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*ALASKA RETIREMENT MANAGEMENT BOARD*

BOARD OF TRUSTEES MEETING

December 8-9, 2016

Dena'Ina Convention Center  
K'enakatnu Room  
600 W. 7<sup>th</sup> Avenue  
Anchorage, AK  
907 263-2850

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*Thursday, December 8, 2016*

- I. 9:00 am Call to Order
- II. Roll Call
- III. Public Meeting Notice
- IV. Approval of Agenda
- V. Public/Member Participation, Communications, and Appearances  
(Three Minute Limit)
- VI. Approval of Minutes - September 29-30, 2016
- VII. Election of Officers
- VIII. 9:15 Reports
  - 1. Chair Report, *Gail Schubert*
  - 2. Committee Reports
    - A. Audit Committee, *Rob Johnson, Chair*
    - B. Actuarial Committee, *Kris Erchinger, Chair*
    - C. Defined Contribution Plan Committee,  
*Bob Williams, Chair*
  - 3. Retirement & Benefits Division Report
    - A. Membership Statistics (informational)
    - B. Buck Consulting Invoices (informational)  
*Kevin Worley, CFO, Division of Retirement & Benefits*
  - 4. Treasury Division Report  
*Pamela Leary, Treasury Division Director*
  - 5. CIO Report, *Gary Bader, Chief Investment Officer*
  - 10:00-10:20 6. Fund Financial Presentation and Cash Flow Update  
*Scott Jones, Comptroller, Department of Revenue*  
*Kevin Worley, CFO, Division of Retirement & Benefits*

*10:20 - Break  
10 Minutes*

10:30-11:10 7. Private Equity Review  
*Gary Robertson, Callan Associates Inc.*

11:15-11:45 8. KPMG - Audit Report  
*Daniel Mitchell and Melissa Beedle, KPMG*

*Lunch - 11:45 - 1:15 pm*

*Thursday Afternoon*

1:15-2:15 9. Performance Measurement - 3<sup>rd</sup> Quarter  
*Paul Erlendson and Steve Center, Callan Associates, Inc.*

2:20-2:50 10. Fidelity Institutional Asset Management  
*Kristin Shofner and Beau Coash*

*2:50 - Break  
10 Minutes*

3:00-3:30 11. Allianz Global - large cap  
*Melody McDonald and Ray Edelman*

3:35-3:55 12. Investment Actions  
a. Manager Search - Small Cap Growth  
b. Scientific Beta International Mandate

End of Meeting Day

*Friday, December 9, 2016*

- 9:00 Call to Order
- 9:00-9:30 14. T Rowe Price - Small Cap Equity Portfolio  
*John Plowright, Michele Ward and Frank Alonzo*
- 9:35-10:05 15. McKinley Capital Management - Non-US Equity  
*Alex Slivka and Rob Gillam*

*10:05 - Break  
10 Minutes*

- 10:15-10:45 16. Lazard Asset Management - Emerging Market Equity  
*Tony Dote and James Donald*

- IX. Unfinished Business
1. Calendar, *Judy Hall, Liaison Officer*
  2. Disclosure Report, *Judy Hall, Liaison Officer*
  3. Legal Report, *Stuart Goering, Department of Law*
- X. Action Items - New Business
- XI. Other Matters to Properly Come Before the Board
- XII. Public/Member Comments
- XIII. Investment Advisory Council Comments
- XIV. Trustee Comments
- XV. Future Agenda Items
- XVI. Adjournment

(Times are approximate. Every attempt will be made to stay on schedule; however, adjustments may be made.)

**State of Alaska**  
**ALASKA RETIREMENT MANAGEMENT BOARD**  
**MEETING**

**Location:**  
Dena'Ina Convention Center  
600 West Seventh Avenue  
Anchorage, Alaska

**MINUTES OF**  
**September 29-30, 2016**

**Thursday, September 29, 2016**

**CALL TO ORDER**

VICE-CHAIR ROBERT JOHNSON called the meeting of the Alaska Retirement Management Board (ARMB) to order at 9:03 a.m.

**ROLL CALL**

Eight ARMB trustees were present at roll call to form a quorum.

**Board Members Present**

Robert Johnson, *Vice Chair*  
Gayle Harbo, *Secretary*  
Kristin Erchinger  
Commissioner Sheldon Fisher  
Commissioner Randy Hoffbeck  
Tom Brice  
Norman West  
Bob Williams

**Investment Advisory Council Members Present**

Dr. William Jennings  
Dr. Jerrold Mitchell  
Robert Shaw

**Department of Revenue Staff Present**

Gary M. Bader, Chief Investment Officer  
Bob Mitchell, Deputy Chief Investment Officer  
Scott Jones, State Comptroller  
Jerry Burnett, Deputy Commissioner, Department of Revenue  
Pamela Leary, Director, Treasury Division  
Steve Sikes, State Investment Officer  
Nicholas Orr, State Investment Officer

Judy Hall, Board Liaison

**Department of Administration Staff Present**

Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits (DRB)

Kathy Lea, Chief Pension Officer, DRB

John Boucher, Deputy Commissioner, Office of Management & Budget

**Consultants, Invited Participants, and Others Present**

David Corris, BMO

Kamila Kowalke, BMO

Tom Letternberger, BMO

Steven Center, Callan Associates, Inc.

Paul Erlendson, Callan Associates, Inc.

Lori Lucas, Callan Associates, Inc.

James Veneruso, Callan Associates, Inc.

Stuart Goering, Department of Law, Assistant Attorney General

T.J. Duncan, Frontier Capital Management

Nick Johnston, Lord Abbett, LLC

Chris Cunningham, Townsend Group

Jack Koch, Townsend Group

**PUBLIC MEETING NOTICE**

JUDY HALL, Board Liaison, confirmed that public meeting notice requirements had been met.

**APPROVAL OF AGENDA**

MRS. HARBO moved to approve the agenda. MS. ERCHINGER seconded the motion.

The agenda was approved.

**PUBLIC/MEMBER PARTICIPATION, COMMUNICATIONS, AND APPEARANCES**

Vice-Chair Johnson welcomed the newest Trustee, Norman West.

**APPROVAL OF MINUTES: June 24, 2016**

MRS. HARBO moved to approve the minutes of the June 24, 2016 meeting. MR. BRICE seconded the motion.

The minutes were approved.

**REPORTS**

**1. CHAIR REPORT**

VICE-CHAIR JOHNSON noted CHAIR SCHUBERT will attend the meeting on September 30th.

## **2. COMMITTEE REPORTS**

### **A. Actuarial Committee**

MS. ERCHINGER reported the Actuarial Committee met the day before the Board meeting and the focus was primarily on the review of the FY 2018 contribution rates, which is in the packet for approval later in today's meeting. Buck Consultants provided an update on the healthcare cost trend and a presentation was made regarding the extent proxy data may be impacting the persistent health gains. Discussions occurred on rehire assumptions, as well as audit findings and the valuation timeline for preparing the next valuation.

MS. ERCHINGER stated the Actuarial Committee requested GRS to develop an Actuarial Committee manual outlining funding policies and memorializing processes that would help guide the decisions of the Actuarial Committee each year. GRS presented an overview of their recommendations and an action item for approval will come before the Board later in today's meeting.

### **B. Audit Committee**

VICE-CHAIR JOHNSON reported the Audit Committee met the day before the Board meeting and productive discussions occurred with KPMB and KEVIN WORLEY, Chief Financial Officer, DRB, regarding the anticipated clean audited financial statement, to be delivered at the November 3rd Committee meeting. Other topics of discussion included concerns and mitigations against cyber attacks and reporting pursuant to GASB 68.

### **C. Budget Committee**

MRS. HARBO reported the Budget Committee met the day before the Board meeting and reviewed the FY16 actuals, the current FY17 projected budget, and the FY18 proposed budget, which will come before the Board for approval later in today's meeting. MR. WEST is a new member of the Committee. MRS. HARBO stated CHAIR SCHUBERT joined yesterday's Committee meeting by teleconference.

### **D. Defined Contribution Committee**

MR. WILLIAMS reported the Defined Contribution Committee met and heard presentations by KATHY LEA, Chief Pension Officer, regarding Empower's new features, and by GARY BADER, Chief Investment Officer, regarding the differences and challenges between defined contribution and defined benefits. MR. WILLIAMS indicated T.Rowe Price, Prudential, and Met Life each gave presentations on how to better meet the needs of the DC plan members by offering options like a lifetime fixed income amount in retirement, guaranteed income flow, or QLAC, respectively.

### **3. RETIREMENT & BENEFITS DIVISION REPORT**

#### **A. Membership Statistics**

MR. WORLEY reviewed the Retirement System Membership Activity Report for FY16. The continued decrease in the number of defined benefit members and increase in defined contribution members is expected. Approximately 2,100 retirement applications were processed in FY16 and two retirement applications were processed in the DC plan.

#### **B. Buck Consulting Invoices**

MR. WORLEY reported on the Buck Consultants invoices for each quarter of the fiscal year at the request of the Board. There were no out-of-the-ordinary services provided during the year.

### **4. TREASURY DIVISION REPORT**

#### **A. Pension Obligations Bond Update**

Deputy Commissioner of Revenue JERRY BURNETT gave members a copy of the Senate Finance Committee presentation that will be delivered today. He addressed particular concerns and answered questions regarding the complexities of pension obligation bonds (POBs). The POBs will be issued with a fixed rate debt. The unfunded liability of the pension system is listed in the same place in the Comprehensive Annual Financial Report (CAFR) as long-term State debt. The current amortization at 23 years will remain the same, but payments may be reduced in later years. The credit ratings for the POB are expected to come in this week at AA, AA, and AA3.

DEPUTY COMMISSIONER BURNETT explained the preliminary offering statement (POS) has an initial structure of \$2.3 billion. The Teachers' Retirement System (TRS) could receive a \$981 million deposit, bringing it to a 90% funding level, and Public Employees' Retirement System (PERS) would receive the remaining amount. The maximum structured size is \$3.3 billion. TRS would receive a \$981 million deposit and PERS could receive up to a \$2.25 billion deposit, bringing it to a 90% funding level. The expected savings to the State is significant over time with a net present value basis of 50%.

DEPUTY COMMISSIONER BURNETT advised the POBs do not add additional risk to the trusts because the trusts are receiving the funds in replacement of the State's on-behalf payments. The POBs do not add additional risk to the State because the State has to pay the on-behalf payment under the statute. The State would continue to operate the same as it does now with no intent of legislative changes.



DEPUTY COMMISSIONER BURNETT reviewed the aggressive financing schedule to take advantage of current interest rate trends. Because of the size and opportunity of the sale, marketing to new investors in Asia, Europe, and the United States will occur in October. Negotiations for pricing and closing will be completed by October 31, 2016. The Pension Obligation Bond Corporation has delegated the authority for the sale, subject to terms, to the Department of Revenue. Senior managers and co-managers include Citibank, Goldman Sachs, Bank of America, Merrill Lynch, RBC, JP Morgan, Key Bank, and Jefferies.

JOHN BOUCHER, Deputy Commissioner, Office of Management & Budget, requested additional information on the timing of the deposits into the funds. DEPUTY COMMISSIONER BURNETT explained the entire balance of the funds will be transferred directly to the retirement trusts on closing and the Board will decide on the investment allocations.

### **B. FY 18 Budget - Action**

Treasury Division Director PAMELA LEARY directed the Board's attention to the FY18 proposed ARMB budget. MS. LEARY recommended the Board adopt the fiscal year 2018 proposed budget, with the understanding that components will be subject to appropriation by the Office of Management and Budget (OMB) and the Legislature.

MRS. HARBO, as Chair of the Budget Committee, moved to adopt Resolution 2016-02. No second necessary.

A roll call vote was taken, and the motion passed unanimously.

MS. LEARY provided an update on the draft report produced by KPMG relating to the cost savings of the potential consolidation of the investment responsibilities for assets in the Treasury and the Alaska Permanent Fund Corporation. KPMG was requested to review the cost savings of three options; 1) transferring the Permanent Fund Corporation assets to the Treasury for management purposes, 2) transferring the Treasury assets to the Permanent Fund Corporation for management purposes, and 3) transferring the management of the constitutional budget reserve to the Permanent Fund Corporation. The report was purely cost-related and did not consider performance returns.

MS. LEARY reviewed the results of the draft reports showing there is no cost savings for Option 3. The small cost savings on both Option 1 and Option 2 ranged from zero cost savings up to 1.5 basis points of the total assets under management for the two organizations. MS. LEARY informed the staff of both organizations will meet with KPMG next week addressing specific assumptions at issue in the draft report. Staff of both organizations will submit response letters addressing areas that were not included in the draft report, such as the impact of consolidation, policy matters, performance metrics, and diversification. MS. LEARY indicated the final report is due to the Legislature in mid-October, and believes the Board will receive a copy of the preliminary report after the corrections are made. MS. LEARY welcomed engagement from Board members on concerns and issues to be included in staff's response letter.

COMMISSIONER FISHER commented on the sequencing difficulty in providing feedback when the report has not been released to Board members. He believes it is worthwhile to continue to review other options that may make sense, in terms of meaningful upgrades to systems, data warehouse, data management, and the possibility of combining back office functions that would be an intelligent way to operate the two organizations.

COMMISSIONER HOFFBECK noted the Board put forth a resolution at the last meeting in opposition to the consolidation. COMMISSIONER HOFFBECK stated he met with DIRECTOR RODELL regarding the report and several staff members are tasked to review the report. COMMISSIONER HOFFBECK feels the cost savings generated in the report are not compelling enough to consolidate. This was a good exercise to undergo during these tight budget times.

VICE-CHAIR JOHNSON stated the Board adopted a resolution at the last meeting in opposition to the statement of intent that formed the basis for the analysis. The resolution was delivered to the Permanent Fund Corporation and to legislators. It requested the Board specifically be involved as a resource if the issue moves forward.

COMMISSIONER HOFFBECK believes there is benefit to the Board providing feedback regarding the report. The hope was the report would have been available at this time, but there were enough issues associated with some of the assumptions and analysis that it is not ready for release. COMMISSIONER HOFFBECK suggested the Board address this issue again at the December meeting after the report is transmitted to the Senate Finance Committee and they have provided a response.

## **5. CIO REPORT**

MR. BADER reported he met with members of Department of Administration and Department of Revenue to discuss best practices regarding DC plans and developing processes for the Board going forward. Department of Revenue has agreed to create a document to be reviewed and modified by Department of Administration regarding the DC best practices and processes. COMMISSIONER FISHER believes clarifying roles and responsibilities will allow accelerated progress.

MR. BADER reviewed the CIO Report provided to the Board. He clarified Item 1. should read "Rebalanced defined contribution and defined benefit plans," and included various transactions on the dates listed in the report. Copies of the specific documents are available for the Board's review. MR. BADER discussed each of the 15 transaction items provided in the CIO Report.

MR. BADER noted Wells Fargo is acquiring Analytic Investors and staff has approved the assignment of the contract to Wells Fargo. MR. BADER asked for a motion to approve the assignment.

VICE-CHAIR JOHNSON asked MR. GOERING for his advice. MR. GOERING indicated he has not had an opportunity to formally review the document. VICE-CHAIR JOHNSON requested action on this item be postponed until later in the meeting, giving MR. GOERING the opportunity to fully review the assignment. It was agreed action would be postponed.

MR. BADER requested the Board place GAM on the watch list. He noted the resignation of the CIO and terminations over the years that have changed since the original investment. MR. BADER indicated staff will return in December with a further recommendation related to GAM.

MRS. HARBO moved to place GAM on the watch list. MR. WILLIAMS seconded the motion.

A roll call vote was taken, and the motion passed unanimously.

## **6. FUND FINANCIAL REPORT**

State Comptroller SCOTT JONES and Chief Financial Officer of the Division of Retirement and Benefits KEVIN WORLEY presented the Fund Financial Report. MR. JONES reviewed the financial statements for the year-to-date ending August 31st, 2016. The approximate numbers are: the PERS system ended with \$16.5 billion, the TRS system with \$8.1 billion, the JRS with \$181 million, the National Guard and Naval Militia (NGNMRS) with \$36.5 million, SBS with \$3.5 billion, and Deferred Comp with \$829 million, for a total of \$29.1 billion, of which \$23.8 billion is non-participant directed assets and \$5.3 billion is participant-directed assets. This is a year-to-date increase of about 3% and was largely due to investment income. All of the funds are close to targets and within the asset allocation bands. MR. JONES noted the month has been fairly flat through September 23rd.

MR. WORLEY indicated, as requested by the Board, notes for the supplement to the Treasury Report were added and provide answers to questions typically asked at Board meetings. MR. WORLEY informed the Legislature appropriated funding for PERS, TRS, NGNMRS, and others. Funding in the amount of \$99.2 million was received for PERS. Funding in the amount of \$116.7 million was received for TRS. The funding transfer for NGNMRS is expected this month. Funding in the amount of \$5.4 million was received for past service cost for the JRS. No prescription rebates were received.

## **7. FRONTIER CAPITAL MANAGEMENT**

MR. BADER introduced THOMAS DUNCAN, Senior Vice-President and Co-Portfolio Manager, from Boston-based Frontier Capital Management. MR. DUNCAN informed the 30-year-old company has approximately \$13.3 billion assets under management. MR. DUNCAN provided an overview of the firm's organizational structure and noted the investment team is made up of nine portfolio managers, 11 analysts, and two traders. MR. DUNCAN and his Co-Portfolio Manager WILLIAM TEICHNER started the Small Cap Value portfolio in 1999.

MR. DUNCAN continued his presentation discussing the firm's fundamental investment process and philosophy which focuses on good companies that are temporarily trading below their historical valuation and that contain unrecognized earnings power. MR. DUNCAN gave two examples of companies owned in the portfolio to illustrate the buying process and the selling process for the portfolio. MR. DUNCAN reviewed the performance of the portfolio and informed individual stock picking drives performance. No company gets above a 3% weighted position in the portfolio. The allocation for cash varies because of the time it can take to both get in and get out of a position. The attempt is to have approximately 3% cash in the portfolio.

DR. MITCHELL requested additional information as to the financial services businesses which comprise eight out of the 10 largest holdings. MR. DUNCAN provided specific background stories on the top three companies. He noted the index has a large weighting in financial services and the portfolio has been reducing its bank exposure because the companies are getting expensive. MR. SHAW requested an opinion on the impact of Wells Fargo's issues to the small cap area. MR. DUNCAN noted the importance of proper oversight and review of operations for smaller banks. He cited recent discussions with the CFO of First Horizon National regarding these serious issues and their status on reviewing operations.

MR. DUNCAN continued his presentation and answered questions from the Board. MR. DUNCAN explained the initial investment into a company is typically around a half a percent and the position is built over time as the managers get to know the company and the models are designed. Part of the due diligence before an investment is made is reviewing the proxy, the directors, the CEO, and the board. Frontier is a passive investor and does not actively push at the management team.

VICE-CHAIR JOHNSON recessed the meeting from 10:45 a.m. to 10:56 a.m.

MR. BADER requested MR. GOERING report on the assignment to Wells Fargo discussed earlier in the meeting. MR. GOERING indicated he had the opportunity to review the request for assignment and the underlying investment management agreement with Analytic. MR. GOERING stated there is no legal objection to the assignment as proposed. MR. GOERING recommended the contract be amended to have Wells Fargo explicitly sign onto the obligations contained in the agreement to avoid the record-keeping issue of the contract that reads Analytic as the counter party, when in actual practice, Wells Fargo is the counter party. This amendment does not have to take place at the time of assignment.

MRS. HARBO moved to approve the assignment of contract with Analytic Investors, LLC to Wells Fargo Asset Management. Ms. Erchinger seconded.

COMMISSIONER FISHER asked MR. BADER if he is comfortable with the underlying management changes. MR. BADER informed discussions occurred with the firm and no changes will be made to the operations or management in the short to intermediate-term.

A roll call vote was taken, and the motion passed unanimously.

## 8. LORD ABBETT, LLC

MR. BADER welcomed NICK JOHNSTON, Director, Institutional Investor Services, and THOMAS O'HALLORAN, Partner and Portfolio Manager, from Lord Abnett & Co., who manages a small cap fund and a microcap fund for the ARMB. MR. JOHNSTON expressed his appreciation for 11 years in partnership with the ARM Board. MR. JOHNSTON provided an overview of Lord Abnett's investment-led, investor-focused philosophy and noted its singular investment management focus since 1929. Lord Abnett is a privately held firm with 56 partners and approximately \$130 billion in assets under management. MR. JOHNSTON reviewed the updates on the organizational structure. The investment professionals have grown from 105 in 2010, to 148 in 2016.

MR. O'HALLORAN joined Lord Abnett in 2001, and has been in the financial services business for almost 30 years. He continued the presentation discussing Lord Abnett's rigorous fundamental research process supported through technical analysis, risk management, diversified portfolio, and a good selling discipline. MR. O'HALLORAN described the four attributes of great companies include a very good business model, great managers, healthy industry, and the first or second leader in market-share.

MR. O'HALLORAN reported the microcap strategy has had a 32% cumulative outperformance since 2011. He stressed it is important for a strategy to make more when they are right than they lose when they are wrong. MR. O'HALLORAN gave specific examples of how the portfolio benefitted from timing and selection.

MR. O'HALLORAN directed the Board's attention to the small cap portfolio, which shows a painful one-year return. He explained the timing for small cap was really good in 2013, but this portfolio was created late in 2013, and did not receive the benefits of that period. Since then, there has been the reversion effect, quantitative easing ended, and China stumbled. All of this created horrible performance for high-growth names. MR. O'HALLORAN believes those factors contributed 3/4 of the under-performance and other issues were with execution and holding large positions longer than optimal. MR. O'HALLORAN stated staff is working hard to strengthen fundamental research and technical analysis.

DR. MITCHELL commented on the cyclicity of performance within the small cap growth strategy over the years and asked if small cap growth should be part of the traded portfolio rather than a long-term investment. MR. O'HALLORAN believes tactical rebalancing is appropriate from an asset allocation standpoint, in terms of reallocating assets away from small cap growth after a big year. MR. O'HALLORAN does not believe it is beneficial to allocate funds away after the recent brutal period. He believes the portfolio is positioned to do quite well going forward, even within the anticipated low-growth in the developed world and low interest rates. MR. O'HALLORAN noted 300 basis points of the underperformance has been regained since the middle of May.

MR. BADER requested more information on stock selection in the healthcare and biotech sectors. MR. O'HALLORAN explained the four business elements to look for include trials showing drug efficacy, safety and side effects, market opportunity, and the quality of

management. Phase II trials typically provide an appropriate gauge as to the potential of the drug. Lord Abbett sends analysts to dozens of investment conferences every year involving healthcare and biotech.

MR. WILLIAMS asked for more discussion regarding the rationale and underlying causes of the big swings in small cap growth performance. MR. O'HALLORAN explained the risk-on and risk-off market appetite settings. Growth opportunity companies are rewarded in risk-on market environments when the economy is healthy and optimistic. The same growth opportunity companies swing negatively in risk-off market environments when there is angst in the economy like a threat of a government shutdown or after the stock has had huge gains, up tenfold in one year, then begins to fall and there is nobody there to buy the stock because it has gone up tenfold. Small cap growth stocks tend to get very overvalued at times and in an environment of fear, they tend to be cheap for their potential.

MR. ERLENDSON asked what portion of the companies is dependent on being acquired in order to realize their gains. MR. O'HALLORAN discussed the primary strategy for their stock selection is superior revenue and earnings growth, and not the potential for being acquired. He noted they are happy when acquisitions come along and they are able to sell out into the premium, but acquisitions is not a primary driver.

## **8. BMO - Small Cap**

MR. BADER reported Callan was requested by the Board to review BMO for a possible small cap strategy. The review was performed and BMO is here to present their methodology. Staff is excited about the possibility and the Board will decide upon hiring BMO later in the agenda. MR. BADER welcomed BMO representatives. KAMILA KOWALKE, Director, Institutional Sales, began the presentation on the disciplined small cap core strategy by introducing DAVID CORRIS, Head of Disciplined Equities and Senior Portfolio Manager, and TOM LETTENBERGER, Senior Portfolio Manager. MS. KOWALKE stated MR. LETTENBERGER joined BMO in 2005, and MR. CORRIS joined BMO in 2008, and the two have been working together since 2008, researching, creating, launching and managing this strategy.

MS. KOWALKE showed how this strategy has demonstrated the ability to deliver excess returns versus the Russell 2000 by utilizing the comprehensive risk controls and focusing on consistency in delivery alpha. Success is based on the investment strategy, the investment process, and the investment team. MS. KOWALKE provided a background of BMO Global Asset Management and noted they managed \$234 billion for both institutional and retail clients.

MR. CORRIS continued the presentation describing the investment philosophy of the team that has been used for over 30 years. The philosophy is based on two core beliefs, which are company fundamentals and quantitative implementation. Earnings and cash flows drive stocks over the long-run and stocks become mispriced in the short-run. Research has shown that a data-driven and systematic approach to stock ranking, risk management, and portfolio construction gives the best chance to consistently and repeatedly outperform the market.

MR. CORRIS explained the managers are active in stock selection and utilize the sophisticated proprietary model to identify these companies. Risk management provides this strategy with a competitive advantage by using five different risk models to understand the risks in the portfolio from different perspectives and allowing decisions to be made regarding those risks. MR. CORRIS discussed how the process is adaptive and proactive by utilizing a data-driven approach of 80 to 90 factors that help identify when an unusual market condition is happening, at which time analysis occurs to determine the response to the condition.

MR. CORRIS provided a high level review of the process used to build the small cap core strategy and then provided an in-depth review of each step of the stock selection model. The portfolios are built to have the highest expected return, while managing risk comprehensively. The portfolios contain appropriate positions, given the market environment, while managing transaction costs.

MR. BRICE asked if BMO's model is believed to be predictive and capture the profitable gains of the market's movements on a global and macro level. MR. CORRIS agreed, but emphasized the primary driver of BMO's outperformance is stock selection across a wide variety of environments.

MR. SHAW requested a description of a market environment when this strategy will underperform. MR. CORRIS described the hardest periods for the small cap core strategy are times when fundamentals are not driving stock prices and risky cyclical companies are leading high quality companies. These are called lower quality risk rallies in the market.

MR. LETTENBERGER continued the presentation sharing more detailed processes of the fundamentals of developing the portfolio, including data validation, rates of exposures, and a thorough fundamental review of each company.

DR. MITCHELL requested additional comments on the high annual turnover and how that is connected to the models. MR. LETTENBERGER informed the models run daily, but trading does not occur daily. The biggest changes in the model scores are around quarterly earnings time. The turnover equates to about 7% a month. MR. LETTENBERGER believes this level is appropriate to the optimal exposure of the highest potential return stocks.

MR. ERLENDSON commented the track record of the strategy is impressive, but the amount of assets with a six-year history is relatively low. He asked if there is a capacity limit on the strategy itself. MR. ERLENDSON asked if BMO would be willing to hold aside a fixed amount for the ARMB, if requested. MR. CORRIS advised there is a capacity of \$3 billion. He noted BMO would be willing to reserve an amount of that capacity for ARMB.

MR. LETTENBERGER continued the presentation discussing the constraints of the diversified portfolio, liquidity and transaction costs. He reviewed performance charts in different market environments.

VICE-CHAIR JOHNSON recessed the meeting from 12:15 p.m. to 1:37 p.m.

**9. ACTUARIAL RESOLUTIONS -- FY18 Contribution Rate Setting**

***Action: Relating to FY18 PERS Contribution Rate  
Resolution 2016-11***

MS. ERCHINGER, as Chair of the Actuarial Committee, moved to approve Resolution 2016-11. No second necessary.

MS. ERCHINGER informed this resolution will establish the fiscal year 2018 actuarially determined contribution rate attributable to employers participating in the PERS at 25.01%, composed of the contribution rate for the DB Pension of 17.27%, the contribution rate for healthcare at 3.11%, and the contribution rate for Defined Contribution Pension of 4.63%.

MS. ERCHINGER noted the Actuarial Committee previously recommended funding for healthcare be set at zero percent and the total contribution go into pension. After discussion at the Actuarial Committee meeting yesterday and at the recommendation of the Department of Administration, the Actuarial Committee is not recommending the zero percent healthcare funding this year. The proposed split contribution rate is recommended.

COMMISSIONER HOFFBECK requested additional reasoning as to the decision for split funding. MS. ERCHINGER explained the Committee wants to create a funding policy for the future that addresses when it is appropriate to set a zero percent contribution rate. She stated the Administration recommended contribution to healthcare based on recently revealed statistical information. VICE-CHAIR JOHNSON commented the discussions that underpin the setting of the various contribution rates through the resolutions offered at today's meeting were extensive and thorough by members, Buck, and GRS. He recommended listening to the record of the meeting or reading the minutes for further review.

A roll call vote was taken, and the motion passed unanimously.

***Action: Relating to FY18 PERS RMMI Contribution Rate  
Resolution 2016-12***

MS. ERCHINGER, as Chair of the Actuarial Committee, moved to approve Resolution 2016-12. No second necessary.

MS. ERCHINGER informed this resolution establishes the fiscal year 2018 employer contribution rate for the Retiree Major Medical Insurance for PERS DC plan at 1.03%.

A roll call vote was taken, and the motion passed unanimously.

***Action: Relating to FY18 PERS ODD Contribution Rate  
Resolution 2016-13***



MS. ERCHINGER, as Chair of the Actuarial Committee, moved to approve Resolution 2016-13. No second necessary.

MS. ERCHINGER informed this resolution establishes the fiscal year 2018 employer contribution rate for PERS Occupational Death and Disability Benefits at 0.43% for peace officers and firefighters, and at 0.16% for all other PERS DC employees.

A roll call vote was taken, and the motion passed unanimously.

***Action: Relating to FY18 TRS Contribution Rate  
Resolution 2016-14***

MS. ERCHINGER, as Chair of the Actuarial Committee, moved to approve Resolution 2016-14. No second necessary.

MS. ERCHINGER informed this resolution would establish the fiscal year 2018 actuarially determined contribution rate attributable to employers participating in TRS at 26.78%, composed of the contribution rate for the defined benefit pension of 19.16%, the contribution rate for the postemployment healthcare of 2.59%, and the contribution rate for defined contribution pension of 5.03%.

MS. ERCHINGER noted there were previous discussions regarding this resolution having the potential of a zero contribution rate to healthcare. Buck Consultants provided two exhibits at the Actuarial Committee meeting showing the actual dollar contributions under both rate scenarios. These are available for members to review.

A roll call vote was taken, and the motion passed unanimously.

***Action: Relating to FY18 TRS RMMI Contribution Rate  
Resolution 2016-15***

MS. ERCHINGER, as Chair of the Actuarial Committee, moved to approve Resolution 2016-15. No second necessary.

MS. ERCHINGER informed this resolution establishes the fiscal year 2018 employer contribution rate for the retiree major medical insurance for TRS DC at 0.91%.

A roll call vote was taken, and the motion passed unanimously.

***Action: Relating to FY18 TRS ODD Contribution Rate  
Resolution 2016-16***

MS. ERCHINGER, as Chair of the Actuarial Committee, moved to approve Resolution 2016-16. No second necessary.

MS. ERCHINGER informed this resolution establishes the fiscal year 2018 employer contribution rate for TRS ODD benefit at zero percent for all TRS DC employees.

A roll call vote was taken, and the motion passed unanimously.

***Action: Relating to FY18 NGNMRS Contribution Rate  
Resolution 2016-17***

MS. ERCHINGER, as Chair of the Actuarial Committee, moved to approve Resolution 2016-17. No second necessary.

MS. ERCHINGER informed this resolution establishes the fiscal year 2018 actuarially-determined contribution amount for the State of Alaska Department of Military and Veteran's Affairs to the NGNMRS be set at \$907,231, composed of the contribution amount for normal costs of \$603,495, past service cost of \$71,736, and expense load cost of \$232,000.

A roll call vote was taken, and the motion passed unanimously.

***Action: Approval of extending the GRS contract***

MS. ERCHINGER, as Chair of the Actuarial Committee, moved to approve extending the GRS contract up to \$30,000 for first and second draft work in preparing an Actuarial Committee manual. No second necessary.

MS. ERCHINGER informed GRS would assist the Actuarial Committee in preparing a manual to establish practices around issues including funding policies, review of earnings assumptions and mortality assumptions. GRS prepared an estimate of the total proposal fee of \$25,000, with an additional fee of up to \$5,000 for a final second draft of work.

A roll call vote was taken, and the motion passed unanimously.

**Information: JRS Contribution**

MS. ERCHINGER informed the Department of Administration determines the contribution rate for JRS and the ARMB is not requested to provide a vote. For information purposes, the JRS contribution rate is recommended at 74.21%.

DEPUTY COMMISSIONER BOUCHER recommended continuing the discussions at some point regarding the funding policy contribution rates of the placement of the potentially large POB sales to pension and healthcare, including zero percent allocations to healthcare. MR. BADER believes the stated allocation promise to the purchases of the bond is required to be followed. If the bond does not contain an outlined allocation, he believes the allocation recommendation would come from Department of Administration and the actuaries for the Board to act upon.

MS. HARBO noted she was under the impression from the presentation that any funding from the Pension Obligation Bonds would go into the pension funds and not the healthcare funds. MR. WILLIAMS believes it is important for the POB sales to go toward pension and not healthcare funds.

COMMISSIONER HOFFBECK advised the official statement will be reviewed more closely to ensure these issues are addressed appropriately. COMMISSIONER FISHER noted a special telephonic meeting in early November may be necessary to review prepared recommendations.

## **10. REAL ASSETS FY17 ANNUAL PLAN**

### **A. REAL ESTATE GUIDELINES POLICIES AND PROCEDURES**

MR. BADER introduced STEVE SIKES, State Investment Officer, and NICHOLAS ORR, State Investment Officer, who provided the presentation on the real assets portfolio. MR. BADER stated gradual changes to staff assignments within the portfolio group include MR. SIKES being responsible for active investment management in the equity space and MR. ORR taking over the previous responsibilities of MR. SIKES.

MR. SIKES indicated he will first present the 2017 Investment Plan, then Townsend Group, the Board's real estate consultant, will provide comments about the plan and an overview of the market, and lastly, MR. SIKES will come back before the Board for the adoption of the plan and approval of the investment guidelines.

MR. SIKES noted real assets is a fairly meaningful part of the overall portfolio at an 18.1% allocation, with the major components being real estate, farmland, timberland, energy, infrastructure, and TIPS. The purpose of the real assets portfolio is to generate attractive returns and provide diversification and inflation hedging. Historically, the assets exhibit lower volatility and have a higher income component of total return. The return expectation is a 5% net real return over rolling five-year periods. The benchmark is a blend of the component assets.

MR. SIKES reviewed the real assets group manages real estate, farmland, timberland and infrastructure. The fixed income group manages the TIPS portfolio, and the private equity staff manages the energy assets. MR. SIKES reported the total real assets allocation is within its target. He detailed the individual sector target allocations and noted their underweight or overweight.

MR. SIKES stated the real assets performance for the one-year period ending June 30, 2016, came in at 4.81%. He continued with the component returns for the same time period. Real estate was strong with the overall real estate at 13.8%, private real estate at 11.38%, and public REITS at about 24%. Farmland was slightly below the target at 6%. Infrastructure produced attractive results above its benchmark at 7.31%. Timberland and energy portfolios both underperformed their benchmarks. The negative performance of the energy sector impacted energy funds and MLP investments.

MR. SIKES gave an overview of the real estate portfolio as of June 30, 2016. The total \$1.8 billion of assets is comprised of three separate accounts and two open-end funds in the core portfolio and 16 comingled funds in the non-core portfolio. MR. SIKES reviewed the graphics illustrating return components over time and current composition.

MR. SIKES profiled the farmland portfolio as of June 30th, 2016. The total NAV is \$814 million with two separate account managers, investments in 92 properties and approximately 160,000 acres. The construction of the portfolio is relatively conservative and focuses on row crops. The portfolio is within its target allocation. MR. SIKES commented water and drought issues continue to be major factors for farmland and the managers have undertaken an effort to shift some of the exposures. He noted the wildfires in California have not impacted the properties. One of the recommendations that will be made later in the meeting to the Board is to increase in the UBS separate account commitment.

MR. SIKES described the timberland portfolio, which started in 2008, has grown to \$384 million in two separate accounts with 16 properties and approximately 191,000 acres. The returns were lower this year, primarily due to sluggish growth in housing starts and the portfolio's geographic exposure. The remaining separate account allocation for timberland is \$183 million and it has been very challenging to deploy capital in this sector. This will be addressed later under investment recommendations.

MR. SIKES stated the infrastructure strategy focuses on core infrastructure investments, which are characterized by long-lived assets with high barriers to entry, often having regulated or contracted cash flows, including airports, toll roads, utilities, and electric transmission assets. The structure is comprised of two managers that invest in public stocks and two managers that invest in private open-end funds. One of the later recommendations relates to increasing investment to one of the open-end funds.

MR. SIKES commented the transaction flows and liquidity in real estate equity and debt are still at very healthy levels historically. Real estate fundamentals are very strong. Timberland and farmland have been challenging to get invested. USDA projects a declining U.S. farm income over the next few years, given the weaker commodity prices and lower exports.

MR. SIKES enumerated the investment recommendations for the real assets. Overall, there are no recommended changes in terms of components or new strategies. Real estate will continue to focus on high quality assets located in markets with high barriers to entry. To address the weighting between private and public real estate, the recommendation is to move \$100 million from REITs to the UBS Trumbull Property Fund. Staff will continue to evaluate higher risk/higher return strategies throughout the year.

MR. SIKES stated the two recommendations for the timberland portfolio. The first recommendation is to decrease the target allocation from 15% to 10%, by reducing Hancock's allocation by \$150 million. The current portfolio is attractive and well-diversified. The allocation to Hancock has been challenging to deploy. No investments have been made since 2011. Hancock has been very disciplined in not chasing the market. The business model of

this portfolio will become more reactive and opportunities will be considered when they come forth, rather than leaving a large amount of allocation uninvested.

MR. SIKES stated the second recommendation is to add to the guidelines the requirement for separate account managers to get CIO approval for reinvestment of capital. This requirement is part of the real estate guidelines and staff is recommending it be added to timberland and farmland processes. Currently, the reinvestment of capital is automatic. No additional authority to the CIO is requested. The CIO already has the discretion to add or reduce allocation. This component provides the opportunity to discuss reinvestments and make adjustments, if necessary.

MR. SIKES reviewed the recommendation for infrastructure is to increase the allocation from 12.5% to 17.5%. The proposal is to add to the current investment in the IFM Global Infrastructure Fund by \$50 million.

MR. SIKES stated the two recommendations for farmland. The first recommendation is to increase the allocation to UBS by \$100 million. UBS has a specific client allocation queue for sequencing client capital commitments and building portfolios. UBS believes it could take 12 to 24 months to build the portfolio if the intent to increase commitment was made now. No monies would be transferred until the actual purchase of properties. The second recommendation is to add to the guidelines the requirement for separate account managers to get CIO approval for reinvestment of capital.

MR. SIKES noted there were no recommended changes for the TIPS and energy portfolios.

**B. CONSULTANT EVALUATION OF REAL ESTATE PLAN:  
DIVERSIFICATION, COMPLIANCE, & PERFORMANCE MEASUREMENT**

VICE-CHAIR JOHNSON welcomed CHRIS CUNNINGHAM, Vice-President, and JACK KOCH, Manager Global Advisory Services, of Townsend Group. MR. CUNNINGHAM noted he has been working with ARMB for several years and wished MR. SIKES good luck in his new role. MR. CUNNINGHAM reported the previous real estate consultant to the ARMB, MICOLYN MAGEE, has taken a leave of absence from Townsend. MR. CUNNINGHAM will assume her ARMB account responsibilities. MR. CUNNINGHAM is confident Townsend has adequate staffing and resources dedicated to the ARMB portfolio. MR. KOCH acknowledged he will be providing additional service and support for the portfolio.

MR. KOCH gave a broad overview of the real estate market and noted it has been a very strong performer across the globe over the last eight years with double digit growth and double digit returns. Net operating income and asset valuations have increased in all property types during this time period. The average cap rate is about 5.5%.

MR. KOCH described the primary view of the real estate market over the next three years is a period of uncertainty. This is consistent with the uncertain economic and monetary policy across the globe. Political uncertainty is also a factor, including the new Prime Minister in the

UK, elections occurring in United States within the next couple of months, and national elections for Germany and France next year.

MR. KOCH explained the ARMB portfolio has shown strong income generation even through times of distress, due to the core stabilized properties located in good locations across the United States and globally. The expectation is real estate will continue to perform squarely in the middle between bonds and equities. MR. KOCH does not believe the recent double digit returns will continue, but will normalize to 6% to 8% on a gross-of-fees basis. Fundamentals are beginning to diverge, putting downward pressure on pockets of oversupply and making investment selection more imperative.

MR. KOCH explained the preference in today's market is looking at both retail and industrial, with a second tier of apartments and office space. The focus is to capitalize on the changing spending habits of consumers, evolving from brick-and-mortar sales to E-commerce sales. The attractive hybrid strategies in real estate debt come with a very strong income component, return capital at a faster rate, and provide good opportunities. MR. KOCH believes particular sectors in real estate will continue to be attractive as interest rates rise slowly.

MR. CUNNINGHAM continued the presentation detailing the performance of the \$1.8 billion real estate portfolio. The portfolio is well-positioned for the goals of capital preservation, inflation hedging, diversification, and steady income. The current portfolio allocation is approximately 70% core private real estate, 10% non-core, and 20% REITs. The portfolio is in compliance with all required metrics and has been above the 5% real benchmark on a five-year rolling basis for the last several years. MR. CUNNINGHAM expressed his agreement to all of the portfolio recommendations proposed by staff for this year. He explained there will be additional focus next year on current cash flow and conservative non-core investments that are defensive in nature, in style, or in structure, similar to the current Almanac investment.

VICE-CHAIR JOHNSON recessed the meeting from 3:16 p.m. to 3:28 p.m.

### **C. ADOPTION: REAL ASSETS FY17 PLAN & POLICIES**

#### ***Action: Real Assets FY17 Annual Plan Resolution 2016-18***

MS. ERCHINGER moved to adopt Resolution 2016-18. The motion was seconded.

VICE-CHAIR JOHNSON asked if Townsend reviewed, vetted, and agreed with the annual plan proposal. MR. SIKES confirmed Townsend reviewed, vetted, and agreed with the annual plan proposal.

COMMISSIONER FISHER inquired about the effects to real estate when interest rates begin to rise and if the changes to the portfolio positioning will mitigate the effects. MR. SIKES believes the adjustments at this time in the cycle are necessary to focus on high quality existing cash flows, as opposed to growth. He noted the adjustments are consistent with the long-term targets the ARMB has created.

A roll call vote was taken, and the motion passed unanimously.

***Action: Revised Investment Guidelines  
Resolution 2016-19 - Real Estate***

MR. SIKES informed Resolution 2016-19 relates to the adoption of the Real Estate Revised Investment Guidelines. The adjustments in the guidelines are updating addresses, dates, and those types of administrative changes.

MS. ERCHINGER moved to adopt Resolution 2016-19. MRS. HARBO seconded the motion.

A roll call vote was taken, and the motion passed unanimously.

***Action: Revised Investment Guidelines  
Resolution 2016-20 - Farmland***

MR. SIKES informed Resolution 2016-20 relates to the adoption of the Farmland Revised Investment Guidelines. The substantial change is the additional language requiring CIO approval for the reinvestment of capital. Other adjustments in the guidelines are administrative in nature.

MRS. HARBO moved to adopt Resolution 2016-20. MRS. ERCHINGER seconded the motion.

A roll call vote was taken, and the motion passed unanimously.

***Action: Revised Investment Guidelines  
Resolution 2016-21 - Timber***

MR. SIKES informed Resolution 2016-21 relates to the adoption of the Timber Revised Investment Guidelines. The substantial change is the additional language requiring CIO approval for the reinvestment of capital. Other adjustments in the guidelines are administrative in nature.

MRS. HARBO moved to adopt Resolution 2016-21. MRS. ERCHINGER seconded the motion.

A roll call vote was taken, and the motion passed unanimously.

***Action: Revised Investment Guidelines  
Resolution 2016-22 - Infrastructure***

MR. SIKES informed Resolution 2016-22 relates to the adoption of the Infrastructure Revised Investment Guidelines. The adjustments in the guidelines are administrative in nature.

MRS. HARBO moved to adopt Resolution 2016-22. MRS. ERCHINGER seconded the motion.

VICE-CHAIR JOHNSON inquired about the reasoning behind repealing and replacing a previous resolution if there are no substantive changes.

MS. ERCHINGER stated the changes include effective dates of the policies and contact information. This is the time for the Board to reaffirm the guidelines.

A roll call vote was taken, and the motion passed unanimously.

## **11. PERFORMANCE MEASUREMENT - 2ND QUARTER**

VICE-CHAIR JOHNSON introduced PAUL ERLENDSON, Senior Vice President, and STEVE CENTER, Vice President, of Callan, who provided the review of the performance measurement for the second quarter 2016. MR. ERLENDSON outlined his presentation starting with a broad overview of the markets as of June 30th, asset allocation of the PERS fund, as a proxy for the pension plans, as well as a discussion of some of the managers and asset classes.

MR. ERLENDSON reviewed the real GDP growth in the U.S. over the last 10 to 15 years averaged close to 2%, which is down from the long-term 55-year average of about 3%. The Federal Reserve Board Open Market Committee met on September 20th and 21st. The expectations are for moderate economic growth going forward, but not robust enough to begin raising interest rates. The U.S. inflation target is at 2%.

MR. ERLENDSON continued his presentation describing the current environment of global rate expectations. Nearly 36% of all outstanding global government debt currently pays negative interest rates and almost 75% are paying rates less than 1%. Capital markets will continue to be challenged until these rates begin to increase. The foreign exchange markets experienced turbulence due to the Brexit vote uncertainty, but have stabilized since then. The dollar has strengthened against many currencies. The currency effect has become a critical issue because of the erosion of returns upon repatriation of the assets. The magnitude is quite significant for stock investors and even more so for bond investors, because the return potential is lower, but the currency impact is just as great.

MR. ERLENDSON described the September 23, 2016 year-to-date performance returns. The Russell 3000 returned 8%. The S&P 500 returned 7.6%. The Russell 2000 returned 11.6%. The EAFE Index returned 2.4%. The Emerging Markets returned 17.8%. The Aggregated Bond Index returned 5.7%. MR. ERLENDSON explained the importance of diversification and good managers within a portfolio. He noted staff has been rigorous in maintaining market exposures close to the strategic targets.

MR. ERLENDSON discussed historic yield curves and commented the ARMB's dividend-oriented investment strategy within the equity portfolio provides a higher dividend yield than



the 10-year Treasury. Staff had the foresight to implement such a strategy a couple of years ago and it is now becoming popular with other investors for the same reasons.

MR. ERLENDSON examined the ratio of workers to retired people in the U.S. in 2015 was four-to-one. The U.S. projection for 2050 is 2.5-to-one. On a global basis, there are approximately seven working-age people for every retired person, which is expected to decrease by 2050 to three-to-one. In the U.S., 70% of retirement funding assets in 1974 were dedicated to defined benefit plans and has decreased to about 35% in 2014. The shift is occurring toward individuals funding all of their own retirement risk. A Federal Reserve Board study from 2013 showed the average level of the combination of 401(k) assets, IRA assets, and Keogh plans for households with the head of the household between 56 years and 61 years is \$17,000. MR. ERLENDSON commented defined benefit plans are socially good because they diversify the risk for individuals to fund their retirement.

MR. ERLENDSON reviewed the funded status of public pension plans data from the Center for State and Local Government Excellence. Before the telecom bubble burst in 2001, the typical public pension plan was fully funded. Since that time, the funding ratios have decreased. In 2012, the Governmental Accounting Standards Board (GASB) issued new calculations about measuring funded status. The projection as of 2015, is the typical public pension plan is funded at a ratio of a 72%. According to the exhibit published by JP Morgan, Alaska is within the boundaries of a manageable debt and does not require disproportionate use of state revenues in order to meet future obligations.

MR. CENTER continued the presentation focussing on the PERS plan as a proxy for all of the plans. Asset allocation is in-line with the long-term strategic targets. The target fixed income allocation for PERS is 12%. The median fixed income allocation for the public fund database is 27%. Fixed income was the strongest performer last year returning 6%. The laggards last year were ex-U.S. equity. The target global equity ex-U.S. allocation for PERS is 25%. The median global equity ex-U.S. allocation for the public fund database is 18.6%. These two tradeoffs are what caused the performance for the PERS plan to lag peers last year. PERS' performance versus the total plan benchmark is in-line. The longer-term performance versus peers is above median for the last three, five, seven, and 24-year time periods.

MR. CENTER reported the performance of the portfolio over the last quarter returned 1.64% versus the target of 1.53%. The key driver of performance was excess return from the real asset portfolio and a little drag from domestic and international equities. Over the last year, the total portfolio returned negative 0.36% versus the target of 0.05%, primarily due to an underperformance from real assets, along with negative performance from the absolute return portfolio. The net-of-fee net return last year came in at negative 0.55%, which is approximately 20 basis points of fee impact. MR. CENTER commented the fee level is very competitive. Performance of the plan versus the target actuarial return has been very much in-line, yet experiencing some difficulty catching up with the actuarial return targets since 2008.

MR. CENTER discussed the difficult period active equity managers faced over the last year. All of the large cap active managers underperformed their benchmark. The plan contains 2/3

of the U.S. large cap equity in passive allocations and the passive portfolios have performed as expected. MR. CENTER believes active managers still add value in the small cap area and have performed better than small cap passive portfolios over longer time periods. Last year, the small cap portfolio beat its benchmark, although both came in negative, negative 6.56% versus negative 6.73%. The two microcap managers outperformed their benchmark last year. The alternative equities portfolio performed well last year, returning 3.54%. The in-house equities yield portfolio and the REIT allocation both performed well last year.

MR. CENTER reviewed the above median performance of the fixed income portfolio last year. The absolute return portfolio returned a negative 4.45% last year, which is better than its benchmark at negative 5.4%. This has been a very difficult near-term period for hedge funds to add value. MR. CENTER described the stoplight page representing the Balanced and Target Date Fund options within the Defined Contribution plan. He noted the red-colored cells trailed their peer group in the near-term because they have a lower allocation to fixed income. Callan staff will provide a detailed Defined Contribution plan review tomorrow.

## **12. INVESTMENT ACTIONS**

### **A. BMO SMALL CAP MANAGER**

MR. BADER stated the Board approved the portable alpha strategy at the February 2016 meeting, which would entail utilization of small cap managers as an alpha source. Callan conducted a due diligence review of BMO and provided a favorable opinion. The report did not make it in today's meeting packet. MR. BADER believes BMO's earlier presentation addressed issues of interest to the Board and highlighted the consistency of their returns. BMO classifies themselves as a quantitative manager. Staff believes it is important to have a blend of several different styles of managers. The intent is that part of or all of the BMO allocation may end up in the portable alpha pool. The portable alpha structure will develop as more components are available.

Staff recommends the Board authorize BMO to manage \$75 million in their Disciplined Small Cap Core Strategy, subject to successful contract and fee negotiations.

MRS. HARBO moved to authorize BMO to manage \$75 million in their Disciplined Small Cap Core Strategy, subject to successful contract and fee negotiations. Mr. West seconded.

VICE-CHAIR JOHNSON inquired if the GAM part of BMO is related to the GAM that was put on the watch list earlier in the meeting. DR. JENNINGS stated there is no relation.

A roll call vote was taken, and the motion passed unanimously.

### **RECESS FOR THE DAY**

VICE-CHAIR JOHNSON recessed the meeting at 4:48 p.m.

**Friday, September 30, 2016**

**CALL BACK TO ORDER**

CHAIR SCHUBERT reconvened the meeting at 9:00 a.m.

Trustees Johnson, Brice, Erchinger, Fisher, Harbo, Hoffbeck, West, and Williams were also present.

**13. DEFINED CONTRIBUTION PLAN REVIEW**

MR. ERLENDSON introduced LORI LUCAS, Practice Leader, and JIMMY VENERUSO, Senior Member, of Callan's Defined Contribution group. MS. LUCAS has been with Callan for 10 years and previously was Director of Research at Hewitt Associates. She is the current Chair of the Defined Contribution Institutional Investment Association and a very active member of the National Association of Governmental Defined Contribution Administrators' Organization. MR. VENERUSO has been with Callan for nine years and previously was in Tonga with the Peace Corps.

MR. ERLENDSON stated the Defined Contribution Plan Review was conducted by Callan's Defined Contribution group, as well as a peer review committee within Callan. MS. LUCAS noted the project began in March and has extensive objectives to review all aspects of the Defined Contribution plan, including record keeping, administration, participant communication, investment fund line-up, target date funds, managed accounts, and plan delivery. Follow-up will be conducted once decisions are made concerning the investment policy statement and an enhanced performance report.

MS. LUCAS reported discussion today will cover primarily the executive summary, which comes out of the full comprehensive report that can be referenced as needed. The four plans that are administered by Empower are the Supplemental Annuity Plan, the 457 Deferred Compensation Plan, PERS, and TRS. There is a total of 89,500 participants accounting for \$6 billion in assets across the plans.

MS. LUCAS explained Empower has clearly indicated its commitment and dedication to record-keeping by gaining marketshare through its recent merger with Putnam and recent acquisition of JP Morgan Retirement Services. These consolidations have resulted in conversions from various platforms, changes in management, personnel, and the participant website. Currently Empower is respected for their capabilities and are the record-keeper for 24 out of the 50 state plans in the country.

MS. LUCAS informed Callan's normal course of business includes record-keeper searches, RFIs, fee reviews, and data in various databases updated annually. Callan also met numerous times with staff to collect specific data on the services that were provided to the plans and to the participants, and to discuss different aspects of the findings. MS. LEA requested the names of the staff Callan met with because to her knowledge, the Division of Retirement and

Benefits (DRB) were not contacted. MS. LUCAS informed the contacts were primarily with MS. HALL and SHANE CARSON on the ARMB side.

MS. LUCAS explained the gathered knowledge was used by Callan to score Empower's record-keeping services based on 21 categories compared to its competitors using the ranking scale of below average, average, and above average. The categories were weighted according to importance for Alaska participants. Empower received a total weighted score of above average. Callan believes Empower can make the improvements in the areas that scored average and below average.

MS. LUCAS reviewed the graphics illustrating the scoring and weighting of each category. The highest weighted categories that received an above average score were record-keeping processing, record-keeping functionality, communications, and participant website. The highest weighted category that received an average score was investments. The main reason for the average score for investments was Empower does not have a lot of clients with custom funds. Empower has an open architecture and is clearly able to handle the portfolio's current custom target date funds. The question is around future investments and resources devoted to custom fund solutions. MR. ERLENDSON added he believes there will come a time when the portfolio offers highly customized funds.

The highest weighted categories that received a below average score were advice/managed accounts and fees. The main reasons for the below average score for advice/managed accounts were participants have been defaulted into the product and it was challenging to get good information on the participant experience in these products to ensure participants receive value for their money.

The fee of \$44 per participant across the plan is within the range of competitors in between 50th and 75th percentile of sample database bids. From a percentage basis, Empower receives 0.0675% of assets across the plans, which puts them between the 75th and 90th percentile of the sample database bids. These are the main reasons for the below average score for fees. However, a RFI or RFP was not conducted by Callan and the disclaimer is included regarding complexities that could make the Alaska experience more expensive than the Lower 48. The recommendation is to continue to monitor the fees to ensure they remain competitive.

MS. LEA requested clarification on the per participant administrative fee. She stated the per participant administrative fee is \$35 plus four basis points and does not go to Empower. The administrative fees go through the plan, but are paid to the Division to meet administrative expenses between the two departments. MS. LUCAS clarified 0.0675% revenue to Empower has been separated out. The total asset-based fee participants are paying is higher at 0.11%.

CHAIR SCHUBERT commented it would be helpful for Callan to talk to DRB before the recommendations are finalized and before they are brought back to the Board.

COMMISSIONER FISHER requested a discussion of the list of record-keepers who had overall weightings higher than Empower. He stated those discussions could occur offline.

MS. LUCAS agreed and commented the weighted rankings are based on the needs of the portfolio's participants and may not be the areas other plan sponsors would rank the most highly.

MR. WILLIAMS requested additional information on the stated concern over representatives' compensation structure and potential for promoting managed accounts. MS. LUCAS explained there was a lack of transparency into how the representatives are being compensated for the managed accounts and a lack of transparency around the participant utilization experience. Seventy-five percent of the participants in managed accounts from the PERS and TRS DC plans were defaulted into the program prior to 2010. The default now is the target date fund.

MS. LEA informed that when the default option changed, the Division requested Empower provide all the defaulted managed accounts participants with the necessary information to get value from the managed account option. The Division has instructed Empower not to push manage accounts and it is to be an education model that gives members an opportunity to make their own decisions. There are not large numbers of new enrollees in managed accounts. MS. LUCAS believes there are many potential advantages to the managed accounts if the participants are tailoring their portfolio to their unique circumstances and specific needs. She noted the portfolio's target date funds are very strong and if a participant's managed account information essentially puts them in the same allocation as a target date fund, they would be paying a premium for a product that is not adding value.

MR. ERLENDSON requested a broad overview of the different needs of 401(k)s and public sector DC plans and why it is important Empower is significantly committed to the public sector. MS. LUCAS explained the requirements for the plans are very different. ERISA informs the 401(k)s. Public plans have unique considerations and the differences in the demographics of participants. It is very common for a public plan to have one-on-one dedicated representative support. This is uncommon on the corporate side. The differences are primarily in the participant experience, legal and regulatory environment. There are fewer differences strictly on the investment side.

MR. BADER commented these discussions are beneficial to the Board. Staff suggested the process going forward include identifying the areas of concern by Callan, addressing those areas with the various responsible agencies, returning to the Board and readdressing the areas one-by-one in a sequenced fashion. MS. LUCAS informed the summary of conclusions is at the end of the executive summary and includes possible next steps.

MS. LUCAS provided an in-depth description of the proposal from Empower to utilize their Retirement Solutions Group (RSG) service for distribution counseling. Reports from Empower state 75% of government plans and 99% of mega-corporate plans are using this service. MS. LUCAS noted Indiana as a state example and will provide members with a list of other participating states. One concern the RSG addresses is plan leakage. The objective is to prevent people from cashing out of their program and to ideally keep the money in the best possible solution for them, whether it is in the plan or in an alternative IRA. There is no additional direct cost to the plan participant for the RSG service. If funds remain in the plan,

the participant fees remain the same. If the funds get rolled into an Empower IRA, normal account fees would apply.

MS. LUCAS explained Callan had concerns with the RSG compensation structure of bonuses paid to representatives according to asset retention, and/or rolling assets into an Empower IRA. The data provided by Empower since the RSG rollout in 2014 showed participants who did not use RSG would rollover into an outside IRA 80% of the time. Participants who used RSG would rollover into an outside IRA 58% of the time. The concerns are ensuring the incentives are aligned with participants' best interest and how the Department of Labor's recent fiduciary rule subject to rollovers is assessed.

COMMISSIONER FISHER advised the State retirement plans are not using Empower's RSG service because of the potential conflict of interest and other issues highlighted. MS. LUCAS explained the two basic options for distribution counseling are outside providers or in-house retirement educators. Outside providers would need to include measures in the service level agreements to prevent conflicts of interest. Determinations for in-house educators would need to be made regarding licensing and advice fiduciary requirements.

MS. LUCAS provided an overview of the plans' retirement income solutions and proposed offerings to help members with managing the draw-down phase within retirement. This is an area where the regulators and legislators have spent much time and attention because the concern is people are faced with an even more daunting prospect in retirement of drawing down their assets than was faced in the accumulation phase. Proposals include both guaranteed products, such as variable annuities and in-plan Qualified Longevity Annuity Contracts (QLAC), and non-guaranteed products, such as the current Morningstar Spend Down Tool.

MR. VENERUSO continued the presentation giving a detailed representation of the investment structure evaluation and the proposed changes to mitigate shortcomings of investment decisions based on known behavioral biases. MR. VENERUSO discussed the specifics of behavioral finance, including explanations of inertia, momentum market timing, framing effects, and overwhelming choice. He noted the scale of the Alaska plans can impact participant outcomes and benefit participants by bringing down costs and lowering fees.

The structure of the DC plan is divided into three main tiers. The first tier is asset allocation. The second tier is core options. The third tier is specialty options, including a brokerage window. MR. VENERUSO explained the slide showing the recommended options for each tier division. A recommendation for the first tier asset allocation is to eliminate the balanced funds and move those participants to the target date funds. A recommendation for the second tier core options is to eliminate the money market fund, offer a consolidated stable value fund, and build out multi-manager funds. A recommendation for the third tier is to merge the allocations with the second tier multi-manager options and add a retail brokerage window for the small subset of members who will utilize it. MR. VENERUSO explained the goal is to have the minimum core number of exposures needed to build out a diversified portfolio.

MR. BADER commented one of the reasons there are currently 17 fund options is to provide managed accounts with a more robust selection from which to create an appropriate investment program. MR. VENERUSO agreed the decisions made on the investment structure will impact the managed account side.

CHAIR SCHUBERT recessed the meeting from 10:27 a.m. to 10:49 a.m.

CHAIR SCHUBERT called the meeting back to order and requested MR. VENERUSO continue his plan review presentation. MR. VENERUSO provided a detail review of the target date suitability analysis, which revolves around the DOL framework of best practice for target date funds. The asset roll-down of the target date funds are in-line with lowering allocation to growth assets as a person increases in age.

COMMISSIONER FISHER requested more information on the breakdown of the assets in the target date funds. MR. BADER informed the target date funds are based on T.Rowe Price's asset allocation recommendations to staff and uses the four T.Rowe Price investment pools for the glide path. MR. VENERUSO stated the asset allocation is the main driver of results and T.Rowe Price has a more aggressive philosophical orientation, believing in the equity risk premium, which provides the potential for more upside and the risk of more downside.

DR. JENNINGS inquired if the consensus of the target date funds is becoming more aggressive. MR. VENERUSO agreed the consensus has gotten more aggressive over the years. He believes the increase in equity allocation is due to a favorable equity environment and providers that were more conservative did not look as favorable compared to their more aggressive peers.

MR. VENERUSO showed the fees for the target date funds are well below the median. The equity funds are generally passive. The bond allocation does contain an active component. The funds were then ranked on four criteria of risk. Shortfall risk is the risk of not accumulating sufficient balance at the beginning of retirement. Downside risk is the risk of volatility, particularly the risk of a market downfall upon retirement. Inflation risk is the eroding of assets in retirement. Longevity risk is living a longer life than actuarially anticipated.

The target date funds' glide path ranked lower on shortfall risk and inherently higher in downside risk because of the increased exposure to growth. T.Rowe Price has a strong historical performance and is committed to this area of the market. The fees are extremely competitive.

MR. VENERUSO provided a deeper review of the managed account program evaluation. The managed account work is performed by the Advised Asset Group (AAG), a wholly-owned subsidiary of Empower. AAG leverages Morningstar's philosophy. The fee schedule is well within the market range for managed account providers. The underlying investment management also receives a fee. Managed accounts pay a range of 45 to 77 basis points compared to target date funds which pay a range of 13 to 16 basis points.

COMMISSIONER FISHER requested feedback from Board members regarding the order of priority the Board should evaluate Callan's recommendations and concerns. He believes the primary issue to review is the members who were defaulted to the managed accounts and if next steps need to be taken. The other concerns can be addressed sequentially. VICE-CHAIR JOHNSON agreed with the focus on members who were defaulted to managed accounts. He also suggested reviewing the viability of the recommendation to reduce the 17 funds because it may be necessary to have the 17 funds as building blocks for members.

MR. WILLIAMS is not convinced the fees are an issue because the RFP went out and fees came in higher from other vendors. There is no ethical issue of concern regarding incentives because Empower is not offering their proprietary IRAs and the managed accounts are no longer the default. He believes website layout is important because of the choices available.

MR. WEST agreed the decision to reduce the number of investment options needs further review. He believes the concerns regarding fees have been addressed and the service level agreements can be developed individually.

MR. BRICE believes the Defined Contribution Committee needs to address the score rankings of average and below average, as well as the number of investment options to offer. He commented making retirement decisions as a new employee is difficult because of stimulus, stress, and the enormity of paperwork a new employee is required to complete. The whole process of employee interface with Empower and employee education could be reviewed.

MRS. HARBO expressed her appreciation for the presentation and for the selection of target date funds available for members. Her concern over fees has been addressed. MRS. HARBO believes education of the participants is important and work with employers is necessary.

DEPUTY COMMISSIONER BOUCHER commented on the importance of educating members and employers. He informed the employer conference next week is a step in the right direction in the education process.

CHAIR SCHUBERT commented the original ASPIB Board had concerns about the education component when first rolling out the investment choices decades ago.

***Action: Direction to Staff***

MR. BADER informed the action memo before the Board directs staff to work with the Department of Administration and the Defined Contribution Committee and to return with assessments of the recommendations contained in the report.

MRS. HARBO moved to direct staff to work with the Department of Administration and the Defined Contribution Committee and to return with assessments of the recommendations contained in the report. MR. BRICE seconded the motion.

The motion passed unanimously.



**14. EXECUTIVE SESSION: 11:30 a.m.**

VICE-CHAIR JOHNSON moved to go into executive session for purposes of obtaining attorney/client privileged information from Counsel. MR. WEST seconded the motion.

The motion passed unanimously.

CHAIR SCHUBERT called the meeting back to order at 11:40 a.m. and informed the Board agreed with the recommendations of the Attorney General.

**UNFINISHED BUSINESS**

**1. Disclosure Reports**

MS. HALL indicated the Disclosure Report was included in the Board's packet. There was nothing unusual to report.

**2. Calendar**

MS. HALL stated an Actuarial Committee meeting was added to the calendar on December 7th, 2016.

**3. Legal Report**

MR. GOERING reported the procurement regulations adopted by the Board have been filed with the Lieutenant Governor and will be published in the next register. MR. GOERING advised the Petrobras securities fraud litigation is pending in the Southern District of New York. It is unknown if the case will be tried. An update will be given at the next Board meeting.

MR. GOERING informed outside counsel intended to file the case this week brought on behalf of the Board against Volkswagen and Porsche in Germany related to the securities fraud involving the emissions scandal. Updates will continue to be provided.

**NEW BUSINESS**

None

**OTHER MATTERS TO PROPERLY COME BEFORE THE BOARD**

None

**PUBLIC/MEMBER COMMENTS**

VICE-CHAIR JOHNSON brought it to the attention of the Board that RICH KRONBERG of NEA Alaska stated he was online yesterday during the public comment period, but was not able to communicate because of electronic reasons. MR. KRONBERG subsequently has sent a letter enumerating the comments he would have given yesterday opposing HB 256 legislative intent language regarding consolidations and standing forth in opposition on behalf of NEA Alaska. VICE-CHAIR JOHNSON proposed submittal of MR. KRONBERG's letter on behalf of NEA into the record as a communication received. There was no objection.

#### **INVESTMENT ADVISORY COUNCIL COMMENTS**

None

#### **TRUSTEE COMMENTS**

None

#### **FUTURE AGENDA ITEMS**

None

#### **ADJOURNMENT**

There being no objection and no further business to come before the Board, the meeting was adjourned at 11:46 a.m. on September 30, 2016, on a motion made by MRS. HARBO and seconded by MR. BRICE.

Chair of the Board of Trustees  
Alaska Retirement Management Board

**ATTEST:**

\_\_\_\_\_  
Corporate Secretary

# ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Retirement System Membership Activity  
as of September 30, 2016

ACTION: \_\_\_\_\_

DATE: December 8, 2016

INFORMATION:   **X**  

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## **BACKGROUND:**

Information related to PERS, TRS, JRS, NGNMRS, SBS, and DCP membership activity as requested by the Board.

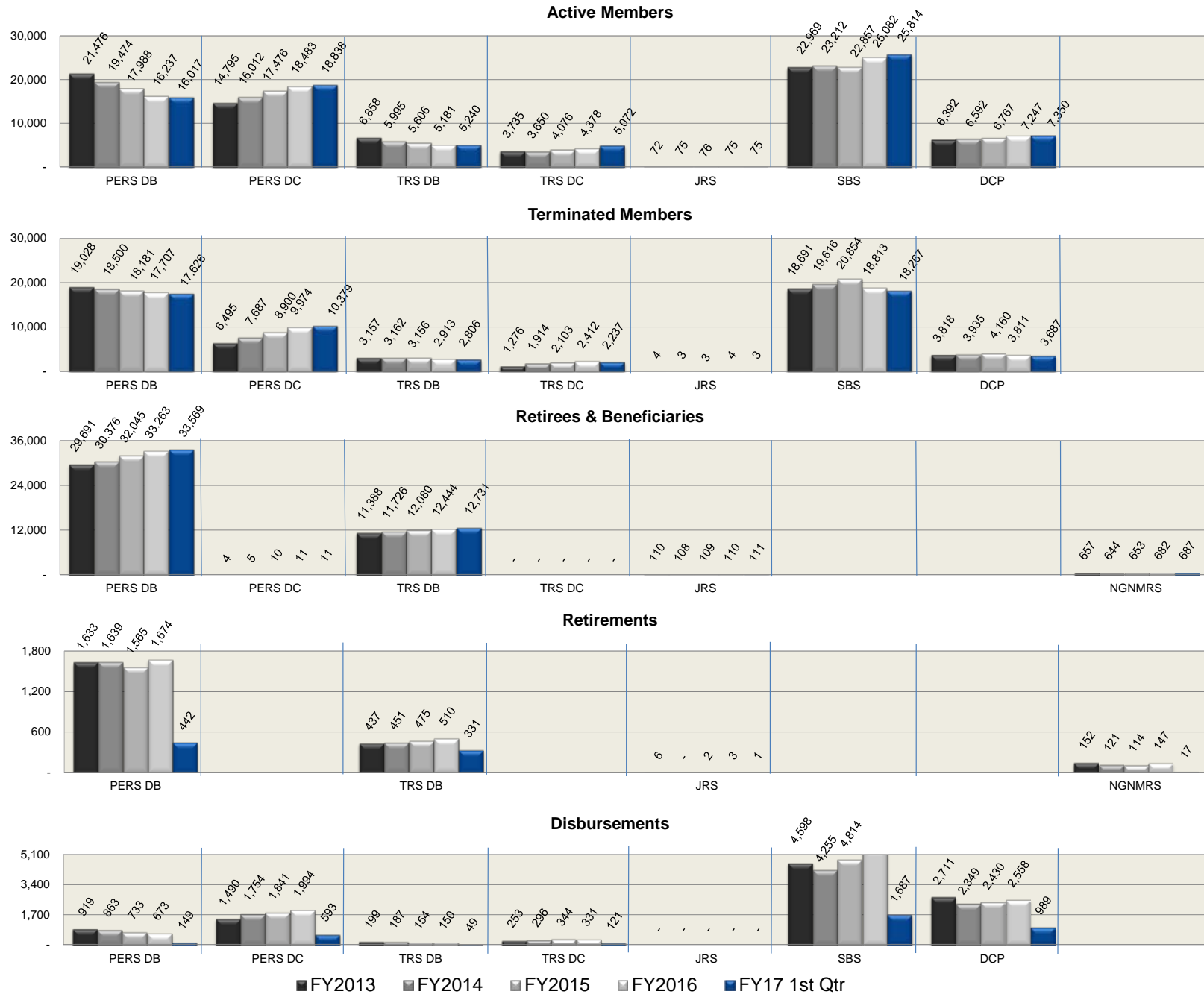
## **STATUS:**

Membership information as of September 30, 2016.

**MEMBERSHIP STATISTICS AS OF SEPTEMBER 30, 2016**

	PERS						TRS					JRS	NGNMRS	SBS	DCP
	DB			DC	SYSTEM TOTAL	DB			DC	SYSTEM TOTAL					
	Tier I	Tier II	Tier III	Total		Tier IV	Tier I	Tier II	Total		Tier III				
Active Members	1,728	4,308	9,981	16,017	18,838	34,855	544	4,696	5,240	5,072	10,312	75	n/a	25,814	7,350
Terminated Members															
Entitled to Future Benefits	531	2,396	2,997	5,924	684	6,608	56	700	756	383	1,139	3	n/a	18,267	3,687
Other Terminated Members	1,212	2,311	8,179	11,702	9,695	21,397	304	1,746	2,050	1,854	3,904	-	n/a	-	-
Total Terminated Members	1,743	4,707	11,176	17,626	10,379	28,005	360	2,446	2,806	2,237	5,043	3	n/a	18,267	3,687
Retirees & Beneficiaries	23,819	6,818	2,932	33,569	11	33,580	10,696	2,035	12,731	-	12,731	111	687	n/a	n/a
Managed Accounts	n/a	n/a	n/a	n/a	5,646	5,646	n/a	n/a	n/a	1,558	1,558	n/a	n/a	1,174	1,313
Retirements - 1st QTR FY17	168	155	119	442	n/a	442	126	205	331	n/a	331	1	17	n/a	n/a
Full Disbursements - 1st QTR FY17	16	27	106	149	523	672	12	37	49	103	152	-	n/a	588	151
Partial Disbursements - 1st QTR FY17	n/a	n/a	n/a	n/a	70	70	n/a	n/a	n/a	18	18	n/a	n/a	1,099	838

Alaska Division of Retirement and Benefits  
**FY 2017 QUARTERLY REPORT OF MEMBERSHIP STATISTICS**  
 Annual & Quarterly Trends as of September 30, 2016



## LEGEND

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**Active Members** - All active members at the time of the data pull, except SBS & DCP, which are counts of contributors during the final quarter of each period.

**Terminated Members** - All members who have terminated without refunding their account, except SBS & DCP, which are counts of members with balances at the end of the period less active members.

**Retirees & Beneficiaries** - All members who have retired from the plans, including beneficiaries eligible for benefits.

**Managed Accounts** - Individuals who have elected to participate in the managed accounts option with Great West.

**Retirements** - The number of retirement applications processed.

**Full Disbursements** - All types of disbursements that leave the member balance at zero.

**Partial Disbursements** - All types of disbursements that leave the member balance above zero. If more than one partial disbursement is completed during the quarter for a member, they are counted only once for statistical purposes.

## ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Summary of Monthly Billings - ACTION: \_\_\_\_\_  
Buck Consultants  
DATE: December 8, 2016 INFORMATION: X

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### BACKGROUND:

AS 37.10.220(a)(8) prescribes that the Alaska Retirement Management Board (Board) “coordinate with the retirement system administrator to have an annual actuarial valuation of each retirement system prepared to determine system assets, accrued liabilities, and funding ratios....”

As part of the oversight process, the Board has requested that the Division of Retirement & Benefits provide quarterly summary updates to review billings and services provided for actuarial valuations and other systems’ request.

### STATUS:

Attached are the summary totals for the three months ended September 30, 2016.

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**Buck Consultants  
Billing Summary  
For the Three Months Ended September 30, 2016**

	<u>PERS</u>	<u>TRS</u>	<u>JRS</u>	<u>NGNMRS</u>	<u>EPORS</u>	<u>AHF</u>	<u>RHF</u>	<u>SBS</u>	<u>DCP</u>	<u>TOTAL</u>
Actuarial valuations	\$ 25,531	24,940	7,172	175	2,593	-	6,757	-	-	\$ 67,168
ARMB presentations and meeting attendance	7,607	3,026	32	166	-	-	-	-	-	10,831
GASB 68 work for PERS and TRS	2,703	1,197	-	-	-	-	-	-	-	3,900
GASB 67 valuation reports as of 6/30/16 (PERS/TRS/ JRS/NGNMRS)	3,774	1,687	35	194	-	-	-	-	-	5,690
Retiree medical data review requested by ARMB Actuarial Committee	36,092	13,505	115	-	-	-	145	-	-	49,857
Misc emails and phone calls	532	242	1	-	-	-	2	-	-	777
<b>TOTAL</b>	<u>\$ 76,239</u>	<u>44,597</u>	<u>7,355</u>	<u>535</u>	<u>2,593</u>	<u>-</u>	<u>6,904</u>	<u>-</u>	<u>-</u>	<u>\$ 138,223</u>
<b>For the Three Months Ended September 30, 2015</b>	<u>\$ 210,482</u>	<u>126,365</u>	<u>15,058</u>	<u>12,377</u>	<u>280</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>\$ 364,562</u>



## CHIEF INVESTMENT OFFICER REPORT

1. September 22, 2016, September 23, 2016, and October 18, 2016, October 21, 2016, October 25, 2016, and November 8, 2016, directed rebalancing of retirement funds.
2. Rebalanced Military Fund on November 10, 2016.
3. Redeemed \$20 million Glacier Bear fund from GAM
4. Funded Schroder Advanced Insurance linked Securities fund \$20 million.
5. Transferred \$4,472,511 from cash to KKR Polar Bear Fund on September 21, and \$6,726,309 on October 31, 2016.
6. Transferred \$4,765,793 from cash to Crestline Specialty lending fund on October 13, 2016.
7. Transferred \$1,576,891 from cash to Crestline Blue Glacier fund Class C-2.
8. Made multiple investments to initiate Large Cap (S&P 500) portable alpha program to bring to approximate value of \$390 million on November 10, 2016.
9. Liquidated Luther King Small Cap and place funds in Cash.
10. Transferred \$100 million from US Treasury Fixed income fund into Allianz Structured Alpha 1000 Plus.
11. Transferred \$50 million from US Treasury Fixed Income Pool into Cash.
12. Reduced McKinley, QMA, large cap managers \$100 million each, and Allianz/RCM large and HGMS large Cap managers \$50 million each, and increase US Treasury Fixed Income Pool \$200 million and Frontier and Victory Capital small cap managers \$50 million.
13. Sold \$75 million Russell 1000 Growth and funded \$75 million internally managed S&P 600 Small Cap fund.
14. Remove Cap Guardian from Watch List.
15. \_\_\_\_\_

9/22/2016

Rebalancing Trades (Final)		Pension				Health Care			
		PERS	TRS	JRS	Mil	PERS	TRS	JRS	
		AY21	AY22	AY23	AY24	AYW2	AYW3	AYW4	
<b>Broad Domestic Equity</b>									
AYQK	Large Cap Pool (AYQK)	974,846		(3,713,959)	269,479	349,329	734,503	(314,250)	25,220
AYQC	Small Cap Pool (AYQC)	163,529		(576,185)	42,727	49,931	105,153	(51,278)	3,945
<b>Alternative Equity Strategies</b>									
AY52	Advent Capital Convertible Bond (AY52)	46,955		(146,358)	11,146		30,986	(11,865)	1,036
AYYK	Alternative Equity Strategies Pool (AYYK)	182,206		(567,921)	43,245		120,237	(46,038)	4,021
<b>Global Equity Ex-US</b>									
AYRC	International Equity Pool (AYRC)	1,117,321		(3,475,586)	264,756	(5,265)	737,615	(281,267)	24,625
AYRK	International Equity - Small Cap Pool (AYRK)	72,329		(224,990)	17,139	(341)	47,749	(18,208)	1,594
AYSC	Emerging Markets Pool (AYSC)	163,256		(507,831)	38,684	(769)	107,776	(41,097)	3,598
<b>Private Equity</b>									
AYSK	Private Equity Pool (AYSK)	432,685		(1,348,643)	102,687		285,530	(109,328)	9,550
<b>Real Assets</b>									
AYVK	Real Estate Pool (AYVK)	507,906		(587,988)	61,908		(204,287)	(244,294)	5,711
AY7A	JP Morgan Real Estate (AY7A)	204,892		(229,407)	24,515				
AYPC	REIT Holdings (AYPC)	79,048		(246,394)	18,761		52,167	(19,974)	1,744
AYTK	Farmland Pool (AYTK)	188,459		(587,411)	44,725		124,365	(47,619)	4,159
AYUK	Timber Pool (AYUK)	87,498		(272,713)	20,763		57,738	(22,108)	1,931
AYVC	Energy Pool (AYVC)	18,297		(57,017)	4,339		12,071	(4,623)	403
AY6N	TIPS Internally Managed (AY6N)	12,718		(39,641)	3,018		8,392	(3,214)	281
AYWK	MLP Pool (AYWK)	111,867		(348,690)	26,550		73,825	(28,267)	2,469
AYZK	Private Infrastructure (AYZK)	72,695		(226,585)	17,252		47,972	(18,368)	1,605
AYMK	Public Infrastructure (AYMK)	48,526		(151,251)	11,517		32,022	(12,262)	1,071
<b>Absolute Return</b>									
AYTC	Absolute Return Pool (AYTC)	351,470		(1,095,501)	83,412		231,936	(88,807)	7,757
<b>Fixed Income</b>									
AYZC	Taxable Municipal Bond Pool (AYZC)	57,148		(188,424)	14,170	7,736	37,284	(15,983)	1,313
AY1A	US Treasury Fixed Income Pool (AY1A)	110,804		(830,361)	54,872	364,260	52,985	(100,646)	4,898
AY63	Mondrian Inv. Partners Inc (AY63)	66,204		(271,288)	19,538	48,771	40,992	(26,455)	1,789
AYPK	High Yield Pool (AYPK)	773,993		321,490	(20,792)	21,127	(712,576)	(353,840)	(3,190)
AY5M	Lazard Emerging Income (AY5M)	23,912		(78,841)	5,928	3,237	15,601	(6,688)	549
AYIC	Tactical Fixed Income Pool (AYIC)	37,275		(122,905)	9,242	5,046	24,320	(10,425)	857
<b>Short-term Fixed Income</b>									
AY70	State of AK Short Term Pool (AY70)	(5,905,839)		15,574,400	(1,189,581)	(843,062)	(2,064,356)	1,876,904	(106,936)

9/22/2016

Rebalancing Trades (Final)	DGM Medical			DC Health Reimbursement			DGD&D		
	PERS	TRS		PERS	TRS		PERS	TRS	P&F
	AYX2	AYX3	AYY2		AYY3		AY6G	AY6H	AY6I
<b>Broad Domestic Equity</b>									
Large Cap Pool (AYQK)	360,970	43,519		1,079,943	123,023		48,372	3,085	15,920
Small Cap Pool (AYQC)	56,489	6,786		169,037	19,237		7,620	493	2,516
<b>Alternative Equity Strategies</b>									
Advent Capital Convertible Bond (AY52)	14,658	1,770		43,887	5,019		1,981	129	656
Alternative Equity Strategies Pool (AYYK)	56,878	6,868		170,298	19,474		7,687	502	2,543
<b>Global Equity Ex-US</b>									
International Equity Pool (AYRC)	348,214	42,054		1,042,598	119,229		47,060	3,076	15,570
International Equity - Small Cap Pool (AYRK)	22,542	2,722		67,492	7,718		3,047	199	1,008
Emerging Markets Pool (AYSC)	50,879	6,145		152,338	17,421		6,876	449	2,275
<b>Private Equity</b>									
Private Equity Pool (AYSK)	135,069	16,311		404,410	46,244		18,253	1,193	6,039
<b>Real Assets</b>									
Real Estate Pool (AYVK)	100,915	11,132		299,298	31,517		13,230	727	4,225
JP Morgan Real Estate (AY7A)									
REIT Holdings (AYPC)	24,677	2,980		73,885	8,449		3,335	218	1,104
Farmland Pool (AYTK)	58,831	7,104		176,144	20,142		7,951	520	2,630
Timber Pool (AYUK)	27,313	3,298		81,776	9,351		3,691	241	1,221
Energy Pool (AYVC)	5,710	689		17,097	1,955		772	51	256
TIPS Internally Managed (AY6N)	3,970	479		11,888	1,359		537	35	178
MLP Pool (AYWK)	34,922	4,218		104,561	11,956		4,719	308	1,562
Private Infrastructure (AYZK)	22,693	2,740		67,945	7,769		3,067	200	1,015
Public Infrastructure (AYMK)	15,149	1,829		45,355	5,186		2,047	134	677
<b>Absolute Return</b>									
Absolute Return Pool (AYTC)	109,716	13,249		328,501	37,564		14,828	969	4,906
<b>Fixed Income</b>									
Taxable Municipal Bond Pool (AYZC)	18,683	2,250		55,923	6,380		2,522	164	834
US Treasury Fixed Income Pool (AY1A)	74,287	8,708		221,712	24,678		9,938	615	3,250
Mondrian Inv. Partners Inc (AY63)	25,981	3,103		77,697	8,794		3,498	224	1,152
High Yield Pool (AYPK)	(1,451)	(2,263)		(11,921)	(7,018)		(1,569)	(648)	(1,342)
Lazard Emerging Income (AY5M)	7,817	942		23,400	2,670		1,055	69	349
Tactical Fixed Income Pool (AYIC)	12,187	1,468		36,477	4,161		1,646	107	544
<b>Short-term Fixed Income</b>									
State of AK Short Term Pool (AY70)	(1,587,099)	(188,101)		(4,739,741)	(532,278)		(212,163)	(13,060)	(69,088)

Military Only -

Rebalancing Trades (Final)	11/10/2016 Pension					Health Care		
	PERS	TRS	JRS	Mil	PERS	TRS	JRS	
	AY21	AY22	AY23	AY24	AYW2	AYW3	AYW4	
<b>Broad Domestic Equity</b>								
Large Cap Pool (AYQK)	0	0	0	0	0	0	0	
Small Cap Pool (AYQC)	0	0	0	0	0	0	0	
<b>Alternative Equity Strategies</b>								
Advent Capital Convertible Bond (AY52)	0	0	0		0	0	0	
Alternative Equity Strategies Pool (AYYK)	0	0	0		0	0	0	
<b>Global Equity Ex-US</b>								
International Equity Pool (AYRC)	0	0	0	0	0	0	0	
International Equity - Small Cap Pool (AYRK)	0	0	0	0	0	0	0	
Emerging Markets Pool (AYSC)	0	0	0	0	0	0	0	
<b>Private Equity</b>								
Private Equity Pool (AYSK)	0	0	0		0	0	0	
<b>Real Assets</b>								
Real Estate Pool (AYVK)	0	0	0		0	0	0	
JP Morgan Real Estate (AY7A)	0	0	0		0	0	0	
REIT Holdings (AYPC)	0	0	0		0	0	0	
Farmland Pool (AYTK)	0	0	0		0	0	0	
Timber Pool (AYUK)	0	0	0		0	0	0	
Energy Pool (AYVC)	0	0	0		0	0	0	
TIPS Internally Managed (AY6N)	0	0	0		0	0	0	
MLP Pool (AYWK)	0	0	0		0	0	0	
Private Infrastructure (AYZK)	0	0	0		0	0	0	
Public Infrastructure (AYMK)	0	0	0		0	0	0	
<b>Absolute Return</b>								
Absolute Return Pool (AYTC)	0	0	0		0	0	0	
<b>Fixed Income</b>								
Taxable Municipal Bond Pool (AYZC)	0	0	0	0	0	0	0	
US Treasury Fixed Income Pool (AY1A)	0	0	0	(35,000)	0	0	0	
Mondrian Inv. Partners Inc (AY63)	0	0	0		0	0	0	
High Yield Pool (AYPK)	0	0	0	0	0	0	0	
Lazard Emerging Income (AYSM)	0	0	0	0	0	0	0	
Tactical Fixed Income Pool (AYIC)	0	0	0	0	0	0	0	
<b>Short-term Fixed Income</b>								
State of AK Short Term Pool (AY70)	0	0	0	35,000	0	0	0	





THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

**Department of Revenue**

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11<sup>th</sup> Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

October 26, 2016

Arvin Soh  
Portfolio Manager  
GAM USA, Inc.  
One Rockefeller Plaza, 21<sup>st</sup> Floor  
New York, NY 10020

Dear Arvin:

RE: Redemption from Glacier Bear Fund, L.P.

On Friday, October 28, 2016, please redeem and wire transfer **\$20,000,000.00** to the following account at State Street Bank:

State Street Bank  
ABA Number: 011-000-028  
Account Number: 00566182  
Account Name: State of Alaska – AY8M  
Attn: Traci Wright, 617-664-7218

Sincerely,

A handwritten signature in cursive script that reads "Gary M. Bader".

Gary M. Bader  
Chief Investment Officer

GMB/sv

cc: Scott Jones, Comptroller  
Bob Mitchell, Deputy Chief Investment Officer  
Zachary Hanna, Investment Officer  
Arvin Soh, GAM  
Nancy Fong, Bank of New York  
Traci Wright, State Street Bank.



THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11<sup>th</sup> Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

**Department of Revenue**

October 17, 2016

Traci Wright  
State Street Global Services, IIS Public Funds  
1200 Crown Colony Drive, CC5  
Quincy, MA 02169

Dear Ms. Wright:

This letter is your authorization to transfer **\$20,000,000.00** on **Friday, October 21, 2016**, from account AY70 to account AY1H using the currently applicable sending pool ratios and then wire transfer the full amount as soon as possible using the following instructions:

**Bank :** U.S. Bank, N.A.  
777 E. Wisconsin Avenue  
Milwaukee, WI 53202  
**ABA:** 075000022  
**Credit :** U.S. Bancorp Fund Services, LLC  
**A/C Number :** 112-952-305  
**FFC :** Schroder Advanced ILS Fund (Cayman) Limited Share Class     I      
Account Name Alaska Retirement Management Board as Trustee for  
State of Alaska Retirement and Benefit Plans  
Account Number 1519800011

Please identify on the wire transfer the name of the intended subscriber: Alaska Retirement Management Board as Trustee for State of Alaska Retirement and Benefits Plans.

Sincerely,

Handwritten signature of Gary M. Bader in cursive.

Gary M. Bader  
Chief Investment Officer

cc: Gail Schubert, Chair ARMB  
Pamela Leary, Director  
Asset Accounting Group: Scott Jones, State Comptroller, James McKnight, Senior Investment  
Compliance Officer, Kelli Barkov, Accounting Technician  
Bob Mitchell, Deputy Chief Investment Officer  
Fixed Income Group  
GMB/mab



THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

**Department of Revenue**

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11<sup>th</sup> Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

September 21, 2016

Traci Wright  
State Street Global Services  
IIS Public Funds  
1200 Crown Colony Drive, CC5  
Quincy, MA 02169

Dear Traci:

RE: Additional Funding Polar Bear Fund LP – Class B

This letter is your authorization to transfer **\$4,472,511.00** on **Friday, September 30, 2016** from account AY70 to account AY8N using the currently applicable absolute return ratios and then wire transfer the full amount as soon as possible using the following instructions:

The Bank of New York Mellon  
1 Wall Street, New York  
ABA Number: 021-000-018  
Account Number: 8901234524  
Account Name: Polar Bear Fund LP – Class B  
Reference Details: Alaska Retirement Management Board on behalf of the State of Alaska Retirement and Benefits Plans Trust

Please provide the Fed Confirmation number for this transaction to Sarah Baulch of Bank of New York Mellon via e-mail at [sarah.baulch@bnymellon.com](mailto:sarah.baulch@bnymellon.com)

Sincerely,

A handwritten signature in black ink, appearing to read "G. Bader".

*for* Gary M. Bader  
Chief Investment Officer

GMB/sv Handwritten initials "GMB/sv" in black ink.

cc: Gail Schubert, ARMB Chair  
Randall Hoffbeck, Commissioner  
Pamela Leary, Director  
Scott Jones, State Comptroller  
James McKnight, Senior Investment Compliance Officer  
Bob Mitchell, Deputy Chief Investment Officer  
Sarah Baulch, Bank of New York  
Fran Conroy, KKR Prisma Capital Partners





THE STATE  
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GOVERNOR BILL WALKER

**Department of Revenue**  
ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11<sup>th</sup> Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

October 3, 2016

Traci Wright  
State Street Global Services  
IIS Public Funds  
1200 Crown Colony Drive, CC5  
Quincy, MA 02169

RE: Capital Contribution – Crestline Specialty Lending (US), L.P.

Dear Traci:

This letter is your authorization to transfer **\$4,765,793.00** on **Thursday, October 13, 2016**, from account AY70 to account AYLX using the currently applicable absolute return ratios and then wire transfer the full amount as soon as possible using the following instructions:

Bank Name: The Northern Trust International Banking Corporation  
ABA Number: 026001122  
Account Number: 13591320010  
Account Name: Crestline Specialty Lending (US) LP  
Reference: Alaska Retirement Management Board as Trustee for the State of Alaska Retirement and Benefit Plans.

Sincerely,

A handwritten signature in cursive script that reads "Gary M. Bader".

Gary M. Bader  
Chief Investment Officer

GMB/sv Handwritten initials "sv" followed by a stylized signature.

cc: Scott Jones, Comptroller  
Bob Mitchell, Investment Officer  
Zachary Hanna, Investment Officer  
David Mabry, Crestline Investors, Inc.  
Travis Keith, Crestline Investors, Inc.



THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

**Department of Revenue**

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11<sup>th</sup> Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

October 11, 2016

Traci Wright  
State Street Global Services  
IIS Public Funds  
1200 Crown Colony Drive, CC5  
Quincy, MA 02169

Dear Traci:

RE: Capital Contribution Blue Glacier Fund, L.P. – Class C-2

This letter is your authorization to transfer **\$1,576,891.00** on **Friday, October 14, 2016** from account AY70 to account AY9F using the currently applicable absolute return ratios and then wire transfer the full amount as soon as possible using the following instructions:

Bank Name: The Bank of New York Mellon  
ABA Number: 021-000-018  
Account Name: Blue Glacier Fund, L.P. (Class C-2)  
Account Number: 890-1302-112  
Reference: Investor – Capital Contribution – Friday, October 14, 2016  
Reference Details: Alaska Retirement Management Board on behalf of the State of Alaska Retirement and Benefits Plans Trust

Please provide the Fed Confirmation number for this transaction to Sarah Baulch of Bank of New York Mellon via e-mail at Sarah.Baulch@bnymellon.com.

Sincerely,

A handwritten signature in black ink, appearing to read "GMB", written over a circular stamp or watermark.

*FDL*  
Gary M. Bader  
Chief Investment Officer

GMB/sy  
*su SA*

cc: Scott Jones, Comptroller  
Bob Mitchell, Deputy Chief Investment Officer  
Zachary Hanna, Investment Officer  
Sarah Baulch, Bank of New York Mellon  
Travis Keith, Crestline Investors, Inc.



THE STATE  
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GOVERNOR BILL WALKER

**Department of Revenue**  
ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11<sup>th</sup> Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

October 26, 2016

Traci Wright  
State Street Global Services  
IIS Public Funds  
1200 Crown Colony Drive, CC2  
Quincy, MA 02169

RE: Revised Letter of Direction.

Dear Ms. Wright:

The Alaska Retirement Management Board (ARMB) requests the following changes to be made with a trade date and settlement date of Thursday, October 27, 2016. Please use the percentage of ownership ratios from the sending pool in all instances.

[1.] The ARMB legacy funds sell the following of the G-series fund-of-funds:

Please sell each Selling Fund's ownership in the G-series fund-of-fund, as indicated in the table below. Further, please sell the amounts indicated in the table below from each Selling Fund.

Selling Fund	Fund of Fund Sold	Amount	Selling Fund Name
AYKX	AYGA	\$ -	AYKX - Internally Managed S&P 600
AY4G	AYGB	\$ -	AY4G - Jennison Associates
AY4Q	AYGD	\$ -	AY4Q - Barrow, Hanley, Mewhinney & Strauss (BHMS)
AY5F	AYGE	\$ -	AY5F - Lord Abbett Small Cap Growth
AY5G	AYGF	\$ 4,133,333.34	AY5G - Frontier Capital Management Company
AYKN	AYGH	\$ 4,133,333.33	AYKN - Fidelity (FIAM) Small Company
AY5H	AYGJ	\$ 4,133,333.33	AY5H - Victory Capital Management
AYKV	AYGL	\$ -	AYKV - SSgA Managed Volatility Russell 2000

[2.] Transfer of proceeds into the Large Cap Portable Alpha Fund:

Please use the proceeds from Step 1 to buy the Portable Alpha Fund (AYG2).

[3.] Portable Alpha Fund buys Small Cap Domestic Equity Portable Alpha:

Please use the proceeds from Step 2 to buy the Small Cap Domestic Equity Portable Alpha (AYG1).

[4.] The Small Cap Domestic Equity Portable Alpha (AYG1) buys the following of the G-series fund-of-funds:

Please buy the G-series fund-of-funds, as indicated in the table below, on behalf of Small Cap Domestic Equity Portable Alpha (AYG1).

Buying Fund	Fund of Fund Bought	Amount	Bought Fund Name
AYG1	AYGA	\$ -	AYKX - Internally Managed S&P 600
AYG1	AYGB	\$ -	AY4G - Jennison Associates
AYG1	AYGD	\$ -	AY4Q - Barrow, Hanley, Mewhinney & Strauss (BHMS)
AYG1	AYGE	\$ -	AY5F - Lord Abbett Small Cap Growth
AYG1	AYGF	\$ 4,133,333.34	AY5G - Frontier Capital Management Company
AYG1	AYGH	\$ 4,133,333.33	AYKN - Fidelity (FIAM) Small Company
AYG1	AYGJ	\$ 4,133,333.33	AY5H - Victory Capital Management
AYG1	AYGL	\$ -	AYKV - SSgA Managed Volatility Russell 2000

All transactions listed above in steps one through four are for accounting purposes only.

If you have any questions, please do not hesitate to contact me at (907) 465-4399.

Sincerely,



Gary M. Bader  
Chief Investment Officer

Cc: Gail Schubert, ARMB Chair  
Randall Hoffbeck, Commissioner  
Pamela Leary, Director  
Scott Jones, State Comptroller  
James McKnight, Senior Investment Compliance Officer  
Bob Mitchell, Deputy Chief Investment Officer  
Mike Barnhill, State Investment Officer

GMB/bm



THE STATE  
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GOVERNOR BILL WALKER

**Department of Revenue**

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11<sup>th</sup> Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

October 21, 2016

Traci Wright  
State Street Global Services  
IIS Public Funds  
1200 Crown Colony Drive, CC2  
Quincy, MA 02169

Dear Ms. Wright:

The Alaska Retirement Management Board (ARMB) requests the following changes to be made on **Monday, October 24, 2016**:

Luther King Small Cap (AY4F)	<\$13,571.41>
Short-Term Fixed Income Pool (AY70)	\$13,571.41

Please take this letter as direction to transfer \$13,571.41 from Small Cap Pool (AYQC) to Short-Term Fixed Income Pool (AY70) using percentage of ownership ratios on October 24, 2016.

If you have any questions, please do not hesitate to contact me at (907) 465-4399.

Sincerely,

A handwritten signature in cursive script that reads "Gary M. Bader".

Gary M. Bader  
Chief Investment Officer

Cc: Gail Schubert, ARMB Chair  
Randall Hoffbeck, Commissioner  
Pamela Leary, Director  
Scott Jones, State Comptroller  
James McKnight, Senior Investment Compliance Officer  
Bob Mitchell, Deputy Chief Investment Officer  
Mike Barnhill, State Investment Officer

GMB/smh



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Department of Revenue

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11th Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

October 26, 2016

Traci Wright  
State Street Global Services  
IIS Public Funds  
1200 Crown Colony Drive, CC5  
Quincy, MA 02169

Dear Traci:

RE: AllianzGI Structured Alpha 1000 Plus

This letter is your authorization to transfer **\$100,000,000.00** on **Friday, October 28, 2016** from account AY1A to account AYLW using the currently applicable absolute return ratios and then wire transfer the full amount as soon as possible using the following instructions:

J.P. Morgan Chase, N.A.  
SWIFT: CHASUS33  
ABA Number: 021-000-021  
Account Number: 22622-6858  
Account Name: AllianzGI Structured Alpha 1000 Plus LLC  
Reference Details: Alaska Retirement Management Board on behalf of the State of Alaska Retirement and Benefits Plans Trust

Please be sure to identify on the wire transfer, the name of the Investor and the account number for the remitting account.

Sincerely,

A handwritten signature in black ink that reads "Gary M. Bader".

Gary M. Bader  
Chief Investment Officer

GMB/sv/K

cc: Gail Schubert, ARMB Chair  
Randall Hoffbeck, Commissioner  
Pamela Leary, Director  
Scott Jones, State Comptroller  
James McKnight, Senior Investment Compliance Officer  
Bob Mitchell, State Investment Officer



THE STATE  
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ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11<sup>th</sup> Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

October 26, 2016

Traci Wright  
State Street Global Services  
IIS Public Funds  
1200 Crown Colony Drive, CC5  
Quincy, MA 02169

Dear Ms. Wright:

The Alaska Retirement Management Board (ARMB) requests to have the following cash transfers made as soon as possible on October 26, 2016

US Treasury Fixed Income Pool (AY1A)	<\$50,000,000>
Short-term Fixed Income (AY70)	\$50,000,000

This transaction applies to the ARMB Defined Benefit Pension Plans AY21-AY24; the ARMB Retirement Health Funds AYW2-AYW4; and the ARMB Defined Contribution Plans AY6G-AY6I, AYX2-AYX3, AYY2-AYY3. Please use a pro-rata split based on ownership in AY1A pertaining to the referenced Pension Plans, Retirement Health Funds and Defined Contribution Plans. If you have any questions, please do not hesitate to contact me at (907) 465-4399.

Sincerely,

A handwritten signature in cursive script that reads "Gary M. Bader".

Gary M. Bader  
Chief Investment Officer

cc: Gail Schubert, Chair ARMB  
Pamela Leary, Director  
Scott Jones, State Comptroller  
James McKnight, Senior Investment Compliance Officer  
Bob Mitchell, Deputy Chief Investment Officer  
Kelli Barkov, Accounting Technician  
Fixed Income Group

GMB/mab



THE STATE  
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GOVERNOR BILL WALKER

**Department of Revenue**

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11<sup>th</sup> Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

October 28, 2016

\*REVISION\*

Traci Wright  
State Street Global Services  
IIS Public Funds  
1200 Crown Colony Drive, CC2  
Quincy, MA 02169

Dear Ms. Wright:

The Alaska Retirement Management Board (ARMB) requests the following changes to be made on Thursday, November 3, 2016:

[1]

McKinley Large Cap (AY48)	<\$100,000,000>
QMA Large Cap (AY4V)	<\$100,000,000>
Allianz/RCM Large Cap (AY38)	<\$50,000,000>
BHMS Large Cap (AY4U)	<\$50,000,000>
U.S. Treasury Fixed Income Pool (AY1A)	\$200,000,000
Frontier Capital Management (AY5G)	\$50,000,000
Victory Capital Management (AY5H)	\$50,000,000

[2]

Please buy the G-series fund-of-funds, as indicated in the table below:

Buying Fund	Fund of Fund Bought	Amount	Bought Fund Name
AY5G	AYGF	\$50,000,000	Frontier Capital Management
AY5H	AYGJ	\$50,000,000	Victory Capital Management

[3]

Please also take this letter as direction to make the following pool-level transfer using sending pool percentage of ownership ratios on November 3, 2016:

Large Cap Pool (AYQK)	<\$300,000,000>
U.S Treasury Fixed Income Pool (AY1A)	\$200,000,000
Small Cap Pool (AYQC)	\$100,000,000

Transactions in steps two and three are for accounting purposes only.





THE STATE  
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GOVERNOR BILL WALKER

**Department of Revenue**

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11<sup>th</sup> Floor  
PO Box 110405  
Juneau, Alaska 99811-0405  
Main: 907.465.3749  
Fax: 907.465.2389

November 2, 2016

Traci Wright  
State Street Global Services  
IIS Public Funds  
1200 Crown Colony Drive, CC2  
Quincy, MA 02169

Dear Ms. Wright:

The Alaska Retirement Management Board (ARMB) requests the following changes to be made on Thursday, November 17, 2016:

[1]

SSgA Russell 1000 Growth (AY4L)	<\$75,000,000>
Internally Managed S&P 600 (AYKX)	\$75,000,000

[2]

Please buy the G-series fund-of-funds, as indicated in the table below:

Buying Fund	Fund of Fund Bought	Amount	Bought Fund Name
AYKX	AYGA	\$75,000,000	Internally Managed S&P 600

[3]

Please also take this letter as direction to make the following pool-level transfer using sending pool percentage of ownership ratios on November 17, 2016:

Large Cap Pool (AYQK)	<\$75,000,000>
Small Cap Pool (AYQC)	\$75,000,000

Transactions in steps two and three are for accounting purposes only.

If you have any questions, please do not hesitate to contact me at (907) 465-4399.

