^2 \sigma_i^2 + \sum_i \sum_{j \neq i} w_i w_j \sigma_i \sigma_j \rho_{ij}$$



Asset Class Historical Performance vs. Assumptions

Annualized as of 12/31/2017

----- Historical ----- Forecast -----

A/O 12/2017	5 Year	10 Year	15 Year	20 Year	LT Std. Dev.*	Return	Std. Dev.
US Cash	0.2%	0.3%	1.2%	2.0%	0.6%	2.00%	0.50%
US Aggregate	2.1%	4.0%	4.1%	5.0%	3.4%	3.32%	3.75%
US High Yield	5.8%	8.0%	9.0%	6.8%	9.2%	5.59%	8.50%
US Leveraged Loan	4.0%	4.9%	5.2%	4.9%	5.9%	5.28%	7.75%
WGB exUS	-0.3%	2.4%	4.1%	4.4%	8.2%	2.56%	8.00%
Emerging Mkts Bond	3.8%	6.4%	8.7%	7.8%	11.5%	5.70%	9.75%
US Large Cap	15.7%	8.6%	10.2%	7.4%	15.1%	6.41%	14.00%
US Mid Cap	15.0%	9.1%	12.1%	9.5%	16.8%	6.93%	16.00%
US Small Cap	14.1%	8.7%	11.2%	7.9%	19.8%	7.35%	18.75%
EAFE Equity	7.9%	1.9%	8.1%	5.2%	16.6%	7.61%	17.25%
Emerging Markets Equity	4.3%	1.7%	12.3%	NA	21.4%	10.04%	21.50%
Private Equity	14.4%	10.7%	11.3%	12.5%	21.0%	9.21%	21.00%
US Core RE	10.9%	6.9%	9.0%	9.8%	11.5%	5.79%	10.75%
US Val Add RE	13.9%	3.8%	NA	12.2%	15.0%	7.37%	13.75%
US REITs	9.8%	7.8%	11.1%	9.1%	21.0%	7.42%	16.00%
Infrastructure	9.2%	3.4%	11.4%	NA	14.6%	6.89%	11.75%
Hedge Funds – Diversified	4.2%	3.2%	6.0%	6.2%	6.2%	4.52%	7.50%
Commodities	-8.5%	-6.8%	-0.3%	0.8%	16.3%	5.06%	16.75%

*20 years or longest period available

	5 Year	10 Year	15 Year	20 Year
Current Mix	9.45%	6.44%	7.92%	6.70%

Return	Std. Dev.
5.28%	8.67%

All non-US returns are unhedged

Asset class allocations proxied for the current mix where historical data was not available.



Model Asset Allocation

Broad Asset Class Allocation (%)	Current	Mix 1	Mix 2	Mix 3	Mix 4
US Aggregate	42.00	37.00	32.00	30.00	27.00
US Large Cap	33.00	33.00	33.00	33.00	33.00
US Mid Cap	20.00	15.00	15.00	15.00	15.00
US Small Cap	0.00	5.00	5.00	5.00	5.00
EAFE Equity	5.00	10.00	15.00	17.00	20.00

Constraints
10-47
28-45
15-25
0-10
0-30

Single Year Expectations (%)	Current	Mix 1	Mix 2	Mix 3	Mix 4
Return	5.28	5.51	5.73	5.81	5.94
Standard Deviation	8.67	9.49	10.26	10.57	11.04
Sharpe Ratio	0.61	0.58	0.56	0.55	0.54
Best Case Return	20.83	22.90	24.76	25.45	26.51
Worst Case Return	-7.74	-8.73	-9.44	-9.73	-10.43
Negative Return Probability	28.00	29.37	30.70	30.90	31.53
Time Horizon Expectations (%)	Current	Mix 1	Mix 2	Mix 3	Mix 4
Return	4.94	5.11	5.25	5.31	5.38
Best Case Return	8.20	8.71	9.17	9.32	9.58
Worst Case Return	1.87	1.78	1.68	1.63	1.57
Negative Return Probability	0.67	0.87	0.97	1.00	1.10



Efficient Frontier

- **Restricted Efficient Frontier**

- The efficient frontier (EF) is a visual display of the mathematical optimization of mean/variance opportunities for a given set of asset class inputs.
- This red line represents the maximum level of return available for each level of standard deviation (risk). Stated another way, if a portfolio is being designed to target a specific, desired rate of return, the EF illustrates the risk that must be taken to achieve this objective.
- The restricted EF is limited by the constraints set on the individual asset classes and the various groups. Using the return, risk and correlation expectations for each asset classes in the model, the optimization software creates a set of portfolios that combine the various asset classes to create mathematically efficient portfolios (mean/variance optimized). As a result of this optimization, a portfolio cannot be created that plots above the EF.
- The restricted EF only includes the asset classes input into the model for this study.

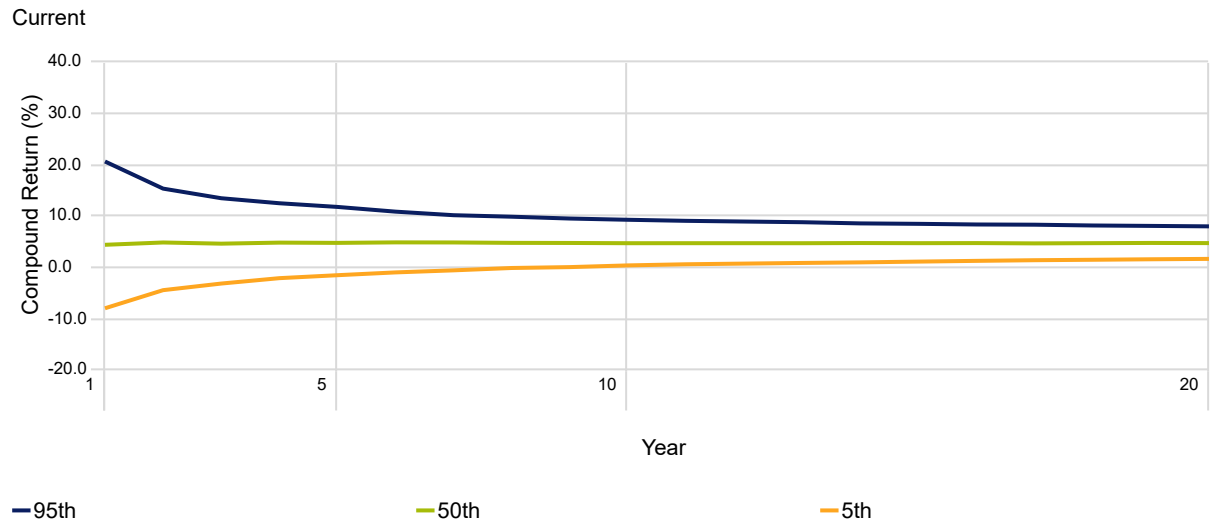


Current Mix – Return, Risk & Probability Forecasts

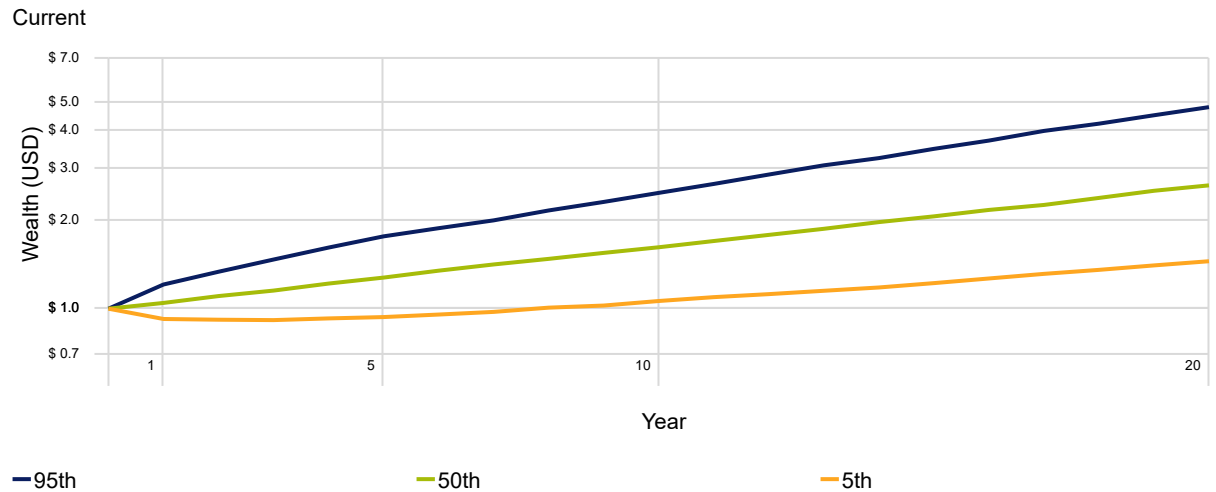
Broad Asset Class Allocation (%)	Current
US Aggregate	42.00
US Large Cap	33.00
US Mid Cap	20.00
US Small Cap	0.00
EAFE Equity	5.00

Single Year Expectations (%)	Current
Return	5.28
Standard Deviation	8.67
Sharpe Ratio	0.61
Best Case Return	20.83
Worst Case Return	-7.74
Negative Return Probability	28.00
Time Horizon Expectations (%)	Current
Return	4.94
Best Case Return	8.20
Worst Case Return	1.87
Negative Return Probability	0.67