Sincerely,

Gary M. Bader  
Chief Investment Officer

**ALASKA RETIREMENT MANAGEMENT BOARD  
FINANCIAL REPORT**

As of October 31, 2016

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**Schedule of Investment Income and Changes in Invested Assets by Fund**  
**Fiscal Year-to-Date through October 31, 2016**

	Beginning Invested Assets	Investment Income <sup>(1)</sup>	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income <sup>(2)</sup>
<b><u>Public Employees' Retirement System (PERS)</u></b>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	\$ 8,209,687,323	\$ 203,128,838	\$ (43,897,480)	\$ 8,368,918,681	1.94%	2.48%
Retirement Health Care Trust	6,773,545,245	165,435,281	(86,433,966)	6,852,546,560	1.17%	2.46%
Total Defined Benefit Plans	<u>14,983,232,568</u>	<u>368,564,119</u>	<u>(130,331,446)</u>	<u>15,221,465,241</u>	1.59%	2.47%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	667,523,128	13,528,802	29,768,104	710,820,034	6.49%	1.98%
Health Reimbursement Arrangement	224,830,912	5,474,628	11,623,112	241,928,652	7.60%	2.37%
Retiree Medical Plan	59,563,867	1,452,424	4,424,079	65,440,370	9.87%	2.35%
Defined Benefit Occupational Death and Disability:						
Public Employees	14,541,982	354,850	508,379	15,405,211	5.94%	2.40%
Police and Firefighters	7,181,338	175,802	198,138	7,555,278	5.21%	2.41%
Total Defined Contribution Plans	<u>973,641,227</u>	<u>20,986,506</u>	<u>46,521,812</u>	<u>1,041,149,545</u>	6.93%	2.11%
<b>Total PERS</b>	<b><u>15,956,873,795</u></b>	<b><u>389,550,625</u></b>	<b><u>(83,809,634)</u></b>	<b><u>16,262,614,786</u></b>	1.92%	2.45%
<b><u>Teachers' Retirement System (TRS)</u></b>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	4,939,784,971	122,329,390	(20,488,340)	5,041,626,021	2.06%	2.48%
Retirement Health Care Trust	2,537,521,837	61,988,710	(34,766,432)	2,564,744,115	1.07%	2.46%
Total Defined Benefit Plans	<u>7,477,306,808</u>	<u>184,318,100</u>	<u>(55,254,772)</u>	<u>7,606,370,136</u>	1.73%	2.47%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	286,112,304	6,028,817	4,591,050	296,732,171	3.71%	2.09%
Health Reimbursement Arrangement	68,360,784	1,669,371	2,005,883	72,036,038	5.38%	2.41%
Retiree Medical Plan	23,621,452	579,027	933,938	25,134,417	6.41%	2.40%
Defined Benefit Occupational Death and Disability	3,137,633	76,585	(181)	3,214,037	2.44%	2.44%
Total Defined Contribution Plans	<u>381,232,173</u>	<u>8,353,800</u>	<u>7,530,690</u>	<u>397,116,663</u>	4.17%	2.17%
<b>Total TRS</b>	<b><u>7,858,538,981</u></b>	<b><u>192,671,900</u></b>	<b><u>(47,724,082)</u></b>	<b><u>8,003,486,799</u></b>	1.84%	2.46%
<b><u>Judicial Retirement System (JRS)</u></b>						
Defined Benefit Plan Retirement Trust	143,723,441	3,546,183	4,353,623	151,623,247	5.50%	2.43%
Defined Benefit Retirement Health Care Trust	26,917,606	656,909	(67,695)	27,506,820	2.19%	2.44%
<b>Total JRS</b>	<b><u>170,641,047</u></b>	<b><u>4,203,092</u></b>	<b><u>4,285,928</u></b>	<b><u>179,130,067</u></b>	4.97%	2.43%
<b><u>National Guard/Naval Militia Retirement System (MRS)</u></b>						
Defined Benefit Plan Retirement Trust	35,866,581	565,674	304,366	36,736,621	2.43%	1.57%
<b><u>Other Participant Directed Plans</u></b>						
Supplemental Annuity Plan	3,419,489,723	44,558,052	(6,869,730)	3,457,178,045	1.10%	1.30%
Deferred Compensation Plan	808,795,367	10,940,863	(3,583,289)	816,152,941	0.91%	1.36%
<b>Total All Funds</b>	<b><u>28,250,205,494</u></b>	<b><u>642,490,206</u></b>	<b><u>(137,396,441)</u></b>	<b><u>28,755,299,259</u></b>		
Total Non-Participant Directed	23,068,284,972	567,433,672	(161,302,576)	23,474,416,068	1.76%	2.47%
Total Participant Directed	5,181,920,522	75,056,534	23,906,135	5,280,883,191	1.91%	1.45%
<b>Total All Funds</b>	<b><u>\$ 28,250,205,494</u></b>	<b><u>\$ 642,490,206</u></b>	<b><u>\$ (137,396,441)</u></b>	<b><u>\$ 28,755,299,259</u></b>	<b>1.79%</b>	<b>2.28%</b>

Notes:

(1) Includes interest, dividends, securities lending, expenses, realized and unrealized gains/losses

(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates and can be found at: <http://www.revenue.state.ak.us/treasury/programs/programs/other/armb/investmentresults.aspx>

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**Schedule of Investment Income and Changes in Invested Assets by Fund**  
**For the Month Ended October 31, 2016**

	Beginning Invested Assets	Investment Income <sup>(1)</sup>	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income <sup>(2)</sup>
<b><u>Public Employees' Retirement System (PERS)</u></b>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	\$ 8,499,694,034	\$ (101,766,882)	\$ (29,008,471)	\$ 8,368,918,681	-1.54%	-1.20%
Retirement Health Care Trust	6,955,566,863	(84,368,028)	(18,652,275)	6,852,546,560	-1.48%	-1.21%
Total Defined Benefit Plans	<u>15,455,260,897</u>	<u>(186,134,910)</u>	<u>(47,660,746)</u>	<u>15,221,465,241</u>	-1.51%	-1.21%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	713,283,419	(12,848,649)	10,385,264	710,820,034	-0.35%	-1.79%
Health Reimbursement Arrangement	241,246,284	(2,920,684)	3,603,052	241,928,652	0.28%	-1.20%
Retiree Medical Plan	65,005,920	(786,577)	1,221,027	65,440,370	0.67%	-1.20%
<u>Defined Benefit Occupational Death and Disability:</u>						
Public Employees	15,444,477	(187,018)	147,752	15,405,211	-0.25%	-1.21%
Police and Firefighters	7,609,086	(91,925)	38,117	7,555,278	-0.71%	-1.21%
Total Defined Contribution Plans	<u>1,042,589,186</u>	<u>(16,834,853)</u>	<u>15,395,212</u>	<u>1,041,149,545</u>	-0.14%	-1.60%
<b>Total PERS</b>	<b><u>16,497,850,083</u></b>	<b><u>(202,969,763)</u></b>	<b><u>(32,265,534)</u></b>	<b><u>16,262,614,786</u></b>	-1.43%	-1.23%
<b><u>Teachers' Retirement System (TRS)</u></b>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	5,133,894,645	(61,507,123)	(30,761,501)	5,041,626,021	-1.80%	-1.20%
Retirement Health Care Trust	2,603,281,006	(31,581,109)	(6,955,782)	2,564,744,115	-1.48%	-1.21%
Total Defined Benefit Plans	<u>7,737,175,651</u>	<u>(93,088,232)</u>	<u>(37,717,283)</u>	<u>7,606,370,136</u>	-1.69%	-1.21%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	298,649,390	(5,446,471)	3,529,252	296,732,171	-0.64%	-1.81%
Health Reimbursement Arrangement	71,953,969	(873,128)	955,197	72,036,038	0.11%	-1.21%
Retiree Medical Plan	25,117,446	(304,795)	321,766	25,134,417	0.07%	-1.21%
Defined Benefit Occupational Death and Disability	3,253,494	(39,435)	(22)	3,214,037	-1.21%	-1.21%
Total Defined Contribution Plans	<u>398,974,299</u>	<u>(6,663,829)</u>	<u>4,806,193</u>	<u>397,116,663</u>	-0.47%	-1.66%
<b>Total TRS</b>	<b><u>8,136,149,950</u></b>	<b><u>(99,752,061)</u></b>	<b><u>(32,911,090)</u></b>	<b><u>8,003,486,799</u></b>	-1.63%	-1.23%
<b><u>Judicial Retirement System (JRS)</u></b>						
Defined Benefit Plan Retirement Trust	153,957,381	(1,842,109)	(492,025)	151,623,247	-1.52%	-1.20%
Defined Benefit Retirement Health Care Trust	27,868,553	(337,709)	(24,024)	27,506,820	-1.30%	-1.21%
<b>Total JRS</b>	<b><u>181,825,934</u></b>	<b><u>(2,179,818)</u></b>	<b><u>(516,049)</u></b>	<b><u>179,130,067</u></b>	-1.48%	-1.20%
<b><u>National Guard/Naval Militia Retirement System (MRS)</u></b>						
Defined Benefit Plan Retirement Trust	37,435,720	(460,579)	(238,520)	36,736,621	-1.87%	-1.23%
<b><u>Other Participant Directed Plans</u></b>						
Supplemental Annuity Plan	3,499,041,367	(44,468,071)	2,604,749	3,457,178,045	-1.20%	-1.27%
Deferred Compensation Plan	828,734,697	(12,170,465)	(411,291)	816,152,941	-1.52%	-1.47%
<b>Total All Funds</b>	<b><u>29,181,037,751</u></b>	<b><u>(362,000,757)</u></b>	<b><u>(63,737,735)</u></b>	<b><u>28,755,299,259</u></b>		
Total Non-Participant Directed	23,841,328,878	(287,067,101)	(79,845,709)	23,474,416,068	-1.54%	-1.21%
Total Participant Directed	5,339,708,873	(74,933,656)	16,107,974	5,280,883,191	-1.10%	-1.40%
<b>Total All Funds</b>	<b><u>\$ 29,181,037,751</u></b>	<b><u>\$ (362,000,757)</u></b>	<b><u>\$ (63,737,735)</u></b>	<b><u>\$ 28,755,299,259</u></b>	<b>-1.46%</b>	<b>-1.24%</b>

Notes:

(1) Includes interest, dividends, securities lending, expenses, realized and unrealized gains/losses

(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates and can be found at: <http://www.revenue.state.ak.us/treasury/programs/programs/other/armb/investmentresults.aspx>

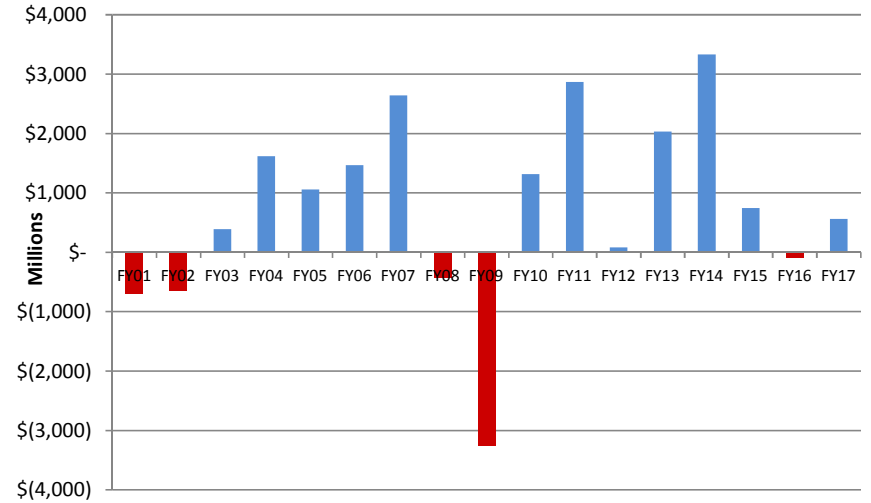
## Total Defined Benefit Assets

As of October 31, 2016

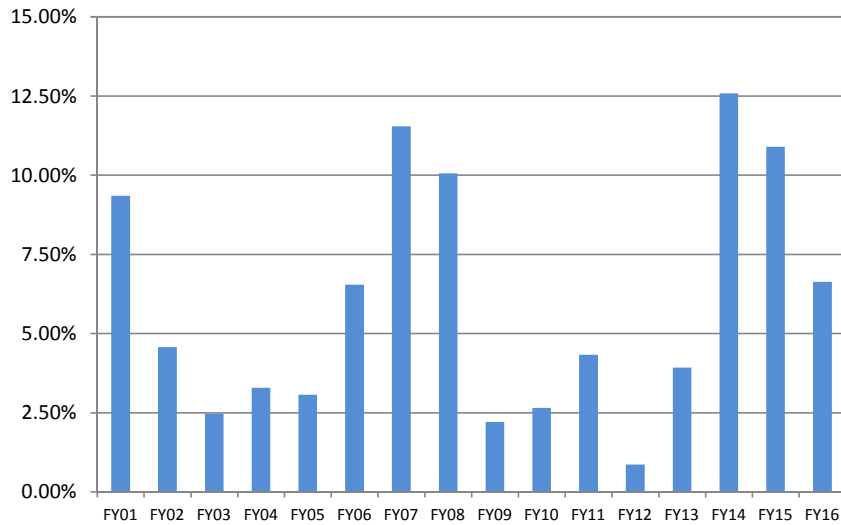
### Total Assets History



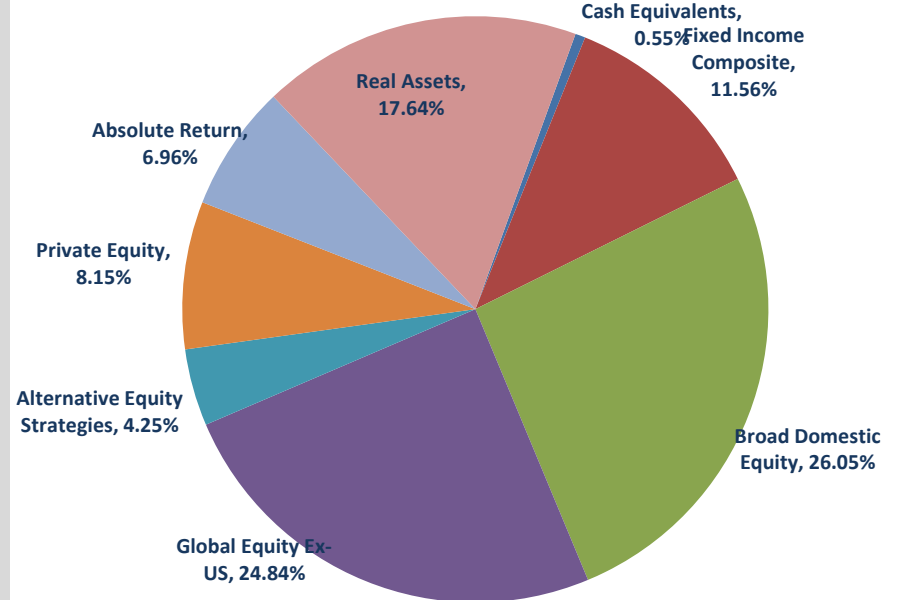
### Income by Fiscal Year



### 5-year Annualized Returns as of Fiscal Year End



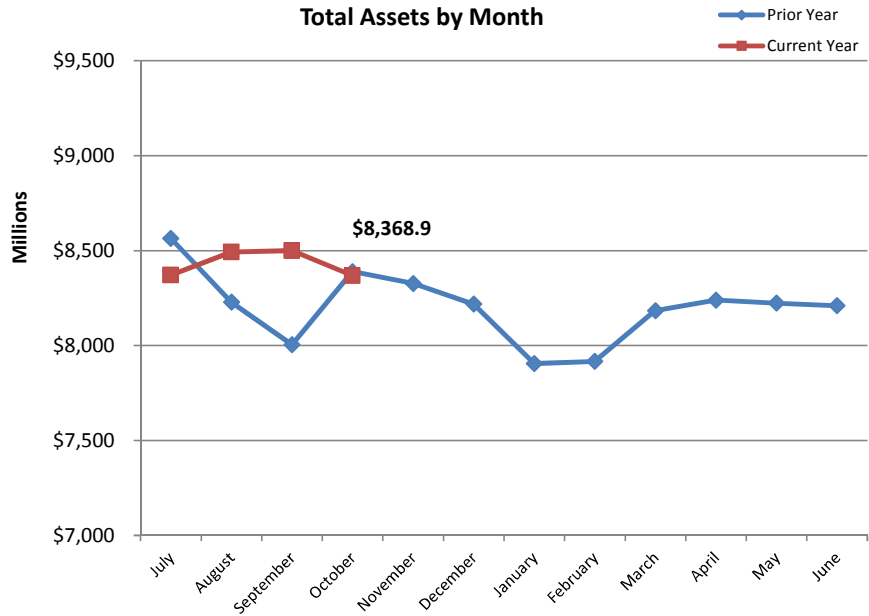
### Actual Asset Allocation



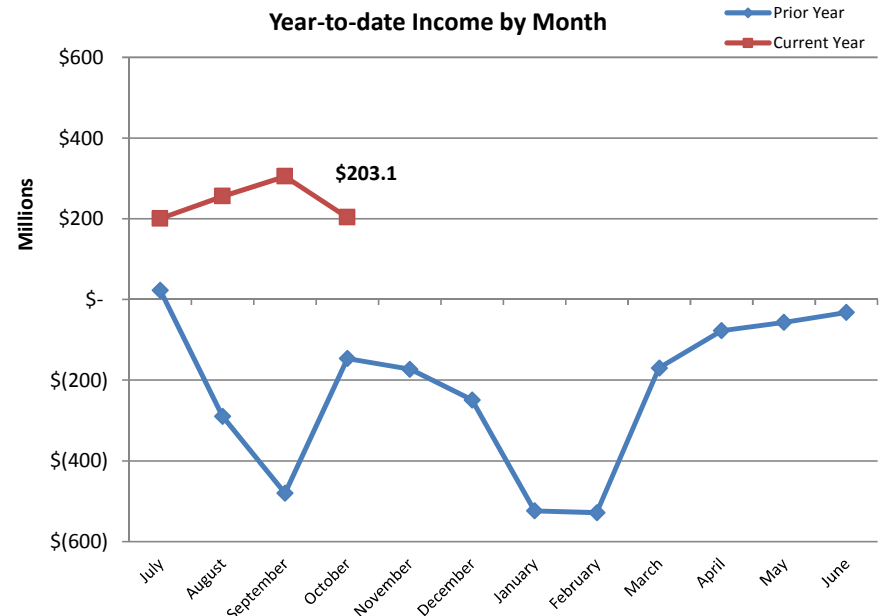
# Public Employees' Retirement Pension Trust Fund

Fiscal Year-to-Date through October 31, 2016

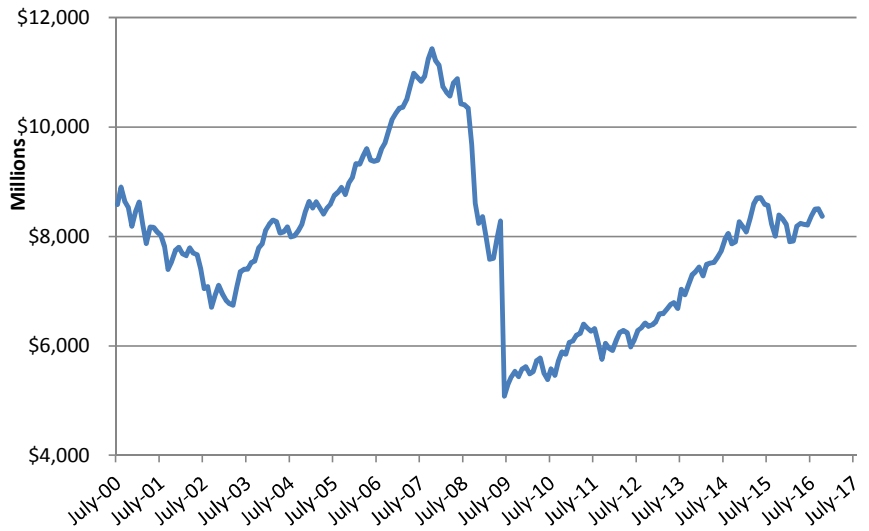
### Total Assets by Month



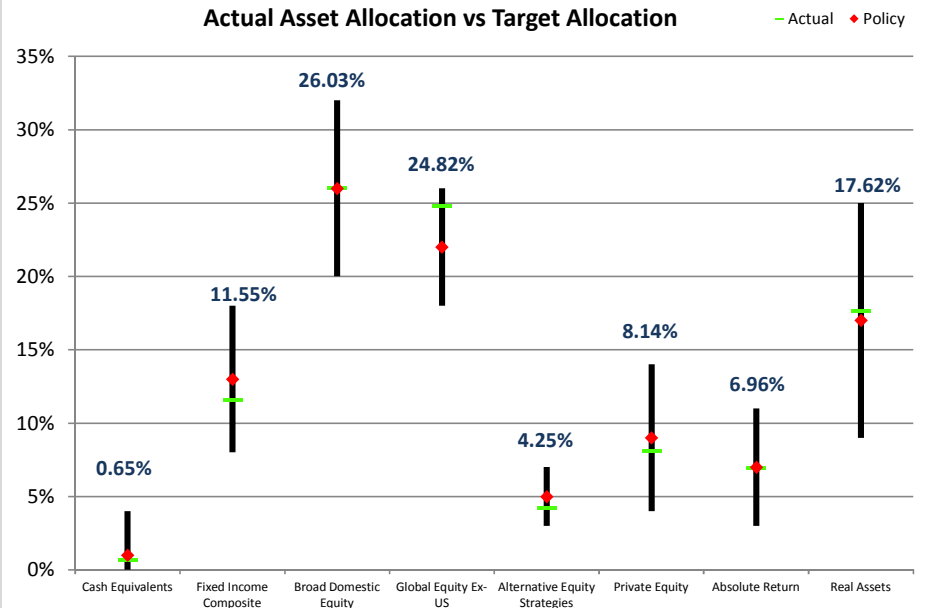
### Year-to-date Income by Month



### Total Assets History



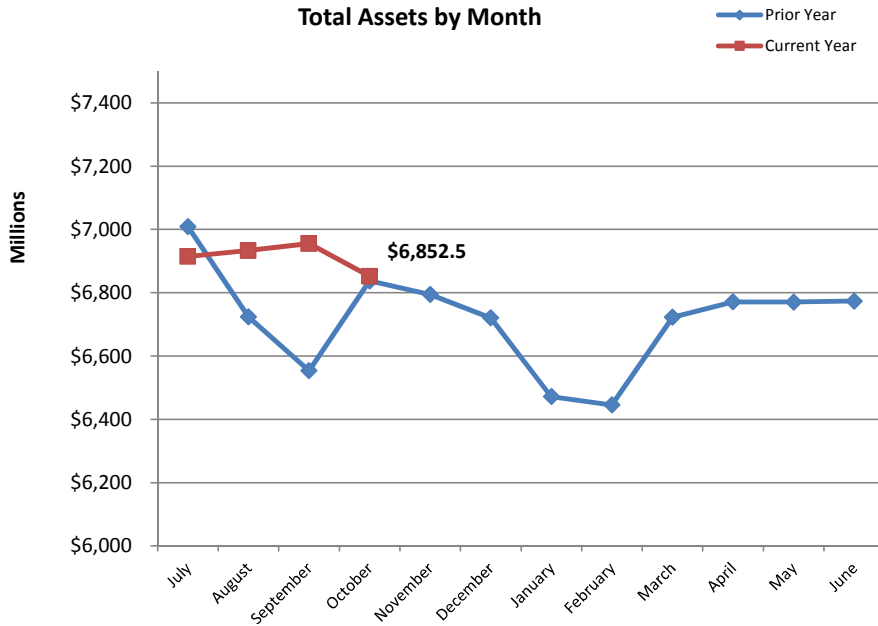
### Actual Asset Allocation vs Target Allocation



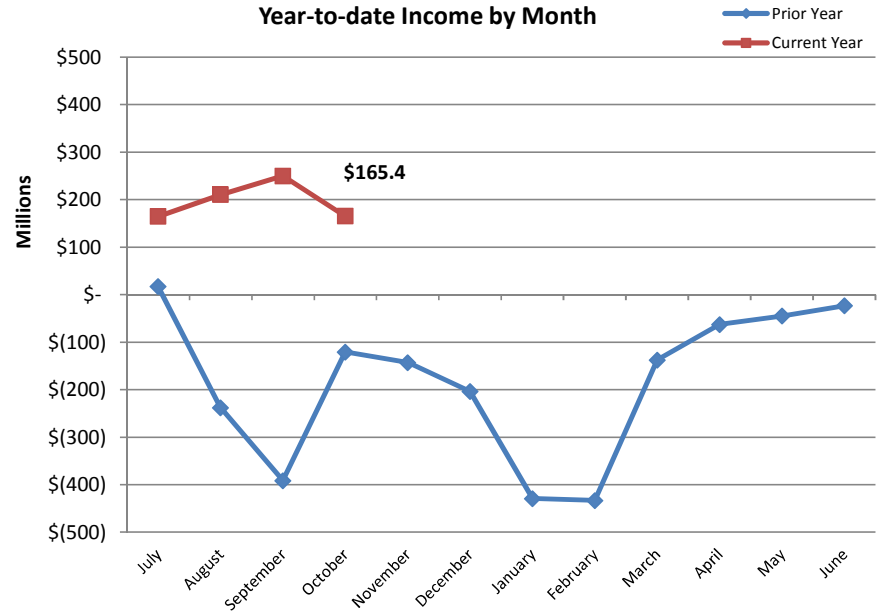
# Public Employees' Retirement Health Care Trust Fund

Fiscal Year-to-Date through October 31, 2016

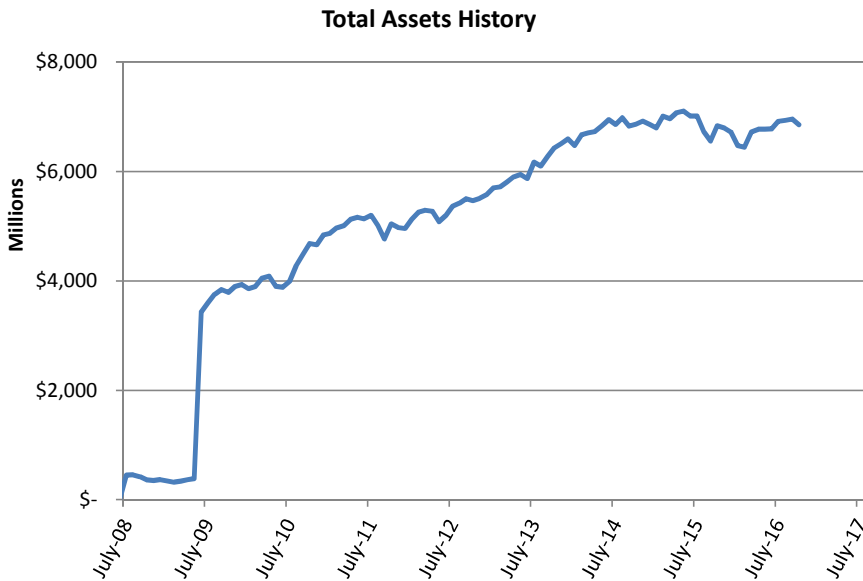
### Total Assets by Month



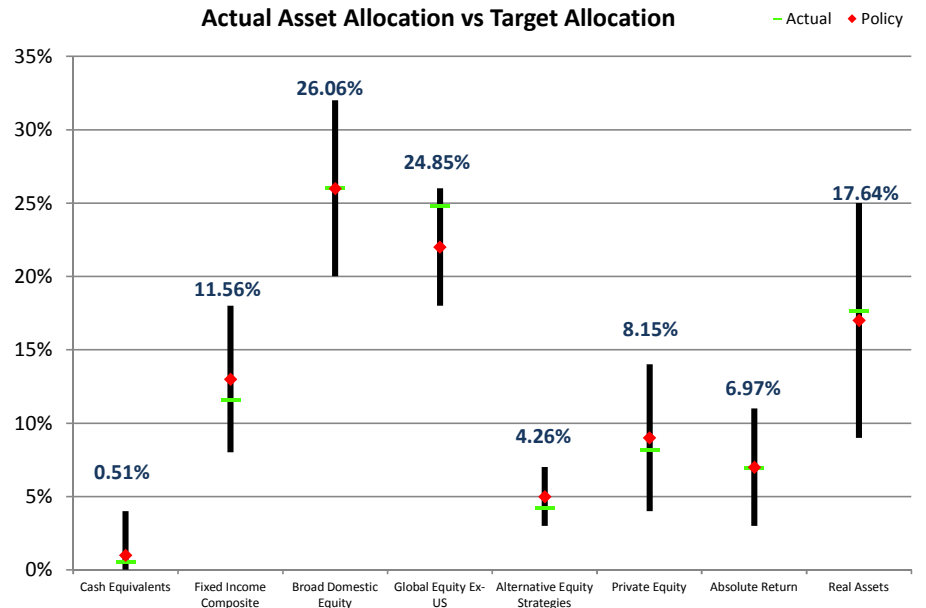
### Year-to-date Income by Month



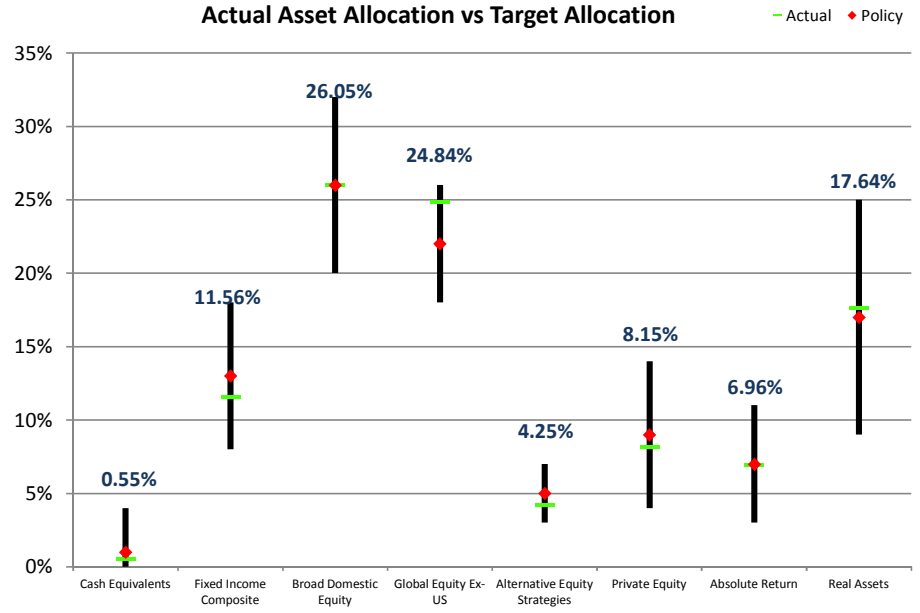
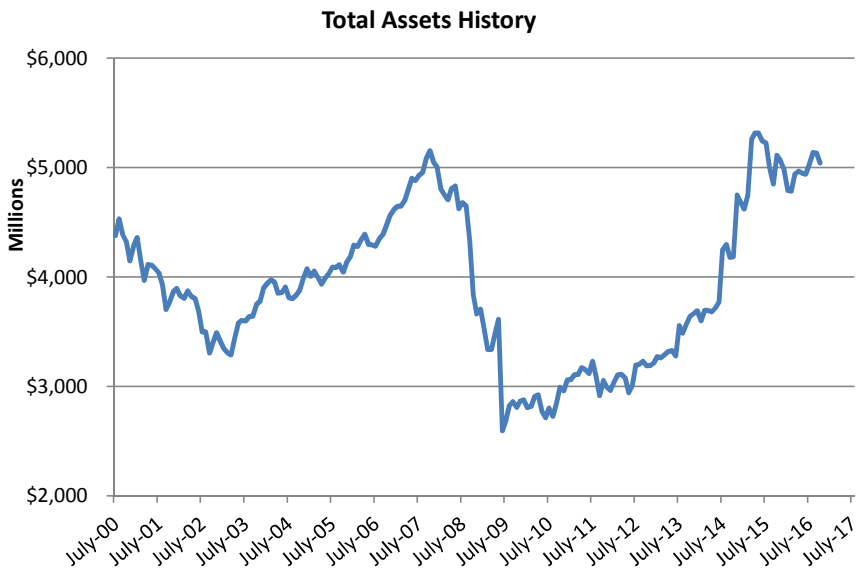
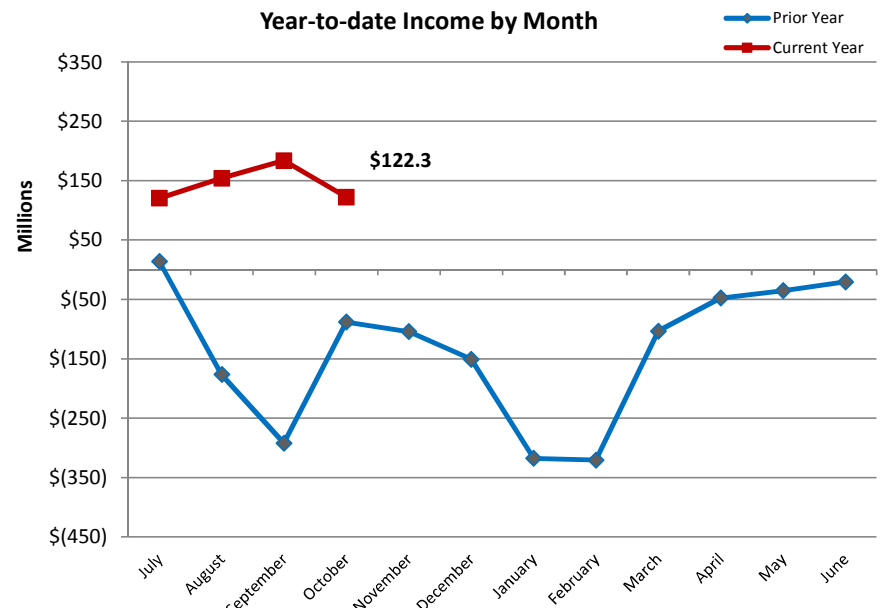
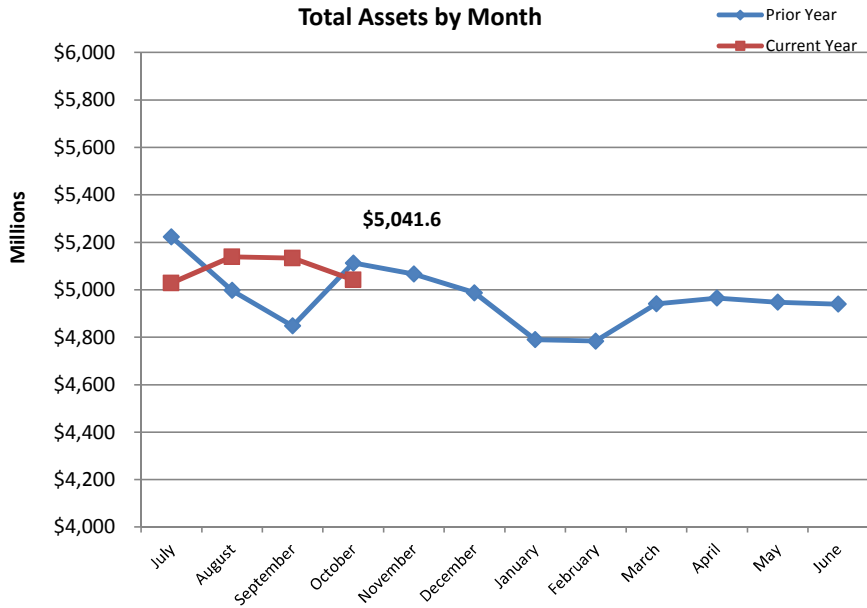
### Total Assets History



### Actual Asset Allocation vs Target Allocation



## Teachers' Retirement Pension Trust Fund Fiscal Year-to-Date through October 31, 2016

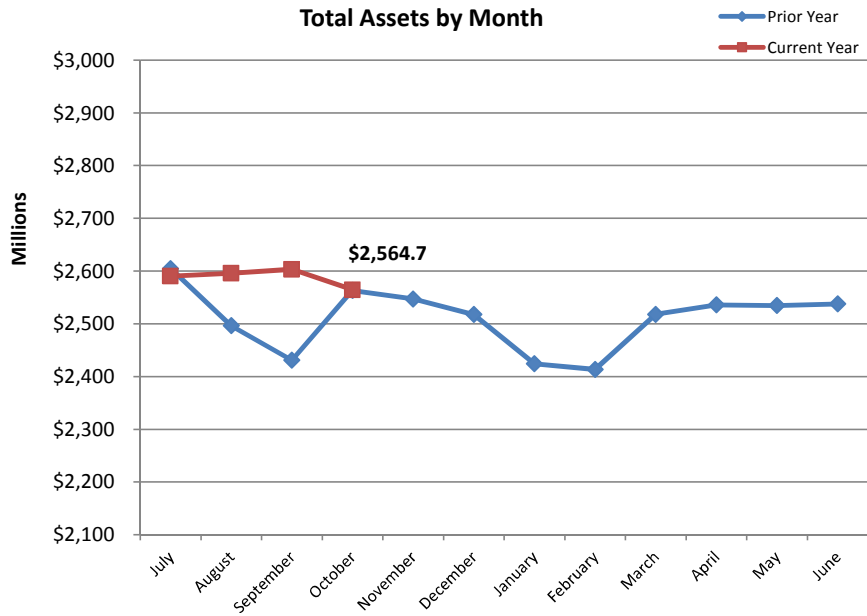




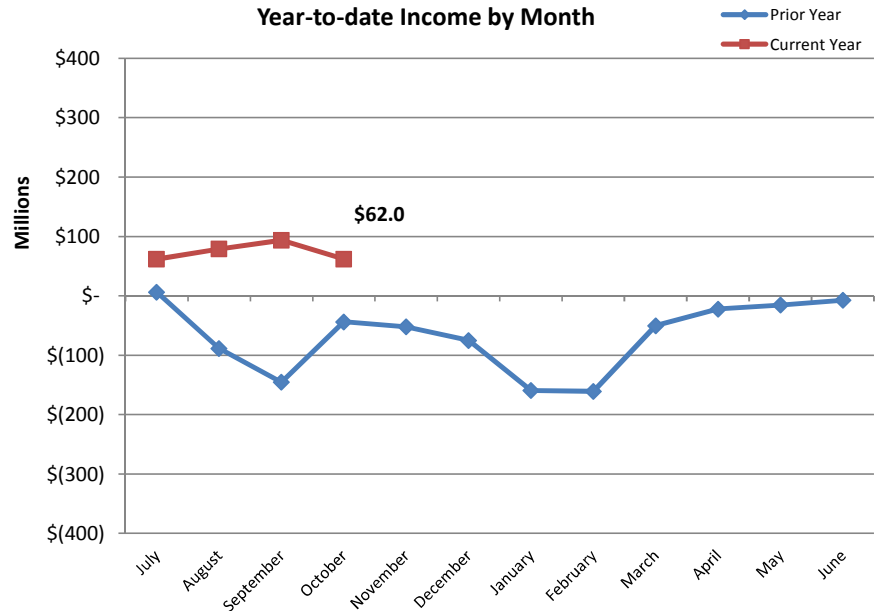
# Teachers' Retirement Health Care Trust Fund

Fiscal Year-to-Date through October 31, 2016

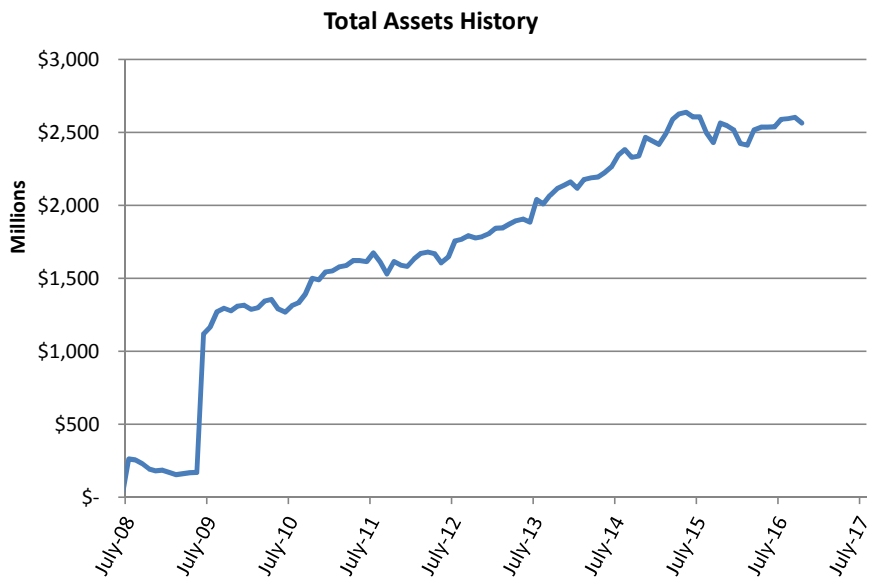
### Total Assets by Month



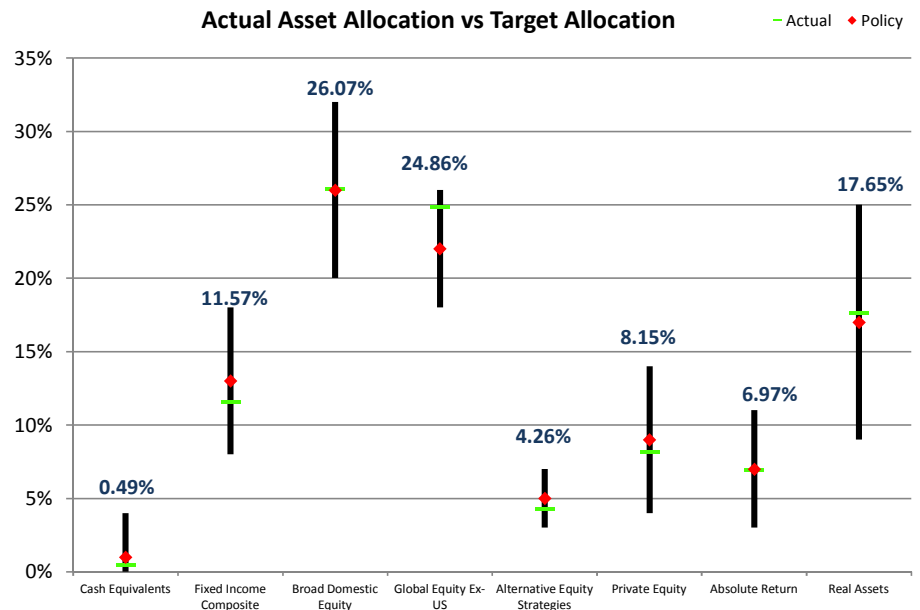
### Year-to-date Income by Month



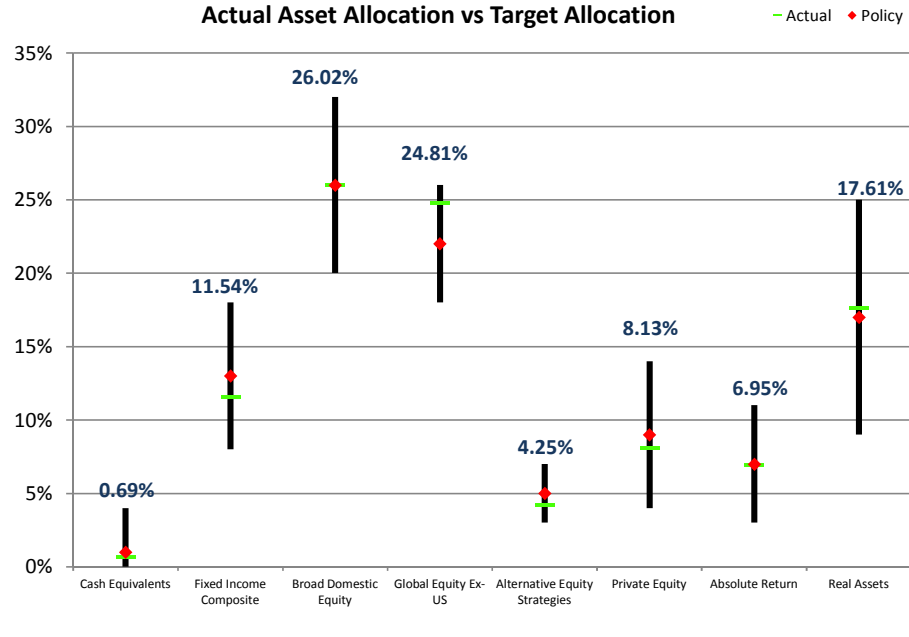
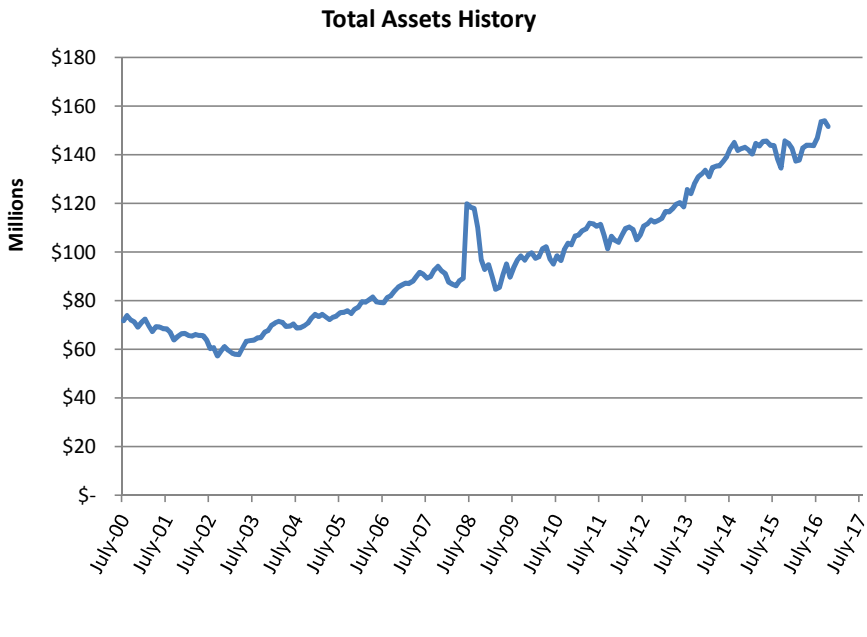
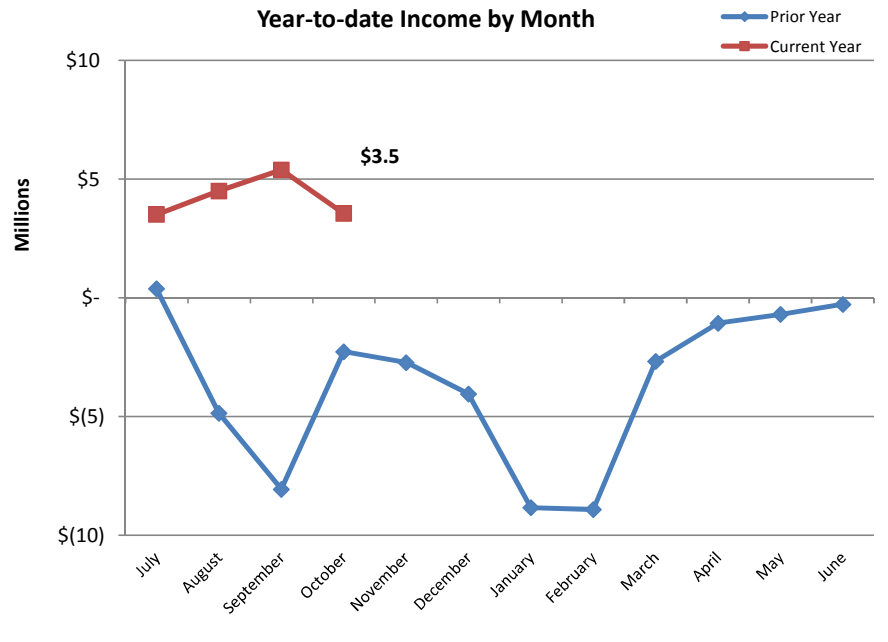
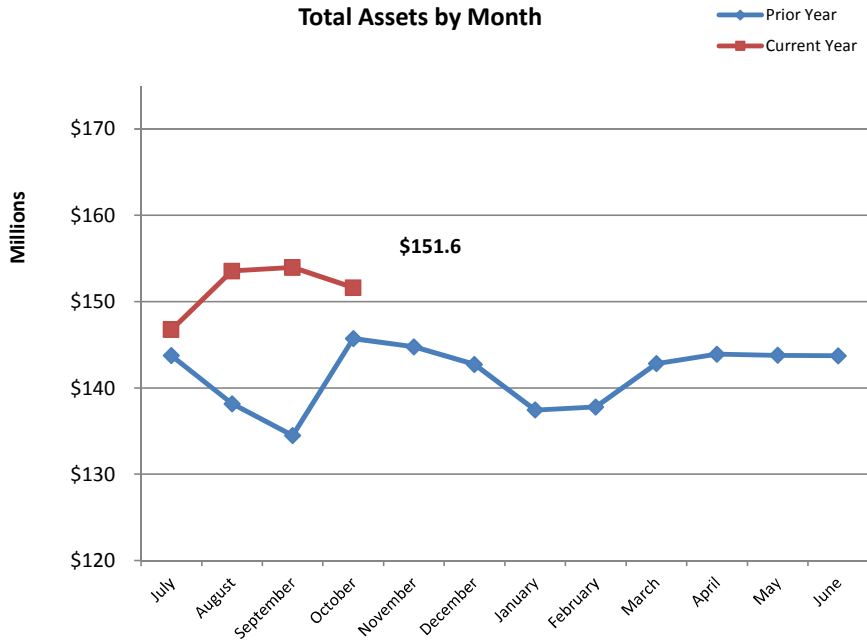
### Total Assets History



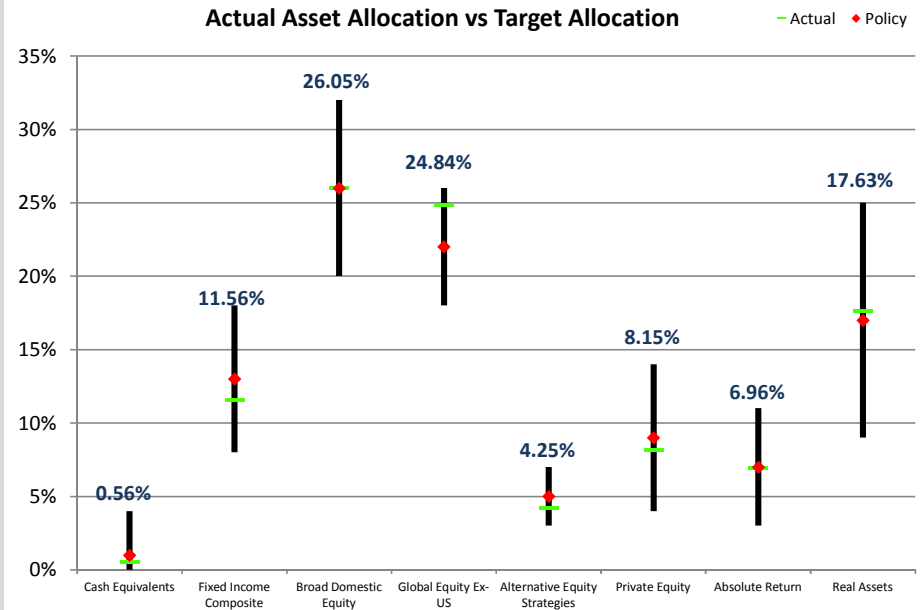
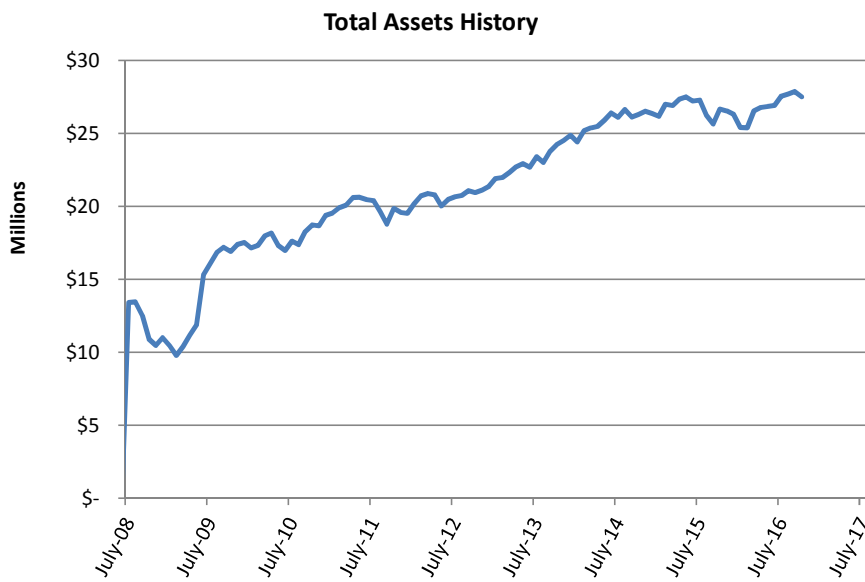
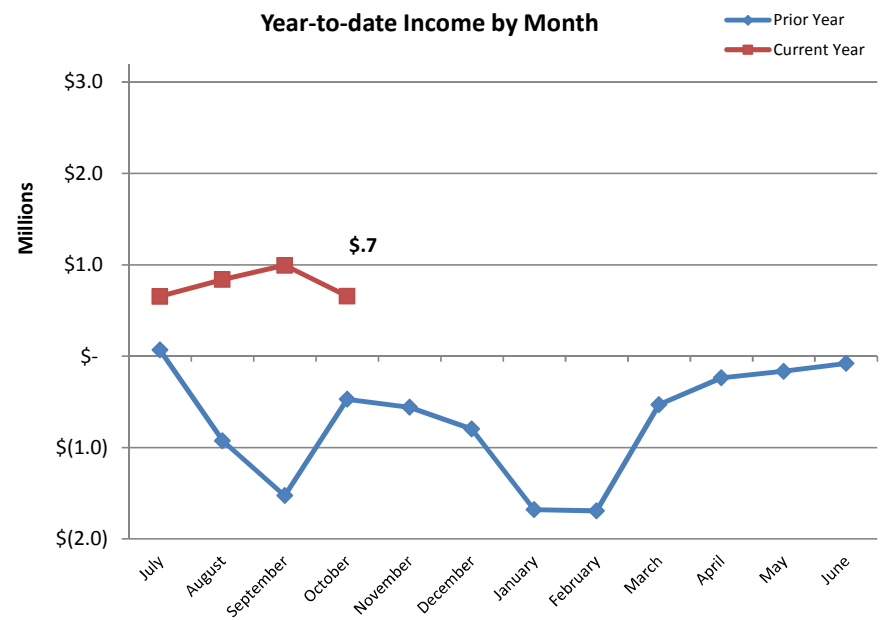
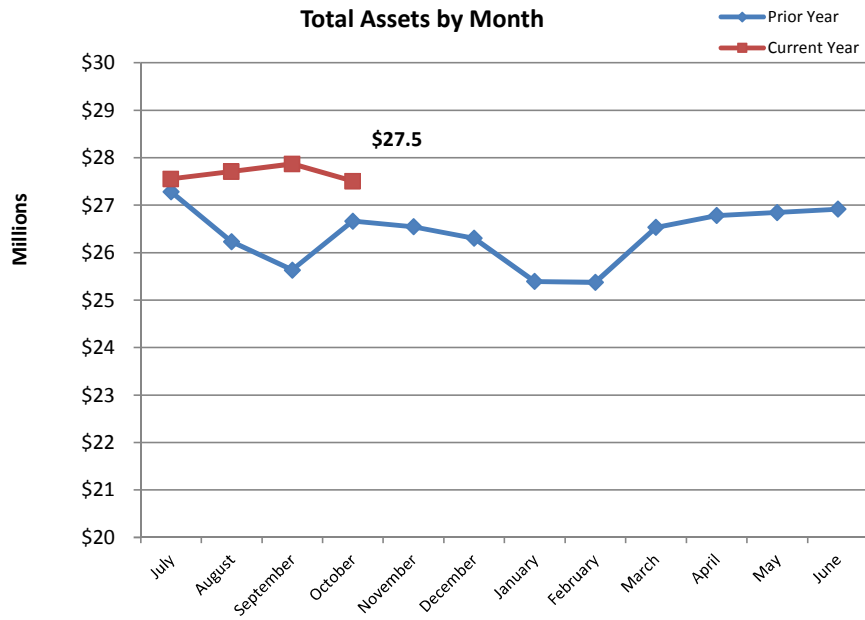
### Actual Asset Allocation vs Target Allocation



## Judicial Retirement Pension Trust Fund Fiscal Year-to-Date through October 31, 2016

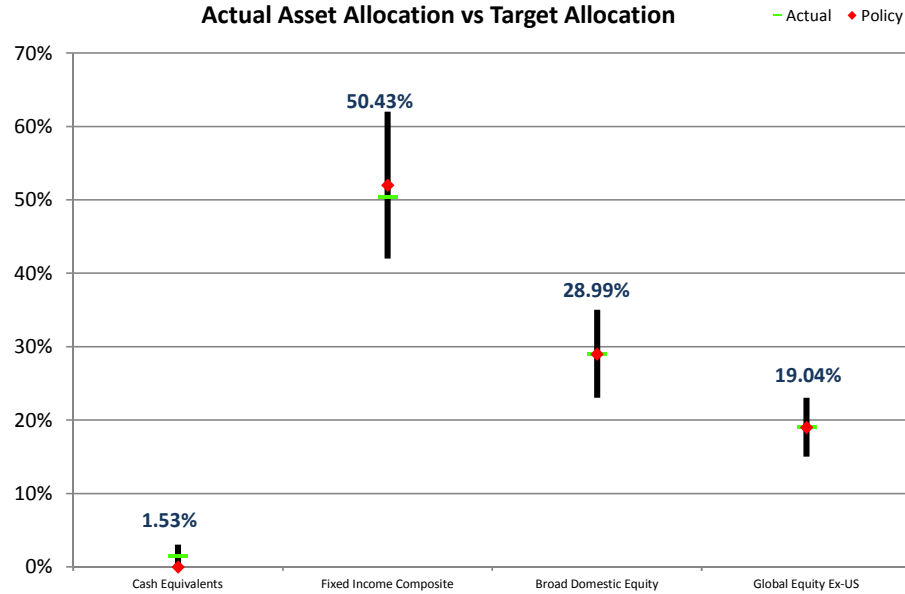
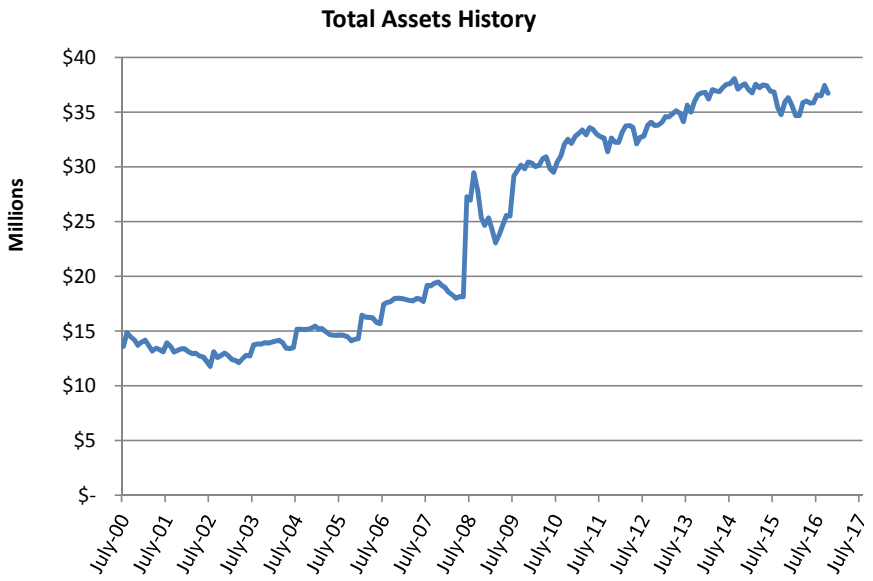
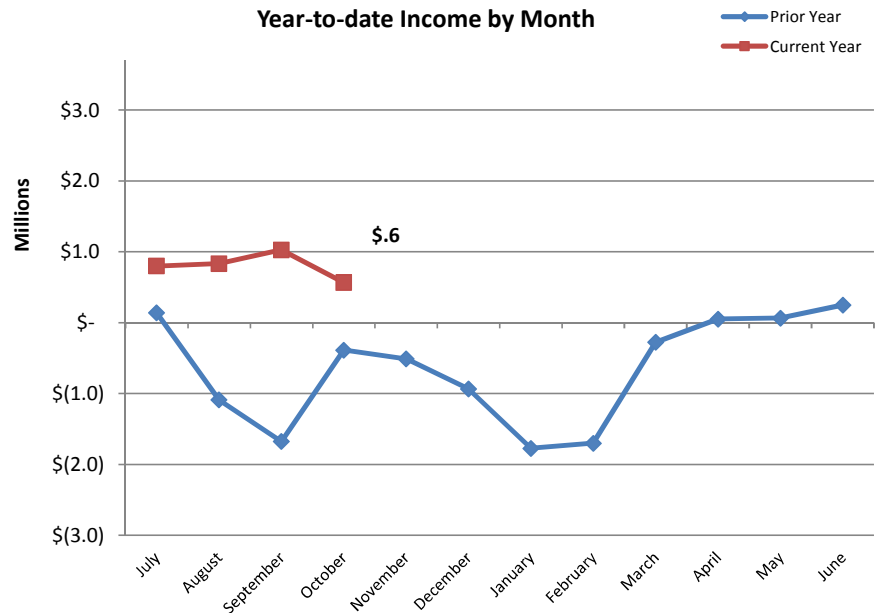
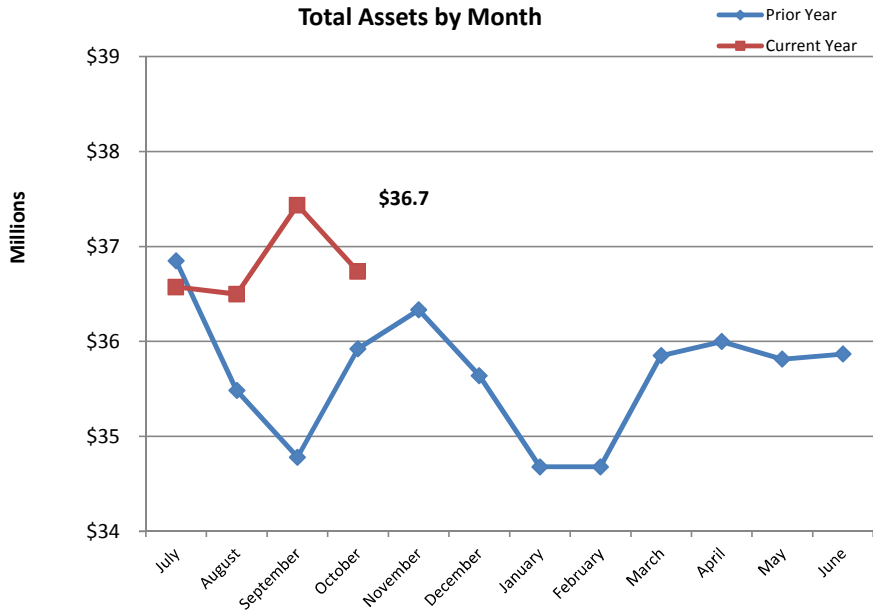


## Judicial Retirement Health Care Trust Fund Fiscal Year-to-Date through October 31, 2016



## Military Retirement Trust Fund

### Fiscal Year-to-Date through October 31, 2016



# **ALASKA RETIREMENT MANAGEMENT BOARD**

## **Reporting of Funds by Manager**

All Non-Participant Directed Plans

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2016**

	<b>Beginning Invested Assets</b>	<b>Investment Income</b>	<b>Net Contributions and (Withdrawals)</b>	<b>Ending Invested Assets</b>	<b>% increase (decrease)</b>
<b>Cash</b>					
Short-Term Fixed Income Pool	\$ 153,104,237	\$ 114,642	\$ (17,992,871)	\$ 135,226,008	-11.68%
<b>Total Cash</b>	<u>153,104,237</u>	<u>114,642</u>	<u>(17,992,871)</u>	<u>135,226,008</u>	-11.68%
<b>Fixed Income</b>					
US Treasury Fixed Income	1,071,467,095	(4,976,102)	(150,037,500)	916,453,493	-14.47%
<b>Taxable Municipal Bond Pool</b>					
Western Asset Management	134,453,067	(2,415,300)	-	132,037,767	-1.80%
Guggenheim Partners	129,147,686	(2,191,640)	-	126,956,046	-1.70%
	<u>263,600,753</u>	<u>(4,606,940)</u>	<u>-</u>	<u>258,993,813</u>	-1.75%
<b>Alternative Fixed Income Pool</b>					
Fidelity Institutional Asset Management.	132,086,893	(154,095)	-	131,932,798	-0.12%
Schroders Innsurance Linked Securities	40,040,539	338,160	20,000,000	60,378,699	50.79%
	<u>172,127,432</u>	<u>184,065</u>	<u>20,000,000</u>	<u>192,311,497</u>	11.73%
<b>International Fixed Income Pool</b>					
Mondrian Investment Partners	370,984,245	(10,365,988)	-	360,618,257	-2.79%
<b>High Yield Pool</b>					
MacKay Shields, LLC	235,239,793	1,244,346	-	236,484,139	0.53%
Fidelity Instit. Asset Mgmt. High Yield CMBS	205,828,648	(517,962)	-	205,310,686	-0.25%
Columbia Threadneedle	224,277,680	(390,051)	-	223,887,629	-0.17%
Eaton Vance High Yield	221,788,577	(153,675)	-	221,634,902	-0.07%
	<u>887,134,698</u>	<u>182,658</u>	<u>-</u>	<u>887,317,356</u>	0.02%
<b>Emerging Debt Pool</b>					
Lazard Emerging Income	110,962,028	123,974	-	111,086,002	0.11%
<b>Total Fixed Income</b>	<u>2,876,276,251</u>	<u>(19,458,333)</u>	<u>(130,037,500)</u>	<u>2,726,780,418</u>	-5.20%

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2016**

**Domestic Equities**

**Small Cap Pool**

Passively Managed

SSgA Russell 2000 Growth	19,419,949	(1,201,353)	-	18,218,596	-6.19%
SSgA Russell 2000 Value	34,030,059	(1,118,014)	-	32,912,045	-3.29%
Total Passive	<u>53,450,008</u>	<u>(2,319,367)</u>	-	<u>51,130,641</u>	-4.34%

Actively Managed

Barrow, Haney, Mewhinney & Strauss	43,825,859	(1,139,339)	-	42,686,520	-2.60%
DePrince, Race & Zollo Inc.- Micro Cap	85,216,913	(2,165,584)	-	83,051,329	-2.54%
Fidelity (FIAM) Small Company	160,550,836	(6,436,191)	(17,466,667)	136,647,978	-14.89%
Frontier Capital Mgmt. Co.	33,789,051	(1,348,011)	(17,466,667)	14,974,373	-55.68%
Jennison Associates, LLC	88,354,138	(3,549,035)	-	84,805,103	-4.02%
Lord Abbett Small Cap Growth Fund	50,011,147	(3,507,398)	-	46,503,749	-7.01%
Lord Abbett & Co.- Micro Cap	87,186,554	(6,341,477)	-	80,845,077	-7.27%
Luther King Capital Management	-	13,574	(13,571)	3	-
SSgA Futures Small Cap	12,485,352	(523,315)	-	11,962,037	-4.19%
Transition Account	13	-	-	13	-
Sycamore Capital	106,031,975	(2,301,023)	(17,466,667)	86,264,285	-18.64%
SSgA Volatility-Russell 2000	929,178	(6,413)	-	922,765	-0.69%
Zebra Capital Management	80,748,936	(3,494,751)	-	77,254,185	-4.33%
Total Active	<u>749,129,952</u>	<u>(30,798,963)</u>	<u>(52,413,572)</u>	<u>665,917,417</u>	-11.11%
<b>Total Small Cap</b>	<u>802,579,960</u>	<u>(33,118,330)</u>	<u>(52,413,572)</u>	<u>717,048,058</u>	-10.66%

**Large Cap Pool**

Passively Managed

SSgA Russell 1000 Growth	1,093,325,759	(25,622,389)	-	1,067,703,370	-2.34%
SSgA Russell 1000 Value	992,641,261	(15,472,872)	-	977,168,389	-1.56%
SSgA Russell 200	847,109,354	(12,370,226)	-	834,739,128	-1.46%
Total Passive	<u>2,933,076,374</u>	<u>(53,465,487)</u>	-	<u>2,879,610,887</u>	-1.82%

Actively Managed

Allianz Global Investors	367,661,756	(8,089,201)	-	359,572,555	-2.20%
Barrow, Haney, Mewhinney & Strauss	348,749,131	(2,493,248)	-	346,255,883	-0.71%
Lazard Freres	374,022,887	(10,498,032)	-	363,524,855	-2.81%
McKinley Capital Mgmt.	361,920,965	(9,240,226)	-	352,680,739	-2.55%
Quantitative Management Assoc.	339,055,674	(2,114,650)	-	336,941,024	-0.62%
SSgA Futures large cap	15,624,084	(292,535)	-	15,331,549	-1.87%
Transition Account	-	780	-	780	100.00%
SSgA Volatility-Russell 1000	86,634,793	(1,242,924)	-	85,391,869	-1.43%
Portable Alpha	282,575,462	(951,355)	59,000,000	340,624,107	20.54%
Internally Managed Large Cap.	327,471,917	(8,797,484)	-	318,674,433	-2.69%
Total Active	<u>2,503,716,669</u>	<u>(43,718,875)</u>	<u>59,000,000</u>	<u>2,518,997,794</u>	0.61%
<b>Total Large Cap</b>	<u>5,436,793,043</u>	<u>(97,184,362)</u>	<u>59,000,000</u>	<u>5,398,608,681</u>	-0.70%
<b>Total Domestic Equity</b>	<u>6,239,373,003</u>	<u>(130,302,692)</u>	<u>6,586,428</u>	<u>6,115,656,739</u>	-1.98%

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2016**

**Alternative Equity Strategies**

**Alternative Equity Strategy Pool**

Relational Investors, LLC	1,080,829	-	-	1,080,829	-
Analytic Buy Write Account	308,580,664	(89,882)	-	308,490,782	-0.03%
Quantitative Management Associates MPS	203,538,892	(3,038,321)	-	200,500,571	-1.49%
ARMB Equity Yield Strategy	287,165,633	(4,458,704)	-	282,706,929	-1.55%
Alternative Equity Strategies Transition Account	-	-	-	-	-
<b>Total Alternative Equity Strategy Pool</b>	<u>800,366,018</u>	<u>(7,586,907)</u>	<u>-</u>	<u>792,779,111</u>	<u>-0.95%</u>

**Convertible Bond Pool**

Advent Capital	206,313,200	(2,466,172)	-	203,847,028	-1.20%
<b>Total Alternative Equity Strategies</b>	<u>1,006,679,218</u>	<u>(10,053,079)</u>	<u>-</u>	<u>996,626,139</u>	<u>-1.00%</u>

**Global Equities Ex US**

**Small Cap Pool**

Mondrian Investment Partners	154,131,952	(7,515,579)	-	146,616,373	-4.88%
Schroder Investment Management	163,642,319	(4,952,777)	-	158,689,542	-3.03%
<b>Total Small Cap</b>	<u>317,774,271</u>	<u>(12,468,356)</u>	<u>-</u>	<u>305,305,915</u>	<u>-3.92%</u>

**Large Cap Pool**

Blackrock ACWI Ex-US IMI	816,203,202	(13,050,077)	-	803,153,125	-1.60%
Brandes Investment Partners	699,916,288	2,503,799	-	702,420,087	0.36%
Cap Guardian Trust Co	725,858,122	(11,898,223)	-	713,959,899	-1.64%
Lazard Freres	356,193,129	(12,978,967)	-	343,214,162	-3.64%
McKinley Capital Management	514,771,155	(10,174,236)	-	504,596,919	-1.98%
SSgA Futures International	-	-	-	-	-
Allianz Global Investors	256,181,453	(4,349,303)	-	251,832,150	-1.70%
Arrow Street Capital	308,118,175	(4,473,654)	-	303,644,521	-1.45%
Baillie Gifford Overseas Limited	395,764,059	(14,952,983)	-	380,811,076	-3.78%
State Street Global Advisors	819,270,742	(13,336,880)	-	805,933,862	-1.63%
<b>Total Large Cap</b>	<u>4,892,276,325</u>	<u>(82,710,524)</u>	<u>-</u>	<u>4,809,565,801</u>	<u>-1.69%</u>

**Emerging Markets Equity Pool**

Lazard Asset Management	464,069,142	2,800,659	-	466,869,801	0.60%
Eaton Vance	245,835,106	-	-	245,835,106	-
<b>Total Emerging Markets Pool</b>	<u>709,904,248</u>	<u>2,800,659</u>	<u>-</u>	<u>712,704,907</u>	<u>0.39%</u>

<b>Total Global Equities</b>	<u>5,919,954,844</u>	<u>(92,378,221)</u>	<u>-</u>	<u>5,827,576,623</u>	<u>-1.56%</u>
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**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2016**

**Private Equity Pool**

Abbott Capital	785,883,237	2,574,596	(5,463,261)	782,994,572	-0.37%
Angelo, Gordon & Co.	3,336,686	-	(710,900)	2,625,786	-21.31%
Advent International GPE Fund VIII-B	525,000	-	-	525,000	-
Lexington Partners VII	33,868,638	-	(737,815)	33,130,823	-2.18%
Merit Capital Partners	18,428,794	-	(853,590)	17,575,204	-4.63%
NB SOF III	22,489,439	-	1,246,795	23,736,234	5.54%
NB SOF IV	-	-	-	-	-
Resolute Fund III	7,804,803	-	9,688	7,814,491	0.12%
Glendon Opportunities	25,455,323	-	-	25,455,323	-
New Mountain Partners IV	13,540,432	-	-	13,540,432	-
KKR Lending Partners II	80,428,181	-	(10,180,784)	70,247,397	-12.66%
NGP XI	13,109,133	-	4,518,039	17,627,172	34.46%
Lexington Capital Partners VIII	10,554,712	-	-	10,554,712	-
Onex Partnership III	20,799,722	-	-	20,799,722	-
Pathway Capital Management LLC	832,149,744	(1,622,905)	833,055	831,359,894	-0.09%
Summit Partners GE IX	-	-	-	-	-
Warburg Pincus X	14,977,817	-	-	14,977,817	-
Warburg Pincus XI	29,179,199	-	-	29,179,199	-
Warburg Pincus XII	6,571,497	-	-	6,571,497	-
<b>Total Private Equity</b>	<b>1,919,102,357</b>	<b>951,691</b>	<b>(11,338,773)</b>	<b>1,908,715,275</b>	<b>-0.54%</b>

**Absolute Return Pool**

Global Asset Management (USA) Inc.	256,872,351	1,085,472	(20,000,000)	237,957,823	-7.36%
Prisma Capital Partners	361,991,268	-	-	361,991,268	-
Crestline Investors, Inc.	372,629,846	519,505	1,576,891	374,726,242	0.56%
Allianz Global Investors	234,977,517	2,341,784	100,000,000	337,319,301	43.55%
Crestline Specialty Fund	23,360,267	-	4,082,696	27,442,963	17.48%
KKR Apex Equity Fund	96,392,955	(394,033)	-	95,998,922	-0.41%
Zebra Global Equity Fund	129,647,554	(1,594,882)	-	128,052,672	-1.23%
Zebra Global Equity Advantage Fund	69,627,200	(1,620,844)	-	68,006,356	-2.33%
<b>Total Absolute Return Investments</b>	<b>1,545,498,958</b>	<b>337,002</b>	<b>85,659,587</b>	<b>1,631,495,547</b>	<b>5.56%</b>

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2016**

**Real Assets**

**Farmland Pool**

UBS Agrivest, LLC	554,922,361	-	-	554,922,361	-
Hancock Agricultural Investment Group	267,772,242	-	-	267,772,242	-
<b>Total Farmland Pool</b>	<b>822,694,603</b>	<b>-</b>	<b>-</b>	<b>822,694,603</b>	<b>-</b>

**Timber Pool**

Timberland Invt Resource LLC	284,685,023	1,650,027	(8,600,000)	277,735,050	-2.44%
Hancock Natural Resource Group	97,263,932	-	-	97,263,932	-
<b>Total Timber Pool</b>	<b>381,948,955</b>	<b>1,650,027</b>	<b>(8,600,000)</b>	<b>374,998,982</b>	<b>-1.82%</b>

**Energy Pool**

EIG Energy Fund XV	33,706,301	216,769	-	33,923,070	0.64%
EIG Energy Fund XD	1,553,831	-	-	1,553,831	-
EIG Energy Fund XIV-A	11,465,089	-	-	11,465,089	-
EIG Energy Fund XVI	33,437,412	-	-	33,437,412	-
<b>Total Energy Pool</b>	<b>80,162,633</b>	<b>216,769</b>	<b>-</b>	<b>80,379,402</b>	<b>0.27%</b>

**REIT Pool**

REIT Trans Account	-	-	-	-	-
REIT Holdings	347,211,087	(17,770,396)	-	329,440,691	-5.12%
<b>Total REIT Pool</b>	<b>347,211,087</b>	<b>(17,770,396)</b>	<b>-</b>	<b>329,440,691</b>	<b>-5.12%</b>

**Treasury Inflation Proof Securities**

TIPS Internally Managed Account	56,114,322	(238,331)	-	55,875,991	-0.42%
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**Master Limited Partnerships**

Advisory Research MLP	236,765,268	(9,825,239)	-	226,940,029	-4.15%
Tortoise Capital Advisors	265,101,239	(11,054,909)	-	254,046,330	-4.17%
<b>Total Master Limited Partnerships</b>	<b>501,866,507</b>	<b>(20,880,148)</b>	<b>-</b>	<b>480,986,359</b>	<b>-4.16%</b>

**Infrastructure Private Pool**

IFM Global Infrastructuer Fund-Private	218,696,872	5,294,708	-	223,991,580	2.42%
JP Morgan Infrastructure Fund-Private	99,148,559	-	-	99,148,559	-
<b>Total Infrastructure Private Pool</b>	<b>317,845,431</b>	<b>5,294,708</b>	<b>-</b>	<b>323,140,139</b>	<b>1.67%</b>

**Infrastructure Public Pool**

Brookfield Investment Mgmt.-Public	99,783,239	(3,349,453)	-	96,433,786	-3.36%
Lazard Asset Mgmt.-Public	115,240,496	(4,103,548)	-	111,136,948	-3.56%
<b>Total Infrastructure Public Pool</b>	<b>215,023,735</b>	<b>(7,453,001)</b>	<b>-</b>	<b>207,570,734</b>	<b>-3.47%</b>

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2016**

<b>Real Estate</b>					
Core Commingled Accounts					
JP Morgan	241,080,614	1,558,906	(2,099,169)	240,540,351	-0.22%
UBS Trumbull Property Fund	97,630,529	1,394,152	(747,514)	98,277,167	0.66%
Total Core Commingled	<u>338,711,143</u>	<u>2,953,058</u>	<u>(2,846,683)</u>	<u>338,817,518</u>	0.03%
Core Separate Accounts					
LaSalle Investment Management	220,609,012	-	(432,399)	220,176,613	-0.20%
Sentinel Separate Account	219,511,452	-	(896,011)	218,615,441	-0.41%
UBS Realty	486,343,180	-	(734,053)	485,609,127	-0.15%
Total Core Separate	<u>926,463,644</u>	<u>-</u>	<u>(2,062,463)</u>	<u>924,401,181</u>	-0.22%
Non-Core Commingled Accounts					
Almanac Realty Securities IV	52,485	-	-	52,485	-
Almanac Realty Securities V	7,372,871	-	-	7,372,871	-
Almanac Realty Securities VII	14,438,911	-	1,068,461	15,507,372	7.40%
BlackRock Diamond Property Fund	2,091,583	(50,797)	-	2,040,786	-2.43%
Clarion Ventures 4	41,020,516	-	-	41,020,516	-
Colony Investors VIII, L.P.	12,067,815	-	-	12,067,815	-
Cornerstone Apartment Venture III	46,308	-	-	46,308	-
Coventry	1,408,751	-	-	1,408,751	-
ING Clarion Development Ventures III	5,941,508	-	-	5,941,508	-
KKR Real Estate Partners Americas LP.	39,019,199	-	-	39,019,199	-
LaSalle Medical Office Fund II	11,639	-	-	11,639	-
Lowe Hospitality Partners	984,270	-	(281,895)	702,375	-28.64%
Silverpeak Legacy Pension Partners II, L.P.	16,636,285	-	-	16,636,285	-
Silverpeak Legacy Pension Partners III, L.P.	5,758,612	-	-	5,758,612	-
Tishman Speyer Real Estate Venture VI	39,341,386	-	-	39,341,386	-
Tishman Speyer Real Estate Venture VII	7,105,811	-	-	7,105,811	-
Total Non-Core Commingled	<u>193,297,950</u>	<u>(50,797)</u>	<u>786,566</u>	<u>194,033,719</u>	0.38%
<b>Total Real Estate</b>	<u>1,458,472,737</u>	<u>2,902,261</u>	<u>(4,122,580)</u>	<u>1,457,252,418</u>	-0.08%
<b>Total Real Assets</b>	<u>4,181,340,010</u>	<u>(36,278,111)</u>	<u>(12,722,580)</u>	<u>4,132,339,319</u>	-1.17%
<b>Total Assets</b>	<u>\$ 23,841,328,878</u>	<u>\$ (287,067,101)</u>	<u>\$ (79,845,709)</u>	<u>\$ 23,474,416,068</u>	-1.54%

**ALASKA RETIREMENT MANAGEMENT BOARD**

**Reporting of Funds by Manager**

Participant Directed Plans

**Supplemental Annuity Plan**  
**Schedule of Investment Income and Changes in Invested Assets**  
**for the Month Ended**  
**October 31, 2016**

	<u>Beginning Invested Assets</u>	<u>Investment Income</u>	<u>Net Contributions (Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Ending Invested Assets</u>	<u>% Change in Invested Assets</u>	<u>% Change due to Investment Income (2)</u>
<b>Participant Options</b>							
T. Rowe Price							
Stable Value Fund	\$ 376,378,993	\$ 697,475	\$ (2,099,385)	\$ 4,838,414	\$ 379,815,497	0.91%	0.18%
Small Cap Stock Fund	131,788,652	(4,727,437)	212,246	(1,474,316)	125,799,145	-4.54%	-3.60%
Alaska Balanced Trust	1,164,532,482	(10,915,838)	(1,700,886)	(431,772)	1,151,483,986	-1.12%	-0.94%
Long Term Balanced Fund	548,939,488	(7,098,629)	1,835,562	(230,111)	543,446,310	-1.00%	-1.29%
AK Target Date 2010 Trust	10,366,008	(106,823)	24,537	78,739	10,362,461	-0.03%	-1.03%
AK Target Date 2015 Trust	88,031,056	(1,019,296)	(189,756)	(224,135)	86,597,869	-1.63%	-1.16%
AK Target Date 2020 Trust	78,640,687	(1,031,850)	298,775	(292,204)	77,615,408	-1.30%	-1.31%
AK Target Date 2025 Trust	52,375,544	(761,999)	485,864	(122,168)	51,977,241	-0.76%	-1.45%
AK Target Date 2030 Trust	38,947,032	(613,913)	405,963	297,710	39,036,792	0.23%	-1.56%
AK Target Date 2035 Trust	36,293,831	(610,277)	424,953	465,801	36,574,308	0.77%	-1.66%
AK Target Date 2040 Trust	35,716,459	(622,322)	669,342	318,987	36,082,466	1.02%	-1.72%
AK Target Date 2045 Trust	38,669,523	(678,455)	616,058	134,261	38,741,387	0.19%	-1.74%
AK Target Date 2050 Trust	44,202,518	(775,747)	906,560	(120,326)	44,213,005	0.02%	-1.74%
AK Target Date 2055 Trust	33,820,444	(595,166)	910,754	(121,784)	34,014,248	0.57%	-1.74%
AK Target Date 2060 Trust	115,284	(2,027)	885	(9)	114,133	-1.00%	-1.75%
Total Investments with T. Rowe Price	<u>2,678,818,001</u>	<u>(28,862,304)</u>	<u>2,801,472</u>	<u>3,117,087</u>	<u>2,655,874,256</u>		
State Street Global Advisors							
State Street Treasury Money Market Fund - Inst.	38,739,177	7,001	(304,894)	2,404,467	40,845,751	5.44%	0.02%
S&P 500 Stock Index Fund Series A	349,621,222	(6,356,494)	134,009	(109,589)	343,289,148	-1.81%	-1.82%
Russell 3000 Index	66,829,844	(1,429,858)	221,940	(1,752,862)	63,869,064	-4.43%	-2.16%
US Real Estate Investment Trust Index	49,189,431	(2,744,314)	150,002	(2,611,524)	43,983,595	-10.58%	-5.72%
World Equity Ex-US Index	26,909,633	(390,277)	31,614	999,635	27,550,605	2.38%	-1.42%
Long US Treasury Bond Index	27,978,107	(1,125,851)	24,566	(2,323,754)	24,553,068	-12.24%	-4.20%
US Treasury Inflation Protected Securities Index	22,886,145	(96,290)	(48,271)	718,186	23,459,770	2.51%	-0.41%
World Government Bond Ex-US Index	8,860,446	(396,895)	(47,541)	(348,402)	8,067,608	-8.95%	-4.58%
Global Balanced Fund	54,100,857	(920,117)	(521,931)	721,860	53,380,669	-1.33%	-1.70%
Total Investments with SSGA	<u>645,114,862</u>	<u>(13,453,095)</u>	<u>(360,506)</u>	<u>(2,301,983)</u>	<u>628,999,278</u>		
BlackRock							
Government/Credit Bond Fund	41,481,596	(401,908)	10,978	11,058	41,101,724	-0.92%	-0.97%
Intermediate Bond Fund	32,853,054	(156,980)	21,982	290,725	33,008,781	0.47%	-0.48%
Total Investments with Barclays Global Investors	<u>74,334,650</u>	<u>(558,888)</u>	<u>32,960</u>	<u>301,783</u>	<u>74,110,505</u>		
Brandes/Allianz (3)							
AK International Equity Fund	61,754,457	(413,989)	145,630	(412,626)	61,073,472	-1.10%	-0.67%
RCM							
Sustainable Core Opportunities Fund	39,019,397	(1,179,795)	(14,807)	(704,261)	37,120,534	-4.87%	-3.05%
<b>Total All Funds</b>	<u>\$ 3,499,041,367</u>	<u>\$ (44,468,071)</u>	<u>\$ 2,604,749</u>	<u>\$ -</u>	<u>\$ 3,457,178,045</u>	-1.20%	-1.27%

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.  
(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.  
(3) This investment is comprised of two funds, Brandes International Equity Fund and Allianz NFJ International Fund effective March 30, 2015.

**Supplemental Annuity Plan**  
**Schedule of Invested Assets with**  
**Schedule of Investment Income and Changes in Invested Assets**  
**By Month Through the Month Ended**  
**October 31, 2016**  
**\$ (Thousands)**

<u>Invested Assets (at fair value)</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>
Investments with T. Rowe Price				
Stable Value Fund	\$ 376,543	\$ 373,305	\$ 376,379	\$ 379,815
Small Cap Stock Fund	128,981	131,621	131,789	125,799
Alaska Balanced Trust	1,173,354	1,167,198	1,164,532	1,151,484
Long Term Balanced Fund	548,289	548,555	548,939	543,446
AK Target Date 2010 Trust	9,976	10,012	10,366	10,362
AK Target Date 2015 Trust	90,467	89,013	88,031	86,598
AK Target Date 2020 Trust	78,030	77,667	78,641	77,615
AK Target Date 2025 Trust	51,632	51,790	52,376	51,977
AK Target Date 2030 Trust	38,154	38,809	38,947	39,037
AK Target Date 2035 Trust	35,727	35,875	36,294	36,574
AK Target Date 2040 Trust	35,051	35,401	35,716	36,082
AK Target Date 2045 Trust	38,002	38,321	38,670	38,741
AK Target Date 2050 Trust	43,080	43,355	44,203	44,213
AK Target Date 2055 Trust	32,450	32,932	33,820	34,014
AK Target Date 2060 Trust	116	112	115	114
State Street Global Advisors				
State Street Treasury Money Market Fund - Inst.	39,523	38,279	38,739	40,846
S&P 500 Stock Index Fund Series A	348,876	350,812	349,621	343,289
Russell 3000 Index	70,910	68,574	66,830	63,869
US Real Estate Investment Trust Index	49,651	49,140	49,189	43,984
World Equity Ex-US Index	28,316	27,211	26,910	27,551
Long US Treasury Bond Index	28,731	29,447	27,978	24,553
US Treasury Inflation Protected Securities Index	22,342	22,450	22,886	23,460
World Government Bond Ex-US Index	8,979	8,896	8,860	8,068
Global Balanced Fund	53,169	53,749	54,101	53,381
Investments with BlackRock				
Government/Credit Bond Fund	42,821	42,464	41,482	41,102
Intermediate Bond Fund	31,560	32,277	32,853	33,009
Investments with Brandes/Allianz Institutional				
AK International Equity Fund	58,730	60,653	61,754	61,073
Investments with RCM				
Sustainable Core Opportunities Fund	40,377	39,498	39,019	37,121
<b>Total Invested Assets</b>	<b>\$ 3,503,837</b>	<b>\$ 3,497,417</b>	<b>\$ 3,499,041</b>	<b>\$ 3,457,178</b>
<b>Change in Invested Assets</b>				
Beginning Assets	\$ 3,419,490	\$ 3,503,837	\$ 3,497,417	\$ 3,499,041
Investment Earnings	77,719	5,163	6,144	(44,468)
Net Contributions (Withdrawals)	6,629	(11,583)	(4,521)	2,605
<b>Ending Invested Assets</b>	<b>\$ 3,503,837</b>	<b>\$ 3,497,417</b>	<b>\$ 3,499,041</b>	<b>\$ 3,457,178</b>

**Deferred Compensation Plan**  
**Schedule of Invested Assets and Changes in Invested Assets**  
**for the Month Ended**  
**October 31, 2016**

	<b>Beginning Invested Assets</b>	<b>Investment Income</b>	<b>Net Contributions (Withdrawals)</b>	<b>Transfers In (Out)</b>	<b>Ending Invested Assets</b>	<b>% Change in Invested Assets</b>	<b>% Change due to Investment Income (1)</b>
<b>Participant Options</b>							
T. Rowe Price							
Interest Income Fund	\$ 184,227,588	\$ 375,352	\$ (977,936)	\$ 1,856,832	\$ 185,481,836	0.68%	0.20%
Small Cap Stock Fund	92,737,938	(3,325,121)	(316,946)	(131,372)	88,964,499	-4.07%	-3.59%
Alaska Balanced Trust	23,320,694	(219,786)	58,502	410,692	23,570,102	1.07%	-0.93%
Long Term Balanced Fund	48,082,951	(620,984)	(112,857)	235,323	47,584,433	-1.04%	-1.29%
AK Target Date 2010 Trust	3,672,183	(37,528)	(27,879)	(8,001)	3,598,775	-2.00%	-1.03%
AK Target Date 2015 Trust	9,228,592	(107,092)	61,674	13,265	9,196,439	-0.35%	-1.16%
AK Target Date 2020 Trust	19,312,207	(252,153)	129,834	(317,468)	18,872,420	-2.28%	-1.31%
AK Target Date 2025 Trust	11,101,537	(157,819)	144,665	(292,191)	10,796,192	-2.75%	-1.43%
AK Target Date 2030 Trust	7,124,308	(114,939)	84,116	309,491	7,402,976	3.91%	-1.57%
AK Target Date 2035 Trust	4,446,725	(73,846)	58,503	7,721	4,439,103	-0.17%	-1.65%
AK Target Date 2040 Trust	4,883,093	(84,483)	45,987	(77,113)	4,767,484	-2.37%	-1.74%
AK Target Date 2045 Trust	3,268,874	(57,217)	25,617	13,369	3,250,643	-0.56%	-1.74%
AK Target Date 2050 Trust	2,129,519	(36,973)	(12,739)	13,819	2,093,626	-1.69%	-1.74%
AK Target Date 2055 Trust	3,290,521	(56,919)	45,072	(54,902)	3,223,772	-2.03%	-1.73%
AK Target Date 2060 Trust	90,796	(2,259)	1,253	664	90,454	-0.38%	-2.46%
Total Investments with T. Rowe Price	<u>416,917,526</u>	<u>(4,771,767)</u>	<u>(793,134)</u>	<u>1,980,129</u>	<u>413,332,754</u>		
State Street Global Advisors							
State Street Treasury Money Market Fund - Inst.	12,015,481	2,108	(4,242)	84,180	12,097,527	0.68%	0.02%
Russell 3000 Index	29,160,795	(627,807)	168,877	10,054	28,711,919	-1.54%	-2.15%
US Real Estate Investment Trust Index	16,450,279	(924,091)	114,009	(236,845)	15,403,352	-6.36%	-5.64%
World Equity Ex-US Index	9,703,102	(131,262)	11,502	(369,506)	9,213,836	-5.04%	-1.38%
Long US Treasury Bond Index	9,938,907	(403,957)	23,663	(595,950)	8,962,663	-9.82%	-4.18%
US Treasury Inflation Protected Securities Index	9,511,269	(40,679)	(24,232)	154,638	9,600,996	0.94%	-0.42%
World Government Bond Ex-US Index	3,627,005	(165,972)	14,313	(11,664)	3,463,682	-4.50%	-4.57%
Global Balanced Fund	38,055,713	(647,647)	51,334	60,750	37,520,150	-1.41%	-1.70%
Total Investments with SSGA	<u>128,462,551</u>	<u>(2,939,307)</u>	<u>355,224</u>	<u>(904,343)</u>	<u>124,974,125</u>		
BlackRock							
S&P 500 Index Fund	183,196,461	(3,343,938)	32,524	(902,044)	178,983,003	-2.30%	-1.83%
Government/Credit Bond Fund	26,727,866	(258,141)	33,835	104,773	26,608,333	-0.45%	-0.96%
Intermediate Bond Fund	20,402,650	(97,146)	46,102	14,434	20,366,040	-0.18%	-0.48%
Total Investments with Barclays Global Investors	<u>230,326,977</u>	<u>(3,699,225)</u>	<u>112,461</u>	<u>(782,837)</u>	<u>225,957,376</u>		
Brandes/Allianz (2)							
AK International Equity Fund	35,983,892	(242,491)	(101,393)	(230,983)	35,409,025	-1.60%	-0.68%
RCM							
Sustainable Core Opportunities Fund	17,043,751	(517,675)	15,551	(61,966)	16,479,661	-3.31%	-3.04%
<b>Total All Funds</b>	<u>\$ 828,734,697</u>	<u>\$ (12,170,465)</u>	<u>\$ (411,291)</u>	<u>\$ -</u>	<u>\$ 816,152,941</u>	-1.52%	-1.47%

Notes: Source data provided by the record keeper, Great West Life.

(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.

(2) This investment is comprised of two funds, 50% Brandes International equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

**Deferred Compensation Plan**  
**Schedule of Invested Assets with**  
**Schedule of Investment Income and Changes in Invested Assets**  
**By Month Through the Month Ended**  
**October 31, 2016**  
**\$ (Thousands)**

<b><u>Invested Assets (at fair value)</u></b>	<b><u>July</u></b>	<b><u>August</u></b>	<b><u>September</u></b>	<b><u>October</u></b>
Investments with T. Rowe Price				
Interest Income Fund				
Cash and cash equivalents	\$ 7,197	\$ 6,432	\$ 7,076	\$ 7,524
Synthetic Investment Contracts	176,609	176,781	177,152	177,958
Small Cap Stock Fund	91,928	93,241	92,738	88,964
Alaska Balanced Trust	22,932	23,002	23,321	23,570
Long Term Balanced Fund	48,902	48,607	48,083	47,584
AK Target Date 2010 Trust	3,469	3,389	3,672	3,599
AK Target Date 2015 Trust	9,656	9,413	9,229	9,196
AK Target Date 2020 Trust	18,790	19,034	19,312	18,872
AK Target Date 2025 Trust	10,182	10,572	11,102	10,796
AK Target Date 2030 Trust	6,994	7,013	7,124	7,403
AK Target Date 2035 Trust	4,227	4,271	4,447	4,439
AK Target Date 2040 Trust	4,656	4,849	4,883	4,767
AK Target Date 2045 Trust	3,166	3,237	3,269	3,251
AK Target Date 2050 Trust	2,077	2,088	2,130	2,094
AK Target Date 2055 Trust	3,307	3,264	3,291	3,224
AK Target Date 2060 Trust	82	89	91	90
State Street Global Advisors				
State Street Treasury Money Market Fund - Inst.	11,620	11,143	12,015	12,098
Russell 3000 Index	29,474	29,617	29,161	28,712
US Real Estate Investment Trust Index	17,592	16,625	16,450	15,403
World Equity Ex-US Index	9,475	9,675	9,703	9,214
Long US Treasury Bond Index	10,409	10,278	9,939	8,963
US Treasury Inflation Protected Securities Index	9,423	9,275	9,511	9,601
World Government Bond Ex-US Index	3,793	3,670	3,627	3,464
Global Balanced Fund	37,942	37,904	38,056	37,520
Investments with BlackRock				
S&P 500 Index Fund	184,379	184,364	183,196	178,983
Government/Credit Bond Fund	27,541	26,915	26,728	26,608
Intermediate Bond Fund	20,511	20,567	20,403	20,366
Investments with Brandes/Allianz				
AK International Equity Fund	35,708	35,932	35,984	35,409
Investments with RCM				
Sustainable Opportunities Fund	17,305	17,205	17,044	16,480
<b>Total Invested Assets</b>	<b>\$ 829,346</b>	<b>\$ 828,452</b>	<b>\$ 828,735</b>	<b>\$ 816,153</b>
<b><u>Change in Invested Assets</u></b>				
Beginning Assets	\$ 808,795	\$ 829,346	\$ 828,452	\$ 828,735
Investment Earnings	20,447	2,062	602	(12,170)
Net Contributions (Withdrawals)	104	(2,955)	(320)	(411)
<b>Ending Invested Assets</b>	<b>\$ 829,346</b>	<b>\$ 828,452</b>	<b>\$ 828,735</b>	<b>\$ 816,153</b>



**Defined Contribution Retirement - Participant Directed PERS**  
**Schedule of Investment Income and Changes in Invested Assets**  
**for the Month Ended**  
**October 31, 2016**

	<u>Beginning Invested</u> <u>Assets</u>	<u>Investment Income</u>	<u>Net Contributions</u> <u>(Withdrawals)</u>	<u>Transfers In</u> <u>(Out)</u>	<u>Ending Invested</u> <u>Assets</u>	<u>% Change in</u> <u>Invested</u> <u>Assets</u>	<u>% Change due to</u> <u>Investment</u> <u>Income (2)</u>
<b>Participant Options</b>							
T. Rowe Price							
Alaska Money Market	\$ 9,029,551	\$ 3,911	\$ (4,599)	\$ 31,679	\$ 9,060,542	0.34%	0.04%
Small Cap Stock Fund	60,916,478	(2,191,689)	433,400	(112,134)	59,046,055	-3.07%	-3.59%
Alaska Balanced Trust	14,177,332	(133,277)	95,622	(195,617)	13,944,060	-1.65%	-0.94%
Long Term Balanced Fund	8,782,043	(114,077)	38,593	(9,062)	8,697,497	-0.96%	-1.30%
AK Target Date 2010 Trust	1,974,109	(20,360)	35,407	(3)	1,989,153	0.76%	-1.02%
AK Target Date 2015 Trust	9,042,034	(105,595)	172,181	(3)	9,108,617	0.74%	-1.16%
AK Target Date 2020 Trust	22,754,544	(300,765)	360,874	(144,678)	22,669,975	-0.37%	-1.32%
AK Target Date 2025 Trust	33,307,665	(485,832)	610,729	(68,424)	33,364,138	0.17%	-1.45%
AK Target Date 2030 Trust	34,781,355	(549,544)	728,951	36,753	34,997,515	0.62%	-1.56%
AK Target Date 2035 Trust	40,467,798	(677,574)	976,413	(21,428)	40,745,209	0.69%	-1.65%
AK Target Date 2040 Trust	47,884,898	(833,962)	929,420	(37,016)	47,943,340	0.12%	-1.73%
AK Target Date 2045 Trust	59,772,929	(1,049,586)	1,144,380	5,014	59,872,737	0.17%	-1.74%
AK Target Date 2050 Trust	70,861,506	(1,243,581)	1,496,020	(25,868)	71,088,077	0.32%	-1.74%
AK Target Date 2055 Trust	47,909,466	(846,035)	1,555,474	(61,030)	48,557,875	1.35%	-1.74%
AK Target Date 2060 Trust	35,516	(970)	953	36,722	72,221	103.35%	-1.78%
Total Investments with T. Rowe Price	<u>461,697,224</u>	<u>(8,548,936)</u>	<u>8,573,818</u>	<u>(565,095)</u>	<u>461,157,011</u>		
State Street Global Advisors							
Money Market	3,509,903	632	47,552	41,187	3,599,274	2.55%	0.02%
S&P 500 Stock Index Fund Series A	60,293,202	(1,102,955)	478,980	1,165,661	60,834,888	0.90%	-1.80%
Russell 3000 Index	28,398,397	(602,320)	262,220	(1,781,905)	26,276,392	-7.47%	-2.18%
US Real Estate Investment Trust Index	15,865,987	(895,657)	134,417	232,753	15,337,500	-3.33%	-5.58%
World Equity Ex-US Index	30,475,895	(439,471)	256,761	137,762	30,430,947	-0.15%	-1.43%
Long US Treasury Bond Index	1,598,678	(63,043)	27,495	(121,821)	1,441,309	-9.84%	-4.06%
US Treasury Inflation Protected Securities Index	11,180,916	(46,813)	41,090	66,437	11,241,630	0.54%	-0.42%
World Government Bond Ex-US Index	6,233,584	(287,303)	24,574	85,763	6,056,618	-2.84%	-4.57%
Global Balanced Fund	9,329,162	(160,879)	31,645	432,866	9,632,794	3.25%	-1.68%
Total Investments with SSGA	<u>166,885,724</u>	<u>(3,597,809)</u>	<u>1,304,734</u>	<u>258,703</u>	<u>164,851,352</u>		
BlackRock							
Government/Credit Bond Fund	29,844,374	(289,132)	119,544	89,081	29,763,867	-0.27%	-0.97%
Intermediate Bond Fund	14,317,817	(68,559)	70,460	397,832	14,717,550	2.79%	-0.47%
Total Investments with Barclays Global Investors	<u>44,162,191</u>	<u>(357,691)</u>	<u>190,004</u>	<u>486,913</u>	<u>44,481,417</u>		
Brandes/Allianz (3)							
AK International Equity Fund	37,382,314	(248,711)	282,965	(165,271)	37,251,297	-0.35%	-0.66%
RCM							
Sustainable Core Opportunities Fund	3,155,966	(95,502)	33,743	(15,250)	3,078,957	-2.44%	-3.02%
<b>Total All Funds</b>	<u>\$ 713,283,419</u>	<u>\$ (12,848,649)</u>	<u>\$ 10,385,264</u>	<u>\$ -</u>	<u>\$ 710,820,034</u>	-0.35%	-1.79%

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.

(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.

(3) This investment is comprised of two funds, 50% Brandes International Equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

**Defined Contribution Retirement - Participant Directed PERS**  
**Schedule of Investment Assets with**  
**Schedule of Investment Income and Changes in Invested Assets**  
**By Month Through the Month Ended**  
**October 31, 2016**  
**\$ (Thousands)**

<u>Invested Assets (at fair value)</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>
Investments with T. Rowe Price				
Alaska Money Market	\$ 8,618	\$ 8,791	\$ 9,030	\$ 9,061
Small Cap Stock Fund	60,872	61,549	60,916	59,046
Alaska Balanced Trust	14,964	14,487	14,177	13,944
Long Term Balanced Fund	10,894	9,679	8,782	8,697
AK Target Date 2010 Trust	2,096	2,089	1,974	1,989
AK Target Date 2015 Trust	9,092	8,999	9,042	9,109
AK Target Date 2020 Trust	22,302	22,573	22,755	22,670
AK Target Date 2025 Trust	32,368	32,816	33,308	33,364
AK Target Date 2030 Trust	33,667	34,367	34,781	34,998
AK Target Date 2035 Trust	39,047	39,870	40,468	40,745
AK Target Date 2040 Trust	46,696	47,581	47,885	47,943
AK Target Date 2045 Trust	57,906	59,229	59,773	59,873
AK Target Date 2050 Trust	68,378	70,113	70,862	71,088
AK Target Date 2055 Trust	45,309	47,035	47,909	48,558
AK Target Date 2060 Trust	34	35	36	72
State Street Global Advisors				
Money Market	2,986	3,159	3,510	3,599
S&P 500 Stock Index Fund Series A	52,701	56,952	60,293	60,835
Russell 3000 Index	36,790	32,117	28,398	26,276
US Real Estate Investment Trust Index	16,951	16,226	15,866	15,338
World Equity Ex-US Index	35,145	32,463	30,476	30,431
Long US Treasury Bond Index	1,545	1,576	1,599	1,441
US Treasury Inflation Protected Securities Index	10,105	10,690	11,181	11,242
World Government Bond Ex-US Index	5,263	5,750	6,234	6,057
Global Balanced Fund	7,850	8,693	9,329	9,633
Investments with BlackRock				
Government/Credit Bond Fund	30,417	30,105	29,844	29,764
Intermediate Bond Fund	12,018	13,351	14,318	14,718
Investments with Brandes/Allianz				
International Equity Fund	29,899	34,377	37,382	37,251
Investments with RCM				
Sustainable Opportunities Fund	3,178	3,201	3,156	3,079
<b>Total Invested Assets</b>	<b>\$ 697,093</b>	<b>\$ 707,874</b>	<b>\$ 713,283</b>	<b>\$ 710,820</b>
 <u>Change in Invested Assets</u>				
Beginning Assets	\$ 667,523	\$ 697,093	\$ 707,874	\$ 713,283
Investment Earnings	22,468	2,247	1,662	(12,849)
Net Contributions (Withdrawals)	7,102	8,533	3,748	10,385
<b>Ending Invested Assets</b>	<b>\$ 697,093</b>	<b>\$ 707,874</b>	<b>\$ 713,283</b>	<b>\$ 710,820</b>

**Defined Contribution Retirement - Participant Directed TRS**  
**Schedule of Investment Income and Changes in Invested Assets**  
**for the Month Ended**  
**October 31, 2016**

	<u>Beginning Invested Assets</u>	<u>Investment Income</u>	<u>Net Contributions (Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Ending Invested Assets</u>	<u>% Change in Invested Assets</u>	<u>% Change due to Investment Income (2)</u>
<b>Participant Options</b>							
<b>T. Rowe Price</b>							
Alaska Money Market	\$ 2,911,390	\$ 1,268	\$ 23,864	\$ 9,462	\$ 2,945,984	1.19%	0.04%
Small Cap Stock Fund	26,451,814	(950,526)	140,520	(90,274)	25,551,534	-3.40%	-3.59%
Alaska Balanced Trust	6,594,550	(61,421)	14,026	(154,891)	6,392,264	-3.07%	-0.94%
Long Term Balanced Fund	3,949,354	(50,646)	(61,487)	(80,421)	3,756,800	-4.88%	-1.31%
AK Target Date 2010 Trust	495,781	(5,126)	10,375	-	501,030	1.06%	-1.02%
AK Target Date 2015 Trust	2,536,542	(29,748)	54,252	-	2,561,046	0.97%	-1.16%
AK Target Date 2020 Trust	6,649,897	(88,611)	64,409	-	6,625,695	-0.36%	-1.33%
AK Target Date 2025 Trust	10,639,978	(155,568)	156,142	(15,339)	10,625,213	-0.14%	-1.45%
AK Target Date 2030 Trust	11,610,467	(183,941)	281,247	(12,996)	11,694,777	0.73%	-1.57%
AK Target Date 2035 Trust	17,674,048	(297,306)	355,275	103,797	17,835,814	0.92%	-1.66%
AK Target Date 2040 Trust	18,707,937	(325,336)	357,497	15,412	18,755,510	0.25%	-1.72%
AK Target Date 2045 Trust	29,930,104	(526,420)	550,125	-	29,953,809	0.08%	-1.74%
AK Target Date 2050 Trust	41,946,583	(736,082)	567,791	(76)	41,778,216	-0.40%	-1.74%
AK Target Date 2055 Trust	14,049,828	(249,942)	533,771	-	14,333,657	2.02%	-1.75%
AK Target Date 2060 Trust	5,500	(96)	141	-	5,545	0.82%	-1.72%
Total Investments with T. Rowe Price	<u>194,153,773</u>	<u>(3,659,501)</u>	<u>3,047,948</u>	<u>(225,326)</u>	<u>193,316,894</u>		
<b>State Street Global Advisors</b>							
Money Market	223,112	40	3,559	-	226,711	1.61%	0.02%
S&P 500 Stock Index Fund Series A	24,718,281	(453,899)	103,778	620,333	24,988,493	1.09%	-1.81%
Russell 3000 Index	11,963,553	(252,918)	69,725	(820,668)	10,959,692	-8.39%	-2.18%
US Real Estate Investment Trust Index	6,065,099	(341,869)	20,668	(3,308)	5,740,590	-5.35%	-5.63%
World Equity Ex-US Index	13,199,407	(190,314)	89,544	44,723	13,143,360	-0.42%	-1.43%
Long US Treasury Bond Index	283,951	(11,726)	5,552	333	278,110	-2.06%	-4.09%
US Treasury Inflation Protected Securities Index	4,172,678	(17,377)	5,521	33,757	4,194,579	0.52%	-0.41%
World Government Bond Ex-US Index	3,050,117	(139,774)	13,858	12,855	2,937,056	-3.71%	-4.56%
Global Balanced Fund	4,593,082	(78,897)	11,671	162,797	4,688,653	2.08%	-1.69%
Total Investments with SSGA	<u>68,269,280</u>	<u>(1,486,734)</u>	<u>323,876</u>	<u>50,822</u>	<u>67,157,244</u>		
<b>BlackRock</b>							
Government/Credit Bond Fund	13,464,785	(129,881)	42,984	(19,142)	13,358,746	-0.79%	-0.96%
Intermediate Bond Fund	5,692,410	(27,270)	6,573	213,612	5,885,325	3.39%	-0.47%
Total Investments with Barclays Global Investors	<u>19,157,195</u>	<u>(157,151)</u>	<u>49,557</u>	<u>194,470</u>	<u>19,244,071</u>		
<b>Brandes/Allianz Institutional (3)</b>							
AK International Equity Fund	15,824,754	(105,417)	96,384	(22,450)	15,793,271	-0.20%	-0.66%
<b>RCM</b>							
Sustainable Core Opportunities Fund	1,244,388	(37,668)	11,487	2,484	1,220,691	-1.90%	-3.01%
<b>Total All Funds</b>	<u>\$ 298,649,390</u>	<u>\$ (5,446,471)</u>	<u>\$ 3,529,252</u>	<u>\$ -</u>	<u>\$ 296,732,171</u>	-0.64%	-1.81%

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.  
(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.  
(3) This investment option is comprised of two funds, 50% Brandes International equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

**Defined Contribution Retirement - Participant Directed TRS**  
**Schedule of Invested Assets with**  
**Schedule of Investment Income and Changes in Invested Assets**  
**By Month Through the Month Ended**  
**October 31, 2016**  
**\$(Thousands)**

<b><u>Invested Assets (at fair value)</u></b>	<b><u>July</u></b>	<b><u>August</u></b>	<b><u>September</u></b>	<b><u>October</u></b>
Investments with T. Rowe Price				
Alaska Money Market	\$ 2,895	\$ 2,897	\$ 2,911	\$ 2,946
Small Cap Stock Fund	26,278	26,588	26,452	25,552
Alaska Balanced Trust	7,066	6,760	6,595	6,392
Long Term Balanced Fund	4,916	4,351	3,949	3,757
AK Target Date 2010 Trust	490	487	496	501
AK Target Date 2015 Trust	2,657	2,538	2,537	2,561
AK Target Date 2020 Trust	6,571	6,551	6,650	6,626
AK Target Date 2025 Trust	10,506	10,517	10,640	10,625
AK Target Date 2030 Trust	11,516	11,417	11,610	11,695
AK Target Date 2035 Trust	17,502	17,490	17,674	17,836
AK Target Date 2040 Trust	18,576	18,512	18,708	18,756
AK Target Date 2045 Trust	29,696	29,659	29,930	29,954
AK Target Date 2050 Trust	41,678	41,573	41,947	41,778
AK Target Date 2055 Trust	13,833	13,836	14,050	14,334
AK Target Date 2060 Trust	9	5	6	6
State Street Global Advisors				
Money Market	219	222	223	227
S&P 500 Stock Index Fund Series A	21,625	23,391	24,718	24,988
Russell 3000 Index	15,824	13,628	11,964	10,960
US Real Estate Investment Trust Index	6,520	6,197	6,065	5,741
World Equity Ex-US Index	15,330	14,046	13,199	13,143
Long US Treasury Bond Index	238	277	284	278
US Treasury Inflation Protected Securities Index	3,889	3,999	4,173	4,195
World Government Bond Ex-US Index	2,575	2,808	3,050	2,937
Global Balanced Fund	3,975	4,302	4,593	4,689
Investments with BlackRock				
Government/Credit Bond Fund	14,047	13,662	13,465	13,359
Intermediate Bond Fund	4,774	5,278	5,692	5,885
Investments with Brandes/Allianz				
AK International Equity Fund	12,625	14,495	15,825	15,793
Investments with RCM				
Sustainable Opportunities Fund	1,263	1,240	1,244	1,221
<b>Total Invested Assets</b>	<b>\$ 297,096</b>	<b>\$ 296,728</b>	<b>\$ 298,649</b>	<b>\$ 296,732</b>
<b><u>Change in Invested Assets</u></b>				
Beginning Assets	\$ 286,112	\$ 297,096	\$ 296,728	\$ 298,649
Investment Earnings	9,751	1,009	715	(5,446)
Net Contributions (Withdrawals)	1,232	(1,376)	1,206	3,529
<b>Ending Invested Assets</b>	<b>\$ 297,096</b>	<b>\$ 296,728</b>	<b>\$ 298,649</b>	<b>\$ 296,732</b>

**ALASKA RETIREMENT MANAGEMENT BOARD**

**FINANCIAL REPORT**

**(Supplement to the Treasury Division Report)**

**As of October 31, 2016**

**Prepared by the Division of Retirement & Benefits**

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**SCHEDULE OF NON-INVESTMENT CHANGES BY FUND**  
**(Supplement to the Treasury Division Report)**  
**For the Four Months Ending October 31, 2016**

	Contributions				Expenditures				Net Contributions/ (Withdrawals)
	Contributions EE and ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	
<b>Public Employees' Retirement System (PERS)</b>									
<u>Defined Benefit Plans:</u>									
Retirement Trust	\$ 120,379,677	\$ 99,166,576	\$ 10,562	\$ 219,556,815	\$ (253,340,504)	\$ (3,521,312)	\$ (6,592,479)	\$ (263,454,295)	\$ (43,897,480)
Retirement Health Care Trust	44,937,864	-	13,565,120	58,502,984	(135,542,541)	-	(9,394,409)	(144,936,950)	(86,433,966)
Total Defined Benefit Plans	165,317,541	99,166,576	13,575,682	278,059,799	(388,883,045)	(3,521,312)	(15,986,888)	(408,391,245)	(130,331,446)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	45,464,076	-	-	45,464,076	-	(14,202,351)	(1,493,621)	(15,695,972)	29,768,104
Health Reimbursement Arrangement <sup>(a)</sup>	11,636,139	-	-	11,636,139	-	-	(13,027)	(13,027)	11,623,112
Retiree Medical Plan <sup>(a)</sup>	4,443,072	-	-	4,443,072	-	-	(18,993)	(18,993)	4,424,079
Occupational Death and Disability: <sup>(a)</sup>									
Public Employees	547,512	-	-	547,512	(38,338)	-	(795)	(39,133)	508,379
Police and Firefighters	270,471	-	-	270,471	(71,896)	-	(437)	(72,333)	198,138
Total Defined Contribution Plans	62,361,270	-	-	62,361,270	(110,234)	(14,202,351)	(1,526,873)	(15,839,458)	46,521,812
<b>Total PERS</b>	<b>227,678,811</b>	<b>99,166,576</b>	<b>13,575,682</b>	<b>340,421,069</b>	<b>(388,993,279)</b>	<b>(17,723,663)</b>	<b>(17,513,761)</b>	<b>(424,230,703)</b>	<b>(83,809,634)</b>
<b>Teachers' Retirement System (TRS)</b>									
<u>Defined Benefit Plans:</u>									
Retirement Trust	16,521,376	116,699,959	831	133,222,166	(149,162,714)	(933,311)	(3,614,481)	(153,710,506)	(20,488,340)
Retirement Health Care Trust	5,382,431	-	4,476,076	9,858,507	(41,062,898)	-	(3,562,041)	(44,624,939)	(34,766,432)
Total Defined Benefit Plans	21,903,807	116,699,959	4,476,907	143,080,673	(190,225,612)	(933,311)	(7,176,522)	(198,335,445)	(55,254,772)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	10,353,094	-	-	10,353,094	-	(5,279,742)	(482,302)	(5,762,044)	4,591,050
Health Reimbursement Arrangement <sup>(a)</sup>	2,009,862	-	-	2,009,862	-	-	(3,979)	(3,979)	2,005,883
Retiree Medical Plan <sup>(a)</sup>	948,370	-	-	948,370	-	-	(14,432)	(14,432)	933,938
Occupational Death and Disability <sup>(a)</sup>	-	-	-	-	-	-	(181)	(181)	(181)
Total Defined Contribution Plans	13,311,326	-	-	13,311,326	-	(5,279,742)	(500,894)	(5,780,636)	7,530,690
<b>Total TRS</b>	<b>35,215,133</b>	<b>116,699,959</b>	<b>4,476,907</b>	<b>156,391,999</b>	<b>(190,225,612)</b>	<b>(6,213,053)</b>	<b>(7,677,416)</b>	<b>(204,116,081)</b>	<b>(47,724,082)</b>
<b>Judicial Retirement System (JRS)</b>									
Defined Benefit Plan Retirement Trust	2,828,639	5,412,366	-	8,241,005	(3,795,065)	-	(92,317)	(3,887,382)	4,353,623
Defined Benefit Retirement Health Care Trust	201,321	-	40,310	241,631	(268,730)	-	(40,596)	(309,326)	(67,695)
<b>Total JRS</b>	<b>3,029,960</b>	<b>5,412,366</b>	<b>40,310</b>	<b>8,482,636</b>	<b>(4,063,795)</b>	<b>-</b>	<b>(132,913)</b>	<b>(4,196,708)</b>	<b>4,285,928</b>
<b>National Guard/Naval Militia Retirement System (NGNMRS)</b>									
Defined Benefit Plan Retirement Trust <sup>(a)</sup>	866,905	-	-	866,905	(478,008)	-	(84,531)	(562,539)	304,366
<b>Other Participant Directed Plans</b>									
Supplemental Annuity Plan	61,192,371	-	-	61,192,371	-	(66,609,601)	(1,452,500)	(68,062,101)	(6,869,730)
Deferred Compensation Plan	15,641,230	-	-	15,641,230	-	(18,724,357)	(500,162)	(19,224,519)	(3,583,289)
<b>Total All Funds</b>	<b>343,624,410</b>	<b>221,278,901</b>	<b>18,092,899</b>	<b>582,996,210</b>	<b>(583,760,694)</b>	<b>(109,270,674)</b>	<b>(27,361,283)</b>	<b>(720,392,651)</b>	<b>(137,396,441)</b>
Total Non-Participant Directed	210,973,639	221,278,901	18,092,899	450,345,439	(583,760,694)	(4,454,623)	(23,432,698)	(611,648,015)	(161,302,576)
Total Participant Directed	132,650,771	-	-	132,650,771	-	(104,816,051)	(3,928,585)	(108,744,636)	23,906,135
<b>Total All Funds</b>	<b>\$ 343,624,410</b>	<b>\$ 221,278,901</b>	<b>\$ 18,092,899</b>	<b>\$ 582,996,210</b>	<b>\$ (583,760,694)</b>	<b>\$ (109,270,674)</b>	<b>\$ (27,361,283)</b>	<b>\$ (720,392,651)</b>	<b>\$ (137,396,441)</b>

(a) Employer only contributions.

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**SCHEDULE OF NON-INVESTMENT CHANGES BY FUND**  
(Supplement to the Treasury Division Report)  
For the Month Ended October 31, 2016

	Contributions				Expenditures				Net Contributions/ (Withdrawals)
	Contributions EE and ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	
<b>Public Employees' Retirement System (PERS)</b>									
<u>Defined Benefit Plans:</u>									
Retirement Trust	\$ 35,931,598	\$ -	\$ 41	\$ 35,931,639	\$ (63,457,750)	\$ (847,621)	\$ (634,739)	\$ (64,940,110)	\$ (29,008,471)
Retirement Health Care Trust	12,553,963	-	2,531,785	15,085,748	(31,559,070)	-	(2,178,953)	(33,738,023)	(18,652,275)
Total Defined Benefit Plans	48,485,561	-	2,531,826	51,017,387	(95,016,820)	(847,621)	(2,813,692)	(98,678,133)	(47,660,746)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	13,502,452	-	-	13,502,452	-	(3,028,359)	(88,829)	(3,117,188)	10,385,264
Health Reimbursement Arrangement <sup>(a)</sup>	3,604,939	-	-	3,604,939	-	-	(1,887)	(1,887)	3,603,052
Retiree Medical Plan <sup>(a)</sup>	1,221,525	-	-	1,221,525	-	-	(498)	(498)	1,221,027
Occupational Death and Disability: <sup>(a)</sup>									
Public Employees	157,452	-	-	157,452	(9,585)	-	(115)	(9,700)	147,752
Police and Firefighters	56,163	-	-	56,163	(17,974)	-	(72)	(18,046)	38,117
Total Defined Contribution Plans	18,542,531	-	-	18,542,531	(27,559)	(3,028,359)	(91,401)	(3,147,319)	15,395,212
<b>Total PERS</b>	<b>67,028,092</b>	<b>-</b>	<b>2,531,826</b>	<b>69,559,918</b>	<b>(95,044,379)</b>	<b>(3,875,980)</b>	<b>(2,905,093)</b>	<b>(101,825,452)</b>	<b>(32,265,534)</b>
<b>Teachers' Retirement System (TRS)</b>									
<u>Defined Benefit Plans:</u>									
Retirement Trust	7,053,527	-	84	7,053,611	(37,272,296)	(244,736)	(298,080)	(37,815,112)	(30,761,501)
Retirement Health Care Trust	2,241,853	-	965,019	3,206,872	(9,331,213)	-	(831,441)	(10,162,654)	(6,955,782)
Total Defined Benefit Plans	9,295,380	-	965,103	10,260,483	(46,603,509)	(244,736)	(1,129,521)	(47,977,766)	(37,717,283)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	4,600,458	-	-	4,600,458	-	(1,029,771)	(41,435)	(1,071,206)	3,529,252
Health Reimbursement Arrangement <sup>(a)</sup>	955,768	-	-	955,768	-	-	(571)	(571)	955,197
Retiree Medical Plan <sup>(a)</sup>	321,961	-	-	321,961	-	-	(195)	(195)	321,766
Occupational Death and Disability <sup>(a)</sup>	-	-	-	-	-	-	(22)	(22)	(22)
Total Defined Contribution Plans	5,878,187	-	-	5,878,187	-	(1,029,771)	(42,223)	(1,071,994)	4,806,193
<b>Total TRS</b>	<b>15,173,567</b>	<b>-</b>	<b>965,103</b>	<b>16,138,670</b>	<b>(46,603,509)</b>	<b>(1,274,507)</b>	<b>(1,171,744)</b>	<b>(49,049,760)</b>	<b>(32,911,090)</b>
<b>Judicial Retirement System (JRS)</b>									
Defined Benefit Plan Retirement Trust	467,009	-	-	467,009	(950,063)	-	(8,971)	(959,034)	(492,025)
Defined Benefit Retirement Health Care Trust	48,107	-	6,664	54,771	(71,842)	-	(6,953)	(78,795)	(24,024)
<b>Total JRS</b>	<b>515,116</b>	<b>-</b>	<b>6,664</b>	<b>521,780</b>	<b>(1,021,905)</b>	<b>-</b>	<b>(15,924)</b>	<b>(1,037,829)</b>	<b>(516,049)</b>
<b>National Guard/Naval Militia Retirement System (NGNMRS)</b>									
Defined Benefit Plan Retirement Trust <sup>(a)</sup>	-	-	-	-	(218,253)	-	(20,267)	(238,520)	(238,520)
<b>Other Participant Directed Plans</b>									
Supplemental Annuity Plan	18,270,088	-	-	18,270,088	-	(15,335,700)	(329,639)	(15,665,339)	2,604,749
Deferred Compensation Plan	3,524,446	-	-	3,524,446	-	(3,818,399)	(117,338)	(3,935,737)	(411,291)
<b>Total All Funds</b>	<b>104,511,309</b>	<b>-</b>	<b>3,503,593</b>	<b>108,014,902</b>	<b>(142,888,046)</b>	<b>(24,304,586)</b>	<b>-</b>	<b>(171,752,637)</b>	<b>(63,737,735)</b>
Total Non-Participant Directed	64,613,865	-	3,503,593	68,117,458	(142,888,046)	(1,092,357)	(3,982,764)	(147,963,167)	(79,845,709)
Total Participant Directed	39,897,444	-	-	39,897,444	-	(23,212,229)	(577,241)	(23,789,470)	16,107,974
<b>Total All Funds</b>	<b>\$ 104,511,309</b>	<b>\$ -</b>	<b>\$ 3,503,593</b>	<b>\$ 108,014,902</b>	<b>\$ (142,888,046)</b>	<b>\$ (24,304,586)</b>	<b>\$ (4,560,005)</b>	<b>\$ (171,752,637)</b>	<b>\$ (63,737,735)</b>

(a) Employer only contributions.

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**SCHEDULE OF NON-INVESTMENT CHANGES BY FUND**  
(Supplement to the Treasury Division Report)  
For the Four Months Ending October 31, 2016

**PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND BY TYPE**

	PERS DCR Plan	TRS DCR Plan	Supplemental Annuity Plan	Deferred Compensation	TOTAL	% of Total
Payment to Beneficiary	3,849	-	58,297	55,701	117,847	0.1%
Death Benefit	520,501	48,431	2,245,048	235,642	3,049,621	2.9%
Disability / Hardship	57,900	-	63,060	111,640	232,600	0.2%
Minimum Required Distribution	12,771	13,910	1,668,210	642,550	2,337,441	2.2%
Qualified Domestic Relations Order	169,680	-	2,006,996	291,798	2,468,474	2.4%
Separation from Service / Retirement	13,437,651	5,217,401	60,306,697	17,269,862	96,231,611	91.8%
Purchase of Service Credit	-	-	261,292	117,165	378,457	0.4%
Transfer to a Qualifying Plan	-	-	-	-	-	0.0%
TOTAL	<u>14,202,351</u>	<u>5,279,742</u>	<u>66,609,601</u>	<u>18,724,357</u>	<u>104,816,051</u>	<u>100.0%</u>



**Notes for the DRB Supplement to the Treasury Report  
October 2016**

This report is the DRB supplement to the Financial Report presented by the Treasury Division, and expands their “Net Contributions (Withdrawals)” column into contributions and expenditures. It shows contributions received from both employers and employees, contributions from the State of Alaska, and other non-investment income. It also breaks out expenditures into benefits, refunds & disbursements, and administrative & investment expenditures. The net amount of total contributions and total expenditures, presented as “Net Contributions (Withdrawals)”, agrees with the same column in the Treasury Division Report. Page one shows the year-to-date totals for the first four months of Fiscal Year 2017, while page two shows only the month of October 2016.

Highlights – On page one, for the **four months** ending October 31, 2016:

- PERS DB Pension – Average employer and employee contributions of \$30.1 million per month; benefit payments of approximately \$63.3 million per month; refunds average \$880 thousand with a HIGH of \$1.1 million in July 2016 and a LOW of \$485 thousand in September 2016; and average Administrative and Investment expenditures of 1.6 million.
- PERS DB Healthcare – Average employer contributions of \$11.2 million per month; other income from Rx rebates and similar total of \$13.6 million; benefit payments of approximately \$33.9 million per month; and average Administrative and Investment expenditures of \$2.3 million per month (DOR and DRB).
- PERS DC Pension – Average employer and employee contributions of \$11.4 million per month; participant disbursements average \$3.6 million per month; and average Administrative and Investment expenditures of \$373 thousand per month (DOR and DRB).
- PERS DC Health – For HRA, RMP, and OD&D, only employer contributions on behalf of participating employees; currently eleven (11) benefits are being paid from the Occupational Death & Disability plans; 5 are for Public Employees and 6 are for Police and Firefighters.
- TRS DB Pension - Average employer and employee contributions of \$4.1 million per month; benefit payments of approximately \$37.3 million per month; refunds average \$233 thousand with a HIGH of \$309 thousand in August 2016 and a LOW of \$152 thousand in July 2016; and average Administrative and Investment expenditures of \$904 thousand per month (DOR and DRB).
- TRS DB Healthcare – Average employer contributions of \$1.3 million per month; other income from Rx rebates and similar total of \$4.5 million; benefit payments of approximately \$10.3 million per month; and average Administrative and Investment expenditures of \$891 thousand per month (DOR and DRB).

- TRS DC Pension – Average employer and employee contributions of \$2.6 million per month; participant disbursements average \$1.3 million per month; and average Administrative and investment expenditures of \$121 thousand per month (DOR and DRB).
- TRS DC Health – For HRA, RMP, and OD&D, only employer contributions on behalf of participating employees; currently no benefits paid from any category; and minor Administrative and Investment expenditures for each category (DOR and DRB).
- JRS Pension – Average employer and employee contributions of \$707 thousand per month; benefit payments of approximately \$949 thousand per month; and average Administrative and Investment expenditures of \$23 thousand per month (DOR and DRB).
- JRS Healthcare – Average employer contributions of \$50 thousand per month; other income from Rx rebates and similar total of \$40 thousand; benefit payments of approximately \$67 thousand per month; and average Administrative and Investment expenditures of \$10 thousand per month (DOR and DRB).
- NGNMRS – Annual contribution from DMVA in the amount of \$867 thousand was received in September 2016; combination of lump-sum and monthly benefit payments of \$120 thousand per month with a HIGH of \$218 thousand in October 2016 and a LOW of \$74 thousand in August 2016; and average Administrative and Investment expenditures of \$21 thousand per month (DOR and DRB).
- SBS – Average employer and employee contributions and transfers in of \$15.3 million per month. Participant disbursements average of \$16.7 million per month with a HIGH of \$19.7 million in August 2016 and a LOW of \$14.1 million in July 2016; and average Administrative and Investment expenditures of \$363 thousand per month (DOR and DRB).
- Deferred Compensation – Average member-only contributions and transfers in of \$3.9 million per month; participant disbursements average of \$4.7 million per month; and average Administrative and Investment expenditures of \$125 thousand per month (DOR and DRB).

Highlights – On page two, activity for the **one month** ending October 31, 2016 only:

- PERS DB Pension – nothing significant to report
- PERS DB Healthcare – During month of September, other income reported \$6.3 million in Aetna’s rebates and \$4.7 million in retiree drug subsidy.
- PERS DC Pension – nothing significant to report
- PERS DC Health – nothing significant to report
- TRS DB Pension – nothing significant to report
- TRS DB Healthcare – During month of September, other income reported \$2.0 million in Aetna’s rebates and \$1.5 million in retiree drug subsidy.
- TRS DC Pension – nothing significant to report
- TRS DC Health – nothing significant to report
- JRS Pension – nothing significant to report
- JRS Healthcare – During month of September, other income reported \$17 thousand in Aetna’s rebates and \$16 thousand in retiree drug subsidy.
- NGNMRS – nothing significant to report
- SBS – nothing significant to report
- Deferred Compensation – nothing significant to report

If you have any questions or comments, please let me know.

December 8, 2016

December 8, 2016



**ARMB Private Equity Portfolio  
Review and Performance  
Analysis**

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**Gary Robertson**  
Senior Vice President

# Private Equity Discussion Topics

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- How Private Equity Works (Cash Flows)
- ARMB Private Equity Program Overview
- Market Conditions
- ARMB Private Equity Performance
  - Portfolio and Manager Performance
  - Vintage Year Benchmarking
  - Strategy Diversification
- Corporate Governance Portfolio
- Summary

# How Private Equity Works

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*ARMB invests in all major private corporate finance strategies (“private equity”):*

- **Venture Capital**
  - Smaller technology/medical companies
- **Buyouts and Special Situations**
  - Larger company equity, traditional industries
- **Subordinated Debt (Mezzanine)**
  - Private high yield, senior to equity, junior to bank debt, equity-linked
- **Distressed Debt**
  - Larger company restructuring, restarting good businesses

\* ARMB’s strategy targets are governed by the Investment Policy Guidelines and the Annual Tactical Plan

\* For distressed debt and mezzanine, the tactical plan takes into account other ARMB investment activity in this strategy

# How Private Equity Works

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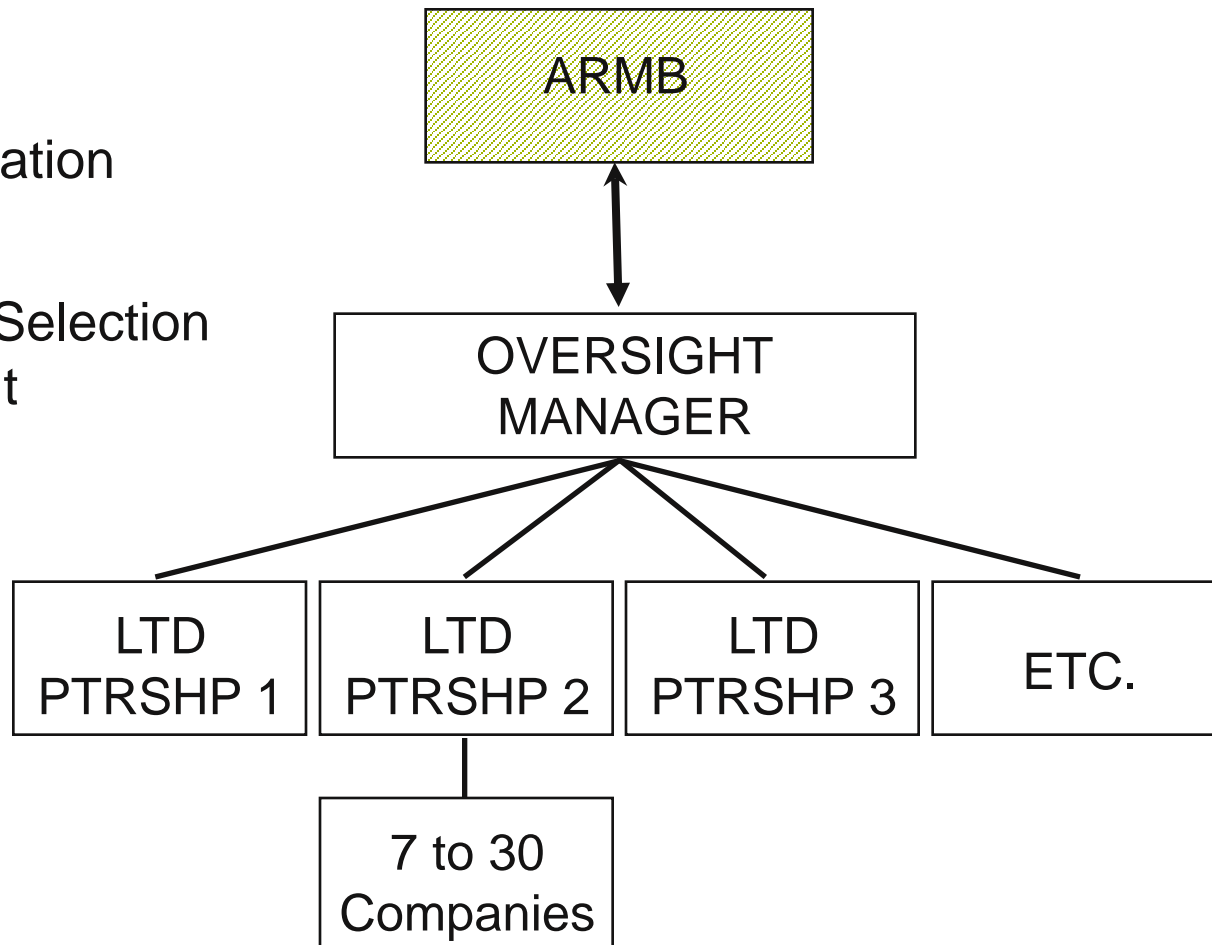
## Private Equity Partnerships Program Structure

Policy  
Strategic Planning  
Performance Evaluation

Proactive Security Selection  
Active Management  
Reporting

Mini-Conglomerate  
(Security)

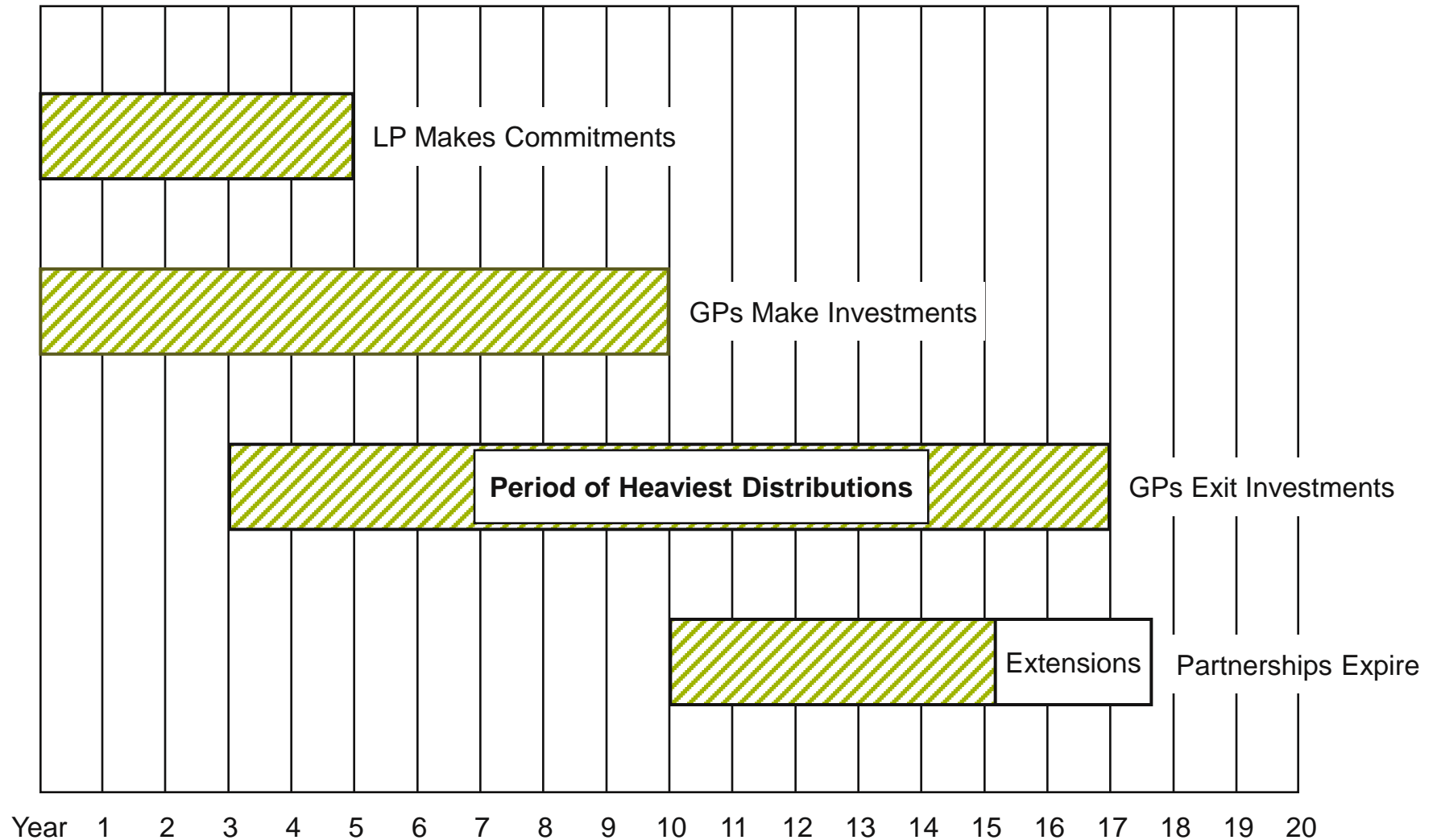
Divisions



# How Private Equity Works

A Private Equity Investment Program Requires a Long-Term Horizon

Source: *The Private Equity Analyst*





# ARMB Private Equity Program Overview

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## Timeline

- 1998 - ARMB initiates a 3% allocation 19 years ago and hires Abbott to invest in partnerships
- 2001 - ARMB raises the allocation to 6%
- 2001 - Hires Pathway to develop a second partnerships portfolio
- 2005 - ARMB hires Blum Capital for direct Corporate Governance
  - Two products: listed and hybrid, neither are “private equity”
- 2006 - Private equity allocation raised to 7%
- 2007- ARMB initiates In-House private equity portfolio
- 2011 - Private equity allocation raised to 8%
- 2013 - Private equity allocation raised to 9%
- 2016 - Blum governance partnerships exited

# ARMB Private Equity Program Overview

## Funding

- ARMB's total assets decreased \$921 million (4%) during the 12-month period, so the private equity target decreased by \$83 million (4%) as a result
- The total private equity NAV increased \$4.7 million (0.3%)
- The private equity funding increased 0.4% and is within 1% of the 9% target

*As of June 30, 2016*

<b>Measure</b>	<b>2015</b>	<b>2016</b>	<b>%</b>
Total Assets*	23,952,982,149	23,032,418,391	
PE % Target	9.0%	9.0%	
PE \$ Target	2,155,768,393	2,072,917,655	
Abbott	775,455,531	769,692,462	42%
Pathway	831,496,280	819,252,480	45%
In-House	221,916,546	247,540,621	13%
Blum	2,955,929	0	0%
Total Private Equity	1,831,824,286	1,836,485,563	100%
% PE	7.6%	8.0%	
Difference from Target	-323,944,107	-236,432,092	

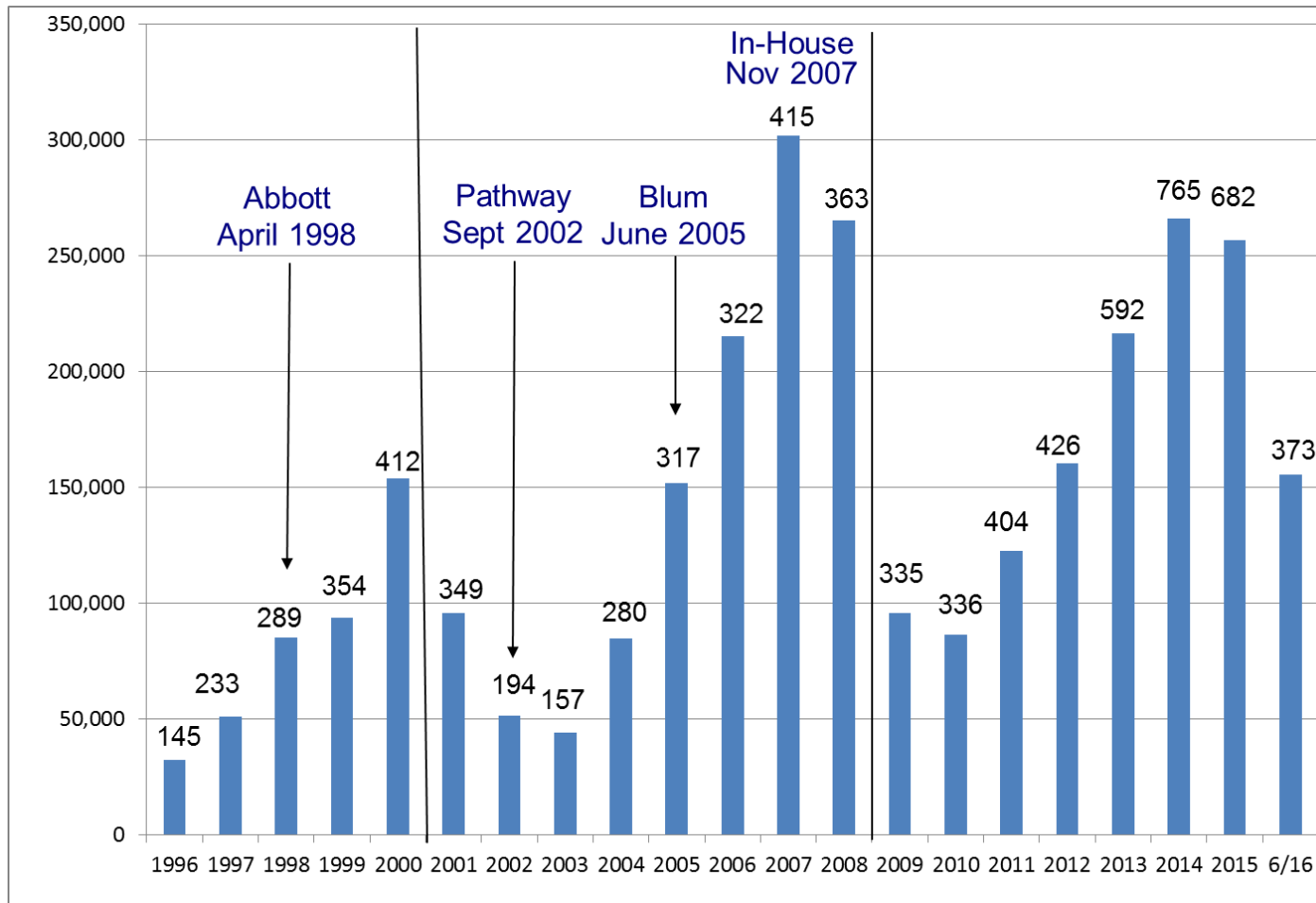
\* Treasury Financials less MRS which doesn't invest in PE

- ARMB's uncalled capital increased to 82% of NAV compared to 69% last year, which will support continued growth in the NAV
- Given asset valuations, Callan is encouraging clients to be mindful of "denominator effects"

# Private Equity Market Conditions

## Industry Commitments To Partnerships

(\$ Millions, # Funds Formed)



Source: *Private Equity Analyst*

ARMB's portfolio is in its third market cycle. The recent economic expansion has been considered relatively weak, but financial asset returns have been robust

# Private Equity Market Conditions

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## Late-Expansion Phase – Increased Volatility Ahead?

- In fiscal year 2016, equity markets experienced increased volatility, and returns further moderated (R3000 up 3.62%) relative to fiscal 2015, 2014 and 2013 (7.29%, 25.2% and 21.5%, respectively)
  - Fiscal 2016 saw large temporary public equity drawdowns in 3Q15 and 1Q16 (which hampered liquidity)
- Distributions slowed but remained relatively strong for a fourth year, and the new company investment pace remained moderate due to high prices and competition from strategic acquirers
- Fundraising fell slightly to \$257 billion (from \$266 billion) as strong distributions continued, but total plan valuations flattened
  - Large partnerships continued to have a good reception in the market
- Average U.S. buyout deal pricing remained above 10.0x EBITDA for a second year, as valuations have flattened at elevated levels
- Credit is readily available, but regulators have been enforcing a 6x EBITDA bank guideline and average leverage in 1H16 was 5.32x EBITDA, down from from 5.54x a year earlier
  - Larger equity investments are required given the moderate total leverage
  - A growing cadre of non-bank lenders are not held to the regulatory limits
- Exits and distributions have continued to be very strong for investors with mature portfolios
  - Companies purchased after the financial crisis are now being exited, and some legacy companies remain
- The global conditions of lower economic growth, elevated government debt levels, and high asset prices, have the potential to cause future fluctuations in liquidity—to which private equity is keenly sensitive

# Private Equity Market Conditions

## Private Equity Industry Returns IRRs through March 31, 2016

<u>Strategy</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>10 Years</u>	<u>15 Years</u>	<u>20 Years</u>
All Venture	6.6%	20.6%	15.0%	10.4%	5.3%	23.2%
Buyouts	9.7%	12.8%	11.1%	10.9%	12.3%	12.7%
Mezzanine	8.0%	9.3%	10.2%	9.6%	8.5%	9.4%
<b>All Private Equity</b>	<b>7.5%</b>	<b>13.3%</b>	<b>11.5%</b>	<b>10.6%</b>	<b>10.2%</b>	<b>13.5%</b>
<b>S&amp;P 500</b>	<b>1.8%</b>	<b>11.8%</b>	<b>11.6%</b>	<b>7.0%</b>	<b>6.0%</b>	<b>8.0%</b>

Source: Thomson/Cambridge

- All Private Equity has provided the expected return premium over longer time periods
- All Private Equity outperforms public equity over all horizons except five-years (with 10 bp lag), and the long-term double-digit performance is attractive
- The recent public market volatility has benefitted private equity relative standing due to private equity's less volatility appraisal valuation methodology
- It has been seven years since public markets bottomed in 1Q2009 and the bull market began
- Venture capital's strong recent run has helped lift diversified portfolios' returns

# ARMB Private Equity Performance

## Total Portfolio: 12-Month Changes, June 30, 2016 (\$000)

Year	Committed	Paid-In	Uncalled	Distributed	NAV	DPI	RVPI	TVPI	IRR
2015	4,610,928	3,474,104	1,266,675	3,306,981	1,831,393	0.95	0.53	1.48	11.0%
2016	5,160,640	3,794,225	1,513,668	3,719,577	1,836,486	0.98	0.48	1.46	10.8%
<b>Change</b>	<b>549,712</b>	<b>320,121</b>	<b>246,993</b>	<b>412,596</b>	<b>5,092</b>	<b>0.03</b>	<b>(0.04)</b>	<b>(0.01)</b>	<b>-0.2%</b>

ACM and PCM private equity holdings are March 31 values updated for June 30 cash flows, In-House and Blum are June 30 actual

NAV reflects Treasury Financials which includes additional accruals.

DPI = Distributions as a ratio of (divided by) Paid-In capital

RVPI = Residual Value (Net Asset Value) as a ratio of (divided by) Paid-In Capital

TVPI = Total Value (Distributions + NAV) as a ratio of (divided by) Paid-In Capital

1. Total of 377 partnerships, up 36 from last year (compared to an increase of 41 funds previously)
2. Commitments increased by \$550 million (12%), less than the \$641 million (16%) the prior year
3. Paid-in capital increased \$320 million (9%), less than the \$401 million (13%) last year
4. Uncalled capital increased \$247 million (19%), less than the \$271 million (27%) last year
5. The portfolio is 74% paid-in (mature), down from 75%, with Abbott 77% and Pathway 78%
6. The portfolio distributed \$413 million, a 23% gross cash flow return (distributions divided by beginning NAV), down from from \$515 million (30%) last year
7. Net cash flow to ARMB was \$93 million (5%), down from \$114 million (7%) last year
8. NAV increased by \$5 million (0.3%), down from \$105 million (6%) last year
9. Total portfolio appreciation was \$97 million (5%), compared to \$219 million (13%) last year
10. IRR of 10.8% is second quartile versus the Thomson/Cambridge All Region composite since 1998, which has a top quartile of 15.6% and a median of 8.2%
11. Performance ratios: DPI increased, and RVPI and TVPI decreased. The TVPI of 1.46x is second quartile versus the Thomson/Cambridge upper quartile of 1.74x and a median of 1.32x

# ARMB Private Equity Performance

## Total Portfolio Summary Change Metrics: Last 10 Years Ended June 30, 2016 (\$000)

ARMB Summary Changes Metrics - Fiscal Years ended June 30 (\$000)

Cumulative Values	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Commitments	2,095,104	2,474,744	2,742,373	2,863,483	3,137,245	3,376,366	3,536,444	3,969,626	4,610,928	5,160,640
Paid-In	1,383,305	1,698,786	1,882,191	2,043,035	2,285,180	2,546,467	2,812,066	3,073,494	3,474,104	3,794,225
% PI	66%	69%	69%	71%	73%	75%	80%	77%	75%	74%
Uncalled	711,799	773,553	857,745	818,549	850,282	830,317	803,896	995,506	1,266,675	1,513,668
Distributed	828,482	1,053,166	1,135,362	1,278,525	1,565,519	1,859,734	2,332,346	2,792,318	3,306,981	3,719,577
NAV	1,061,115	1,283,311	1,069,319	1,289,123	1,497,378	1,604,129	1,610,963	1,726,998	1,831,824	1,836,486

Annual Changes	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Commitments	273,848	379,640	267,629	121,110	273,762	239,121	160,078	433,182	641,302	549,712
Paid-In	283,329	315,481	183,405	160,844	242,145	261,287	265,599	261,428	400,610	320,121
Uncalled	(9,482)	61,754	84,192	(39,196)	31,733	(19,965)	(26,421)	191,610	271,169	246,993
Gross Distributed	300,837	224,684	82,196	143,163	286,994	294,215	472,612	459,972	514,663	412,596
Net Cash Flow	17,508	(90,797)	(101,209)	(17,681)	44,849	32,928	207,013	198,544	114,053	92,475
NAV	201,726	222,196	(213,992)	219,804	208,255	106,751	6,834	116,035	104,826	4,662
Total Appreciation	219,234	131,399	(315,201)	202,123	253,104	139,679	213,847	314,579	218,879	97,137

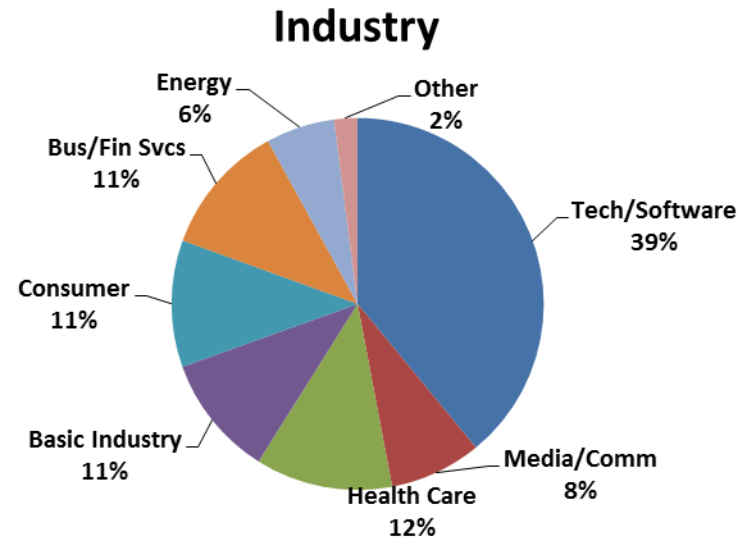
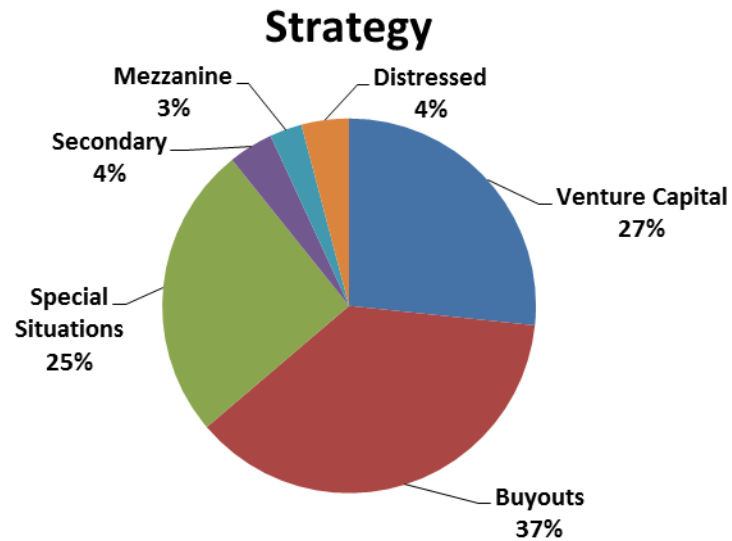
Annual Results (Change/Prior NAV)	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Gross Cash Flow Return	35%	21%	6%	13%	22%	20%	29%	29%	30%	23%
Paid-In Change	33%	30%	14%	15%	19%	17%	17%	16%	23%	17%
Net Cash Flow Return	2%	-9%	-8%	-2%	3%	2%	13%	12%	7%	5%
NAV % Increase	23%	21%	-17%	21%	16%	7%	0%	7%	6%	0%
Total Portfolio Appreciation	26%	12%	-25%	19%	20%	9%	13%	20%	13%	5%

PE Funded Versus Target	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Target	7.0%	7.0%	6.6%	7.0%	8.0%	8.0%	8.0%	9.0%	9.0%	9.0%
% Funded	6.7%	8.5%	8.7%	9.6%	9.2%	9.9%	8.9%	8.2%	7.6%	8.0%
Over/(Under) Target	-0.3%	1.5%	2.1%	2.6%	1.2%	1.9%	0.9%	-0.8%	-1.4%	-1.0%

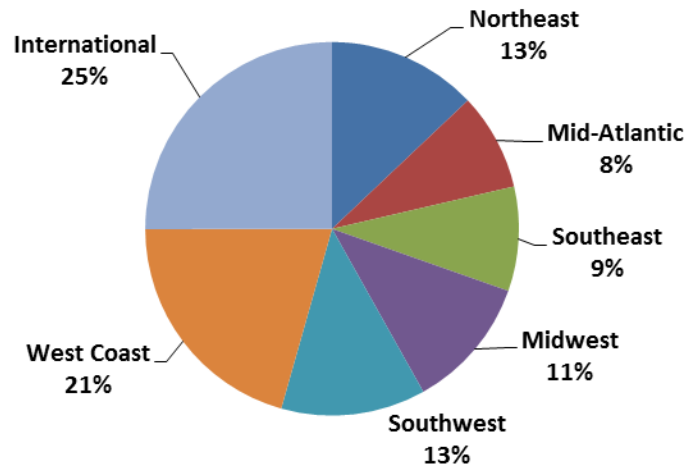
Key: Poor Weak Good Strong

- Strong Gross Cash Flow and moderate Paid-In have provided good Net Cash Flow in recent years
- Good Net Cash Flow and moderate NAV increases result in attractive Total Portfolio Appreciation
- 2016 saw some curtailment in “liquidity,” although flows, notably distributions, are still quite healthy
- 2016’s flat NAV valuation significantly reduced Total Portfolio Appreciation

# ARMB Portfolio Diversification June 30, 2016 (\$000)



### Geography



International = Europe 17%, Asia 3%, and Rest-of-World 6%

Note: Strategy allocations based on partnership NAV and includes ACM, PCM and In-House.

Industry and Geography allocations based underlying portfolio companies and include ACM and PCM.



# Abbott Capital Management Profile

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- Founded in 1986. The firm is an independent registered investment advisor and is employee-owned by Abbott's 12 Managing Directors (90%) and two retired co-founders (10%).
- ACM has 11 senior investment professionals, 6 junior investment professionals and a total staff of 59 employees
- ACM has had a stable team with little senior professional turnover
- The firm is headquartered in New York and has an additional office in London
- The firm has \$7.5 billion in AUM (Uncalled + NAV), in both fund-of-funds and separate accounts, and has a large established client base. ARMB represents 18% of the ACM's AUM
- ACM's ARMB investment program started in mid-1998 and represents 42% of the ARMB's private equity portfolio NAV
- ACM invests in all key private equity strategies, except distressed debt, in a diversified manner. The firm has strong relationships in venture capital and an expertise in non-US investing.
- Callan would characterize ACM as a conservative global boutique, with strong historical experience in venture capital and European private equity investing. The firm also has long-standing with highly-developed corporate finance funds

# ARMB Private Equity Performance

## Abbott Portfolio: 12-Month Changes, June 30, 2016 (\$000)

Year	Committed	Paid-In	Uncalled	Distributed	NAV	DPI	RVPI	TVPI	IRR
2015	2,137,485	1,676,430	461,055	1,758,777	775,456	1.05	0.46	1.51	9.9%
2016	2,360,696	1,820,675	540,021	1,944,751	769,692	1.07	0.42	1.49	9.6%
<b>Change</b>	<b>223,211</b>	<b>144,245</b>	<b>78,966</b>	<b>185,974</b>	<b>(5,763)</b>	<b>0.02</b>	<b>(0.04)</b>	<b>(0.02)</b>	<b>-0.3%</b>

NAV reflects Treasury Financials which includes additional accruals. Abbott's reported NAV was \$125k higher including stock distributions.

DPI = Distributions as a ratio of (divided by) Paid-In capital

RVPI = Residual Value (Net Asset Value) as a ratio of (divided by) Paid-In Capital

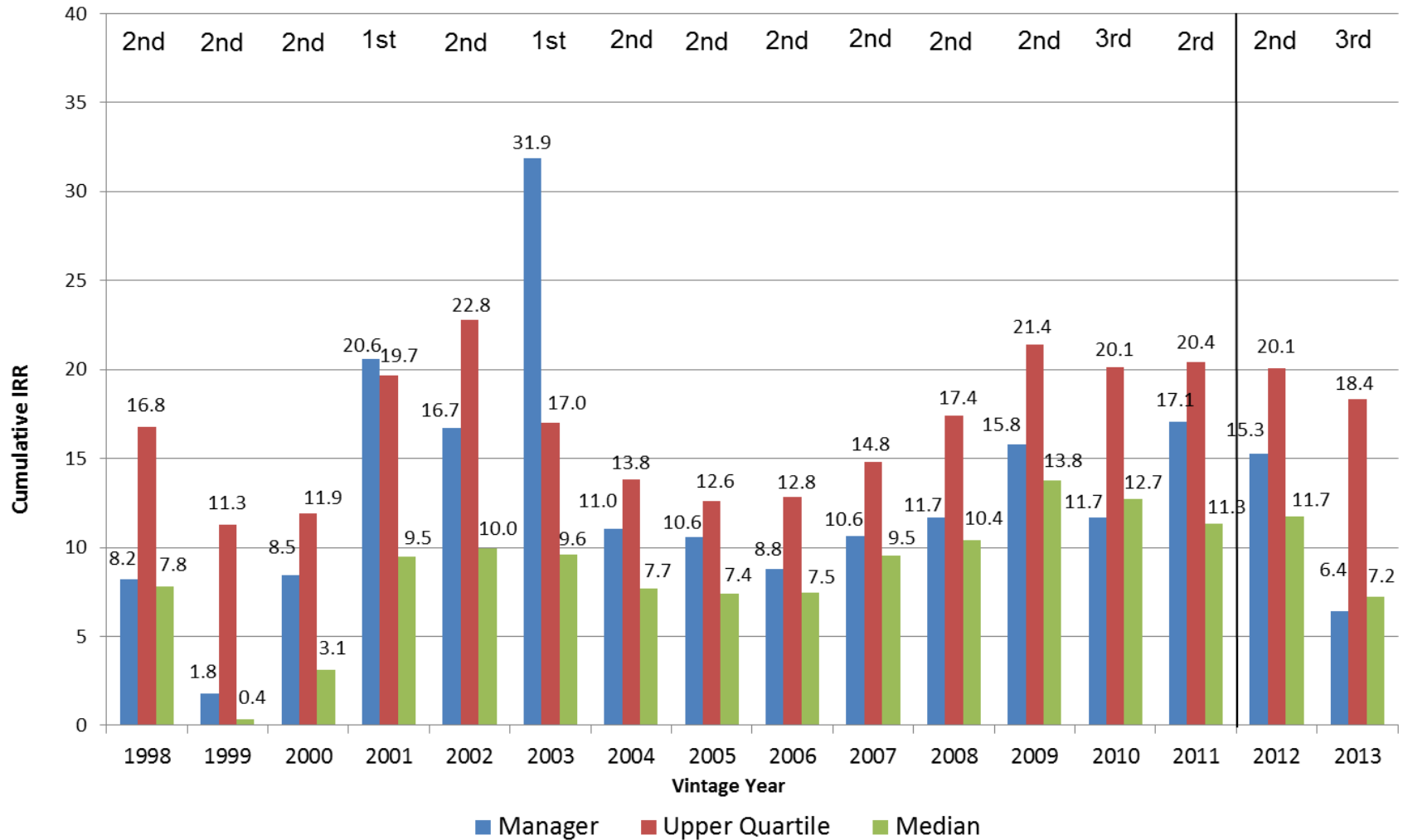
TVPI = Total Value (Distributions + NAV) as a ratio of (divided by) Paid-In Capital

Benchmarks are Thomson/Cambridge All Regions 3/31/16

1. Initiated in 1998, invested in 195 partnerships (+19). 42% of NAV
2. Commitments increased \$223 million (10%), up from \$146 million (7%) last year
3. Paid-in increased \$144 million (9%), up slightly from \$128 million (8%) last year
4. The portfolio is 77% paid-in (*fully mature*) being *net cash flow positive* for its second year
5. Uncalled capital increased \$79 million (4%), an increase from \$19 million (4%) last year
6. The portfolio distributed \$186 million (24% cash flow yield), a dip from \$210 million (27%)
7. Portfolio net cash flow was a positive \$42 million (5%) as more capital was distributed than paid-in, down from a positive \$83 million (11%) in the prior year
8. NAV fell \$6 million (-1%), compared with last year's increase of \$7 million (1%)
9. Total portfolio appreciation was \$36 million (5%), down from \$89 million (12%) last year
10. Abbott's IRR of 9.6% is second quartile versus the Thomson/Cambridge All Region composite since 1998, which has a top quartile of 15.6% and a median of 8.2%
11. The TVPI of 1.49x is also second quartile versus a top quartile of 1.74x and a median of 1.32x

# Abbott: Cambridge Vintage Year Peer Group Benchmark

IRRs and All Region Benchmarks as of March 31, 2016



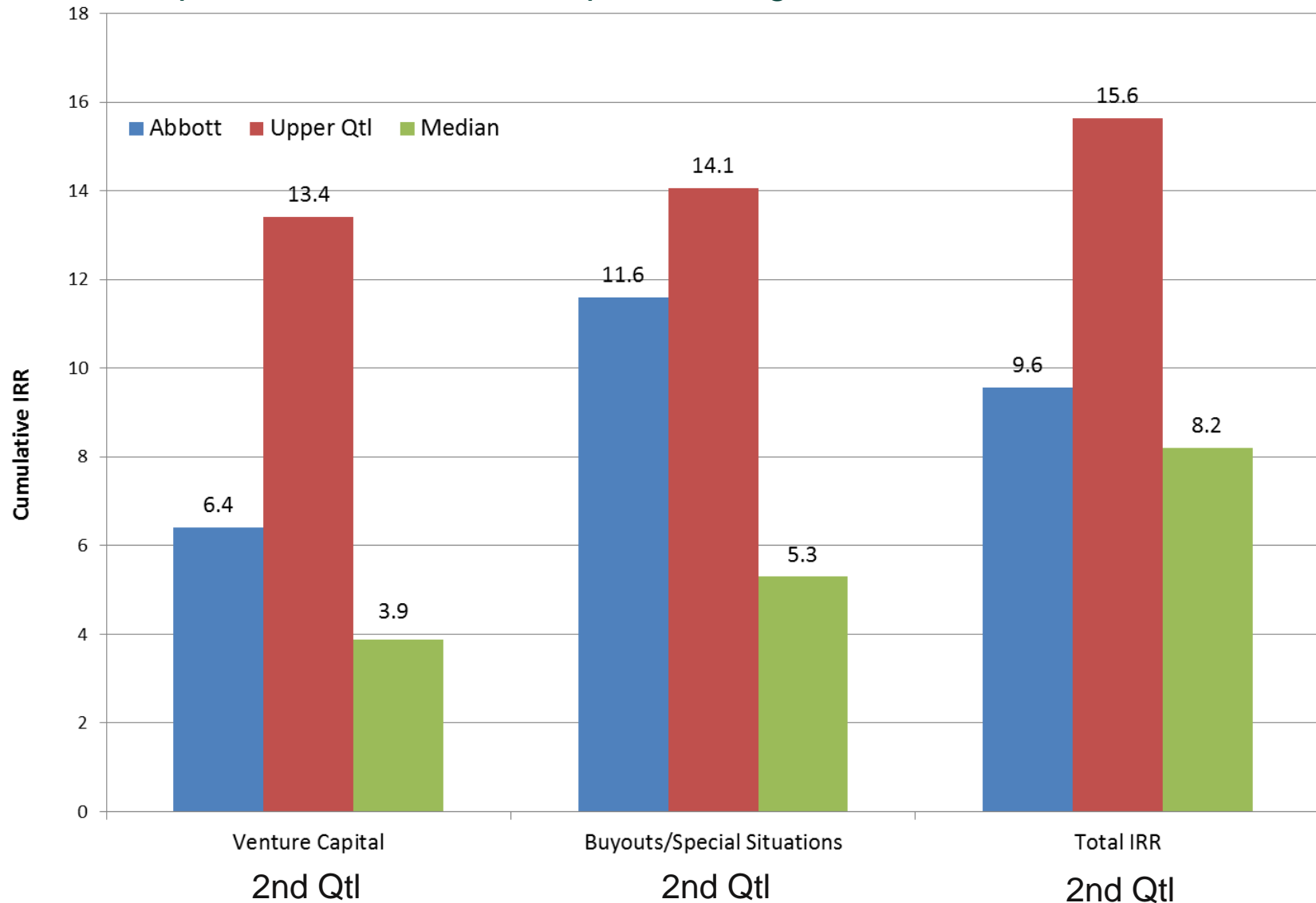
1st Quartile: 2 years

2nd Quartile: 12 years

Below Median: 2 years

# Abbott: Cambridge Strategy Peer Group Benchmark

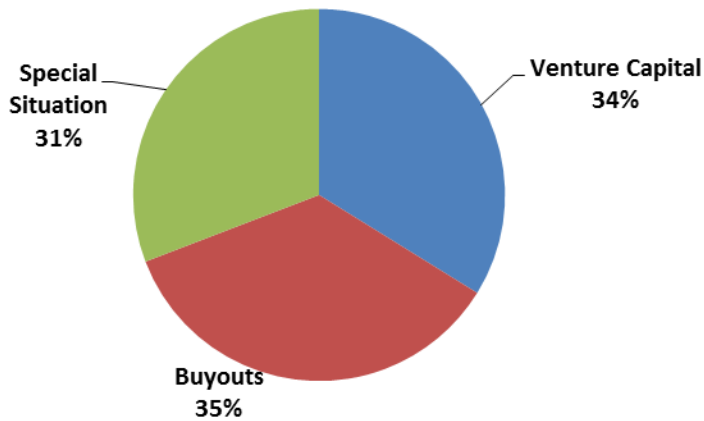
Cumulative Composite Benchmarks Inception through 3/31/2016



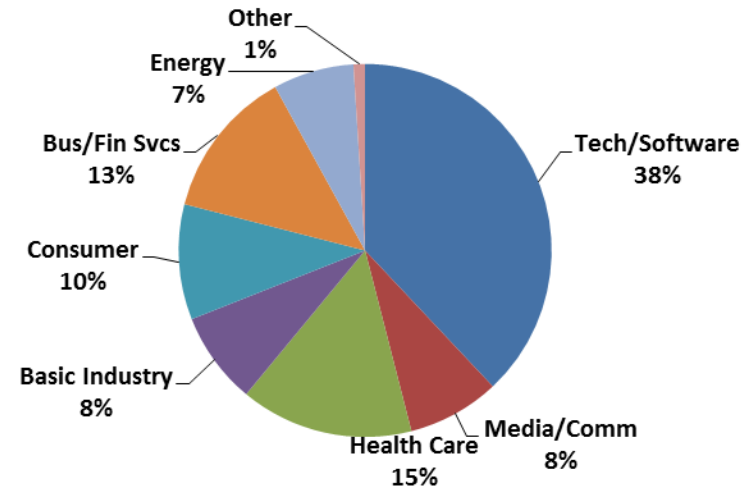
All Composites: VY 1998 – 2015

# ACM Portfolio Diversification June 30, 2016 (\$000)

## Strategy

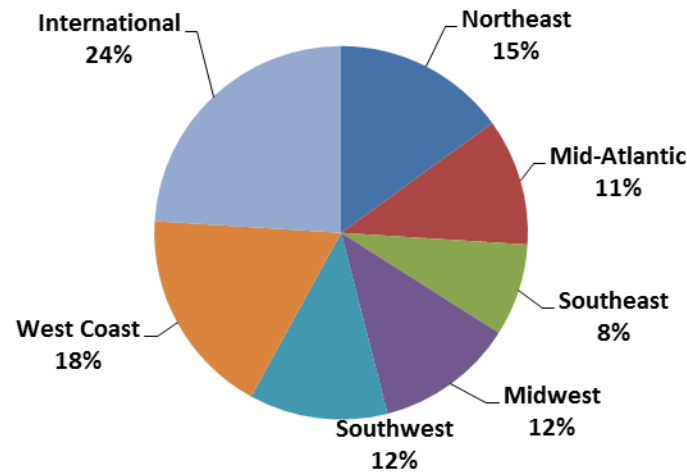


## Industry



## Geography

International = Europe 16%, Asia 4%, and Rest-of-World 4%



Note: Strategy allocations are based on partnership NAV, Industry and Geography allocations are based on underlying portfolio company valuations

# Pathway Capital Management Profile

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- Founded in 1991. The firm is an independent registered investment advisor and is wholly owned by its 18 principals. PCM has 16 senior investment professionals and 28 junior investment professionals, with 130 total employees
- The firm is headquartered in Irvine, CA and has additional offices located in London and Rhode Island and Hong Kong. PCM also has a Pacific Basin alliance with its client Tokyo Marine
- PCM has had a generally stable team. There have been four senior departures in recent years, in early-2012 one of the three founding partners departed, in 2013 a director departed, and in 2015 a managing director and director in the Rhode Island office both retired. The firm maintains a deep staff
- Total AUM is \$42.8 billion (NAV plus uncalled), with a large established client base. ARMB represents 3% of the ACM's AUM
- Pathway's portfolio initiated in mid-2002 and represents 45% of the ARMB's private equity portfolio NAV
- Pathway states that they use a market-weighting investment strategy and do not tend to overweight particular investment strategies. The investment approach is conservative, investing with highly developed general partners with proven track records and experience investing through market cycles, primarily in developed markets
- Callan would characterize PCM as a conservative global boutique core manager that invests in key private equity strategies, except mezzanine and has an expertise in non-US investing. The firm's corporate finance investments have a mid- to large-buyouts orientation

# ARMB Private Equity Performance

## Pathway Portfolio: 12-Month Changes, June 30, 2016 (\$000)

Year	Committed	Paid-In	Uncalled	Distributed	NAV	DPI	RVPI	TVPI	IRR
2015	1,828,443	1,416,472	522,003	1,340,253	831,496	0.95	0.59	1.53	13.9%
2016	1,977,041	1,544,479	554,149	1,524,092	819,253	0.99	0.53	1.52	13.3%
<b>Change</b>	<b>148,599</b>	<b>128,007</b>	<b>32,147</b>	<b>183,839</b>	<b>(12,244)</b>	<b>0.04</b>	<b>(0.06)</b>	<b>(0.02)</b>	<b>-0.6%</b>

NAV reflects Treasury Financials which includes additional accruals. Pathway's reported NAV was \$3.4 million lower

DPI = Distributions as a ratio of (divided by) Paid-In capital

RVPI = Residual Value (Net Asset Value) as a ratio of (divided by) Paid-In Capital

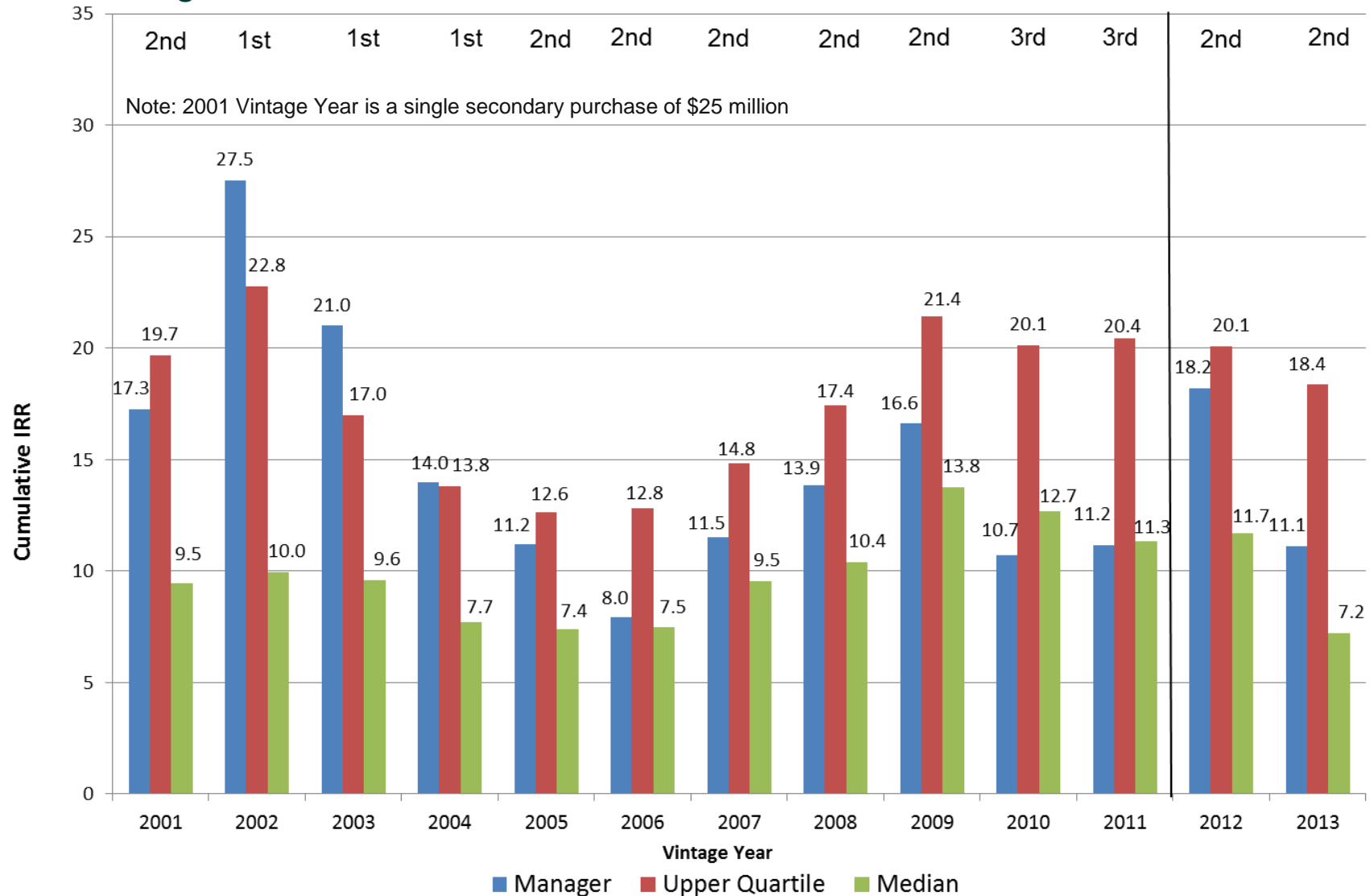
TVPI = Total Value (Distributions + NAV) as a ratio of (divided by) Paid-In Capital

Benchmarks are Thomson ONE All Regions 3/31/16

1. Initiated in mid-2002 (14 years), invested in 165 partnerships (+14), 45% of NAV
2. Commitments increased \$149 million (8%), down from \$230 million (14%) last year
3. Paid-in increased \$128 million (9%), down from \$166 million (13%) last year
4. The mature portfolio is 78% paid-in and is \$20 million shy of being net cash flow positive
5. Uncalled capital increased \$32 million (6%), down from \$79 million (18%) last year
6. Distributions were \$184 million (22% cash flow yield), down from \$247 million (31%)
7. Portfolio net cash flow was \$56 million or 7% of initial NAV (distributions exceeded paid-in), down from \$82 million (10%) last year
8. NAV decreased \$12 million (-1.5%), versus a \$27 million (3%) increase last year
9. Total portfolio appreciation was \$44 million (5%), down from \$109 million (13%) last year
10. Pathway's IRR of 13.3% is second quartile versus the Thomson/Cambridge All Region composite since 2002, which has a top quartile of 16.2% and a median of 8.9%
11. The 1.52x TVPI is also second quartile versus the top quartile and median of 1.72x and 1.33x

# Pathway: Cambridge Vintage Year Peer Group Benchmark

IRRs and All Region Benchmarks as of March 31, 2016



1st Quartile: 3 years

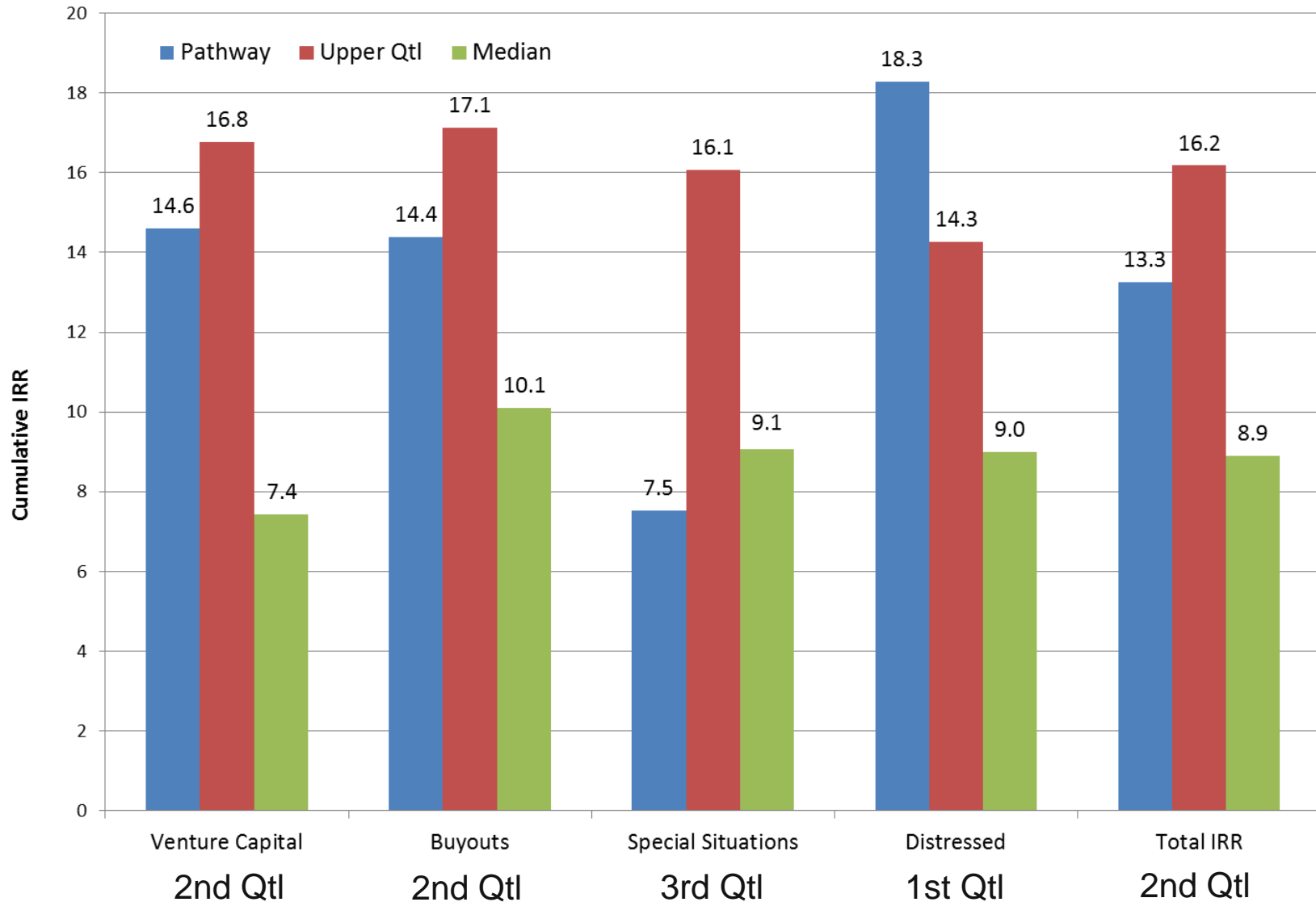
2nd Quartile: 8 years

Below Median: 2 years



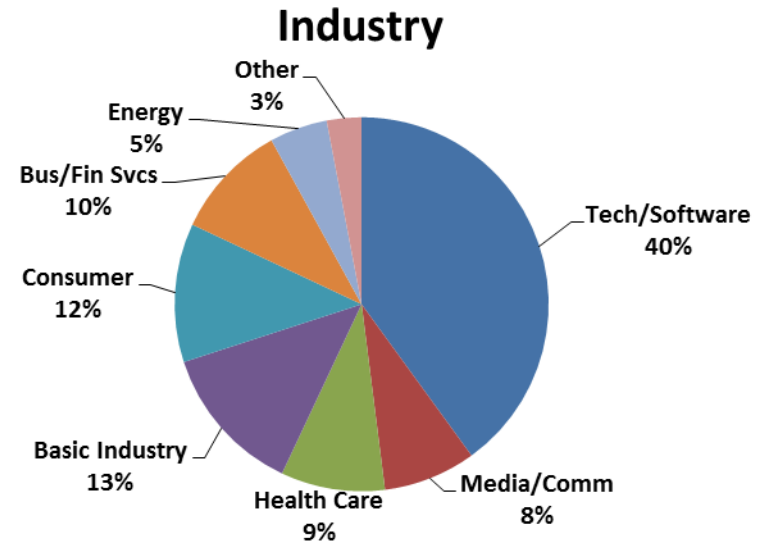
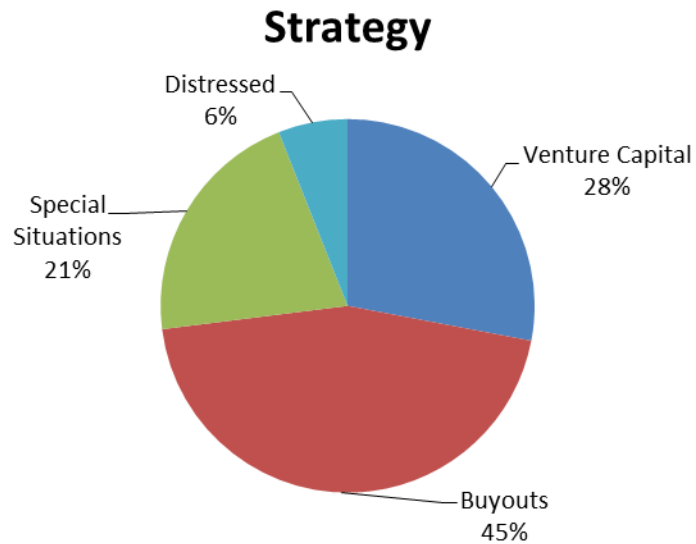
# Pathway: Cambridge Strategy Peer Group Benchmark

Cumulative Composite Benchmarks Inception through 3/31/2016

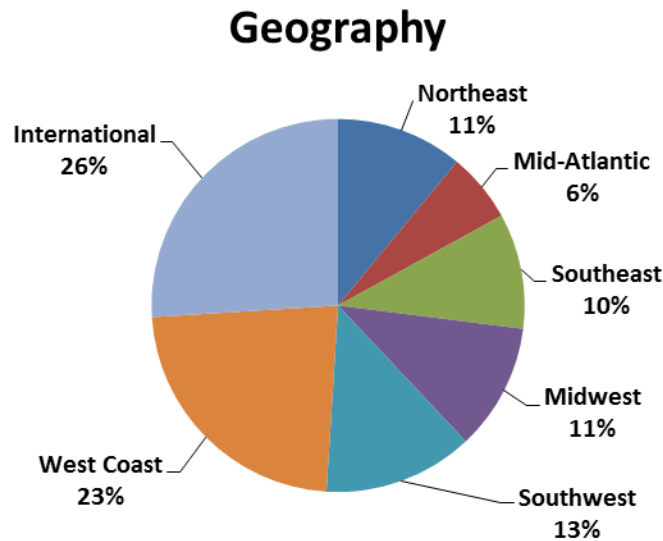


All Composites: VY 2002 – 2015

# PCM Portfolio Diversification June 30, 2016 (\$000)



International = Europe 17%, Asia 2%, and Rest-of-World 7%

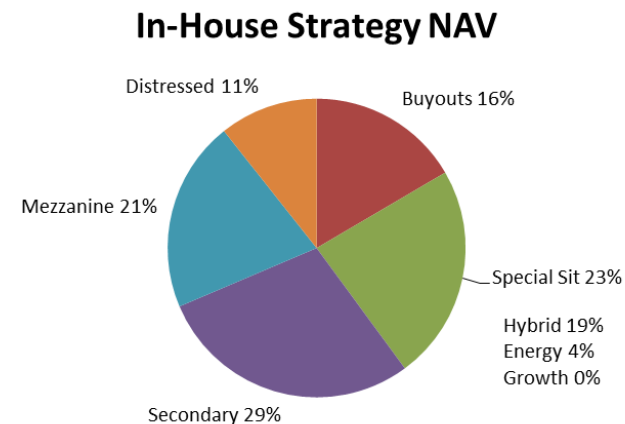


Note: Strategy allocations are based on partnership NAV, Industry and Geography allocations are based on underlying portfolio company valuations

# In-House Portfolio Overview June 30, 2016 (\$000)

Partnership	VY	Strategy	Overlap	Committed	Paid-In	% PI
Warburg X	2007	Special Sit	ACM	30,000,000	30,000,000	100%
AG CRP VI	2008	Distressed	None	25,000,000	25,000,000	100%
Onex III	2008	Buyout	PCM	25,000,000	26,101,442	91%
Lexington VII	2010	Secondary	None	75,000,000	66,324,748	79%
Merit V	2010	Mezzanine	None	25,000,000	23,473,470	88%
Warburg XI	2013	Special Sit	ACM	30,000,000	27,687,507	87%
NB SOF III	2013	Secondary	None	50,000,000	17,054,868	36%
Resolute III	2014	Buyout	ACM/PCM	20,000,000	10,500,267	35%
New Mountain IV	2014	Buyout	None	25,000,000	11,334,240	46%
Glendon Opps	2014	Distressed	PCM	40,000,000	25,981,992	65%
KKR Lending II	2015	Credit	None	100,000,000	40,867,853	33%
NGP XI	2015	Energy	None	50,000,000	11,215,512	20%
Lexington VIII	2015	Secondary	None	50,000,000	11,076,412	22%
Warburg XII	2015	Special Sit	None	65,000,000	4,550,000	7%
Advent VIII	2016	Buyout	ACM/PCM	25,000,000	0	0%
Summit IX	2016	Special Sit	PCM	40,000,000	0	0%
NB SOF IV	2016	Secondary	None	50,000,000	0	0%
<b>Total</b>				<b>725,000,000</b>	<b>331,168,311</b>	<b>42%</b>

VY	# Fds	Committed	%
2007	1	30,000,000	4%
2008	2	50,000,000	7%
2010	2	100,000,000	14%
2013	2	80,000,000	11%
2014	3	85,000,000	12%
2015	4	265,000,000	37%
2016	3	115,000,000	16%
<b>Total</b>	<b>17</b>	<b>725,000,000</b>	<b>84%</b>



- The portfolio represents all key strategies except venture capital (although some VC exposure will be provided by Warburg)
- The investment pace by partnerships has been increasing since the financial crisis lull, although the recent increases in commitments reduce the portfolio's paid-in percentage
- The largest investment, KKR Lending II, is a private senior debt strategy, not a private equity strategy, and may affect benchmarking versus private equity databases—particularly TVPI

# ARMB Private Equity Performance

## In-House Portfolio: 12-Month Changes, June 30, 2016 (\$000)

Year	Committed	Paid-In	Uncalled	Distributed	NAV	DPI	RVPI	TVPI	IRR
2015	545,000	283,300	283,303	132,499	221,917	0.47	0.78	1.25	11.2%
2016	725,000	331,168	419,184	174,798	247,541	0.53	0.75	1.28	10.9%
<b>Change</b>	<b>180,000</b>	<b>47,869</b>	<b>135,881</b>	<b>42,298</b>	<b>25,624</b>	<b>0.06</b>	<b>(0.04)</b>	<b>0.02</b>	<b>-0.4%</b>

1. Initiated November 2007 (10 years), 17 partnerships (+4), 13% of NAV (+1%)
2. Commitments increased \$180 million (+33%), down from \$265 million (+95%) last year
3. Paid-in capital increased \$48 million (17%), down from \$136 million (61%) last year
4. Portfolio is 42% paid-in, down from 48% last year, due to the large increase in commitments
5. Uncalled capital increased \$136 million (48%), down from \$173 million (158%) last year
6. Distributions were \$42 million (19% of NAV), down from \$47 million (26%) last year
7. Net cash flow was negative \$6 million (-3%) as paid-in exceeded distributions, a more equal balance than the negative \$60 million (-42%) last year
8. NAV increased \$26 million (12%), down from \$80 million (56%) last year
9. Total portfolio appreciation was \$20 million (9%), compared to \$20 million (14%). The portfolio was initiated just before the bubble peaked, has weathered the downturn and continues building
10. While still early for benchmarking (given the slow start, and that *52% of commitments were made in the last two years*), the in-house portfolio second quartile versus Thomson/Cambridge
11. The 10.9% IRR is second quartile versus a database upper quartile of 14.8% and median of 8.8%. The 1.28x TVPI is second quartile versus an upper quartile of 1.53x and median of 1.26x

Benchmark = VY 2007, 2008, 2010, 2013, 2014, 2015 for Buyout, Mezzanine, Distressed, Energy, Secondary

# ARMB Private Equity Performance

## Blum Strategic Partners III: 12-Month Changes, June 30, 2016 (\$000)

Year	Committed	Paid-In	Uncalled	Distributed	NAV	DPI	RVPI	TVPI	IRR
2015	50,000	47,903	314	40,703	2,525	0.85	0.05	0.90	-2.3%
2016	47,903	47,903	314	41,188	-	0.86	0.00	0.86	-2.1%
<b>Change</b>	<b>(2,097)</b>	<b>-</b>	<b>-</b>	<b>485</b>	<b>(2,525)</b>	<b>0.01</b>	<b>(0.05)</b>	<b>(0.04)</b>	<b>0.2%</b>

Figures are June 30 actual (not March 31 values updated for June 30 cash flows)

TWR = Time-Weighted Return (period-linked return calculation normally used for public stock portfolios)

1. Two \$50 million commitments initiated in May 2005 focusing on activist investments in under-performing publicly-traded small- and mid-cap companies
2. Public-only vehicle was fully redeemed in 2009 with a \$15 million loss
3. Strategic III was fully liquidated during the fiscal year
4. The portfolio distributed a final \$485,000
5. The portfolio had challenges with Financials, Digital Media, and Education sector companies
6. Performance has reflected a concentrated, small company public stock portfolio that did not recover from the financial crisis

# ARMB Summary

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## *Observations*

- ARMB's private equity portfolio is mature, has provided good performance, and is well-diversified
  - Had to overcome initial timing issue and target increases
  - The private equity allocation is 1.0% below target, which could change quickly if public market “volatility” renews.
  - The uncalled backlog has also increased to 82% of NAV from 69% last year
  - Total Portfolio is approaching cumulative cash flow break-even: DPI increased to 0.98x vs. 0.95x
- Performance is mid-second quartile versus a database of partnerships selected by other professionally-managed programs
  - ARMB's performance remains highly competitive relative to its peer group of institutional investors.
  - Both external managers are performing well relative to benchmarks and their strategy mixes are complementary
  - The In-House portfolio appreciated 9%, and new commitments, valuation, and cash flows were dynamic (relatively large percentage changes)—consistent with a developing portfolio
  - The Blum investments (which are not private equity) have been fully liquidated
  - The portfolio is composed of tenured, high-quality general partners
  - ARMB has an attractive strategy mix for a large fund, and is well-diversified by other measures

# ARMB Summary

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## *Observations*

- ARMB's private equity portfolio had another good year
  - Private equity industry liquidity diminished somewhat, but was still strong for a fourth year, although the public equity markets have flattened and volatility has increased
  - The total private equity portfolio produced a 23% distributed cash return, and 5% total appreciation from positive net cash flow of \$93 million (5%) to ARMB, and a \$5 million (0%) NAV increase
- Looking forward
  - Uncalled commitments rose to 82% of NAV, from 69% last year, which will support NAV growth
  - Public equity volatility appears to be increasing in the last years (particularly 3Q14, and 3Q15, and 1Q16), and continued “risk-off” periods would impact private equity liquidity and valuation
  - The private equity market prices are “toppy”
  - Capital market liquidity is supporting continued distribution cash flow, but marginal valuation increases
  - ARMB's portfolio is becoming mature (although the recent increase in uncalled commitments decreased its paid-in ratio), so year-over-year performance changes may become smaller
  - With the seller's-market environment, we expect general partners will stay focused on portfolio exits, so distributions will continue to be as strong as practicable
  - Callan is cautioning clients to be mindful of the “denominator effect” if public markets contract



# State of Alaska Division of Retirement and Benefits Audit results June 30, 2016

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December 7, 2016



# Agenda

## **1.0 Audit status**

## **2.0 Significant findings or issues from the audit**

- Areas of Interest
- Summary of misstatements
- Significant deficiencies and material weaknesses in internal control
- Other matters

## **3.0 KPMG's Audit Committee Institute**

## **4.0 Appendices**

- I – Responsibilities
- II – Material written communications between KPMG and management
- III – Regulatory and standard setting update



1.0

Audit status

# Audit status

## **Expect to issue an unmodified opinion on the financial statements and supplemental schedules for:**

- Public Employees' Retirement System
- Teachers' Retirement System
- Judicial Retirement System
- National Guard and Naval Militia Retirement System
- Supplemental Benefits System
- Deferred Compensation Plan

## **Significant changes to our audit plan**

There have been no significant changes to our audit plan dated June 22, 2016

## **Pending matters as of November 30, 2016**

- Health Claims Testwork
- National Guard and Naval Militia Retirement System lump sum distribution calculation
- Second partner final review
- Actuary and Tax specialist sign off
- IBNR variances



2.0

Significant findings  
or issues from the  
audit

# Areas of Interest

Significant accounting policies and practices	Results of evaluation, and conclusions about the qualitative aspects	Comments
Accuracy of Contributions	<ul style="list-style-type: none"> <li>- Verified accuracy of employee data including eligibility</li> <li>- Recalculated a selection of contributions</li> </ul>	No issues identified
Valuation of Alternative Investments	<ul style="list-style-type: none"> <li>- Confirmed a sample of investments</li> <li>- Performed benchmark analysis</li> <li>- Verified reliability of valuation estimates</li> <li>- Performed a lag analysis</li> <li>- Assessed underlying valuations related to funds of one</li> </ul>	No issues identified
Valuation of Benefit Plan Obligations including IBNR	<ul style="list-style-type: none"> <li>- Obtained actuarial determined liabilities</li> <li>- Tested completeness and accuracy of data sent to actuary</li> <li>- Consulted with KPMG actuary on reasonableness of assumptions and calculations</li> </ul>	Pending IBNR conclusion at time of presentation drafting
Employer Census Testing	<ul style="list-style-type: none"> <li>- Tested 20 PERS employers and 490 employees</li> <li>- Tested 15 TRS employers and 360 employees</li> </ul>	Issues encountered: <ul style="list-style-type: none"> <li>- 47 Marital Status</li> <li>- 2 Original Date of Hire</li> <li>- 1 Employee sex</li> <li>- \$0 pensionable wage differences</li> </ul>

# Summary of misstatements

## **Corrected Misstatements**

None identified during our audit with respect to PERS, TRS, JRS, DCP or SBS.

## **Uncorrected Misstatements**

Difference in valuation of alternative investments between year end and lag period used to record investments

# Significant deficiencies and material weaknesses in internal control

None at the time of presentation drafting. An update will be presented at the audit committee meeting on December 8.

# Other matters

<b>Related-party transactions</b>	None noted
<b>Litigations, claims, and assessments</b>	None noted
<b>Illegal acts or fraud</b>	None noted
<b>Noncompliance with laws and regulations</b>	None noted
<b>Going Concern</b>	None noted
<b>Other Information in Documents Containing Audited Financial Statements</b>	KPMG will review the draft CAFR when it is provided to us
<b>Significant Difficulties Encountered During the Audit</b>	Delay in receiving claim support from Aetna
<b>Disagreements with Management</b>	No matters to report
<b>Management's Consultation with Other Accountants</b>	No matters to report
<b>Significant Issues Discussed, or Subject to Correspondence, with Management</b>	No matters to report
<b>Alternative Accounting Treatments Discussed with Management</b>	No matters to report
<b>Other Findings or Issues Relevant Regarding Oversight of the Financial Reporting Process</b>	No matters to report
<b>Communications with the Firm's National Office</b>	No matters to report





3.0

# KPMG's Audit Committee Institute

## KPMG's Audit Committee Institute (ACI)

In depth insights. In time to matter.

### ACI programs

- Audit Committee Roundtable Series
  - Approximately 25 cities each Spring/Fall
- Quarterly Audit Committee Webcast
  - A quarterly Webcast providing updates and insights into issues affecting Audit Committee/board oversight—from key accounting and regulatory changes to developments in risk oversight.
- 13<sup>th</sup> Annual Audit Committee Issues Conference
  - January 9-10, 2017, Boca Raton, FL

### Suggested publications (available for download at [www.kpmg.com/aci](http://www.kpmg.com/aci))

- Directors Quarterly
- Global Boardroom Insights
- On the 2016 Audit Committee and Board Agendas
- Global Audit Committee Survey

### Resources

- ACI Web site: [www.kpmg-institutes.com/institutes/aci.html](http://www.kpmg-institutes.com/institutes/aci.html)

### Resources

- ACI Web site: [www.kpmg-institutes.com/institutes/aci.html](http://www.kpmg-institutes.com/institutes/aci.html)
- ACI mailbox: [auditcommittee@kpmg.com](mailto:auditcommittee@kpmg.com)
- ACI hotline: [1-877-KPMG-ACI](tel:1-877-KPMG-ACI)
- *Audit Committee Insights – U.S. and International editions (biweekly electronic publications)*: [www.kpmginsights.com](http://www.kpmginsights.com)
- KPMG Government Institute [www.kpmg-institutes.com/institutes/government-institute.html](http://www.kpmg-institutes.com/institutes/government-institute.html)





# 4.0

# Appendices

- I. Detailed summary of unadjusted audit differences related to accounts and disclosures
- II. Material written communications between KPMG and management
- III. Regulatory and standard setting update

# Appendix I - Responsibilities

## **Management is responsible for:**

- Adopting sound accounting policies
- Fairly presenting the financial statements, including disclosures, in conformity with generally accepted accounting principles (GAAP)
- Establishing and maintaining effective internal control over financial reporting (ICFR), including internal controls to prevent, deter, and detect fraud
- Identifying and ensuring that the Company complies with laws and regulations applicable to its activities, and for informing the auditor of any known material violations of such laws and regulations
- Making all financial records and related information available to the auditor
- Providing unrestricted access to personnel within the entity from whom the auditor determines it necessary to obtain audit evidence
- Adjusting the financial statements to correct material misstatements
- Providing the auditor with a letter confirming certain representations made during the audit that includes, but is not limited to, management's:
  - Disclosure of all significant deficiencies, including material weaknesses, in the design or operation of internal controls that could adversely affect the Company's financial reporting
  - Acknowledgement of their responsibility for the design and implementation of programs and controls to prevent, deter, and detect fraud; and
  - Affirmation that the effects of any uncorrected misstatements aggregated by the auditor are immaterial, both individually and in the aggregate, to the financial statements taken as a whole

# Appendix I - Responsibilities (continued)

## **The Audit Committee is responsible for:**

- Oversight of the financial reporting process and oversight of ICFR
- Oversight of the establishment and maintenance of programs and internal controls designed to prevent and detect fraud

## **Management and the Audit Committee are responsible for:**

- Setting the proper tone and creating and maintaining a culture of honesty and high ethical standards

**The audit of the financial statements does not relieve management or the Audit Committee of their responsibilities.**

# Appendix I - Responsibilities (continued)

## **KPMG is responsible for:**

- Forming and expressing an opinion about whether the financial statements that have been prepared by management with the oversight of the Audit Committee are presented fairly, in all material respects, in conformity with GAAP. Our audit is designed to obtain reasonable, rather than absolute, assurance about whether the financial statements are free of material misstatement.
- Planning and performing the audit with an attitude of professional skepticism
- Conducting the audit in accordance with professional standards and complying with the Code of Professional Conduct of the American Institute of Certified Public Accountants, and the ethical standards of relevant CPA societies and relevant state boards of accountancy
- Evaluating ICFR as a basis for designing audit procedures, but not for the purpose of expressing an opinion on the effectiveness of the entity's ICFR
- Communicating to management and the Audit Committee all required information, including significant matters
- Communicating to management and the Audit Committee in writing all significant deficiencies and material weaknesses in internal control identified in the audit and reporting to management all deficiencies noted during our audit that are of sufficient importance to merit management's attention. The objective of our audit of the financial statements is not to report on the Company's internal control and we are not obligated to search for material weaknesses or significant deficiencies as part of our audit of the financial statements.

# Appendix I - Responsibilities for other information in documents containing audited financial statements

- The auditors' report on the financial statements does not extend to other information in documents containing audited financial statements, except for required supplementary information which is covered by the auditors' report.
- We are required to:
  - Read the other information to identify material inconsistencies with the audited financial statements or material misstatements of fact, and
  - Make appropriate arrangements with management or the Audit Committee to obtain the other information prior to the report release date.
- Any material inconsistencies or misstatement of facts that are not resolved prior to the report release date, and that require revision of the other information, may result in KPMG modifying or withholding the auditors' report or withdrawing from the engagement.
- We will performed the following procedures with respect to other information when it is provided to us:
  - Read the draft CAFRs for PERS and TRS
  - Compare information in documents to the audited financial statements to identify material inconsistencies

# Appendix II – Material written communications between KPMG and management

- Engagement letter
- Management representation letters including summary of uncorrected misstatements



# Appendix III – Standard setting update

## **New accounting pronouncements**

- GASB 74 – Financial Reporting for Postemployment Benefit Plans Other than Pension Plans – effective for plan year ends June 30, 2017
  - OPEB equivalent to GASB 67
- GASB 75 – Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions – effective for employer year ends June 30, 2018
  - OPEB equivalent to GASB 68
- GASB 82 – Pension Issues – effective for plan year ends June 30, 2017
  - Specifically addresses issues regarding:
    - The presentation of payroll-related measures in required supplementary information
    - The selection of assumptions and the treatment of deviations from the guidance in an Actuarial Standard of Practice for financial reporting purposes
    - The classification of payments made by employers to satisfy employee (plan member) contribution requirements.



[kpmg.com/socialmedia](https://kpmg.com/socialmedia)

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December 9, 2016



## **ARMB Board Meeting**

Investment Performance  
(Preliminary Real Estate)

Periods Ended September 30, 2016

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**Paul Erlendson**

Senior Vice President

**Steve Center, CFA**

Senior Vice President

# Agenda

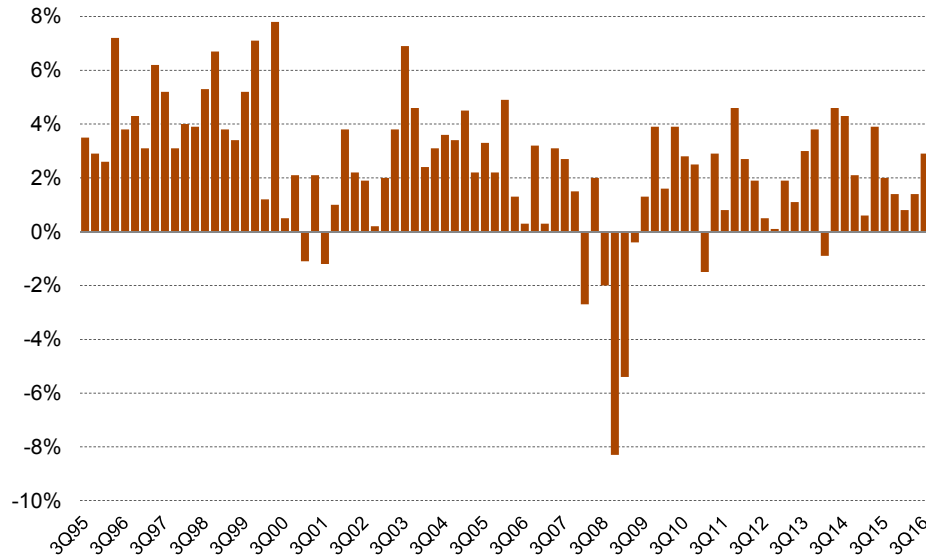
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- Market and Economic Environment
- Total Fund Performance
  - Major Asset Classes
- Review of Major Activities

# U.S. Economy

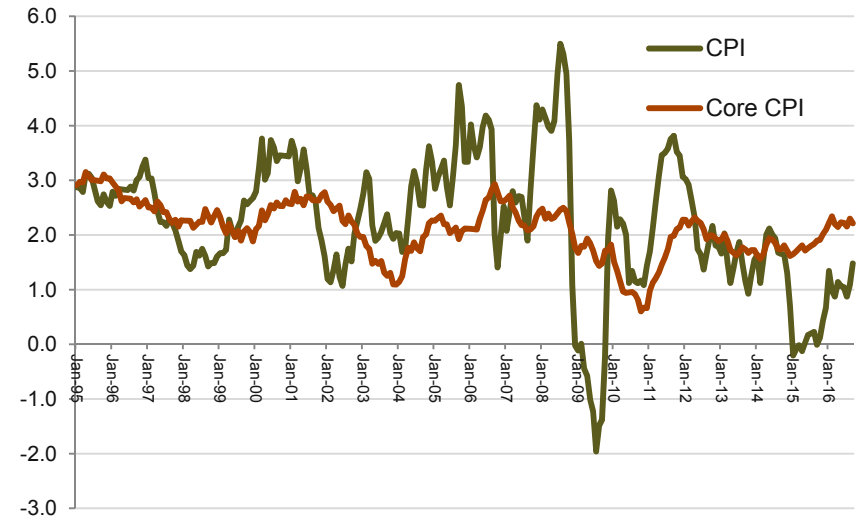
Periods Ending September 30, 2016

Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year (%)



Source: Bureau of Labor Statistics

- The first estimate of third quarter GDP came out up 2.9%, an increase from Q2's reading of 1.4%.
- The trailing twelve-month headline inflation rate as of September rose 1.5%. Core CPI (which excludes food and energy) increased 2.2% over the trailing twelve-months ended 9/30/2016..
- September unemployment was 5.0% (up 0.1% from June) and the labor force participation rate increased to 62.9% (up 0.3%).
- The Fed maintained a target rate of 0.25% - 0.50%. Consensus favors an increase in December.