Return Percentiles



Forecasted Growth of \$1



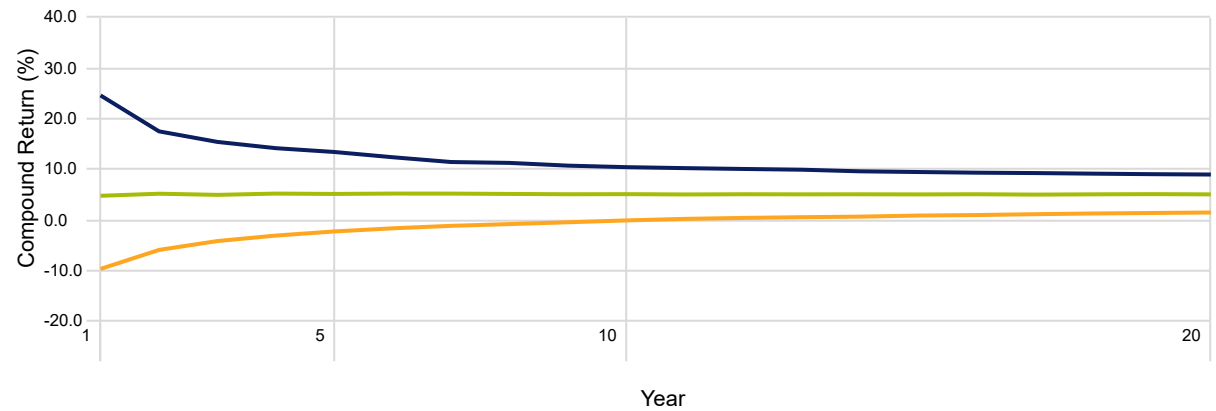
Mix 2 – Return, Risk & Probability Forecasts

Broad Asset Class Allocation (%)	Mix 2
US Aggregate	32.00
US Large Cap	33.00
US Mid Cap	15.00
US Small Cap	5.00
EAFE Equity	15.00

Single Year Expectations (%)	Mix 2
Return	5.73
Standard Deviation	10.26
Sharpe Ratio	0.56
Best Case Return	24.76
Worst Case Return	-9.44
Negative Return Probability	30.70
Time Horizon Expectations (%)	Mix 2
Return	5.25
Best Case Return	9.17
Worst Case Return	1.68
Negative Return Probability	0.97