# Asset Class Performance

- US small cap stocks (Russell 2000) was the best performer last quarter, returning 9.0%.
- Emerging markets (EM) rose 9.0% last quarter. EM lags over the last three and five years.
- Developed non-US markets (MSCI EAFE) was third best in the third quarter, rising 6.4%.
- US large cap stocks (S&P 500) rose 3.9% last quarter and is the best performer over the three, five, and 10 year time frames.

**Periodic Table of Investment Returns  
for Periods Ended September 30, 2016**

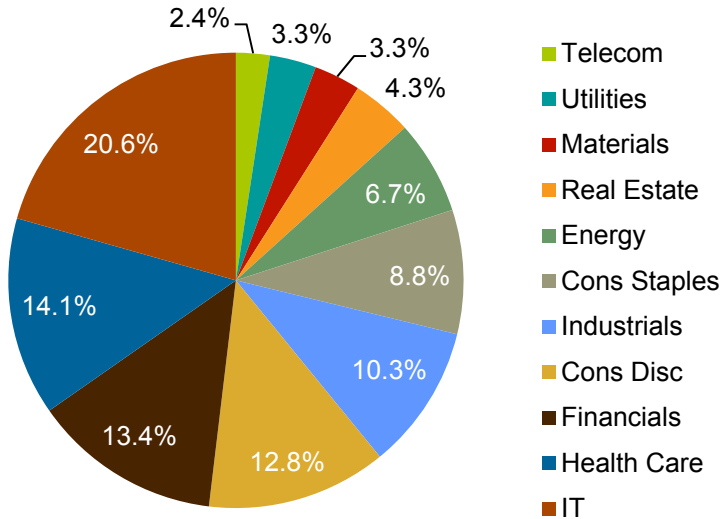
Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Russell:2000 Index 9.0%	MSCI:EM 16.8%	S&P:500 11.2%	S&P:500 16.4%	S&P:500 7.2%
MSCI:EM 9.0%	Russell:2000 Index 15.5%	Russell:2000 Index 6.7%	Russell:2000 Index 15.8%	Russell:2000 Index 7.1%
MSCI:EAFE 6.4%	S&P:500 15.4%	BB Barclays:Aggregate Idx 4.0%	MSCI:EAFE 7.4%	BB Barclays:Aggregate Idx 4.8%
S&P:500 3.9%	MSCI:EAFE 6.5%	MSCI:EAFE 0.5%	BB Barclays:Aggregate Idx 3.1%	MSCI:EM 3.9%
BB Barclays:Aggregate Idx 0.5%	BB Barclays:Aggregate Idx 5.2%	3 Month T-Bill 0.1%	MSCI:EM 3.0%	MSCI:EAFE 1.8%
3 Month T-Bill 0.1%	3 Month T-Bill 0.3%	MSCI:EM (0.6%)	3 Month T-Bill 0.1%	3 Month T-Bill 0.9%

	QTD (11/11/2016)	YTD (11/11/2016)
Russell 3000	0.2%	8.4%
S&P 500	0.1%	7.9%
Russell 2000	2.6%	14.3%
MSCI EAFE	-3.5%	-1.8%
MSCI EM	-5.9%	9.1%
BC Aggregate	-2.1%	3.6%

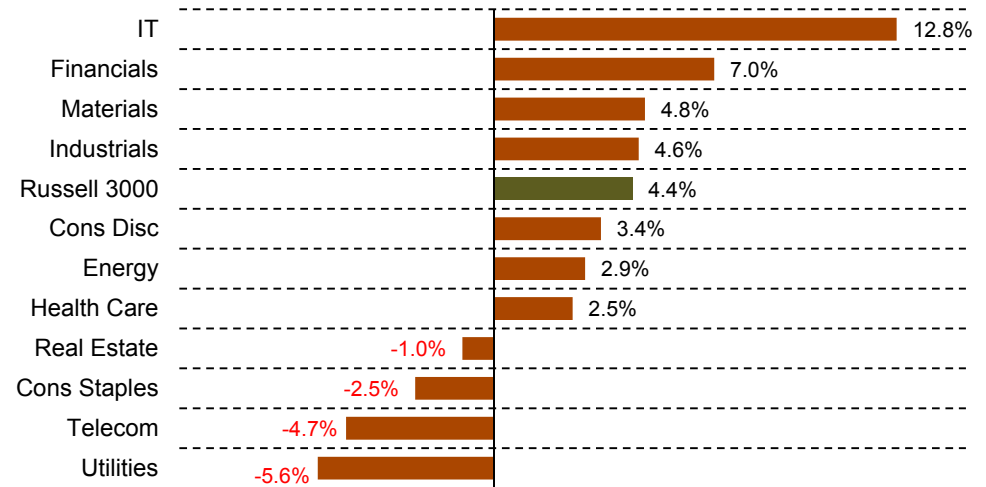
# U.S. Equity Returns

Periods Ending September 30, 2016

Economic Sector Exposure (Russell 3000)



Russell 3000 Sector Returns

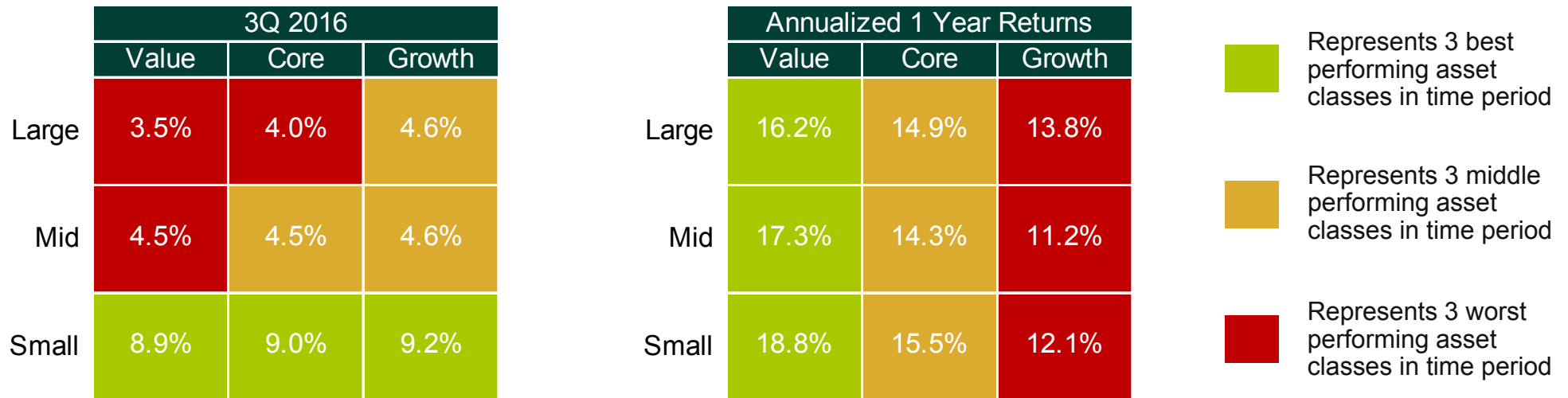


Source: Russell Investment Group

- The Russell 1000 index (large cap stocks) was up 4.0% - Information Technology (+12.6%) and Financials (+6.7%) were the best performing sectors.
- The Russell 2000 index (small cap stocks) was up 9.0% - Information Technology (+16.2%) and Health Care (+13.5%) were the best performing sectors.
- The sectors that performed best through June 30, 2016 ended up underperforming in third quarter. Utilities declined (-5.6%) as did Telecom (-4.7%) and the Consumer Staples sector (-2.5%).

# U.S. Equity Style Returns

Periods Ending September 30, 2016



- Third calendar quarter: Small cap was best; Growth outperformed Value.
- Last Year ended 9/30/16: Size was mixed although Value tended to do better than Growth

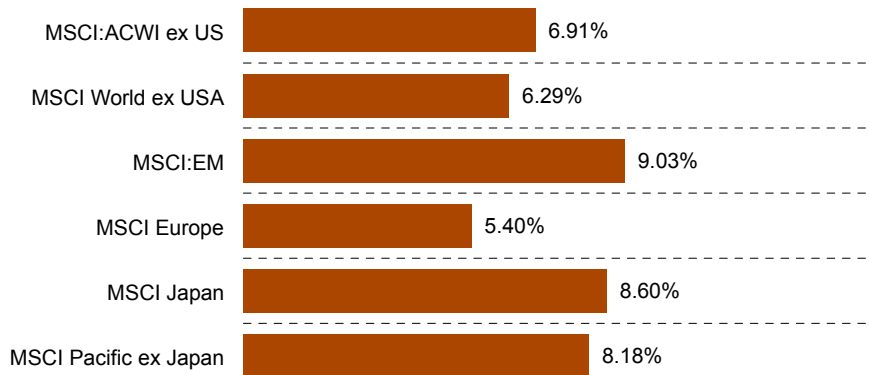
Large Cap Core is represented by the Russell 1000 Index, Large Cap Value is represented by the Russell 1000 Value Index and Large Cap Growth is represented by the Russell 1000 Growth Index. Mid Cap Core is represented by the Russell Midcap Index, Mid Cap Value is represented by the Russell Midcap Value Index and Mid Cap Growth is represented by the Russell Midcap Growth Index. Small Cap Core is represented by the Russell 2000 Index, Small Cap Value is represented by the Russell 2000 Value Index and Small Cap Growth is represented by the Russell 2000 Growth Index.



# International Equity Returns

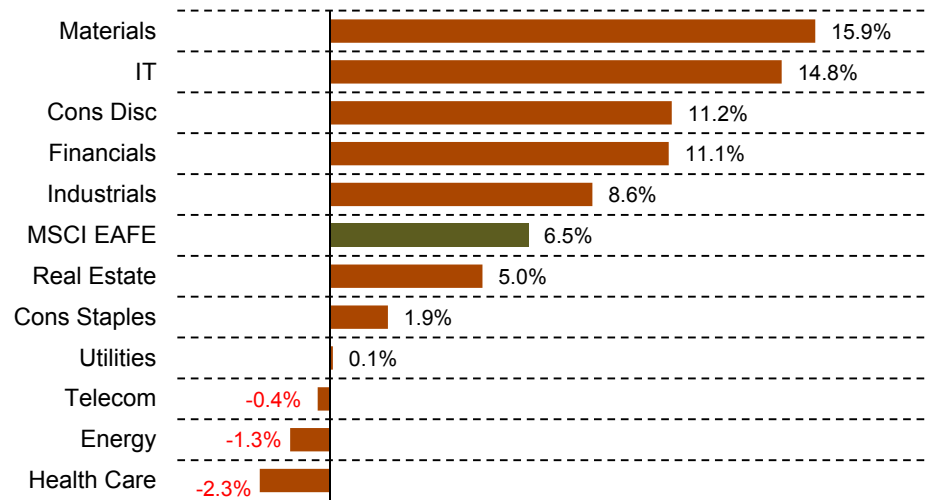
Periods Ending September 30, 2016

## Regional Quarterly Performance (U.S. Dollar)



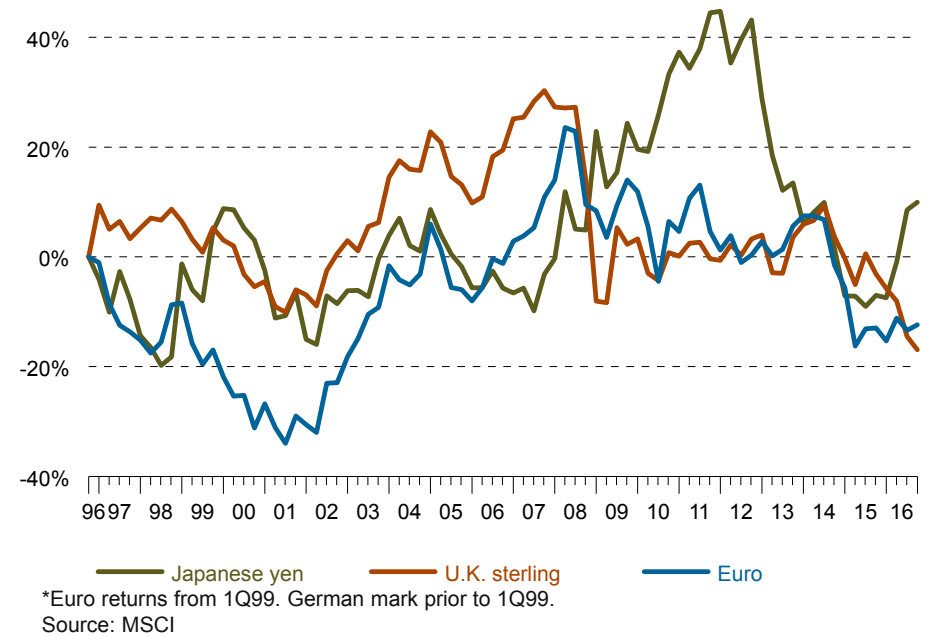
Source: MSCI

## MSCI EAFE Sector Returns



Source: Barrow Hanley Quarterly Benchmark Review

## Major Currencies' Cumulative Returns (vs. U.S. Dollar)

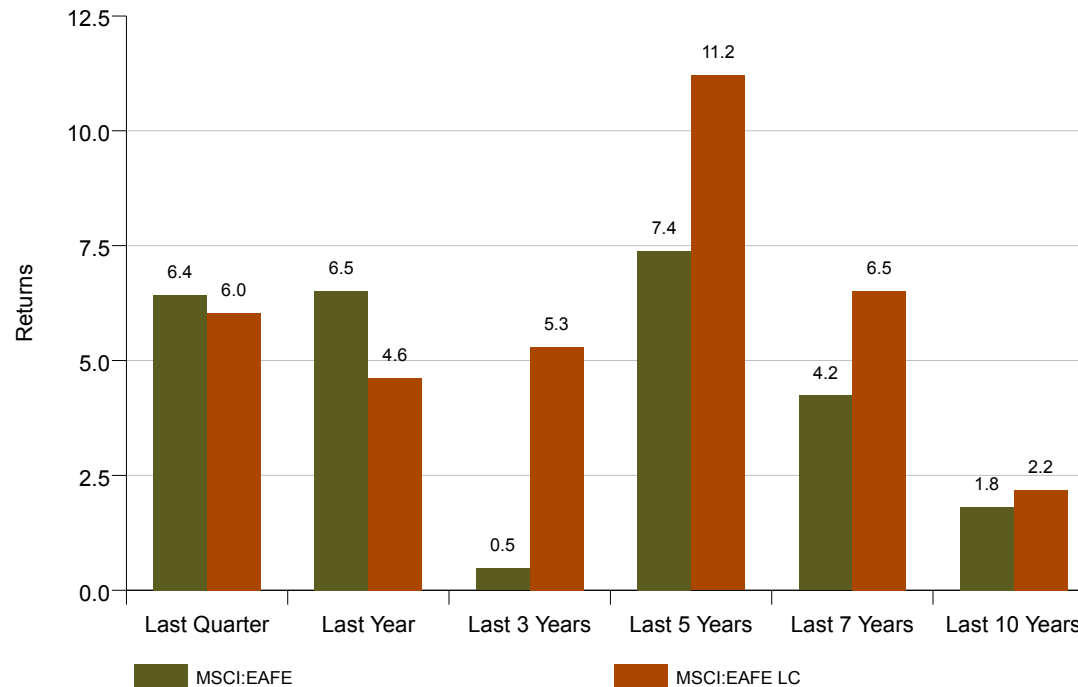


- Best region was Emerging Markets (+9.0%).
- Yen (+1.3%) and Euro (+1.2%) strengthened vs the US Dollar. The Pound weakened (-2.8%) in value against the dollar. The Yen has risen almost 20% year to date as of 9/30/16.
- Materials was the top performing sector; Health Care was the weakest.

# Domestic vs. Local Currency Returns

## Currency Effect on U.S. Investors' International Equity Returns

Returns for Various Time Periods  
Current Quarter Ending September 30, 2016

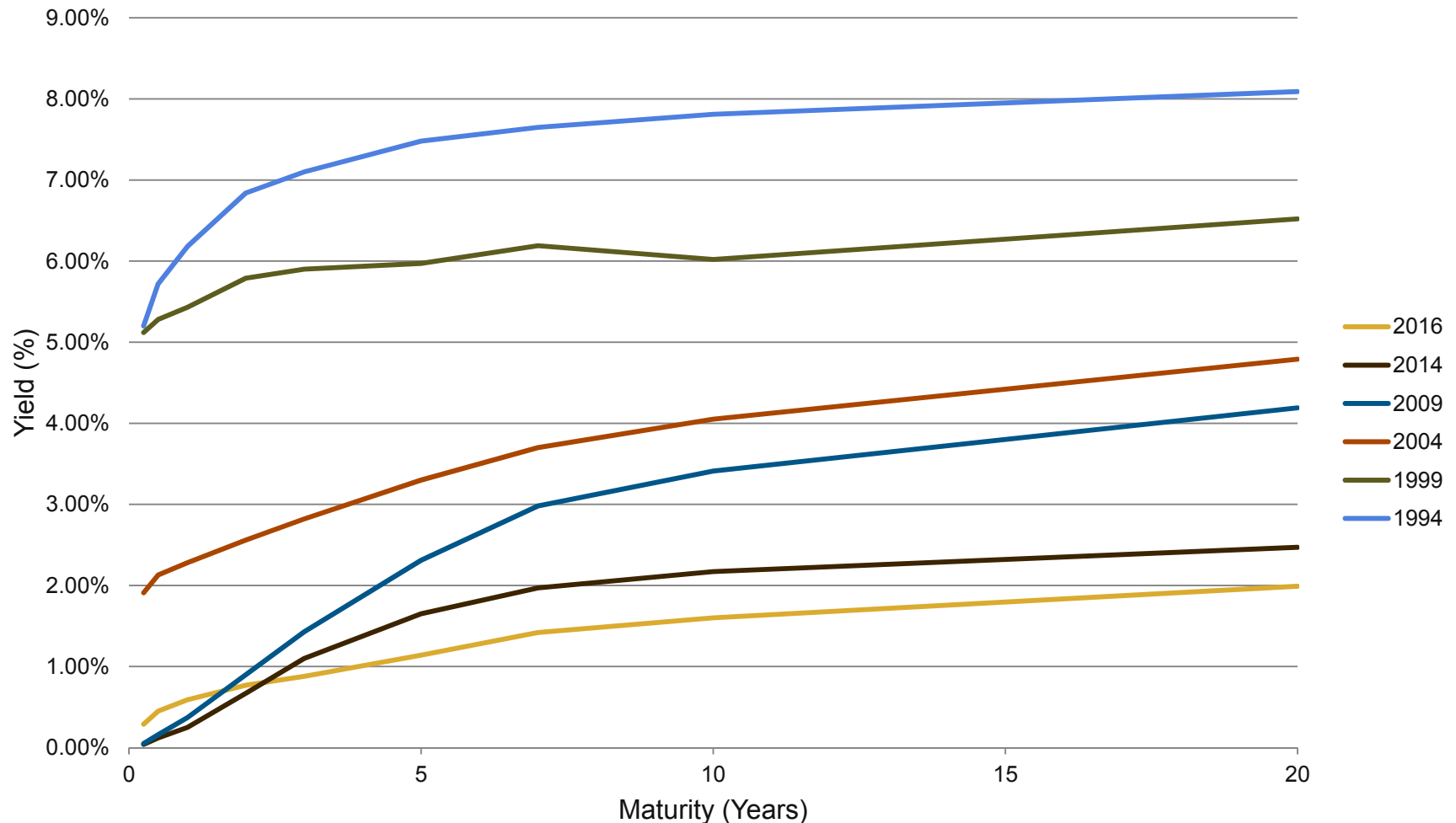


- U.S. investors' gains on international equities were enhanced over the last year by the amount that the US Dollar weakened against local market currencies.
- Over the last five years, Dollar strength has cost U.S. investors 3.8% (11.2% return in local currency, but only 7.4% when returns are adjusted by local currency declines versus the Dollar).

# Historic Yield Curves

As of September 30, 2016

Treasury Yield Curve

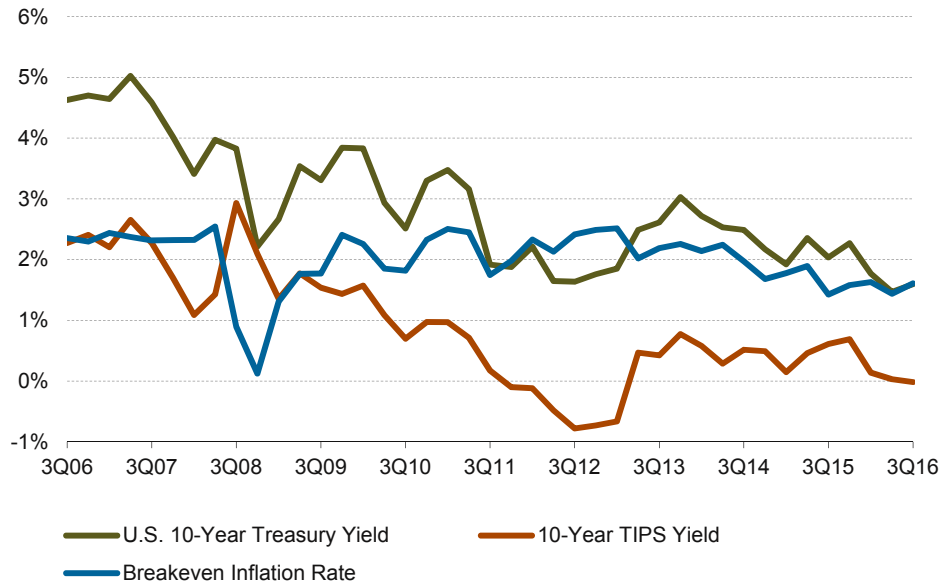


- Between September 30 and November 16, interest rates rose between 12 basis points for cash to 60 basis points for long bonds.

# Yield Curve Changes

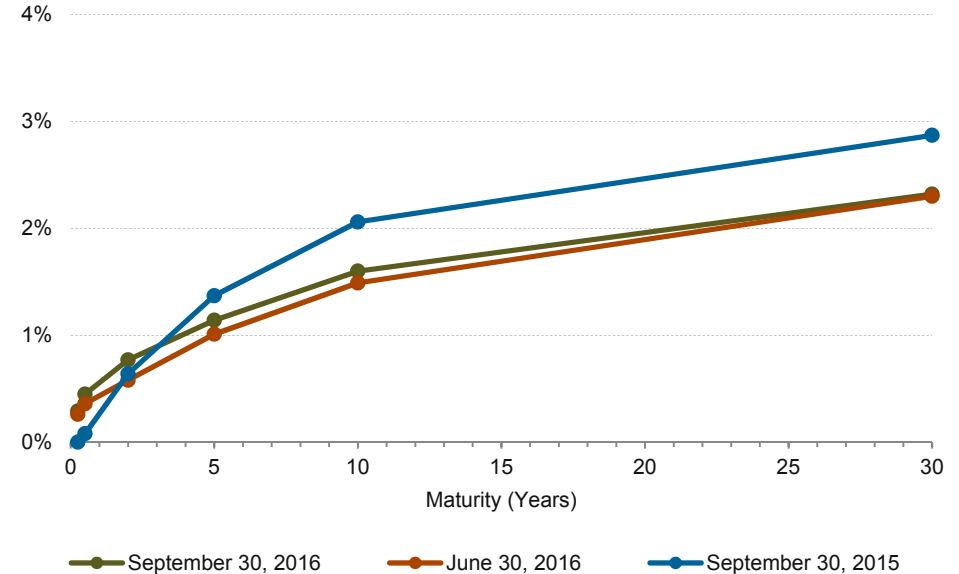
Periods Ending September 30, 2016

Historical 10-Year Yields



Source: Bloomberg

U.S. Treasury Yield Curves



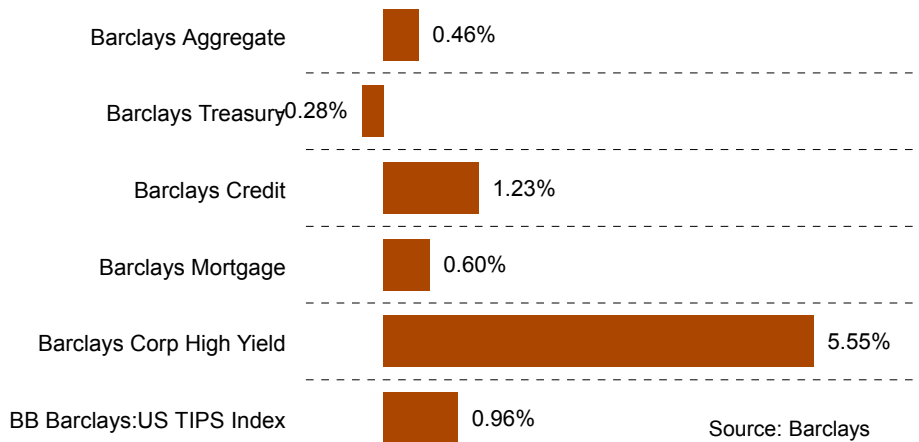
Source: U.S. Department of the Treasury

- Treasury yields rose across all segments of the curve, most notably at the short end where increases were greatest. The yield on the 2-year increased 19 bps and the 5-year increased 13 bps.
- Breakeven inflation edged higher on healthy core inflation figures and stable oil prices.
- Worldwide, rates remain low as Japan and the ECB contemplate additional stimulus measures.

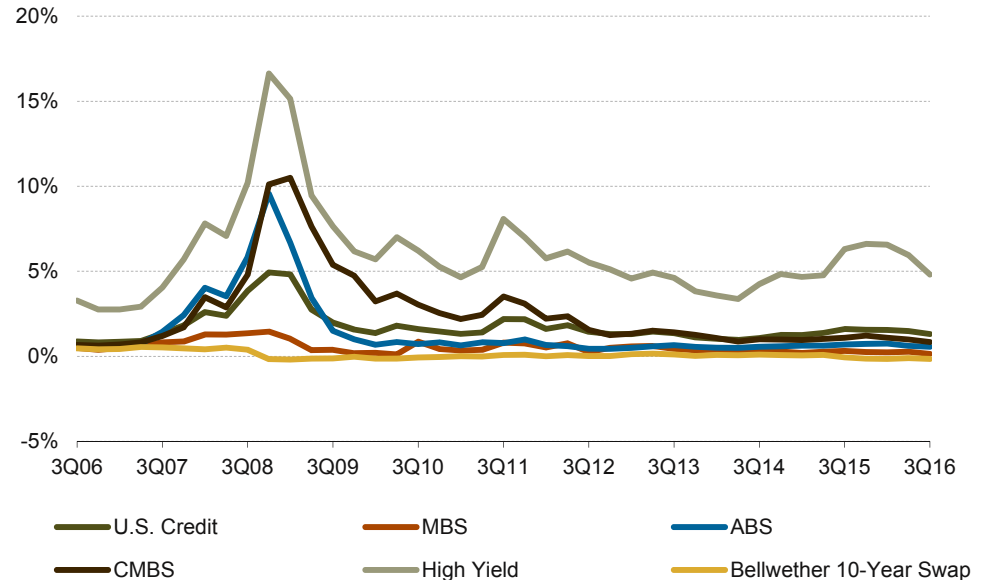
# Total Rates of Return by Bond Sector

Periods Ending September 30, 2016

Absolute Returns for Quarter ended September 30, 2016



Effective Yield Over Treasuries



- Rising rates coupled with tightening spreads led the Aggregate to a muted return (+0.5%).
- Best performing sector of the Aggregate was investment grade credit (+1.2%).
- High yield gained 5.6% on spread narrowing of 114 bps.
- Treasury Inflation Protected Securities (TIPS) outperformed Treasuries on rising inflation expectations producing the highest excess return vs like-duration Treasuries (+5.8%).

# Real Estate

## Style medians and index returns

### Style Median and Index Returns\* for Periods ended September 30, 2016

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
<b>Private Real Estate</b>							
Real Estate Database (net of fees)	1.62	5.85	9.34	11.64	11.74	4.58	7.33
NCREIF Property**	1.77	6.13	9.22	11.31	11.18	7.22	8.93
NFI-ODCE (value wtd-net)	1.83	5.80	9.08	11.42	11.34	5.05	7.03
<b>Public Real Estate</b>							
REIT U.S. Database	-1.15	9.61	17.67	14.49	16.28	7.05	12.57
FTSE NAREIT Equity	-1.43	11.75	19.86	14.22	15.91	6.35	11.38
<b>Global Real Estate</b>							
Global REIT Database	1.36	9.06	13.66	9.14	13.77	4.73	10.87
EPRA/NAREIT Developed REITs	1.46	10.97	15.85	8.60	13.17	4.16	10.67
EPRA/NAREIT Developed REITs ex-US	4.28	10.44	11.66	3.21	10.42	2.57	10.59

Sources: Callan, Citigroup, JPMorgan Chase & Co.

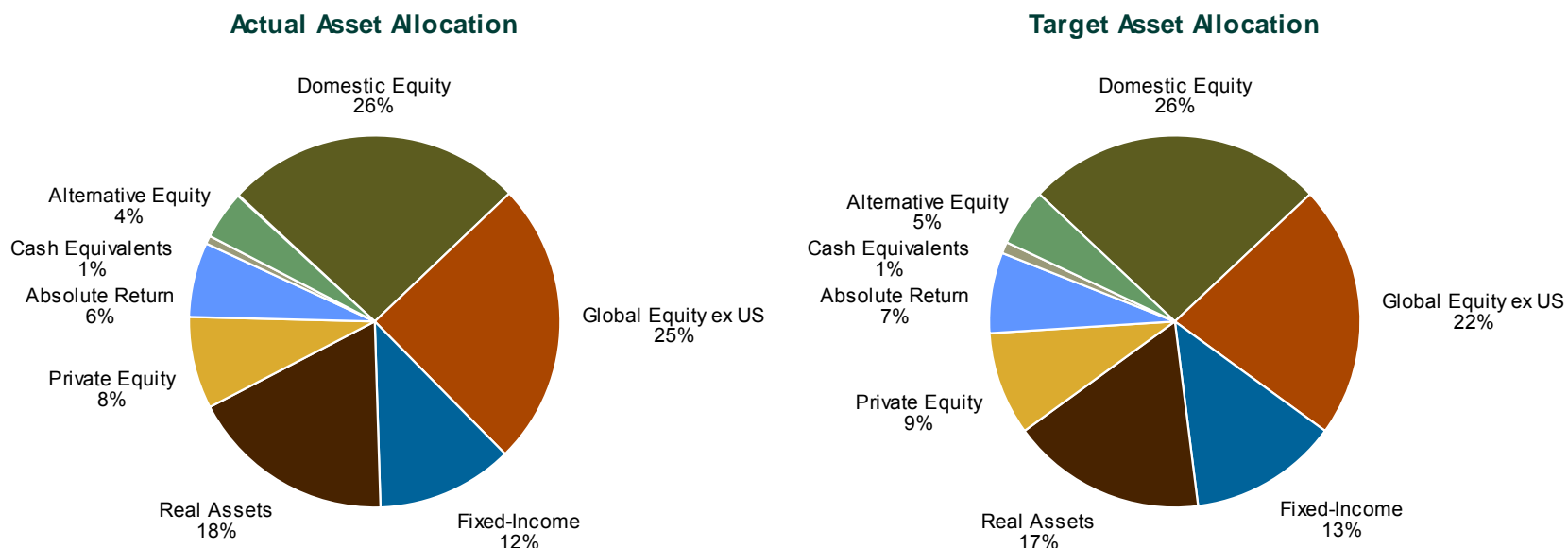
- The NCREIF Property index's 1.77% return in the third calendar quarter of 2016 was split between a 1.16% income return and a 0.60% appreciation return.
- A preliminary query of NCREIF tracked institutional asset trades representing \$9.6 billion in volume during the third quarter.
  - This is a 20% increase over third quarter 2015.
  - Appraisal capitalization rates fell to 4.48%, an all-time low.
- As of September 30<sup>th</sup>, U.S. REITs were trading at 12.3% premium to NAV.



Pension Plan

# Asset Allocation – Public Employees’ Retirement System

Quarter Ending September 30, 2016



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equity	2,222,720	26.0%	26.0%	0.0%	3,760
Global Equity ex US	2,110,097	24.7%	22.0%	2.7%	232,515
Fixed-Income	1,019,467	11.9%	13.0%	(1.1%)	(90,013)
Real Assets	1,527,362	17.9%	17.0%	0.9%	76,503
Private Equity	684,855	8.0%	9.0%	(1.0%)	(83,246)
Absolute Return	551,530	6.5%	7.0%	(0.5%)	(45,882)
Cash Equivalents	59,186	0.7%	1.0%	(0.3%)	(26,159)
Alternative Equity	359,246	4.2%	5.0%	(0.8%)	(67,477)
Total	8,534,464	100.0%	100.0%		

**PERS is used as illustrative throughout the presentation.**

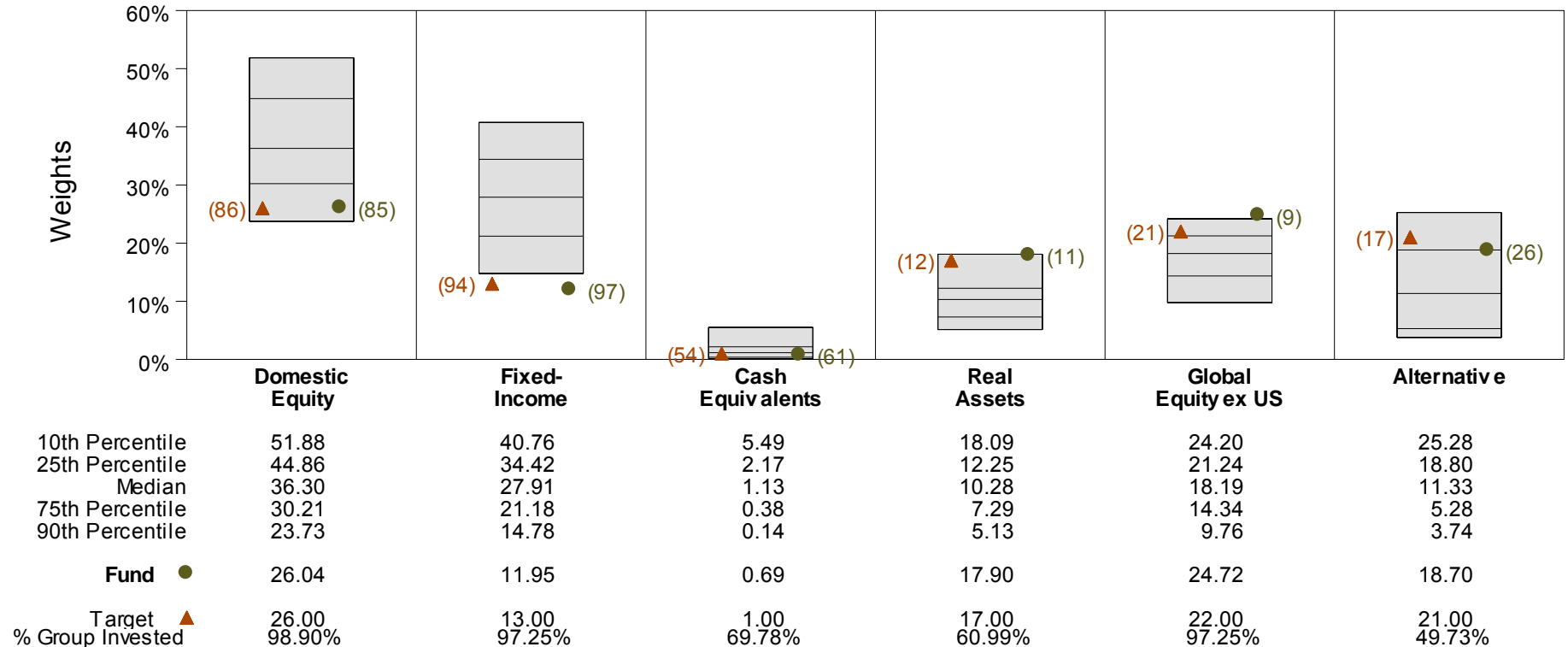
**The other plans exhibit similar modest and understandable variations from strategic target allocations.**



# Asset Allocation vs. Public Funds (PERS)

## Callan Public Fund Database

### Asset Class Weights vs CAI Public Fund Sponsor Database



- All positions are close to their targets except for cash. Fixed income is a low allocation when compared to other public funds. Real assets are high when compared to other public funds. Policy is “growth” oriented as opposed to “income” oriented.

\*Note that “Alternative” includes private equity and absolute return

# PERS Performance – 3<sup>rd</sup> Quarter 2016 & Trailing Year

## Relative Attribution Effects for Quarter ended September 30, 2016

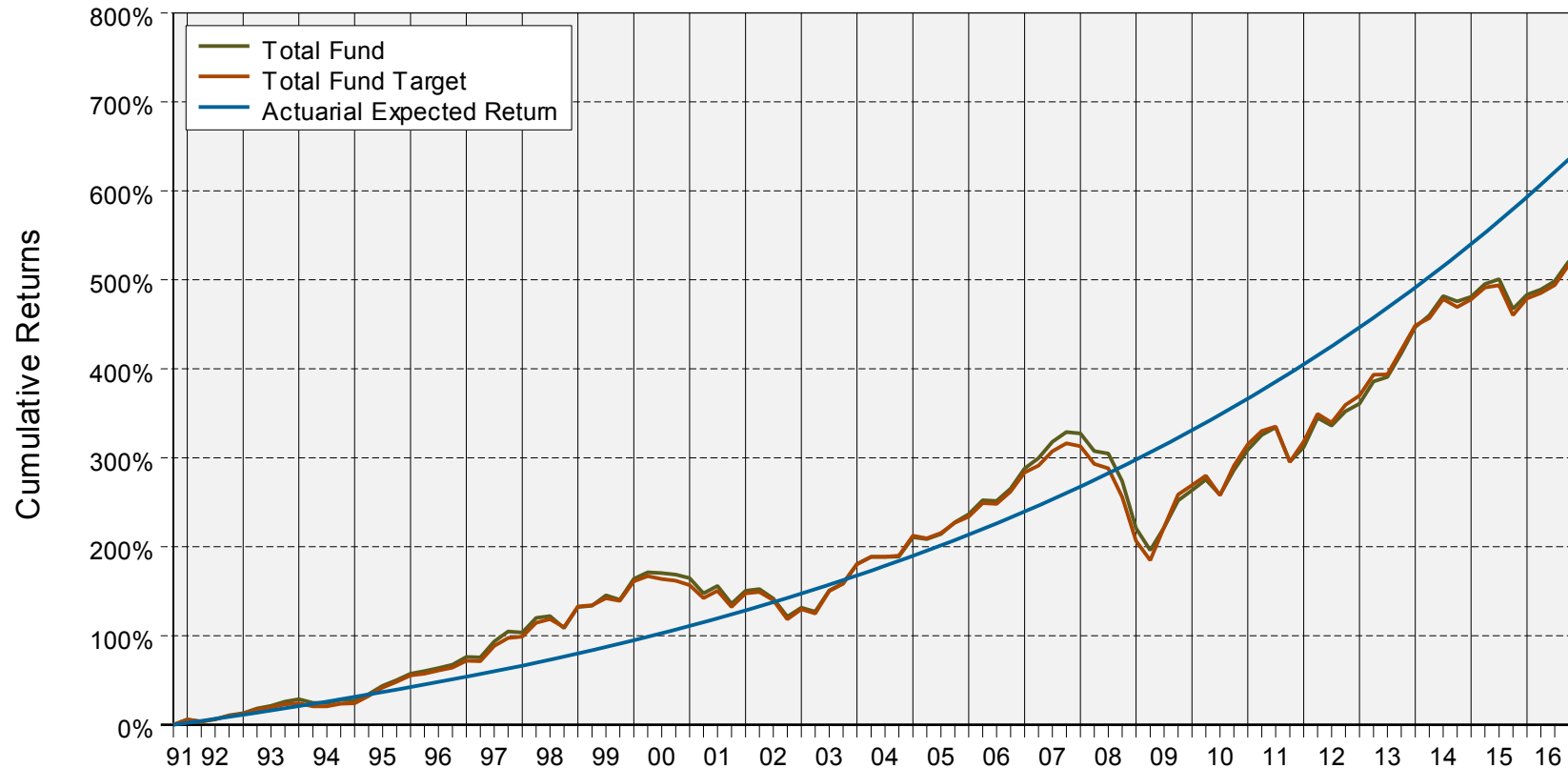
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	26%	26%	4.62%	4.40%	0.06%	0.00%	0.06%
Fixed-Income	12%	13%	1.74%	0.46%	0.16%	0.03%	0.18%
Real Assets	18%	17%	1.32%	1.45%	(0.02%)	(0.03%)	(0.05%)
Global Equity ex US	24%	22%	6.96%	7.00%	(0.01%)	0.06%	0.05%
Private Equity	8%	9%	3.13%	6.44%	(0.27%)	(0.02%)	(0.29%)
Absolute Return	7%	7%	0.66%	1.32%	(0.04%)	0.01%	(0.03%)
Alternative Equity	4%	5%	2.80%	3.56%	(0.03%)	0.00%	(0.03%)
Cash Equivalents	1%	1%	0.18%	0.10%	0.00%	0.01%	0.01%
<b>Total</b>			<b>3.74%</b>	<b>= 3.84%</b>	<b>+ (0.16%)</b>	<b>+ 0.06%</b>	<b>(0.10%)</b>

## One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	26%	26%	13.81%	14.96%	(0.29%)	(0.01%)	(0.30%)
Fixed-Income	12%	12%	7.83%	4.63%	0.40%	(0.00%)	0.40%
Real Assets	18%	17%	8.13%	9.30%	(0.22%)	(0.00%)	(0.22%)
Global Equity ex US	24%	24%	10.44%	9.80%	0.15%	0.10%	0.25%
Private Equity	8%	9%	4.87%	12.47%	(0.64%)	0.02%	(0.62%)
Absolute Return	6%	5%	1.59%	5.27%	(0.24%)	(0.02%)	(0.26%)
Alternative Equity	4%	3%	11.01%	11.41%	(0.02%)	0.03%	0.01%
Cash Equivalents	1%	2%	0.65%	0.27%	0.00%	0.12%	0.12%
<b>Total</b>			<b>9.50%</b>	<b>= 10.11%</b>	<b>+ (0.84%)</b>	<b>+ 0.23%</b>	<b>(0.61%)</b>

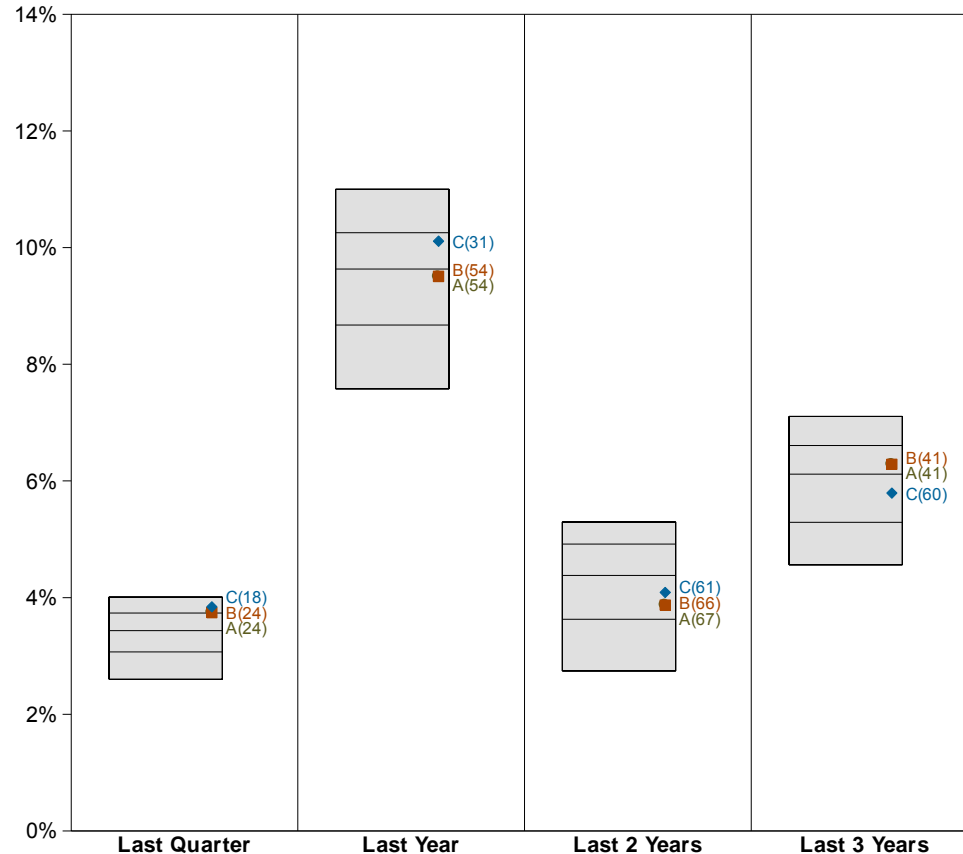
# PERS Long-Term Performance as of 9/30/16

## Cumulative Returns Actual vs Target



- Each Fund has two targets: the asset allocation policy return and the actuarial return.
- Total Fund returns continue to closely track the strategic allocation target.
- Since the volatile 2008/2009 period, Though it suffered a setback in 3Q15, Total Fund performance had been closing the gap versus the actuarial return.

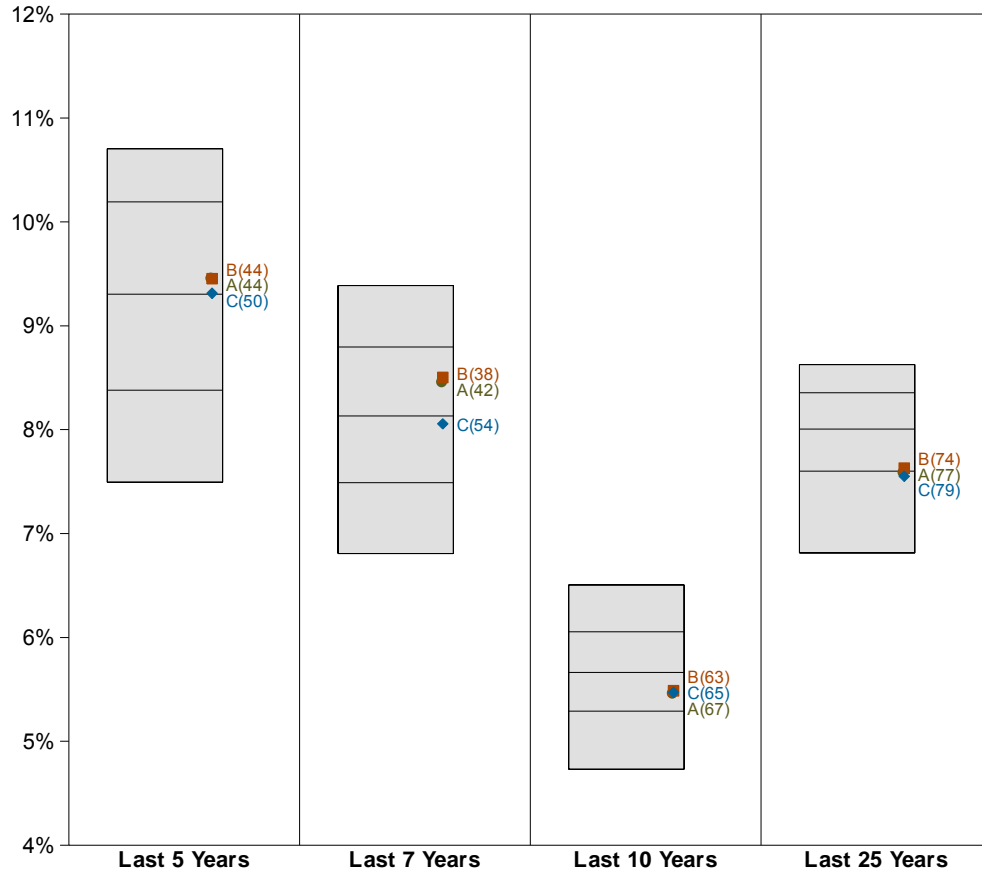
# Cumulative Total Fund Returns as of 9/30/16



	Last Quarter	Last Year	Last 2 Years	Last 3 Years
10th Percentile	4.01	11.00	5.29	7.11
25th Percentile	3.74	10.26	4.92	6.61
Median	3.43	9.63	4.38	6.12
75th Percentile	3.07	8.67	3.63	5.29
90th Percentile	2.60	7.58	2.74	4.56
PERS Total Plan ● A	3.74	9.50	3.87	6.28
TRS Total Plan ■ B	3.74	9.51	3.87	6.29
Target Index ◆ C	3.84	10.11	4.09	5.79

- PERS and TRS have outperformed their target for the last three year time frame.
- 3<sup>rd</sup> quarter performance lags the target by 10 basis points.

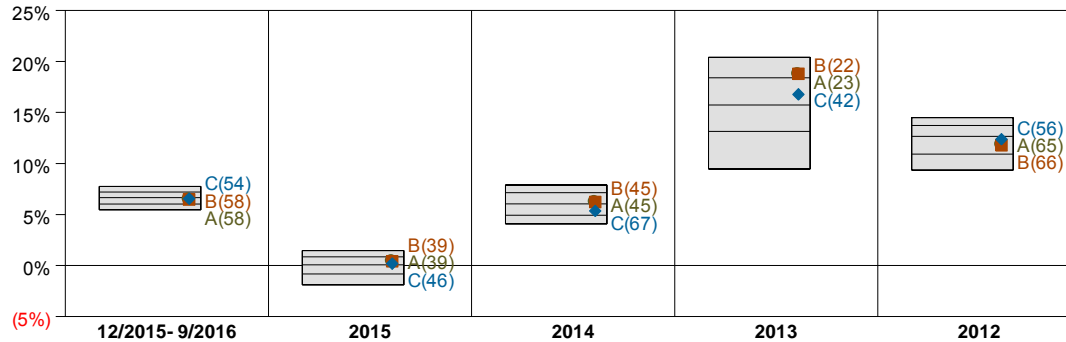
# Longer-Term Returns as of 9/30/16



	Last 5 Years	Last 7 Years	Last 10 Years	Last 25 Years
10th Percentile	10.70	9.39	6.51	8.63
25th Percentile	10.19	8.80	6.05	8.36
Median	9.30	8.13	5.66	8.01
75th Percentile	8.38	7.49	5.29	7.60
90th Percentile	7.49	6.81	4.73	6.81
PERS Total Plan ● A	9.45	8.45	5.45	7.58
TRS Total Plan ■ B	9.45	8.50	5.49	7.63
Target Index ◆ C	9.31	8.06	5.47	7.55

- Five-year performance is above target and median.
- 10-year return a bit below median. PERS slightly trails the target return. This is primarily due to the 2009 calendar year performance.
- 25-year return beats target.

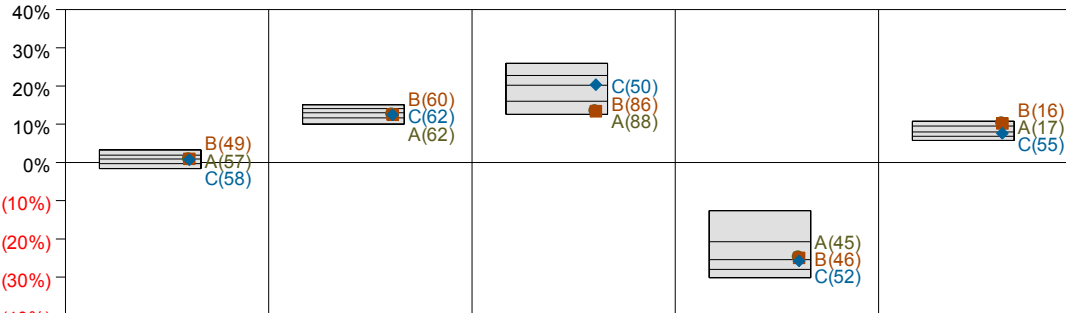
# Calendar Period Performance



(5%) 12/2015- 9/2016 2015 2014 2013 2012

10th Percentile	7.75	1.46	7.89	20.41	14.49
25th Percentile	7.20	0.85	7.14	18.40	13.73
Median	6.65	0.07	6.04	15.73	12.66
75th Percentile	6.03	(0.84)	4.93	13.14	10.92
90th Percentile	5.46	(1.90)	4.08	9.46	9.34

PERS Total Plan ● A	6.47	0.40	6.22	18.74	11.81
TRS Total Plan ● B	6.48	0.41	6.22	18.79	11.79
Target Index ◆ C	6.55	0.18	5.35	16.78	12.38



(10%) (20%) (30%) (40%) 2011 2010 2009 2008 2007

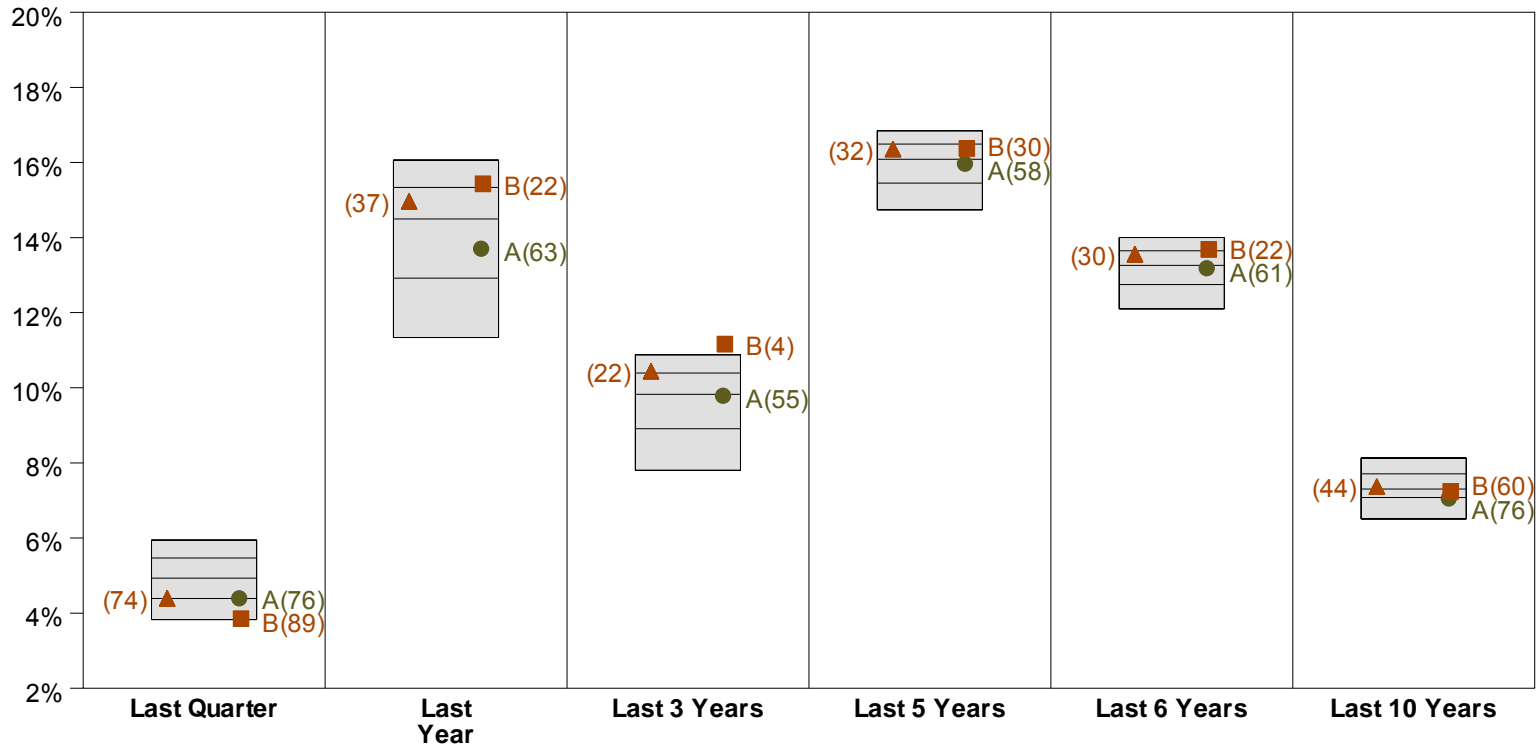
10th Percentile	3.31	15.10	25.93	(12.58)	10.77
25th Percentile	1.92	14.11	22.73	(20.71)	9.53
Median	0.91	13.00	20.23	(25.43)	7.97
75th Percentile	(0.30)	11.68	16.02	(27.97)	6.84
90th Percentile	(1.58)	10.06	12.57	(30.14)	5.75

PERS Total Plan ● A	0.77	12.45	13.31	(24.91)	10.17
TRS Total Plan ● B	0.95	12.55	13.40	(24.98)	10.20
Target Index ◆ C	0.72	12.49	20.33	(25.74)	7.64

- PERS and TRS had the same return during 2014.
- Peer group range of returns during 2015 and 2014 were very tight. They are even tighter so far this year.
- Wide range of peer group returns during calendar 2013 due to varying fixed-income allocations within the Public Fund universe.
- PERS ranks above median in five and TRS ranks above median in six of the ten periods shown.

# Total Domestic Equity through 9/30/16

## Performance vs Pub Pln- Domestic Equity (Gross)



10th Percentile	5.95	16.06	10.88	16.84	14.00	8.13
25th Percentile	5.47	15.33	10.39	16.49	13.65	7.71
Median	4.93	14.50	9.83	16.09	13.26	7.30
75th Percentile	4.39	12.92	8.91	15.45	12.75	7.08
90th Percentile	3.83	11.34	7.80	14.74	12.10	6.51

Domestic Equity Pool Standard & Poor's 500	● A	4.35	13.66	9.74	15.92	13.13	7.00
& Poor's 500	■ B	3.85	15.43	11.16	16.37	13.68	7.24
Russell 3000 Index	▲	4.40	14.96	10.44	16.36	13.56	7.37

# Domestic Equity Component Returns

Returns for Periods Ended September 30, 2016

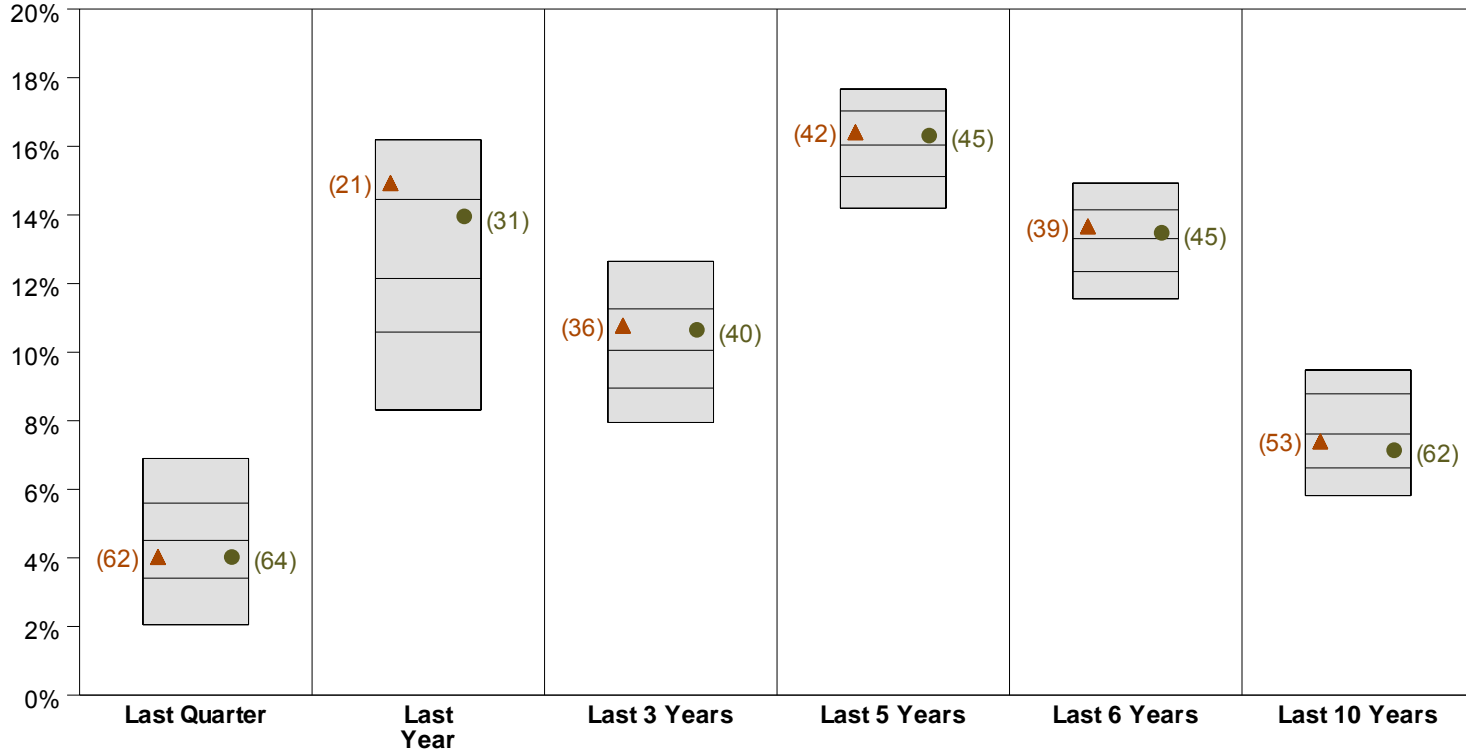
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 6 Years
Total Dom Equity Pool	4.35%	13.66%	9.74%	15.92%	13.13%
Russell 3000 Index	4.40%	14.96%	10.44%	16.36%	13.56%
Large Cap Managers	3.97%	13.90%	10.60%	16.26%	13.43%
Large Cap Active	5.36%	12.74%	10.26%	16.11%	13.19%
Large Cap Passive	3.84%	14.75%	10.87%	16.43%	13.62%
Russell 1000 Index	4.03%	14.93%	10.78%	16.41%	13.67%
Small Cap Managers	8.45%	12.95%	6.73%	16.30%	12.95%
Small Cap Active	8.77%	12.17%	6.61%	16.32%	13.51%
Small Cap Passive	4.49%	16.12%	7.13%	15.77%	11.68%
Russell 2000 Index	9.05%	15.47%	6.71%	15.82%	12.35%
Alternative Equity	2.80%	11.14%	7.58%	10.28%	8.40%

- Newly adopted policy (effective 7-1-13) alters cosmetics of “true” traditional active & passive returns.
  - *Alternative Equity* category includes defensive equity oriented portfolios, including the Analytic Buy/Write portfolio, QMA Market Participation strategy, and in-house equity yield portfolio.
- Alternative Equity continues to mute overall volatility within the equity portfolio.
- Alternative equity performance negatively impacted the Total Domestic Equity portfolio during quarter, and active equity managers contributed positively.



# Large Cap Domestic Equity Pool through 9/30/16

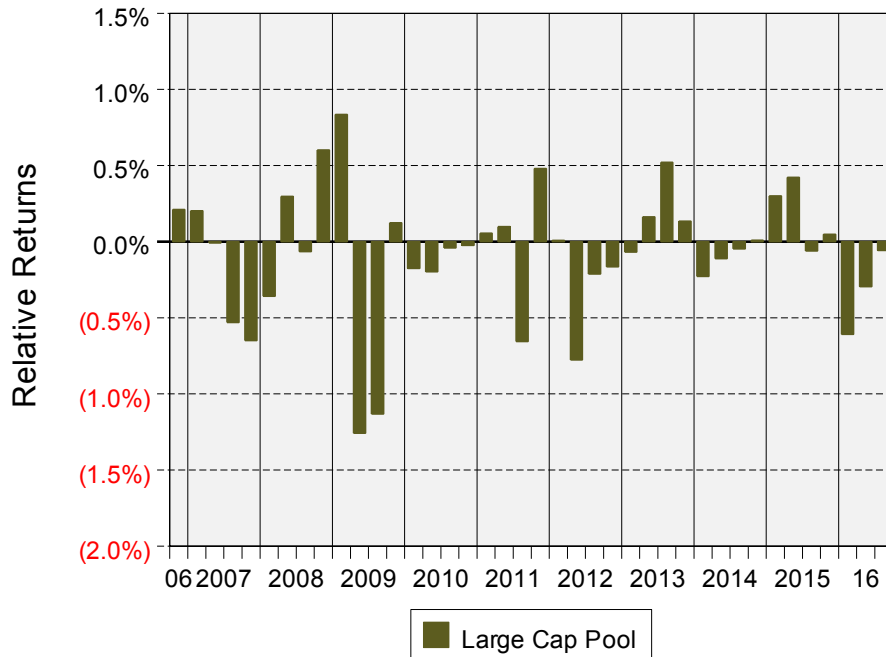
## Performance vs CAI Large Capitalization (Gross)



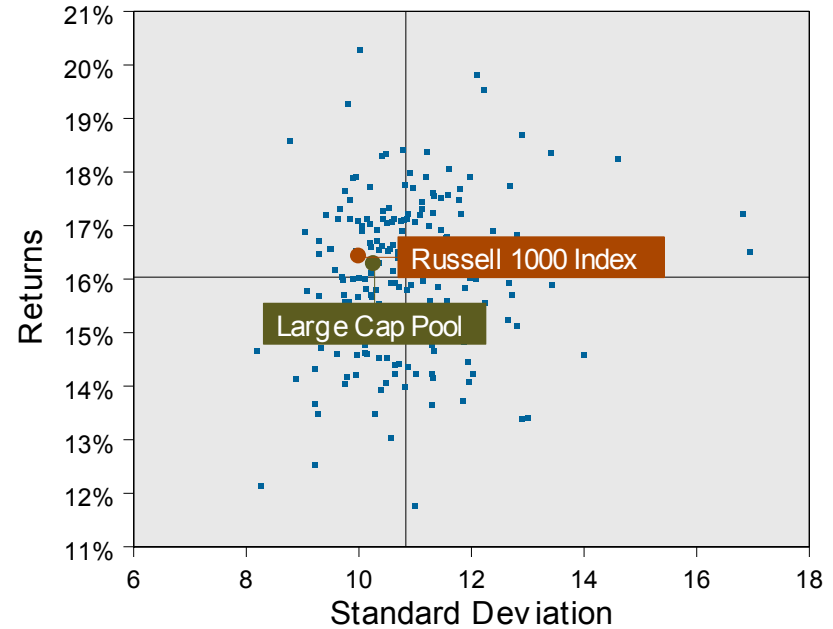
10th Percentile	6.90	16.19	12.64	17.67	14.93	9.48
25th Percentile	5.60	14.45	11.26	17.03	14.15	8.78
Median	4.51	12.15	10.05	16.04	13.31	7.61
75th Percentile	3.41	10.59	8.95	15.12	12.35	6.63
90th Percentile	2.05	8.32	7.95	14.19	11.56	5.81
<b>Large Cap Pool</b> ●	3.97	13.90	10.60	16.26	13.43	7.09
<b>Russell 1000 Index</b> ▲	4.03	14.93	10.78	16.41	13.67	7.40

# Large Cap Domestic Equity Pool as of 9/30/16

Relative Return vs Russell 1000 Index



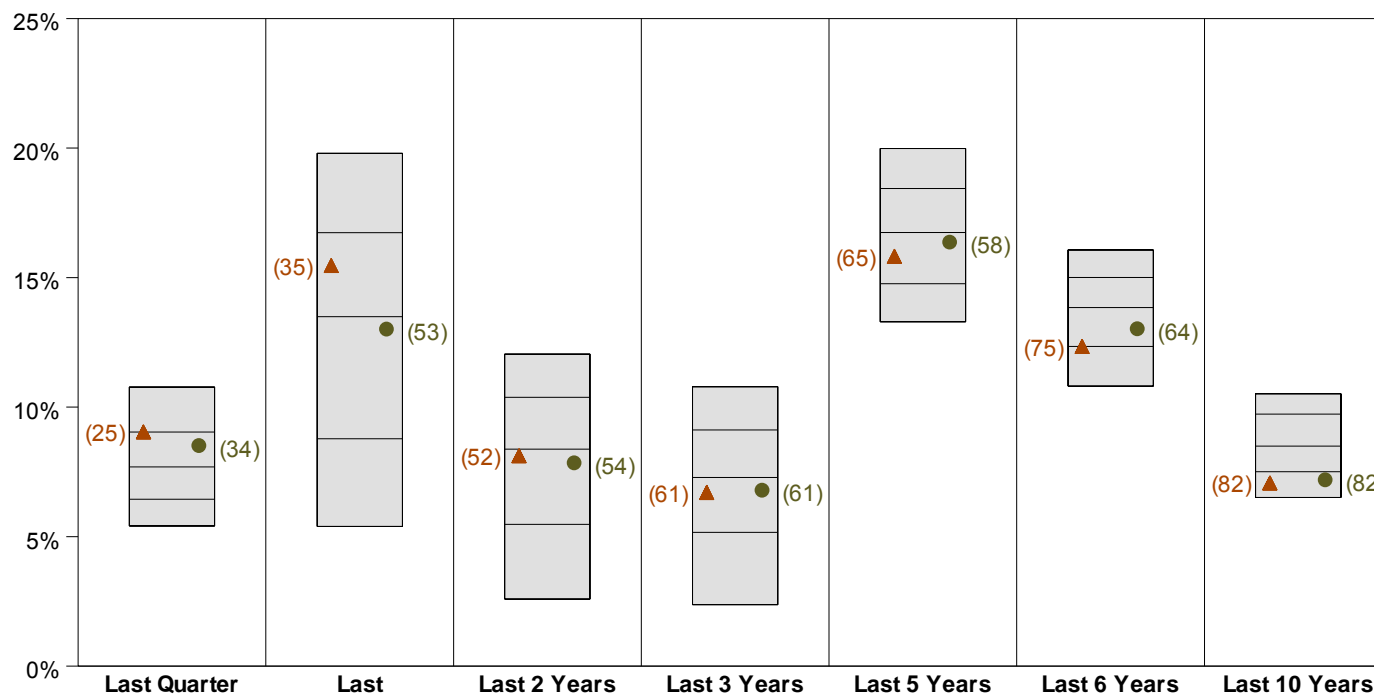
CAI Large Capitalization (Gross) Annualized Five Year Risk vs Return



- Nearly 3/5 of large cap allocation is passively managed.
- Long-term performance exhibits market-like returns with similar risk.

# Small Cap Domestic Equity Pool through 9/30/16

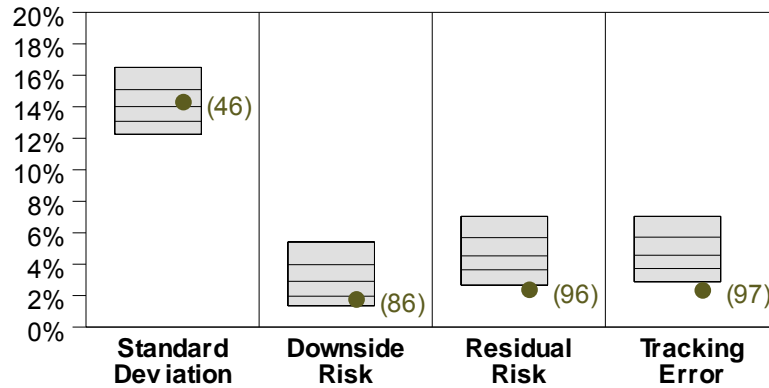
Performance vs CAI Small Capitalization (Gross)



10th Percentile	10.78	19.80	12.05	10.79	19.98	16.07	10.51
25th Percentile	9.04	16.74	10.38	9.12	18.44	15.01	9.73
Median	7.69	13.49	8.38	7.28	16.74	13.84	8.49
75th Percentile	6.44	8.78	5.47	5.16	14.76	12.35	7.51
90th Percentile	5.41	5.40	2.59	2.37	13.29	10.81	6.51
<b>Small Cap Pool</b> ●	8.45	12.95	7.79	6.73	16.30	12.95	7.13
<b>Russell 2000 Index</b> ▲	9.05	15.47	8.12	6.71	15.82	12.35	7.07

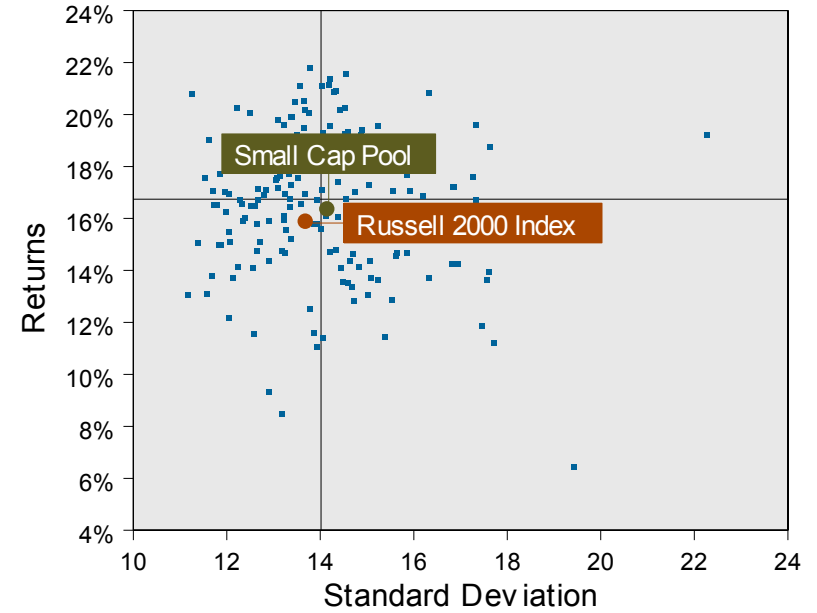
- Returns compare favorably versus the index across the five, six, and 10 year time frames.

# Small Cap Pool through 9/30/16



	Standard Deviation	Downside Risk	Residual Risk	Tracking Error
10th Percentile	16.51	5.41	7.05	7.04
25th Percentile	15.09	3.97	5.69	5.71
Median	14.02	2.91	4.52	4.57
75th Percentile	13.08	1.97	3.64	3.72
90th Percentile	12.25	1.36	2.67	2.88
<b>Small Cap Equity Pool</b>	<b>14.18</b>	<b>1.64</b>	<b>2.25</b>	<b>2.21</b>

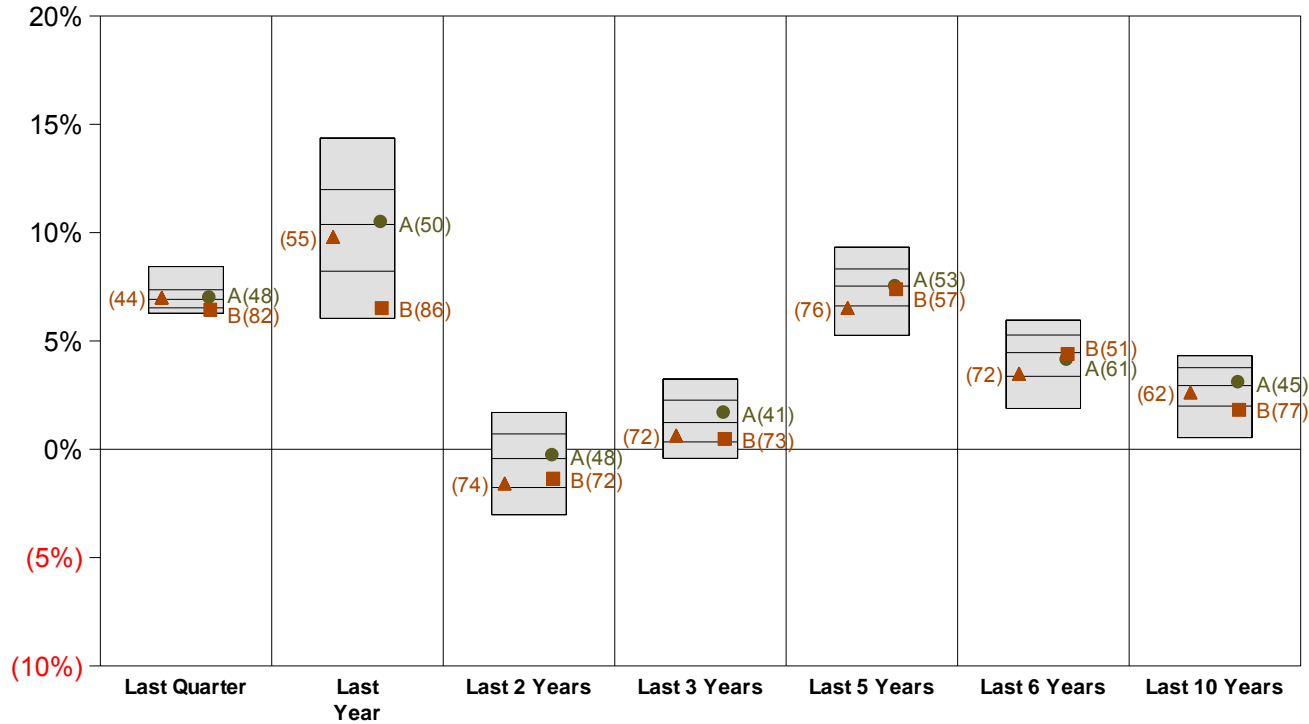
CAI Small Capitalization (Gross)  
Annualized Five Year Risk vs Return



- The five-year risk statistics of downside risk, residual risk, and tracking error compare favorably versus the peer group of small cap managers.

# International Equity through 9/30/16

Performance vs Pub Pln- International Equity (Gross)

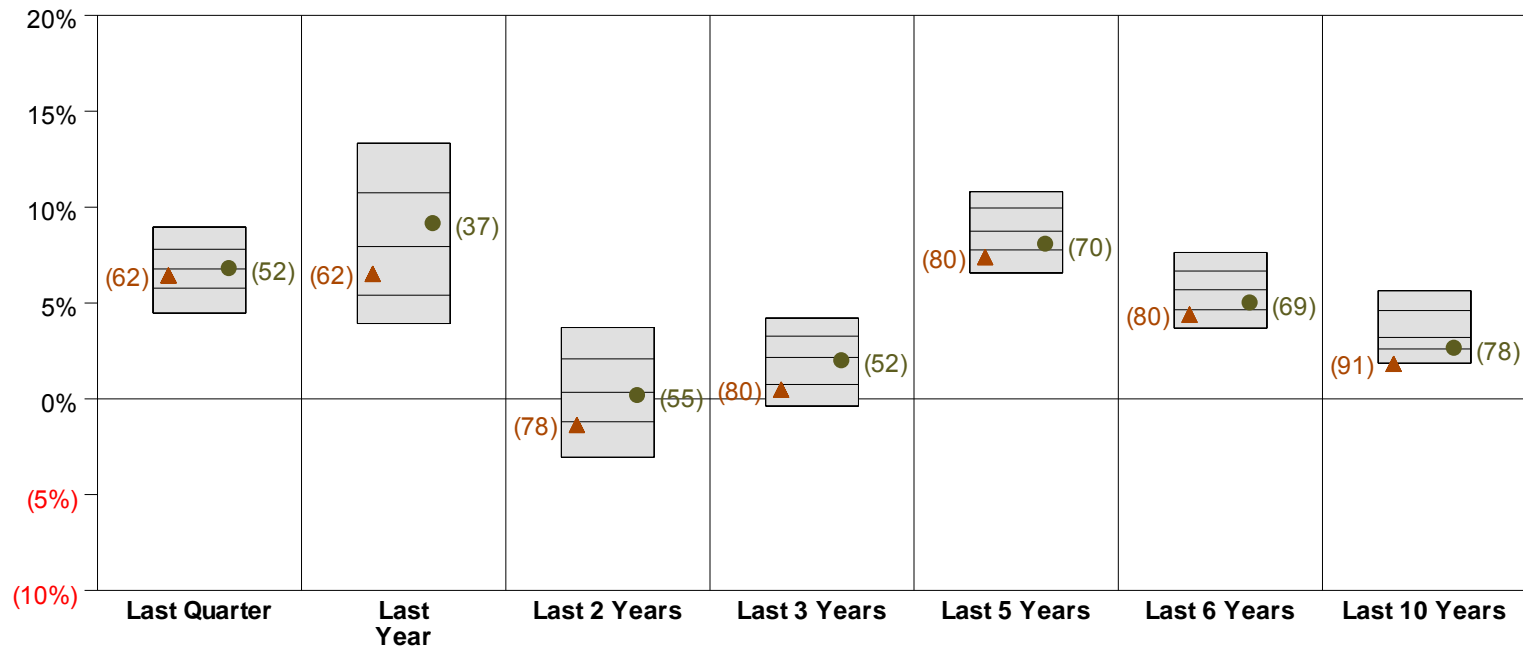


- Third quarter performance figures were bolstered by continued strong performance in emerging markets.

10th Percentile	8.43	14.37	1.70	3.24	9.33	5.96	4.32
25th Percentile	7.36	11.98	0.71	2.27	8.32	5.27	3.77
Median	6.92	10.38	(0.43)	1.23	7.53	4.46	2.94
75th Percentile	6.53	8.22	(1.77)	0.34	6.61	3.37	1.99
90th Percentile	6.28	6.03	(3.02)	(0.42)	5.26	1.88	0.53
Employees' Total Int'l Equity	● A 6.96	10.44	(0.32)	1.65	7.47	4.09	3.05
MSCI EAFE Index	■ B 6.43	6.52	(1.36)	0.48	7.39	4.40	1.82
MSCI ACWixUS Gross	▲ 7.00	9.80	(1.58)	0.64	6.52	3.49	2.63

# International Equity ex Emerging Markets through 9/30/16

## Performance vs CAI Non-U.S. Equity Style (Gross)



10th Percentile	8.96	13.33	3.72	4.21	10.80	7.63	5.64
25th Percentile	7.80	10.74	2.09	3.27	9.94	6.66	4.61
Median	6.77	7.94	0.34	2.16	8.75	5.69	3.20
75th Percentile	5.77	5.40	(1.19)	0.74	7.76	4.64	2.60
90th Percentile	4.47	3.92	(3.05)	(0.39)	6.57	3.68	1.86

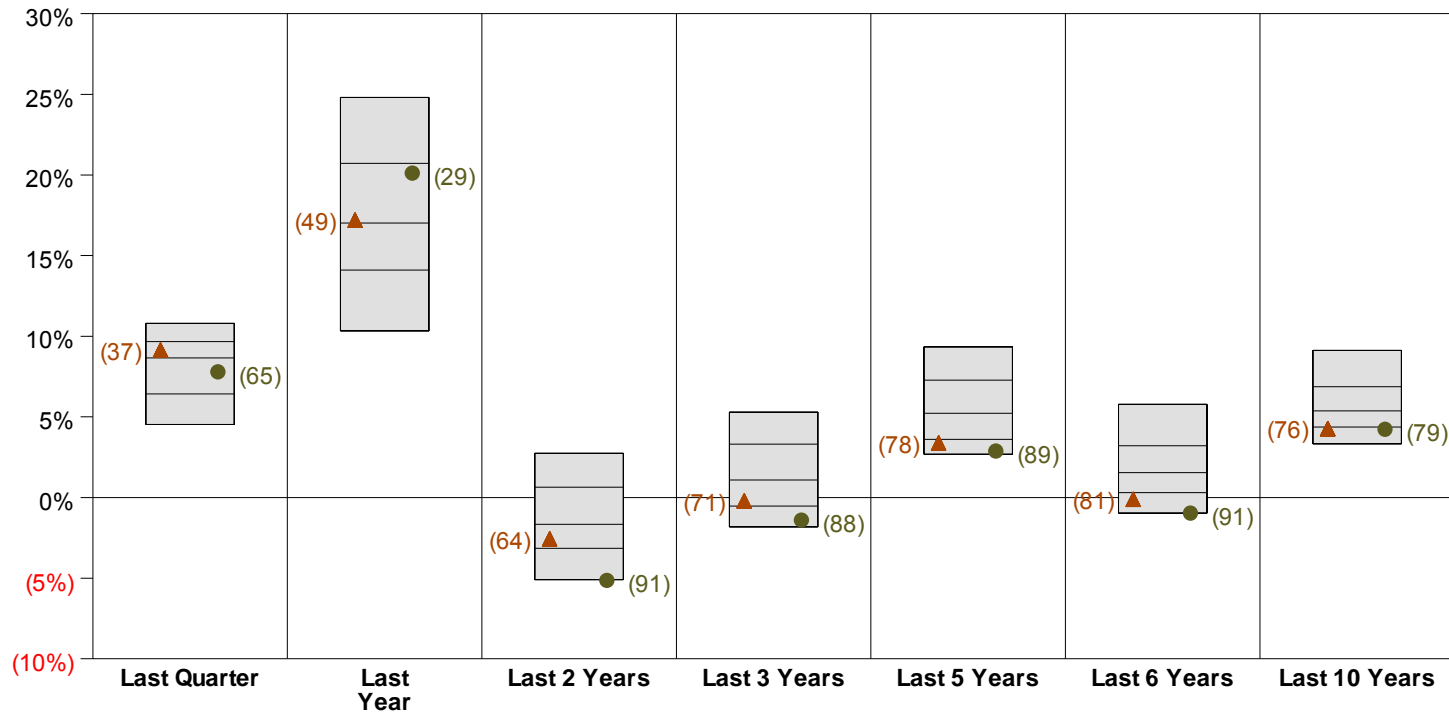
<b>Int'l Equity Pool (ex Emerging. Mkt)</b>	●	6.73	9.08	0.10	1.91	8.00	4.93	2.57
<b>MSCI EAFE</b>	▲	6.43	6.52	(1.36)	0.48	7.39	4.40	1.82

# International Equity ex Emerging Markets through 9/30/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Int'l Equity Pool (ex Emerging Market)</b>	<b>6.73%</b>	<b>9.08%</b>	<b>1.91%</b>	<b>8.00%</b>	<b>2.57%</b>
Allianz Global Investors	4.55%	(1.19%)	-	-	-
Arrowstreet ACWI ex -US	5.64%	10.30%	-	-	-
Baillie Gifford ACWI ex US	8.60%	17.65%	-	-	-
Blackrock ACWI ex US IMI	7.10%	10.04%	0.84%	-	-
Brandes Investment	6.05%	5.39%	2.17%	8.32%	2.91%
Capital Guardian	8.15%	10.77%	0.75%	8.55%	2.86%
Lazard Asset Intl	4.80%	8.00%	2.59%	8.92%	3.88%
McKinley Capital	6.27%	8.46%	6.42%	9.56%	2.21%
SSgA Int'l	7.03%	9.93%	0.90%	6.58%	-
Schroder Inv Mgmt	10.24%	10.76%	6.67%	11.63%	-
Mondrian Intl Sm Cap	7.38%	15.80%	4.09%	10.51%	-
MSCI EAFE Index	6.43%	6.52%	0.48%	7.39%	1.82%
MSCI ACWI ex-US IMI Index	7.05%	9.81%	0.62%	6.37%	2.47%

# Emerging Markets Pool through 9/30/16

Performance vs Emerging Markets Equity DB (Gross)



10th Percentile	10.80	24.81	2.75	5.30	9.34	5.78	9.12
25th Percentile	9.67	20.72	0.64	3.31	7.27	3.21	6.87
Median	8.66	17.02	(1.66)	1.09	5.22	1.55	5.37
75th Percentile	6.43	14.11	(3.15)	(0.53)	3.61	0.30	4.36
90th Percentile	4.53	10.33	(5.10)	(1.82)	2.69	(0.97)	3.34
<b>Emerging Markets Pool</b>	● 7.68	20.01	(5.24)	(1.52)	2.76	(1.07)	4.12
<b>MSCI EM Gross</b>	▲ 9.15	17.21	(2.55)	(0.21)	3.39	(0.10)	4.28

- The Emerging Markets Pool outperformed third quarter and over the trailing 12 months but continues to lag longer term.



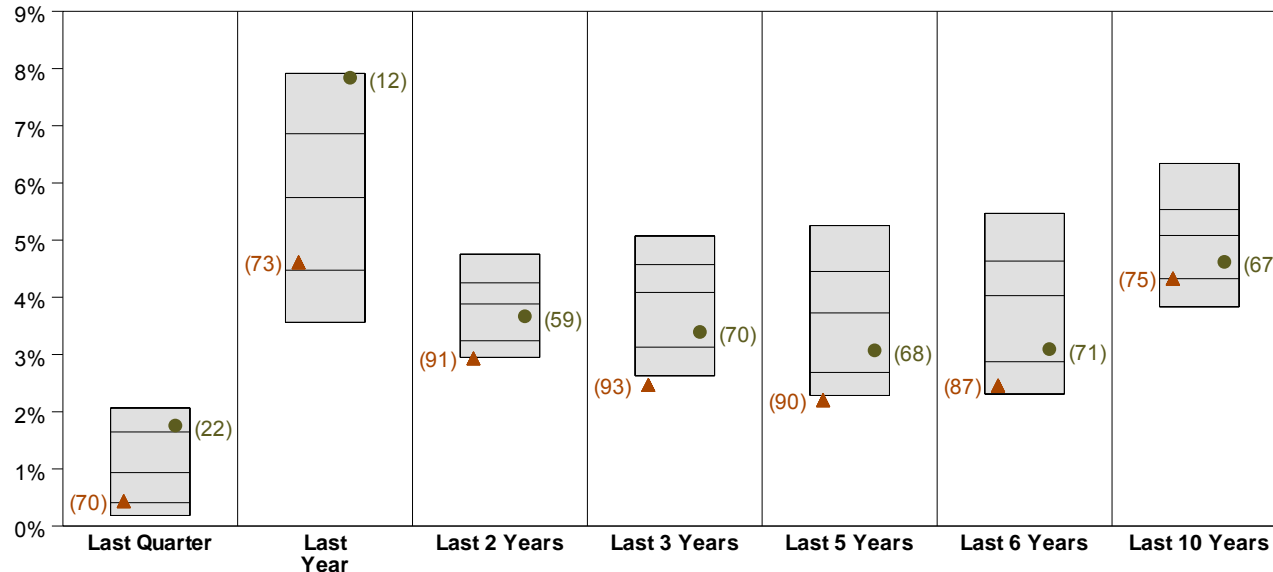
# Emerging Markets Pool through 9/30/16

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	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Emerging Markets Pool</b>	<b>7.68%</b>	<b>20.01%</b>	<b>(1.52%)</b>	<b>2.76%</b>	<b>4.12%</b>
Lazard Emerging	8.85%	23.62%	(1.17%)	3.65%	-
Eaton Vance Emerging(net)	5.55%	13.61%	(1.70%)	2.75%	-
MSCI Emerging Mkts Idx	9.15%	17.21%	(0.21%)	3.39%	4.28%

# Total Bond as of 9/30/16

## Performance vs Pub Pln- Domestic Fixed (Gross)



- The Total Bond portfolio has a custom target, intermediate in nature, that reflects a cautious view on the risk of rising rates.
- The strategy's returns outperform the benchmark over all time periods.

Includes In-House and External Portfolios

# Preliminary Real Assets through 9/30/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Real Assets</b>	<b>1.30%</b>	<b>8.16%</b>	<b>7.08%</b>	<b>8.63%</b>
Real Assets Target (1)	1.45%	9.30%	9.13%	9.17%
Real Estate Pool	0.75%	11.71%	11.90%	11.30%
Real Estate Target (2)	1.47%	10.38%	11.62%	11.72%
Private Real Estate	1.22%	9.48%	11.40%	10.66%
NCREIF Total Index	1.77%	9.22%	11.31%	11.18%
REIT Internal Portfolio	(1.21%)	20.89%	13.84%	15.80%
NAREIT Equity Index	(1.21%)	20.94%	13.86%	15.97%
Total Farmland	1.06%	5.54%	6.45%	10.14%
UBS Farmland	1.09%	5.75%	6.95%	11.33%
Hancock Agricultural	0.99%	5.13%	5.38%	8.01%
ARMB Farmland Target (3)	1.08%	5.41%	7.70%	11.55%
Total Timber	0.39%	(0.26%)	6.23%	6.17%
Timberland Investment Resources	0.58%	0.44%	6.02%	5.37%
Hancock Timber	(0.16%)	(2.25%)	6.07%	7.27%
NCREIF Timberland Index	0.67%	3.28%	7.59%	6.91%
TIPS Internal Portfolio	1.04%	6.61%	2.43%	2.01%
BC US TIPS Index	0.96%	6.58%	2.40%	1.93%
Total Energy Funds *	5.96%	(31.98%)	(18.08%)	(9.78%)
CPI + 5%	1.31%	6.22%	5.72%	6.04%
MLP Composite	3.25%	13.83%	0.12%	-
Advisory Research (FKA FAMCO) MLP	4.24%	11.35%	(1.59%)	-
Tortoise Capital Adv MLP	2.38%	16.15%	1.72%	-
Alerian MLP Index	1.07%	12.74%	(4.82%)	4.96%
Total Infrastructure	1.27%	9.40%	-	-
Brookfield	2.80%	16.06%	-	-
Lazard	5.24%	13.37%	-	-
JPM Infrastructure	(0.90%)	2.54%	-	-
IFM Infrastructure (funded May 2015)	(0.39%)	9.08%	-	-
Global Infrastructure Idx	2.71%	14.61%	7.01%	9.78%

Real estate returns are provided to Callan by ARMB's real estate consultant.

# Absolute Return Composite through 9/30/16

Performance vs CAI Absolute Return Hedge Fund of Funds (Net)



	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6 Years	Last 10 Years	Last 11-3/4 Years
10th Percentile	3.01	3.58	3.04	5.05	5.91	5.64	4.56	5.25
25th Percentile	2.92	2.24	2.46	4.19	5.23	4.85	4.18	4.56
Median	2.10	0.97	0.95	3.00	4.44	4.07	3.58	4.22
75th Percentile	1.28	0.32	(1.18)	1.45	3.54	2.88	3.03	3.75
90th Percentile	1.08	(0.62)	(2.18)	0.74	2.74	2.43	2.79	3.59

	A	B	T-Bills + 5%
Absolute Return Composite	1.58	0.15	(0.13)
HFRI Fund of Funds Compos	2.44	0.52	0.24
T-Bills + 5%	1.32	5.27	5.15

- Absolute return allocation has exceeded HFRI FoF Index over each trailing time period shown except for the last quarter, year, and two year time frames.

# Absolute Return Composite through 9/30/16

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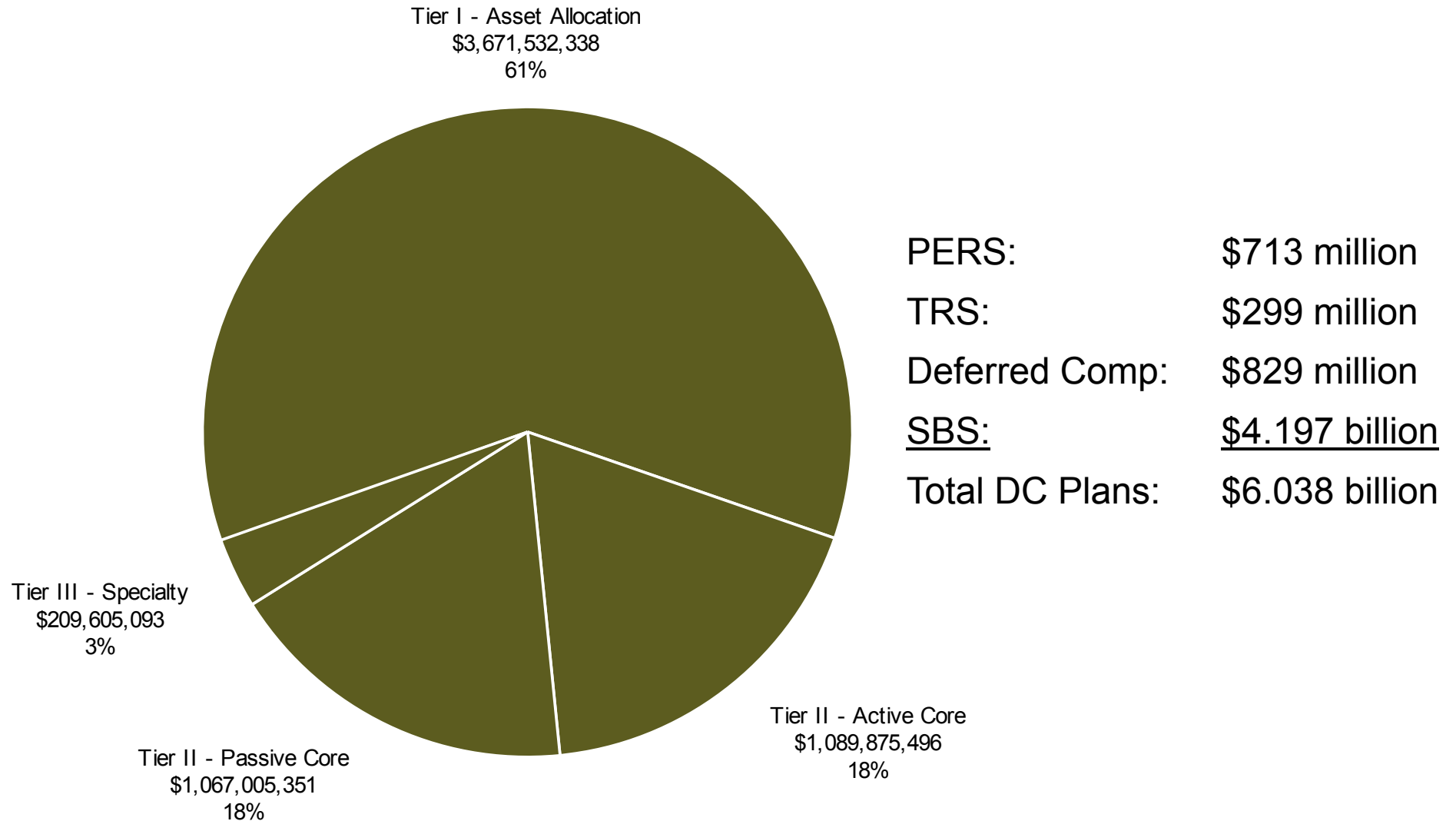
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Absolute Return</b>	<b>0.66%</b>	<b>1.59%</b>	<b>4.50%</b>	<b>4.38%</b>	<b>2.83%</b>
Crestline ABS	1.42%	3.18%	7.81%	6.21%	3.74%
Glob Asset Mgt	0.55%	(0.19%)	2.79%	4.28%	-
Prisma ABS	2.61%	(1.52%)	2.25%	4.30%	-
Allianz Stuctured Alpha 1000+	2.52%	15.01%	-	-	-
KKR Apex Equity Fund	(1.33%)	2.06%	-	-	-
HFRI Fund of Funds Index	2.44%	0.52%	2.17%	3.17%	1.78%



**Defined Contribution Plans**

# AII ARMB DC Plans

Market Values as of September 30, 2016



# AII ARMB DC Plans

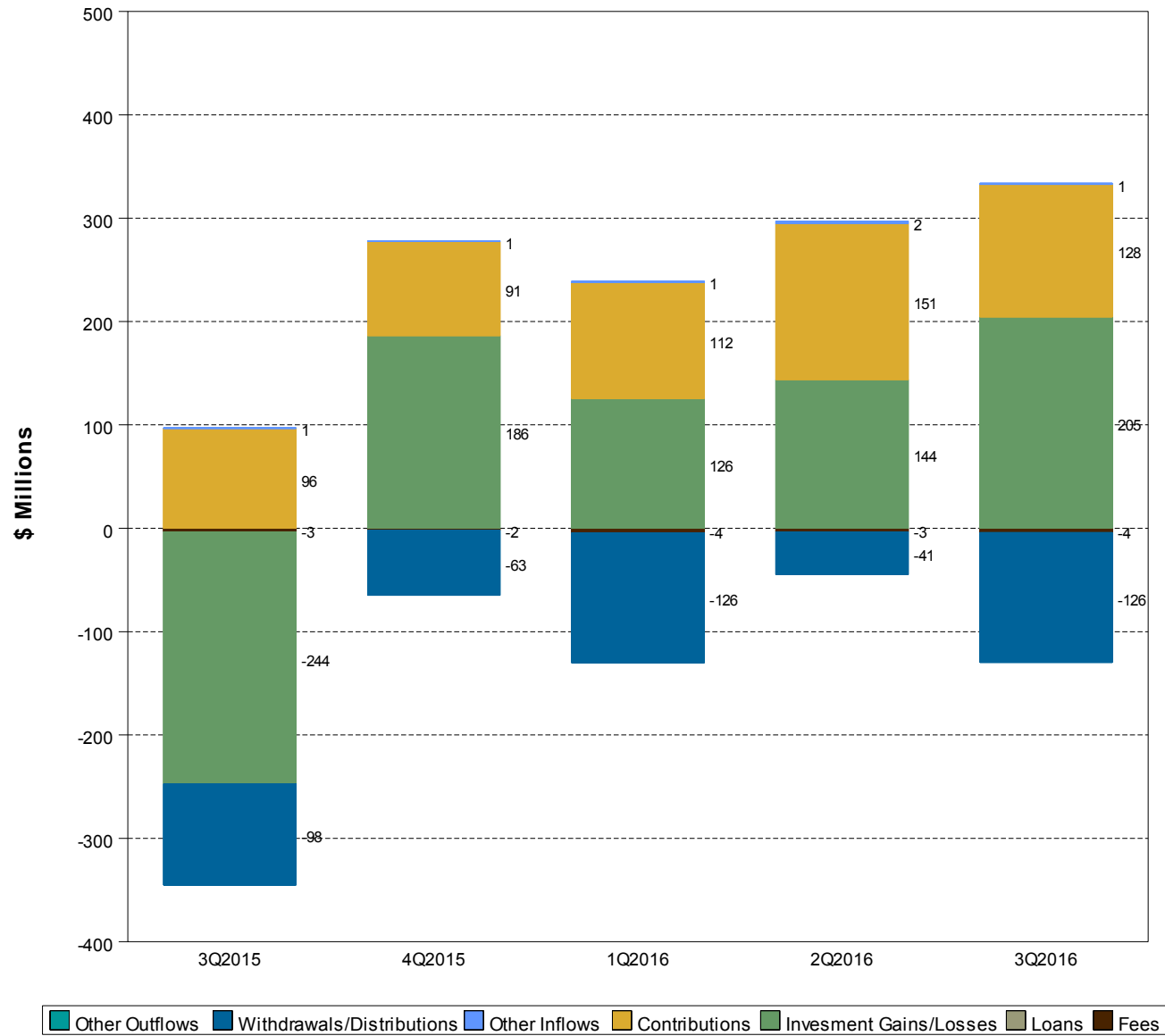
## Market Values by Fund Option as of September 30, 2016

	Market Value	Weight	Number of Participants	Net New Investment	Investment Return
<b>Total Combined Plan</b>					
<b>Tier I - Asset Allocation</b>	<b>\$3,671,532,338</b>	<b>60.81%</b>		<b>\$2,789,347</b>	<b>\$124,503,829</b>
Target 2010 Trust	22,601,777	0.37%	442	532,779	451,502
Target 2015 Trust	130,022,569	2.15%	2022	(5,097,909)	4,961,319
Target 2020 Trust	176,012,780	2.92%	3398	1,571,610	6,274,009
Target 2025 Trust	162,392,060	2.69%	4067	3,769,267	6,874,809
Target 2030 Trust	145,972,693	2.42%	4150	4,377,330	5,625,611
Target 2035 Trust	161,535,566	2.68%	4619	4,515,926	7,462,005
Target 2040 Trust	179,036,539	2.97%	5269	3,745,236	8,560,754
Target 2045 Trust	224,541,351	3.72%	6741	4,569,009	10,943,362
Target 2050 Trust	274,107,965	4.54%	8864	6,216,591	13,942,410
Target 2055 Trust	164,230,349	2.72%	11267	7,661,439	9,013,693
Target 2060 Trust	467,506	0.01%	42	(105,993)	176,548
Alaska Balanced Trust	1,253,787,972	20.76%	18694	(26,075,385)	32,663,787
Alaska Long-Term Balanced	670,744,399	11.11%	21941	(8,159,311)	15,395,008
SSgA Global Balanced	106,078,814	1.76%	11065	5,268,757	2,159,011
<b>Tier II - Active Core</b>	<b>\$1,089,875,496</b>	<b>18.05%</b>		<b>\$12,214,174</b>	<b>\$37,867,685</b>
SSgA Inst Treasury Money Market	54,487,673	0.90%	1928	(893,301)	1,382,189
Money Market	11,940,942	0.20%	6831	588,916	10,573
International Equity Fund *	150,945,417	2.50%	15322	10,361,160	14,860,337
T. Rowe Price Small Cap	311,894,883	5.17%	17171	2,809,716	16,613,931
Interest Income Fund	184,227,588	3.05%	3473	324,918	1,276,404
T. Rowe Price Stable Value	376,378,993	6.23%	4074	(977,235)	3,724,251
<b>Tier II - Passive Core</b>	<b>\$1,067,005,351</b>	<b>17.67%</b>		<b>\$(35,183,782)</b>	<b>\$45,519,691</b>
BlackRock Intermediate Gov Bond	73,265,932	1.21%	9407	11,021,621	(3,078,513)
BlackRock Govt/Credit	111,518,621	1.85%	12876	(5,124,233)	1,680,025
SSgA US TIPS	47,751,008	0.79%	7916	2,331,241	445,484
SSgA S&P 500 Index Fund	617,829,165	10.23%	20450	3,592,435	27,677,820
SSgA Russell 3000 Index Fund	136,352,589	2.26%	12967	(31,271,150)	11,587,953
SSgA World Equity ex-US Index Fund	80,288,036	1.33%	11071	(15,733,697)	7,206,922
<b>Tier III - Specialty</b>	<b>\$209,605,093</b>	<b>3.47%</b>		<b>\$9,933,242</b>	<b>\$(3,342,680)</b>
SSgA Long US Treasury Bond	39,799,643	0.66%	1627	6,244,669	(3,821,745)
SSgA World Gov't Bond ex-US	21,771,153	0.36%	7882	315,121	903,422
Allianz/RCM Socially Responsible	60,463,501	1.00%	3474	(2,363,572)	3,105,349
SSgA US REIT Index Fund	87,570,796	1.45%	12770	5,737,024	(3,529,706)
<b>Total Fund</b>	<b>\$6,038,018,278</b>	<b>100.0%</b>		<b>\$(10,247,020)</b>	<b>\$204,548,525</b>



# AII ARMB DC Plans: Asset Changes

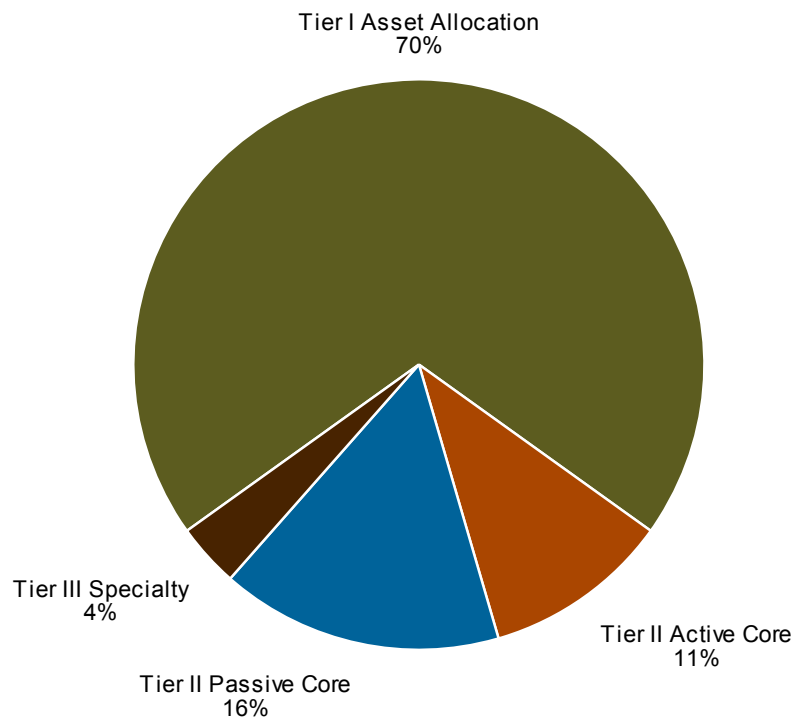
By Quarter: 9/30/2015 through 9/30/2016



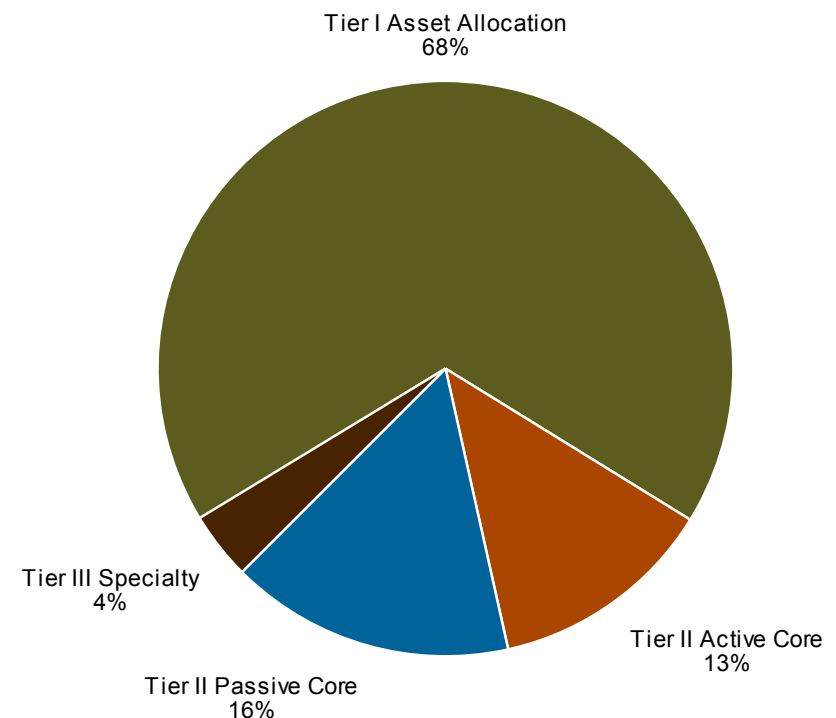
# All ARMB DC Plans: Contributions by Fund Tier

By quarter and trailing one-year period

Contributions ended September 30, 2016



Contributions for One Year ended September 30, 2016



- Allocation of contributions by the PERS, TRS, and the SBS Plans' are very similar to one another.
- Participants in the Deferred Compensation Plan allocate roughly half as much to the Tier 1 Fund Options (38% during the quarter ended 9/30/16 versus over 75% by the other three Plans).
- Deferred Compensation participants are twice as likely to select from the Tier 3 Specialty Fund Options (8% in current quarter versus 2-3% for members of the PERS, TRS and SBS Plans).

# Individual Account Option Performance: 9/30/16

## Balanced & Target Date Funds

Investment Manager	Market Value (\$mm)	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
<b>Balanced &amp; Target Date Funds</b>											
<b>Alaska Balanced Fund</b>	\$1,210	2.0 <sup>60</sup>	7.1 <sup>45</sup>	4.9 <sup>19</sup>	6.9 <sup>22</sup>	6.6 <sup>21</sup>	3.7 <sup>78</sup>		0.9 <sup>2</sup>	0.2 <sup>100</sup>	1.8 <sup>3</sup>
Lipper: Mixed-Asset Target Alloc Cons Passive Target		2.0 <sup>59</sup>	7.1 <sup>46</sup>	4.9 <sup>20</sup>	6.7 <sup>27</sup>	6.5 <sup>26</sup>	3.6 <sup>85</sup>				1.8 <sup>3</sup>
<b>Long Term Balanced Fund</b>	\$610	3.1 <sup>48</sup>	9.4 <sup>38</sup>	6.0 <sup>24</sup>	9.7 <sup>19</sup>	8.4 <sup>18</sup>	6.1 <sup>64</sup>		0.6 <sup>3</sup>	0.2 <sup>100</sup>	1.6 <sup>12</sup>
Lipper: Mixed-Asset Target Alloc Mod Passive Target		3.2 <sup>43</sup>	9.6 <sup>33</sup>	6.0 <sup>23</sup>	9.6 <sup>22</sup>	8.4 <sup>18</sup>	6.0 <sup>67</sup>				1.6 <sup>12</sup>
<b>Target 2010 Trust</b>	\$16	2.4 <sup>58</sup>	7.6 <sup>58</sup>	5.1 <sup>21</sup>	8.2 <sup>11</sup>	7.3 <sup>13</sup>	5.0 <sup>51</sup>		0.1 <sup>8</sup>	0.2 <sup>100</sup>	1.6 <sup>16</sup>
CAI Tgt Date 2010 Custom Index		2.5 <sup>51</sup>	7.7 <sup>56</sup>	5.1 <sup>21</sup>	8.1 <sup>11</sup>	7.3 <sup>12</sup>	5.0 <sup>51</sup>				1.6 <sup>20</sup>
<b>Target 2015 Trust</b>	\$109	2.8 <sup>35</sup>	8.7 <sup>45</sup>	5.7 <sup>12</sup>	9.4 <sup>4</sup>	8.1 <sup>6</sup>	5.9 <sup>25</sup>		0.3 <sup>2</sup>	0.2 <sup>100</sup>	1.6 <sup>19</sup>
CAI Tgt Date 2015 Custom Index		2.9 <sup>31</sup>	8.7 <sup>44</sup>	5.7 <sup>13</sup>	9.4 <sup>4</sup>	8.0 <sup>7</sup>	6.0 <sup>23</sup>				1.5 <sup>25</sup>
<b>Target 2020 Trust</b>	\$127	3.3 <sup>31</sup>	9.7 <sup>25</sup>	6.2 <sup>11</sup>	10.5 <sup>6</sup>	8.9 <sup>5</sup>	6.7 <sup>23</sup>		0.2 <sup>3</sup>	0.2 <sup>100</sup>	1.5 <sup>12</sup>
CAI Tgt Date 2020 Custom Index		3.4 <sup>28</sup>	9.8 <sup>24</sup>	6.2 <sup>12</sup>	10.4 <sup>6</sup>	8.9 <sup>5</sup>	6.8 <sup>23</sup>				1.5 <sup>17</sup>
<b>Target 2025 Trust</b>	\$107	3.6 <sup>34</sup>	10.5 <sup>25</sup>	6.6 <sup>12</sup>	11.4 <sup>10</sup>	9.5 <sup>6</sup>	7.5 <sup>27</sup>		0.1 <sup>9</sup>	0.3 <sup>100</sup>	1.5 <sup>9</sup>
CAI Tgt Date 2025 Custom Index		3.8 <sup>28</sup>	10.6 <sup>23</sup>	6.6 <sup>13</sup>	11.4 <sup>10</sup>	9.6 <sup>5</sup>	7.6 <sup>22</sup>				1.5 <sup>19</sup>
<b>Target 2030 Trust</b>	\$92	4.0 <sup>33</sup>	11.3 <sup>23</sup>	7.0 <sup>5</sup>	12.2 <sup>4</sup>	10.0 <sup>3</sup>	8.1 <sup>24</sup>		0.1 <sup>4</sup>	0.3 <sup>100</sup>	1.5 <sup>4</sup>
CAI Tgt Date 2030 Custom Index		4.1 <sup>28</sup>	11.4 <sup>21</sup>	6.9 <sup>6</sup>	12.2 <sup>4</sup>	10.0 <sup>3</sup>	8.3 <sup>16</sup>				1.5 <sup>11</sup>
<b>Target 2035 Trust</b>	\$99	4.2 <sup>43</sup>	11.8 <sup>24</sup>	7.2 <sup>5</sup>	12.8 <sup>3</sup>	10.3 <sup>1</sup>	8.7 <sup>33</sup>		0.1 <sup>3</sup>	0.3 <sup>100</sup>	1.5 <sup>4</sup>
CAI Tgt Date 2035 Custom Index		4.4 <sup>33</sup>	12.0 <sup>19</sup>	7.2 <sup>5</sup>	12.8 <sup>3</sup>	10.3 <sup>1</sup>	8.8 <sup>26</sup>				1.4 <sup>7</sup>
<b>Target 2040 Trust</b>	\$108	4.5 <sup>44</sup>	12.2 <sup>21</sup>	7.3 <sup>4</sup>	13.0 <sup>2</sup>	10.5 <sup>1</sup>	8.9 <sup>43</sup>		0.0 <sup>2</sup>	0.3 <sup>100</sup>	1.4 <sup>3</sup>
CAI Tgt Date 2040 Custom Index		4.6 <sup>33</sup>	12.5 <sup>15</sup>	7.3 <sup>4</sup>	13.0 <sup>2</sup>	10.5 <sup>1</sup>	9.1 <sup>26</sup>				1.4 <sup>5</sup>
<b>Target 2045 Trust</b>	\$132	4.6 <sup>49</sup>	12.4 <sup>18</sup>	7.4 <sup>4</sup>	13.1 <sup>3</sup>	10.5 <sup>1</sup>	8.9 <sup>62</sup>		0.1 <sup>1</sup>	0.3 <sup>100</sup>	1.4 <sup>4</sup>
CAI Tgt Date 2045 Custom Index		4.7 <sup>46</sup>	12.5 <sup>16</sup>	7.3 <sup>5</sup>	13.0 <sup>3</sup>	10.5 <sup>1</sup>	9.1 <sup>44</sup>				1.4 <sup>6</sup>

Returns: ■ above median, ■ third quartile, ■ fourth quartile  
 Risk: ■ below median, ■ second quartile, ■ first quartile  
 Risk Quadrant:   
 Excess Return Ratio: ■ above median, ■ third quartile, ■ fourth quartile  
 Tracking Error: ■ below median, ■ second quartile, ■ first quartile  
 Sharpe Ratio: ■ above median, ■ third quartile, ■ fourth quartile

Investment Manager	Market Value (\$mm)	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
<b>Target 2050 Trust</b>	\$159	4.6 <sup>50</sup>	12.4 <sup>20</sup>	7.4 <sup>4</sup>	13.0 <sup>3</sup>	10.5 <sup>1</sup>	8.9 <sup>73</sup>		0.1 <sup>1</sup>	0.3 <sup>100</sup>	1.4 <sup>3</sup>
CAI Tgt Date 2050 Custom Index		4.7 <sup>45</sup>	12.5 <sup>18</sup>	7.3 <sup>5</sup>	13.0 <sup>3</sup>	10.5 <sup>1</sup>	9.1 <sup>59</sup>				1.4 <sup>4</sup>
<b>Target 2055 Trust</b>	\$99	4.5 <sup>61</sup>	12.4 <sup>23</sup>	7.4 <sup>6</sup>	13.0 <sup>5</sup>	10.5 <sup>1</sup>	9.0 <sup>73</sup>		0.1 <sup>2</sup>	0.3 <sup>100</sup>	1.4 <sup>6</sup>
CAI Tgt Date 2055 Custom Index		4.7 <sup>50</sup>	12.5 <sup>20</sup>	7.3 <sup>9</sup>	13.0 <sup>5</sup>	10.5 <sup>1</sup>	9.1 <sup>67</sup>				1.4 <sup>7</sup>

Returns: ■ above median, ■ third quartile, ■ fourth quartile  
 Risk: ■ below median, ■ second quartile, ■ first quartile  
 Risk Quadrant:   
 Excess Return Ratio: ■ above median, ■ third quartile, ■ fourth quartile  
 Tracking Error: ■ below median, ■ second quartile, ■ first quartile  
 Sharpe Ratio: ■ above median, ■ third quartile, ■ fourth quartile

# Other Options: 9/30/16

## Active Equity, Stable Value, and Interest Income

Investment Manager	Market Value (\$mm)	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
<b>Active and Other Funds</b>											
<b>AK International Equity</b> CAI Mut Fd: Non-U.S. Equity Style	\$37	5.3 77	2.3 94								
MSCI EAFE Index		6.4 44	6.5 52	0.5 66	7.4 67	4.2 69	11.8 59				0.6 62
<b>Allianz/RCM Soc Resp</b> CAI Mut Fd: Core Equity Style	\$39	3.7 65	11.8 67	8.3 79	13.7 85	10.6 85	10.6 53		-0.6 94	1.8 89	1.3 90
MSCI USA ESG		4.1 44	15.1 22	9.8 37	15.5 48	12.6 36	9.8 82				1.6 30
<b>T. Rowe Price Small Cap</b> CAI Mut Fd: Sm Cap Broad Style	\$132	6.2 70	16.0 25	7.9 22	17.4 9	15.0 7	13.3 66		0.7 1	2.5 98	1.3 12
Russell 2000 Index		9.0 24	15.5 30	6.7 34	15.8 30	12.5 50	13.7 57				1.1 38
<b>T. Rowe Price Stable Value Fd</b> CAI Stable Value Database	\$376	0.6 1	2.4 1	2.4 1	2.6 1	2.9 3	0.1 47		11.3 15	0.0 92	18.0 14
5 Yr U.S. Treas Rolling		0.3 95	1.3 95	1.4 88	1.6 83	2.1 58	0.2 15				7.6 95
<b>Def Comp Interest Income Fund</b> CAI Stable Value Database	\$184	0.7 1	2.8 1	2.8 1	3.0 1	3.4 1	0.2 40		22.6 2	0.0 97	18.7 12
5 Yr U.S. Treas Rolling		0.3 95	1.3 95	1.4 88	1.6 83	2.1 58	0.2 15				7.6 95

Returns:  
■ above median  
■ third quartile  
■ fourth quartile

Risk:  
■ below median  
■ second quartile  
■ first quartile

Risk Quadrant:  


Excess Return Ratio:  
■ above median  
■ third quartile  
■ fourth quartile

Tracking Error:  
■ below median  
■ second quartile  
■ first quartile

Sharpe Ratio:  
■ above median  
■ third quartile  
■ fourth quartile

# Passive Options: 9/30/16

Investment Manager	Market Value (\$mm)	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
<b>Index Funds</b>											
<b>State Street S&amp;P Index Fund (i)</b> CAI Large Cap Core Style	\$350	3.9 <sup>65</sup>	15.4 <sup>16</sup>	11.1 <sup>34</sup>	16.4 <sup>45</sup>	13.2 <sup>43</sup>	9.8 <sup>82</sup>		-0.3 <sup>78</sup>	0.0 <sup>99</sup>	1.7 <sup>19</sup>
S&P 500 Index		3.9 <sup>65</sup>	15.4 <sup>16</sup>	11.2 <sup>31</sup>	16.4 <sup>44</sup>	13.2 <sup>43</sup>	9.8 <sup>82</sup>				1.7 <sup>19</sup>
<b>BlackRock S&amp;P 500 Index Fund (i)</b> CAI Mut Fd: Core Equity Style (Gross)	\$183	3.8 <sup>63</sup>	15.4 <sup>24</sup>	11.1 <sup>28</sup>	16.4 <sup>45</sup>	13.2 <sup>41</sup>	9.9 <sup>79</sup>		0.1 <sup>34</sup>	0.0 <sup>99</sup>	1.7 <sup>19</sup>
S&P 500 Index		3.9 <sup>63</sup>	15.4 <sup>24</sup>	11.2 <sup>28</sup>	16.4 <sup>45</sup>	13.2 <sup>42</sup>	9.8 <sup>79</sup>				1.7 <sup>18</sup>
<b>SSgA Russell 3000 Index (i)</b> CAI Mut Fd: Large Cap Broad Style (Net)	\$67	4.4 <sup>53</sup>	14.9 <sup>12</sup>	10.5 <sup>29</sup>	16.4 <sup>18</sup>	13.2 <sup>21</sup>	10.2 <sup>81</sup>		-0.0 <sup>20</sup>	0.1 <sup>100</sup>	1.6 <sup>8</sup>
Russell 3000 Index		4.4 <sup>52</sup>	15.0 <sup>12</sup>	10.4 <sup>30</sup>	16.4 <sup>18</sup>	13.2 <sup>21</sup>	10.2 <sup>80</sup>				1.6 <sup>8</sup>
<b>SSgA World Equity ex-U.S. Index (i)</b> CAI MF: Non-U.S. Equity Style (Net)	\$27	6.2 <sup>48</sup>	9.4 <sup>21</sup>	0.3 <sup>66</sup>	6.3 <sup>88</sup>	3.6 <sup>75</sup>	11.7 <sup>61</sup>		0.2 <sup>71</sup>	0.9 <sup>100</sup>	0.5 <sup>81</sup>
MSCI ACWI x U.S. Index (Net)		6.9 <sup>35</sup>	9.3 <sup>22</sup>	0.2 <sup>66</sup>	6.0 <sup>91</sup>	3.7 <sup>74</sup>	11.8 <sup>58</sup>				0.5 <sup>87</sup>
<b>SSgA Global Balanced Index (i)</b> CAI Int'l/Global Balanced Database	\$54	3.3 <sup>33</sup>	10.4 <sup>26</sup>	4.8 <sup>29</sup>	7.8 <sup>32</sup>	6.6 <sup>37</sup>	6.0 <sup>66</sup>		1.0 <sup>7</sup>	0.3 <sup>100</sup>	1.3 <sup>25</sup>
Global Balanced Custom Benchmark		3.4 <sup>29</sup>	10.1 <sup>28</sup>	4.6 <sup>35</sup>	7.4 <sup>33</sup>	6.3 <sup>50</sup>	6.1 <sup>64</sup>				1.2 <sup>27</sup>
<b>SSgA Long U.S. Treasury Index (i)</b> CAI Mut Fd: Extended Mat Fixed Income	\$28	-0.3 <sup>79</sup>	13.1 <sup>66</sup>	11.2 <sup>21</sup>	5.5 <sup>67</sup>	8.1 <sup>70</sup>	10.6 <sup>29</sup>		0.3 <sup>36</sup>	0.1 <sup>100</sup>	0.5 <sup>53</sup>
BB Barclays Long Treasury Index		-0.4 <sup>81</sup>	13.1 <sup>66</sup>	11.2 <sup>21</sup>	5.5 <sup>67</sup>	8.1 <sup>69</sup>	10.6 <sup>31</sup>				0.5 <sup>53</sup>
<b>SSgA U.S. TIPS Index (i)</b> Lipper: TIPS Funds	\$23	1.0 <sup>58</sup>	6.5 <sup>33</sup>	2.3 <sup>17</sup>	1.8 <sup>17</sup>	3.9 <sup>14</sup>	5.1 <sup>38</sup>		-4.0 <sup>95</sup>	0.0 <sup>100</sup>	0.3 <sup>21</sup>
BB Barclays U.S. TIPS Index		1.0 <sup>56</sup>	6.6 <sup>28</sup>	2.4 <sup>13</sup>	1.9 <sup>12</sup>	4.0 <sup>6</sup>	5.1 <sup>38</sup>				0.4 <sup>15</sup>
<b>SSgA World Gov't Bond Ex-U.S. Index (i)</b> \$9 CAI Mut Fd: Global Fixed Income Style	\$29	0.6 <sup>84</sup>	12.6 <sup>1</sup>	1.1 <sup>70</sup>	0.2 <sup>89</sup>	1.3 <sup>92</sup>	7.2 <sup>1</sup>		-0.6 <sup>100</sup>	0.0 <sup>100</sup>	0.0 <sup>89</sup>
Citi WGBI Non-U.S. Index		0.6 <sup>84</sup>	12.6 <sup>1</sup>	1.2 <sup>68</sup>	0.2 <sup>89</sup>	1.4 <sup>92</sup>	7.2 <sup>1</sup>				0.0 <sup>89</sup>
<b>U.S. Real Estate Investment Trust (i)</b> CAI Mut Fd: Real Estate Database	\$49	-1.3 <sup>55</sup>	17.4 <sup>52</sup>	14.0 <sup>37</sup>	15.3 <sup>53</sup>	14.9 <sup>58</sup>	12.7 <sup>37</sup>		-3.0 <sup>100</sup>	0.1 <sup>99</sup>	1.2 <sup>63</sup>
U.S. Select REIT Index		-1.2 <sup>54</sup>	17.7 <sup>44</sup>	14.3 <sup>23</sup>	15.6 <sup>34</sup>	15.5 <sup>26</sup>	12.8 <sup>25</sup>				1.2 <sup>53</sup>

Returns: ■ above median, ■ third quartile, ■ fourth quartile  
 Risk: ■ below median, ■ second quartile, ■ first quartile  
 Risk Quadrant:   
 Excess Return Ratio: ■ above median, ■ third quartile, ■ fourth quartile  
 Tracking Error: ■ below median, ■ second quartile, ■ first quartile  
 Sharpe Ratio: ■ above median, ■ third quartile, ■ fourth quartile

Investment Manager	Market Value (\$mm)	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
<b>BlackRock Govt/Credit Bond Fund (i)</b> CAI Mut Fd: Core Bond Style	\$41	0.4 <sup>89</sup>	5.8 <sup>35</sup>	4.1 <sup>43</sup>	3.1 <sup>84</sup>	4.1 <sup>79</sup>	3.1 <sup>12</sup>		-1.8 <sup>99</sup>	0.1 <sup>100</sup>	1.0 <sup>90</sup>
BB Barclays Govt/Credit Bd		0.4 <sup>89</sup>	5.9 <sup>32</sup>	4.2 <sup>29</sup>	3.2 <sup>83</sup>	4.3 <sup>71</sup>	3.1 <sup>12</sup>				1.0 <sup>87</sup>
<b>BlackRock Int. Govt Bond Fund (i)</b> CAI MF: Intermediate Fixed Income Style	\$20	-0.2 <sup>87</sup>	2.4 <sup>70</sup>	2.1 <sup>66</sup>	1.5 <sup>76</sup>	2.4 <sup>77</sup>	1.8 <sup>66</sup>		-3.7 <sup>100</sup>	0.0 <sup>98</sup>	0.8 <sup>83</sup>
BB Barclays Gov Inter		-0.2 <sup>87</sup>	2.4 <sup>69</sup>	2.2 <sup>58</sup>	1.6 <sup>73</sup>	2.6 <sup>72</sup>	1.8 <sup>66</sup>				0.9 <sup>78</sup>
<b>State Street Inst Trsry MM (i)</b> Lipper: US Treas Money Mk	\$39	0.0 <sup>11</sup>	0.1 <sup>10</sup>	0.0 <sup>12</sup>	0.0 <sup>12</sup>	0.0 <sup>13</sup>	0.0 <sup>11</sup>		-3.6 <sup>93</sup>	0.0 <sup>90</sup>	-2.4 <sup>11</sup>
3-Month T-Bills		0.1 <sup>1</sup>	0.2 <sup>1</sup>	0.1 <sup>1</sup>	0.1 <sup>1</sup>	0.1 <sup>1</sup>	0.0 <sup>3</sup>				-0.7 <sup>1</sup>

Returns: ■ above median, ■ third quartile, ■ fourth quartile  
 Risk: ■ below median, ■ second quartile, ■ first quartile  
 Risk Quadrant:   
 Excess Return Ratio: ■ above median, ■ third quartile, ■ fourth quartile  
 Tracking Error: ■ below median, ■ second quartile, ■ first quartile  
 Sharpe Ratio: ■ above median, ■ third quartile, ■ fourth quartile

(i) – Indexed scoring method used. Green: manager & index differ by less than +/- 10 percentiles; Yellow: manager and index differ by +/- 20 percentiles; Red: manager & index differ by more than 20 percentiles.

## Fidelity Tactical Bond

**Mandate:** Fixed Income

**Hired:** 2014

Firm Information	Investment Approach	Total ARMB Mandate & Fees
<p>Fidelity Institutional Asset Management (FIAM), formerly known as Pyramis Global Advisors, is owned by privately-held Fidelity Investments. Fidelity Investments had \$2.1 trillion in assets under management in a diverse range of equity, fixed income and asset allocation strategies, as of September 30, 2016.</p> <p><b>Key Executives:</b>  <i>Jeff Moore</i>, Portfolio Manager  <i>Beau Coash</i>, Fixed Income Institutional Portfolio Manager  <i>Scott Couto</i>, President  <i>Christine Thompson</i>, CIO – Fixed Income  <i>Kristin Shofner</i>, Relationship Manager  <i>Mark Botelho</i>, Account Executive</p>	<p>The Tactical Bond portfolio team seeks to achieve strong total returns by exercising broad flexibility to invest in a broad set of fixed income sectors. The Portfolio seeks to achieve returns in excess of the Barclays US Aggregate Index.</p> <p>Returns will be generated from the allocation among a full suite of global fixed income investments including investment grade and high yield corporates, emerging market debt (hard and local currency), leveraged loans, non-agency mortgages, high yield CMBS, convertible bonds, preferred stock and hybrid securities. The portfolio team seeks to generate returns from asset allocation, sector rotation, security selection, duration management, yield curve positioning and foreign currency exposures.</p> <p>Inception: October 2014</p> <p><b>Benchmark:</b> Bloomberg Barclays US Aggregate Index</p>	<p><b>Assets Under Management:</b>            9/30/16: \$ 132,199,932            9/30/15: \$ 120,742,378</p> <p><b>Fee Schedule:</b>            First \$100 million 36 basis points            Next \$400 million 32 basis points            Over \$500 million 22 basis points</p>

**Concerns:** None

### 9/30/16 Performance (gross of fees)

	<u>Last</u> <u>Quarter</u>	<u>1-Year</u>	<u>Since Inception</u> <u>Annualized</u>
FIAM Tactical Bond	3.61%	9.58%	5.57%
Benchmark	0.46%	5.19%	3.60%

# Tactical Bond Strategy

December 8, 2016



Presentation to: Alaska Retirement Management Board

**Beau Coash**

*Fixed Income Institutional Portfolio Manager*

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FIDELITY INSTITUTIONAL ASSET MANAGEMENT<sup>SM</sup>



# Table of Contents

1. Tactical Bond
2. Portfolio Performance and Positioning
3. Macro Update
4. Appendix
  - A. Important Information
  - B. GIPS Composite Performance Data
  - C. Biographies

See “Important Information” for a discussion of performance data, some of the principal risks related to any of the investment strategies referred to in this presentation and other information related to this presentation.



# Tactical Bond

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# Asset Management

Over 40 years of experience serving institutional fixed income clients worldwide

History
<b>Fidelity founded in 1946</b>
<b>Fidelity has been managing Fixed Income since 1971</b>
Global multi-asset class solutions provider

People	
<b>Global Investment Professionals:</b>	<b>860</b>
<b>Fixed Income Professionals:</b>	<b>211</b>
Research:	109
Trading:	32
Portfolio Management:	42
Other:	28

Assets	
<b>Fidelity Assets Under Management:</b>	<b>\$2.1T</b>
<b>Fixed Income Assets:</b>	<b>\$933.3B</b>
Bond Assets:	\$410.2B
Money Market Assets:	\$523.1B

Assets noted are as of 9/30/16.

Information presented, including number of investment professionals, represent the combined resources of FIAM and Fidelity Investments as of 9/30/16.

Fixed Income assets include investment grade and high income products, bond sub-portfolios of multi-asset class strategies and money market cash management vehicles.

# FIAM Tactical Bond

## Leveraging a long history of fixed income asset allocation

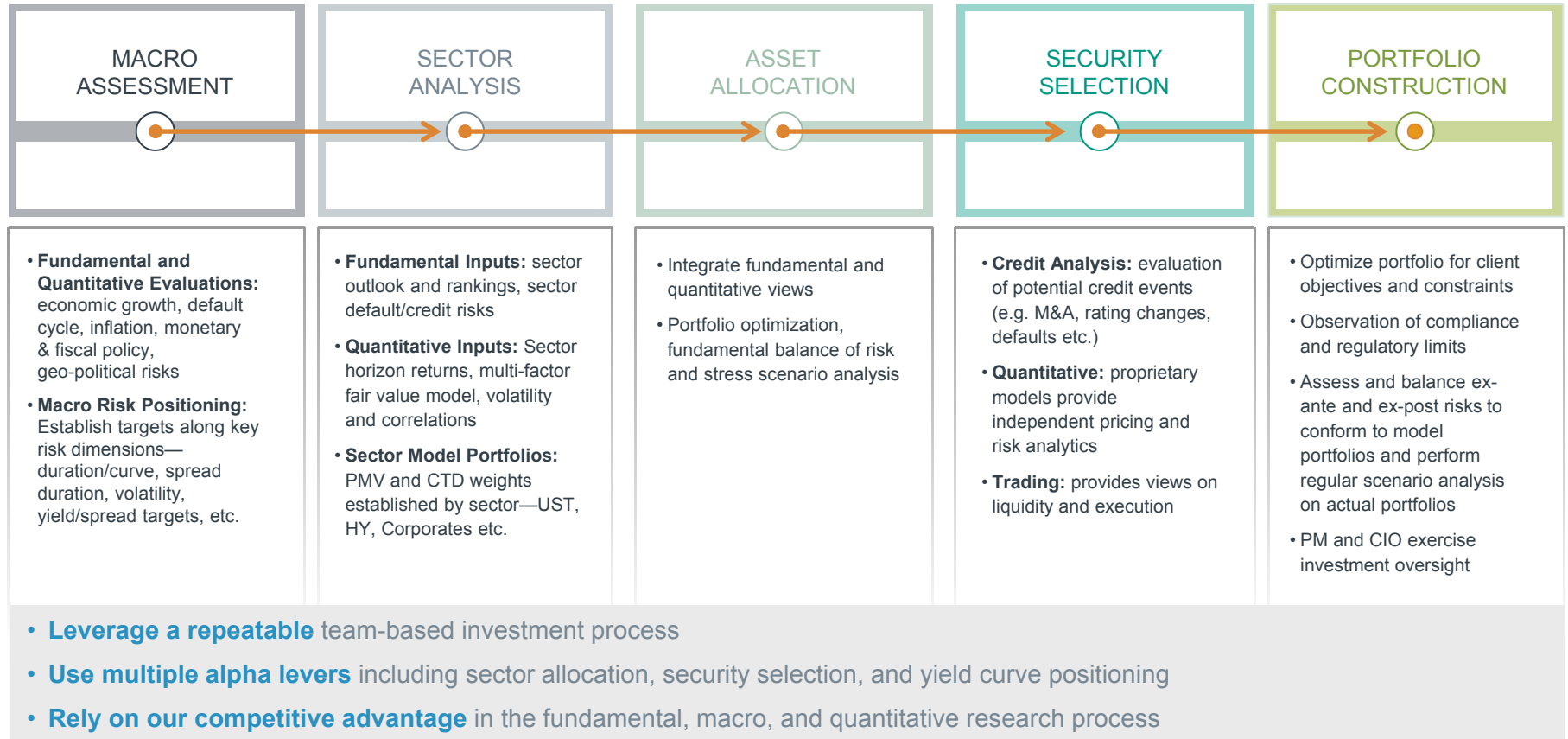
- Multi-sector allocation to a full suite of global fixed income asset classes
- Risk-adjusted returns are driven by relative value assessments on a qualitative and quantitative basis
- Liquidity is maintained at the appropriate level to capitalize on dynamic opportunities

Characteristics	Maximum	Average
Universe:	Global investment grade and non-investment grade fixed income sectors and securities	
Sources of Return:	Asset allocation, sector rotation, security selection, yield curve, foreign currency	
Non-Investment Grade Exposure:	70%	30-40% (max 53%)
Active Currency Exposure:	Up to 10%	0 – 2%
Targeted Duration Range:	Flexible	3 – 6 years
Targeted Volatility Over a Market Cycle:	3-6% annualized	Actual 5-Year: 3.76%

Expected ranges are subject to review and change by a multi-disciplinary team including the CIO. Target volatility is presented gross of any fees and expenses, including advisory fees, which when deducted will reduce returns. Although FIAM believes it has a reasonable basis for any gross target volatility returns, there can be no assurance that actual results will be comparable. Actual results will depend on market conditions over a full market cycle and any developments that may affect these investments and will be reduced by the deduction of any fees and expenses associated with the investment.

As of 9/30/16.

# Integrated and Disciplined Investment Process



For illustrative purposes only.

# RAPIDS Risk Model Overview and Advantages

Simulation-based Factor Model	<ul style="list-style-type: none"> <li>Proprietary model that provides a framework for quantifying the active bets in a portfolio versus its benchmark index</li> </ul>
Parsimony	<ul style="list-style-type: none"> <li>Keeps number of factors to a minimum while allowing for risk differentiation via security level betas</li> <li>Uses data reduction (principal components - PC) strategy where factors have existing structure</li> </ul>
277 Risk Factors	<ul style="list-style-type: none"> <li>135 interest rate: 17 yield curves</li> <li>22 US risky asset classes: TIPS, Credit, ABS, MBS, CMBS, MUNI</li> <li>10 Global TIPS (Canada, UK and Germany)</li> <li>17 global credit (including Canada)</li> <li>32 FX</li> <li>25 equity (11 Equity indices, 14 equity strategies)</li> <li>36 misc, including VIX, global swap spreads</li> </ul>
Statistical Distributions	<ul style="list-style-type: none"> <li>Allow for large simulated outcomes and asymmetry, e.g., larger downside than upside</li> </ul>
Correlation Structure	<ul style="list-style-type: none"> <li>Allows for contagion, e.g., flight to quality</li> </ul>
Dynamic	<ul style="list-style-type: none"> <li>Performs simulations conditioned on current and forward-looking implied market conditions, re-estimated monthly</li> </ul>
Sensitivity Analysis	<ul style="list-style-type: none"> <li>Multiple sets (4) of simulations (5k)</li> </ul>

Intended to show modeling resource that may be used by portfolio manager.

For illustrative purposes only.

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# Portfolio Performance and Positioning

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# State of Alaska Performance Review

## Performance as of October 31, 2016

	Cumulative	Annualized		TNA
	YTD	1-Year	SI (10/07/2014)	
<b>State of Alaska Tactical Bond (Gross)</b>	<b>11.56</b>	<b>8.48</b>	<b>4.81</b>	<b>\$132.1M</b>
Bloomberg Barclays U.S. Aggregate	4.99	4.37	3.12	
<i>Active Return (Gross)</i>	<i>6.57</i>	<i>4.11</i>	<i>1.69</i>	

Client data shown.

Performance shown is gross of any fees and expenses, including advisory fees, which when deducted will reduce returns. Past performance is no guarantee of future results.



# Tactical Bond Portfolio Positioning

As of October 31, 2016

Characteristics	FIAM Tactical Bond	Bloomberg Barclays U.S. Aggregate	Difference
YTW%	3.68%	2.08%	1.60%
Duration (yrs)	5.01	5.60	(0.59)
<b>Sector Allocation (%)</b>			
US Treasuries	9.75	36.13	(26.38)
TIPS	20.09	0.00	20.09
Gov't Related	2.67	7.84	(5.17)
Corporate	40.18	25.88	14.30
Investment Grade	22.14	25.88	(3.74)
Financials	10.62	8.03	2.59
Industrials	10.03	15.87	(5.84)
Utilities	1.50	1.99	(0.49)
High Yield	18.04	0.00	18.04
Securitized	0.24	29.35	(29.11)
Agency MBS	0.00	27.16	(27.16)
Non-Agency MBS	0.24	0.00	0.24
CMBS	0.00	1.66	(1.66)
Consumer ABS	0.00	0.54	(0.54)
Emerging Market Debt	0.00	0.00	0.00
Leveraged Loans	21.13	0.00	21.13
Global Bond	3.11	0.00	3.11
Cash/Other	2.84	0.80	2.03
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	

Investment Grade Corporate Allocation (%)	FIAM Tactical Bond	Bloomberg Barclays US Aggregate	Difference
Banking	9.88	5.66	4.22
Basic Industry	2.87	0.94	1.94
Energy	3.06	2.43	0.62
Consumer Cyclical	2.23	1.94	0.29
Other	0.00	0.13	(0.13)
Natural Gas	0.00	0.14	(0.14)
Brokerage	0.00	0.22	(0.22)
Finance Companies	0.04	0.27	(0.23)
Electric	1.50	1.82	(0.33)
REITS	0.27	0.63	(0.36)
Transportation	0.07	0.58	(0.51)
Insurance	0.44	1.26	(0.82)
Capital Goods	0.14	1.29	(1.14)
Communications	0.94	2.45	(1.51)
Technology	0.17	2.01	(1.85)
Consumer Non-Cyclical	0.54	4.12	(3.58)
<b>Total</b>	<b>22.14%</b>	<b>25.88%</b>	
<b>Ratings Allocation (%)</b>			
AAA	23.73	71.55	(47.82)
AA	0.36	6.05	(5.69)
A	5.34	13.09	(7.75)
BBB	21.61	9.32	12.29
BB	21.72	0.00	21.72
B	14.72	0.00	14.72
CCC	1.59	0.00	1.59
NR/Other	10.94	0.00	10.94
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	

Representative account information is shown. Supplemental information is complemented by the GIPS Composite Performance Data.

Cash/Other may include cash and derivatives.

# Tactical Bond Portfolio Strategy

## Macroeconomic view as of November 2016

### Post-Election Thoughts

- President-Elect Trump expected to move quickly on passing fiscal stimulus, lowering the tax rate and simplifying the tax code. Paying for fiscal stimulus will likely require debt issuance.
- Implementation of these measures will likely create a surge in economic activity along with higher inflation and a steeper yield curve.

### Central Banks

- Market expectations of a Fed rate hike in December are essentially priced in. The potential for multiple rate hikes in 2017 is high.
- ECB accommodation continues. December meeting will be important for scope; no sign of tapering at this stage, especially as European inflation wanes.
- BoJ in the 'new' world of targeting 10 year yield for JGB's. Continued accommodation in the face of massive population decline.
- BoE Carney will stay one more year; a thought leader in terms of management of crisis, and how to shore up bank capital and liquidity. His actions have not been missed by other Central Bankers.

### U.S. Economy

- Positive economic growth continues led by a consumer balance sheet that is no longer deleveraging as well as expectations for gov't stimulus in 2017
- Corporate capital spending remains subdued in many sectors. A hangover of the debt fuelled spending post 2010 and subsequent retrenchment of excesses post 2015 market and China volatility. Could this sector benefit from repatriation of "trapped" overseas capital?
- Housing prices continue to increase at low single digit rates. No sign of overbought market at this stage; a positive for bank balance sheets and consumers.

### Global Economy

- Global interest rates at extremely low (or negative) levels. EM country rates have also declined to very low levels.
- Japan population decline (about 300,000 this year) is an issue – excess of liquid investment vs spending which is affecting all country borrowing rates. This population decline. Global liquidity will be influenced by Japan actions.
- European banking system fears are not a near term event. While European banks will issue significant AT1 and Coco debt this year, this initiative may be aided if the ECB provides down in capital debt securities with some level of priority in bankruptcy. Watch Italian referendum for possible increase in risk
- UK banking system benefiting from BOE tinkering – countercyclical capital buffer reduced to 0%; new 100B pound term funding scheme.
- China economy is stable but is a lesser contributor to future global GDP growth. Rapidly aging population will be a headwind to China growth (by 2025 China demographics will approach US aging).
- China's currency has devalued significantly. Less risk on this front
- Commodity linked country risk has declined materially with bounce in many products. However, the future growth of these countries will be slowed by limited investment in new fields (copper, iron, oil etc) and only incremental demand growth.

### Capital Markets

- Risk assets remain well bid – particularly with the back up of interest rates.
- Market volatility (VIX) has trouble crossing 20% with so much Central Bank accommodation and still strong savings rates globally. This keeps tail risk of major stock meltdown at bay.
- ECB and BoJ buying risk assets, supportive for these markets.

Source: Fidelity Investments. For illustrative purposes only.

# Tactical Bond Portfolio Strategy, continued

## Portfolio positioning as of November 2016

### Risk and Return Targets

- Yield Target: 4.00%
- Duration Target: about 5 years (-0.8 years versus the Bloomberg Barclays U.S. Aggregate Bond Index)
- Spread-Duration Beta Target: In line with the Bloomberg Barclays U.S. Aggregate Bond Index
- Risk to Risk-Free Asset Ratio: 60%/40%.

### Sector Strategy

- Investment Grade
  - Very large exposure to TIPs, laddered between 3's, 10's, and 30's, which provide the portfolio with inexpensive insurance in the event that easy global monetary policy begins to bleed into producer prices and consumer prices. Tail risk hedge.
  - Favor 4-8 year credit due to credit curve roll down and spread tightening potential.
  - Constructive on energy and metals/mining but reducing overweight on significant outperformance.
  - Maintain overweight in Banks, with focus on U.S. banks and selected names in U.K. and continental Europe.
- High Yield
  - Overweight but reducing (down 10% from peak).
  - Expect defaults will continue to decline supporting prices and spreads; but upside less than just 6-months ago (much in price).
- Leveraged Loans
  - Overweight. Currently favoring over High Yield due to floating-rate nature
  - Regulatory change in December will have important impact but should be supportive of credit quality and lead to some spread tightening.
  - Fed hikes would soon change Libor floor, leading to higher yield resets (useful if interest rates try to rise).
- Emerging Market Debt
  - Continue to be opportunistic. Prefer investment grade emerging market credits or names that are too big to fail in important countries.
  - Sector highly correlated to High Yield sector, particularly in stress scenarios. Consequently, careful about too much exposure.
- Securitized
  - Zero weight in MBS. Very tight; no price upside – rather own US treasuries
  - Non-Agency and CMBS. Opportunistic, bond by bond. Universe of holdings is getting smaller as issue flags and spreads tight versus historic.
- Global
  - Modest overweight to Mexican peso and Euro on valuation.

Source: Fidelity Investments. Target Yield is presented gross of fees and expenses, including advisory fees, which when deducted will reduce returns. Although FIAM believes it has a reasonable basis for any target yield, there can be no assurance that actual results will be comparable. Actual results will depend on market conditions over a full market cycle and any developments that may affect these investments and will be reduced by the deduction of any fees and expenses associated with the investment. For illustrative purposes only.

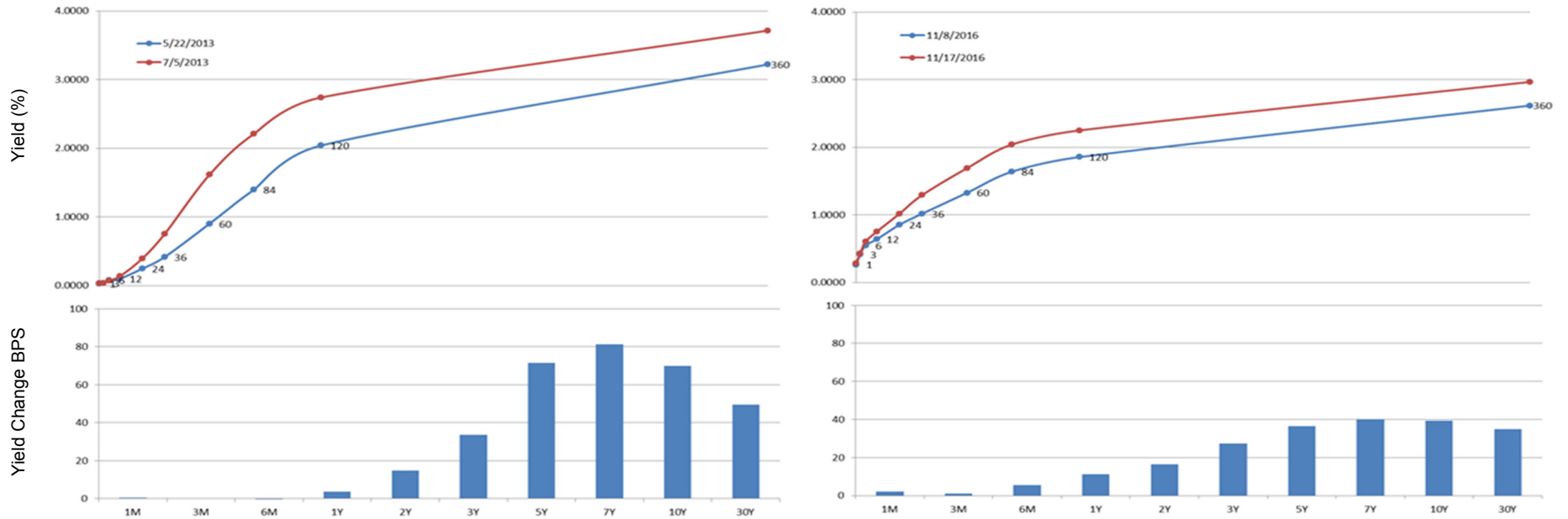


# Macro Update

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# Putting the Rate Moves into Context

## Yield Curves and Differences in Each Node: Half the Move of Taper Tantrum in Less than Two Weeks

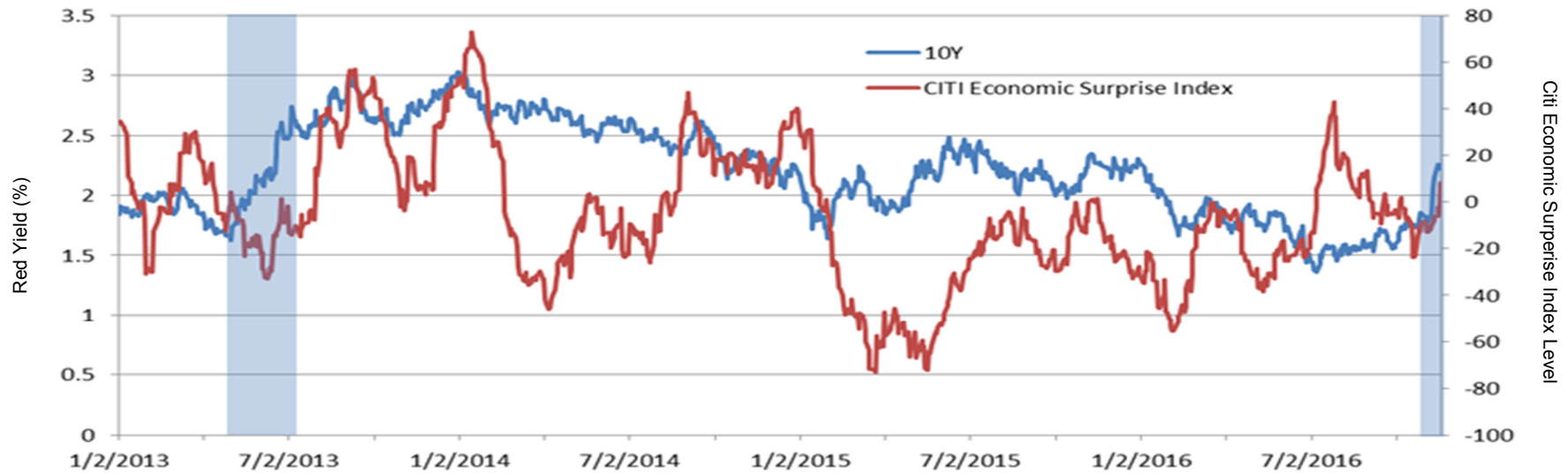


Source: Bloomberg Barclays.



# Treasuries also Reacting to More Positive Data

SERIES OF ABOVE EXPECTATION ECONOMIC REPORTS SINCE NOV 10 (COINCIDENT WITH TRUMP ELECTION)

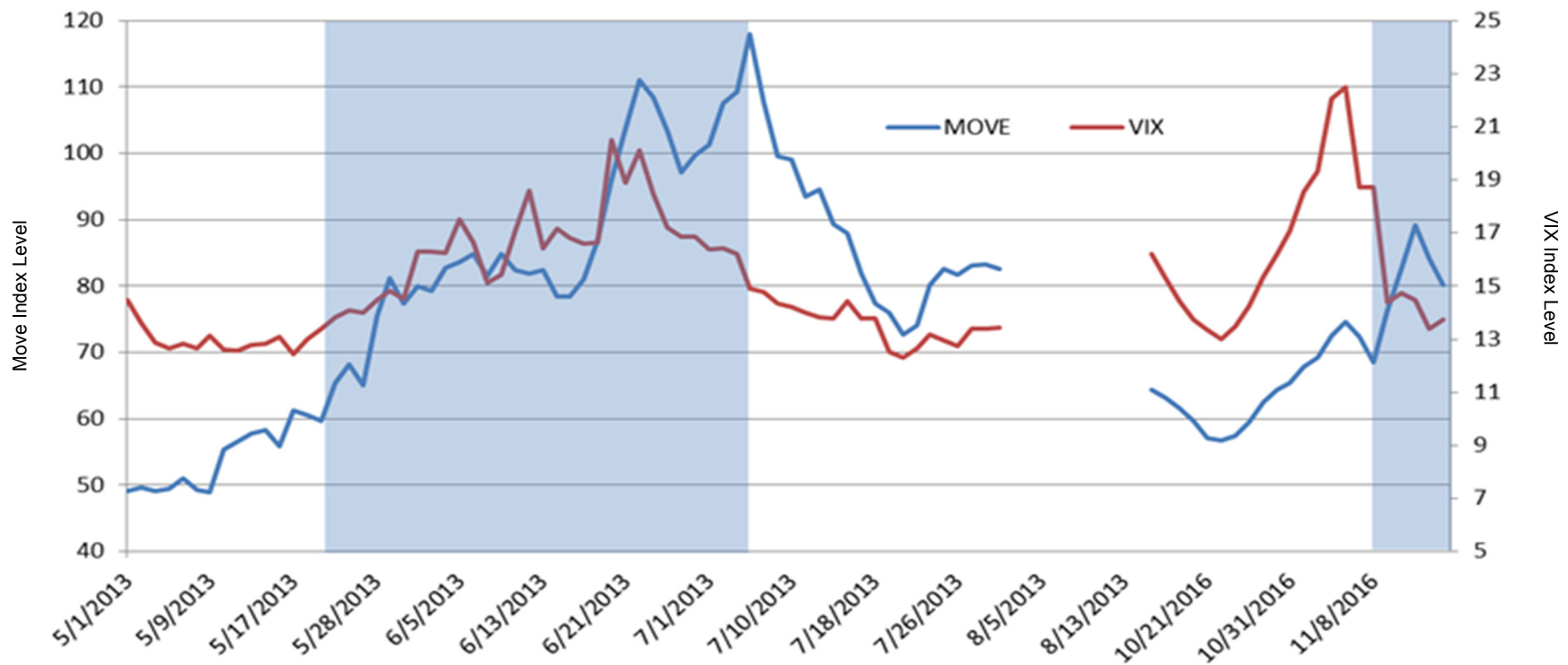


Release Date	Event	Period	Survey Median	Actual	Prior
10-Nov	Initial Jobless claims	29-Oct	260k	254k	265k
11-Nov	U. of Mich. Sentiment	Nov	87.9	91.6	87.2
15-Nov	Import Price index	Oct	0.4%	0.5%	0.4%
15-Nov	Retail Sales Advance	Oct	0.6%	0.8%	0.6%
15-Nov	Retail Sales ex Auto	Oct	0.5%	0.8%	0.5%
16-Nov	PPI final demand	Oct	0.3%	0.0%	0.3%
17-Nov	Housing starts	Oct	1156k	1323k	1047k
17-Nov	CPI MoM	Oct	0.4%	0.4%	0.3%
17-Nov	Initial Jobless claims	12-Nov	257k	235k	254k

Source: Bloomberg Barclays.

# MOVE Index Measures The Cost of Protection In Fixed Income, Compared to VIX

- In 2013, MOV/VIX remained positively correlated, cost of protection increased both markets
- Post Trump, MOV/VIX decoupled, cost of protection higher in rates and lower in rates

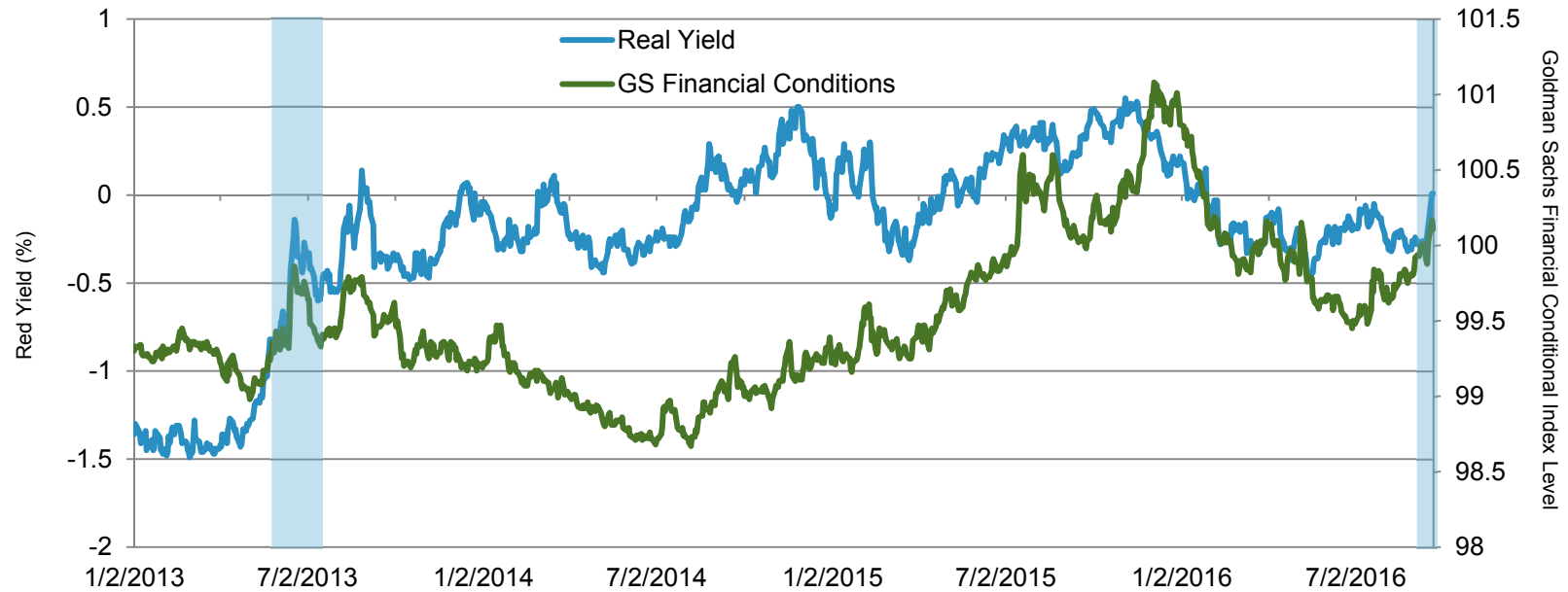


Source: Bloomberg Barclays.



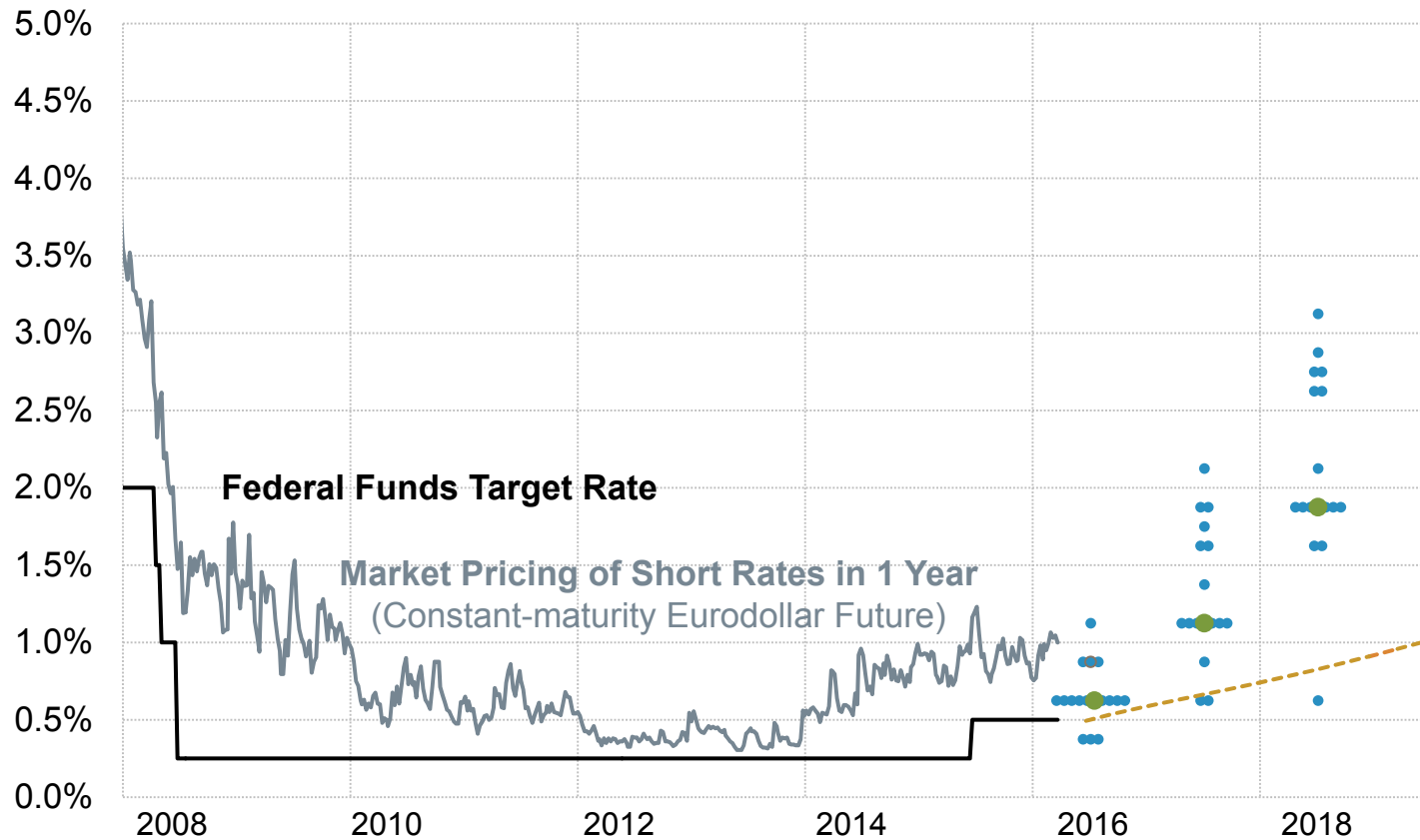
# Real Yields up at 0.0 to 0.5 %

**SPEED BUMP HAS OCCURRED OVER THE LAST FEW YEARS  
(ARE FINANCIAL CONDITIONS COINCIDENT?)**



Source: Bloomberg Barclays.

# Markets Now Pricing In Slow Pace of Rate Hikes



## September 2016 Federal Reserve Projections of Fed Funds Rate

Median Fed Funds Rate Projection

Market Expectations For Fed Funds Rate

Source: Sources: Federal Reserve, U.S. Treasury, Bloomberg and FMR Research as of 9/21/16.

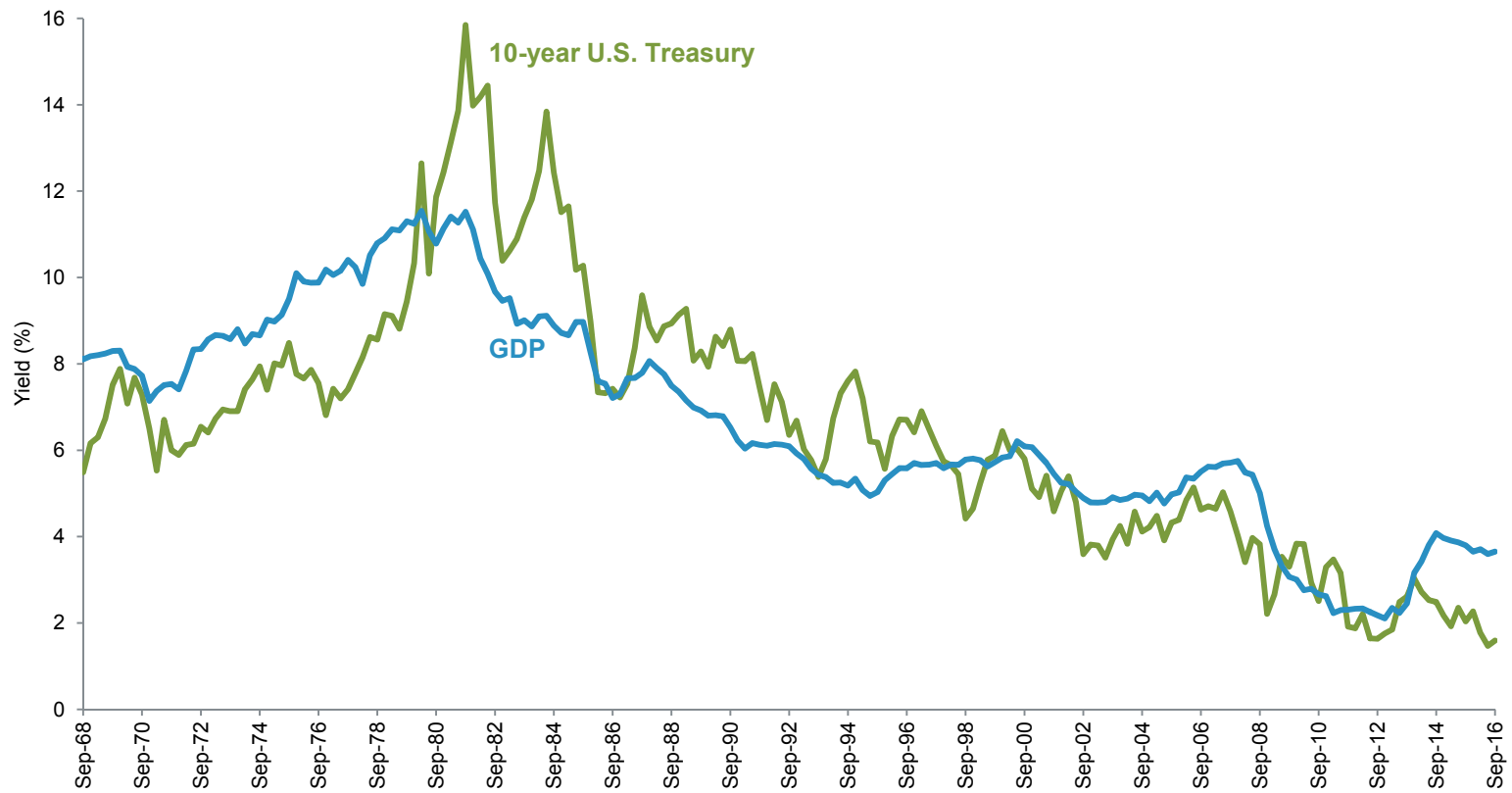
# Financial Conditions Have Tightened



Source: GS, Federal Reserve as of 10/17/16.

# GDP and 10-Year U.S. Treasury

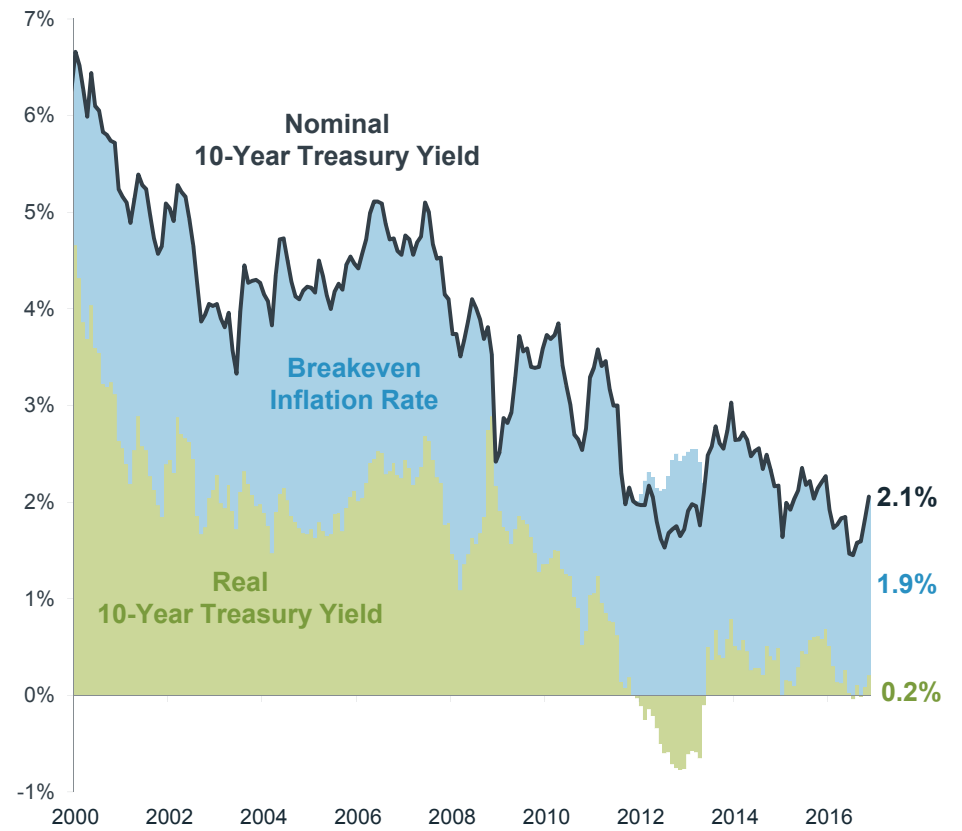
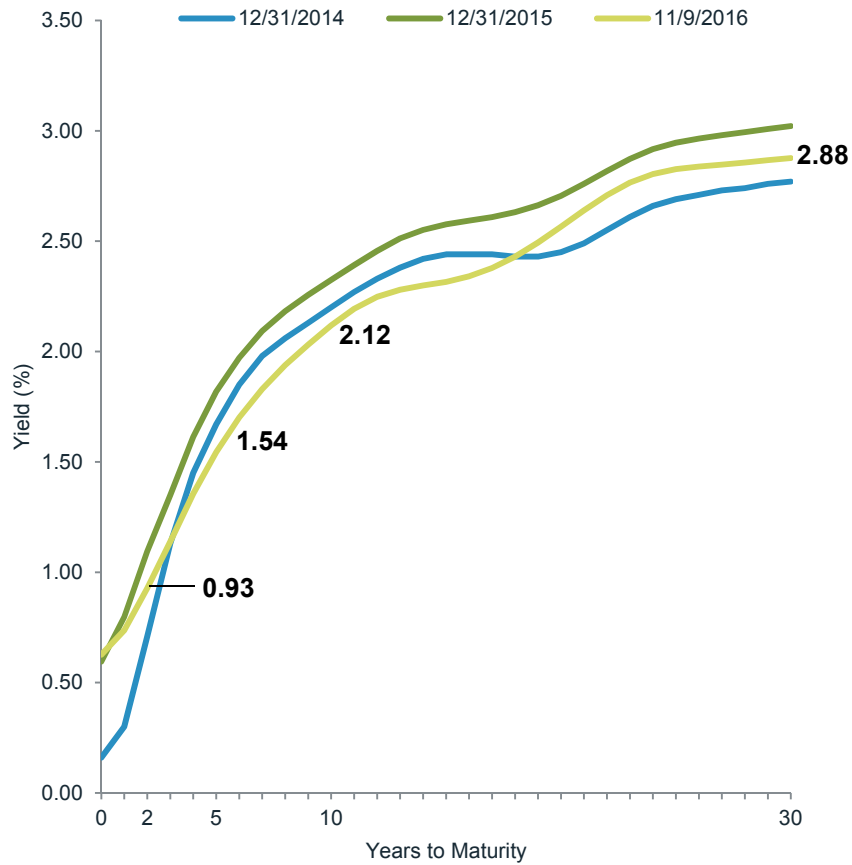
Highly correlated



Source: Bloomberg as of 9/30/16.

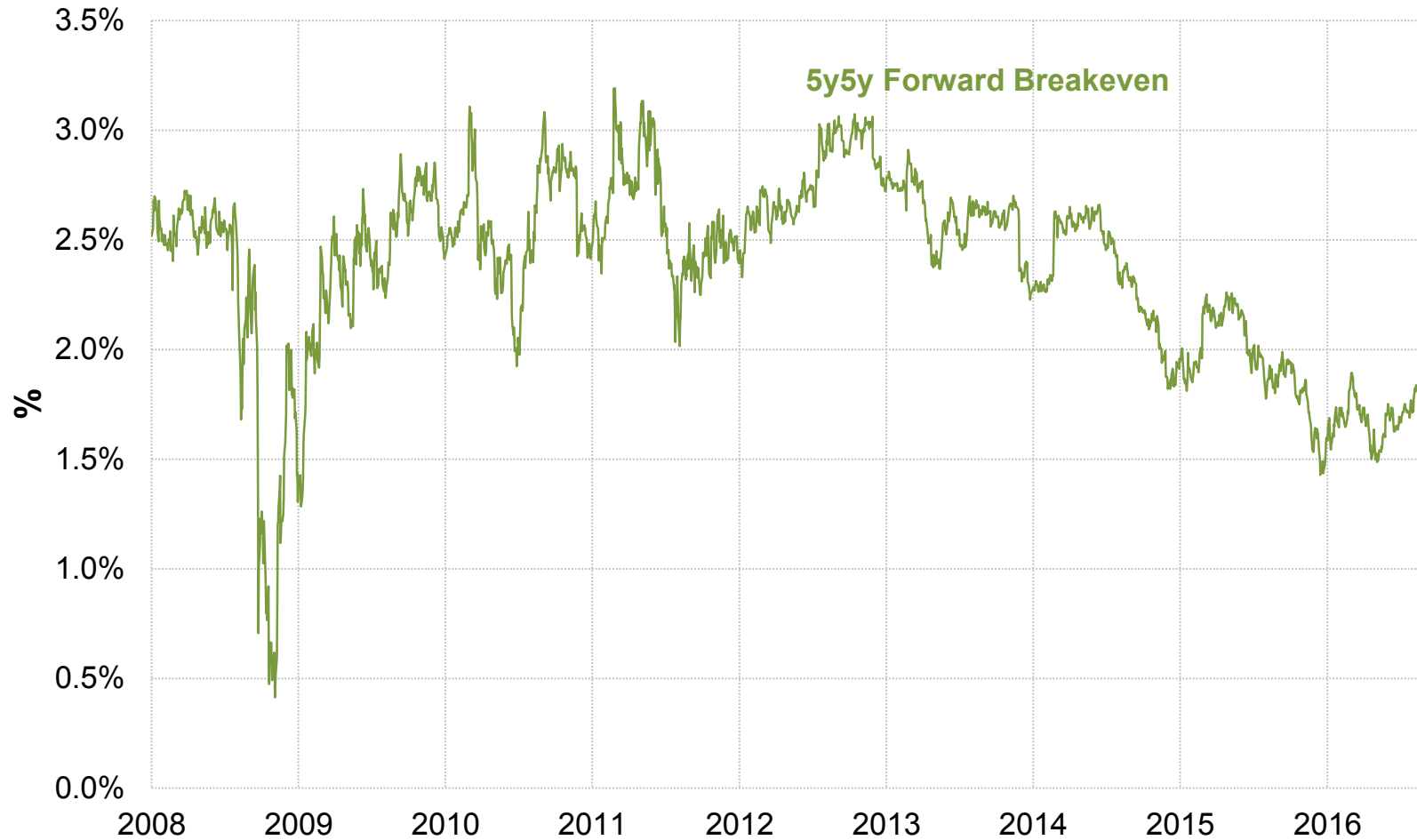
GDP data represents annualized 20-quarter percent change.

# Interest Rate Environment



Source: (Left) TradeNet, Fidelity Investments as of 11/09/2016; (Right) Bloomberg as of 11/09/16.  
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# U.S. Inflation Expectations Are at the Low End of Their 5-Year Range

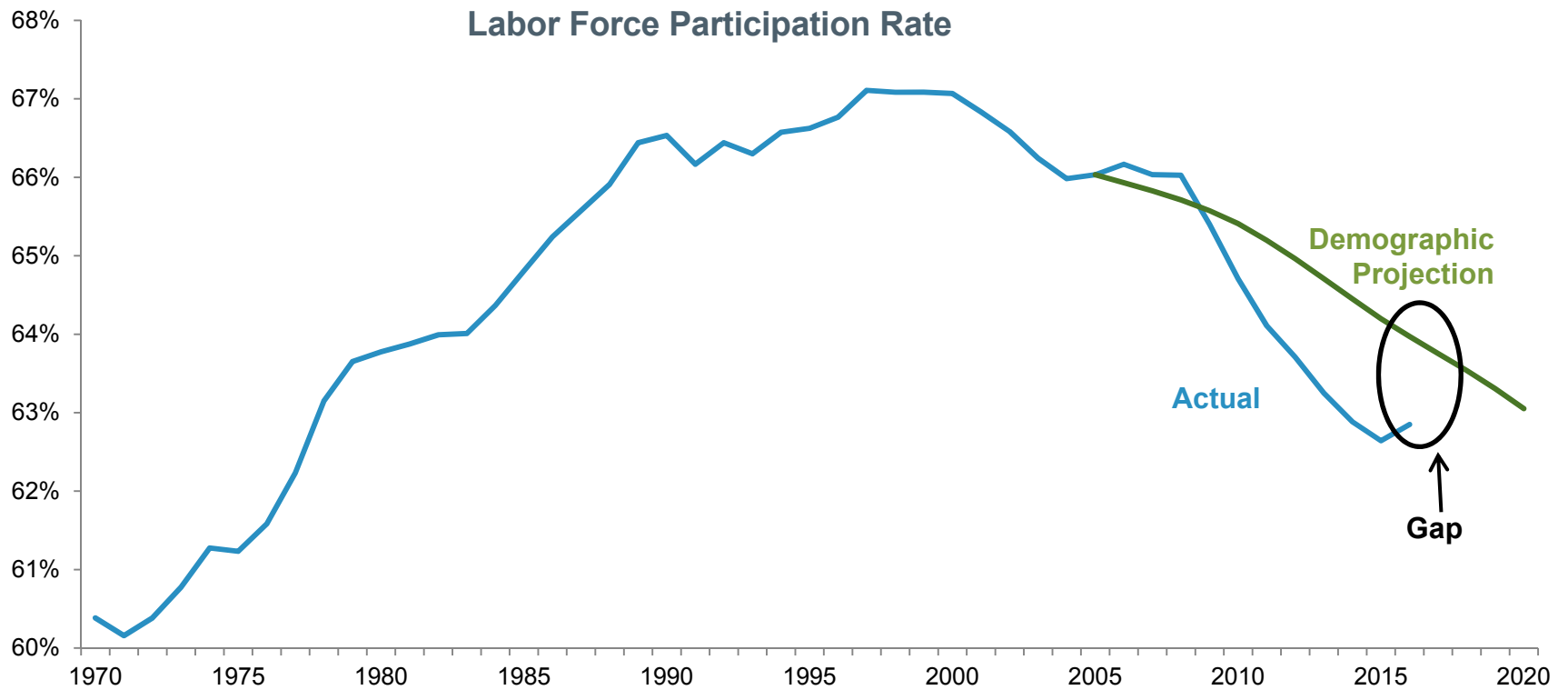


Source: Federal Reserve as of 10/31/16.

# The Drop in the Participation Rate is Caused Mostly by Aging Demographics

## Could wage acceleration be looming?

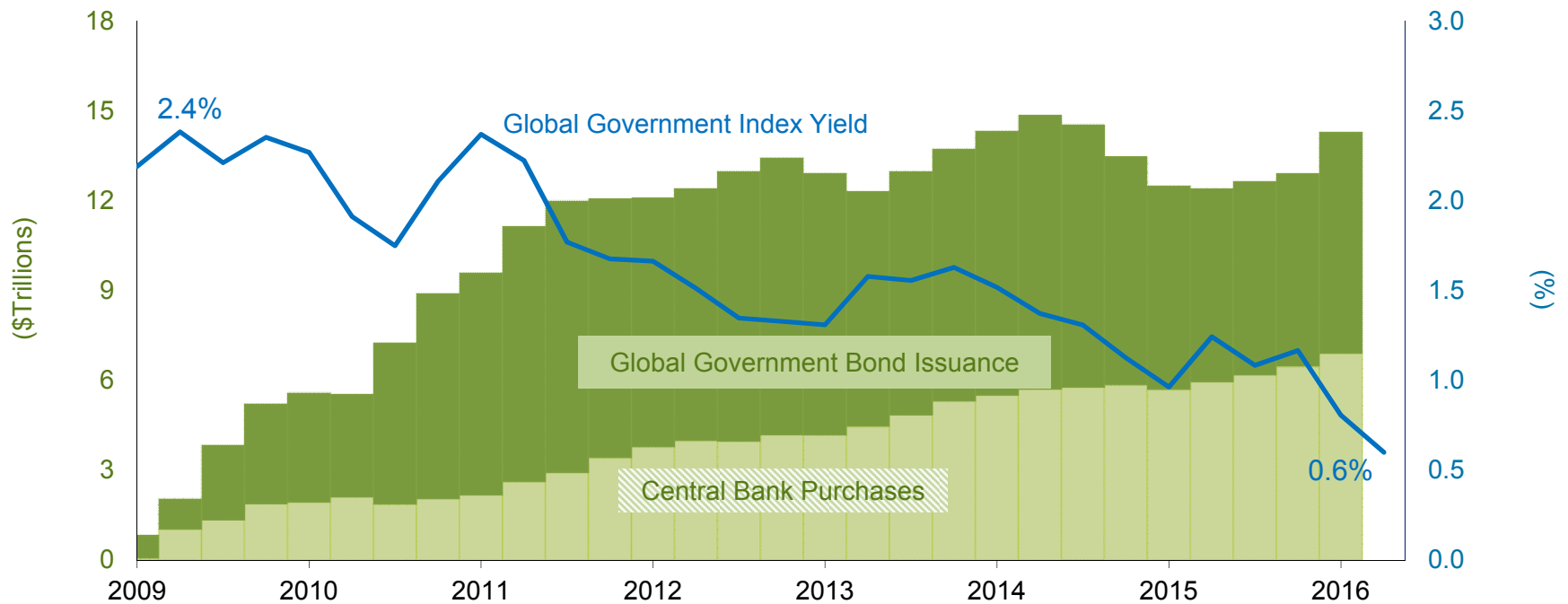
Annual Absolute Return (Average)



Source: Demographic projection: Fidelity calculation. Source: Census Bureau, Bureau of Labor Statistics, Haver Analytics, Fidelity Investments (AART), as of 4/30/16.

# Global Government Debts Rising and Yields Are Falling

## Cumulative Issuance, Purchases, and Yields



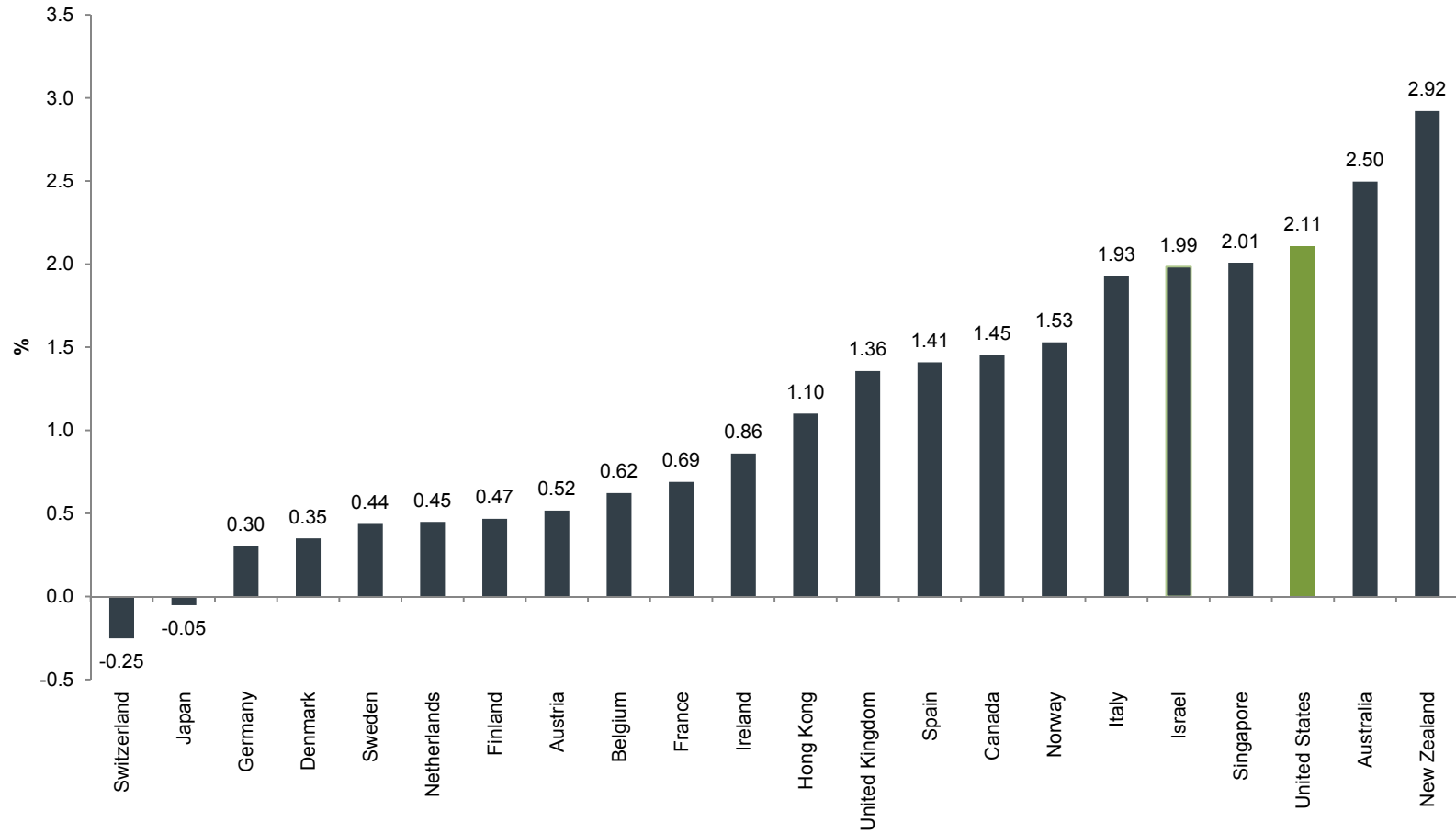
Source: Bloomberg Barclays Global Treasury Index as of 6/30/16



# Everything Is Relative

U.S. Rates are not low relative to other high-quality liquid markets

### 10-Year Yield – Government Debt



Source: Bloomberg. Data retrieved on 11/10/16.

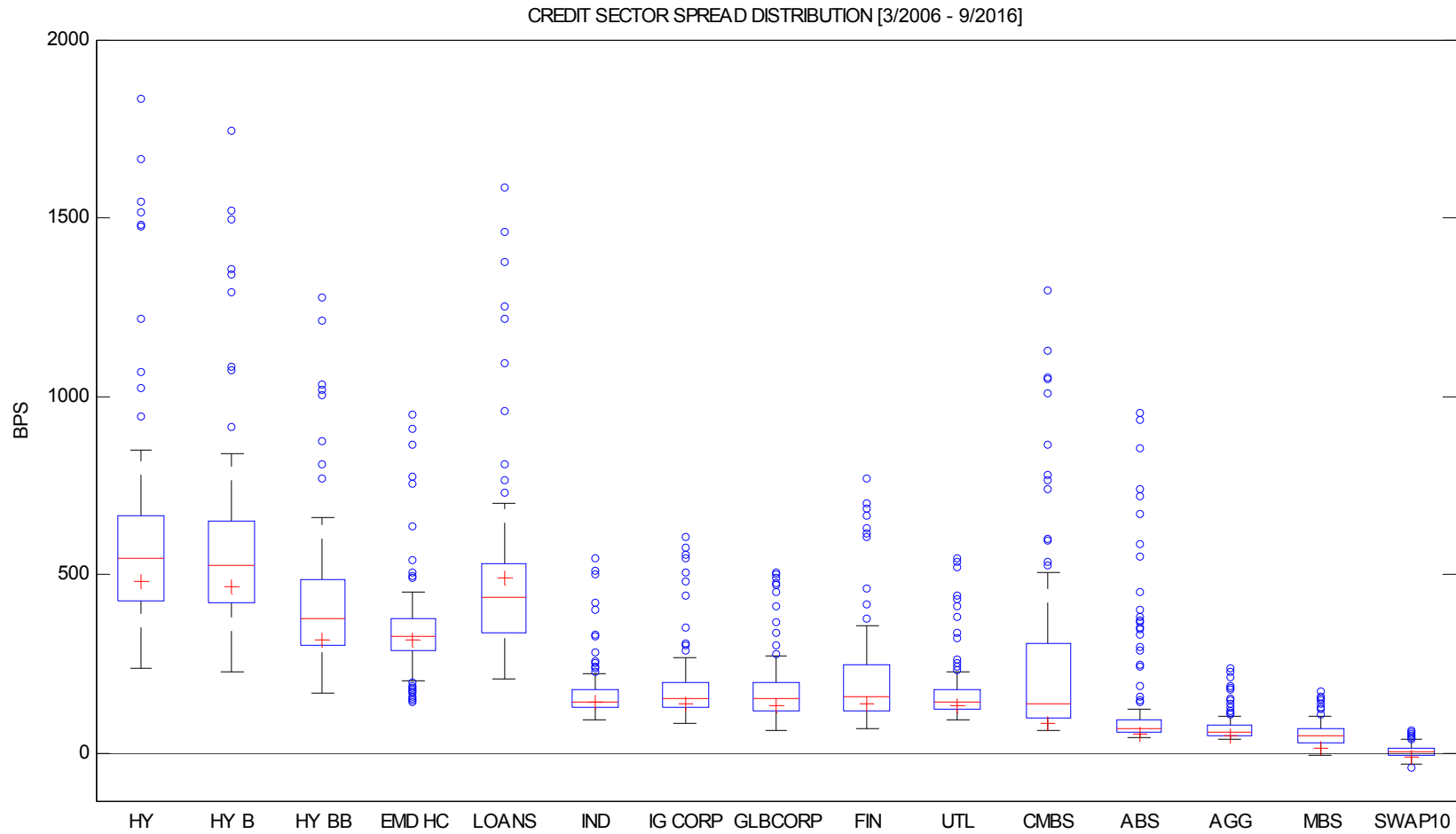


# Forecaster Expectations: Interest Rates are Always Going Up

**Rolling 5-quarter median forecasts of 10-year note yields in the Philadelphia fed's quarterly survey of professional forecasters: 2000-2016**  
*Successive quarterly forecasts versus the actual trend in 10-year note yields*



# Spread Markets Have Recovered



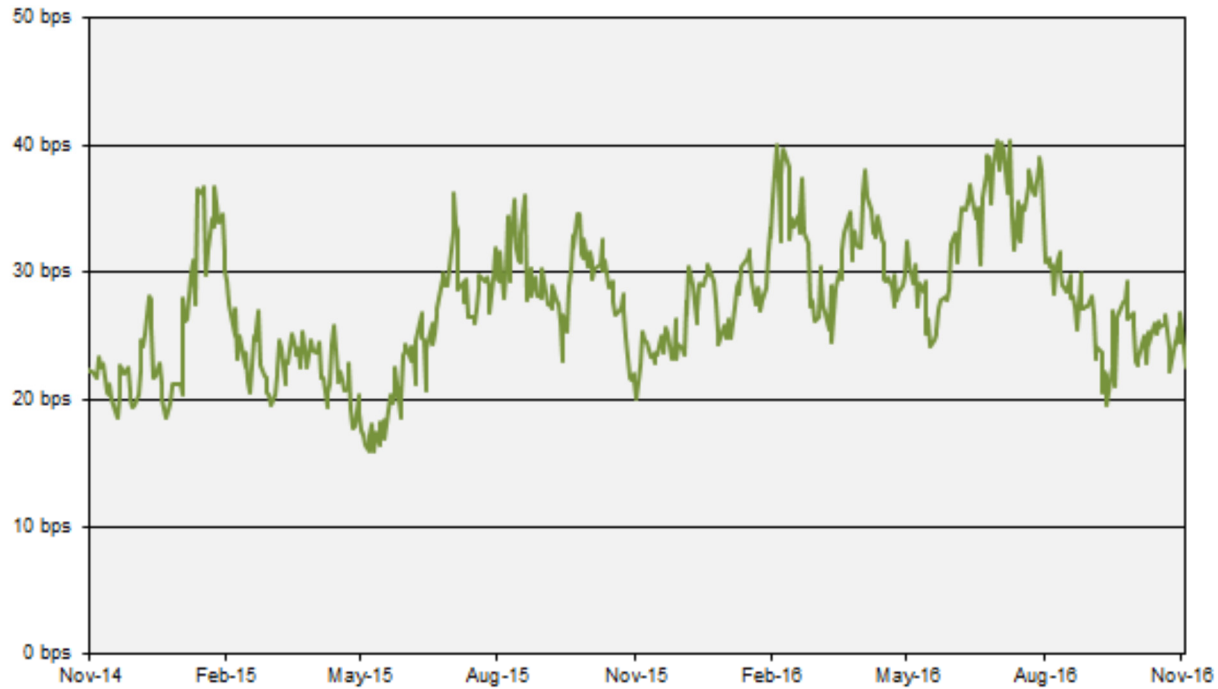
Source: FMR as of 9/30/16.

Intended to show modeling resource that may be used by portfolio manager.

For illustrative purposes only .

# MBS Spreads Relatively Tight

## Fixed Rate MBS Treasury Option-Adjusted Spread

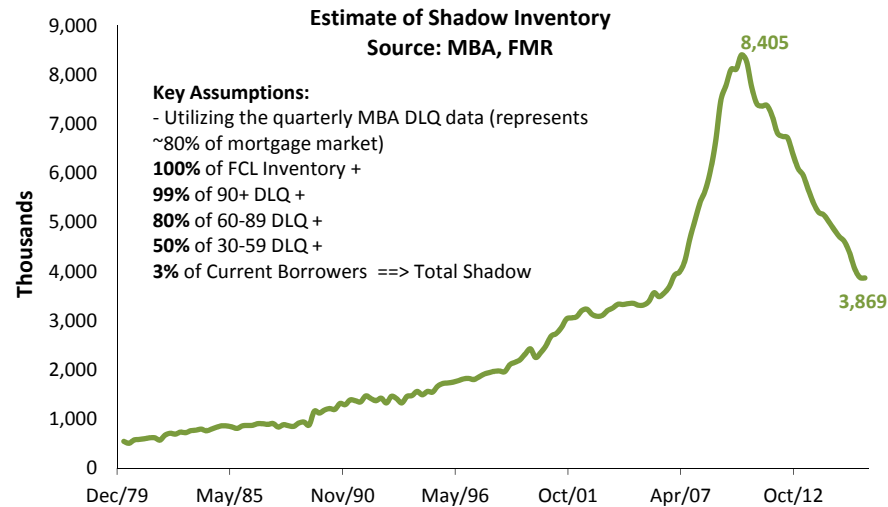
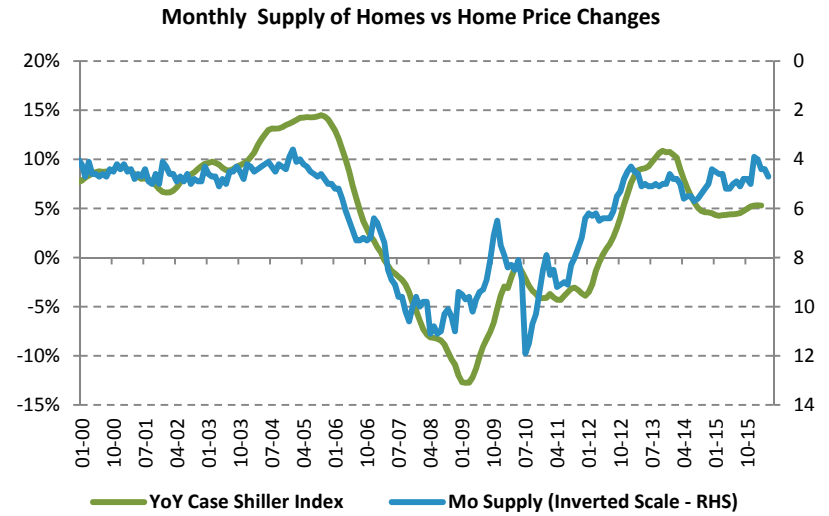
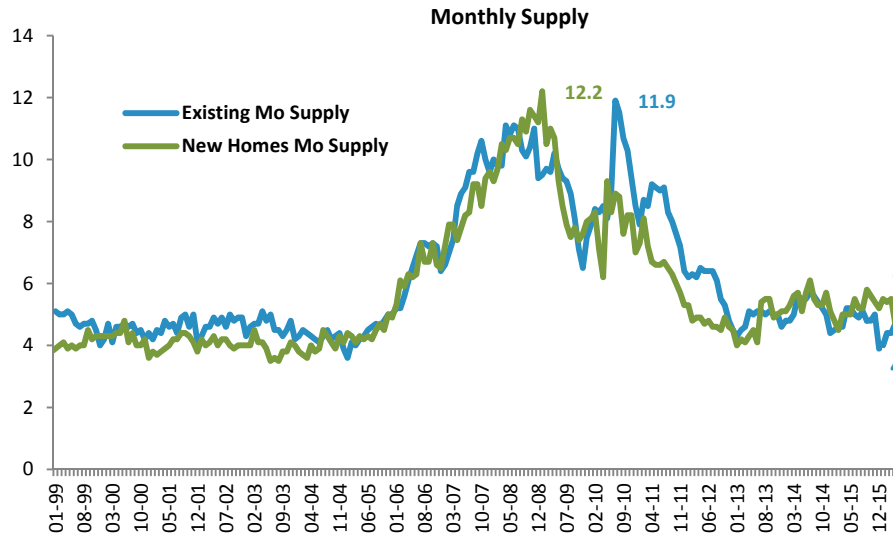


Note: MBS = Mortgage Backed Securities.

Source: Bloomberg Barclays as of 11/7/16

# Housing Outlook - Stable

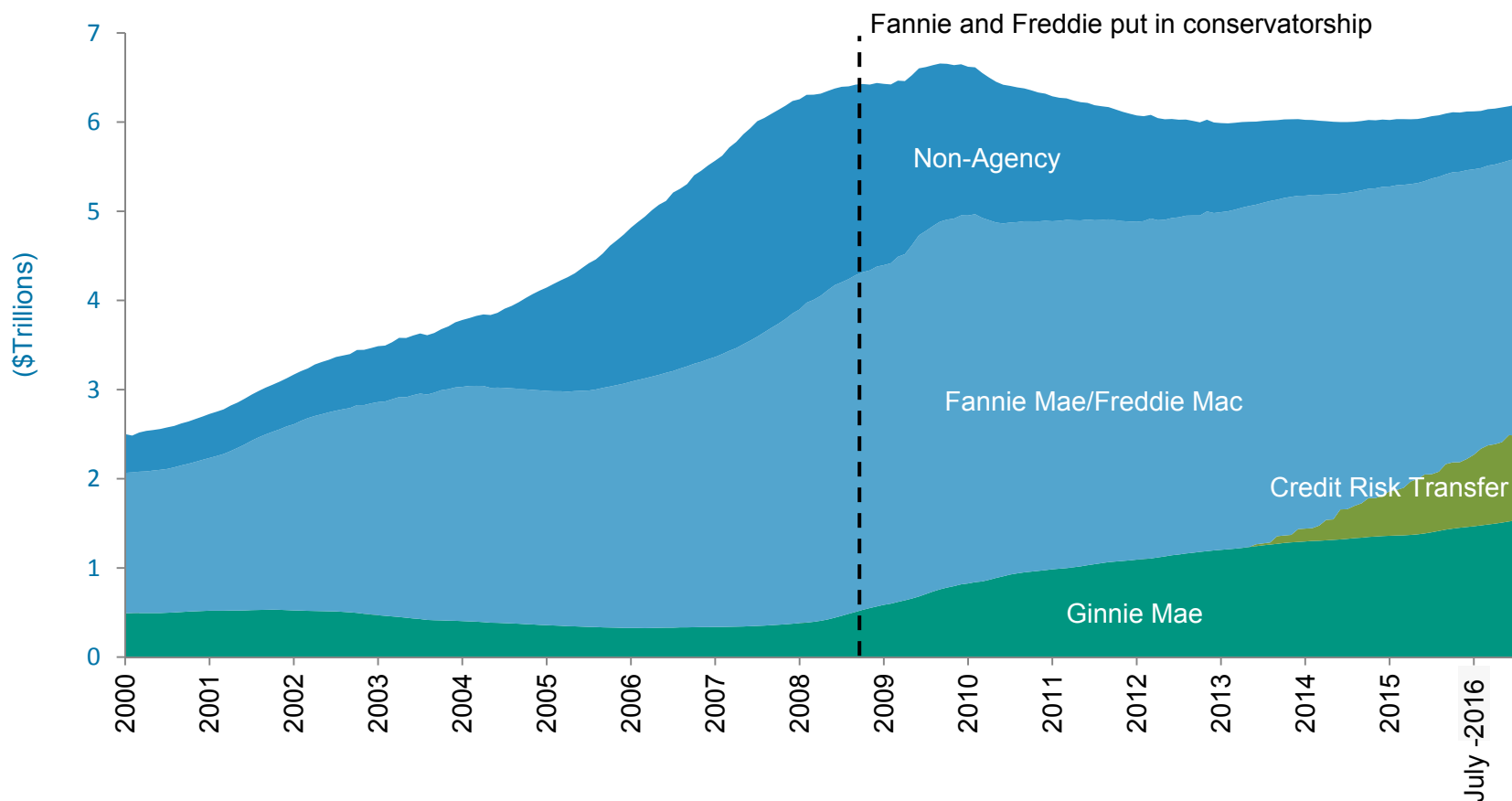
## This is not the housing market of 2008



Source: National Association of Realtors, Census Bureau, Mortgage Bankers Association. As of 5/31/16.

# Agency MBS Market is Displacing Non-Agency Market

## MBS Par Amount Outstanding



Note: MBS = Mortgage Backed Securities.

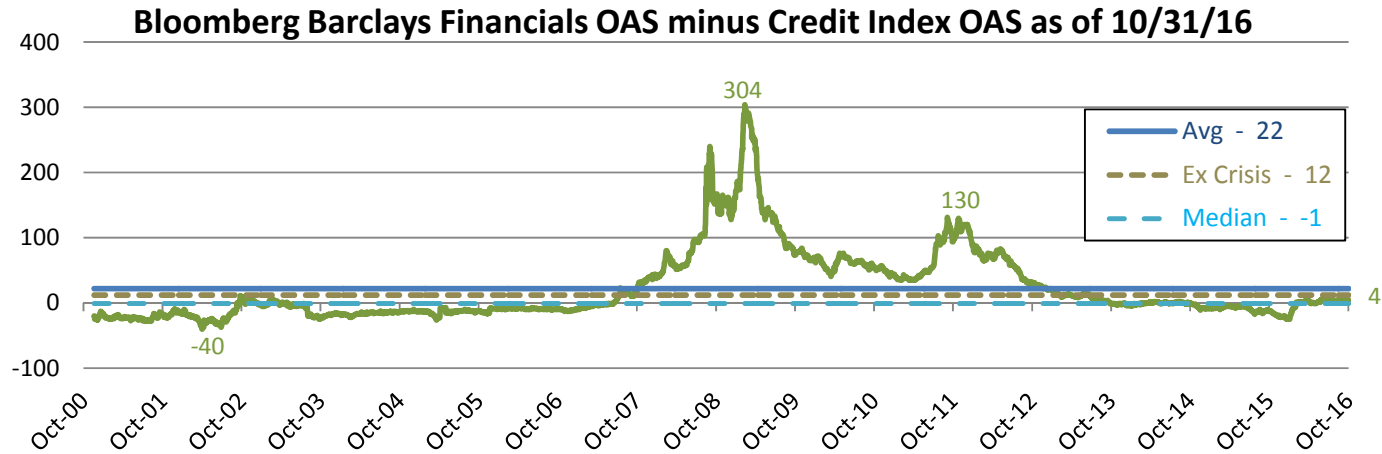
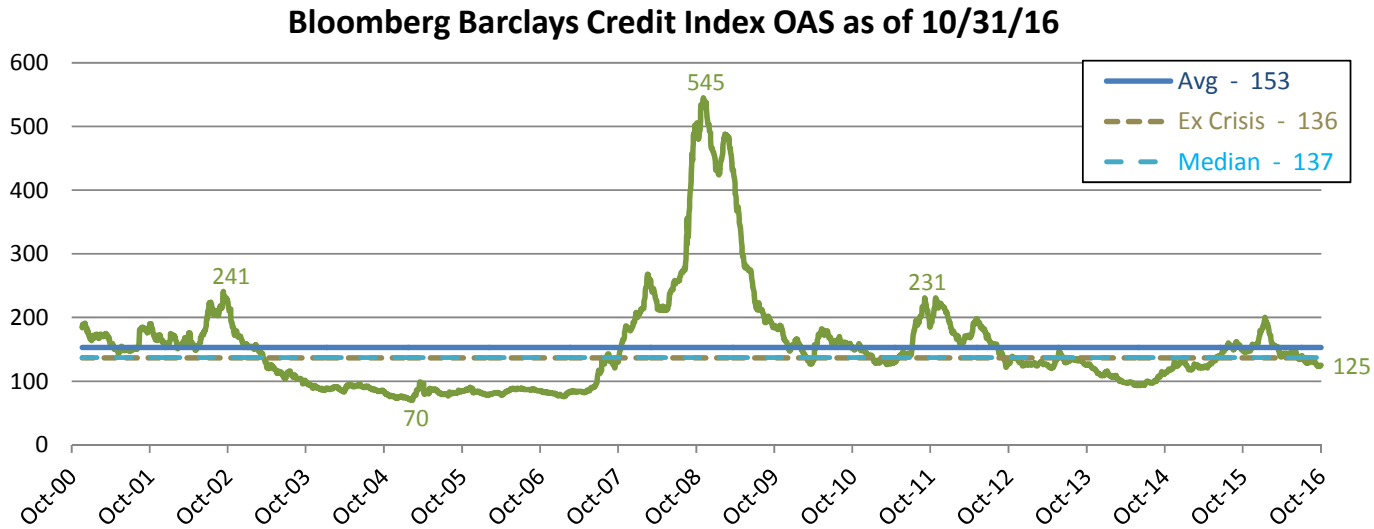
Sources: FMR, eMBS and Bank of America as of 7/31/16

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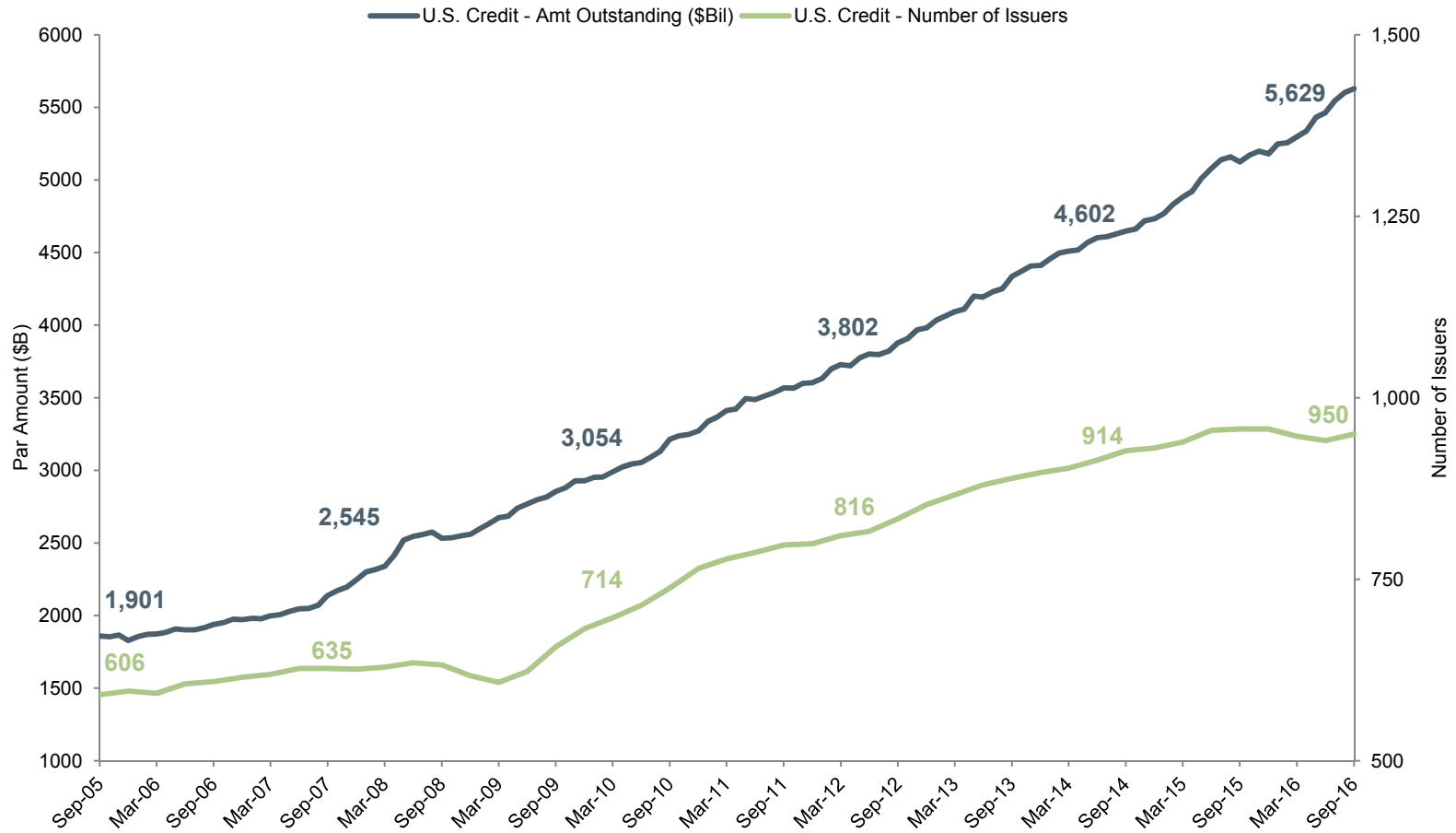


# Credit Option-Adjusted Spreads



Source: Bloomberg Barclays.