Return Percentiles

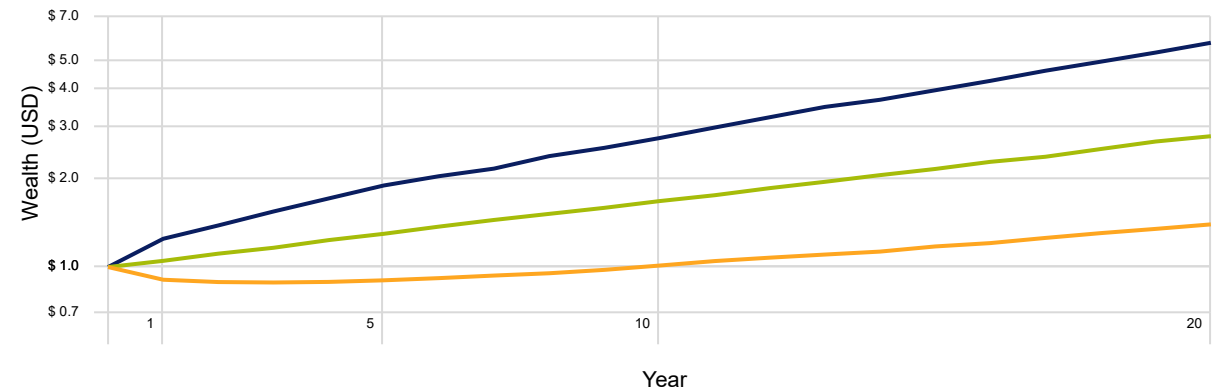
Mix 2



— 95th — 50th — 5th

Forecasted Growth of \$1

Mix 2



— 95th — 50th — 5th

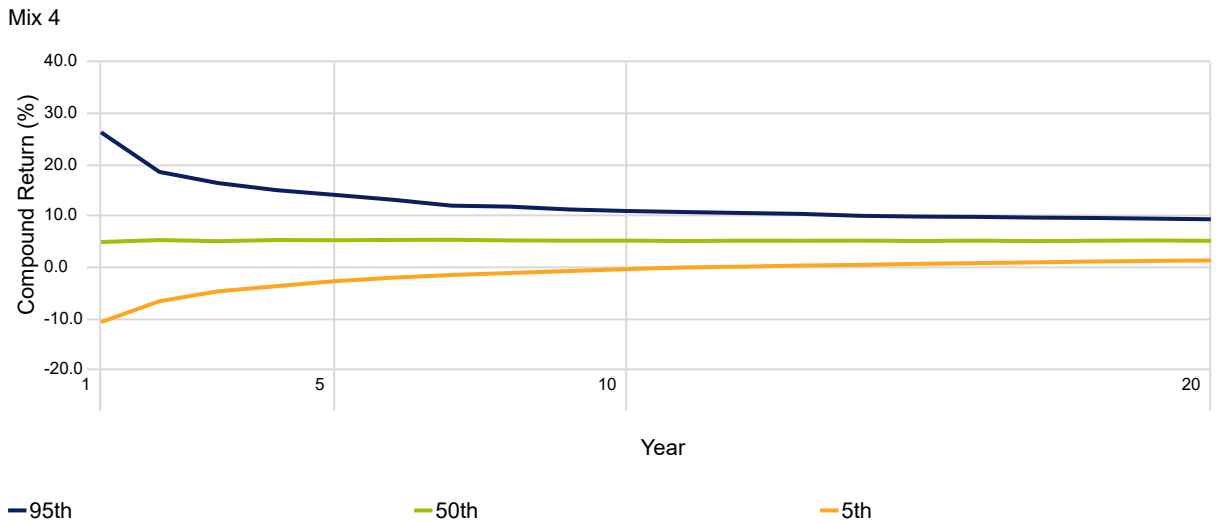


Mix 4 – Return, Risk & Probability Forecasts

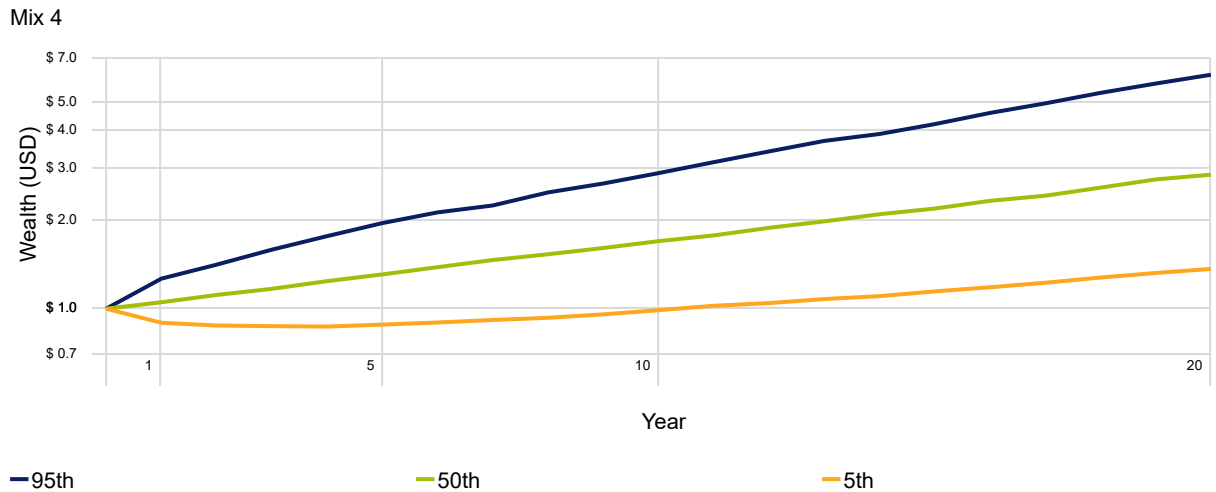
Broad Asset Class Allocation (%)	Mix 4
US Aggregate	27.00
US Large Cap	33.00
US Mid Cap	15.00
US Small Cap	5.00
EAFE Equity	20.00

Single Year Expectations (%)	Mix 4
Return	5.94
Standard Deviation	11.04
Sharpe Ratio	0.54
Best Case Return	26.51
Worst Case Return	-10.43
Negative Return Probability	31.53
Time Horizon Expectations (%)	Mix 4
Return	5.38
Best Case Return	9.58
Worst Case Return	1.57
Negative Return Probability	1.10

Return Percentiles



Forecasted Growth of \$1



Introduction To Asset Allocation Modeling

Mean/variance optimization using forecast capital market assumptions

Model Input	Description
Expected Return	The arithmetic average expected return (mean) of each asset class.
Expected Risk	The variability of each asset class around its mean return. The statistical measure known as standard deviation.
Correlation	The degree of co-movement of each asset class relative to all other asset classes. The statistical measure known as a correlation coefficient.

- **Understanding asset allocation model limitations:**

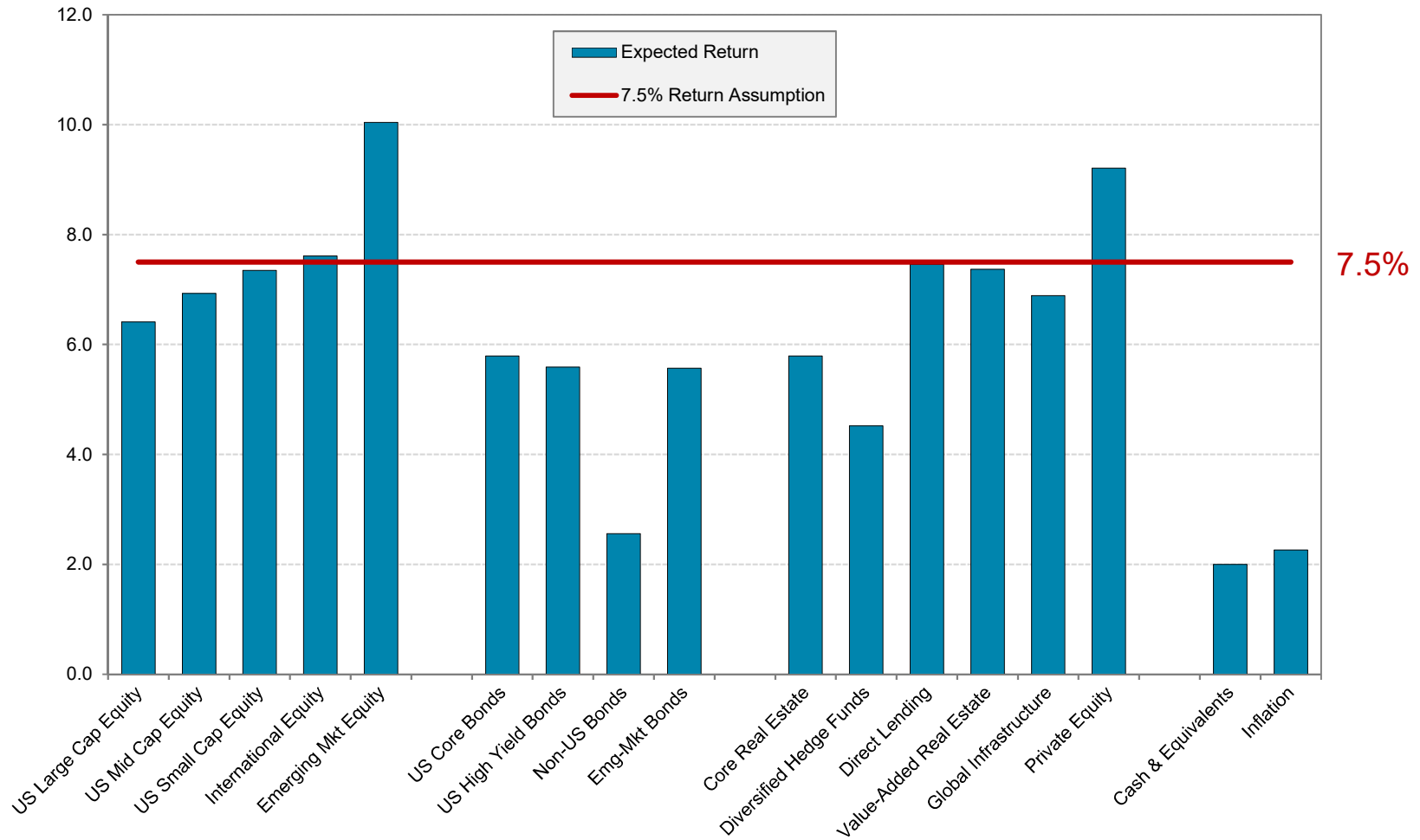
- Output is based on forecasts (guesses) of each capital market assumption. Accurately predicting the expected return, expected risk (standard deviation), and correlation coefficients for each asset class is not a science, it's an economic methodology that varies by organization and forecast timeframe.
- Assumes asset class returns are normally distributed (bell-shape curve). However, many asset classes exhibit non-normal (kurtosis - fat-tails and/or skewness) return distributions.
- Assumes correlations between asset class pairs are static. However, since correlation coefficients can and do change over time, diversification and/or stability benefits of combining different asset classes may be overstated. Even historically stable correlation relationships may break down during periods of market stress.
- Alternative asset classes introduce a variety of important risk factors that are not captured in their standard deviation measures.

- **Despite its shortcomings, asset allocation modeling provides a foundational framework for making sound portfolio decisions.**