# Size of the Credit Market Has Grown





































Source: Bloomberg Barclays as of 9/30/16.





# Expected M&A-related New Issue Supply

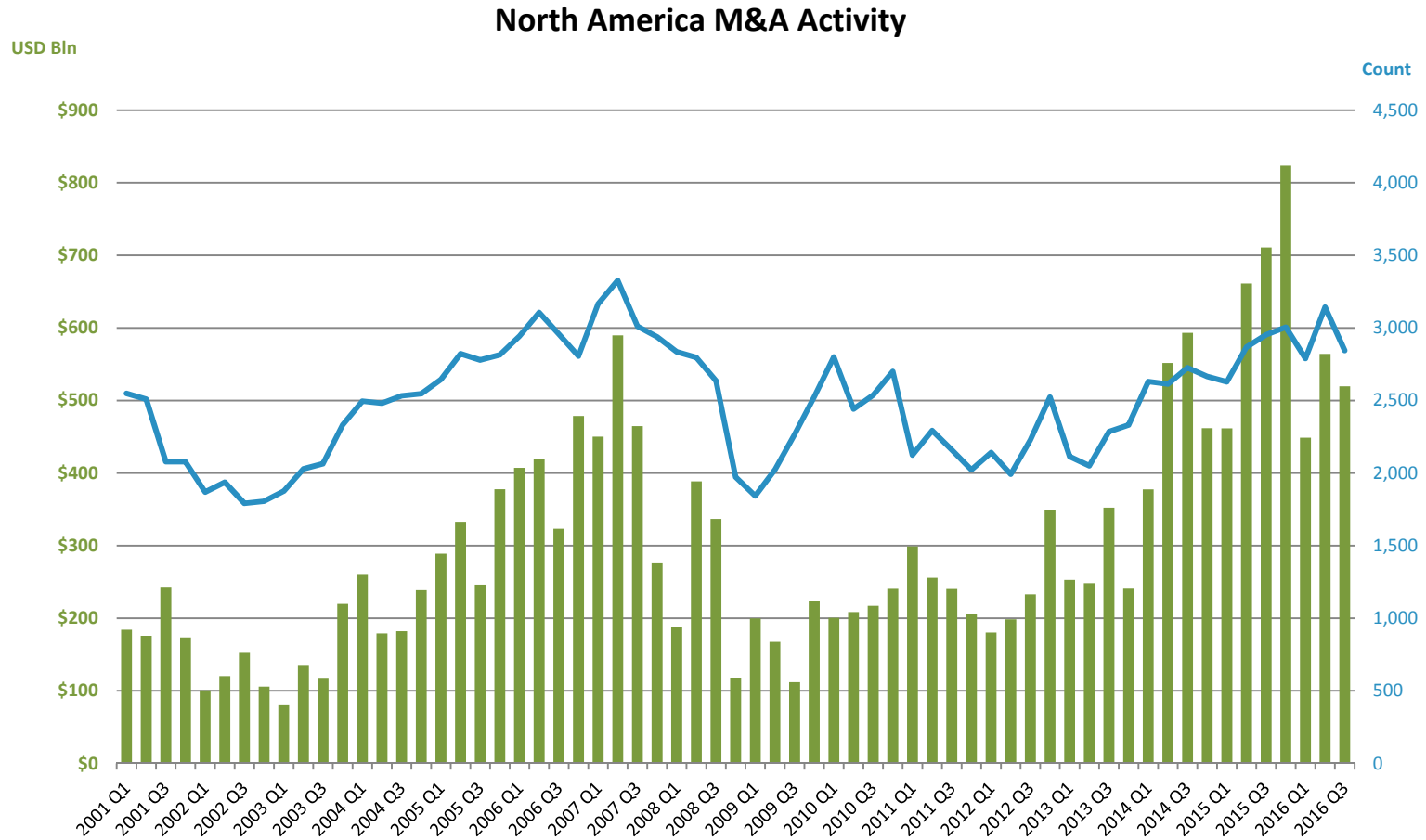
Announcement Date	Acquirer	Current Ratings	Target	Expected Debt	Expected M&A Closing
10/22/16	 AT&T	Baa1/BBB+	 Time Warner	\$30bn bridge (IG debt TBD)	YE 2017
05/18/16	 BAYER	A3/A-	 MONSANTO	\$38bn	H2 2017
07/24/15	 Anthem.	Baa2/A	 Cigna.	\$15bn - \$20bn	H2 2016
10/21/16	 BRITISH AMERICAN TOBACCO	A3/A-	 RAK Rak American	\$20bn cash (a) component	TBD
10/27/16	 QUALCOMM	A1/A+	 NXP	\$13.6bn bridge (IG debt TBD)	YE 2017
07/29/16	 NEXTERA ENERGY	Baa1/A-	 Energy Future Holdings	\$9.5bn	Q1 2017
02/01/16	 Abbott A Promise for Life	A2/A+	 Alere	\$9bn loan (IG debt TBD)	TBD
04/28/16			 ST. JUDE MEDICAL	\$17.2bn loan (IG debt TBD)	Q4 2016
05/31/16	 GREEN PLAINS ENERGY	Baa2/BBB+	 Westar Energy.	\$8bn loan (IG debt TBD)	Q2 2017
07/26/16	 ANALOG DEVICES	A3/BBB	 LINEAR TECHNOLOGY	\$7.3bn	Q2 2017
03/21/16	 SHERWIN WILLIAMS.	A3/A	 valspar paint*	c. \$6-8bn	Q1 2017
04/04/16	 Alaska Air Group	NR/BBB-	 Virgin america	\$2bn	Q4 2016
10/23/16	 Rockwell Collins	A3/A-	 B/E AEROSPACE	\$6.4bn cash component	H1 2017
05/24/16	 Hewlett Packard Enterprise	Baa2/BBB	 CSC	\$3.6bn	Q1 2017
03/02/16	 MCKESSON	Baa2/BBB+	 Rexall	\$2.2bn	H2 2016
10/12/16	 Stanley Black & Decker	Baa1/A	Newell Brands-Tools Business	\$1.3bn	H1 2017
10/24/16	 BUCKEYE PARTNERS, L.P.	Baa3/BBB-	 vtti	~\$550mm	Q1 2017
10/24/16	 TD Ameritrade	A3/A	 Scottrade	\$400mm	Q3 2017

(a) Currently no agreement, only a proposed offer.

Source: Deutsche Bank, Informa, Company press releases.

# U.S Industrial Event Risk Still an Issue

## Regulatory overhang presents some uncertainty



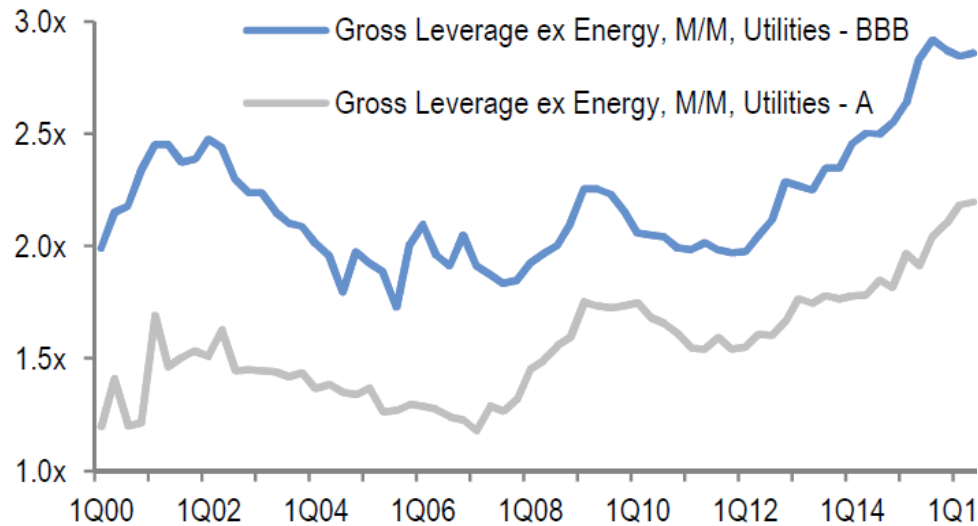
USD = U.S. Dollar

Source: Bloomberg and Fidelity Investments as of 9/30/16



# Lower Rated Companies (ex commodities and utilities) Have Been Reducing Leverage

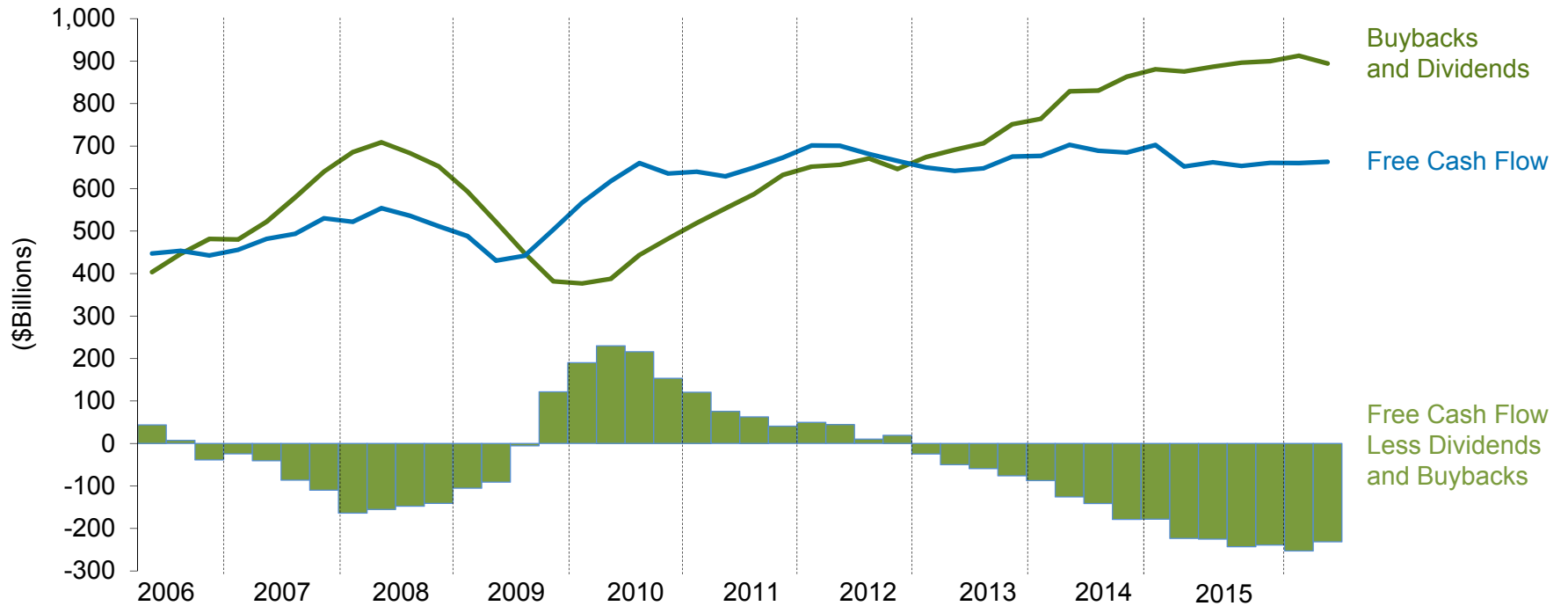
**The leverage of BBB companies was flat y/y while it rose for A-rated companies**



Source: JP Morgan as of 6/30/16

# Shareholder Payouts Exceed Cash Flow

## Cumulative Deficit Over \$2 Trillion Since 2013



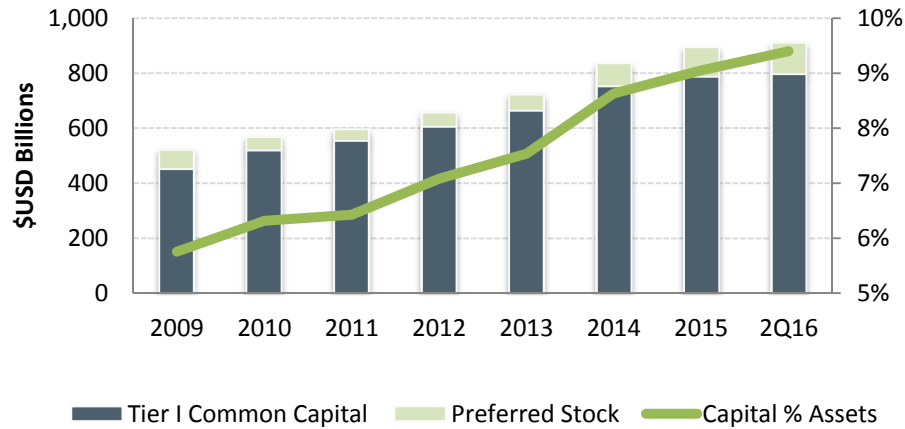
Notes: Includes all industrial companies in the Bloomberg Barclays U.S. Credit Index. Free Cash Flow = Cash flow from operations less capital expenditures.

Sources: FMR, Factset and Company Financials as of 6/30/16

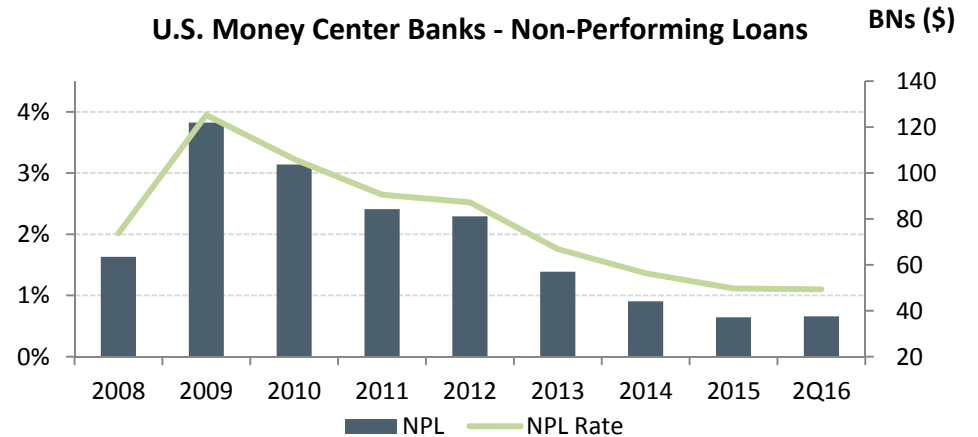
# Financials Are Now Stronger Credits

## Safer balance sheets and more robust oversight

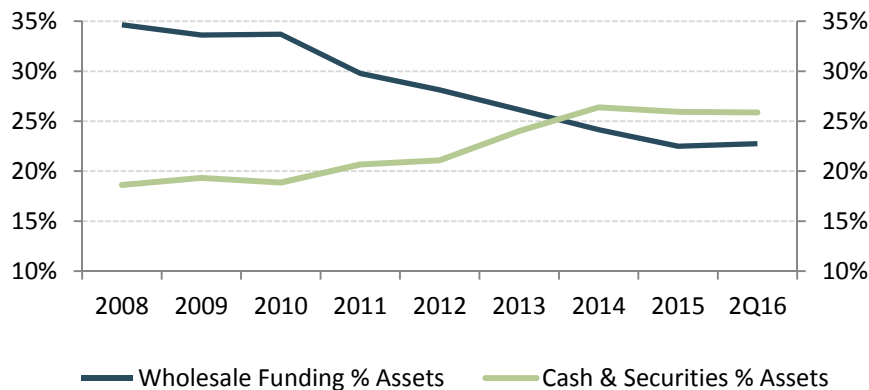
U.S. Money Center Banks - Capital Build



U.S. Money Center Banks - Non-Performing Loans



U.S. Money Center Banks - Liquidity and Funding

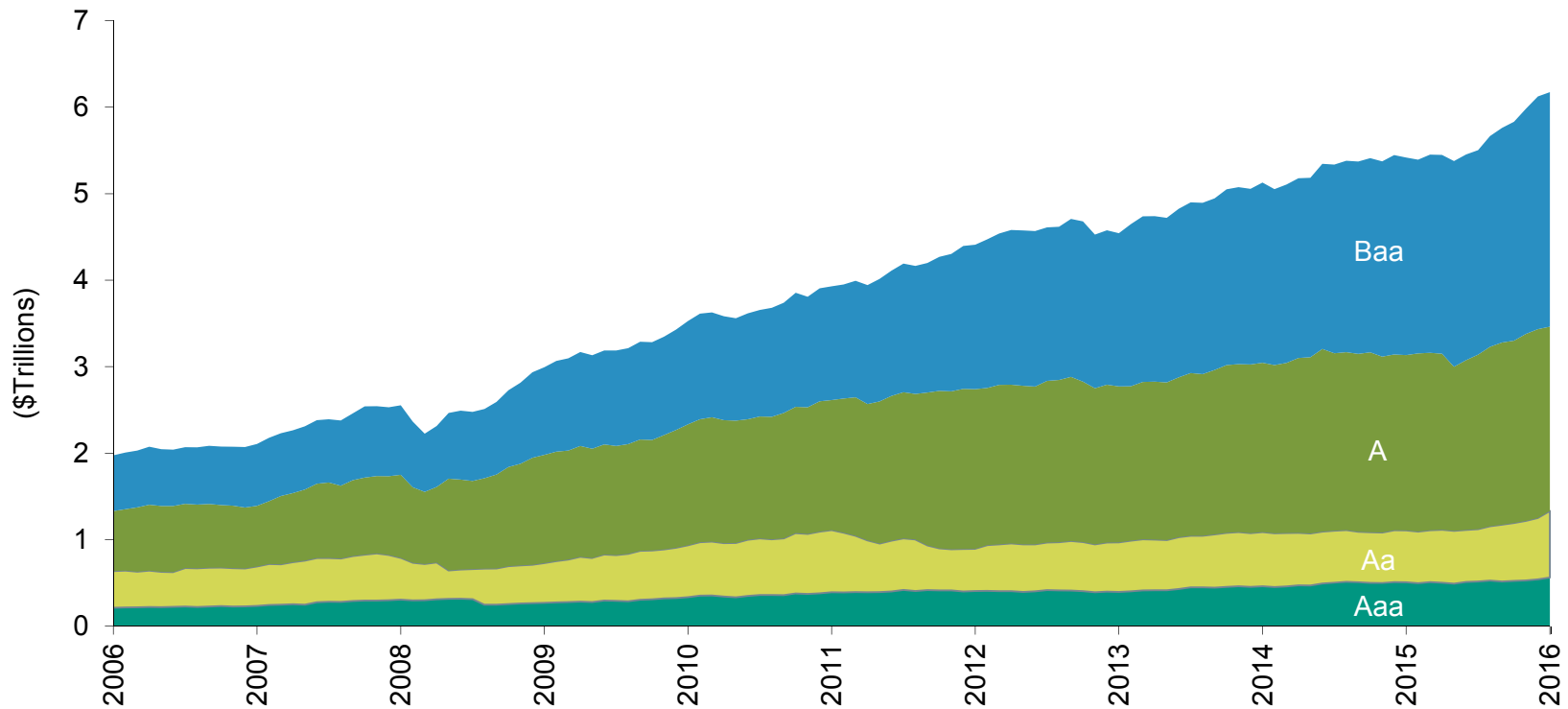


- Capital levels continue to increase
- Additional regulations have bolstered liquidity
- Qualitative oversight process is likely to remain strict for many years
- 2008-like banking crisis risk has receded measurably; A positive for risk assets.

Source: Regulatory Filings.

# Larger and Lower-Rated Credit Market

## Credit Index Composition by Quality Rating



Note: Rating categories are based on Bloomberg Barclays Index methodology, which uses Moody's, S&P and Fitch ratings as inputs where available.

Source: Bloomberg Barclays Investment Grade Credit Index as of 8/31/16

# Appendix

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# FIAM GIPS Composite Performance Data

Tactical Bond Composite (USD) Versus Barclays U.S. Aggregate Bond Index  
As of September 30, 2016

Period	Composite Return (Gross%)	Composite Return (Net%)	Benchmark Return (%)	Value Added (%)*	Number of Portfolios	Total Composite Assets End of Period (\$M)	Composite 3 Year Standard Deviation (%)	Benchmark 3 Year Standard Deviation (%)	Asset Weighted Standard Deviation (%)	Percent of Firm's Assets
2016 YTD	10.93	10.60	5.80	5.13	8	5,822	3.89	2.61	N/A	1%
2015 Annual	(1.80)	(2.19)	0.55	(2.35)	8	4,719	3.73	2.92	0.28	less than 1%
2014 Annual	6.05	5.62	5.97	0.08	6	1,370	3.33	2.67	N/A	less than 1%
2013 Annual	3.20	2.79	(2.02)	5.22	less than 5	249	3.18	2.75	N/A	less than 1%
2012 Annual	12.45	12.07	4.21	8.24	less than 5	145	2.52	2.42	N/A	less than 1%
2011 Annual	9.37	9.02	7.84	1.53	less than 5	91	3.85	2.82	N/A	less than 1%
2010 Annual	11.49	11.19	6.54	4.95	less than 5	192	6.53	4.23	N/A	less than 1%
2009 Annual	24.69	24.39	5.93	18.76	less than 5	218	6.41	4.17	N/A	less than 1%
2008 Annual	(8.30)	(8.53)	5.24	(13.54)	less than 5	204	N/A	N/A	N/A	less than 1%
2007 Annual	3.35	3.09	6.97	(3.62)	less than 5	229	N/A	N/A	N/A	less than 1%
2006 Partial**	5.33	5.09	4.33	1.00	less than 5	222	N/A	N/A	N/A	less than 1%

\* Value Added is calculated by taking the gross composite return less the benchmark return.

\*\* The inception of this composite is January 31, 2006; performance is presented for the period February 01, 2006 through December 31, 2006.

## Notes

### Definition of the "Firm"

For GIPS purposes, the "Firm" includes: (1) all of the portfolios managed by the investment management units of the Fidelity Institutional Asset Management group of companies ("FIAM"); and (2) portfolios managed by FIAM's affiliates, Fidelity Management & Research Company and its subsidiaries ("FMR Co."), the fixed income portfolios of Fidelity Management Trust Company ("FMTC"), and/or Fidelity Investments Money Management, Inc. ("FIMM"), that are also substantially similar to institutional mandates advised by FIAM and managed by the same portfolio management team.

### Changes to Definition of the "Firm"

Effective January 1, 2011, the definition of the Firm was revised to include substantially similar investment strategies managed by FMR Co. and/or FIMM and the same portfolio management team. Effective January 1, 2013, the definition of the Firm was revised to include subsidiaries of FMR Co. Effective November 20, 2015, the definition of the Firm was revised to change the name of Pyramid Global Advisors to FIAM. Effective January 1, 2016, the definition of the Firm was revised to include substantially similar fixed income investment strategies managed by FMTC and the same portfolio management team.

### Basis of Presentation

The Firm claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. The Firm has been independently verified for the periods January 1, 1990 through December 31, 2014. The verification reports are available upon request. Verification assesses whether (1) the firm has complied with all of the composite 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. Verification does not ensure the accuracy of any specific composite presentation. The Firm's list of composite descriptions is available upon request. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.

### Returns

Gross composite returns do not reflect the deduction of investment advisory ("IA"), administrative or custodial fees, but do include trading expenses. Net composite returns are calculated by deducting the maximum standard IA fee that could have been charged to any client employing this strategy during the time period shown, exclusive of performance fee or minimum fee arrangements. IA fees paid by a client vary depending upon a variety of factors, including portfolio size and the use of any performance fee or minimum fee arrangement. Actual returns will be reduced by the IA fee and any administrative, custodial, or other fees and expenses incurred. Returns could be higher or lower than those shown. A client's fees are generally calculated based on the average month-end assets at market value during the quarter as calculated by the Firm, and are billed quarterly in arrears. More information regarding fees is available upon request. These investment performance statistics were calculated without a provision for any income taxes.

### Composite Creation Date

This composite was created in 2012

### Composite Description

The investment objective of this composite is to achieve competitive total returns by exercising broad flexibility to invest in a broad set of fixed income sectors. The strategy will seek to generate returns from the allocation among a full suite of global fixed income investments including high yield corporates, emerging market debt (hard and local currency), leveraged loans, non-agency mortgages, high yield CMBS, convertible bonds, preferred stock and hybrid securities. The strategy seeks to generate returns from asset allocation, sector rotation, security selection, duration management, yield curve positioning and foreign currency exposures. The composite is composed of all fee-paying discretionary accounts that are managed by the Firm in this style.

### Fee Schedule

The maximum scheduled investment advisory fee for this strategy is 40 basis points, which may be subject to certain decreases as assets under management increase. The investment advisory fee applicable to a portfolio depends on a variety of factors, including but not limited to portfolio size, the level of committed assets, service levels, the use of a performance fee or minimum fee arrangement, and other factors.

### Effect of Investment Advisory Fee

Returns will be reduced by the investment advisory fee and any other expenses incurred in the management of the portfolio. For example, an account with a compound annual return of 10% would have increased by 61% over five years. Assuming an annual advisory fee of 40 basis points, the net return would have been 58% over five years.

### Pool Portfolio

The composite contains a pool portfolio that is presented net of custody and audit fees. Investment security transactions for the pool portfolio are accounted for on trade date-plus-one.

### Known Inconsistencies in Exchange Rates

The composite base currency is U.S. Dollar (USD). One or more of the current or historic constituent portfolios have a base currency that differs from the composite and uses a valuation point that differs from other constituent portfolios.

### Derivative Exposure

Typically, portfolios may make use of derivative instruments as a substitute for underlying cash or bond positions or to hedge the risk of a portfolio. In particular, derivative instruments are used as an efficient alternative to cash bonds in the implementation of duration, yield curve, security selection, and sector rotation strategies. Derivative instruments are only used when and as client guidelines permit.

Past performance is no guarantee of future results.

630784.13.0



# Important Information

**Read this important information carefully before making any investment. Speak with your relationship manager if you have any questions.**

## **Risks**

Past performance is no guarantee of future results. An investment may be risky and may not be suitable for an investor's goals, objectives and risk tolerance. Investors should be aware that an investment's value may be volatile and any investment involves the risk that you may lose money. Performance results for individual accounts will differ from performance results for composites and representative accounts due to factors such as portfolio size, account objectives and restrictions, and factors specific to a particular investment structure.

The value of a strategy's investments will vary day to day in response to many factors, including in response to adverse issuer, political, regulatory, market or economic developments. The value of an individual security or a particular type of security can be more volatile than the market as a whole and can perform differently from the value of the market as a whole. Nearly all accounts are subject to volatility in non-US markets, either through direct exposure or indirect effects on US markets from events abroad, including fluctuations in foreign currency exchange rates and, in the case of less developed markets, currency illiquidity.

The performance of fixed income strategies will change daily based on changes in interest rates and market conditions and in response to other economic, political or financial developments. Debt securities are sensitive to changes in interest rates depending on their maturity, and may involve the risk that their prices may decline if interest rates rise or, conversely, if interest rates decline, their prices may increase. Debt securities carry the risk of default, prepayment risk and inflation risk. Changes specific to an issuer, which may involve its financial condition or economic environment, can affect the credit quality or value of an issuer's securities. Lower-quality debt securities (those of less than investment grade quality, also referred to as high yield debt securities) and certain types of other securities are more volatile and are often considered to be speculative and involve greater risk due to increased sensitivity to adverse issuer, political, regulatory and market developments, especially in periods of general economic difficulty. The value of mortgage securities may change due to shifts in the market's perception of issuers and changes in interest rates, regulatory or tax changes.

Derivatives may be volatile and involve significant risk, such as credit risk, currency risk, leverage risk, counterparty risk and liquidity risk. Using derivatives can disproportionately increase losses and reduce opportunities for gains in certain circumstances. Investments in derivatives may have limited liquidity and may be harder to value, especially in declining markets. Derivatives involve leverage because they can provide investment exposure in an amount exceeding the initial investment. Leverage can magnify investment risks and cause losses to be realized more quickly. A small change in the underlying asset, instrument, or index can lead to a significant loss. Assets segregated to cover these transactions may decline in value and are not available to meet redemptions. Government legislation or regulation could affect the use of these transactions and could limit the ability to pursue such investment strategies.

The securities, derivatives and currency markets of emerging market countries are generally smaller, less developed, less liquid, and more volatile than the securities, derivatives and currency markets of the United States and other developed markets and disclosure and regulatory standards in many respects are less stringent. There also may be a lower level of monitoring and regulation of markets in emerging market countries and the activities of investors in such markets and enforcement of existing regulations may be extremely limited. Government enforcement of existing market regulations is limited, and any enforcement may be arbitrary and the results may be difficult to predict. Emerging market countries are more likely than developed market countries to experience political uncertainty and instability, including the risk of war, terrorism, nationalization, limitations on the removal of funds or other assets, or diplomatic developments that affect investments in these countries. In many cases, governments of emerging market countries continue to exercise significant control over their economies. In addition, there is a heightened possibility of expropriation or confiscatory taxation, imposition of withholding taxes on interest payments, or other similar developments that could affect investments in those countries.

These materials contain statements that are "forward-looking statements," which are based on certain assumptions of future events. Forward-looking statements are based on information available on the date hereof, and FIAM does not assume any duty to update any forward-looking statement. Actual events may differ from those assumed. There can be no assurance that forward-looking statements, including any projected returns, will materialize or that actual market conditions and/or performance results will not be materially different or worse than those presented.

# Important Information, continued

## Performance Data

Performance data is generally presented gross of any fees and expenses, including advisory fees, which when deducted will reduce returns. See the GIPS® Composite Performance Data for performance figures that are net of the maximum investment advisory fee charged any client employing this strategy. Some clients may request a performance fee arrangement, which if imposed will also reduce returns when deducted. See FIAM LLC's Form ADV for more information about advisory fees if FIAM LLC is the investment manager to the account. For additional information about advisory fees related to other FIAM advisory entities, speak with your relationship manager. All results reflect realized and unrealized appreciation and the reinvestment of dividends and investment income, if applicable. Taxes have not been deducted.

FIAM claims compliance with the Global Investment Performance Standards (GIPS®). In conducting its investment advisory activities, FIAM utilizes certain assets, resources and investment personnel of FMR Co. and its affiliates, which do not claim compliance with GIPS®. However, Fidelity Investments Canada ULC ("FIC"), which is a Fidelity Investments company, and FIAM are separate firms, each claiming compliance with GIPS and maintaining separate GIPS Composites.

Representative account information is based on an account in the subject strategy's composite that generally reflects that strategy's management and is not based on performance of that account. An individual account's performance will vary due to many factors, including inception dates, portfolio size, account guidelines and type of investment vehicle. Index or benchmark performance shown does not reflect the deduction of advisory fees, transaction charges and other expenses, which if charged would reduce performance. Investing directly in an index is not possible.

Unless otherwise indicated, references made to product assets under management ("AUM") are to the GIPS firm AUM for the strategy which include all discretionary and, if applicable, non-discretionary portfolios.

\* \* \* \*

Fidelity Institutional Asset Management (FIAM), formerly known as Pyramis Global Advisors, includes the following entities, or divisions of entities that provide investment services: Fidelity Institutional Asset Management Trust Company, a New Hampshire trust company (FIAM TC); FIAM LLC, a U.S. registered investment adviser; the Fidelity Institutional Asset Management division of FMR Investment Management (UK) Limited, a U.K. registered investment manager and U.S. registered investment adviser (FMRIM-UK); and the Fidelity Institutional Asset Management division of Fidelity Management & Research (Hong Kong) Limited, a Hong Kong and U.S. registered investment adviser (FMRHK). FIAM may use the name Pyramis Global Advisors or Pyramis as an additional business name under which it conducts its advisory business.

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**Not FDIC Insured • No Bank Guarantee • May Lose Value**

# Biographies

## **Jeff Moore, CFA** *Portfolio Manager*

Jeffrey Moore is a portfolio manager at Fidelity Institutional Asset Management<sup>SM</sup> (FIAM<sup>SM</sup>), an investment organization within Fidelity Investments' asset management division that is dedicated to serving the needs of consultants and institutional investors, such as defined benefit and defined contribution plans, endowments and financial advisors. In this role, he manages portfolios across retail and institutional assets, ranging from Tactical Bond, Core and Core Plus, and Global strategies.

Prior to assuming his current role as portfolio manager in 2000, Mr. Moore was a fixed income analyst assigned to several sectors, including sovereign debt, energy, REITs, Yankee banks, and Canada. Before joining the firm in 1995, he was a credit analyst for Dominion Bond Rating Service. Prior to that, he worked for the Department of Finance of the Canadian government from 1990 to 1994. He has been in the investments industry since 1990.

Mr. Moore earned his bachelor of arts degree in economics from the University of Western Ontario and his master's degree in economics from the University of Waterloo. He is a Chartered Financial Analyst (CFA) charterholder. Mr. Moore has authored a number of Thought Leadership papers, most recently "Active Multi-Sector Fixed Income Investing in an Uncertain Yield Environment" (2013), "Stretching for Yield in the Fixed Income Market" (2012), and "What Does Risk Free Mean Now?" (2012). In Canada, he authored the paper "The Art and Science of Fixed Income" in 2009, and co-authored the paper "The Social Cost of Labor Taxes" for the Canadian Tax Journal in 1990.

## **Christian G. Pariseault, CFA** *Senior Vice President and Director of Bonds, North America*

Christian Pariseault is senior vice president and director of bonds, North America at Fidelity Institutional Asset Management<sup>SM</sup> (FIAM<sup>SM</sup>), an investment organization within Fidelity Investments' asset management division that is dedicated to serving the needs of consultants and institutional investors, such as defined benefit and defined contribution plans, endowments and financial advisors. In this role, he is responsible for driving the institutional fixed income business in North America and for leading the Institutional Portfolio Management team.

Prior to assuming his current role in April 2013, Mr. Pariseault worked as an institutional portfolio manager in Fidelity Investments' Fixed Income division from 2009 to 2013, and as a senior vice president and investment director at Pyramis Global Advisors, a Fidelity Investments Company, from 2006 to 2009. Before joining Fidelity in 2006, he was a fixed income portfolio manager at Deutsche Asset Management from 1999 to 2006, and a senior credit analyst covering tax-backed municipal bonds and colleges and universities from 1994 to 1999. He has been in the investments industry since 1993.

Mr. Pariseault earned his bachelor of science degree in business administration from Saint Michael's College. He is also a Chartered Financial Analyst (CFA) charterholder. Mr. Pariseault has authored a number of Thought Leadership papers, including "Active Multi-Sector Fixed Income Investing in an Uncertain Yield Environment" (2013), "Diversification into International Fixed Income: Tempering the Influence of US Deficits, Cliffs and Ceilings in a Portfolio" (2012), and "Fixed Income Derivatives: A Market that Cannot be Ignored" (2006).

# Biographies

## **William C. Coash**

### *Fixed Income Institutional Portfolio Manager*

William (Beau) Coash is a fixed income institutional portfolio manager at Fidelity Institutional Asset Management<sup>SM</sup> (FIAM<sup>SM</sup>), an investment organization within Fidelity Investments' asset management division that is dedicated to serving the needs of consultants and institutional investors, such as defined benefit and defined contribution plans, endowments and financial advisors. In this role, he is an active part of the portfolio management team and represents the team's capabilities, thought process and views to clients and consultants.

Prior to assuming his current role in September 2013, Mr. Coash was global head of syndicate and primary trading in Fidelity Management & Research Company's (FMR Co.) Equity Trading division from 2005 to 2013. Before joining Fidelity in 2005, he held other various positions, including that of senior vice president in Corporate Bond Sales at Lehman Brothers from 1993 to 2005, division head/business development at Replica/Preview Media from 1990 to 1993, and national sales manager at Knight Stations from 1985 to 1988. Previously, Mr. Coash was a professional football player for the New England Patriots and Boston Breakers from 1982 to 1985. He has been in the investments industry since 1993.

Mr. Coash earned his bachelor of arts degree in history from Middlebury College and his master of business administration degree in entrepreneurship studies from Harvard Business School.

## **Kristin v. Shofner**

### *Senior Vice President, Business Development*

Kristin Shofner is senior vice president, Business Development at Fidelity Institutional Asset Management<sup>SM</sup> (FIAM<sup>SM</sup>), Fidelity Investments' distribution and client service organization dedicated to meeting the needs of consultants and institutional investors, such as defined benefit and defined contribution plans, endowments and financial advisors. In this role, she leads the development of relationships with public pension plans.

Prior to joining Fidelity in 2013, Ms. Shofner was a director of Institutional Sales and Marketing at Lord, Abbett & Co. LLC since June 2003. Her previous positions include serving as a manager of Institutional Sales and Client Services from 2000 to 2003 and as a manager research associate from 1998 to 2000 at Asset Strategy Consulting, later acquired by InvestorForce. She has been in the investments industry since 1998.

Ms. Shofner earned her bachelor of arts degree in history and sociology from the University of California at Santa Barbara where she ran Division I Cross Country and Track & Field. She was also a member of our United States Ekiden Relay Team in China and ran in the US Olympic Trials Women's Steeplechase in Atlanta.

FIDELITY INSTITUTIONAL ASSET MANAGEMENT<sup>SM</sup>

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ORIGINAL INSIGHT / TAILORED ACCESS / DIVERSE INVESTMENT CAPABILITIES



# Allianz Global Investors

**Mandate:** US Large Cap Core Growth

**Hired:** 1995

Firm Information	Investment Approach	Total ARMB Mandate
<p>Allianz Global Investors US LLC is a wholly-owned, indirect subsidiary of Allianz SE. Its predecessor firm, RCM Capital Management, was founded as Rosenberg Capital Management by Claude Rosenberg in 1970.</p> <p>As of 6/30/2016, Allianz's total assets under management were \$521 billion.</p> <p><b>Key Executives:</b>  <b>Raphael Edelman</b>, <i>Director</i>  <b>Karen Hiatt</b>, <i>Director</i>  <b>Melody McDonald</b>, <i>Managing Director</i></p>	<p>The US Large Cap Core Growth team utilizes a bottom-up stock picking approach. Portfolios are broadly-diversified with high active share. Relative performance is derived primarily from stock selection.</p> <p>The investment philosophy leads the team to invest in companies that have above average top- and bottom-line growth, superior and less volatile profitability, and high barriers to entry. Allianz seeks to invest in companies whose management teams have demonstrated a wise and shareholder-friendly approach to capital allocation.</p> <p>Growth, quality and valuation are the key focus areas for the US Large Cap Core Growth team to identify potential portfolio holdings. The time horizon for investment decisions is approximately 2-3 years, as demonstrated by the typically low turnover figure of ~ 40%.</p> <p>Individual stock weights are derived from the team's level of conviction and the potential upside for each stock.</p> <p><b>Benchmark:</b> S&amp;P 500 Index</p>	<p><b>Assets Under Management:</b>            9/30/2016: \$367,933,765</p>

**Concerns:** None

## 9/30/2016 Performance

	<u>Last Quarter</u>	<u>1-Year</u>	<u>3-Years Annualized</u>	<u>5-Years Annualized</u>	<u>6-Years Annualized</u>
Allianz US Large Cap Growth	5.67%	13.93%	12.19%	17.50%	14.06%
S&P 500	3.85%	15.43%	11.16%	16.37%	13.68%

Allianz Global Investors

# Alaska Retirement Management Board

December 8, 2016

Raphael L. Edelman  
Director, Senior Portfolio Manager  
CIO US Large Cap Select and Core Growth Equities

Melody L. McDonald  
Managing Director  
Senior Relationship Manager

**Allianz**   
Global Investors

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- 2 Investment Philosophy and Process
- 3 ARMB – Large Cap Core Growth
- 4 Appendix

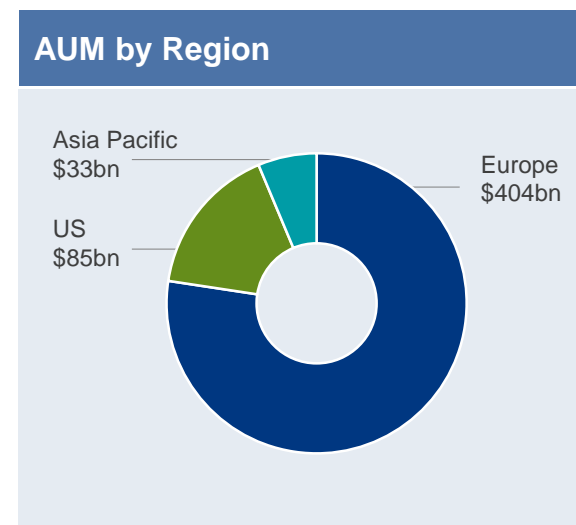
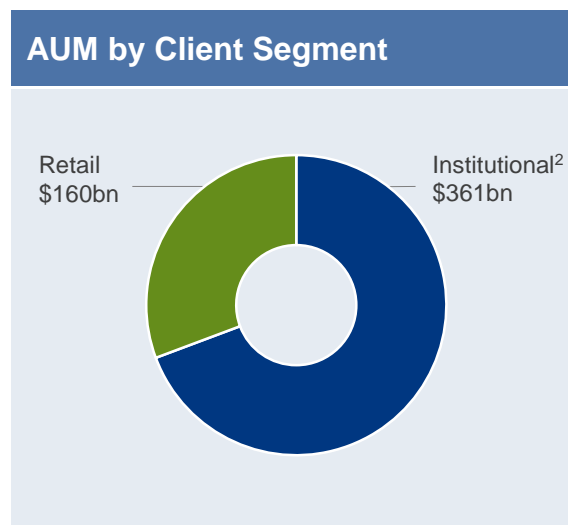
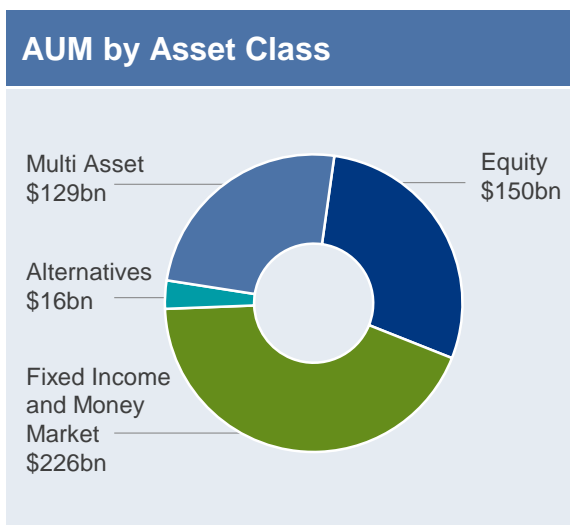


# 1

# Allianz Global Investors Overview

# Assets under management

**Total AUM: \$521 billion<sup>1</sup>**



1. Based on EUR to USD currency conversion rate as of June 30, 2016 (\$1.1110).

2. Includes Institutional share classes of mutual funds.

## Global breadth, local expertise and resources

	North America	Europe	Asia Pacific	Total
Office Locations	4	13	8	25
Relationship Managers	145	256	158	559
Investment Professionals	137	358	118	613



# Global investment platform

## Key investment capabilities

Equities	Fixed Income	Alternatives	Global Multi Asset and Solutions Group	
<ul style="list-style-type: none"> <li>▪ Fundamental               <ul style="list-style-type: none"> <li>– Across styles and capitalizations</li> </ul> </li> <li>▪ Global/Regional/ Emerging Markets</li> <li>▪ Systematic</li> <li>▪ Sector and Specialty</li> </ul>	<ul style="list-style-type: none"> <li>▪ Global Fixed Income</li> <li>▪ Emerging Market Debt</li> <li>▪ High Yield</li> <li>▪ Convertible</li> </ul>	<ul style="list-style-type: none"> <li>▪ Options Strategies</li> <li>▪ Infrastructure</li> <li>▪ Volatility</li> <li>▪ Equity Long/Short</li> </ul>	<ul style="list-style-type: none"> <li>▪ Dynamic Risk Mitigation</li> <li>▪ Global Tactical Asset Allocation</li> <li>▪ Target Date</li> <li>▪ Target Risk</li> </ul>	<ul style="list-style-type: none"> <li>▪ Investment and Risk Management Advisory</li> <li>▪ Portfolio Risk Analytics</li> <li>▪ Asset-Liability Management</li> <li>▪ Outcome Specific</li> </ul>

# 2

## Investment Philosophy and Process

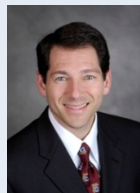
## AllianzGI US Large Cap Core Growth philosophy

We believe **proprietary, fundamental research** is the key to identifying companies that will outperform the market. We invest in **high quality** companies with **superior growth** rates that are **attractively valued**.

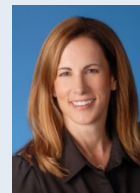
# Portfolio management team

<b>Global CIO</b>
Steven J. Berexa, CFA 27 Years Experience
<b>US Equity CIO</b>
Jeffrey Parker, CFA 25 Years Experience
<b>PMT Resources</b>
Sector & Global Portfolios
Global Policy Council
Trading
Product Specialist
Mid Cap Team

## US Large Cap Core Growth Portfolio Management Team



Raphael Edelman  
Lead Senior Portfolio Manager  
31 Years Experience



Karen Hiatt, CFA  
Senior Portfolio Manager  
21 Years Experience



Joanne Howard, CFA  
Senior Portfolio Manager  
51 Years Experience

# Deep and experienced investment team

## Fundamental Research



**Nina Gupta, CFA**  
Director of Research  
Sector Head  
Financial Services  
1.5 Years at AllianzGI US  
(12 Years Experience)



**Sebastian Thomas, CFA**  
Sector Head  
Technology  
12 Years at AllianzGI US  
(19 Years Experience)



**Raymond Cunha, CFA**  
Sector Head  
Industrials  
7 Years at AllianzGI US  
(23 Years Experience)



**John Schroer, CFA**  
Sector Head  
Healthcare  
2 Years at AllianzGI US  
(25 Years Experience)



**Alec Patterson, CFA**  
Sector Head  
Consumer / Retail  
25 Years at AllianzGI US  
(29 Years Experience)



**Bryan Agbabian, CFA**  
Sector Head  
Agriculture  
11 Years at AllianzGI US  
(22 Years Experience)



**Paul Strand, CFA**  
Sector Head  
Resources  
12 Years at AllianzGI US  
(19 Years Experience)

## Grassroots<sup>SM</sup> Research



**Kelly A. Reuba**  
Global Head of  
Grassroots<sup>SM</sup> Research  
18 Years at AllianzGI US  
(18 Years Experience)



# Global research headcount

	Consumer	Financial	Health Care	Industrial & Resources	Tech & Telecom & Media	ESG & Engagement	Grassroots <sup>SM</sup> Research	Credit	Total
<b>Asia</b>	4	4	1	4	3	0	1	3	20
<b>Europe</b>	4	4	3	9	5	6	2	10	43
<b>Americas</b>	3	1	3	4	6	0	3	0	20
<b>Total</b>	<b>11</b>	<b>9</b>	<b>7</b>	<b>17</b>	<b>14</b>	<b>6</b>	<b>6</b>	<b>13</b>	<b>83</b>

- An average of 15 years of industry experience
- Innovative and proprietary investment tools
- Analysts manage sector and thematic mandates
- Each analyst conducts an average of 100 meetings per year with corporate management
- Research identifies the key drivers of each stock, which frames and focuses the analytical process
- Dedicated sustainability research analysts
- Complemented by Grassroots<sup>SM</sup> Research

 The cornerstone of our investment process—generating information advantage

Data as of September 30, 2016. Grassroots<sup>SM</sup> Research is a division of Allianz Global Investors that commissions investigative research for asset-management professionals. Research data used to generate Grassroots<sup>SM</sup> Research reports are received from reporters and Field Force investigators who work as independent, third-party research providers, supplying research that is paid for by commissions generated by trades executed on behalf of clients.

# Grassroots<sup>SM</sup> Research—Overview

## Mission:

Provide investment professionals with timely business insights that help identify inflection points and increase investment conviction

## Methodology:

- Customized to answer specific questions about key stock drivers identified by Portfolio Managers and Analysts

## Resources:

- In-house staff of 10
- 60 reporters
- 300+ Field Force Investigators
- 50,000+ industry contacts

## Results:

- 30+ company/industry studies per month



[www.grassrootsresearch.com](http://www.grassrootsresearch.com)

**Investment decisions—reality checked**

# Stock example: Edwards Lifesciences, Corp. (EW)

Edwards Lifesciences Corp. designs, develops, manufactures, and markets products and services to treat late-stage cardiovascular disease. The company's products include tissue replacement heart valves, heart valve repair products, hemodynamic monitoring devices, angiography equipment, oxygenators, and pharmaceuticals. Edwards supplies its products to customers worldwide.

## Investment Thesis – Key Drivers

- Sapien 3 Valve
  - Advanced valve design with low stroke rates, and a lower profile for easier implantation.
  - The valve is implanted through a catheter and allows patients to avoid open heart surgery.
  - Attractive market share gains and market expansion opportunities.
- Transcatheter Aortic Valve Replacement (TAVR) intermediate/moderate risk population
  - The TAVR procedure has been indicated for high and severe risk patients.
  - The next step is moving into the moderate risk patients, which could increase the TAVR market by 50-75%
  - This market expansion could meaningfully accelerate earnings growth
  - A recent study showed the Sapien 3 heart valve lowered the risk of death and stroke in intermediate risk patients suffering from aortic stenosis (narrowing of the heart's aortic valve).
  - FDA approval for intermediate risk patients is expected in Q4 2016.

## Grassroots<sup>SM</sup> Research Input

- **July 2016:** Grassroots conducted a survey to check on overall transcatheter aortic valve replacement procedure volumes and to identify any impact on procedure volumes following the data presented for Edwards' Sapien 3 valve.
  - 75% of sources said the data presented on Sapien 3 would increase the number of heart valve procedures going forward.
  - 50% have seen an increase in the number of referrals for aortic stenosis evaluation since the data came out.
  - According to respondents, physician preference/familiarity with devices is a significant decision-making factor, and Edwards has the lead among competitors in this regard.



Michael Dauchot, CFA  
Director  
Senior Analyst

**It should not be assumed that recommendations made in the future will be profitable or will equal the performance of any security presented here.**

Past performance is no guarantee of future results. The information and opinions expressed here should not be considered a recommendation to purchase or sell any particular security. The information herein is intended to demonstrate AllianzGI US analyses of specific securities it holds in portfolios and does not constitute a representative list of all securities bought or sold during any time period. The price chart shown above merely shows the performance of the security over a recent period, is not indicative of the period during which AllianzGI US held the security, and should not be considered indicative of a pattern of success or a guarantee of positive performance. Not all buy/sell decisions made by AllianzGI US resulted in profitable outcomes. Upon request, a list of all AllianzGI US recommendations is available for the immediately preceding one-year period or from the time of the earliest recommendation discussed, whichever is longer. The market price as of September 22, 2016 for EW was US\$120.87.

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# Grassroots<sup>SM</sup> Research\* studies – Large Cap

## Consumer

- 2016 Back-to-School Survey in the US
- Advance Auto Parts/CARQUEST Stores and Franchises in the US
- Chipotle Consumer Behavior Survey in the US
- Corporate Travel Spending in the UK
- Costco Member Spending Habits Survey in the US
- GameStop Consumer Survey in the US
- Impact of the New Starbucks Rewards Program in the US
- kate spade Sales at TJ Maxx in the US
- KFC in China
- lululemon survey in the US
- Mall Operators in the US
- McDonald's Franchises in Europe
- McDonald's Franchises in the US
- Michael Kors at Department Stores in the US
- Online Hotel Booking Trends in Europe
- Online Hotel Booking Trends in the US
- Online Hotel Booking Trends Survey in Europe
- Online Hotel Booking Trends Survey in the US
- Pizza Hut in China (2)
- PUMA Merchandise in France, Germany, and the UK
- Ralph Lauren at Multibrand Retailers in China
- Ralph Lauren at Multibrand Retailers in Europe
- Ralph Lauren at Multibrand Retailers in the US
- Streaming Service Trends Survey in the US
- Unlimited Wireless Data Plans in the US
- Vacation-Rental Site Trends in the US
- Whole Foods Survey in the US

## Healthcare

- BENEPAI Etanercept Biosimilar in France, Germany and Spain
- Dental Equipment Demand Trends in the US
- Edwards Lifesciences Sapien 3 Valve in the US
- Impact of the Comprehensive Care for Joint Replacement Model on Hospital Spending Trends in the US
- Silicone Hydrogel Daily Contact Lenses in the US

## Financials

- Consumer Sentiment Post-Brexit Survey in the UK

## Materials

- Shale Oil Market Outlook in the US and Canada

## Energy

- Frac Sand Demand and Pricing in the US

## Technology

- Facebook's Instagram Stories vs. Snapchat Survey in the US
- Global Intuit QuickBooks Survey
- Global PC Demand
- Global Samsung Mobile Market Check
- Global Wearable Fitness Device Demand
- Impact of 3.5mm Earphone Jack Removal on iPhone Users Survey in the US
- Intuit QuickBooks Survey in the US
- iPhone Replacement Cycle in the US
- Online Advertising on Baidu in China
- Potential Impact of iPhone 3.5mm Headphone Removal Survey in the US
- Wearable Fitness Device Survey in the US

(Studies undertaken during the third quarter 2016)

The information provided in this report should not be considered a recommendation to purchase or sell any particular security or strategy.

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# AllianzGI US Large Cap Core investment process

**Goal: To deliver significant excess returns by investing in high quality growth companies**

Idea Generation	Stock Selection	Portfolio Construction	Implementation/Monitoring and Review	Alpha Potential
<ul style="list-style-type: none"> <li>▪ Approximately 700 companies</li> <li>▪ AllianzGI US Fundamental Research</li> <li>▪ Grassroots<sup>SM</sup> Research</li> <li>▪ Sector Funds and Mid Cap Teams</li> <li>▪ Global Policy Council</li> <li>▪ Street research</li> </ul>	<ul style="list-style-type: none"> <li>▪ Culled down to approximately 150 – 200 candidates</li> <li>▪ Stocks must meet rigorous Growth, Quality, and Valuation criteria</li> <li>▪ Identify catalysts, e.g., new product launch, improving cost structure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Team managed</li> <li>▪ Minimum initial position: 1%</li> <li>▪ Maximum position: 10%</li> <li>▪ Weightings driven by absolute return potential</li> </ul>	<ul style="list-style-type: none"> <li>▪ Team acts quickly if investment case weakens</li> <li>▪ Daily meetings with Research Analysts</li> <li>▪ Weekly review of under-performing stocks</li> <li>▪ Quarterly review with Global CIO</li> <li>▪ RIMS Express, Northfield, APT</li> </ul>	

The number of securities referenced above represent the typical number of stocks researched at each stage of the investment process. During any given stage of the investment process the selection criteria may vary from those shown above. The diagrams and statements above reflect the typical investment process applied to this strategy. At any given time other criteria may affect the investment process. See additional disclosure at the end of this presentation.

**3**

# **ARMB – Large Cap Core Growth**

## Performance review

### ARMB - Large Cap Core Growth

As of September 30, 2016

Assets Under Management	
ARMB - Large Cap Core Growth	\$367,940,657

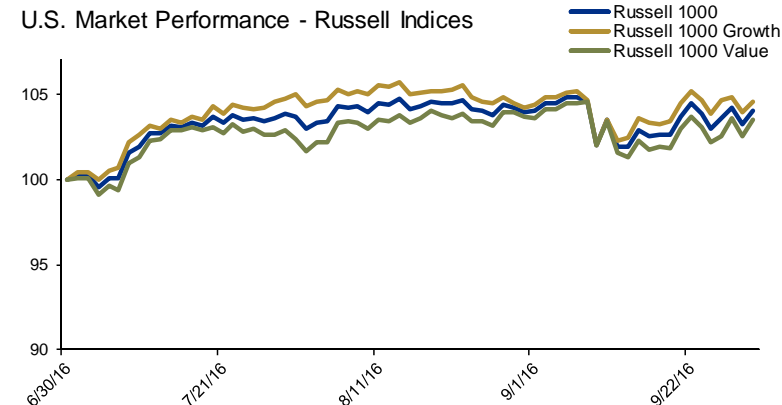
### Annualized Performance (%)

Inception Date: June 30, 1995	3rd Quarter 2016	YTD	1 Year	3 Year	5 Year	10 Year	Since Inception
<b>ARMB - Large Cap Core Growth</b>	<b>5.67</b>	<b>6.04</b>	<b>13.92</b>	<b>12.16</b>	<b>17.43</b>	<b>8.40</b>	<b>9.77</b>
S&P 500 Index	3.85	7.84	15.43	11.16	16.37	7.24	8.76
Russell 1000 Growth Index	4.58	6.00	13.76	11.83	16.60	8.85	8.12

# U.S. Market overview: 3<sup>rd</sup> Quarter 2016

U.S. Key Economic Indicators	Sep-16	Jun-16	Mar-16	Dec-15
Real GDP Growth (%q/q, saar)	2.9	1.4	0.8	0.9
Civilian Unemployment Rate (%)	5.0	4.9	5.0	5.0
Initial Unemployment Claims (Thous., 4wk MA)	253	267	263	277
Housing Starts (Thous. of Units, saar)	1047	1195	1113	1160
New Home Sales (Thous. of Units, saar)	593	558	537	538
CPI (%y/y, nsa)	1.5	1.0	0.9	0.7
PPI (%y/y, nsa)	1.1	1.3	2.1	0.7
ISM Manufacturing Report	51.5	53.2	51.8	48.0
Industrial Production (%y/y)	-1.0	-0.6	-2.0	-2.3

Sources: AllianzGI US, FactSet, Russell



## What Happened in the Market?

- US equities rallied modestly over the quarter, with the S&P 500 Index touching new record highs, helped by better-than-forecast company earnings and generally supportive economic news. The Russell 1000 Growth Index rose 4.6%, while the S&P 500 Index gained 3.9% during the quarter.
- On balance, economic data was positive, although there were signs that momentum was slowing in August. After May's weak report, employment rebounded, with 292,000 and 271,000 jobs added in June and July, respectively, but declined to 151,000 in August.
- Retail sales rose in June, but were lower than forecast in both July and August. The extended investment spending slump showed signs of bottoming during the quarter with the first three-month growth of capital goods orders since last October.
- The Federal Reserve kept interest rates on hold throughout the quarter. In its September meeting, the Fed noted that, while the case to raise rates had strengthened, it wanted to wait for further evidence of economic progress. However, three FOMC officials voted to raise rates, the largest number of dissenters since December 2014. In addition, the Fed lowered its projection for the number of rate rises in 2017 from three to two.
- Within the Russell 1000 Growth Index, the technology sector led the advance, supported by strong second-quarter earnings, and the financials and energy sectors also posted meaningful gains. However, after robust returns in the first half of the year, companies in more defensive sectors, such as consumer staples, telecommunication services and utilities, retreated as investors rotated into more cyclical sectors.
- At the global level, equities rallied during the quarter, recovering from a sharp sell-off at the end of June following the UK's unexpected referendum result. Signs of improvement in China's economy also supported share prices.

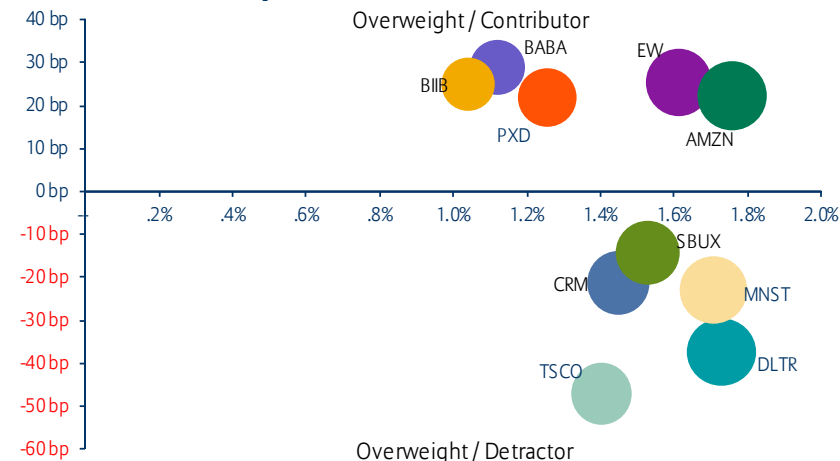


# Attribution performance summary: 3<sup>rd</sup> Quarter 2016

Top 5 Active Contributors		Average Weight			Stock Return	Active Contrib
		Port	Bmk	Rel		
<b>BABA</b>	Alibaba Group Holding Ltd.	1.1%	--	1.1%	33%	<b>29 bp</b>
<b>EW</b>	Edwards Lifesciences Corporation	1.7%	.1%	1.6%	21%	<b>25 bp</b>
<b>BIIB</b>	Biogen Inc.	1.4%	.3%	1.0%	29%	<b>25 bp</b>
<b>AMZN</b>	Amazon.com, Inc.	3.3%	1.6%	1.8%	17%	<b>22 bp</b>
<b>PXD</b>	Pioneer Natural Resources Co.	1.4%	.1%	1.3%	23%	<b>22 bp</b>

Bottom 5 Active Contributors		Average Weight			Stock Return	Active Contrib
		Port	Bmk	Rel		
<b>TSCO</b>	Tractor Supply Company	1.5%	.1%	1.4%	-26%	<b>-47 bp</b>
<b>DLTR</b>	Dollar Tree, Inc.	1.8%	.1%	1.7%	-16%	<b>-37 bp</b>
<b>MNST</b>	Monster Beverage Corporation	1.8%	.1%	1.7%	-9%	<b>-23 bp</b>
<b>CRM</b>	salesforce.com, inc.	1.7%	.3%	1.4%	-10%	<b>-21 bp</b>
<b>SBUX</b>	Starbucks Corporation	2.0%	.4%	1.5%	-5%	<b>-14 bp</b>

## Top & Bottom Active Contributors



## Portfolio Impact and Action

- Alibaba** rose sharply as its diversification strategy is starting to pay off. The company has spent billions of dollars diversifying its revenue to become less dependent on a slowing Chinese economy. Sales strength was driven by the streaming entertainment, cloud computing, and e-commerce business segments. We believe these results demonstrate the company's progress in monetizing its platform and diversifying its business, and added transparency should help boost sentiment.
- Shares in **Edwards Lifesciences** rose sharply after the company topped consensus expectations and raised 2016 guidance for a third consecutive quarter. The guidance upside is largely due to the company's larger market for its heart valve. We maintain a positive view of the company's long term growth prospects given solid management execution and potential further expansion of its addressable market.
- Biogen** was also among the top contributors to relative returns. The company reported modestly positive earnings results, largely driven by lower than expected operating expenses. News that Biogen's CEO will step down in the coming months was also well received. Biogen has recently indicated an interest in acquiring other companies to spark growth, but now it may be a source of growth for a larger company. As these developments evolve, we are closely monitoring the direction management chooses.
- Tractor Supply** was the top detractors during the quarter. Shares have declined as irregular weather and new market expansion have weighed on total sales growth. In early September, shares declined after weaker sales in oil-producing regions prompted the company to cut its forecast. While these headwinds may weigh on the stock in the near-term, we see compelling long-term opportunities for the company. We continue to closely monitor the company's growth strategy and management's execution.
- Dollar Tree, Inc.** shares reached their 52-week high in August 2016, and had climbed nearly 27% in the year-to-date period, however, disappointing Q2 revenues and sales growth expectations brought the stock down -9% on the day. We believe the management team is capable, and with continued execution of well-articulated plans, the stock can recover and move higher.
- Monster Beverage** underperformed as the company's earnings results were roughly in line with expectations. Higher operating expenses weighed on margins, but most of the spending may add to growth as the company is completing the integration into Coca-Cola's distribution system.

# Characteristics

## ARMB - Large Cap Core Growth

As of September 30, 2016

Characteristics	Portfolio	S&P 500 Index	Russell 1000 Growth Index
Number of Holdings	57	500	599
Cash	2.9%	0.0%	0.0%
Yield	1.5%	2.1%	1.6%
Market Cap (w td. avg) (B)	\$163.4	\$146.2	\$151.7
Wtd Median Market Cap (B)	\$87.3	\$82.1	\$72.7
<b>Earnings Per Share Growth</b>			
Last 3 Years	8.9%	8.0%	11.0%
Last 12 Months	6.3	-3.1	9.1
Next 12 Months	11.8	7.4	9.7
Next 3-5 Years	18.2	13.0	14.7
<b>Portfolio P/E</b>			
Last 12 Months	21.4x	18.9x	21.3x
Next 12 Months	19.1	17.6	19.4
P/E to Long Term Growth	1.05	1.35	1.32

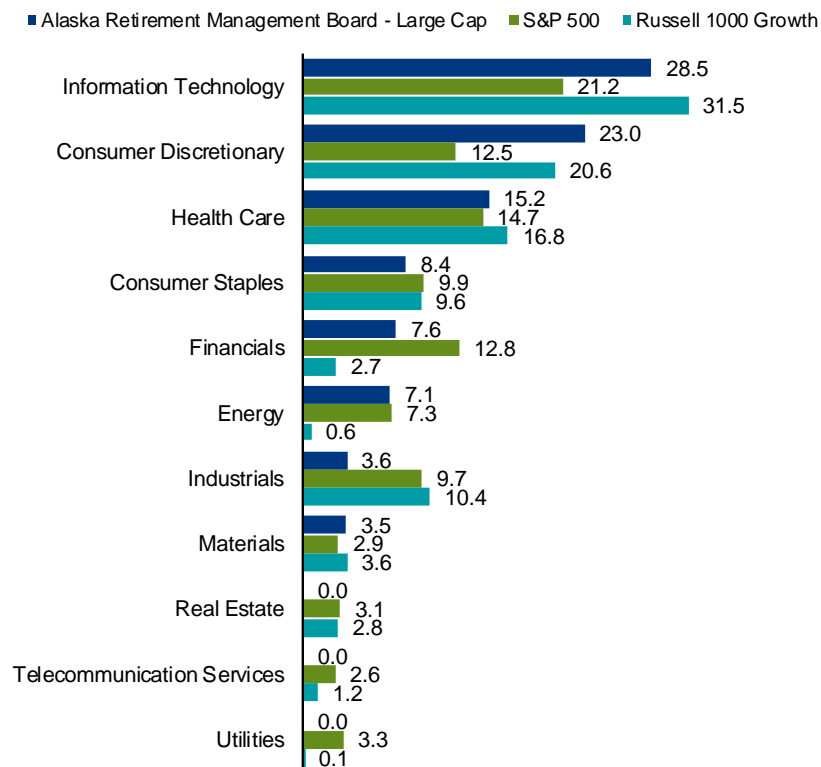
Top 10 Holdings	Portfolio Weights (%)	S&P 500 Index (%)	Russell 1000 Growth Index (%)
Apple Inc	4.7	3.3	5.4
Microsoft Corp	3.8	2.4	4.1
Amazon.com Inc	3.6	1.8	3.1
Facebook Inc	3.0	1.6	2.7
Visa Inc	2.8	0.8	1.5
UnitedHealth Group Inc	2.4	0.7	1.2
Alphabet Inc	2.4	1.3	2.2
Cisco Systems Inc	2.1	0.9	0.0
Pepsico Inc	2.1	0.8	1.3
JPMorgan Chase & Co	2.0	1.3	0.0
<b>Total</b>	<b>29.1</b>	<b>14.8</b>	<b>21.7</b>

# Weightings

## ARMB - Large Cap Core Growth

As of September 30, 2016

### Top Sector Weightings (%)



# Holdings by sector/industry group

## ARMB - Large Cap Core Growth

As of September 30, 2016

Description	Pct of Total
<b>ENERGY</b>	<b>7.13</b>
EOG RESOURCES INC	1.51
EXXON MOBIL CORP	1.93
PIONEER NATURAL RESOURCES CO	1.52
RANGE RESOURCES CORP	0.76
SCHLUMBERGER LTD	1.41
<b>MATERIALS</b>	<b>3.53</b>
DOW CHEMICAL CO/THE	1.06
ECOLAB INC	1.13
VULCAN MATERIALS CO	1.34
<b>INDUSTRIALS</b>	<b>3.57</b>
<b>CAPITAL GOODS</b>	<b>3.57</b>
AMETEK INC	0.90
FORTIVE CORP	1.25
LOCKHEED MARTIN CORP	1.42
<b>CONSUMER DISCRETIONARY</b>	<b>23.03</b>
<b>AUTOMOBILES/COMPONENTS</b>	<b>1.57</b>
DELPHI AUTOMOTIVE PLC	1.57
<b>CONSUMER DURABLES/APPAREL</b>	<b>3.01</b>
MOHAWK INDUSTRIES INC	1.24
NEWELL BRANDS INC	1.77
<b>HOTELS RESTAURANTS/LEISURE</b>	<b>4.54</b>

Description	Pct of Total
MCDONALD'S CORP	1.26
ROYAL CARIBBEAN CRUISES LTD	1.40
STARBUCKS CORP	1.88
<b>MEDIA</b>	<b>4.42</b>
CBS CORP CL B	1.50
COMCAST CORP CL A	1.85
TIME WARNER INC	1.06
<b>RETAILING</b>	<b>9.49</b>
AMAZON.COM INC	3.62
DOLLAR TREE INC	1.59
PRICELINE GROUP INC/THE	1.43
TJX COS INC/THE	1.68
TRACTOR SUPPLY CO	1.16
<b>CONSUMER STAPLES</b>	<b>8.42</b>
<b>FOOD &amp; STAPLES RETAILING</b>	<b>2.99</b>
COSTCO WHOLESALE CORP	1.39
WALGREENS BOOTS ALLIANCE INC	1.60
<b>FOOD BEVERAGE/TOBACCO</b>	<b>5.42</b>
CONSTELLATION BRANDS INC CL A	1.64
MONSTER BEVERAGE CORP	1.70
PEPSICO INC	2.09
<b>HEALTH CARE</b>	<b>15.20</b>
<b>HEALTH CARE EQUIP/SERVICES</b>	<b>5.74</b>

Description	Pct of Total
DANAHER CORP	1.46
EDWARDS LIFESCIENCES CORP	1.84
UNITEDHEALTH GROUP INC	2.44
<b>PHARMACEUTICALS, BIOTECHNOLOGY &amp; LIFE SCIENCES</b>	<b>9.45</b>
ABBVIE INC	1.63
ALLERGAN PLC	1.87
BIOGEN INC	1.39
CELGENE CORP	1.17
GILEAD SCIENCES INC	0.50
MERCK & CO INC	1.12
PFIZER INC	1.78
<b>FINANCIALS</b>	<b>7.64</b>
<b>BANKS</b>	<b>5.71</b>
CITIGROUP INC	1.03
JPMORGAN CHASE & CO	2.04
US BANCORP	1.45
WELLS FARGO & CO	1.19
<b>DIVERSIFIED FINANCIALS</b>	<b>1.93</b>
CME GROUP INC	1.93
<b>INFORMATION TECHNOLOGY</b>	<b>28.52</b>
<b>SOFTWARE/SERVICES</b>	<b>16.72</b>
ACTIVISION BLIZZARD INC	1.85
ALIBABA GROUP HOLDING LTD ADR	1.27

## Holdings by sector/industry group – cont.

### ARMB - Large Cap Core Growth

As of September 30, 2016

Description	Pct of Total
ALPHABET INC CL A	2.39
FACEBOOK INC CL A	3.02
MICROSOFT CORP	3.80
SALESFORCE.COM INC	1.55
VISA INC	2.84
<b>TECHNOLOGY HARDWARE/EQUIPMENT</b>	<b>8.22</b>
APPLE INC	4.73
CISCO SYSTEMS INC	2.10
CORNING INC	1.39
<b>SEMICONDUCTORS &amp; SEMICONDUCTOR EQUIPMENT</b>	<b>3.58</b>
BROADCOM LTD	1.79
INTEL CORP	1.79
Cash	2.90

## Significant buys/sells

### ARMB - Large Cap Core Growth

Third Quarter 2016










Sector	Buys	Additions > 0.5%	Sells	Trims > 0.5%
<b>ENERGY</b>	RANGE RESOURCES CORP			
<b>INDUSTRIALS</b>		FORTIVE CORP	UNITED CONTINENTAL HOLDINGS	
<b>CONSUMER DISCRETIONARY</b>			NIKE INC	
<b>HEALTH CARE</b>			ALEXION PHARMACEUTICALS INC	
<b>INFORMATION TECHNOLOGY</b>		APPLE INC	ACCENTURE PLC NXP SEMICONDUCTORS NV	

# 4

# Appendix

# US equity market outlook

## Q4 2016

Factors	Effects on stock market returns			Recent observations and one year out expectations
	Positive	Neutral	Negative	
<b>Corporate Profits</b>				Total business revenues should return to year over year gains in Q4 2016, with 3-5% sales growth likely in 2017, helped by the rebound in oil prices. Pricing power should increase, but sustained profit margin improvement requires stronger productivity growth. Unfortunately, despite record low interest rates, and near record high profit margins, corporate reinvestment rates remain too low to support anything more than cyclical productivity gains ahead. S&P 500 EPS should return to growth this quarter, with a 5–8% growth rate range likely over the next 12 months.
<b>Pricing/ Inflation</b>				Rent and health care expenses have led the rise in the core CPI rate to nearly a 2.5% pace, while headline inflation has stabilized just above 1%. Given the absence of supply side bottlenecks, and the pause in the unemployment rate near 5%, inflation pressures should build slowly through 2017, with headline inflation tracking closer to the long term expected 1.5-1.75% range by year-end.
<b>Interest Rates</b>				The Fed has hesitated to follow up on the December 2015 rate hike so far this year, but with signs of a moderate reacceleration in growth underway, December 2016 marks the next most likely rate hike by the Fed. 10 year US Treasury bond yields have lifted nearly 40 basis points from the historical July lows of 1.4%. With 75 basis points of tightening due over the next year, a 10 year US Treasury closer to 2.25% is likely by year end.
<b>Economic Activity</b>				Real GDP growth momentum stabilized in Q2 at a 1.4% year over year pace, and should achieve gains in the 1.5–2% range over the next 12 months. Real consumer spending growth should improve to a 3-3.5% pace as election uncertainty clears. Export growth is likely to remain subdued, but there are some early signs that capital spending will improve. Fiscal policy stimulus is more likely in the next administration, and in particular, the contraction in public construction spending is due to reverse in 2017.
<b>International</b>				The UK exit vote has introduced downside risk to the UK and eurozone economies over the forecast horizon, with March 2017 the target date for a carve out. China's housing price appreciation should cool under credit rationing and regulatory measures, while aggressive infrastructure spending should support further acceleration of industrial profits over the next 12 months. Emerging markets are likely to continue their slow recoveries as commodity prices rebound, and as room for further policy ease and structural reform is exploited.
<b>Dollar</b>				The US dollar exchange rate with major currencies is 5% below the peak established in January, but stability has prevailed since May. The UK exit vote, along with shift in the Bank of Japan's monetary policy, a smoldering banking crisis in the eurozone, and a Fed more intent on rate hikes, may lead to a retest of the January high by Q1 2017, but an improved tone to global economic growth should draw portfolio preferences towards riskier nations and regions in 2017.
<b>Valuation</b>				Assuming our earnings expectations are correct, the forward P/E multiple on the S&P 500 is above average, in the 15–16 times range, while other longer term valuation measures like market capitalization to GDP, CAPE, and Tobin's Q look extended. Relative to other developed and emerging markets, US equities tend to be on the more expensive side. Nevertheless, share repurchase activity remains strong, and recession risks are higher in other developed markets. As US Treasury yields increase, multiple expansion may become harder to justify.
<b>Technical/ Sentiment</b>				Household equity exposures are still below normal, and major US equity indexes are not much higher than they were in late 2014. With nominal yields at low historical levels, investors have few other choices besides equities, junk bonds, private equity, and some segments of the real estate market to achieve their required returns. In addition, equity corrections have been consistently met with renewed institutional and corporate buying, thereby limiting downside risk.
<b>Fiscal Policy</b>				The discontent of US citizens with politics as usual, along with growing frustration with the distortions introduced by unconventional monetary policy, will likely lead to a more populist fiscal policy approach in 2017. Regardless of the November election outcome, greater emphasis on infrastructure spending and tax cuts is likely, though trade deals become less likely given the growing backlash against globalization. The more nationalist tone to politics also implies higher military expenditures ahead.

This document contains the current opinions of AllianzGI US and its employees, and such opinions are subject to change without notice. Statements concerning financial market trends are based on current market conditions, which will fluctuate. Forecasts are inherently limited and should not be relied upon as an indicator of future results. This document has been distributed for informational purposes only, does not constitute investment advice and is not a recommendation or offer of any particular security, strategy or investment product. Information contained herein has been obtained from sources believed to be reliable, but AllianzGI US cannot guarantee that the information is accurate, current or complete. (As of September 30, 2016)

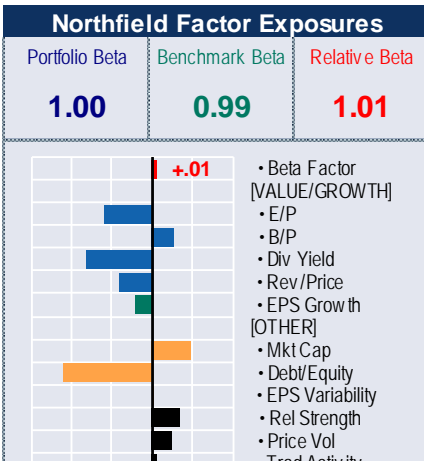
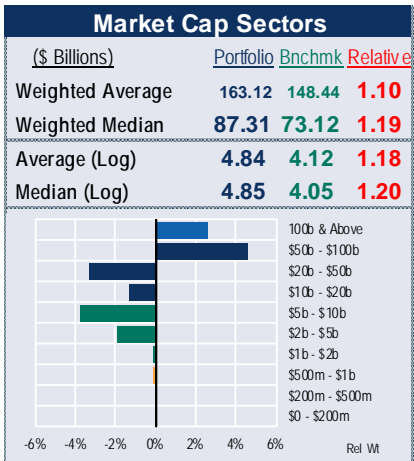
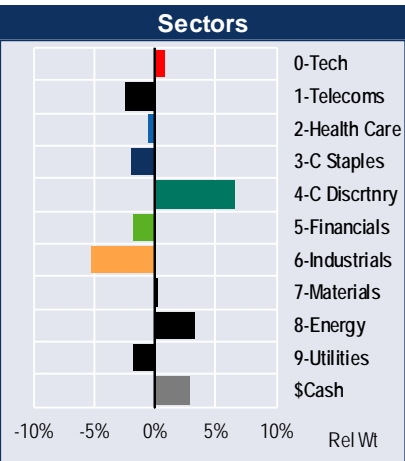


# Style Snapshot

September 30, 2016

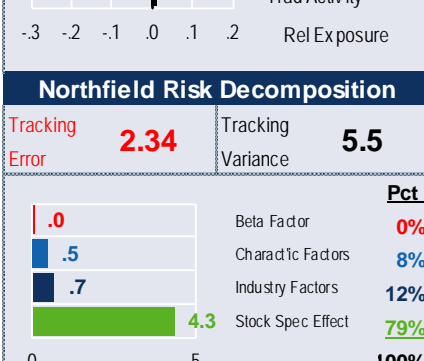
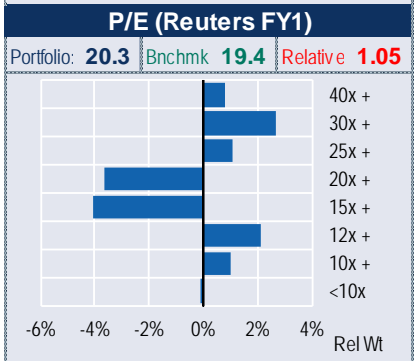
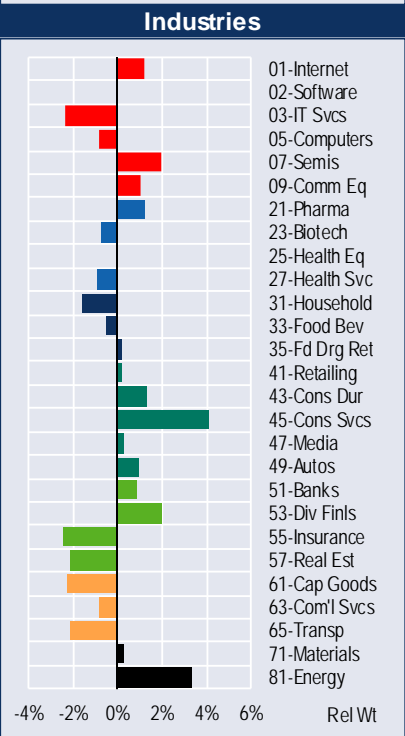
Portfolio: ARMB Large Cap Core Growth

Benchmark: S&P 500 Index / Russell 1000 Growth Index



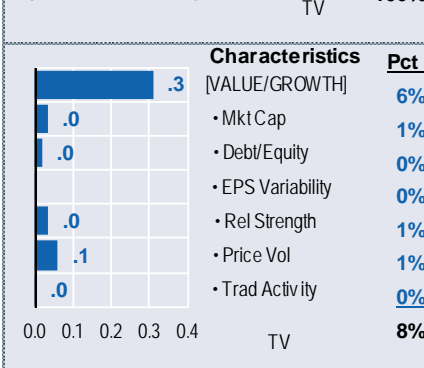
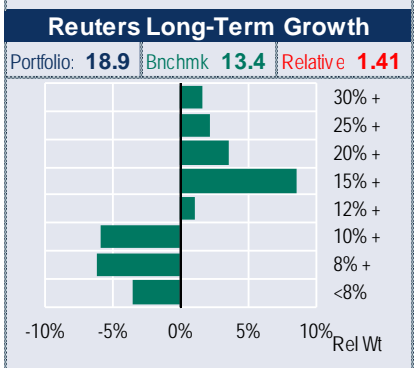
### Stocks Held by Rel Wt

Relative Weigh	Num	Port Wt	Bmk Wt	Rel Wt
3% +	--	--	--	--
2% - 3%	--	--	--	--
1% - 2%	35	60.9	13.2	47.7
0% - 1%	21	35.7	19.9	15.8
Underwts	1	.5	.8	-3
Not Held	--	--	66.2	-66.2
<b>TOTAL</b>	<b>57</b>	<b>97.1</b>	<b>100.0</b>	<b>-2.9</b>



### Top 18 Rel Wts

Tkr	Name	Port Wt	Bmk Wt	Rel Wt
CASH	Cash	2.9	--	2.9
CME	Cme Group Inc	1.9	.1	1.8
V	Visa Inc	2.8	1.2	1.7
CSCO	Cisco Systems Inc	2.1	.4	1.7
ATVI	Activision Blizzard Inc	1.9	.2	1.7
EW	Edwards Lifesciences Corp	1.8	.2	1.7
NWL	Newell Brands Inc	1.8	.2	1.6
MNST	Monster Beverage Corp	1.7	.1	1.5
DLTR	Dollar Tree Inc	1.6	.1	1.5
UNH	Unitedhealth Group Inc	2.4	1.0	1.5
PXD	Pioneer Natural Resources Co	1.5	.1	1.4
DLPH	Delphi Automotive Plc	1.6	.1	1.4
STZ	Constellation Brands	1.6	.2	1.4
JPM	Jpmorgan Chase & Co	2.0	.6	1.4
AGN	Allergan Plc	1.9	.5	1.4
RCL	Royal Caribbean Cruises Ltd	1.4	.0	1.4
WBA	Walgreens Boots Alliance Inc	1.6	.3	1.3
GOOG	Alphabet Inc	--	1.7	-1.7



### Concentration

Port Top 5 Stock	18%	Bmk Top 5 Stock	14%
Port Top 10	29%	Bmk Top 10	20%
Port Top 20	48%	Bmk Top 20	30%
Port "CC"	49	Bmk "CC"	124

### Overlap

Weight Overlap	34%	Active Weight	66%
----------------	-----	---------------	-----

Source: AllianzGI US Quantitative Analytics; FactSet; Northfield US Fundamental Enhanced Model

Data through September 30, 2016

# Top ten overweights and underweights

## ARMB - Large Cap Core Growth vs. S&P 500 Index

As of September 30, 2016

Top Ten Overweights	% of Portfolio	% of Benchmark	Difference
VISA INC	2.84	0.83	2.01
AMAZON.COM INC	3.62	1.76	1.86
CME GROUP INC	1.93	0.19	1.74
UNITEDHEALTH GROUP INC	2.44	0.71	1.73
EDWARDS LIFESCIENCES CORP	1.84	0.14	1.70
ACTIVISION BLIZZARD INC	1.85	0.16	1.69
NEWELL BRANDS INC	1.77	0.14	1.63
MONSTER BEVERAGE CORP	1.70	0.11	1.59
DOLLAR TREE INC	1.59	0.10	1.49
APPLE INC	4.73	3.25	1.48
<b>Total</b>	<b>24.31</b>	<b>7.39</b>	<b>16.92</b>

Top Ten Underweights	% of Portfolio	% of Benchmark	Difference
JOHNSON & JOHNSON	0.00	1.72	-1.72
BERKSHIRE HATHAWAY INC	0.00	1.46	-1.46
GENERAL ELECTRIC CO	0.00	1.42	-1.42
AT&T INC	0.00	1.33	-1.33
PROCTER & GAMBLE CO/THE	0.00	1.28	-1.28
ALPHABET INC	0.00	1.23	-1.23
VERIZON COMMUNICATIONS INC	0.00	1.13	-1.13
CHEVRON CORP	0.00	1.04	-1.04
COCA-COLA CO/THE	0.00	0.88	-0.88
BANK OF AMERICA CORP	0.00	0.85	-0.85
<b>Total</b>	<b>0.00</b>	<b>12.34</b>	<b>-12.34</b>

# Chronology – summary

## ARMB - Large Cap Core Growth

As of September 30, 2016

Description	Sep 2016	Jun 2016	Mar 2016	Dec 2015	Sep 2015
<b>MARKET VALUE</b>	<b>367941</b>	<b>348187</b>	<b>343759</b>	<b>347482</b>	<b>345787</b>
<b>CASH</b>	<b>10681</b>	<b>5839</b>	<b>5777</b>	<b>4365</b>	<b>3746</b>
<b>CASH PCT</b>	<b>2.90</b>	<b>1.68</b>	<b>1.68</b>	<b>1.26</b>	<b>1.08</b>
<b>NON-CASH PCT</b>	<b>97.10</b>	<b>98.32</b>	<b>98.32</b>	<b>98.74</b>	<b>98.92</b>
<b>ENERGY</b>	<b>7.13</b>	<b>6.21</b>	<b>5.64</b>	<b>5.03</b>	<b>3.07</b>
ENERGY	7.13	6.21	5.64	5.03	3.07
<b>MATERIALS</b>	<b>3.53</b>	<b>3.50</b>	<b>3.34</b>	<b>3.10</b>	<b>4.12</b>
MATERIALS	3.53	3.50	3.34	3.10	4.12
<b>INDUSTRIALS</b>	<b>5.04</b>	<b>4.57</b>	<b>5.72</b>	<b>6.44</b>	<b>7.25</b>
CAPITAL GOODS	5.04	3.89	3.76	4.12	4.81
TRANSPORTATION		0.68	1.96	2.31	2.44
<b>CONSUMER DISCRETIONARY</b>	<b>23.04</b>	<b>24.14</b>	<b>23.30</b>	<b>24.11</b>	<b>24.13</b>
AUTOMOBILES/COMPONENTS	1.57	1.27	1.34	1.51	1.08
CONSUMER DURABLES/APPA REL	3.01	3.53	2.81	2.80	3.07
HOTELS RESTA URANTS/LEISURE	4.54	4.72	5.22	5.45	5.24
MEDIA	4.42	4.54	4.48	3.96	4.20
RETAILING	9.50	10.07	9.44	10.39	10.54
<b>CONSUMER STAPLES</b>	<b>8.42</b>	<b>9.10</b>	<b>10.33</b>	<b>8.93</b>	<b>8.74</b>
FOOD & STAPLES RETAILING	2.99	3.26	3.98	3.84	3.63
FOOD BEVERAGE/TOBACCO	5.43	5.84	5.03	3.86	3.85

Description	Sep 2016	Jun 2016	Mar 2016	Dec 2015	Sep 2015
HOUSEHOLD/PERSONAL PRODUCTS			1.32	1.23	1.26
<b>HEALTH CARE</b>	<b>13.74</b>	<b>14.88</b>	<b>14.09</b>	<b>16.09</b>	<b>17.02</b>
HEALTH CARE EQUIP/SERVICES	4.28	4.21	3.58	4.63	4.67
PHARMA CEUTICALS, BIOTECHNOLOGY & LIFE SCIENCES	9.46	10.67	10.51	11.46	12.35
<b>FINANCIALS</b>	<b>7.65</b>	<b>7.68</b>	<b>7.83</b>	<b>8.38</b>	<b>8.65</b>
BANKS	5.72	5.78	5.93	6.60	6.70
DIVERSIFIED FINANCIALS	1.93	1.90	1.90	1.78	1.95
<b>INFORMATION TECHNOLOGY</b>	<b>28.54</b>	<b>28.24</b>	<b>28.06</b>	<b>26.67</b>	<b>25.93</b>
SOFTWARE/SERVICES	16.73	16.98	17.11	15.74	14.09
TECHNOLOGY HARDWARE/EQUIPMENT	8.22	7.18	6.82	6.49	6.99
SEMICONDUCTORS & SEMICONDUCTOR EQUIPMENT	3.58	4.08	4.14	4.44	4.86

## Portfolio weight by market cap

### ARMB - Large Cap Core Growth vs. S&P 500 Index

As of September 30, 2016

Market Capitalization	Portfolio Percentage	Benchmark Percentage	Stocks
\$500B and Above	7.12	5.74	ALPHABET INC CL A; APPLE INC
\$200B to \$500B	18.67	20.06	ALIBABA GROUP HOLDING LTD ADR; AMAZON.COM INC; EXXON MOBIL CORP; FACEBOOK INC CL A; JPMORGAN CHASE & CO; MICROSOFT CORP; PFIZER INC; WELLS FARGO & CO
\$100B to \$200B	18.83	18.77	ABBVIE INC; CISCO SYSTEMS INC; CITIGROUP INC; COMCAST CORP CL A; GILEAD SCIENCES INC; INTEL CORP; MERCK & CO INC; PEPSICO INC; SCHLUMBERGER LTD; UNITEDHEALTH GROUP INC; VISA INC
\$50B to \$100B	21.76	17.15	ALLERGAN PLC; BIOGEN INC; BROADCOM LTD; CELGENE CORP; COSTCO WHOLESALE CORP; DANAHER CORP; DOW CHEMICAL CO/THE; EOG RESOURCES INC; LOCKHEED MARTIN CORP; MCDONALD'S CORP; PRICELINE GROUP INC/THE; STARBUCKS CORP; TIME WARNER INC; US BANCORP; WALGREENS BOOTS ALLIANCE INC
\$20B to \$50B	19.51	23.57	ACTIVISION BLIZZARD INC; CBS CORP CL B; CME GROUP INC; CONSTELLATION BRANDS INC CL A; CORNING INC; ECOLAB INC; EDWARDS LIFESCIENCES CORP; MONSTER BEVERAGE CORP; NEWELL BRANDS INC; PIONEER NATURAL RESOURCES CO; SALESFORCE.COM INC; TJX COS INC/THE
\$10B to \$20B	9.30	10.67	AMETEK INC; DELPHI AUTOMOTIVE PLC; DOLLAR TREE INC; FORTIVE CORP; MOHAWK INDUSTRIES INC; ROYAL CARIBBEAN CRUISES LTD; VULCAN MATERIALS CO
\$5B to \$10B	1.92	3.57	RANGE RESOURCES CORP; TRACTOR SUPPLY CO
Below \$5B	0.00	0.47	
Cash	2.90	0.00	Cash

# Biographies

## **Raphael L. Edelman**

*Director, Senior Portfolio Manager  
CIO US Large Cap Select and Core Growth Equities*

Mr. Edelman is a senior portfolio manager, a director and Co-CIO US Large Cap Growth Equities with Allianz Global Investors, which he joined in 2004. He is co-manager of all Large-Cap Growth strategies. Mr. Edelman has 31 years of investment-industry experience. He previously worked at Alliance Capital Management, where he developed a large-cap equity product and managed institutional portfolios; before that, he was a research analyst specializing in the consumer products and services sector. Mr. Edelman has a B.A. in history from Columbia College and an M.B.A. in finance from New York University.

## **Melody L. McDonald**

*Managing Director  
Senior Relationship Manager*

Ms. McDonald is a relationship manager and managing director with Allianz Global Investors, which she joined in 1986. She is responsible for a number of the firm's corporate, public, endowment and foundation clients. Ms. McDonald has 28 years of investment-industry experience. She previously worked with Wells Fargo Bank as a credit analyst and corporate lending officer. In 2002, Ms. McDonald was appointed by the president of the United States to serve on the Pension Benefit Guaranty Corporation Advisory Committee; in 2005, she served as chairman of the committee. Ms. McDonald has also served on the investment committee for the IEEE, an international engineering organization that sets standards for engineering worldwide; and on The Juilliard National Council. Ms. McDonald has an M.A. from the New England Conservatory of Music and a doctorate in music from Stanford University; she also graduated as class marshal from Harvard Business School.

## Additional disclosure

**All materials are presented for Institutional Client use only and are not intended for distribution to the public. The strategy may not achieve its desired results. Past performance is not indicative of future results.**

All returns are gross unless otherwise noted. Gross returns do not give effect to investment advisory fees, which would reduce such returns. Investment advisory fees are described further in Form ADV Part 2A Brochure of the investment adviser named in the performance presentation of the relevant strategy (the "Adviser"). Advisory fees deducted periodically from accounts can have an impact on performance. As an example, the effect of investment advisory fees on the total value of a portfolio assuming (a) \$1,000,000 investment, (b) portfolio return of 5% per year, and (c) 1.00% annual investment advisory fee would be \$10,268.81 in the first year, \$56,741.68 over five years, and \$129,160.05 over ten years. Actual fees charged may vary by portfolio due to various conditions, including account size. The presentation may also contain net performance information. Notes to the performance presentation contained herein describe the methodology used to calculate "net of fee" performance.

The results for individual accounts and for different time periods may vary. Descriptions of a strategy's investment process, and "targeted", "expected" and similar forward-looking portfolio information are based on the Adviser's future expectations regarding the strategy. Although the Adviser manages the strategy with the goal of achieving these expectations, actual results may vary, and the publication of these expectations should not be construed as a guarantee. Representative account characteristics do not reflect composite performance, which may be different. On any given date, any portfolio managed in the indicated strategy may include securities not held by the representative account, and may not hold each security held in the representative account. Consequently, any particular account may have portfolio characteristics and performance that differ from those of the representative account. Portfolio characteristics and other information contained in this presentation have been obtained from independent research providers and other sources the Adviser believes to be reliable, but the Adviser cannot guarantee that the information is accurate, current or complete. Certain projected characteristics (such as the forward P/E ratio) of the Representative Account and indices shown may have been estimated. Estimates (est.) are preliminary and unaudited. Estimated data reflect subjective judgments and assumptions and unexpected events may occur. Therefore, there can be no assurance that developments will transpire as forecasted in this brochure. For more information regarding account characteristics, please contact Allianz Global Investors U.S. LLC ("AllianzGI US").

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Although Allianz Global Investors U.S. LLC is registered with the CFTC as a commodity pool operator ("CPO") and commodity trading adviser ("CTA"), it operates client accounts in this strategy, including funds (if any) as if it were exempt from registration as a CPO or CTA.

## ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: U.S. Small Cap Growth Manager Search

ACTION: X

DATE: December 8, 2016

INFORMATION: \_\_\_\_\_

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### BACKGROUND:

At the February 2016 Alaska Retirement Management Board (ARMB) meeting, the Board approved staff engaging in a portable alpha strategy. In execution of the portable alpha strategy, staff employs a portfolio of existing ARMB small cap equity managers to generate the alpha component.

While current ARMB small cap managers are able to accept additional contributions from ARMB, the size of the portable alpha strategy may push up against capacity constraints with certain managers. Limited capacity in the existing manager portfolio could force a concentration in those managers with additional capacity resulting in a reduction of manager diversification and potentially impacting performance.

Investment style is a broad way of categorizing a manager's investment strategy. Investment styles are commonly based on market capitalization and valuation metrics of a manager's investment universe. These descriptions typically include large cap, small cap, growth, value and core. Growth strategies invest in securities that tend to have high forward earnings growth while value strategies invest in those securities that have low valuation multiples. Core is a neutral mix of growth and value.

### STATUS:

Excluding index funds and the managed volatility strategy and including the newly hired BMO Disciplined Small Cap Core strategy, ARMB currently contracts with three small cap core managers, three small cap value managers, and one small cap growth manager.

Staff monitors each manager's style exposure for style drift compared to expectations. Staff also monitors the weighted average style of the entire small cap pool of managers relative to the Russell 2000 Index with the intent of reducing any unintended style bias in the small cap pool.

Staff has identified a need to add an additional small cap growth manager in order to increase diversification from a single, dedicated small cap growth manager.

### RECOMMENDATION:

The Alaska Retirement Management Board direct staff to engage Callan Associates to conduct a search for one U.S. small cap growth manager with an expected initial investment up to \$100 million.

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# ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Scientific Beta Multi-Beta Multi-Strategy Equal-  
Weighted Global Ex-US Index Strategy

ACTION: X

DATE: December 8, 2016

INFORMATION:

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## BACKGROUND:

Factors can be thought of as characteristics of a group of securities that are important in explaining their return and risk. A large body of academic research spanning several decades suggests that long term equity portfolio performance can be explained by factors, also known as betas or risk premia.

Certain equity factors have historically earned a long-term risk premium, including high book/market value, small market capitalization, low price volatility and price momentum. Until recent years, active managers were best positioned to seek these risk premia. Transparent, rules-based indices have become available over the last decade, providing the potential to outperform market capitalization-weighted indices at costs below traditional active management.

Scientific Beta has created a set of global indices that attempt to provide exposure to historically-rewarded risk factors in a diversified manner. Indices have also been created that seek exposure to multiple factors in an attempt to achieve more consistent relative outperformance.

The Alaska Retirement Management Board authorized staff to internally manage a domestic equity strategy benchmarked to Scientific Beta's U.S. multi-beta multi-strategy equal-weighted index in June 2016. Staff concluded contract negotiations and has implemented this strategy.

## STATUS:

Scientific Beta has a similar index focused on international equity securities located in developed and emerging markets.

## RECOMMENDATION:

Authorize staff to broaden its contract with Scientific Beta to receive the constituents of the ex-U.S. multi-beta multi-strategy indices and to initially invest up to \$200 million in an international equity strategy benchmarked against the MSCI ACWI ex-US index.



## T. Rowe Price

**Relevant Mandates:** US Small Cap Stock Trust

**Hired:** 2001

Firm Information	Investment Approach	Total ARMB Mandate
<p>T. Rowe Price Group, Inc. is an independent, publicly traded company with significant employee ownership. T. Rowe Price Group, Inc.'s shares are traded on the NASDAQ Stock Market (symbol: TROW), and are included in the S&amp;P 500 Stock Index. T. Rowe Price Group, Inc. is the direct or indirect owner of multiple subsidiaries.</p> <p>As of 9/30/16, the firm's total assets under management were \$812.9 billion.</p> <p><b>Key Executives:</b>  <b>Francisco M. Alonso</b>, <i>Vice President, Portfolio Manager</i>  <b>Michele Ward, CFA</b>, <i>Vice President, Portfolio Specialist: U.S. Equities</i>  <b>John D. Plowright</b>, <i>Vice President-Institutional Client Service, North America</i></p>	<p>The US Small Cap Stock Trust seeks to provide long-term capital growth by investing in those companies with a market cap range within or below the Russell 2000 Index at time of purchase. The Trust is a core strategy investing in both growth and value oriented equity securities.</p> <p>T. Rowe seeks those small cap companies with the flexibility to respond more quickly to changes in the marketplace. T. Rowe identifies these companies using relevant sector and industry valuation metrics including absolute and relative price ratios. T. Rowe believes that a value creation catalyst is the key. The catalyst is identified through fundamental research to discover underfollowed companies possessing clear business plans, financial flexibility, and proven management teams.</p> <p>T. Rowe employs a low turnover, patient trading strategy to promote full value realization.</p> <p><b>Benchmark:</b> Russell 2000 Index</p>	<p><b>Assets Under Management:</b>            9/30/16 <span style="float: right;">\$311,894,882</span></p>

**Concerns:** None

### 9/30/2016 Performance

	<u>Last Quarter</u>	<u>1-Year</u>	<u>3-Years Annualized</u>	<u>5-Years Annualized</u>	<u>6-Years Annualized</u>
Small Cap Stock Trust (net)	6.25%	16.00%	7.90%	17.43%	14.43%
Russell 2000 Index	9.05%	15.47%	6.71%	15.82%	12.35%



## **U.S. SMALL-CAP STOCK TRUST**

ALASKA RETIREMENT MANAGEMENT BOARD | DECEMBER 9, 2016

**Francisco M. Alonso**  
Portfolio Manager

**Michele Ward, CFA**  
Portfolio Specialist

**John D. Plowright, CFA**  
Institutional Client Service, North America

# T. ROWE PRICE—PRESENTERS



## Portfolio Management

### **Francisco M. Alonso**

Vice President—Portfolio Manager

- 16 years of investment experience;
- 16 years with T. Rowe Price.



## Portfolio Specialist

### **Michele Ward, CFA**

Vice President—Portfolio Specialist: U.S. Equities

- 33 years of investment experience;
- 2 years with T. Rowe Price.



## Client Service

### **John D. Plowright, CFA**

Vice President—Institutional Client Service, North America

- 24 years of investment experience;
- 11 years with T. Rowe Price.