A Closer Look at Expected Returns

10-15 Year Expected Returns Relative to a 7.5% Return Assumption

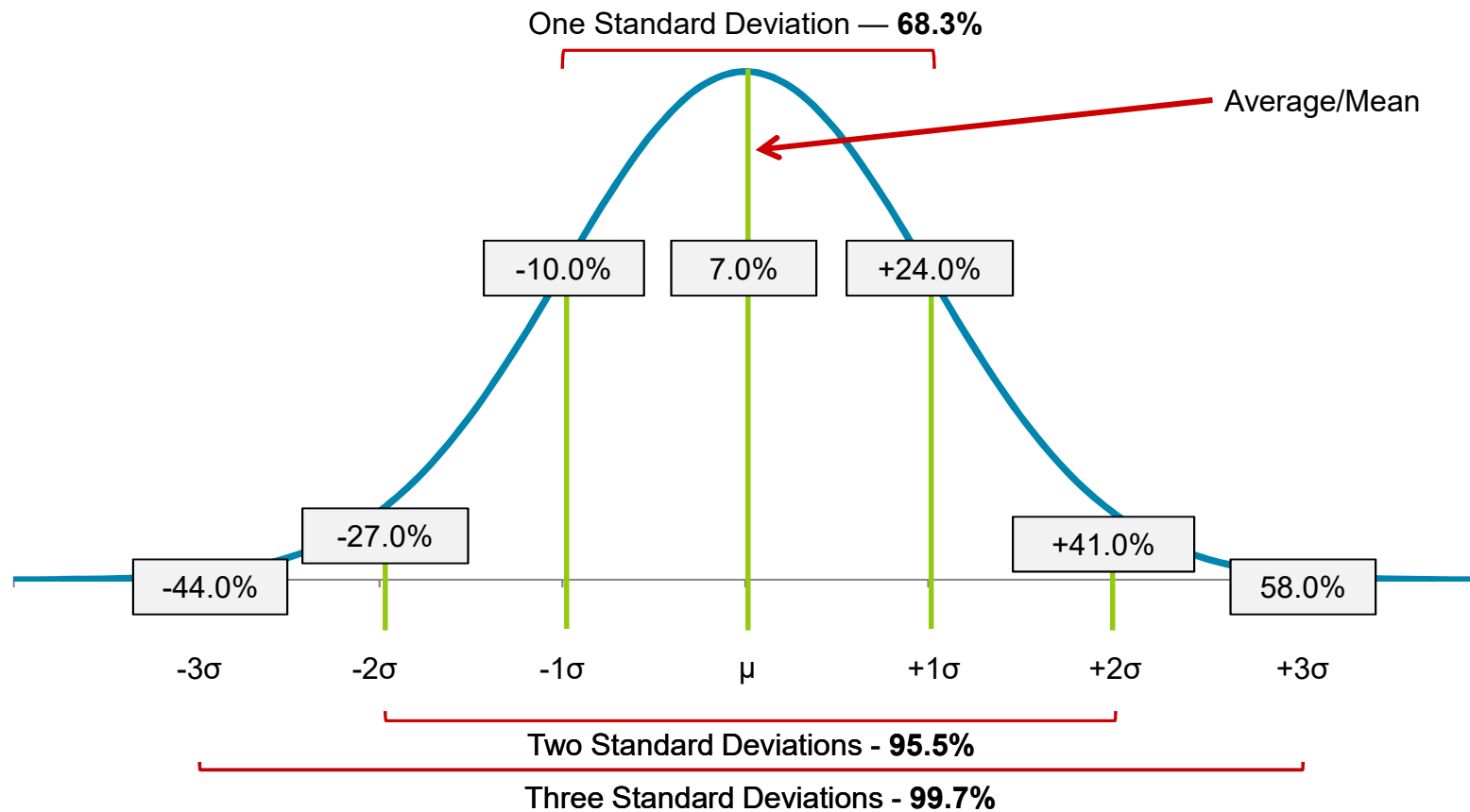


A Closer Look at Investment Risk as Defined by Math

Risk = Variability Around Mean = Standard Deviation

Variability of return around its arithmetic average

Large Cap Equity Average Expected Return of 7.0% with a Standard Deviation of 17.0%



Other Investment Risks Not Captured by Standard Deviation

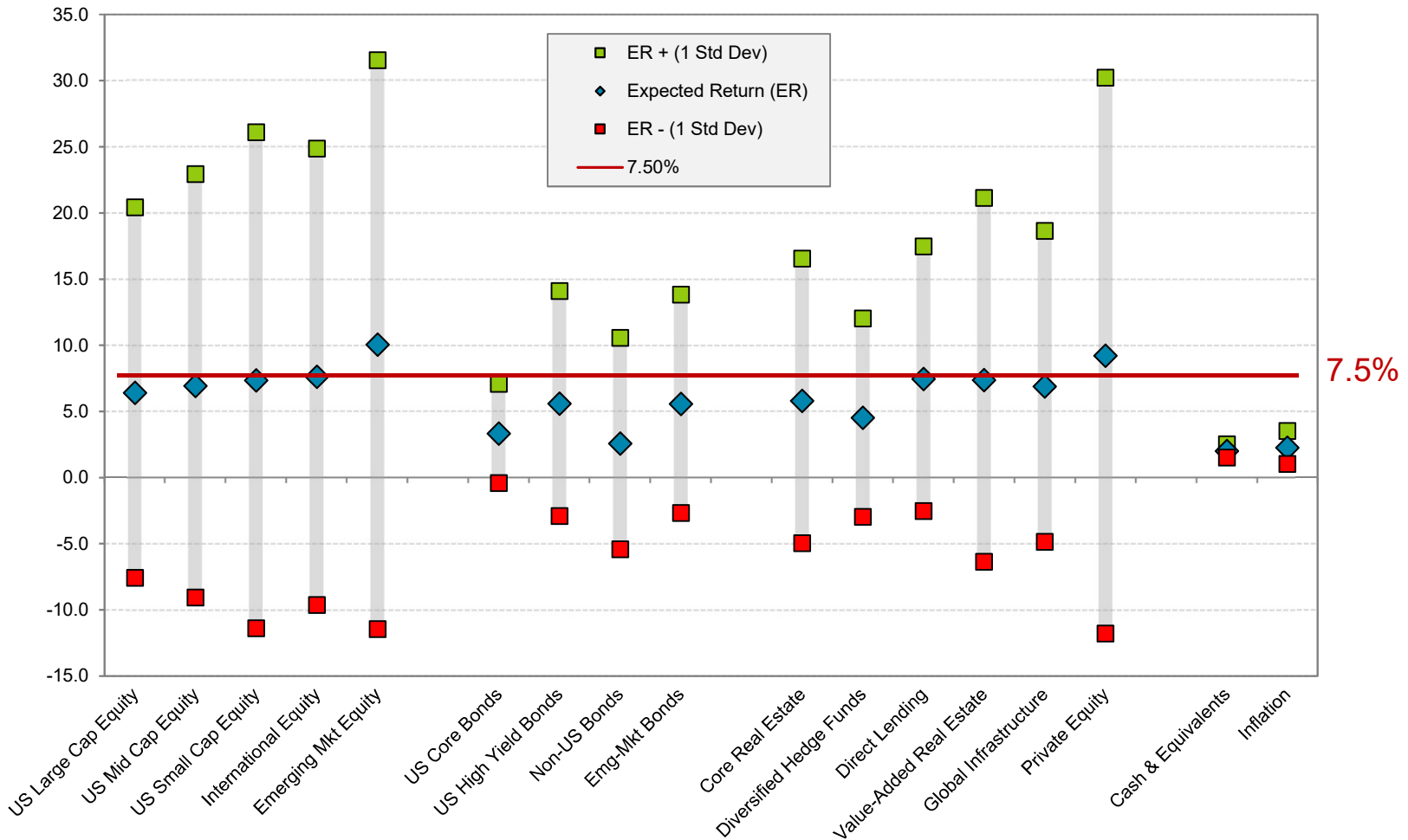
Beyond Variability – Other Risks Are Always Present

<p>Interest Rate: Bonds decline in value when rates rise</p>	<p>Social/political/legislative: Investment landscape changes</p>
<p>Business: Underlying operational volatility/uncertainty</p>	<p>Currency/Exchange Rate: Change in price of one currency against another</p>
<p>Credit: Bond issuer defaults on interest/principal payment</p>	<p>Leverage: Amplifies losses</p>
<p>Call: Debt security called prior to maturity</p>	<p>Fiduciary: Potential non-arm's length transactions</p>
<p>Inflationary: Value of security eroded by inflation</p>	<p>Valuation: Some assets are difficult to price</p>
<p>Liquidity: Lock-up terms or gates during market stress</p>	<p>Headline: Manager makes the headlines or negative press</p>
<p>Systemic/market: Correlations go to "1" (like 2008)</p>	<p>Blow-up: Manager/strategy blows up</p>



Blending the Return & Risk in a Single View

Expected Returns & Risk (Std Dev) Relative to a 7.5% Return Assumption

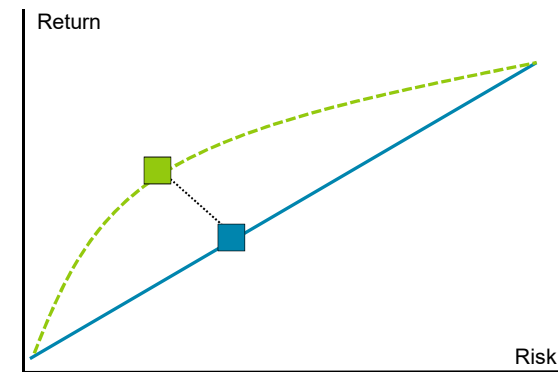


Understanding How Correlation Fits into the Process

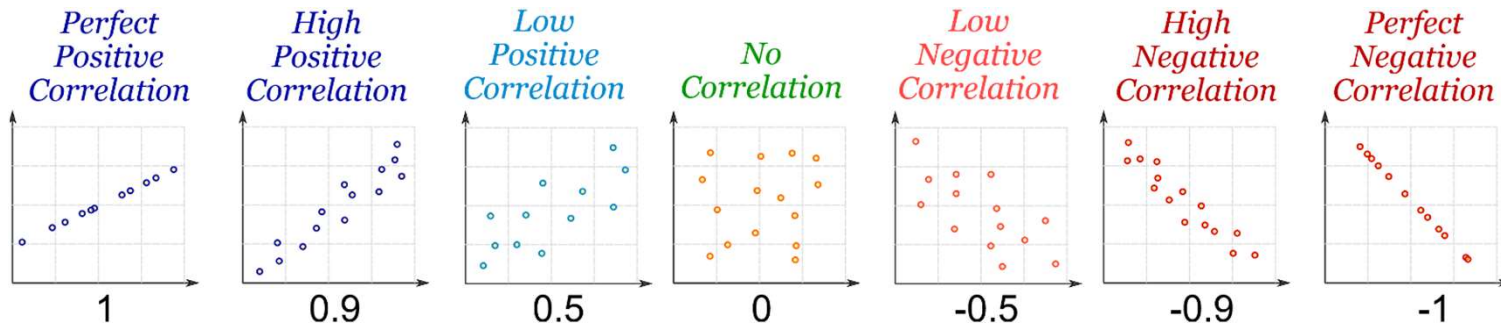
Understanding Correlations

Where the magic happens: How asset class pairs move relative to one another

- A statistical measure of co-movement with a range between +1 and -1.
 - **+1** = Perfect positive correlation. Assets move in tandem in the same direction.
 - **0** = No correlation. Assets move independently of one another – essentially no distinguishable pattern, more random.
 - **-1** = Perfect negative correlation. Assets move in opposite directions – one goes up the other goes down and vice versa.
- It is important to remember that correlations are not constant through time.