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Annual Trustee Fee

Monitoring and Risk Management Elements

Biographical Backgrounds

# ORGANIZATIONAL OVERVIEW

# A GLOBAL ASSET MANAGEMENT FIRM—FOCUSED ON CLIENT SUCCESS

Founded in  
**1937**

**812.9**  
billion USD in assets  
under management<sup>1</sup>

**508**  
investment  
professionals  
worldwide<sup>2,3</sup>

Local presence in  
**16**  
countries<sup>3</sup>

Over  
**6,000**  
associates  
worldwide<sup>3</sup>

## INDEPENDENT INVESTMENT ORGANIZATION

- We are focused solely on investment management

## ALIGNMENT OF INTERESTS

- We are a publicly owned company with substantial employee ownership

## FINANCIAL STRENGTH

- We carry no outstanding long-term debt and maintain substantial cash reserves

## GLOBAL INVESTMENT PLATFORM

- We offer a full range of Equity, Fixed Income, and Asset Allocation solutions

## STABLE LEADERSHIP TEAM

- Our Management Committee averages 19 years with T. Rowe Price<sup>3</sup>

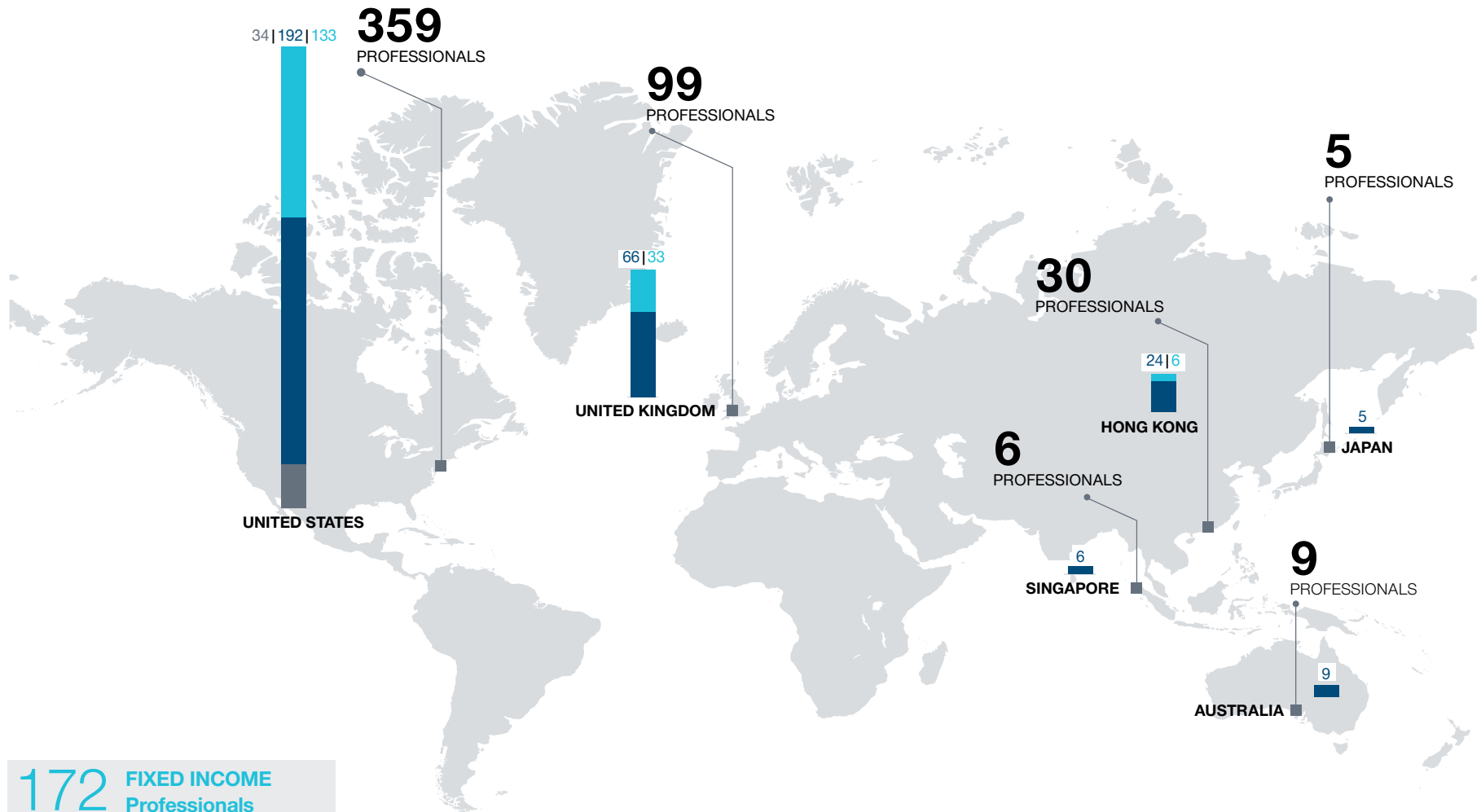
<sup>1</sup> The combined assets under management of the T. Rowe Price group of companies in USD as of September 30, 2016. The T. Rowe Price group of companies includes T. Rowe Price Associates, Inc., T. Rowe Price International Ltd, T. Rowe Price Hong Kong Limited, T. Rowe Price Singapore Private Ltd., and T. Rowe Price (Canada), Inc.

<sup>2</sup> 81 portfolio managers, 5 portfolio manager/analysts, 11 associate portfolio managers, 10 regional portfolio managers, 11 sector portfolio managers, 141 investment analysts/credit analysts, 44 quantitative analysts, 4 solutions associates, 45 associate analysts, 28 portfolio specialists/generalists, 2 strategists, 5 specialty analysts, 52 traders, 12 trading analysts, 2 economists, 34 portfolio modeling associates, and 21 management associates.

<sup>3</sup> As of September 30, 2016.

# WE INVEST IN OUR GLOBAL INVESTMENT RESOURCES

As of September 30, 2016



**172** FIXED INCOME Professionals

**302** EQUITY Professionals

**34** ASSET ALLOCATION Professionals

■ FIXED INCOME PROFESSIONALS

■ EQUITY PROFESSIONALS

■ ASSET ALLOCATION PROFESSIONALS

**16** YEARS Portfolio Manager Average Tenure

**21** YEARS Portfolio Manager Average Investment Experience

81 portfolio managers, 5 portfolio manager/analysts, 11 associate portfolio managers, 10 regional portfolio managers, 11 sector portfolio managers, 141 investment analysts/credit analysts, 44 quantitative analysts, 4 solutions associates, 45 associate analysts, 28 portfolio specialists/generalists, 2 strategists, 5 specialty analysts, 52 traders, 12 trading analysts, 2 economists, 34 portfolio modeling associates, and 21 management associates.

# OUR KEY STRENGTHS WORK TOGETHER TO SERVE CLIENTS

As of September 30, 2016

## Five pillars of strength that anchor our investment process:



**Fundamental Research**



**Collaborative Culture**



**Attention to Risk**



**Stability**



**Consistency**

We offer a range of investment capabilities, as well as solutions, and are structured to deliver long term results for a variety of institutional clients.

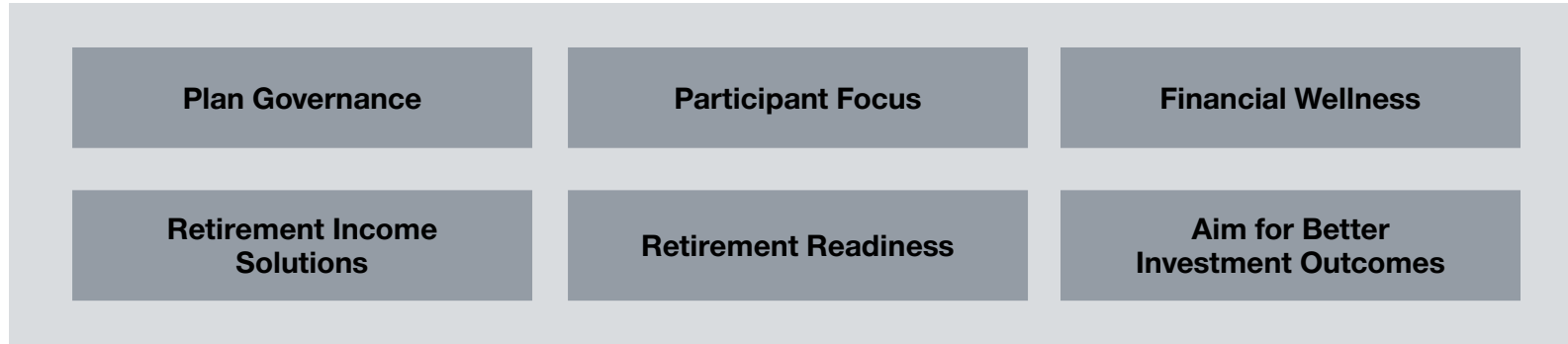


# PERSPECTIVES AND RESEARCH

As of September 30, 2016

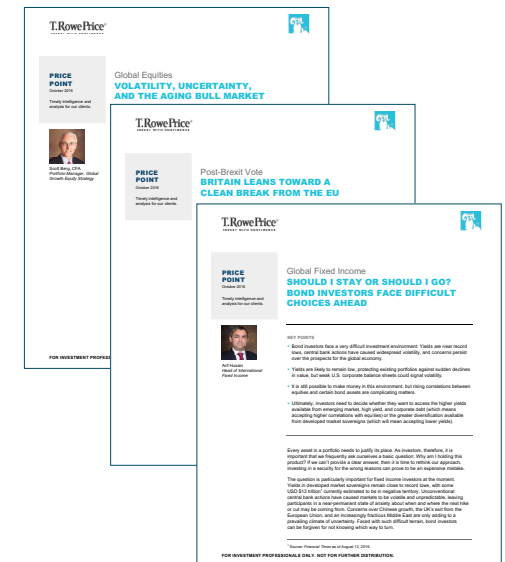
## Retirement Solutions

With nearly 40 years of experience in the Defined Contribution industry, we can share our perspectives on the evolving needs of retirement plan sponsors and their participants, including:



For additional insights, visit [troweprice.com/institutional](http://troweprice.com/institutional). Recent pieces include:

- The Benefits of Active Management at T. Rowe Price
- Brexit: Britain leans toward a clean break from the EU
- Global Equity: Volatility, uncertainty, and the aging bull market
- Fixed Income: Should I stay or should I go? Bond Investors face difficult choices ahead

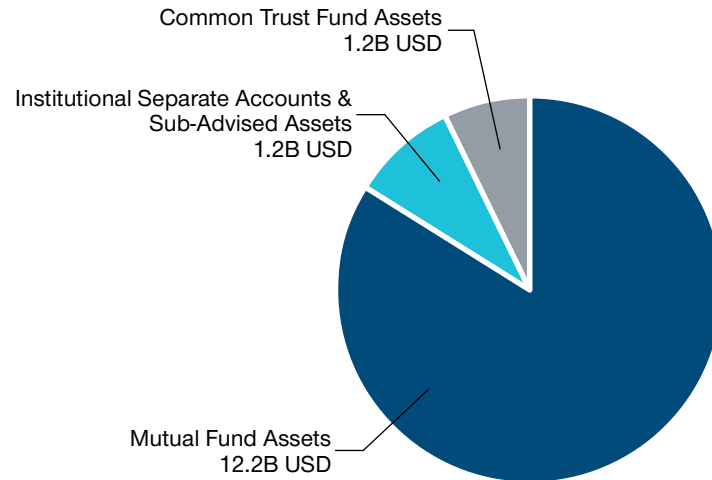


Certain of the above materials were prepared by T. Rowe Price Associates, Inc., a Registered Investment Advisor. T. Rowe Price Associates, Inc. and T. Rowe Price Investment Services, Inc. are affiliated companies.

# SMALL-CAP CORE ASSETS UNDER MANAGEMENT

**Total US Small-Cap Core Equity Strategy Assets: 14.6 Billion USD<sup>1</sup>**

As of September 30, 2016



<sup>1</sup> The total US Small-Cap Core Equity Strategy assets of the T. Rowe Price group of companies.

Strategy assets under management for the T. Rowe Price U.S.-registered mutual funds and common trust funds are calculated based on the closing price of the security in its respective market and may differ from the net asset value of the fund.

Numbers may not total due to rounding.

# CLIENT OBJECTIVE

## Alaska Retirement Management Board

**Total Assets = 312,407,387 USD**

**Inception Date: December 10, 2001**

As of September 30, 2016

### Objective

- Long-term growth of capital through investments in stocks of small companies believed to be undervalued or to have prospects for growth.

### Mandate

- US Small-Cap Core Equity Strategy: U.S. Small-Cap Stock Trust  
Strategy Assets as of September 30, 2016: 14.6 Billion USD

### Benchmark

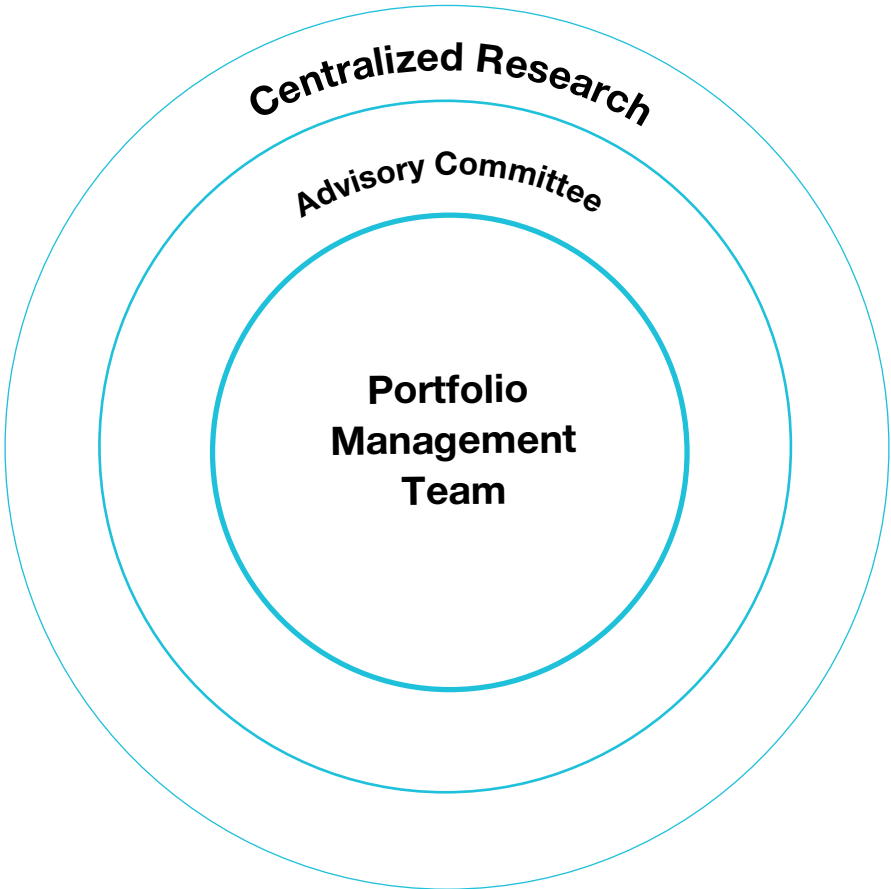
- Russell 2000 Index

The U.S. Small-Cap Stock Trust (the "Trust") is not a mutual fund. It is a common trust fund established by T. Rowe Price Trust Company under Maryland banking law, and its units are exempt from registration under the Securities Act of 1933. Investments in the Trust are not deposits or obligations of, or guaranteed by, the U.S. government or its agencies or T. Rowe Price Trust Company and are subject to investment risks, including possible loss of principal.

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# INVESTMENT TEAM AND PROCESS

# INVESTMENT TEAM



# INVESTMENT TEAM

As of September 30, 2016

## U.S. Small-Cap Stock Trust Portfolio Management Team Stability | Depth | Collaboration



**Frank M. Alonso<sup>1</sup>**  
Portfolio Manager

- 16 years of investment experience
- 16 years with T. Rowe Price
  - B.S., Miami University of Ohio



**Curt J. Organt, CFA**  
Associate Portfolio Manager

- 24 years of investment experience
- 20 years with T. Rowe Price
  - B.S., LaSalle University
  - M.B.A., Wake Forest University



**Michele Ward, CFA**  
Portfolio Specialist

- 33 years of investment experience
- 2 year with T. Rowe Price
  - B.A., Yale University
  - M.B.A., Yale School of Management

### Equity Research Team

153 Research Analysts | Industry Specialists<sup>2</sup>

Extensive collaboration among investment professionals enhances idea generation.

<sup>1</sup> Lead portfolio manager for U.S. Small-Cap Stock Trust.

<sup>2</sup> 11 sector portfolio managers, 90 research analysts, 41 associate research analysts, 6 quantitative analysts, and 5 specialty analysts as of September 30, 2016.

Effective October 1, 2016, Frank Alonso assumed portfolio manager responsibility of the U.S. Small-Cap Stock Trust.

Effective October 1, 2016, Curt Organt assumed associate portfolio manager responsibility of the U.S. Small-Cap Stock Trust.

# INVESTMENT TEAM

As of September 30, 2016

**U.S. Small-Cap Stock Trust  
Investment Advisory Committee  
Stability | Depth | Collaboration**

<b>Name</b>	<b>Role</b>	<b>Years with T. Rowe Price</b>	<b>Years of Experience</b>
Andrew S. Davis	Industrials Analyst	6	10
Christopher T. Fortune, CFA	Financial Analyst	11	12
Timothy E. Parker, CFA	Portfolio Manager, Small- and Mid-Cap Natural Resources	15	19
Charles G. Pepin	Portfolio Manager, Distribution Management Services	22	24
Robert T. Quinn Jr.	Consumer/Retail Analyst	12	22
Joshua K. Spencer	Portfolio Manager, Global Technology	12	18
J. David Wagner, CFA	Portfolio Manager, Small-Cap Value Equity	16	17
Rouven J. Wool-Lewis	Healthcare Analyst	6	9

Provide industry perspective and stock ideas in areas most meaningful for this strategy.

# EQUITY RESEARCH TEAM

As of October 1, 2016

HEADS OF EQUITY		DIRECTORS OF EQUITY RESEARCH				ASSOCIATE DIRECTORS OF EQUITY RESEARCH					
<b>Christopher D. Alderson</b> International	LON	<b>Kamran Baig</b> EMEA and Latin America	LON	<b>Jason Polun, CFA</b> North America	BAL	<b>Kes Visuvalingam, CFA</b> Asia	SGP	<b>Jai Kapadia</b> Asia	HKG	<b>Viral Patel</b> Australia	SYD
<b>Eric L. Veiel, CFA</b> U.S.	BAL	<b>Stephon Jackson, CFA</b> North America	BAL	<b>Mitchell Todd, CA</b> Developed Europe	LON	<b>Thomas Watson, CFA</b> North America	BAL	<b>Tobias Mueller</b> Developed Europe	LON		

HEALTH CARE	INDUSTRIALS	TECHNOLOGY	CONSUMER/RETAIL	FINANCIAL SERVICES	NATURAL RESOURCES	REGIONAL GENERALISTS
<b>Ziad Bakri, CFA, MD<sup>1</sup></b> U.S. Biotech	<b>Jason Adams</b> U.S. Aerospace and Defense	<b>Kennard Allen<sup>1</sup></b> U.S. Hardware/Software	<b>Gbemi Adeniyi-Williams</b> EMEA Generalist/Consumer	<b>Malik Asif</b> EMEA Banks	<b>Haider Ali</b> Asia Ex-Japan Oil & Gas	<b>Ulle Adamson, CFA<sup>1</sup></b> EMEA
<b>Melissa Gallagher, Ph.D.</b> OUS Pharma/Biotech	<b>Peter Bates, CFA<sup>1</sup></b> U.S. Conglomerates	<b>Greg Dunham</b> U.S. Software	<b>Paulina Amieva</b> Latin America Generalist	<b>Jon Casper</b> U.S. Financials	<b>Sheena Barbosa, CFA</b> Asia Ex-Japan Utilities/Infra.	<b>Martin Baylac</b> Latin America
<b>Rachel Jonas</b> U.S. SMID Healthcare	<b>Andrew Chang</b> Japan and Asia Ex Japan Auto/Steel	<b>Tobias Mueller, CFA</b> Europe Semi./Software	<b>Ira Carnahan, CFA</b> U.S. Consumer Discretionary	<b>Vincent DeAugustino, CFA</b> U.S. SMID Financials	<b>Ryan Burgess, CFA</b> U.S. Chemicals/Industrials	<b>Simon Cheng, CFA</b> Greater China Small-Cap
<b>Adam Poussard, CFA</b> U.S. Services & Equipment	<b>Andrew Davis</b> U.S. Transports	<b>Emily Scudder, CFA</b> U.S. Hardware	<b>Eric DeVilbiss, CFA</b> U.S. Restaurants/Agriculture	<b>Christopher Fortune, CFA</b> U.S. Real Estate	<b>Chris Driessen</b> Metals & Mining	<b>Archibald Ciganer, CFA<sup>1</sup></b> Japan Transports/Consumer
<b>Kyle Rasbach, Ph.D., Pharm.D.</b> Pharma	<b>Ryan Ferro</b> U.S. SMID Industrials	<b>Joshua Spencer, CFA<sup>1</sup></b> U.S. Semi./Equipment	<b>Amanda Hall, CFA</b> Europe Consumer	<b>Jon Friar</b> U.S. Banks/Payment	<b>Shawn Driscoll<sup>1</sup></b> U.S. E&P	<b>Anouk Dey</b> U.S. Small-Cap Growth
<b>H-hung Shih, Ph.D.</b> U.S. Biotech	<b>Joel Grant</b> U.S. Autos & Distributors	<b>Alan Tu</b> U.S. Software	<b>Michael Jacobs</b> Japan Retail/Leisure	<b>Nina Jones, CPA<sup>1</sup></b> U.S. Real Estate	<b>Ryan Hedrick, CFA</b> U.S. Coal/Utilities	<b>Vishnu Gopal</b> India & ASEAN Small-Cap
<b>Dai Wang</b> Chinese Healthcare	<b>Gianluca Guicciardi, CFA</b> Industrials/Capital Goods	<b>Alison Yip</b> Asia Ex-Japan Hardware	<b>Jacob Kann, CFA</b> Discretionary	<b>Yoichiro Kai, CMA</b> Asian Banks incl. Japan and Japanese Insurance	<b>Jon Hussey, CFA</b> U.S. Agriculture	<b>Ben Griffiths, CFA<sup>1</sup></b> Europe Small-Cap
<b>Jon Wood, CFA</b> U.S. Medical Devices/Tools	<b>Curt Organt, CFA<sup>1</sup></b> U.S. Small Cap Generalist	<b>MEDIA/TELECOM</b>		<b>Rekha Marda</b> U.S. Food Retail/Durables	<b>Shinwoo Kim</b> U.S. Energy Services	<b>Nabil Hanano, CFA</b> Europe
<b>Rouven Wool-Lewis, Ph.D.</b> U.S. Services & Hospitals	<b>Melanie Rizzo, CFA</b> U.S. Trucking/Machinery	<b>Paul Cho</b> Cable/Telecom	<b>Sridhar Nishtala</b> Asia Ex-Japan Staples	<b>Gregory Locraft, Jr.</b> U.S. P&C Insurance	<b>Matt Mahon</b> U.S. Chemicals	<b>Tetsuji Inoue, CPA</b> Japan Small-Cap/Real Estate, Japan Technology
<b>BUSINESS SERVICES</b>		<b>Paul Greene<sup>1</sup></b> U.S. Advertising/Internet	<b>Robert Quinn, Jr.</b> U.S. Consumer Staples	<b>Dan McCulley, CFA</b> U.S. Real Estate	<b>Ryan Martyn</b> Australia Energy/Industrials	<b>Randal Jenneke<sup>1</sup></b> Australia Media/Consumer
<b>Shaun Currie</b> U.S. Business Services	<b>Eunbin Song, CFA</b> Asia Ex Japan Auto/C&E	<b>Aden Lau</b> Asia Ex-Japan Telecom/Fin.	<b>Sebastian Schrott</b> European Luxury/Retail	<b>Ian McDonald, CFA</b> U.S. Exchanges/Life Ins.	<b>Chris O'Neill</b> U.S. E&P	<b>Jai Kapadia</b> Asia Real Estate/Conglom.
<b>Jared Murphy</b> U.S. Bus. Serv./Industrials	<b>Rupinder Vig, ACA</b> Industrials/Capital Goods	<b>Jacqueline Liu</b> Asia Ex-Japan Internet	<b>Vivian Si</b> U.S. Mass Merch. / Apparel	<b>Jihong Min</b> Southeast Asia Banks	<b>Timothy Parker, CFA<sup>1</sup></b> U.S. E&P	<b>Mark Lawrence, CFA</b> EMEA
		<b>Jeff Nathan</b> U.S. Advertising/Media	<b>Brian Solomon, CFA</b> U.S. Cruise/Lodging	<b>Thibault Nardin</b> Europe Banks	<b>Vivek Rajeswaran</b> U.S. Equip. & Services/Waste	<b>Oxana Lyalina, CFA</b> EMEA
		<b>Corey Shull, CFA</b> U.S. Media/Internet	<b>Konstantin Stoev, CFA</b> European Staples and Auto	<b>Preeta Ragavan, CFA</b> U.S. Real Estate	<b>Rick de los Reyes<sup>1</sup></b> Metals & Mining	<b>Michael Niedzielski</b> Europe Small-Cap
		<b>Christopher Whitehouse</b> Europe Media/Telecom	<b>John Williams, CFA</b> Large-Cap Consumer Staples	<b>Matt Snowling, CFA</b> Capital Markets	<b>Jeneiv Shah, CFA</b> Metals & Mining	<b>Paul O'Sullivan</b> Australia Financials/H.C.
			<b>Eric Yuan, CFA</b> Regional Gaming	<b>Gabriel Solomon<sup>1</sup></b> U.S. Money Center/Insur.	<b>Thomas Shelmerdine</b> Australian Metals & Mining	<b>Seun Oyegunle, CFA</b> EMEA
				<b>Zenon Voyiatzis</b> Europe Insur./Financials	<b>John Sherman</b> European Chemicals/Indus.	<b>Viral Patel</b> Australia REITS/Retail
					<b>Christopher Wheaton</b> Energy Majors	<b>Alexander Roik</b> U.S. Small-Cap Value
						<b>Sin Dee Tan, CFA</b> Europe Small-Cap
						<b>Verena Wachnitz, CFA<sup>1</sup></b> Latin America
						<b>Hiroshi Watanabe, CFA<sup>1</sup></b> Japan SMID-Cap
						<b>Marta Yago</b> Latin America

153 Equity Research Professionals worldwide<sup>2</sup>

BAL Baltimore SGP Singapore  
HKG Hong Kong SYD Sydney  
LON London TOK Tokyo

<sup>1</sup> Also has portfolio management responsibilities.

<sup>2</sup> 11 sector portfolio managers, 90 research analysts, 41 associate research analysts, 6 quantitative analysts, and 5 specialty analysts as of September 30, 2016.



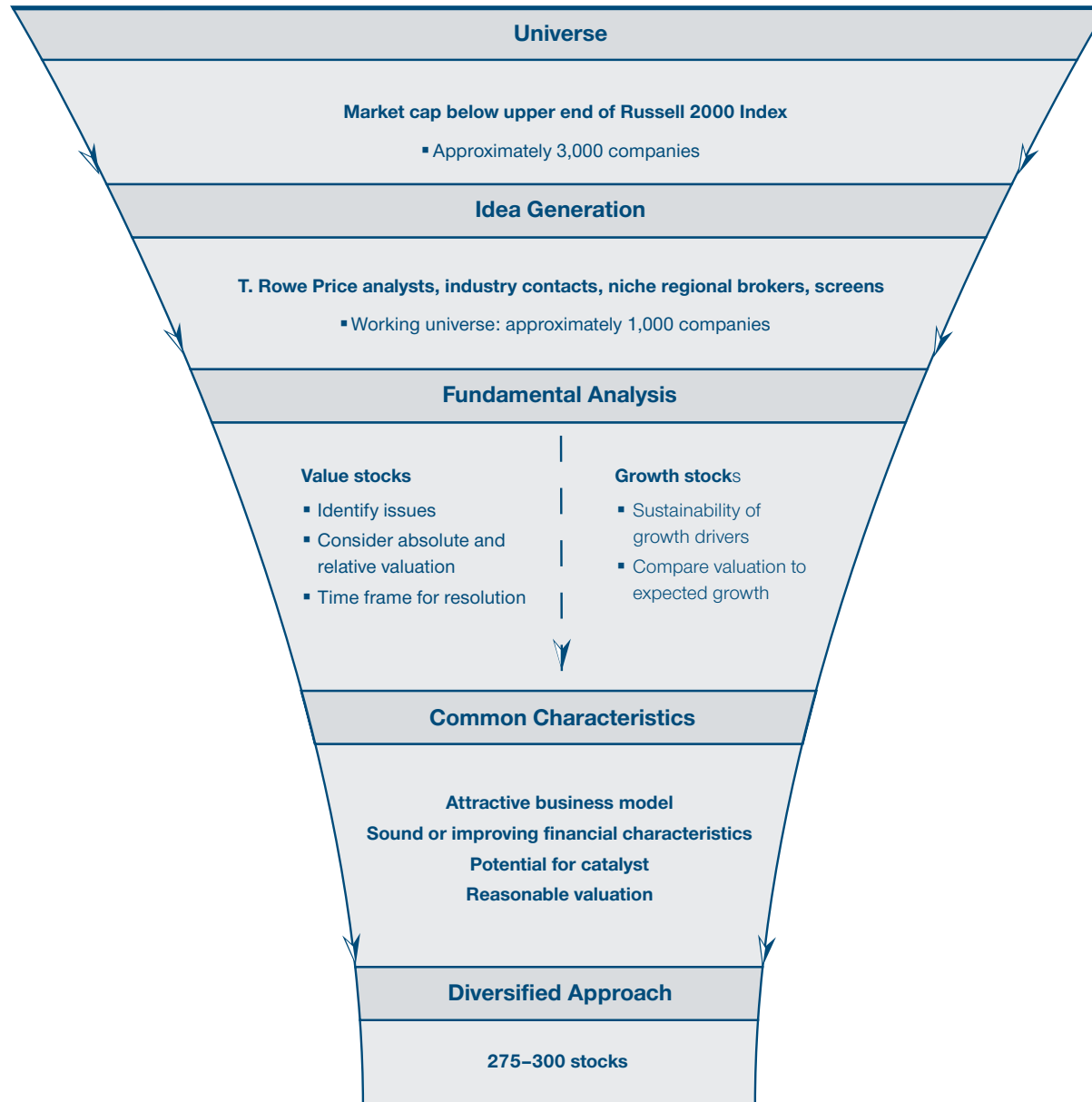
# EQUITY RESEARCH—A FORMULA FOR CONSISTENCY

- Fundamentally driven research approach built around industry expertise
- Intensive M.B.A. recruiting effort centered upon rigorous summer intern program
- Talents honed via thorough mentoring and evaluation processes
- Collegial culture marked by a strong team orientation
- Key retention tools include performance-based compensation, equity participation, and advancement opportunities
- Multiple career paths have fostered stability—career analyst, sector specialist, or portfolio manager

Intensive recruiting effort, coupled with thorough mentoring and feedback, fosters a successful “grow-from-within” culture.

# INVESTMENT PROCESS

## U.S. Small-Cap Stock Trust



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# INVESTMENT PROCESS

## U.S. Small-Cap Stock Trust

### Identify small-cap companies whose shares appear mispriced

- Value core combined with opportunistic approach to growth

### Pursue collaborative approach to fundamental research

- Appraise industry structure and market position
- Analyze business model viability
- Assess management quality and shareholder orientation
- Identify potential catalysts and quantify upside
- Seek solid or improving financial characteristics
- Free cash flow generation potential
- Sound or improving financial leverage

### Key considerations

- Value stocks: controversy surrounding company can be resolved in reasonable time frame
- Growth stocks: growth drivers for the business are sustainable

### Balance relative valuation with inherent risk

- Sufficient reward for acceptable level of risk

# INVESTMENT PROCESS

## U.S. Small-Cap Stock Trust

### Portfolio Construction

- 275–300 securities
- Position sizes typically range from 0.15% to 2.50%
- Primary sector weights generally vary from 0.5X to 2.0X of the Russell 2000 Index weights

### Sell Discipline

- Deteriorating fundamentals
- Change in investment thesis
  - Catalyst no longer apparent
  - Loss of confidence in management
- Excessive valuation
- Displacement by a better idea

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# PORTFOLIO TURNOVER

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
U.S. Small-Cap Stock Trust	32%	29%	45%	51%	40%	25%	27%	23%	23%	25%
Morningstar Small Blend Category Average <sup>1</sup>	82	85	99	97	89	78	67	69	64	69

Our low-turnover and patient approach to trading can help earnings to compound and can help reduce trading costs.

**Past performance cannot guarantee future results.**

<sup>1</sup> Source: Morningstar, December 2015.

# PERFORMANCE REVIEW

# TOTAL RETURN PERFORMANCE

## U.S. Small-Cap Stock Trust

Periods Ended September 30, 2016

Figures are Calculated in U.S. Dollars

	Three Months	Year-to-Date	One Year	Annualized			
				Three Years	Five Years	Ten Years	Since Client Inception 12/10/01
U.S. Small-Cap Stock Trust (Gross of Fees)	6.42%	11.05%	16.73%	8.56%	18.16%	10.21%	10.66%
U.S. Small-Cap Stock Trust (Net of Fees)	6.25	10.53	16.01	7.90	17.43	9.51	9.93
Russell 2000 Index	9.05	11.46	15.47	6.71	15.82	7.07	8.21

Calendar Years	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
U.S. Small-Cap Stock Trust (Gross of Fees)	13.46%	-0.64%	-32.85%	40.53%	33.28%	0.68%	19.39%	40.53%	7.93%	-2.18%
U.S. Small-Cap Stock Trust (Net of Fees)	12.74	-1.28	-33.31	39.59	32.43	0.06	18.64	39.62	7.31	-2.79
Russell 2000 Index	18.37	-1.57	-33.79	27.17	26.85	-4.18	16.35	38.82	4.89	-4.41

**Current performance may be higher or lower than the quoted past performance, which cannot guarantee future results.**

**Unit price, principal value, and return will vary, and you may have a gain or loss when you sell your units. To obtain the most recent month-end performance, please call 1-800-638-7890 or go to [troweprice.com](http://troweprice.com).**

Net of Fees performance figures reflect the deduction of the applicable annual trustee fee (0.60% as of September 30, 2016), which is used primarily to pay normal operating expenses of the trust, including custodial, accounting, and investment management fees.

Investing in small companies involves greater risk than is customarily associated with larger companies, since small companies often have limited product lines, markets, or financial resources.

Figures include changes in principal value and reinvested dividends.

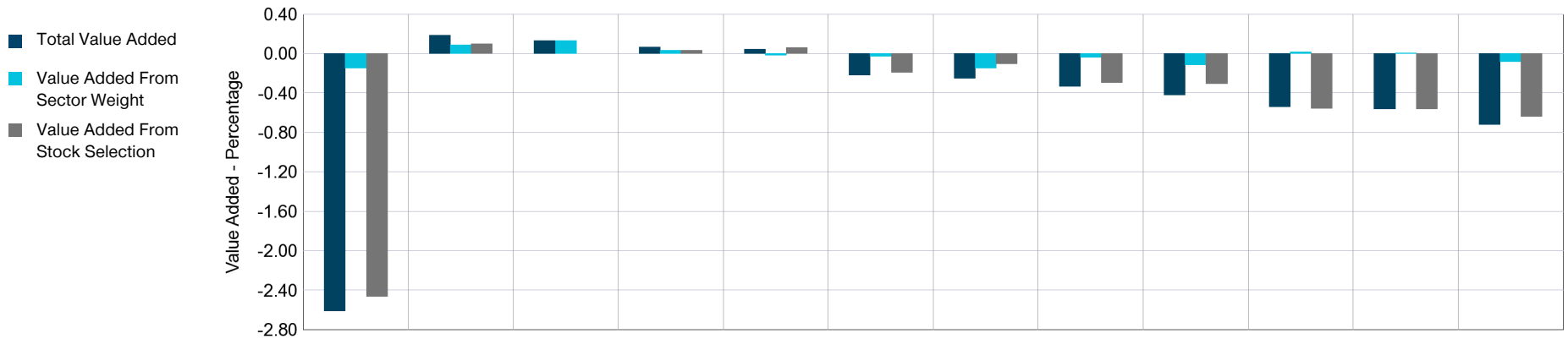
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# ATTRIBUTION ANALYSIS (USD)

## U.S. Small-Cap Stock Trust vs. Russell 2000 Index

Three Months Ended September 30, 2016

### BY SECTOR



	Total	Real Estate	Telecom Svcs	Energy	Financials	Materials	Utilities	Consumer Staples	Information Technology	Consumer Disc	Industrials & Bus Svcs	Health Care
Over (Under) Weight	-	-1.80	-0.71	-0.17	-0.37	-0.97	0.94	0.59	-1.55	-0.49	6.73	-2.21
Portfolio Weight (Ending)	100.00	5.96	0.00	3.04	17.61	3.73	4.74	3.60	16.47	12.00	20.85	11.99
Index Weight (Ending)	100.00	7.77	0.71	3.20	17.98	4.69	3.80	3.01	18.02	12.50	14.12	14.20
Portfolio Performance	6.44	-1.07	0.00	12.05	8.38	7.23	-6.95	-4.95	14.25	-0.46	6.38	8.18
Index Performance	9.05	-2.64	-6.84	10.24	8.07	12.38	-5.12	2.26	16.31	3.85	9.16	13.55

### Past performance cannot guarantee future results.

Numbers may not add to 100% due to rounding; all numbers are percentages.

Analysis represents the equity-only performance of the portfolio as calculated by the Wilshire Atlas attribution model and is exclusive of cash, trusts, mutual funds, delisted securities, and other non-equity holdings. Returns will not match official T. Rowe Price performance because Wilshire uses different pricing and exchange rate sources and does not capture intraday trading or fair-value pricing. Performance for each security is obtained in the local currency and, if necessary, is converted to U.S. dollars using an exchange rate determined by an independent third party.

Source: Wilshire Atlas, MSCI/S&P Global Industry Classification Standards (GICS) Sectors; analysis by T. Rowe Price Associates, Inc. T. Rowe Price uses the MSCI/S&P GICS for sector and industry reporting. Each year, MSCI and S&P review the GICS structure. The last change occurred on August 31, 2016. T. Rowe Price will adhere to all future updates to GICS for prospective reporting.

Figures are shown gross of fees.

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# PERFORMANCE ATTRIBUTION

## U.S. Small-Cap Stock Trust

Three Months Ended September 30, 2016

### SIGNIFICANT ABSOLUTE CONTRIBUTORS

Stock	% of Trust	Industry	Business Descriptions
Finisar	0.7%	Communications Equipment	Finisar is a provider of optical subsystems and components that are used in data communication and telecommunication applications.
E*TRADE Financial	1.1	Capital Markets	E*TRADE Financial is a financial services company. The Company provides brokerage and related products and services primarily to individual retail investors under the brand E*TRADE Financial.
Wright Medical	0.7	Health Care Equipment & Supplies	Wright Medical, formerly Tornier N.V., is a medical device company. The Company is focused on extremities and biologics products.
Fleetmatics	0.6	Software	Fleetmatics is a holding company. The Company is a provider of mobile workforce solutions for service-based businesses of all sizes delivered as software-as-a-service (SaaS).
SS&C Technologies Holdings	1.3	Software	SS&C Technologies Holdings is a holding company. The Company is a provider of software products and software-enabled services that allow financial services providers to automate complex business processes and manage their information processing requirements.

### SIGNIFICANT ABSOLUTE DETRACTORS

Stock	% of Trust	Industry	Business Descriptions
TreeHouse Foods	1.1%	Food Products	TreeHouse Foods is a consumer packaged food and beverage manufacturing company. The Company's segments include North American Retail Grocery, Food Away From Home, and Industrial and Export. It manufactures a range of shelf stable, refrigerated and fresh products.
Core-Mark Holding	0.6	Distributors	Core-Mark Holding is a wholesale distributor to the convenience retail industry in North America. The Company provides sales, marketing, distribution and logistics services to over 36,500 customer locations across the United States and Canada through over 30 distribution centers.
Novavax	0.0	Biotechnology	Novavax is a clinical-stage vaccine company focused on the discovery, development and commercialization of recombinant nanoparticle vaccines and adjuvants.
Triumph Group	0.4	Aerospace & Defense	Triumph Group designs, engineers, manufactures, repairs, overhauls and distributes a portfolio of aircraft components, accessories, subassemblies and systems.
Southwest Gas	0.6	Gas Utilities	Southwest Gas is engaged in the business of purchasing, distributing and transporting natural gas in Arizona, Nevada and California.

Business Description sourced from Thomson Reuters Worldscope Fundamentals, Copyright®, Thomson Reuters, 1999–2016. All Rights Reserved.

The information shown does not reflect any exchange-traded funds that may be held in the trust.

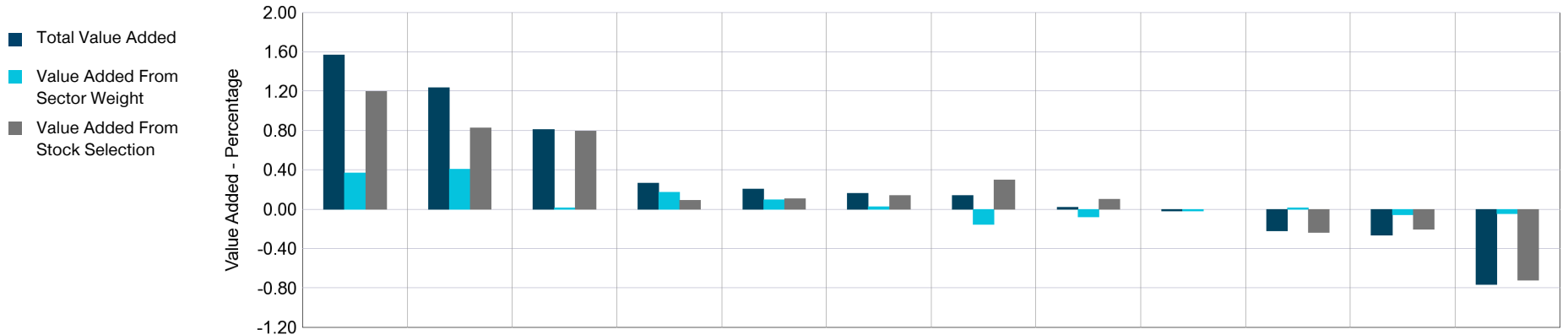
Numbers may not total due to rounding.

# ATTRIBUTION ANALYSIS (USD)

## U.S. Small-Cap Stock Trust vs. Russell 2000 Index

One Year Ended September 30, 2016

### BY SECTOR



	Total	Industrials & Bus Svcs	Energy	Health Care	Real Estate	Utilities	Information Technology	Consumer Staples	Telecom Svcs	Consumer Disc	Materials	Financials
Over (Under) Weight	-	6.73	-0.17	-2.21	-1.80	0.94	-1.55	0.59	-0.71	-0.49	-0.97	-0.37
Portfolio Weight (Ending)	100.00	20.85	3.04	11.99	5.96	4.74	16.47	3.60	0.00	12.00	3.73	17.61
Index Weight (Ending)	100.00	14.12	3.20	14.20	7.77	3.80	18.02	3.01	0.71	12.50	4.69	17.98
Portfolio Performance	17.02	24.79	28.48	8.58	-1.07	26.39	27.75	21.81	0.00	-0.68	30.81	13.48
Index Performance	15.46	20.31	-0.30	8.07	-2.64	23.75	25.79	18.71	16.28	1.07	37.30	16.36

**Current performance may be higher or lower than the quoted past performance, which cannot guarantee future results. Unit price, principal value, and return will vary, and you may have a gain or loss when you sell your units.**

**To obtain the most recent month-end performance, please call 1-800-638-7890 or go to [troweprice.com](http://troweprice.com).**

Numbers may not add to 100% due to rounding; all numbers are percentages.

Analysis represents the equity-only performance of the portfolio as calculated by the Wilshire Atlas attribution model and is exclusive of cash, trusts, mutual funds, delisted securities, and other non-equity holdings. Returns will not match official T. Rowe Price performance because Wilshire uses different pricing and exchange rate sources and does not capture intraday trading or fair-value pricing. Performance for each security is obtained in the local currency and, if necessary, is converted to U.S. dollars using an exchange rate determined by an independent third party.

Source: Wilshire Atlas, MSCI/S&P Global Industry Classification Standards (GICS) Sectors; analysis by T. Rowe Price Associates, Inc. T. Rowe Price uses the MSCI/S&P GICS for sector and industry reporting. Each year, MSCI and S&P review the GICS structure. The last change occurred on August 31, 2016. T. Rowe Price will adhere to all future updates to GICS for prospective reporting.

Figures are shown gross of fees.

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# PERFORMANCE ATTRIBUTION

## U.S. Small-Cap Stock Trust

One Year Ended September 30, 2016

### SIGNIFICANT ABSOLUTE CONTRIBUTORS

Stock	% of Trust	Industry	Business Descriptions
John Bean Technologies	0.9%	Machinery	John Bean Technologies is a technology solutions provider to the segments of the food processing and air transportation industries. The Company designs, manufactures, tests and services technological systems and products.
Finisar	0.7	Communications Equipment	Finisar is a provider of optical subsystems and components that are used in data communication and telecommunication applications.
Semtech	0.5	Semiconductors & Semiconductor Equipment	Semtech is a supplier of analog and mixed-signal semiconductor products. The Company's product lines include Signal Integrity, Protection, Wireless and Sensing, and Power and High-Reliability.
Cray	0.0	Technology Hardware, Storage & Peripherals	Cray designs, develops, manufactures, markets and services the high-end of the high performance computing (HPC) market, primarily categories of systems, known as supercomputers and provides storage and data analytics solutions.
PS Business Parks	0.9	Equity Real Estate Investment Trusts (REITs)	PS Business Parks is a self-advised and self-managed real estate investment trust (REIT). The Company owns, operates and develops commercial properties, primarily multi-tenant flex, office and industrial parks. It focuses on owning concentrated business parks.

### SIGNIFICANT ABSOLUTE DETRACTORS

Stock	% of Trust	Industry	Business Descriptions
Restoration Hardware Holdings	0.2%	Specialty Retail	Restoration Hardware Holdings is a luxury retailer in the home furnishings marketplace. The Company offers merchandise assortments across a range of categories, including furniture, lighting, textiles, bathware, decor, outdoor and garden, tableware, and child and teen furnishings.
Acadia Healthcare	0.6	Health Care Providers & Services	Acadia Healthcare is a provider of behavioral healthcare services. The Company operates in two segments: U.S. Facilities and U.K. Facilities.
Waddell & Reed Financial	0.0	Capital Markets	Waddell & Reed Financial is a mutual fund and asset management company. The Company provides investment management, investment advisory, investment product underwriting and distribution and shareholder services administration to Waddell & Reed Advisors group of mutual funds, Ivy Funds, Ivy Funds Variable Insurance Portfolios, InvestEd Portfolios and 529 college savings plan (collectively, the Funds), and the Ivy Global Investors Fund SICAV and its Ivy Global Investors sub-funds (the IGI Funds), and institutional and separately managed accounts.
Alkermes	0.4	Biotechnology	Alkermes is a biopharmaceutical company. The Company is engaged in researching, developing and commercializing, both with partners and on its own, pharmaceutical products that are designed to address medical needs of patients in therapeutic areas.
Red Robin Gourmet Burgers	0.3	Hotels Restaurants & Leisure	Red Robin Gourmet Burgers, together with its subsidiaries, primarily develops, operates and franchises casual-dining restaurants and fast-casual restaurants in North America and focuses on serving a selection of gourmet burgers.

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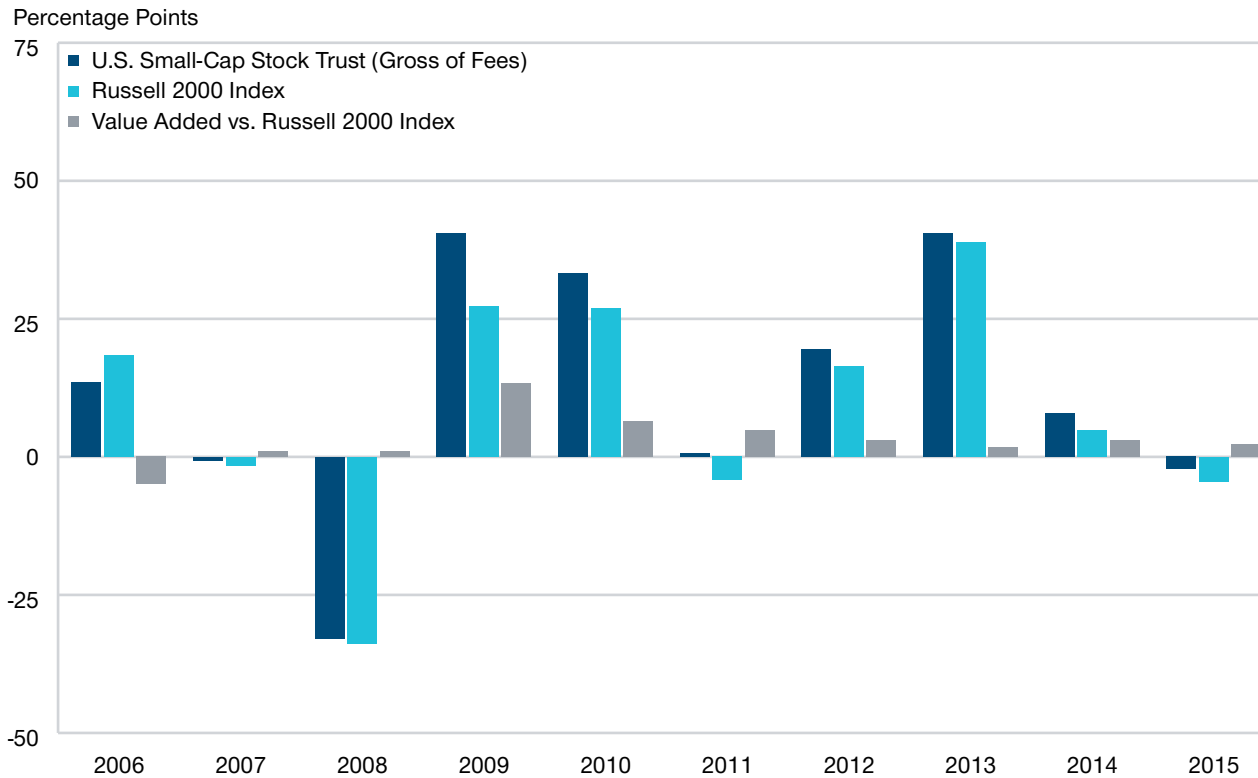
The information shown does not reflect any exchange-traded funds that may be held in the trust.

Numbers may not total due to rounding.

# TOTAL RELATIVE PERFORMANCE

## Value Added in U.S. Small-Cap Stock Trust vs. Russell 2000 Index—Calendar Years (Gross of Fees)

Figures are Calculated in U.S. Dollars



**Current performance may be higher or lower than the quoted past performance, which cannot guarantee future results. Unit price, principal value, and return will vary, and you may have a gain or loss when you sell your units.**

**To obtain the most recent month-end performance, please call 1-800-638-7890 or go to [troweprice.com](http://troweprice.com).**

Each bar measures the difference in performance between the trust and the benchmark for the calendar year shown.

Figures shown gross of fees.

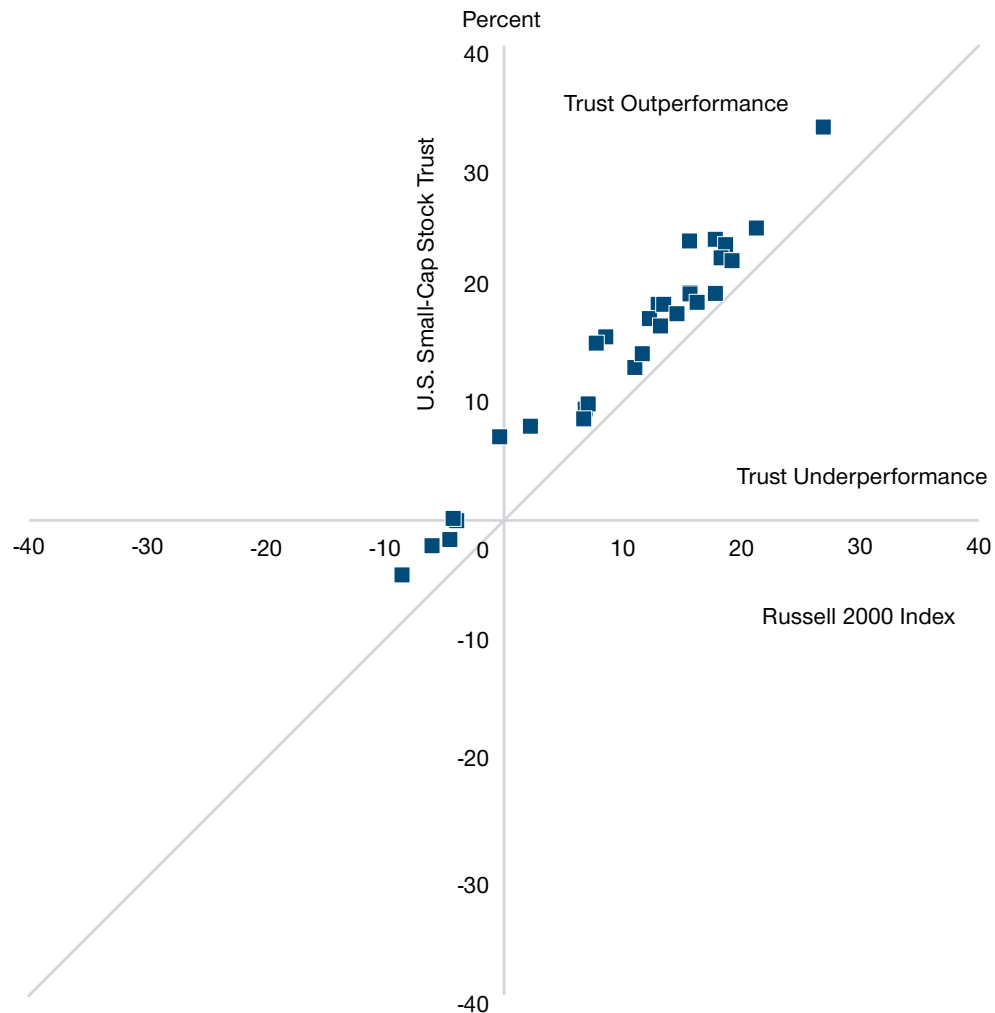
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# TOTAL RETURN PERFORMANCE

## Three-Year Rolling Returns (Annualized Gross of Fees)—U.S. Small-Cap Stock Trust vs. Russell 2000 Index

Calculated Quarterly from September 30, 2006 Through September 30, 2016

Figures are Calculated in U.S. Dollars



### Past performance cannot guarantee future results.

Each point represents the performance of the trust and its benchmark for a three-year annualized period. Points above the diagonal represent outperformance relative to the benchmark. Points below the diagonal represent relative underperformance.

Figures shown gross of fees.

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# PERFORMANCE STATISTICS GLOSSARY

**Active Share** – Active Share is a holdings based measure of active management representing the percentage of a portfolio's holdings that differ from those in its benchmark. Compared to tracking error, which measures the standard deviation of the difference in a manager's returns versus the index returns, Active Share allows investors to get a clearer understanding of what a manager is doing to drive performance, rather than drawing conclusions from observed returns. The greater the difference between the asset composition of a product and its benchmark, the greater the active share is.

**Alpha** – A measure of a strategy's risk-adjusted performance. Alpha represents the difference between a strategy's actual returns and its expected performance, given its level of risk as measured by beta. The difference is expressed as an annualized percentage.

**Batting Average** – A statistical measure used to determine the percentage of months where the portfolio's performance exceeded or matched the return of the index.

**Beta** – A measure of the market risk of a strategy showing how responsive the strategy is to a given market index, such as the S&P 500 Index (an index for equity strategies) or the Bloomberg Barclays Government/Corporate Bond Index (an index for fixed income strategies). By definition, the beta of the benchmark index is 1.00. A strategy with a 1.10 beta is expected to perform 10% better than the index in up markets and 10% worse in down markets. Usually, higher betas represent riskier investments.

**Earnings Growth Rate (Current Fiscal Year)** – Measures the annualized percent change in earnings per share from the prior fiscal year to the current fiscal year.

**Earnings Growth Rate (Next Fiscal Year)** – Measures the annualized percent change in earnings per share from the current fiscal year and the forecast for the next fiscal year.

**Enterprise Value to EBITDA** – A financial ratio that measures a company's return on investment. The EBITDA/EV ratio may be preferred over other measures of return because it is normalized for differences between companies. Using EBITDA normalizes for differences in capital structure, taxation and fixed asset accounting. Meanwhile, using enterprise value also normalizes for differences in a company's capital structure.

**Five-year EPS Growth (Least Squares)** – Uses the least squares regression approach to adjust for sharp fluctuations and reflect the average growth rate over the past five years.

**Historical Tracking Error** – Standard deviation of the strategy's excess return over the market benchmark.

**Long-Term Growth** – Average expected 3-5 year earnings growth rate based on IBES analyst estimates.

**Information Ratio** – A measure of the significance or quality of excess return. It is defined as the ratio of excess return to the standard deviation of excess return. A larger number is better – either a very positive excess return or consistent excess return with low standard deviation.

**Market Capitalization** – A measure of a company's total value and is equal to the total dollar value of all outstanding shares.

Median – Represents the midpoint of market capitalization of stocks in a portfolio where 50% of holdings are above the value.

Investment-Weighted Median – Represents the breakpoint where 50% of the weights are above the value.

Investment-Weighted Average – Sum of each holding's market capitalization multiplied by its weight in the portfolio.

**Net Debt to EBITDA** – A measurement of leverage, calculated as a company's interest-bearing liabilities minus cash or cash equivalents, divided by its EBITDA. The net debt to EBITDA ratio is a debt ratio that shows how many years it would take for a company to pay back its debt if net debt and EBITDA are held constant. If a company has more cash than debt, the ratio can be negative.

**Price to Book Ratio** – Used to compare a stock's market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter's book value (book value is simply total assets minus intangible assets and liabilities).

**Price-to-Earnings Ratio (12 Months Forward)** – P/E is a valuation measure calculated by dividing the price of a stock by the analysts' forecast of the next 12 months expected earnings. The ratio is a measure of how much investors are willing to pay for the company's future earnings. The higher the P/E, the more investors are paying for a company's earnings growth in the next 12 months.

**Price-to-Earnings Ratio (Current Fiscal Year)** – P/E is a valuation measure calculated by dividing the price of a stock by its reported earnings per share from the latest fiscal year. The ratio is a measure of how much investors are willing to pay for the company's earnings. The higher the P/E, the more investors are paying for a company's current earnings.

**Price-to-Earnings Ratio (Next Fiscal Year)** – P/E is a valuation measure calculated by dividing the price of a stock by its estimated earnings for the next fiscal year. The ratio is a measure of how much investors are willing to pay for the company's future earnings. The higher the P/E, the more investors are paying for the company's expected earnings growth in the next fiscal year.

**Price to FFO** – A figure used by real estate investment trusts (REITs) to define the cash flow from their operations. It is calculated by adding depreciation and amortization expenses to earnings, and sometimes quoted on a per share basis.

**Projected Earnings Growth Rate (IBES)** – A company's expected earnings per share growth rate for a given time period based on the forecast from the Institutional Broker's Estimate System, which is commonly referred to as IBES.

**Return on Equity** – ROE is a valuation measure calculated by dividing the company's current fiscal year net income by shareholders' equity (i.e., the company's book value). Return on equity measures how much a company earns on each dollar that common stock investors have put into the company. It indicates how effectively and efficiently a company and its management are using stockholder investments.

**Return on Invested Capital** – Measures how well a company generates cash flow relative to the amount invested. The return on invested capital measures how efficiently a company is using its money to generate returns. It is calculated by dividing net income minus dividends by the sum of long-term debt and common equity.

**R-Squared** – Measures the percentage of a strategy's movement that is explained by movements in the benchmark index. R-Squared helps indicate the accuracy of a strategy's alpha and beta.

**Sharpe Ratio** – A risk-adjusted measure, which is calculated using standard deviation and excess return to determine reward per unit of risk. The higher the Sharpe ratio, the better the strategy's historical risk-adjusted performance.

**Standard Deviation** – Indicates the volatility of a strategy's total returns as measured against its mean performance. Unlike alpha, beta, and R-Squared, which are compared with a benchmark index, standard deviation is strategy-specific. In general, the higher the standard deviation, the greater the volatility or risk.

**Turnover** – A measurement of how frequently assets within a fund are bought and sold by the managers.

**Up and Down Capture** – A statistical measure used to quantify the percentage of market gains captured by the portfolio in either up or down markets. It is expressed as a percentage.

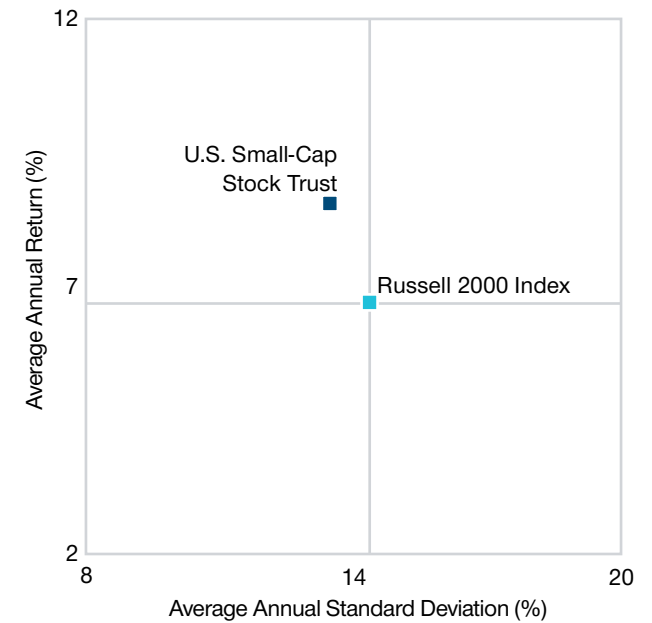
# TOTAL RETURN PERFORMANCE

## Risk/Return Characteristics

Three Years Ended September 30, 2016

Figures are Calculated in U.S. Dollars

	Three Years	
	U.S. Small-Cap Stock Trust	Russell 2000 Index
Annualized Total Return	8.56%	6.71%
Annualized Standard Deviation	13.46%	14.35%
Historical Tracking Error	2.15%	0.00%
Beta	0.93	1.00
R-Squared	0.98	1.00
Alpha	2.15%	0.00%
Sharpe Ratio	0.62	0.46
Information Ratio	0.86	0.00



### Past performance cannot guarantee future results.

This information demonstrates, in part, the firm's Risk/Return analysis. This material is provided for informational purposes only and is not intended to be investment advice or a recommendation to take any particular investment action.

Statistics based on monthly gross returns. Returns would have been lower as the result of the deduction of applicable fees.

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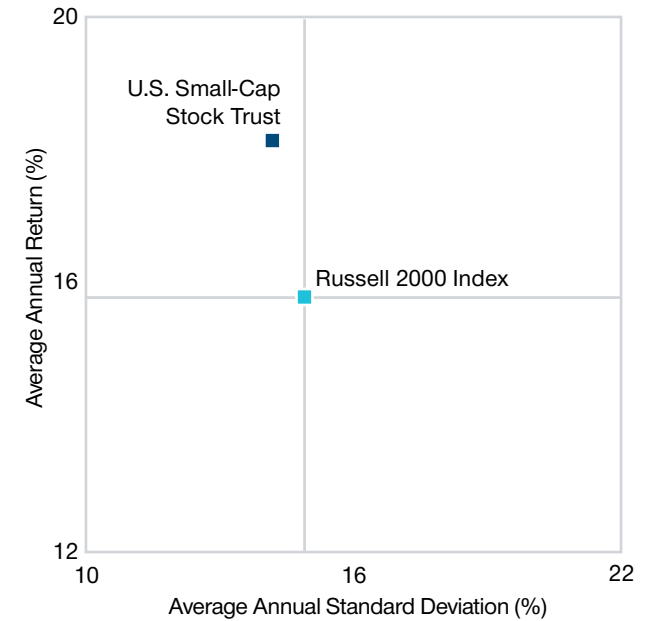
# TOTAL RETURN PERFORMANCE

## Risk/Return Characteristics

Five Years Ended September 30, 2016

Figures are Calculated in U.S. Dollars

	Five Years	
	U.S. Small-Cap Stock Trust	Russell 2000 Index
Annualized Total Return	18.16%	15.82%
Annualized Standard Deviation	14.17%	14.89%
Historical Tracking Error	2.34%	0.00%
Beta	0.94	1.00
R-Squared	0.98	1.00
Alpha	2.89%	0.00%
Sharpe Ratio	1.27	1.05
Information Ratio	1.00	0.00



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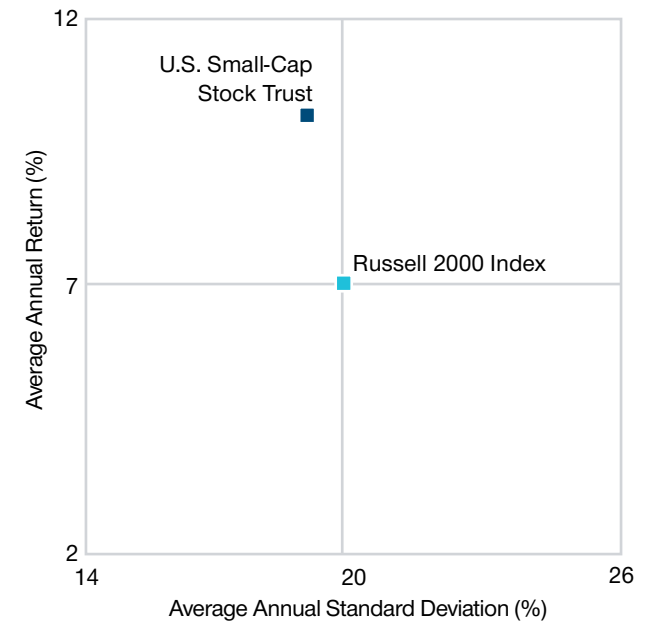
# TOTAL RETURN PERFORMANCE

## Risk/Return Characteristics

Ten Years Ended September 30, 2016

Figures are Calculated in U.S. Dollars

	Ten Years	
	U.S. Small-Cap Stock Trust	Russell 2000 Index
Annualized Total Return	10.21%	7.07%
Annualized Standard Deviation	18.95%	19.77%
Historical Tracking Error	2.67%	0.00%
Beta	0.95	1.00
R-Squared	0.98	1.00
Alpha	3.16%	0.00%
Sharpe Ratio	0.49	0.31
Information Ratio	1.17	0.00



### Past performance cannot guarantee future results.

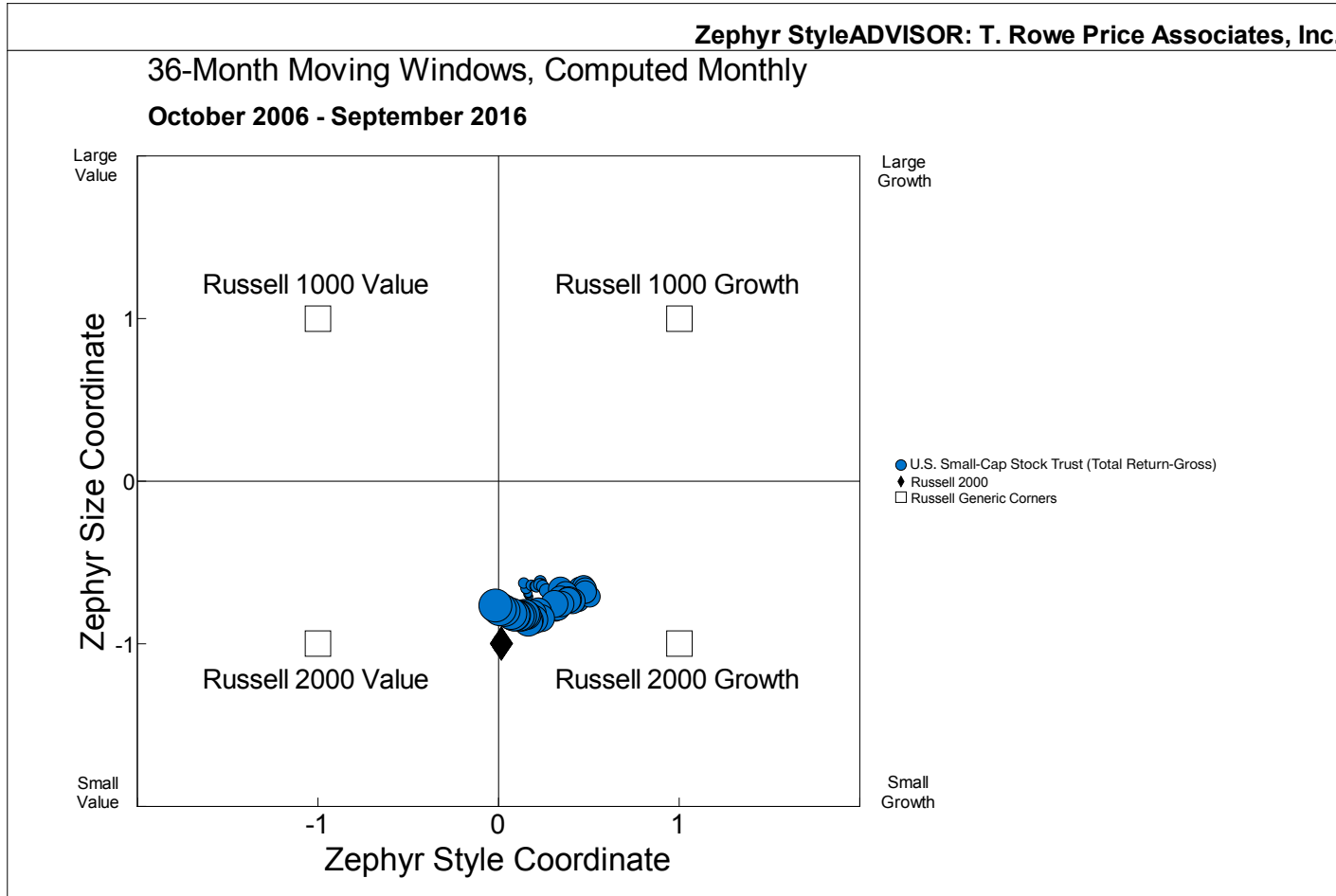
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# STYLE CONSISTENCY

## Zephyr StyleADVISOR: T. Rowe Price Associates, Inc.



Zephyr StyleADVISOR performs a constrained quadratic optimization to determine the portfolio's (style, size) coordinate relative to the indices shown. This rolling window analysis displays the smaller data points to represent the oldest time period and larger data points to represent the most recent time period.

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# PORTFOLIO REVIEW

# PORTFOLIO CHARACTERISTICS

## U.S. Small-Cap Stock Trust

As of September 30, 2016

	U.S. Small-Cap Stock Trust	Russell 2000 Index
Projected Earnings Growth Rate <sup>1,2</sup>	14.0%	12.5%
Price to Earnings (12 Months Forward) <sup>1,2</sup>	21.5X	19.6X
Relative to Russell 2000 Index	1.1	1.0
Return on Equity (Last 12 Months) <sup>2</sup>	9.8%	9.6%
Price to Book	2.8X	2.5X
Long-Term Debt as % of Capitalization	34.1%	33.0%
Unweighted Median Market Capitalization (Millions USD)	1,895	755
Investment-Weighted Median Market Capitalization (Millions USD)	2,463	1,828
Investment-Weighted Average Market Capitalization (Millions USD)	2,841	1,880
Number of Holdings	308	2,000
20 Largest Holdings	18.6%	4.4%
Turnover (Last 12 Months)	31.2%	N/A

<sup>1</sup> Source: IBES.

<sup>2</sup> These statistics are based on the portfolio's underlying holdings and are not a projection of future portfolio performance.

Statistics are investment-weighted median unless otherwise noted.

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# 10 LARGEST HOLDINGS

## U.S. Small-Cap Stock Trust

As of September 30, 2016

Company	% of Trust	Market Capitalization (Millions USD)	Business Description
SS&C Technologies Holdings	1.3%	6,467	SS&C Technologies Holdings is a holding company. The Company is a provider of software products and software-enabled services that allow financial services providers to automate complex business processes and manage their information processing requirements.
TreeHouse Foods	1.1	4,945	TreeHouse Foods is a consumer packaged food and beverage manufacturing company. The Company's segments include North American Retail Grocery, Food Away From Home, and Industrial and Export.
E*TRADE Financial	1.1	7,970	E*TRADE Financial is a financial services company. The Company provides brokerage and related products and services primarily to individual retail investors under the brand E*TRADE Financial.
Pinnacle Foods	1.1	5,919	Pinnacle Foods is a manufacturer, marketer and distributor of branded food products in North America. The Company operates through three segments: the Birds Eye Frozen segment, the Duncan Hines Grocery segment and the Specialty Foods segment.
Proofpoint	1.0	3,146	Proofpoint is a security-as-a-service provider that enables large and mid-sized organizations around the world. The Company's security-as-a-service platform consists of a suite of on-demand data protection solutions, including threat protection, incident response, regulatory compliance, archiving, governance, eDiscovery and secure communication.
ONE Gas	1.0	3,231	ONE Gas is an independent natural gas utility in the United States. The Company is a natural gas distributor in Oklahoma, Kansas and Texas.
WellCare Health Plans	1.0	5,183	WellCare Health Plans is a managed care company focused on government-sponsored managed care services, primarily through Medicaid, Medicare Advantage (MA) and Medicare Prescription Drug Plans (PDPs) to families, children, seniors and individuals with complex medical needs.
Tempur Sealy International	0.9	3,314	Tempur Sealy International is a bedding provider. The Company develops, manufactures, markets and distributes bedding products.
John Bean Technologies	0.9	2,057	John Bean Technologies is a technology solutions provider to the segments of the food processing and air transportation industries. The Company designs, manufactures, tests and services technological systems and products.
PS Business Parks	0.9	3,076	PS Business Parks is a self-advised and self-managed real estate investment trust (REIT). The Company owns, operates and develops commercial properties, primarily multi-tenant flex, office and industrial parks. It focuses on owning concentrated business parks.
<b>Total</b>	<b>10.5%</b>		

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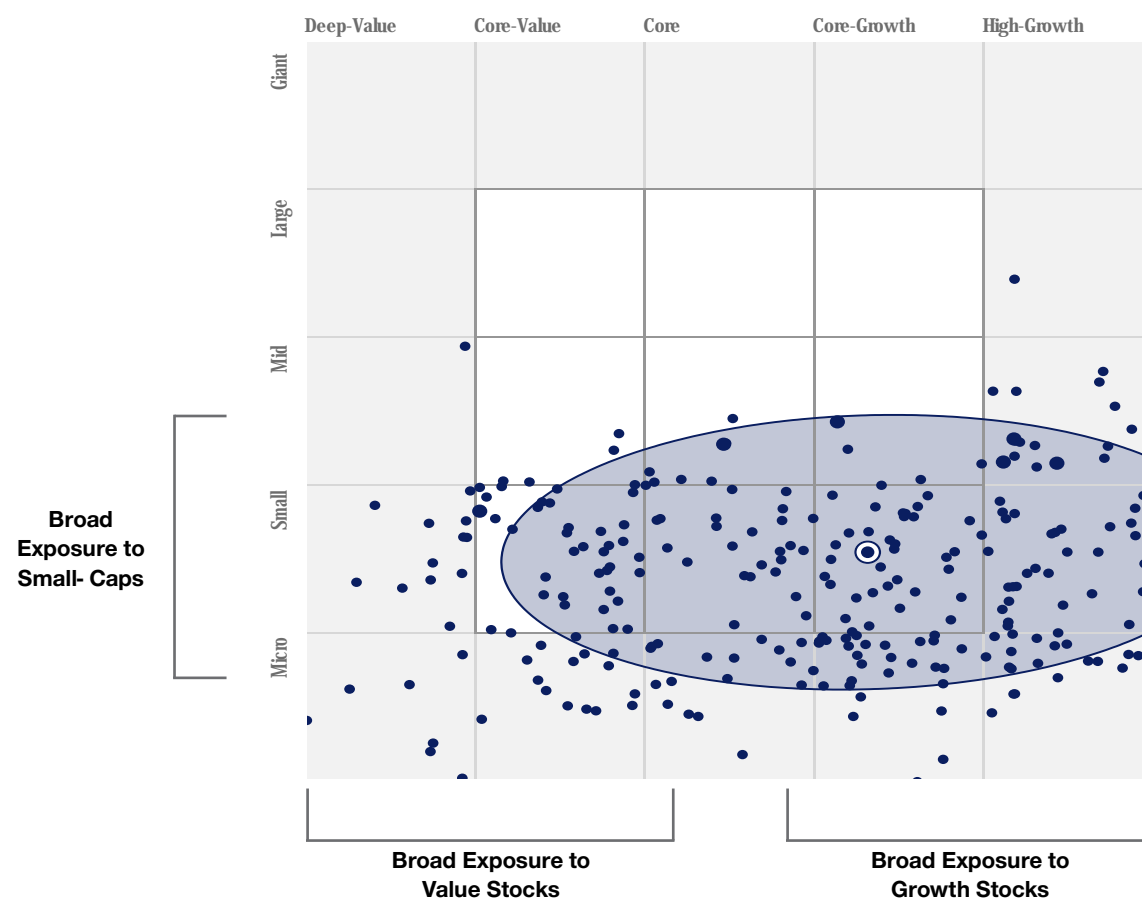
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Numbers may not total due to rounding.

# T. ROWE PRICE FUNDS—US SMALL-CAP STOCK TRUST

## PHILOSOPHY AND PROCESS

### Morningstar Holdings-Based Style Analysis



- A broad, diverse mix of small- cap growth and value stocks
- Central tendency will opportunistically shift from growth to value
- Central tendency will not shift out of the small-cap range
- Outliers reflect “market controversy” of both growth and value stocks

Analyzing the portfolio using Morningstar holdings-based analysis reveals the broad exposure of investments.

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# RECENT PORTFOLIO CHANGES

## U.S. Small-Cap Stock Trust

Three Months Ended September 30, 2016

Major Purchases	Beginning Weight	Ending Weight	Market Capitalization (Millions USD)	Business Description
Brink's Company <sup>1</sup>	0.0%	0.6%	1,837	Brink's Company is a provider of logistics and security solutions. The Company's solutions include cash-in-transit, automated teller machine (ATM) replenishment and maintenance, international transportation of valuables, cash management and payment services, to financial institutions, retailers, government agencies (including central banks), mints, jewelers and other commercial operations around the world.
Cal-Maine Foods <sup>1</sup>	0.0	0.3	1,870	Cal-Maine Foods is a producer and marketer of shell eggs in the United States. The Company operates through the segment of production, grading, packaging, marketing and distribution of shell eggs.
CSRA <sup>1</sup>	0.0	0.4	4,402	CSRA is a provider of information technology services to the United States federal government. The Company operates through two segments: Defense and Intelligence, and Civil.
Ellie Mae <sup>1</sup>	0.0	0.4	3,469	Ellie Mae is a provider of on-demand software solutions and services for the residential mortgage industry in the United States.
Gentherm	0.4	0.7	1,146	Gentherm is a global technology company, which is engaged in the design, development, and manufacturing of innovative thermal management technologies and automotive cable systems.

Major Sales	Beginning Weight	Ending Weight	Market Capitalization (Millions USD)	Business Description
Demandware <sup>2,3</sup>	0.4%	0.0%	–	Demandware is a provider of enterprise-class cloud commerce solutions for retailers and branded manufacturers, including solutions for digital commerce and point of sale, as well as order management and intelligence capabilities.
G & K Services <sup>2</sup>	0.3	0.0	1,883	G & K Services is a service-focused provider of branded uniform and facility services programs.
Veeco <sup>2</sup>	0.2	0.0	798	Veeco designs, manufactures, markets and supports thin film equipment.
Waddell & Reed Financial <sup>2</sup>	0.2	0.0	1,504	Waddell & Reed Financial is a mutual fund and asset management company. The Company provides investment management, investment advisory, investment product underwriting and distribution and shareholder services administration to Waddell & Reed Advisors group of mutual funds, Ivy Funds, Ivy Funds Variable Insurance Portfolios, InvestEd Portfolios and 529 college savings plan (collectively, the Funds), and the Ivy Global Investors Fund SICAV and its Ivy Global Investors sub-funds (the IGI Funds), and institutional and separately managed accounts.
Fairchild Semiconductor <sup>2,4</sup>	0.2	0.0	–	Fairchild Semiconductor is focused on developing, manufacturing and selling power management solutions. The Company is engaged in power analog and discrete design, as well as packaging.

<sup>1</sup> New holding.

<sup>2</sup> Eliminated.

<sup>3</sup> Demandware was acquired by salesforce.com on July 11, 2016.

<sup>4</sup> Fairchild Semiconductor was acquired by ON Semiconductor on September 19, 2016.

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Numbers may not total due to rounding.

# RECENT PORTFOLIO CHANGES

## U.S. Small-Cap Stock Trust

One Year Ended September 30, 2016

Major Purchases	Beginning Weight	Ending Weight	Market Capitalization (Millions USD)	Business Description
Tempur Sealy International <sup>1</sup>	0.0%	0.9%	3,314	Tempur Sealy International is a bedding provider. The Company develops, manufactures, markets and distributes bedding products.
Brink's Company <sup>1</sup>	0.0	0.6	1,837	Brink's Company is a provider of logistics and security solutions. The Company's solutions include cash-in-transit, automated teller machine (ATM) replenishment and maintenance, international transportation of valuables, cash management and payment services, to financial institutions, retailers, government agencies (including central banks), mints, jewelers and other commercial operations around the world.
Triumph Group <sup>1</sup>	0.0	0.4	1,381	Triumph Group designs, engineers, manufactures, repairs, overhauls and distributes a portfolio of aircraft components, accessories, subassemblies and systems.
Gentherm	0.4	0.7	1,146	Gentherm is a global technology company, which is engaged in the design, development, and manufacturing of innovative thermal management technologies and automotive cable systems.
Home Bancshares <sup>1</sup>	0.0	0.4	2,924	Home Bancshares is a bank holding company. The Company is engaged in providing a range of commercial and retail banking, and related financial services to businesses, real estate developers and investors, individuals and municipalities through its community bank subsidiary, Centennial Bank (the Bank).

Major Sales	Beginning Weight	Ending Weight	Market Capitalization (Millions USD)	Business Description
Cray <sup>2</sup>	0.5%	0.0%	959	Cray designs, develops, manufactures, markets and services the high-end of the high performance computing (HPC) market, primarily categories of systems, known as supercomputers and provides storage and data analytics solutions.
Brunswick	1.2	0.4	4,401	Brunswick is a designer, manufacturer and marketer of recreation products, including marine engines, boats, fitness and active recreation products.
Demandware <sup>2,3</sup>	0.2	0.0	-	Demandware is a provider of enterprise-class cloud commerce solutions for retailers and branded manufacturers, including solutions for digital commerce and point of sale, as well as order management and intelligence capabilities.
Incyte	0.7	<0.1	17,727	Incyte is a biopharmaceutical company. The Company is focused on the discovery, development and commercialization of therapeutics to treat medical needs, primarily in oncology.
Rexnord <sup>2</sup>	0.4	0.0	2,199	Rexnord is a multi-platform industrial company. The Company operates through two segments: Process & Motion Control platform, and Water Management platform.

<sup>1</sup> New holding.

<sup>2</sup> Eliminated.

<sup>3</sup> Demandware was acquired by salesforce.com on July 11, 2016.

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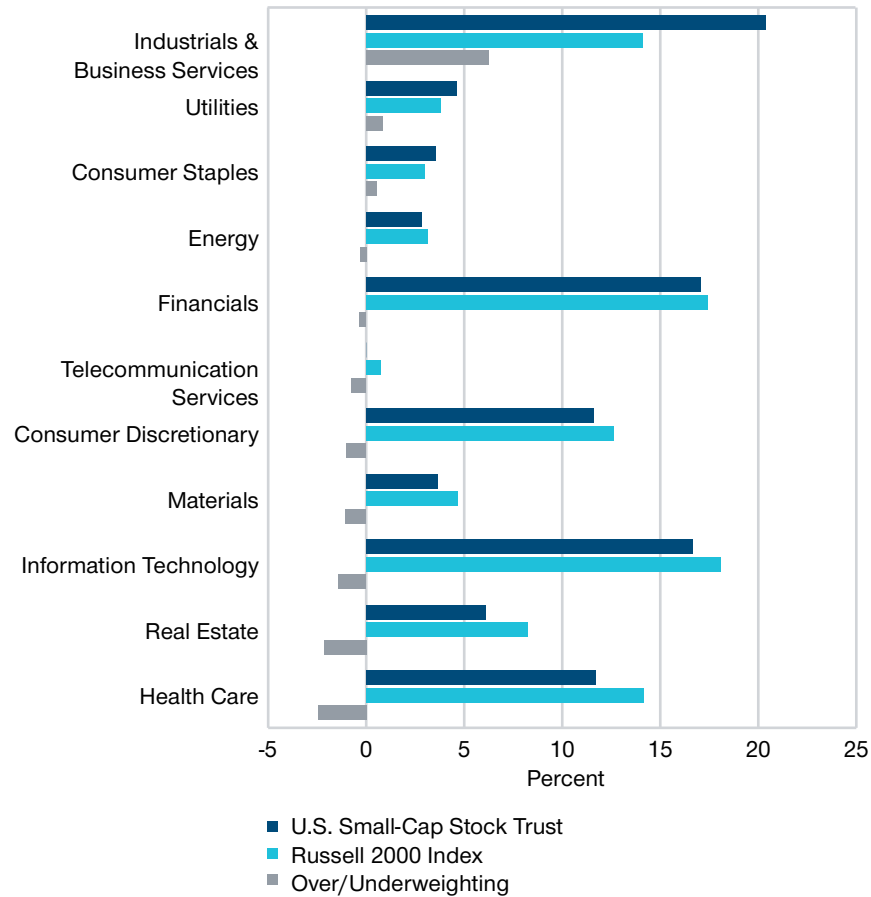
Numbers may not total due to rounding.



# SECTOR DIVERSIFICATION

## U.S. Small-Cap Stock Trust

As of September 30, 2016



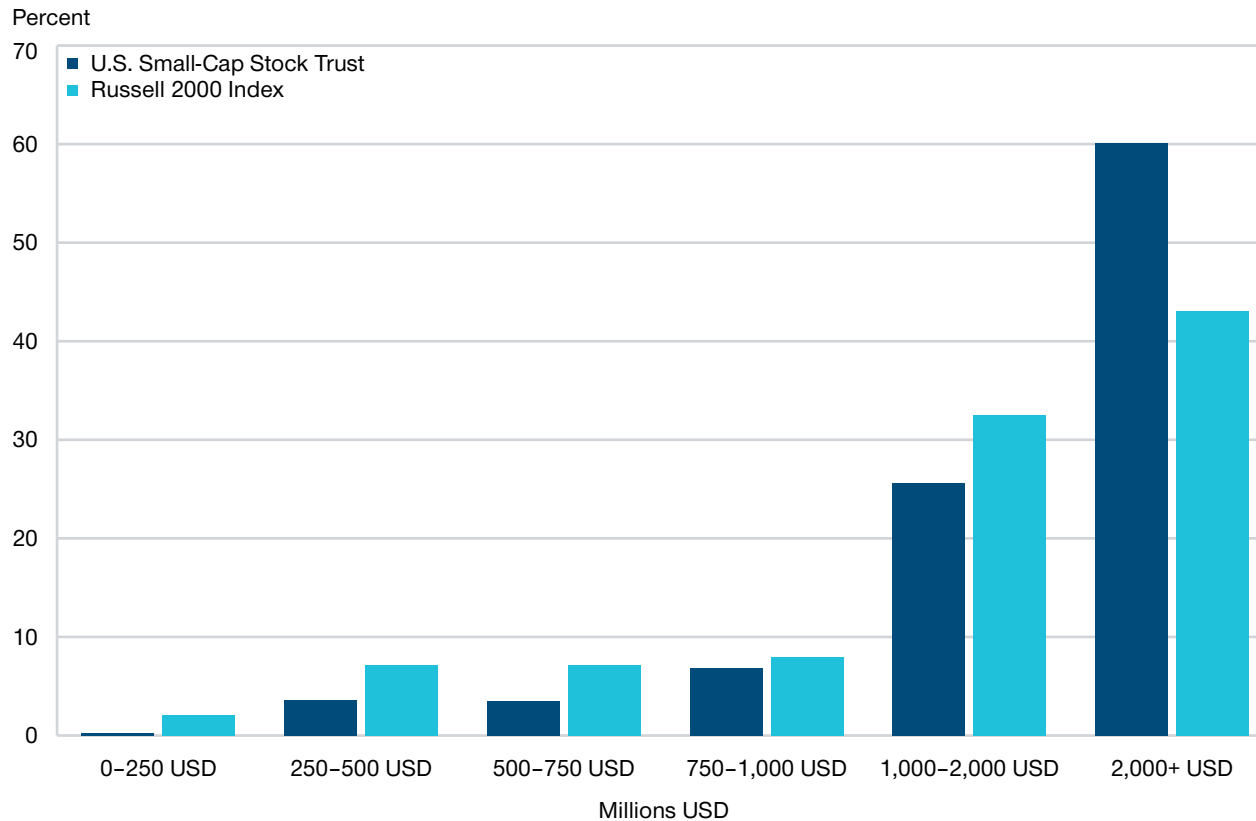
T. Rowe Price uses the MSCI/S&P Global Industry Classification Standard (GICS) for sector and industry reporting. Each year, MSCI and S&P review the GICS structure. The last change occurred on August 31, 2016. T. Rowe Price will adhere to all future updates to GICS for prospective reporting. Russell Investment Group is the source and owner of the trademarks, service marks, and copyrights related to the Russell indexes. Russell® is a trademark of Russell Investment Group.



# MARKET CAPITALIZATION RANGE

## U.S. Small-Cap Stock Trust

As of September 30, 2016

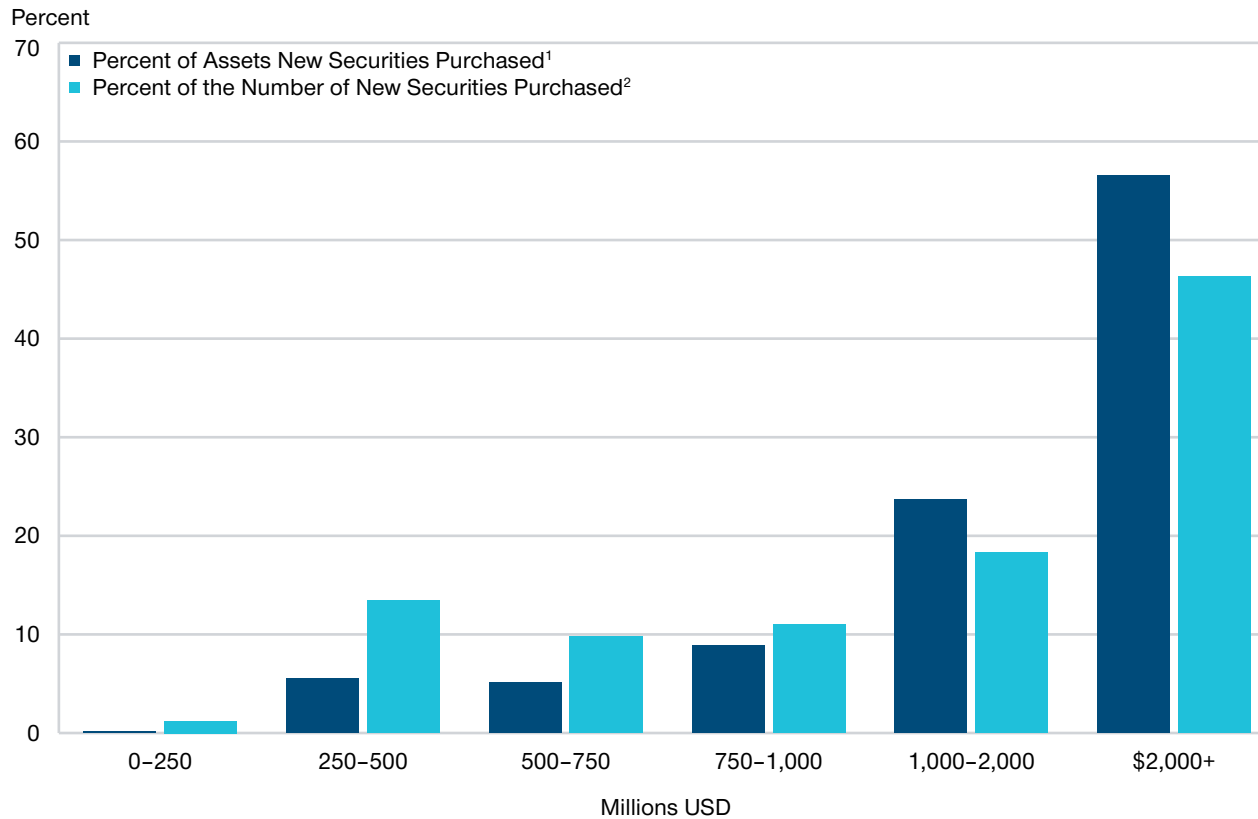


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# MARKET CAPITALIZATION OF NEWLY PURCHASED SECURITIES

## U.S. Small-Cap Stock Trust

As of September 30, 2016



<sup>1</sup> Percentage is the trade size of new securities in the market cap range divided by the total trade size of new securities purchased during the period.

<sup>2</sup> Percentage is the number of new securities in the market cap range divided by the total number of new securities purchased during the period.  
Market capitalization at time of initial purchase.

# MARKET ENVIRONMENT

This material is provided for informational purposes only and is not intended to be investment advice or a recommendation to take any particular investment action. The views contained herein are as of September 30, 2016 and may have changed since that time.

# TRENDS IN SALES AND EARNINGS GROWTH BY MARKET CAP

## Median Operating Earnings Momentum...Largest 3,000 Companies

As of September 30, 2016

### MEDIAN YEAR-OVER-YEAR SALES MOMENTUM

	Q216	Q116	Q415	Q315	Q215
Mega-Caps (Top 50)	-0.6%	0.6%	0.9%	2.2%	0.6%
Bottom (2,000)	4.7	4.4	3.6	3.9	5.5
Large-Cap (Top 300)	2.5	2.5	-0.2	0.7	0.2
Mid-Cap (Next 900)	3.5	3.1	1.7	2.2	2.8
Small-Cap (Next 1,200)	5.2	4.8	4.2	4.7	5.5
Micro-Cap (Last 600)	3.6	3.4	2.9	2.4	5.0

### MEDIAN YEAR-OVER-YEAR OPERATING EARNINGS MOMENTUM

	Q216	Q116	Q415	Q315	Q215
Mega-Caps (Top 50)	-1.3%	-4.5%	8.7%	3.4%	2.0%
Bottom (2,000)	4.2	0.0	1.5	0.0	2.1
Large-Cap (Top 300)	0.0	0.0	2.7	2.5	4.3
Mid-Cap (Next 900)	7.5	5.6	1.5	2.4	4.2
Small-Cap (Next 1,200)	5.9	2.9	2.5	1.9	2.7
Micro-Cap (Last 600)	-1.7	-5.6	-4.3	-8.7	-0.8

Sales momentum and earnings momentum increased over the second quarter across small-caps.

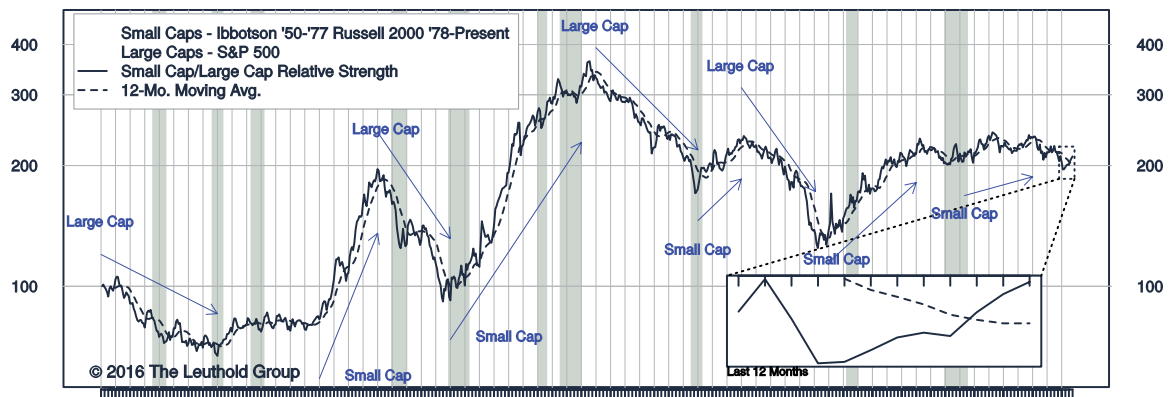
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# SMALL-CAP CYCLE ANALYSIS

## Small-Cap Stocks vs. Large-Caps (Total Returns)

As of September 30, 2016

Figures are Calculated in U.S. Dollars



Source: Leuthold Group, October 2016. All rights reserved. Reprinted with permission.

	Small-Caps		Large-Caps	
	Duration (In Years)	Annualized Return	Annual Excess Return <sup>1</sup>	Annualized Return
1932-37	4.8	62.5%	16.0%	40.1%
1940-45	6.0	36.0	13.9	19.4
1963-68	6.0	24.2	10.8	12.1
1975-83	8.5	33.6	14.5	16.7
1991-94	3.3	30.8	11.3	17.5
1999-06	7.0	13.6	12.6	0.9
3/09-3/11	2.1	55.2	16.4	33.4
7/12-9/13	1.9	35.9	11.7	21.7
Average	5.4	36.6%	13.6%	20.0%

Small-caps outperformed large-caps over the long run, but experienced extended cycles of outperformance and underperformance, which typically ran five or more years.

### Past performance cannot guarantee future results.

<sup>1</sup> Excess return is versus the large-caps. Current period is cumulative.

Sources: CRSP, The University of Chicago; BofA Merrill Lynch Small Cap Research.

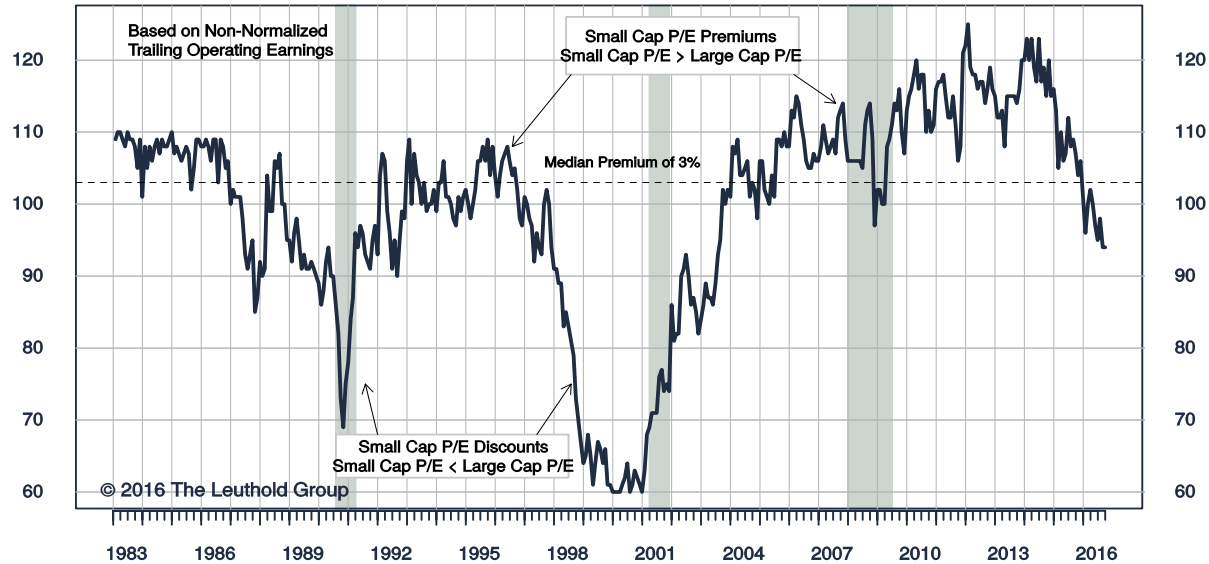
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# SMALL-CAPS REMAIN EXPENSIVE RELATIVE TO LARGE-CAPS

## Historical Ratio of Small-Cap to Large-Cap P/E Ratio

January 31, 1983 Through September 30, 2016

### SMALL CAP TO LARGE CAP HISTORICAL P/E RATIO



Small-cap P/Es relative to large-cap decreased in the last quarter.

**Past performance cannot guarantee future results.**

Source: The Leuthold Group.

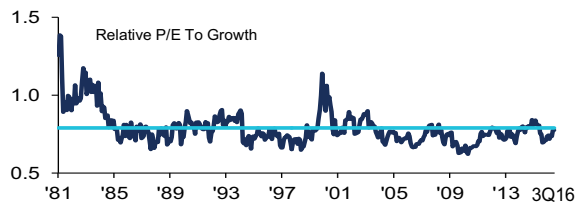
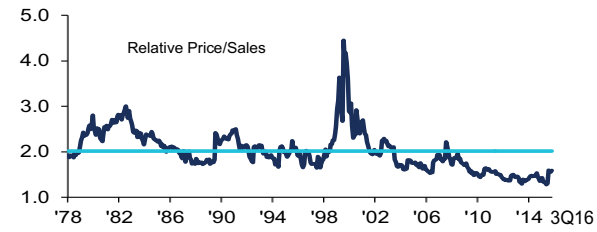
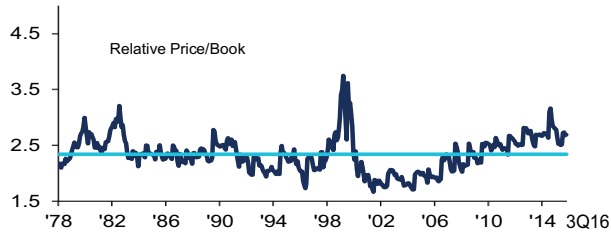
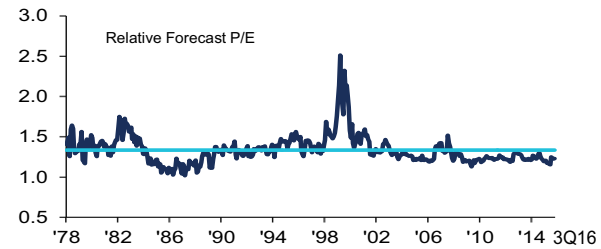
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# SMALL-CAP GROWTH VS. VALUE VALUATIONS

Small-cap growth valuations are comparable to those of small-cap value.

Through September 30, 2016



By many measures, growth and value have comparable valuations. Only on a price-to-sales basis is small-cap growth more attractive than small-cap value.

## Past performance cannot guarantee future results.

<sup>1</sup> P/E excluding negative earnings.

Note: The valuation data are for the Russell 2000 Growth index relative to the Russell 2000 Value Index.

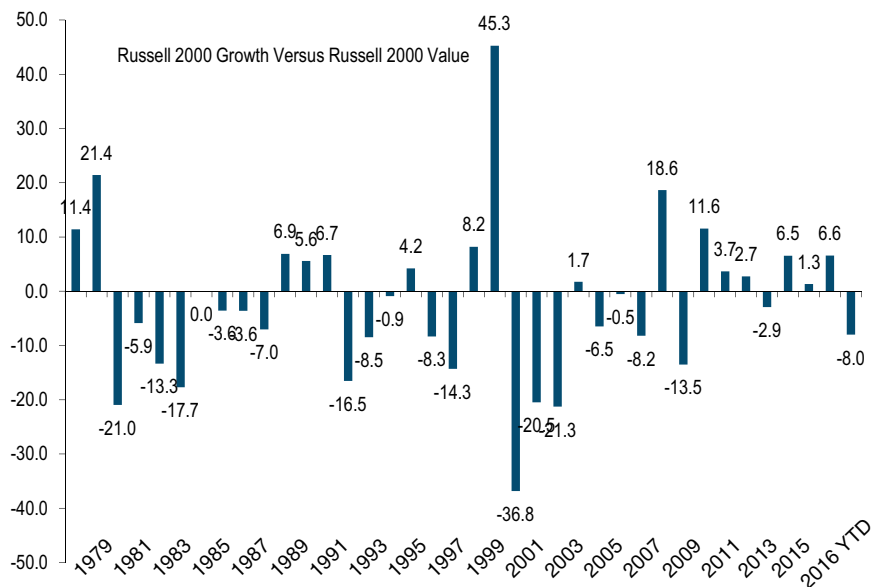
Sources: BofA Merrill Lynch Small Cap Research, Russell Investment Group.