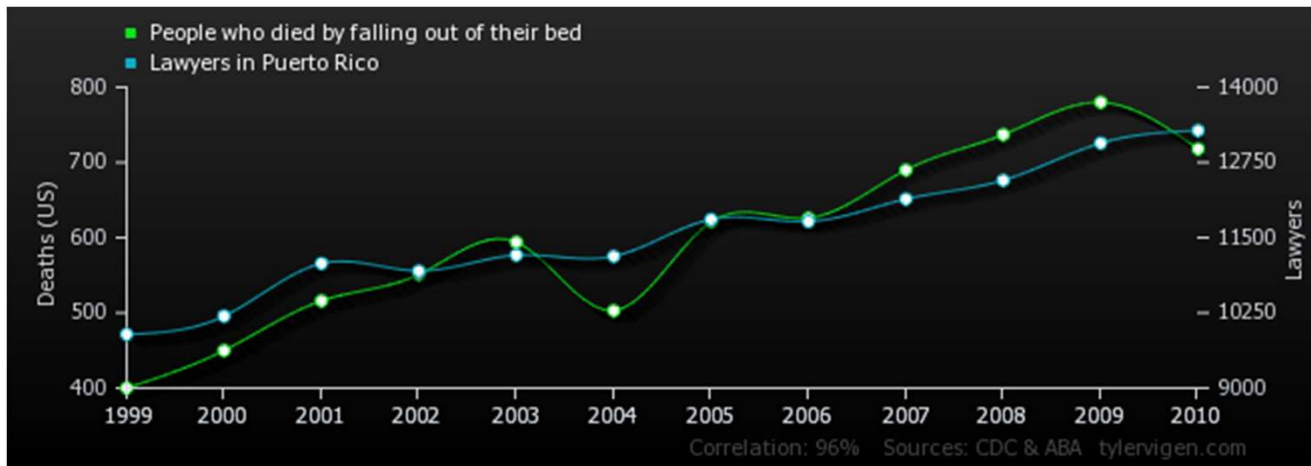


$$\sigma_p^2 = \sum_i w_i^2 \sigma_i^2 + \sum_i \sum_{j \neq i} w_i w_j \sigma_i \sigma_j \rho_{ij}$$

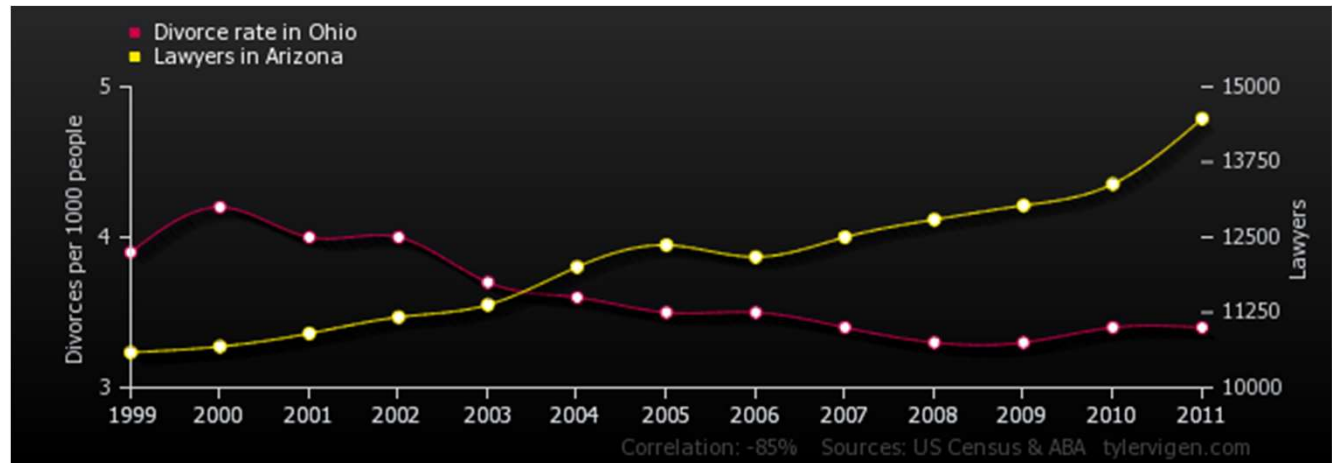


Is it Really Magic? Beware of Spurious Correlation

Don't Believe Everything You See



Correlation = 0.9571
96%



Correlation = -0.8547
85%

Correlation does not necessarily equal causation



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