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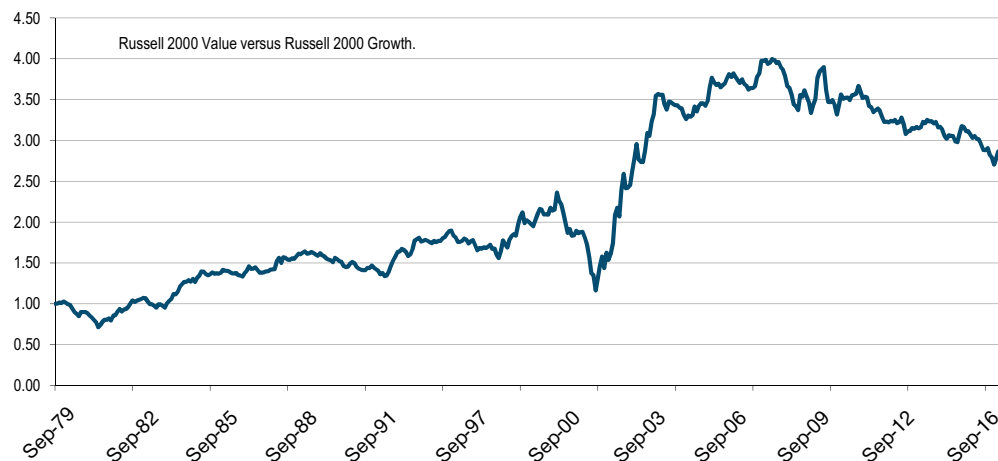
# SMALL-CAP GROWTH VS. VALUE

Through September 30, 2016  
 Figures are Calculated in U.S. Dollars

## GEOMETRIC EXCESS RETURNS



## PERFORMANCE OF RUSSELL 2000 VALUE VS. RUSSELL 2000 GROWTH



### Value Cycles

### Growth Cycles

Dates	Duration (Months)	Cumulative			Dates	Duration (Months)	Cumulative		
		2000 Value	2000 Growth	Differential			2000 Value	2000 Growth	Differential
12/80-8/82	21	15.0%	-23.4%	38.3%	1/79-11/80	23	72.5%	141.8%	69.3%
7/83-11/84	17	0.9	-31.0	32.0	9/82-6/83	10	74.7	96.2	21.6
1/92-4/93	16	38.3	2.5	35.8	3/89-12/91	34	17.6	43.6	25.9
6/96-8/98	27	18.1	-22.0	40.1	5/93-5/96	37	57.4	82.5	25.1
3/00-7/02	29	23.9	-59.6	83.5	9/98-2/00	18	17.3	138.0	120.7
12/03-5/07	42	68.0	48.4	19.6	8/02-11/03	16	36.7	47.5	10.8
1/16-Present <sup>1</sup>	9	15.5	7.5	8.0	6/07-12/15	103	26.1	72.5	46.4
Average	25.3	27.4	-14.2	41.6	Average	34.4	43.2	88.8	45.7
Median	24.0	21.0%	-22.7%	37.1%	Median	23.0	36.7%	82.5%	25.9%

### Past performance cannot guarantee future results.

<sup>1</sup> September 30, 2016.

Note: The average and median figures for Growth Cycles do not include the last outperformance cycle, June 2007 to June 2013. Once the cycle is complete it will be included.

Sources: Russell Investment Group; BofA Merrill Lynch Small-Cap Research.

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## **EXHIBITS**

ANNUAL TRUSTEE FEE

MONITORING AND RISK MANAGEMENT ELEMENTS

BIOGRAPHICAL BACKGROUNDS

# ANNUAL TRUSTEE FEE

## U.S. Small-Cap Stock Trust

As of September 30, 2016

	<b>Annual Fee</b>
First 20 million (USD)	75/100 of 1%
Above 20 million (USD)	60/100 of 1%
When net assets exceed 100 million (USD), the fee will be a flat 60/100 of 1% on the market value of net assets.	

The U.S. Small-Cap Stock Trust (the "Trust") is not a mutual fund. It is a common trust fund established by T. Rowe Price Trust Company under Maryland banking law, and its units are exempt from registration under the Securities Act of 1933. Investments in the Trust are not deposits or obligations of, or guaranteed by, the U.S. government or its agencies or T. Rowe Price Trust Company and are subject to investment risks, including possible loss of principal.

# MONITORING AND RISK MANAGEMENT ELEMENTS

## Equity Steering Committee Oversight

- Periodic review by senior investment professionals promotes consistency of the strategy's investment process and portfolio construction.

## Quantitative Risk Management Tools

- Wilshire Variance Analysis enables portfolio managers to review performance attribution versus benchmarks from a holdings-based perspective.
- Barra risk analysis provides managers with a common risk factor tool to analyze their strategy versus a benchmark.
- Zephyr returns-based style analysis allows portfolio managers to analyze the style and size consistency of their strategy versus a benchmark.

# BIOGRAPHICAL BACKGROUNDS

## U.S. Small-Cap Stock Trust Investment Team

### **Frank M. Alonso**

Frank Alonso is a portfolio manager in the U.S. Equity Division of T. Rowe Price. He is the lead manager for the US Smaller Companies Equity Strategy. He is a vice president of T. Rowe Price Group, Inc., and T. Rowe Price Associates, Inc. Frank joined the firm in 2000 as an analyst covering the consumer sector. Prior to joining the firm, Frank interned at Morgan Stanley Dean Witter in Cincinnati, Ohio, as an assistant to several financial advisors. He earned a B.S. in economics from Miami University in Oxford, Ohio.

### **Curt J. Organt, CFA**

Curt Organt is a vice president of T. Rowe Price Group, Inc., and T. Rowe Price Associates, Inc. He is also a research analyst in the U.S. Equity Division, serving as a small-/mid-cap generalist specializing in industrials. Curt is a vice president and Investment Advisory Committee member of the Small-Cap Stock, Small-Cap Value, Diversified Small-Cap Growth, and New America Growth Funds and vice president of T. Rowe Price International Funds, Inc. Prior to joining the firm in 1995, he served as a financial analyst and marketing analyst at DAP Products, Inc. Curt earned a B.S. in finance and philosophy at La Salle University and an M.B.A. at Wake Forest University. He also has earned the Chartered Financial Analyst designation.

# BIOGRAPHICAL BACKGROUNDS

## U.S. Small-Cap Stock Trust Investment Team

### **Michele Ward, CFA**

Michele Ward is a vice president of T. Rowe Price Group, Inc., and T. Rowe Price Associates, Inc. She is a portfolio specialist in the U.S. Equity Division of T. Rowe Price. Michele is a member of the small- and mid-cap equity strategy teams, working closely with institutional clients, consultants, and prospects. Before joining the firm in 2014, she was an associate partner at Hewitt EnnisKnupp. In this role, Michele advised and educated plan sponsor investment committees on investment policy, plan structure, and regulatory and fiduciary issues. Michele earned a B.A., magna cum laude, in political science from Yale University and an M.B.A. from the Yale School of Management. She has also earned the Chartered Financial Analyst designation.

# BIOGRAPHICAL BACKGROUNDS

## U.S. Small-Cap Stock Trust Investment Team

### **Andrew S. Davis**

Andrew Davis is an investment analyst in the U.S. Equity Division, covering airlines, railroad, and trucking companies and is a vice president of T. Rowe Price Associates, Inc., and T. Rowe Price Group, Inc. He is a vice president and Investment Advisory Committee member of the Mid-Cap Value, Small-Cap Stock, Value, Growth & Income, and Growth Stock Funds and the Tax-Efficient Equity Funds, Inc. He is also a vice president of T. Rowe Price International Funds, Inc. Prior to joining the firm in 2010, he was a manager in the business valuation group at Deloitte Financial Advisory Services. Andrew earned a B.S. in business administration, with a concentration in finance, from Berry College and an M.B.A. from the University of Chicago Booth School of Business.

### **Christopher T. Fortune, CFA**

Chris Fortune is a vice president of T. Rowe Price Group, Inc., and T. Rowe Price Associates, Inc. He is a research analyst in the Equity Division, following smaller banks and trust banks under the financial services industry. Chris is a vice president and Investment Advisory Committee member of the Financial Services Fund, Small-Cap Stock Fund, and Small-Cap Value Fund. Prior to joining the firm in 2005, he participated in a summer research internship at Hillman Capital Management, where he followed financial services firms. Chris earned a B.A. in physics with a minor in economics, magna cum laude, from Colby College, where he became a member of the Phi Beta Kappa Honor Society. He holds a B.E. in electrical engineering from the Thayer School of Engineering at Dartmouth College. Chris has also earned an M.B.A. from The Wharton School, University of Pennsylvania, with a double major in finance and accounting. He has earned his Chartered Financial Analyst designation.



# BIOGRAPHICAL BACKGROUNDS

## U.S. Small-Cap Stock Trust Investment Team

### **Timothy E. Parker, CFA**

Tim Parker is a vice president of T. Rowe Price Group, Inc., and T. Rowe Price Associates, Inc. He is a portfolio manager in the U.S. Equity Division. He is a vice president and Investment Advisory Committee member of the Diversified Mid-Cap Growth, Small Cap Stock, Small Cap Value, New Era, Tax-Efficient Equity, Global Growth Stock, Global Stock, and Real Assets Funds. He is also a vice president of the New Horizons Fund and the T. Rowe Price International Funds. Tim joined the firm in 2001 after serving as a summer intern at T. Rowe Price in 2000, covering storage area networking equipment companies. From 2001 to 2010, he served as an analyst following energy majors, energy services, and exploration and production companies. Prior to this, Tim was a financial analyst in the Corporate Finance Department of Robert W. Baird & Co. Tim earned a B.S. in commerce from the University of Virginia, McIntire School of Commerce, and an M.B.A., with highest honors, from the University of Virginia, Darden Graduate School of Business Administration, where he was a Shermet Scholar. He also has earned the Chartered Financial Analyst designation.

### **Charles G. Pepin**

Charles Pepin is a vice president of T. Rowe Price Group, Inc., and T. Rowe Price Associates, Inc. He is also a member of the Equity Steering Committee. Charles is a vice president and Investment Advisory Committee member of the Small Cap Stock Fund. As an analyst, he concentrated on managed care under the health care industry and restaurants under the consumer industry. Prior to joining the firm in 1994, Charles was a financial analyst (corporate finance) at Piper Jaffray, Inc. He earned a B.A., magna cum laude, in economics from Colby College and an M.B.A. from the Tuck School of Business at Dartmouth College and is a member of Phi Beta Kappa.

# BIOGRAPHICAL BACKGROUNDS

## U.S. Small-Cap Stock Trust Investment Team

### **Robert Thomas (R.T.) Quinn, Jr.**

R.T. Quinn is a vice president of T. Rowe Price Group, Inc., and T. Rowe Price Associates, Inc., and an investment analyst in the U.S. Equity Division. He specializes in food, beverage, tobacco, and personal care companies. R.T. is a vice president and Investment Advisory Committee member of the Capital Appreciation, Dividend Growth, Equity Income, and Value Funds. Before joining T. Rowe Price in 2004, he was employed by UBS Investment Bank as a director in the Global Retail Group. R.T. also spent four years in the UBS equity research area covering cosmetics, household products, and food retailers. He earned a B.S. in finance, summa cum laude, from Georgetown University, where he was the valedictorian of his class at the Georgetown School of Business.

### **Joshua K. Spencer, CFA**

Joshua Spencer is a vice president of T. Rowe Price Group, Inc., and T. Rowe Price Associates, Inc., and a portfolio manager and research analyst in the Equity Division. He is the president and chairman of the Investment Advisory Committee of the Global Technology Fund, and as an analyst, he follows semiconductors and equipment under the technology industry. Josh is a vice president and Investment Advisory Committee member of the Science & Technology Fund, Growth & Income Fund, Capital Opportunity Fund, and Value Fund. He is also an Investment Advisory Committee member of the Institutional Large-Cap Growth Fund and Institutional Large-Cap Value Fund. Before joining T. Rowe Price in 2004, Josh was employed by Fidelity Investments as a research analyst and sector fund portfolio manager specializing in the consumer industry. He earned a B.A. in economics from Johns Hopkins University, where he was awarded the Max Hochschild Prize for Outstanding Student in Economics, and is a member of Phi Beta Kappa. Josh also holds an M.A. in economics from the University of Chicago, where he was awarded the Century Scholarship for full tuition. He earned an M.B.A. in finance and accounting from the University of Chicago Booth School of Business, where he was on the dean's list and was an active member of the Investment Management Group and editor of the Chicago Advisor investment newsletter. Josh has earned the Chartered Financial Analyst designation.

# BIOGRAPHICAL BACKGROUNDS

## U.S. Small-Cap Stock Trust Investment Team

### **J. David Wagner, CFA**

Dave Wagner is the lead portfolio manager for T. Rowe Price's US Small-Cap Value Equity Strategy. He also serves on the Investment Advisory Committees of the US Small-Cap Core Equity and US Small-Cap Growth Equity Strategies. He is a vice president of T. Rowe Price Group, Inc., T. Rowe Price Trust Company, and T. Rowe Price Associates, Inc. Dave joined the firm in 2000 as an analyst covering financial services after serving as a summer intern at T. Rowe Price in 1999. Prior to this, he was employed as an associate analyst in the antitrust area by National Economic Research Associates, Inc. Dave earned a B.A., summa cum laude, in economics from the College of William & Mary and an M.B.A. from the University of Virginia, Darden Graduate School of Business Administration. He has also earned the Chartered Financial Analyst designation.

### **Rouven Wool-Lewis, Ph.D.**

Rouven Wool-Lewis is an investment analyst in the U.S. Equity Division of T. Rowe Price, following health care services. Prior to joining the firm in 2010, Rouven was a vice president, corporate strategy, with UnitedHealth Group. He also was employed as an associate analyst in equity research at Oppenheimer & Co. Rouven earned a B.A., magna cum laude and high honors, in biology and chemistry from Brandeis University and a Ph.D. in cellular and molecular biology from the University of Pennsylvania.

# BIOGRAPHICAL BACKGROUNDS

## T. Rowe Price—Presenter

### **John D. Plowright, CFA**

John Plowright is a vice president of T. Rowe Price Group and T. Rowe Price Associates. He is a client service executive for Global Investment Services (GIS), the organization responsible for the firm's institutional business worldwide. Before joining T. Rowe Price in 2004, he was a director of client services with RCM Capital Management, and prior to that, he was a director and fixed-income specialist with RCM Capital Management. John earned a B.A. in religion from the Earlham College, Cum Laude and a Master's in international management from American Graduate School of International Management. John earned his Chartered Financial Analyst (CFA) designation and holds Series 7 and 63 registrations with the FINRA.

# McKinley Capital Management, LLC

**Relevant Mandates:** Non-US Growth

**Hired:** 2005

Firm Information	Investment Approach	Total ARMB Mandate
<p>McKinley Capital, founded by Robert B. Gillam in 1990, is an independently owned, private limited liability company wholly owned by McKinley Capital Management, Inc. which is wholly owned by employees of McKinley Capital LLC and family trusts. Approximately 24% of issued and outstanding non-voting shares are held by or for the benefit of employees of McKinley Capital other than Robert B. Gillam.</p> <p>As of 9/30/16, the firm's total assets under management were \$7.1 billion.</p> <p><b>Key Executives:</b>  <b>Robert B. Gillam</b>, <i>President &amp; CEO</i>  <b>Robert A. Gillam</b>, <i>Senior VP &amp; CIO</i>  <b>Alex Slivka</b>, <i>Director of Institutional Marketing</i></p>	<p>McKinley Capital's investment decisions are based on the philosophy that excess market returns can be achieved through the construction and active management of a diversified, fundamentally sound portfolio of inefficiently priced common stocks whose earnings growth rates are accelerating above market expectations. McKinley Capital is a bottom-up growth manager. The firm employs both a systematic screening process and qualitative overview to construct and manage investment portfolios.</p> <p><b>Benchmark:</b> MSCI EAFE through 10/31/2012, then MSCI ACWI ex-US Growth Index thereafter.</p>	<p><b>Assets Under Management:</b>            9/30/16 <span style="float: right;">\$515,378,514</span></p>

**Concerns:** None

## 9/30/2016 Performance

	<u>Last Quarter</u>	<u>1-Year</u>	<u>3-Years Annualized</u>	<u>5-Years Annualized</u>	<u>6-Years Annualized</u>
McKinley Non-US Growth	6.27%	8.46%	6.42%	9.56%	6.06%
Blended Benchmark	6.12%	11.92%	2.60%	7.59%	4.56%





*Global Growth Specialist*

McKinley Capital's mission is to be a premier global growth specialist providing superior relative investment returns over the long term and exceptional client service.

# REPORT CONTENTS

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Biographies.....5

Composite Disclosure .....6





*Section* | **1**

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# INTRODUCTION TO MCKINLEY CAPITAL

- Global Investment Adviser
- Founded in 1990
- Quantitatively Driven Investment Process
- Capabilities:
  - Single Country
  - Region Based
  - Global ex Home Country
  - ESG/SRI/MRI
  - Long/Short
- Products:
  - Global Growth
  - Global Core Growth
  - Global Developed
  - Non-U.S. Growth
  - Non-U.S. Core Growth
  - Non-U.S. Developed Growth
  - Non-U.S. Small Cap Growth
  - Emerging Markets Growth
  - U.S. Large Cap Growth
  - U.S. Small Cap Growth
  - Non-U.S. Developed (130/30) Growth
- Independently Owned
- Equity Incentive Plan
- Team Approach



# ORGANIZATIONAL CHART

As of October 1, 2016

**Robert B. Gillam**  
President  
Chief Executive Officer

**Robert A. Gillam, CFA**  
Senior Vice President  
Chief Investment Officer

## Quantitative Research

**John B. Guerard Jr., Ph.D.**  
Director of  
Quantitative Research

**M. Sundaram Chettiappan, CFA**  
Senior Quantitative  
Research Analyst

**Kenneth P. Lenhart**  
Quantitative Research  
Analyst

**Ziwei (Elaine) Wang**  
Quantitative Research  
Analyst

**Abhishek Saxena**  
Quantitative Research  
Analyst

**Xi (Lexi) Wang**  
Quantitative Research  
Analyst

## Portfolio Management

**Martino M. Boffa, CFA**  
Director of Investment  
Alternative Structures

**Gregory S. Samorajski, CFA**  
Director of Investments  
Portfolio Manager

**Sheldon J. Lien, CFA**  
Portfolio Manager

**Brandon S. Rinner, CFA**  
Portfolio Manager

**F. Paul Hanson, CFA**  
Portfolio Manager

**M. Forrest Badgley, CFA**  
Portfolio Manager

**David J. Talbot**  
Director of Investments  
Qualitative Research Analyst

**Flora J. Kim**  
Qualitative Research Analyst

**Shierley Widjaja, CFA**  
Qualitative Research Analyst

## Trading

**Joseph J. Dobrzynski**  
Head Trader

**Jeremy B. Lobb**  
Trader

**Claudia M. Jackson**  
Trader

**Brian D. Tillotson**  
Trader

## Scientific Advisory Board

**Harry M. Markowitz, Ph.D.**  
Quantitative Research  
Consultant

**Ganlin Xu, Ph.D.**  
Quantitative Research  
Consultant

**Rochester Cahan, CFA**  
Quantitative Research  
Consultant

**Ian Domowitz, Ph.D.**  
Quantitative Research  
Consultant

**Ted L. Gifford**  
Quantitative Research  
Consultant

**Rishi K. Narang**  
Quantitative Research  
Consultant

**Jose Menchero, Ph.D.**  
Quantitative Research  
Consultant

**Anureet Saxena, Ph.D.**  
Quantitative Research  
Consultant

Does not include data management team or support staff



## REPRESENTATIVE CLIENT LIST

Bombardier

SEI Investments

Houston Firefighters' Relief and Retirement Fund

Alaska Permanent Fund Corporation

Minnesota State Investment Board

Alaska Retirement Management Board

Teachers' Retirement System of the State of Illinois

The Health Foundation

Caterpillar Pension Trust Ltd.

*It is not known whether the listed clients approve or disapprove of McKinley Capital or the advisory services it has provided. The names included herein were selected as being representative of the different types of institutional clients and businesses serviced by McKinley Capital. Performance was not a determining factor for inclusion or exclusion of client names on the list.*



# ASSET BREAKDOWN

*As of September 30, 2016*

<b>Product</b>	<b>Total Value (U.S.\$ in millions)</b>
Global Growth	\$2,433
Non-U.S. Growth	\$2,953
Non-U.S. Developed Growth	\$490
Emerging Markets Growth	\$86
U.S. Large Cap Growth	\$428
U.S. Small Cap Growth	\$415
Other	\$338
<b>TOTAL</b>	<b>\$7,143</b>

*As of 09/30/2016, the firm managed several client accounts on a non-discretionary basis totaling approximately \$224 million in model portfolio arrangements that are not included in Assets Under Management.*

Total may not be exact when summed due to rounding.  
Figures reflect assets managed in a particular capitalization range or style and may include assets from more than one composite.



*Section* | **2**

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## INVESTMENT PHILOSOPHY

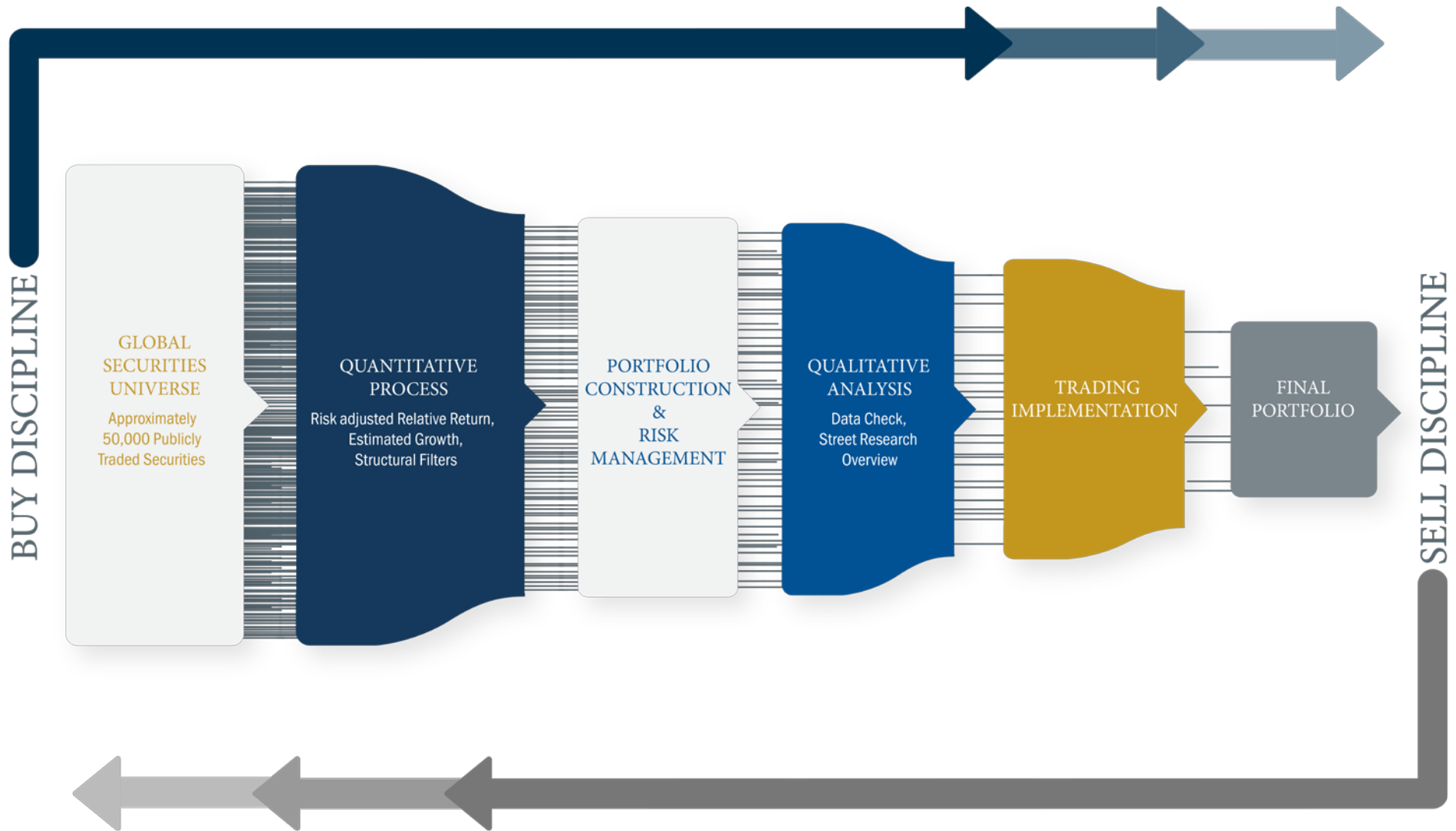
McKinley Capital believes that excess market returns can be achieved through the construction and management of a diversified, fundamentally sound portfolio of inefficiently priced securities whose earnings growth rates are accelerating above market expectations.

## INVESTMENT STYLE

- Growth Focus
- Risk Exposures
  - Growth
  - Momentum
  - Selection
- Bottom-up Process
- Quantitative/Qualitative

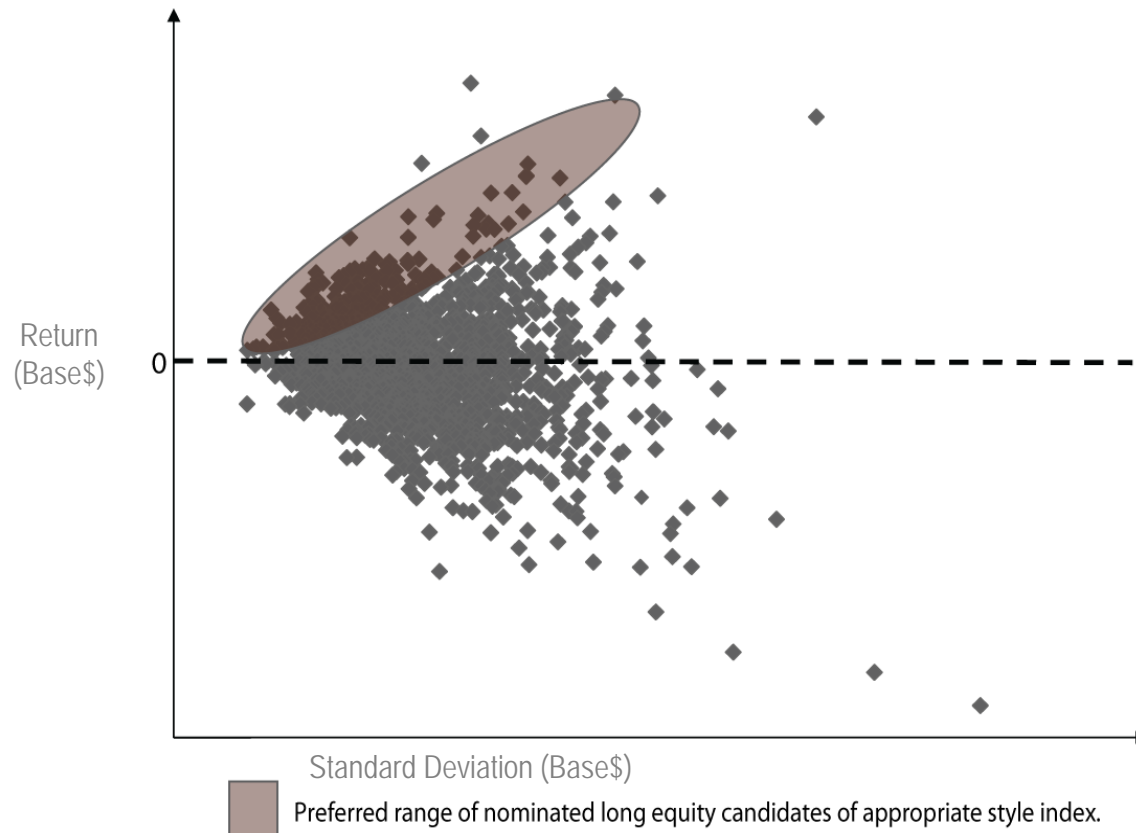


# OVERVIEW





# RISK-ADJUSTED RELATIVE RETURN



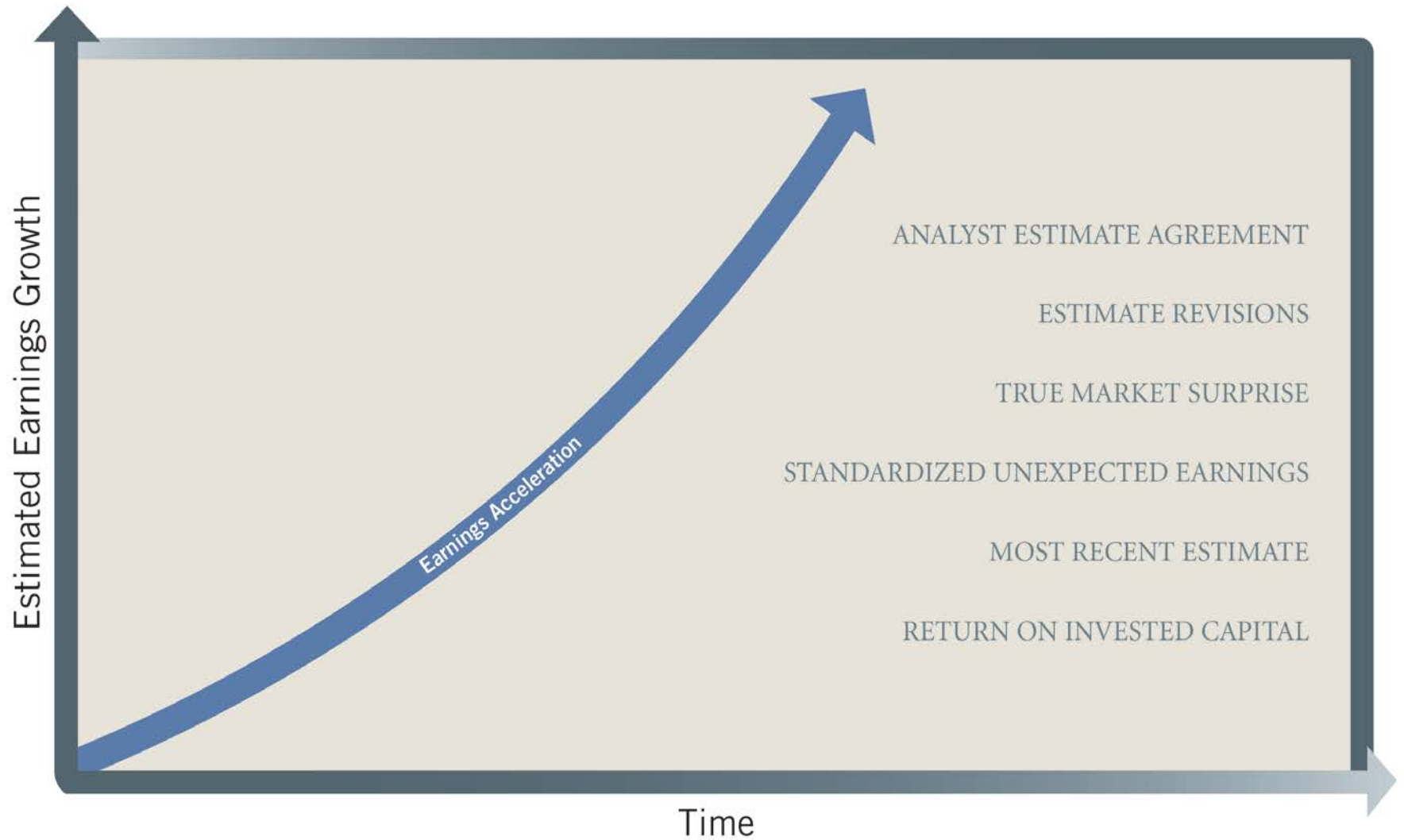
## Currency Strategy *(Non-U.S. and Global)*

- Unhedged
- Quantitative process incorporates currency valuation

Source: McKinley Capital Management, LLC December 2006



# ESTIMATED GROWTH CONCEPTUALIZATION



## STRUCTURAL FILTERS

### Capacity Constraints

- Liquidity constraints dictate maximum capacity
- Maximum asset levels have been established for every product

### Liquidity Filters

- Minimum market cap of U.S. \$100 million (*by style*)
- Buy-in positions not to exceed three times average daily trading volume



## RISK CONTROLS

We seek to create “balanced” portfolios by controlling systematic influences such as:

- Sector
- Industry
- Country
- Region (*emerging markets*)
- Size (*market capitalization*)
- Position (*active weight*)
- Number of stocks (*varies by product*)



## DATA CHECK AND OVERVIEW

Purpose: *To ensure that earnings estimates are reasonable and sustainable.*

### Qualitative Data Check

- Compare data across multiple sources to ensure accuracy
- Review formulas to highlight drivers

### Street Research Overview

- WHO: Determine the top analyst
- WHAT: Top analyst's expectations vs. the Street's
- WHY: Why the top analyst's opinion is different from the Street's
- CROSS-REFERENCE: Research top analyst's opinion and other sources



## SELL DISCIPLINE

*Sells are triggered by the following strict, objective criteria:*

- A consecutive and sustained deterioration in risk-adjusted relative return
- Estimate deceleration
- Negative earnings surprises
- Relative forward valuation multiples exceeding relative forward growth estimates
- Risk controls
- Country factors (*nationalization, capital controls, etc.*)
- Fraud (*earnings re-statement*)



*Section* | **3**

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# INVESTMENT RESULTS

## ANNUALIZED

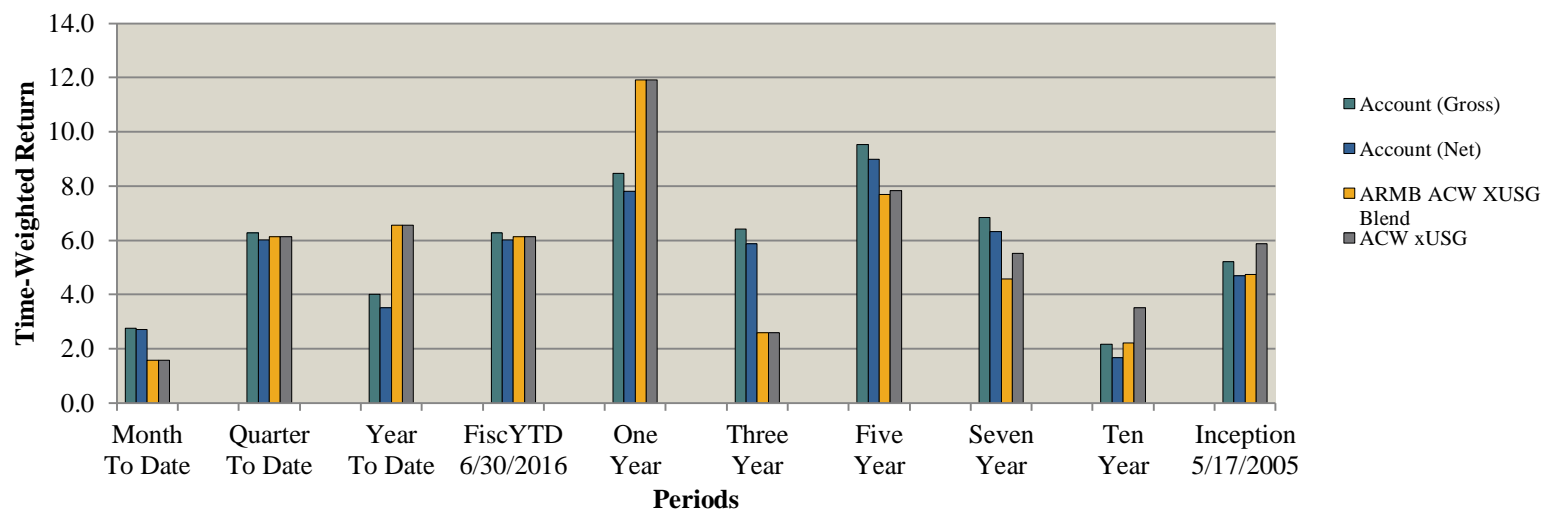
### Alaska Retirement Management Board

#### Non-U.S. Growth

For the Period Ended 09/30/2016

Reporting Currency: United States Dollar

	Month To Date	Quarter To Date	Year To Date	FiscYTD 6/30/2016	One Year	Three Year	Five Year	Seven Year	Ten Year	Inception 5/17/2005
Account (Gross)	2.75	6.27	4.01	6.27	8.47	6.42	9.54	6.84	2.17	5.21
Account (Net)	2.71	6.02	3.51	6.02	7.81	5.88	8.99	6.31	1.66	4.70
ARMB ACW XUSG Blend	1.58	6.12	6.55	6.12	11.92	2.60	7.70	4.58	2.21	4.73
Difference (Gross)	1.17	0.15	-2.54	0.15	-3.45	3.82	1.84	2.26	-0.04	0.48
ACW xUSG	1.58	6.12	6.55	6.12	11.92	2.60	7.82	5.51	3.50	5.87
Difference (Gross)	1.17	0.15	-2.54	0.15	-3.45	3.82	1.72	1.33	-1.33	-0.66



\* The blended benchmark consists of the MSCI EAFE Index from the account inception, 5/17/2005, through 10/31/2012. After 10/31/2012, the blended benchmark is the MSCI ACW XUSG Index. The two benchmarks have been linked.





# NON-U.S. GROWTH COMPOSITE – USD

Performance for the period ended September 30, 2016

## PERFORMANCE

Trailing Performance (%)	QTD	YTD	1 Year	3 Year	5 Year	7 Year	10 Year	15 Year	Inception (10/01/95)
Non-U.S. Growth (gross)	6.41	2.48	6.79	4.77	8.76	6.22	1.79	7.91	7.70
Non-U.S. Growth (net)	6.19	1.97	6.11	4.16	8.15	5.64	1.25	7.38	7.00
MSCI ACW XUS Growth	6.12	6.55	11.92	2.60	7.82	5.51	3.50	7.10	N/A <sup>1</sup>
Difference (gross)	0.29	-4.07	-5.13	2.17	0.94	0.71	-1.71	0.81	N/A <sup>1</sup>
MSCI ACW XUS	7.00	6.29	9.80	0.64	6.52	4.12	2.63	7.02	5.26
MSCI EAFE	6.50	2.20	7.06	0.93	7.88	4.71	2.30	6.28	4.91

<sup>1</sup> Inception date for MSCI ACW XUS Growth 1Q97

Calendar Year Performance (%)	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Non-U.S. Growth (gross)	0.67	2.86	20.82	15.04	-14.74	13.19	26.53	-49.61	19.90	28.57
Non-U.S. Growth (net)	0.12	2.29	20.12	14.47	-15.19	12.62	25.87	-49.87	19.37	28.02
MSCI ACW XUS Growth	-0.91	-2.29	15.86	17.07	-13.93	14.79	39.21	-45.41	21.40	23.96
Difference (gross)	1.58	5.15	4.96	-2.03	-0.81	-1.60	-12.68	-4.20	-1.50	4.61
MSCI ACW XUS	-5.25	-3.44	15.78	17.39	-13.33	11.60	42.14	-45.24	17.12	27.16
MSCI EAFE	-0.39	-4.48	23.29	17.90	-11.73	8.21	32.46	-43.06	11.63	26.86

Calendar Year Performance (%)	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
Non-U.S. Growth (gross)	18.36	26.19	43.77	-7.48	-22.05	-21.10	54.21	6.40	38.70	14.66
Non-U.S. Growth (net)	17.90	25.76	43.10	-7.91	-22.39	-21.50	53.00	4.90	36.67	12.84
MSCI ACW XUS Growth	17.08	17.07	34.91	-14.74	-23.44	-24.85	35.72	16.93	2.21	N/A <sup>1</sup>
Difference (gross)	1.28	9.12	8.86	7.26	1.39	3.75	18.49	-10.53	36.49	N/A <sup>1</sup>
MSCI ACW XUS	17.11	21.36	41.41	-14.67	-19.50	-15.09	30.91	14.46	2.04	6.68
MSCI EAFE	14.02	20.70	39.17	-15.66	-21.21	-13.96	27.30	20.33	2.06	6.36

<sup>1</sup> Inception date for MSCI ACW XUS Growth 1Q97

Source: McKinley Capital Management, LLC

Supplemental Information

Performance periods greater than one year are annualized

See the International Non-U.S. Growth Performance Disclosure Presentation at the end of the report



## Composite Portfolio and Market Commentary

### ***Non-U.S. Growth Portfolio***

For the Quarter Ended September 30, 2016

Concerns over global deflation continued to ease through the third quarter thus leaving major benchmark interest rates largely unchanged. Japan's central bankers signaled a revised policy of yield curve control. The U.S. Libor rates did however move higher driven by changing money market guidelines, an indirect form of policy tightening. While government bond yields troughed in early July, corporate bond yields maintained the rally of the second quarter as the risk appetite sustained. Chinese growth continued to benefit from previously enacted stimulus measures, to the extent that concerns again emerged over inflated housing prices in the tier one cities. The commodity rich economies of Australasia, Canada and Russia cut rates at a time when commodity prices appeared to be putting in the early signs of recovery. Problems in the European banking industry once again returned to dominate headlines.

Oil markets in the quarter consolidated the substantial gains posted since February. The move by OPEC late in September to re-establish some level of supply discipline bears attention, given it is occurring when many analysts believe the market was already experiencing an improving supply and demand balance. China enacted a significant reform in basic industries like coal mining and steel production, seeking to curb over-supply. These actions had a profound impact on global commodity prices with varying grades of seaborne coal prices rallying 40% to 100% over the period. This helped lead to additional strength in the materials and industrials sector. Other cyclical sectors such as Information Technology also saw strength.

Equity markets in early 2016 displayed factor related characteristics which typically prove challenging for the McKinley Capital discipline. Signs of stabilization in emerging markets driven by coordinated Central Bank policy led to a rotation in sector leadership and subsequent underperformance in momentum oriented factors. The unexpected result of the United Kingdom referendum and the emergence of unprecedented levels of negative interest rates in Japan drove violent currency moves in each country. This led to significant mean reversion moves in their respective share markets, and both factors are big benchmark components. Negative returns in most strategies extended into the heart of summer.

It is encouraging to once again see meaningful excess returns emerging since mid-August. Interestingly factor performance does not yet appear as the driving influence as the information coefficient for the blended McKinley Capital factors was largely neutral with a small positive move in September. Rather asset selection was the dominant influence. As leadership gravitates to a more cyclical style, it is worth highlighting how the earnings acceleration factor favored at McKinley Capital over more traditional definitions of "growth", allows the process to quickly capture this new leadership phenomena. Previous periods of factor underperformance experienced in 2003 and 2009 were typically followed by extended periods of excess returns for the model.



McKinley Capital's Non-U.S. Growth Composite outperformed the ACWXUSG by 0.30% for the quarter. On a sector basis, Consumer Discretionary, Industrials and Utilities negatively impacted the portfolio while Health Care, Information Technology and Financials provided positive performance. On a country basis, Japan, Germany and Denmark detracted from performance while Switzerland, China and Taiwan were positive contributors. Negative contributions to return were generated by companies such as Imperial Brands PLC (Consumer Staples, United Kingdom), AngloGold Ashanti Ltd (Materials, South Africa) and Pandora A/S (Consumer Discretionary, Denmark). Positions in Micro-Star International Co Ltd (Information Technology, Taiwan), Tencent Holdings Ltd (Information Technology, China) and Samsung Electronics Ltd (Information Technology, South Korea) positively impacted the portfolio.

McKinley Capital sees improving opportunities in Thailand, Sweden and Finland; and in Materials, Financials and Energy securities. There are relatively fewer opportunities in Japan, Switzerland and Hong Kong; and in Consumer Staples, Health Care and Consumer Discretionary securities. As always, we encourage your questions and comments.



# ATTRIBUTION SUMMARY

## *Alaska Retirement Management Board*

### Non-U.S. Growth

From 6/30/2016 to 9/30/2016

### Reporting Currency: United States Dollar

The Alaska Retirement Management Board Non-U.S. Growth Portfolio outperformed the MSCI All Country World Ex-United States Growth Index last quarter.

<b>Performance Drivers</b>	<b>Total Effect</b>	<b>Country Contributors</b>	<b>Total Effect</b>
<b>Position Contributors</b>		<b>Country Detractors</b>	
Micro-Star International Co Ltd	0.28	Switzerland	0.67
Tencent Holdings Ltd	0.24	China	0.33
Samsung Electronics Co Ltd	0.19	Taiwan	0.33
NetEase Inc	0.18	Japan	-0.65
Teck Resources Ltd	0.18	Denmark	-0.34
		Germany	-0.29
<b>Position Detractors</b>		<b>Sector Contributors</b>	
Imperial Brands PLC	-0.21	Health Care	0.88
Anglo Gold Ashanti Ltd	-0.20	Information Technology	0.49
Pandora A/S	-0.20	Financials	0.33
Taisei Corp	-0.16	<b>Sector Detractors</b>	
Korea Electric Power Corp	-0.16	Consumer Discretionary	-0.86
		Industrials	-0.40
		Utilities	-0.35
<b>Developed/Emerging</b>			
Developed	-0.61		
Emerging	0.90		



# ATTRIBUTION SUMMARY

## *Alaska Retirement Management Board*

### Non-U.S. Growth

From 12/31/2015 to 9/30/2016

### Reporting Currency: United States Dollar

The Alaska Retirement Management Board Non-U.S. Growth Portfolio underperformed the MSCI All Country World Ex-United States Growth Index year to date.

<b>Performance Drivers</b>	<b>Total Effect</b>		<b>Total Effect</b>
<b>Position Contributors</b>		<b>Country Contributors</b>	
Itau Unibanco Holding SA Pfd	0.63	China	0.95
Bluescope Steel Ltd	0.51	Taiwan	0.71
Taiwan Semiconductor Manufacturing Co Ltd	0.49	Switzerland	0.62
Medibank Private Ltd	0.47	<b>Country Detractors</b>	
Tencent Holdings Ltd	0.47	United Kingdom	-2.82
		Japan	-2.28
		Canada	-0.66
<b>Position Detractors</b>		<b>Sector Contributors</b>	
Barratt Developments PLC	-0.70	Information Technology	1.75
Berkeley Group Holdings PLC	-0.53	Health Care	1.05
Carnival PLC	-0.44	Materials	0.47
Qantas Airways Ltd	-0.42	<b>Sector Detractors</b>	
AerCap Holdings NV	-0.41	Consumer Discretionary	-2.87
		Industrials	-1.43
		Energy	-0.52
<b>Developed/Emerging</b>			
Developed	-4.65		
Emerging	2.25		



ASSET SUMMARY  
*Alaska Retirement Management Board*  
Non-U.S. Growth  
September 30, 2016

Reporting Currency: United States Dollar

PORTFOLIO COMPOSITION

	Market Value	Pct. Assets
Equities	506,588,658.89	98.4
Cash	7,263,355.15	1.4
Accruals	864,316.05	0.2
Other	0.00	0.0
<b>Total</b>	<b>514,716,330.09</b>	<b>100.0</b>



## PORTFOLIO CHARACTERISTICS

### *Alaska Retirement Management Board*

Non-U.S. Growth

September 30, 2016

**Reporting Currency: United States Dollar**

	<u>Account</u>	<u>ACW xUSG</u>
Number of Holdings	78	1,055
Market Capitalization BIL*	52.59	58.01
Earnings Growth (Current Year)	12.75 %	10.14 %
Price/Earnings (Forward 1 Year Est.)	16.19	19.61
Dividend Yield	2.22 %	1.76 %
Price to Book	2.75	2.60
Return on Invested Capital	11.60 %	9.08 %

\*Figure is weighted average; all other figures are median.



## TOP TEN WEIGHTS

### *Alaska Retirement Management Board*

Non-U.S. Growth

September 30, 2016

Reporting Currency: United States Dollar

<b>Security</b>	<b>Country</b>	<b>Nominal Weight</b>
Tencent Holdings Ltd	China	3.59
Taiwan Semiconductor Manufacturing Co. Ltd	Taiwan	3.45
Unilever NV	Netherlands	2.95
Samsung Electronics Co Ltd	South Korea	2.93
Shire PLC	United Kingdom	2.25
Lonza Group AG	Switzerland	2.16
Toronto Dominion Bank	Canada	2.00
Merck KGaA	Germany	1.96
Alibaba Group Holding Ltd	China	1.92
Imperial Brands PLC	United Kingdom	1.86
<b>TOTAL</b>		<b>25.07</b>

<b>Security</b>	<b>Country</b>	<b>Active Weight</b>
Lonza Group AG	Switzerland	2.04
Toronto-Dominion Bank	Canada	2.00
Imperial Brands PLC	United Kingdom	1.86
Tencent Holdings Ltd	China	1.85
Taiwan Semiconductor Manufacturing Co. Ltd	Taiwan	1.84
Merck KGaA	Germany	1.80
VINCI SA	France	1.75
Samsung Electronics Co. Ltd	South Korea	1.71
Swedish Match AB	Sweden	1.69
Shire PLC	United Kingdom	1.60
<b>TOTAL</b>		<b>18.14</b>

Active weight vs. ACW xUSG

The securities identified and described do not represent all of the securities purchased, sold or recommended for client accounts. The reader should not assume that an investment in the securities identified was or will be profitable.





## SECTOR WEIGHTS

### *Alaska Retirement Management Board*

Non-U.S. Growth

September 30, 2016

Reporting Currency: United States Dollar

<u>MSCI GICS SECTOR</u>	<u>Portfolio</u>	<u>ACW xUSG</u>	<u>Difference</u>	<u>Portfolio As Of Prior Quarter End</u>
Consumer Discretionary	11.4	13.1	-1.7	12.4
Consumer Staples	17.4	19.7	-2.3	17.2
Energy	3.9	2.6	1.4	1.6
Financials	10.6	9.2	1.4	10.0
Health Care	10.5	12.2	-1.8	9.7
Industrials	13.8	13.5	0.3	16.6
Information Technology	15.2	14.0	1.2	13.5
Materials	8.8	6.9	1.9	7.0
Real Estate	1.8	2.7	-0.9	1.9
Telecommunication Services	3.5	4.6	-1.1	3.3
Utilities	1.6	1.5	0.1	4.4
Cash	1.6	0.0	1.6	2.4
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>		<b>100.0</b>



## COUNTRY WEIGHTS

### *Alaska Retirement Management Board*

Non-U.S. Growth

September 30, 2016

Reporting Currency: United States Dollar

Country	Portfolio	ACW xUSG	Difference	Portfolio As Of Prior Quarter End
<b>Developed</b>	<b>64.5</b>	<b>76.6</b>	<b>-12.1</b>	<b>70.2</b>
Australia	2.0	4.9	-2.9	2.2
Austria	0.0	0.0	0.0	0.0
Belgium	0.0	1.4	-1.4	0.9
Canada	5.2	6.6	-1.4	4.0
Denmark	3.4	1.9	1.5	5.2
Finland	3.9	0.2	3.6	4.1
France	6.2	5.6	0.6	6.8
Germany	4.8	6.7	-1.9	2.9
Hong Kong	0.0	2.5	-2.5	0.0
Ireland	0.0	0.6	-0.6	0.8
Israel	0.0	0.5	-0.5	1.4
Italy	1.7	0.8	0.9	1.2
Japan	11.1	16.7	-5.6	13.2
Luxembourg	0.0	0.0	0.0	0.0
Netherlands	3.8	3.6	0.2	4.0
New Zealand	0.0	0.1	-0.1	0.2
Norway	1.9	0.2	1.6	1.0
Portugal	1.3	0.1	1.1	1.2
Singapore	0.0	0.9	-0.9	0.0
Spain	0.0	1.3	-1.3	0.0
Sweden	6.0	1.9	4.1	4.7
Switzerland	3.8	9.3	-5.5	3.4
United Kingdom	9.5	10.6	-1.1	13.0



Country	Portfolio	ACW xUSG	Difference	Portfolio As of Prior Quarter End
<b>Emerging</b>	<b>33.9</b>	<b>21.1</b>	<b>12.8</b>	<b>27.4</b>
Brazil	2.2	1.6	0.6	1.4
Chile	0.5	0.3	0.2	0.5
China	8.0	6.5	1.6	5.8
Colombia	0.0	0.1	-0.1	0.0
Czech Republic	0.0	0.0	0.0	0.0
Egypt	0.0	0.0	0.0	0.0
Greece	0.0	0.1	-0.1	0.0
Hungary	1.1	0.1	1.0	1.0
India	0.0	1.9	-1.9	0.0
Indonesia	2.3	0.6	1.7	2.0
Malaysia	0.0	0.6	-0.6	0.5
Mexico	0.0	0.9	-0.9	0.0
Peru	1.0	0.1	0.9	0.0
Philippines	0.0	0.3	-0.3	0.0
Poland	0.0	0.3	-0.3	0.0
Qatar	0.0	0.2	-0.2	0.0
Russia	1.5	0.9	0.6	1.5
South Africa	1.1	1.7	-0.6	1.3
South Korea	6.4	1.1	5.3	5.0
Taiwan	5.3	2.9	2.4	4.6
Thailand	4.6	0.5	4.1	4.0
Turkey	0.0	0.3	-0.3	0.0
United Arab Emirates	0.0	0.2	-0.2	0.0
Cash	1.6	0.0	1.6	2.4
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>		<b>100.0</b>



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*Section* | **4**

## MARKET UPDATE

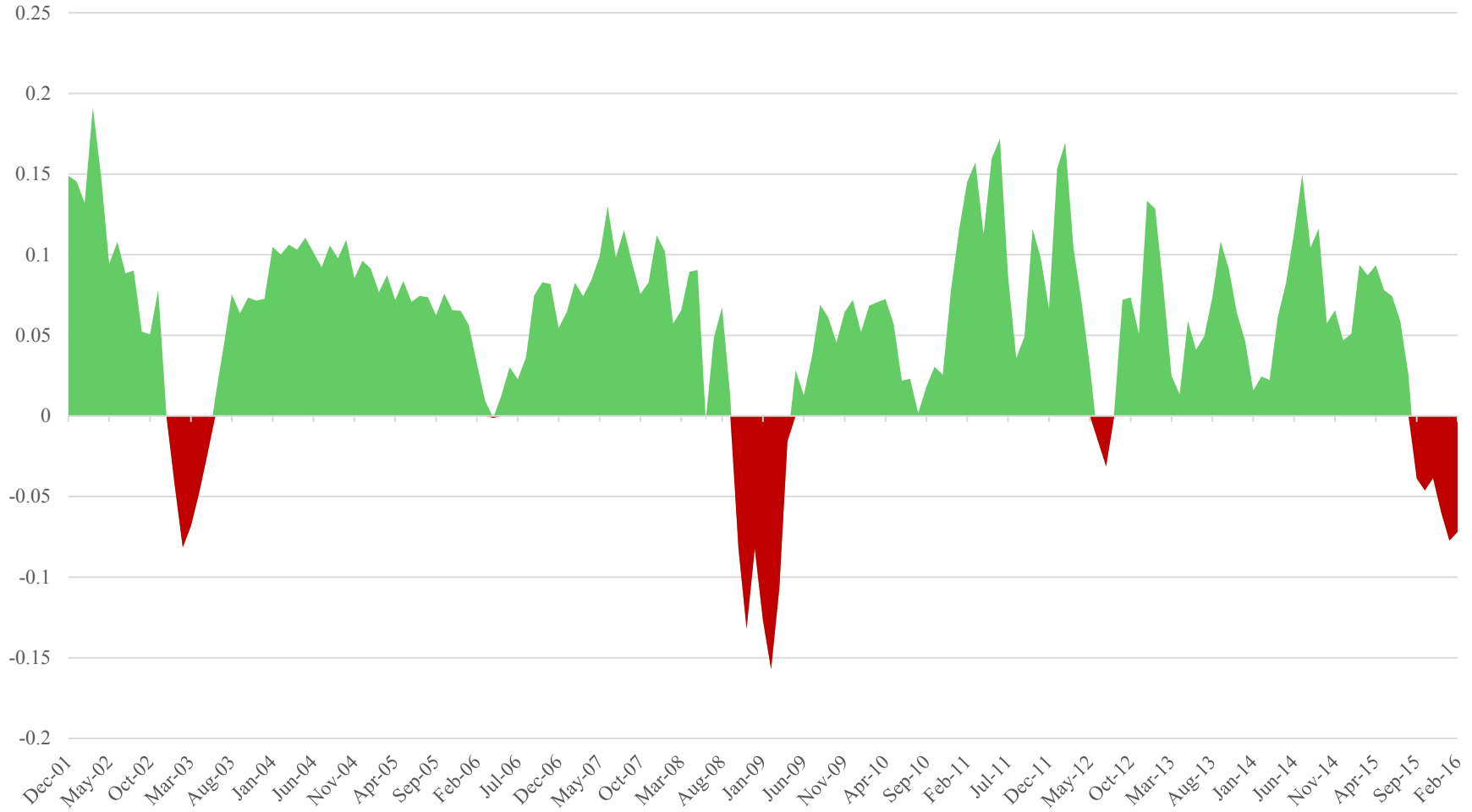
*The year 2016 has seen volatility in market leadership:*

	<b>R1000G (U.S. Large Cap Growth)</b>	<b>R2000G (U.S. Small Cap Growth)</b>	<b>MSCI EAFE (Non-U.S. Developed)</b>	<b>MSCI EM (Emerging Markets)</b>	<b>MSCI World ex US SC (Non- U.S. Small Cap)</b>
<b>3Q 2016</b>	+4.58	+9.22	Growth +5.00 Broad +6.50	Growth +9.93 Broad +9.15	+8.00
<b>October</b>	-2.35	-6.21	Growth -4.30 Broad -2.04	Growth -0.95 Broad +0.25	-2.97
<b>November (Through 11/15/16)</b>	+1.20	+8.36	Growth -3.47 Broad -2.02	Growth -8.03 Broad -6.99	-2.97
<b>YTD (Through 11/15/16)</b>	+4.75	+9.23	Growth -4.85 Broad -1.90	Growth +5.72 Broad +8.49	+0.98



# Average MQ\* Information Coefficient

Forward Rolling 6-Month Periods



\* MQ denotes McKinley Capital's proprietary Quantitative Model Score  
Source: McKinley Capital Management, LLC. Report created September 23, 2016.



*Section* | **5**

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# BIOGRAPHIES

## PORTFOLIO MANAGEMENT TEAM\*

### **Robert B. Gillam**

#### **Chief Executive Officer and President**

M.B.A. Finance, University of California – Los Angeles, 1969  
B.S. Economics, The Wharton School, University of Pennsylvania, 1968

Mr. Gillam is McKinley Capital's founder and remains today its Chairman and Chief Executive Officer. He is responsible for overall corporate strategy and planning as well as providing oversight for all operational and investment management activities. Mr. Gillam serves on McKinley Capital's Executive Management Committee and is Chairman of the firm's Board of Directors. Mr. Gillam has over 40 years of experience in the financial services industry, including banking, brokerage and investment management. He has managed individual, corporate and public investment accounts since 1970, beginning at Foster and Marshall, where he was elected First Vice President. In 1975, Mr. Gillam was appointed by Alaska's Governor to the Alaska State Investment Advisory Committee.

In 1982, he became a General Partner of Boettcher and Company, an investment-banking firm and in 1983 became an Allied Member of the New York Stock Exchange. At Boettcher and Company, Mr. Gillam assisted in the formation of the firm's managed accounts department. In 1988, Mr. Gillam began to incorporate Modern Portfolio Theory via quantitative computer models into active portfolio management. His achievements in this area serve as the foundation for McKinley Capital's quantitative investment methodology. In addition, Mr. Gillam has been featured in articles appearing in the Wall Street Journal, Forbes, Fortune and other financial publications.

### **Robert A. Gillam, CFA**

#### **Chief Investment Officer**

B.S. Economics, Concentration: International Finance & Strategic Management, The Wharton School, University of Pennsylvania, 1994

Mr. Gillam joined McKinley Capital in 1994 and in his current role as Chief Investment Officer (CIO), he is responsible for all investment functions and personnel for traditional and alternative portfolios. He guides the firm's quantitative research, portfolio management, trading, risk management, and portfolio operations functions. Prior to becoming CIO, he worked as a Portfolio Manager with a specialty in non-U.S. and global strategies. Mr. Gillam serves on McKinley Capital's Executive Management Committee where he is actively involved in defining and developing corporate strategy and associated policies, procedures and programs and is a member of the firm's Board of Directors. He is a member of the CFA Institute; a member of the Wharton Global Family Alliance, a unique academic-family business partnership established to enhance the marketplace advantage and social wealth creation contributions of global families; an investment committee member for the Rasmuson Foundation, a private foundation that supports Alaskan non-profit organizations; and an Advisory Board member of Jacobs Levy Equity Management Center for Quantitative Financial Research at Wharton.

### **Gregory S. Samorajski, CFA**

#### **Director of Investments, Portfolio Manager**

M.B.A. Finance and Statistics, University of Chicago  
B.A. Mathematics, Northwestern University

Mr. Samorajski joined McKinley Capital as a Portfolio Manager in 1997. In addition to stock selection responsibilities, he has applied his mathematical and quantitative talents to assist in developing and managing the firm's risk analysis and portfolio construction systems. Prior to joining McKinley Capital, Mr. Samorajski worked for ten years at the Chicago Board of Trade as manager of the Exchange's financial futures product development group. In that capacity, Mr. Samorajski directed the design of the Federal Funds futures contract which is widely used today as a benchmark to determine the market's expectation of Federal Reserve policy changes. He also was responsible for the design of the successful Five-Year and Two-Year Treasury note futures contracts. Mr. Samorajski was also a market maker on the floor of the Chicago Board Options Exchange. He has served as a faculty member in the graduate Financial Markets and Trading Program of the Illinois Institute of Technology and taught graduate investment classes at Alaska Pacific University.

### **Sheldon J. Lien, CFA**

#### **Portfolio Manager**

B.S. Business, DeVry Institute of Technology

Mr. Lien joined McKinley Capital's Portfolio Management Team in 1995. Mr. Lien was formally promoted to Portfolio Manager in 1997 and participates as a member of McKinley Capital's Portfolio Management Team and shares responsibility for risk analysis and portfolio construction. Mr. Lien previously worked closely with the firm's programmers, providing valuable assistance in the development of McKinley Capital's proprietary computer software systems.





# BIOGRAPHIES

## PORTFOLIO MANAGEMENT TEAM\* *(continued)*

### **Brandon S. Rinner, CFA**

#### **Portfolio Manager**

B.S. Applied Mathematics, University of Alaska - Anchorage

Mr. Rinner joined McKinley Capital's Portfolio Management Team in 1998. He has capitalized on his studies in applied mathematics to assist in a variety of portfolio management functions including back test models, quantitative models, and qualitative stock research. Mr. Rinner was formally promoted to Portfolio Manager in 2001 and participates as a member of McKinley Capital's Portfolio Management Team.

### **F. Paul Hanson, CFA**

#### **Portfolio Manager**

M.B.A. University of Alaska – Southeast

B.S. Economics, University of Pennsylvania, Wharton School of Finance and Commerce

Mr. Hanson joined McKinley Capital's Portfolio Management Team in 2000. Mr. Hanson was formally promoted to Portfolio Manager in 2005 and participates as a member of McKinley Capital's Portfolio Management Team. Prior to joining McKinley Capital, Mr. Hanson was an Investment Associate for the Alaska Permanent Fund Corporation, and had additional prior experience in bank management.

### **M. Forrest Badgley, CFA**

#### **Portfolio Manager**

M.B.A. Northwestern University, Kellogg School of Management

B.A. Philosophy, Dartmouth College

Mr. Badgley joined McKinley Capital's Quantitative Research Team in 2004. Mr. Badgley was formally promoted to Portfolio Manager in 2006 and participates as a member of McKinley Capital's Portfolio Management Team. Prior to joining McKinley Capital, Mr. Badgley worked on the currency futures trading desk for Aspire Trading and as a Quantitative Risk Management Analyst for Bank One.

### **Martino M. Boffa, CFA**

#### **Director of Investments, Alternative Structures**

M.S. Finance, Stuart School of the Illinois Institute of Technology

M.S. Economics & Business Administration, Università Cattolica del Sacro Cuore, Milan

Mr. Boffa joined McKinley Capital in 2009 as Director of Alternatives and Portfolio Manager. Mr. Boffa has more than 20 years of investment industry experience with over 16 years in alternative investments on both the buy and sell sides. Under the direction of senior management, Mr. Boffa is responsible for the design, development, and implementation of alternative structures for the firm. Previously, Mr. Boffa was Senior Director of Arbitrage Strategies with Credit Suisse and managed a market neutral investment portfolio. Prior to that, he worked at Société Générale where he was Managing Director of Hedge Fund Sales specializing in European equities.

\*Portfolio Managers listed in order of tenure with the firm.



# BIOGRAPHIES

## QUALITATIVE RESEARCH TEAM

### **David J. Talbot**

#### **Director of Investments and Qualitative Research Analyst**

B.Sc. Honours Mining Engineering and Mineral Economics, University of Nottingham, U.K.

Mr. Talbot joined McKinley Capital as a Qualitative Research Analyst in 2007. In 2009, Mr. Talbot became a Director of Investments. Mr. Talbot has more than two decades of investment industry and personnel management experience, having formerly worked at Deutsche Bank AG, BNP Paribas, and John S. Herold, where he held senior positions in the research and institutional equity sales departments. As a Qualitative Research Analyst Mr. Talbot is a generalist who works closely with the Portfolio Management Team and is responsible for identifying and building relationships with leading global analysts to ascertain when the top analyst of a particular company sees any change that could result in higher or lower earnings. Prior to his career in the investment industry, Mr. Talbot worked for nearly a decade as a mining engineer and in various supervisory roles for several companies with mining operations.

### **Flora J. Kim**

#### **Qualitative Research Analyst**

B.S. Management Science, University of California, San Diego  
B.S. Biochemistry and Cell Biology, University of California, San Diego

Ms. Kim joined McKinley Capital as a Qualitative Research Analyst in 2007. She is a generalist who works closely with the Portfolio Management Team and is responsible for identifying and building relationships with leading global analysts to ascertain when the top analyst of a particular company sees any change that could result in higher or lower earnings. Ms. Kim has five years of experience as a healthcare and emerging markets analyst at Nicholas-Applegate. Prior to entering the investment industry, she worked in the healthcare industry performing laboratory research.

### **Shierley Widjaja, CFA**

#### **Qualitative Research Associate**

M.B.A., Finance and Accounting, The Wharton School of Business, University of Pennsylvania  
B.S., Electrical Engineering (summa cum laude), University of California, Los Angeles

Ms. Widjaja joined McKinley Capital in 2010 as a Qualitative Research Associate. She is a member of McKinley Capital's Qualitative Research Team and assists in providing security research, quantitative research and portfolio modeling. Ms. Widjaja has research and analyst experience from her prior work at UBS Investment Bank in Hong Kong and Singapore where she held positions as an Analyst in the Mergers & Acquisitions and Corporate Finance departments.



## QUANTITATIVE RESEARCH TEAM

### **John B. Guerard Jr., Ph.D.**

#### **Director of Quantitative Research**

Ph.D. Finance, University of Texas – Austin  
M.S.I.M. Finance, Georgia Institute of Technology  
M.A. Economics, University of Virginia  
A.B. Economics, Duke University, cum laude

### **Harry M. Markowitz, Ph.D.**

#### **Quantitative Research Consultant**

Ph.D. Economics, University of Chicago, 1954  
M.A. Economics, University of Chicago, 1950  
Ph.B., University of Chicago, 1947

### **Ganlin Xu, Ph.D.**

#### **Quantitative Research Consultant**

Ph.D. Mathematics, Carnegie Mellon University, 1990  
B.S. Mathematics, University of Science and Technology of China, 1984

Dr. Guerard joined McKinley Capital as Director of Quantitative Research in 2005. His passion for global equity markets, along with his academic credentials and broad practitioner experience, make him a valuable member of the McKinley Capital team. Dr. Guerard's focus is on the maintenance and enhancement of the firm's quantitative capabilities and investment models. Prior to joining McKinley Capital, he held a number of senior-level positions including Vice President for Daiwa Securities Trust Co. where he co-managed the Japan Equity Fund with Nobel Prize winner Dr. Harry Markowitz. He is also a former adjunct faculty member and faculty member of the Wharton School of the University of Pennsylvania and Rutgers University Graduate School of Management, respectively.

Dr. Harry Markowitz, Ph.D., joined McKinley Capital in 2012 as a Quantitative Research Consultant. In his distinguished career, Dr. Markowitz has served in various academic posts at many universities, including Baruch College, London School of Economics, London Business School, University of Tokyo, Rutgers University, Hebrew University, the Wharton School and UCLA. Dr. Markowitz has applied computer and mathematical techniques to various practical decision making areas. In finance: in an article in 1952 and a book in 1959 he presented what is now referred to as MPT, "modern portfolio theory." This has become a standard topic in college courses and texts on investments, and is widely used for asset allocation, risk control and attribution analysis by institutional investors and financial planners. In other areas: Dr. Markowitz developed "sparse matrix" techniques for solving very large mathematical optimization problems. These techniques are now standard in production software for optimization programs. Dr. Markowitz also designed and supervised the development of the SIMSCRIPT programming language. SIMSCRIPT has been widely used for programming computer simulations of systems such as factories, transportation systems and communication networks. In 1989 Dr. Markowitz received The John von Neumann Award from the Operations Research Society of America for his work in portfolio theory, sparse matrix techniques and SIMSCRIPT. In 1990 he shared The Nobel Prize in Economics for his work on portfolio theory. Dr. Markowitz is best known for his pioneering work in Modern Portfolio Theory, studying the effects of asset risk, return, correlation and diversification on probable investment portfolio returns.

In his years on the MCM Scientific Advisory Board, Dr. Markowitz has published articles with Dr. Xu and Dr. Guerard on domestic and global stock selection and the role of earnings forecasting in stock selection modeling.

Dr. Ganlin Xu, Ph.D., joined McKinley Capital as a Quantitative Research Consultant in 2013. Dr. Xu has more than twenty (20) years of investment industry experience and is currently the Chief Technology Officer of GuidedChoice, Inc. Before joining Dr. Harry Markowitz at GuidedChoice in 2000, Dr. Xu worked with Dr. Markowitz in the global portfolio research group at Daiwa Securities. Dr. Xu led an effort at GuidedChoice to incorporate mean-variance efficient frontier into innovative products that provide investment advice and managed accounts to millions of investors. He has worked on various theoretical and practical aspects of portfolio management, and published papers in the SIAM Journal of Control and Optimizations and Annals of Applied Probability, among numerous others. Dr. Xu was co-recipient of the RIIA Practitioner Thought Leadership Award in 2012.

In his years on the MCM Scientific Advisory Board, Dr. Xu has published articles with Dr. Markowitz and Dr. Guerard on domestic and global stock selection and the role of earnings forecasting in stock selection modeling.



# BIOGRAPHIES

## QUANTITATIVE RESEARCH TEAM *(continued)*

### **Rochester Cahan, CFA**

#### **Quantitative Research Consultant**

Bachelor of Science and Bachelor of Business Studies double degree in Mathematical Physics and Finance, Massey University, New Zealand

Rochester Cahan joined McKinley Capital as a Quantitative Research Consultant in 2013. Mr. Cahan has more than ten (10) years of investment industry experience and is currently the U.S. Portfolio Strategist at Empirical Research Partners LLC. Before joining Empirical Research Partners LLC in 2013, Mr. Cahan was the head of U.S. Quantitative Strategy for Deutsche Bank in New York. During his tenure there the team was top-ranked for quantitative research in the Institutional Investor All-America Research Team survey for three consecutive years from 2011 through 2013. Before Deutsche Bank he also held quantitatively-focused positions at Macquarie Bank and Citigroup in both New York and Sydney, Australia from 2003 through 2010. In addition to his highly regarded practitioner research, Mr. Cahan has published a number of academic articles in top journals including The Journal of Empirical Finance, The Journal of Banking and Finance, and The Journal of Portfolio Management.

In his years on the MCM Scientific Advisory Board, Mr. Cahan has published an article with Mr. Robert A. Gillam and Dr. Guerard on text recognition in global stock selection modeling.

### **Ian Domowitz, Ph.D.**

#### **Quantitative Research Consultant**

Ph.D. Economics, University of California, San Diego, 1982  
B.A. Economics, University of Connecticut

Dr. Domowitz is a Managing Director at Investment Technology Group, Inc., responsible for ITG Solutions Network, Inc., and a member of the company's Management and Executive Committees. Prior to joining the company in 2001, he served as the Mary Jean and Frank P. Smeal Professor of Finance at Pennsylvania State University and previously was the Household International Research Professor of Economics at Northwestern University. A former member of the NASD's Bond Market Transparency Committee, he also served as chair of the Economic Advisory Board of the NASD. Dr. Domowitz has held positions with Northwestern's Kellogg Graduate School of Management, Columbia University, the Commodity Futures Trading Commission, the International Monetary Fund, and the World Bank.

Mr. Narang is the Founding Principal of T2AM, LLC and manages T2AM's investment activities. He is a leader in quantitative trading and a veteran in the hedge fund industry. Mr. Narang began his career in 1996 as a Global Investment Strategist for Citibank Alternative Investment. In 1999, he co-founded Tradeworx, Inc., a quantitative hedge fund manager, and acted as its President until his departure in 2002. For the following three years, Mr. Narang was the co-Portfolio Manager and a Managing Director at Santa Barbara Alpha Strategies, after which he founded T2AM, LLC in 2005. Mr. Narang is the author of *Inside the Black Box: A Simple Guide to Quantitative and High-Frequency Trading*, and holds a BA in Economics from the University of California at Berkeley.

### **Rishi K. Narang**

#### **Quantitative Research Consultant**

B.A. Economics, University of California, Berkeley, 1996

Mr. Gifford contributes experience in computer science, mathematics, and statistical analysis to McKinley Capital. Prior to joining McKinley Capital, he was Associate Professor of Computer Science at the University of Alaska Anchorage. In addition to his strong academic background, Mr. Gifford has extensive knowledge of and experience in systems and software consulting. Mr. Gifford has a longstanding relationship with McKinley Capital, working with the firm as a consultant since the early 1990's to incorporate and formalize many of the quantitative research models McKinley Capital uses today. He continues that role in working to maintain and enhance McKinley Capital's quantitative capabilities and investment models.

### **Ted L. Gifford**

#### **Quantitative Research Consultant**

M.S. Operations Research, Georgia Institute of Technology, 1981  
M.A. Mathematics, University of California, Berkeley, 1972  
B.A. Mathematics, University of California, Santa Barbara, 1971



# BIOGRAPHIES

## QUANTITATIVE RESEARCH TEAM *(continued)*

### **Jose Menchero, Ph.D., CFA**

#### **Quantitative Research Consultant**

Ph.D. Theoretical Physics, University of California, Berkeley 1997

B.Sc. Aerospace Engineering, University of Colorado at Boulder

Jose Menchero, Ph.D., joined McKinley Capital as a Quantitative Research Consultant and member of McKinley Capital's Scientific Advisory Board in 2015. Dr. Menchero is the Head of Portfolio Analytics at Bloomberg. He was the founder of Menchero Portfolio Analytics Consulting, a financial services firm dedicated to helping its clients achieve superior investment performance through the application of advanced quantitative techniques and specializes in the areas of portfolio construction, factor modeling, and risk analysis. Prior to founding Menchero Portfolio Analytics Consulting in 2015, he served from 2007 to 2014 as a managing director and Global Head of Research at MSCI and was responsible for portfolio analytics, portfolio construction research and directed the development of Barra equity risk models. Before joining MSCI, Dr. Menchero served as the Director of Research at Thomson Financial. In this position, Dr. Menchero pioneered several innovative techniques in risk and performance analysis that have since become industry standards. Prior to entering the finance industry, he was a physics professor at the University of Rio de Janeiro, Brazil.

### **Anureet Saxena, Ph.D., CFA**

#### **Quantitative Research Consultant**

Ph.D. Management Science, Carnegie Mellon University

M.S. Management Science, Carnegie Mellon University

M.S. Economics, Purdue University

Dr. Saxena is currently a visiting professor at the Krannert School of Management at Purdue University, where he received the 2014 Excellence in Economics Scholarship. He received his Ph. D. in 2008 at Carnegie Mellon University and is a CFA charterholder. Prior to teaching, he worked in the financial industry with Allianz Global Investors as a Vice President, and Axioma Inc. as a Senior Research Associate. He has published articles in the Journal of Investment Management, the Journal of Asset Management, the Journal of Risk, and the Journal of Investing. Among his most notable publications is An Empirical case study of factor alignment using the USER model (The Journal of Investing 21.1 (2012): 25-43) coauthored with Robert A. Stubbs, Vice President Strategic Innovation at Axioma, Inc.

### **M. Sundaram Chettiappan, CFA**

#### **Senior Quantitative Research Analyst**

M.S. Quantitative Computational Finance, Georgia Institute of Technology

B.E. Computer Science and Engineering, College of Engineering Guindy, Anna University

Mr. Chettiappan joined McKinley Capital as a Quantitative Research Analyst in 2006 and currently works with McKinley Capital's Global Quantitative Research Team to maintain and enhance the firm's investment models. He supports the portfolio management team in utilizing quantitative tools and techniques in portfolio construction to create alpha and manage incidental risk exposures on an ongoing basis. Under the direction of the firm's Director of Quantitative Research, Mr. Chettiappan is also responsible for the production of McKinley Capital's nomination list of securities that is utilized by the portfolio management team to construct portfolios, and for engineering customized solutions required by clients or prospective clients.

### **Kenneth P. Lenhart**

#### **Quantitative Research Analyst**

M.B.A. with concentrations in Analytic Finance, Econometrics, and Statistics, University of Chicago, Chicago, IL

B.A. Economics, Northwestern University, Evanston, IL

Mr. Lenhart initially joined McKinley Capital as a Portfolio Associate in 2011 and is now a member of McKinley Capital's Global Quantitative Research Team that maintains and enhances the firm's investment models. Formerly, Mr. Lenhart was a Director of Equities & Quantitative Research for Midwest Asset Management, Inc. Prior to that he was at Deloitte Consulting as a Systems Analyst providing financial data model and securities expertise.



# BIOGRAPHIES

## QUANTITATIVE RESEARCH TEAM *(continued)*

### **Ziwei (Elaine) Wang**

#### **Quantitative Research Analyst**

M.S. Quantitative and Computational Finance, Georgia Institute of Technology

B.S. Economics and Science, Peking University School of Economics & School of Mathematical Sciences

Ms. Wang joined McKinley Capital as a Quantitative Research Analyst in 2013. She works with McKinley Capital's Global Quantitative Research Team to maintain and enhance the firm's investment models. Ms. Wang interned with China Shenzhen Development Bank as an Asset Management Analyst, and with Anheuser-Busch as a Finance & Business Analyst.

### **Abhishek Saxena**

#### **Quantitative Research Analyst**

M.S. Quantitative and Computational Finance, Georgia Institute of Technology

Bachelor of Technology, Pulp and Paper Engineering, Indian Institute of Technology (IIT) Roorkee

Mr. Saxena joined McKinley Capital as a Quantitative Research Analyst in 2013. He works with McKinley Capital's Global Quantitative Research Team to maintain and enhance the firm's investment models and is experienced in quantitative analysis in the investment industry. Prior to joining McKinley Capital, Mr. Saxena provided clients with reports and analysis of the investment opportunities in the Bombay Stock Exchange.

### **Xi (Lexi) Wang**

#### **Quantitative Research Analyst**

M.S. Quantitative and Computational Finance, Georgia Institute of Technology

B.A. Math and Economics and Science, Agnes Scott College

Ms. Wang joined McKinley Capital as a Quantitative Research Analyst in 2016. She works with McKinley Capital's Global Quantitative Research Team to maintain and enhance the firm's investment models. Ms. Wang interned with China Citic Bank where she supported brokers by analyzing companies and evaluated and monitored their credit risk. She was also an intern for Management Center Europe and Georgia State University.



# BIOGRAPHIES

## TRADING AND OPERATIONS

**Joseph J. Dobrzynski****Head Trader**

M.B.A. Finance and Derivative Markets, Loyola University Chicago,  
Graduate School of Business

B.B.A. Accounting, Loyola University Chicago

Mr. Dobrzynski joined McKinley Capital as Head Trader in 2007. In this role, he manages the Global Equity Trading Team and works closely with Trading Operations. Before relocating to Alaska to join McKinley, Mr. Dobrzynski spent ten years at William Blair & Company, four of them as Head of International Equity Trading. In that capacity, he directed the creation of the international equity trading desk and established an automated operations system.

**Jeremy B. Lobb****Trader**

B.S. Business, Montana State University

Mr. Lobb joined McKinley Capital in 2000 and is an integral member of the Global Equity Trading Team and responsible for execution of the firm's domestic and non-U.S. equities trading. Previously, he served as a Portfolio Assistant, providing support to the Portfolio Management Team and gained knowledge about McKinley's investment process as well as experience on the Portfolio Operations Team where he provided operational support for the firm's trading activities. He is a member of the Seattle Security Traders Association.

**Claudia M. Jackson****Trader**

Bachelor of Commerce Honors Degree (cum laude), Advanced Finance  
and Investment Management, University of South Africa

Bachelor of Commerce (cum laude), Finance, Economics and Law,  
University of South Africa

Ms. Jackson joined McKinley Capital in 2006 as an Operations Risk Specialist and was involved in infrastructure and trade-related projects. In 2007 Ms. Jackson became a Trader and formally joined McKinley Capital's Global Equity Trading Team where she is responsible for execution of the firm's domestic and non-us equities trading. Prior to joining McKinley Capital, Ms. Jackson worked for Citibank in South Africa and two Canadian investment managers where she gained experience in foreign exchange trading and retail equity trading in both the U.S. and Canadian equity markets.

**Brian D. Tillotson****Trader**

B.B.A. University of Alaska, Fairbanks

Mr. Tillotson joined McKinley Capital's Portfolio Operations Team in 2004 where he provided operational support for the firm's trading activities and was involved in the daily reconciliation of trades and timely settlement of all transactions. He has held many trading related positions with McKinley Capital and in 2010 formally joined the Global Equity Trading Team.



Section | **6**

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# McKINLEY CAPITAL MANAGEMENT, LLC

## INTERNATIONAL NON-U.S. GROWTH COMPOSITE

Year	End	Total Firm Assets (millions)	Composite Assets		Annual Performance Results							
			U.S. Dollars (millions)	Number of accounts	Composite		Benchmark		3-Year Standard Deviation Benchmark			Composite Dispersion (%)
					Gross (%)	Net (%)	ACWXUSG (%)	ACWXUS (%)	Composite (%)	ACWXUS (%)	ACWXUS (%)	
2015		6,691	915	5	0.67	0.12	(0.91)	(5.25)	10.9	11.6	12.3	N.A.
2014		7,188	1,043	6	2.86	2.29	(2.29)	(3.44)	12.4	12.2	13.0	1.5
2013		8,135	931	6	20.82	20.12	15.86	15.78	17.1	16.3	16.4	0.4
2012		7,408	1,239	7	15.04	14.47	17.07	17.39	20.2	19.4	19.5	0.8
2011		8,585	1,611	10	(14.74)	(15.19)	(13.93)	(13.33)	21.6	22.1	23.1	0.5
2010		11,910	2,817	12	13.19	12.62	14.79	11.60				0.7
2009		12,729	6,737	55	26.53	25.87	39.21	42.14				0.7
2008		9,960	5,297	57	(49.61)	(49.87)	(45.41)	(45.24)				0.6
2007		16,332	8,689	55	19.90	19.37	21.40	17.12				0.8
2006		12,237	6,299	49	28.57	28.02	23.96	27.16				0.6
2005		8,704	4,733	44	18.36	17.90	17.08	17.11				0.2
2004		6,588	2,572	18	26.19	25.76	17.07	21.36				0.5
2003		4,718	1,187	10	43.77	43.10	34.91	41.41				0.5
2002		3,142	427	7	(7.48)	(7.91)	(14.74)	(14.67)				0.5
2001		3,394	398	13	(22.05)	(22.39)	(23.44)	(19.50)				0.3
2000		4,374	638	224	(21.10)	(21.50)	(24.85)	(15.09)				1.2
1999		3,448	269	131	54.21	53.00	35.72	30.91				1.2
1998		1,767	43	148	6.40	4.90	16.93	14.46				1.4
1997		1,142	28	106	38.70	36.67	2.21	2.04				2.0
1996		820	11	51	14.66	12.84	*	6.68				1.3
1995		331	1	2								

N.A. – Information is not statistically meaningful due to an insufficient number of portfolios in the composite for the entire year.

\* MSCI ACW Ex US Growth Index inception date is 1/97

The MSCI All Country World ex-U.S.A. Growth Index (ACWXUSG) is the primary benchmark for the strategy and the MSCI All Country World ex-U.S.A. Index (ACWXUS) is the secondary benchmark.

The **International Non-U.S. Growth Composite** includes fully discretionary institutional portfolios that invest in all capitalization Non-U.S. growth stocks that are considered to have earnings growth rates that are accelerating above market expectations as compared to the earnings growth rate of companies within the benchmark, MSCI All Country World Ex US Growth Index. It includes portfolios with equal to or greater than 25% emerging markets restrictions, 2x the benchmark or is silent regarding emerging markets restrictions and/or accounts that are registered in greater than 90% of investable countries. Returns include the effect of foreign currency exchange rates which are obtained from a third party provider. The composite was redefined October 1, 2010 to ensure accounts having EM restrictions or country registrations issues that result in accounts not being managed in a similar manner to other non-restricted accounts are not allowed to remain in the composite. The composite was redefined January 1, 2013 to ensure accounts managed against the MSCI All Country World Ex US Index were excluded from the composite. The minimum account size for this composite is \$100 thousand.

McKinley Capital Management, LLC ("McKinley Capital") claims compliance with Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. McKinley Capital has been independently verified for the period March 11, 1991 through December 31, 2015. Verification assesses whether (1) the firm has complied with all 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 International Non-U.S. Growth Composite has been examined for the periods October 1, 1995 through December 31, 2015. The verification and performance examination reports are available upon request.

McKinley Capital is a registered investment adviser under the SEC Investment Advisers Act of 1940 and a global growth equity manager. A complete list of composite descriptions is available upon request.

Results are based on fully discretionary accounts under management, including those accounts no longer with the firm. Non-fee paying accounts represented less than 0.1% of the composite from 2007 - 2011. Non-fee-paying accounts were not included in the composite from 2001-2006 and from 2012-2014. Prior to January 1, 2001, non-fee paying accounts were included, and represented less than or equal to 1% of composite assets at each year-end 1996 through 2000, and 20% of the composite assets at year-end 1995. Effective July 1, 2002, composite policy requires the temporary removal of any portfolio incurring a client initiated significant cash inflow or outflow of at least \$150 million or 50% of the portfolio market value, whichever is greater. Effective January 1, 2013, the International Non-U.S. Growth Composite was redefined to narrow its scope, resulting in assets of \$1.21 billion transferring to another composite. Composite performance is presented net of foreign withholding taxes on dividends, interest income, and capital gains. Withholding taxes may vary according to the investor's domicile. Past performance is not indicative of future results.

The U.S. Dollar is the currency used to express performance. Returns are presented gross and net of management fees and reflects the reinvestment of all income to include realized gains, dividends, interest and other earnings. Net returns are reduced by all actual fees incurred. Effective April 1, 2001, the International Non-U.S. Growth Composite includes only non-wrap accounts. On March 31, 2001 the International Non-U.S. Growth Composite consisted of 9% wrap assets. Gross returns for the wrap accounts are reduced by the non-management portion of the wrap fee. Other than brokerage commissions, this fee may include portfolio monitoring, consulting services, and custodial services. 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.

Standard institutional fee schedule (on amounts up to \$300M): First \$10,000,000 = 0.75%; Next \$15,000,000 = 0.65%; Next \$25,000,000 = 0.60%; Next \$100,000,000 = 0.50%; Next \$150,000,000 = 0.48%. Standard institutional fee schedule (on amounts not less than \$300M): First \$300,000,000 = 0.50%; Next \$300,000,000 = 0.45%; Thereafter \$300,000,000 = 0.40%. Actual client fees may vary. A complete fee schedule is available on request at McKinley Capital Management, LLC, 3301 C Street, Suite 500, Anchorage, AK 99503, (907) 563-4488.

The International Non-U.S. Growth Composite was created on October 1, 1995



## DISCLOSURES

McKinley Capital Management, LLC (“McKinley Capital”) is a registered investment adviser under the U.S. Investment Advisers Act of 1940. McKinley Capital is not registered with, approved by, regulated by, or associated with the Financial Conduct Authority (“FCA”), the Prudential Regulation Authority (“PRA”), the Securities & Futures Commission of Hong Kong or the China Securities Regulatory Commission. Additionally, none of the authorities or commissions listed in the previous sentence has commented on the firm, the content of any marketing material or any individual suitability assessments.

The material provided herein has been prepared for a one-on-one institutional client presentation, may contain confidential and/or proprietary information, and should not be further disseminated without written approval from McKinley Capital’s Compliance Department. Returns are absolute, were generated using McKinley Capital’s proprietary growth investment methodology as described in McKinley Capital’s Form ADV Part 2A, are unaudited, and may not replicate actual returns for any client. McKinley Capital’s investment methodology has not materially changed since its inception but it has undergone various enhancements. No securities mentioned herein may be considered as an offer to purchase or sell a firm product or security. Any comment regarding an individual security is presented at the client’s request, may only be used for client reference, and may not be reflective of composite or individual portfolio ownership. McKinley Capital may not currently hold a specific security. In addition, any positive comments regarding specific securities may no longer be applicable and should not be relied upon for investment purposes. No security is profitable all of the time and there is always the possibility of selling it at a loss. With any investment, there is the potential for loss. Investments are subject to immediate change without notice. Comments and general market related perspectives are for informational purposes only; were based on data available at the time of writing; are subject to change without notice; and may not be relied upon for individual investing purposes. Past performance is no guarantee of future results.

Trade date based performance shown reflects the reinvestment of realized gains, dividends, interest and other earnings calculated using McKinley Capital’s growth investment methodology. Portfolio performance is shown gross and/or net of management fees or asset based broker fees as indicated in the text of the presentation. Clients should realize that net returns would be lower and must be considered when determining absolute returns. Detailed account inclusion/exclusion policies are available upon request. Returns are based on fully discretionary accounts and do not take individual investor tax categories into consideration. Returns reported for the periods prior to January 1, 2001 were initially calculated using McKinley Capital’s quarterly reporting methodology. Monthly returns for that period were retroactively calculated and are considered supplemental information. Returns from January 1, 2001 to current date utilize a monthly reporting methodology. No guarantee can be made that the composite performance reflects a statistically accurate representation of the performance of any specific account. Charts, graphs and other visual presentations and text information are derived from internal, proprietary, and/or service vendor technology sources and/or may have been extracted from other firm data bases. As a result, the tabulation of certain reports may not precisely match other published data. Specific results from calculations and formulas may be rounded up. Future investments may be made under different economic conditions, in different securities and using different investment strategies.

For GIPS® compliant presentations, all information is supplemental to the GIPS® compliant composites and a copy of the applicable GIPS® composite(s) is included with the presentation. Composite returns and individual client returns may materially differ from the stated benchmark(s). Deviations may include, but are not limited to, factors such as the purchase of higher risk securities, over/under weighting specific sectors and countries, limitations in market capitalization, company revenue sources, McKinley Capital’s investment process and/or client restrictions. Global market investing, (including developed, emerging and frontier markets), also carries additional risks and/or costs including but not limited to: political, economic, financial market, currency exchange, liquidity, accounting, and trading capability risks. Derivatives trading and short selling may materially increase investment risk and potential returns. These risks may include, but are not limited to, margin/mark-to-market cash calls, currency exchange, liquidity, unlimited asset exposure, and counter-party risk. Foreign accounting principles may also differ from standard U.S. GAAP standards.



## DISCLOSURES

Fees are billed monthly or quarterly, which produces a compounding effect on the total rate of return net of management fees. As an example, the quarterly effect of investment management fees on the total value of a client's portfolio assuming (a) \$1,000,000 investment, (b) portfolio return of 5% a year, and (c) 1.00% annual investment advisory fee would be \$10,038 in the first year, and cumulative effects of \$51,210 over five years and \$110,503 over ten years. Actual client fees vary. A fee schedule, available upon request, is described in the firm's Form ADV part 2A.

Composite returns include only those accounts holding common stocks, preferred stocks, ADRs, ordinary shares, money market instruments and/or cash equivalents – and for non-U.S. and global composites foreign currencies and stocks. For the period prior to April 1, 2001, composites contain both wrap and non-wrap accounts. For this period, net returns for non-wrap accounts were not reduced by wrap sponsor fees, and gross returns for non-wrap accounts were reduced by transactional costs. The performance results prior to March 11, 1991 reflects the investment performance of discretionary brokerage accounts managed by Robert B. Gillam, Chief Investment Officer at FAS Alaska, Inc. (prior to the formation of McKinley Capital) with a growth investment philosophy and methodology similar to that described in McKinley Capital's brochure.

Data may have originated from various sources including, but not limited to, Bloomberg, FactSet, MSCI, Axioma, Russell Indices, FTSE, TQA, APT, Zephyr and/or other systems and programs. With regards to any material, if any, accredited to FTSE International Limited ("FTSE") ©FTSE [2016]: FTSE™ is a trade mark of London Stock Exchange Plc and The Financial Times Limited and is used by FTSE International Limited under license. All rights in the FTSE Indices vest in FTSE and/or its licensors. Neither FTSE nor its licensors accept any liability for any errors or omissions in the FTSE Indices or underlying data. With regards to any materials, if any, accredited to MSCI: Neither MSCI nor any other party involved in or related to compiling, computing or creating the MSCI data makes any express or implied warranties or representations with respect to such data (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of such data. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in or related to compiling, computing or creating the data have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages. No further distribution or dissemination of the MSCI data is permitted without MSCI's express written consent. Please refer to the specific service provider's web site for complete details on all indices. McKinley Capital makes no representation or endorsement concerning the accuracy or propriety of information received from any third party. All information is believed to be correct but accuracy cannot be guaranteed. Clients should rely on their custodial statements for the official investment activity records. Clients should contact their custodian with any questions regarding monthly/quarterly receipt of those statements.

To receive a copy of the firm's ADV, a complete list and description of McKinley Capital's composites and/or a presentation that adheres to the GIPS® standards, please contact McKinley Capital at 1.907.563.4488 or visit the firm's website, [www.mckinleycapital.com](http://www.mckinleycapital.com).





## Lazard Asset Management

**Mandate:** Emerging Markets

**Hired:** 2007

Firm Information	Investment Approach	Total ARMB Mandate
<p>Lazard Asset Management is a subsidiary of Lazard Freres &amp; Co., a limited liability company.</p> <p>As of 9/30/16, the firm's total assets under management were approximately \$186.5 billion.</p> <p><b>Key Executives Emerging Markets Team:</b>  <b>John Reinsberg</b>, Deputy Chairman  <b>James Donald</b>, Managing Director, Portfolio Manager/Analyst  <b>Anthony Dote</b>, Marketing Representative</p>	<p>Lazard employs a bottom-up stock selection process focusing on companies which are financially productive yet inexpensively priced. Lazard's relative value investment philosophy is based on value creation through the process of bottom-up stock selection. This philosophy is implemented by assessing the trade-off between valuation and financial productivity for an individual security.</p> <p>Lazard's analysts are organized into sector teams seeking to provide a global perspective on each company. Lazard believes that where and how a company does business is more important than where it is domiciled.</p> <p><b>Benchmark:</b> The Benchmark is the MSCI Emerging Markets Index</p>	<p><b>Assets Under Management:</b>            9/30/16: \$464,069,133</p>

**Concerns:** None

### 9/30/2016 Performance

	<u>Last Quarter</u>	<u>1-Year</u>	<u>3-Years Annualized</u>	<u>5-Years Annualized</u>	<u>6-Years Annualized</u>
Lazard Emerging Markets (net)	8.85%	23.62%	-1.17%	3.65%	-0.04%
MSCI EM Index	9.15%	17.21%	-0.21%	3.39%	-0.10%

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MSCI EM Index	9.15%	17.21%	-0.21%	3.39%	-0.10%

# LAZARD

ASSET MANAGEMENT

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## Alaska Retirement Management Board Lazard Emerging Markets Equity

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### 2016 Q3 Review and Outlook

December 9, 2016

**James Donald, CFA**

*Managing Director, Portfolio Manager/Analyst*

**Tony Dote**

*Managing Director*

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Please refer to the Important Information section for additional information about risks.

# Table of Contents

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- A. Lazard Asset Management Overview
- B. Team, Philosophy and Process Overview
- C. Emerging Markets and Performance Review
- D. Portfolio Review
- E. Drivers of Performance
- F. Outlook
- G. Appendix



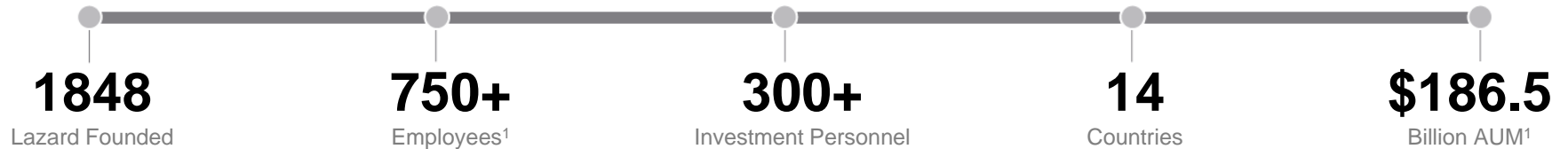
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**A**

Lazard Asset Management Overview

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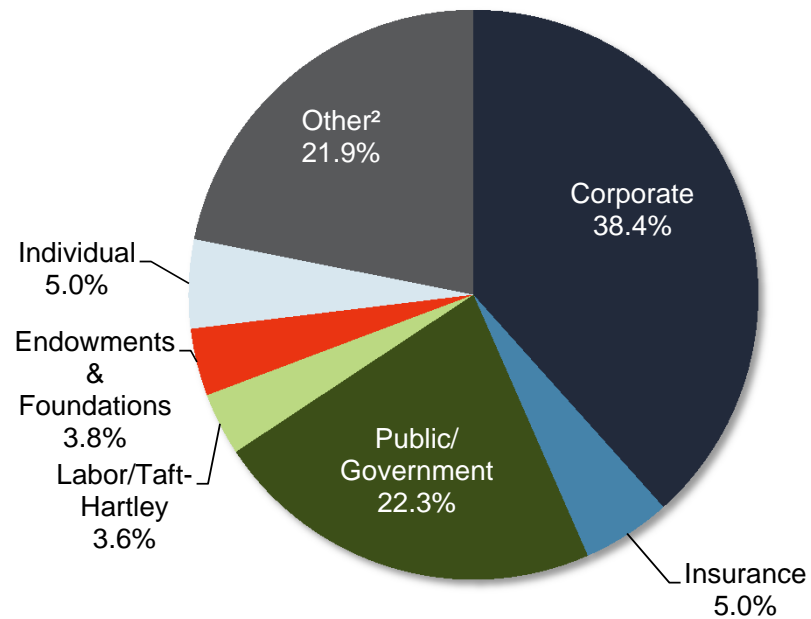
# Lazard Asset Management



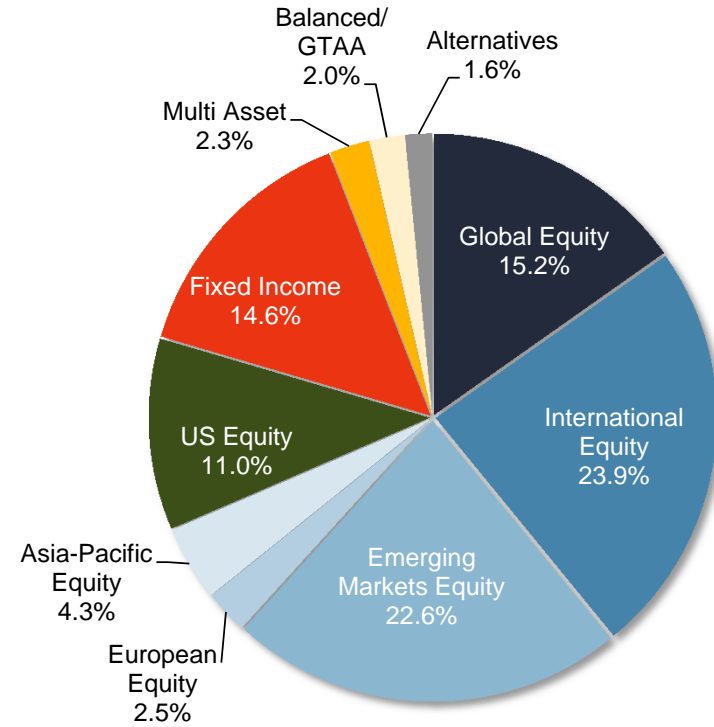
<sup>1</sup> As of 30 September 2016. Includes those of Lazard Asset Management LLC (New York) and its affiliates, but do not include those of Lazard Frères Gestion (Paris) or other asset management businesses of Lazard Ltd.

# Assets Under Management

## By Client Type



## By Investment Mandate



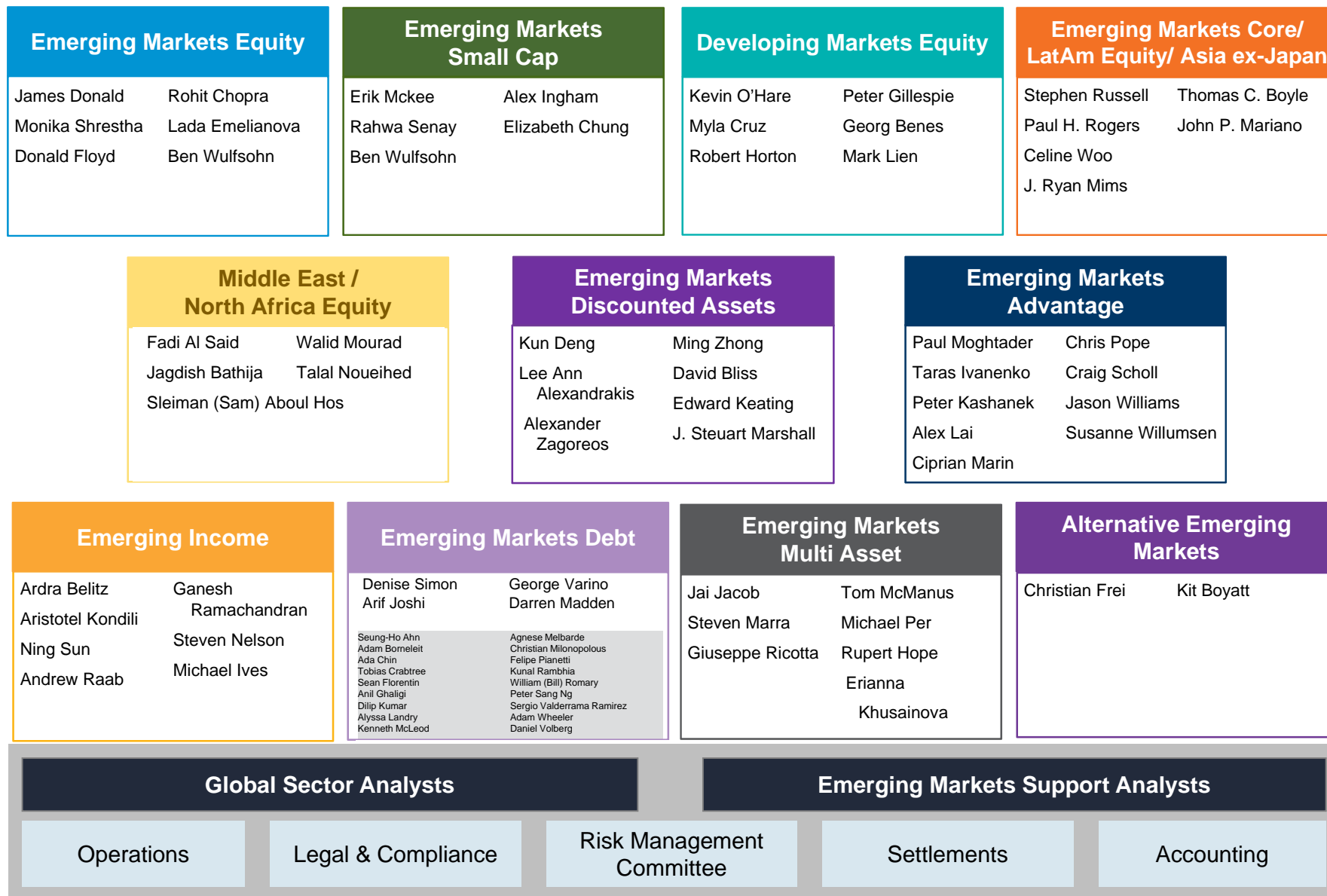
**Total Firm Assets Under Management<sup>1</sup>: 186.5 billion**

<sup>1</sup> As of 30 September 2016. Assets under management include those of Lazard Asset Management LLC (New York) and its affiliates, but do not include those of Lazard Frères Gestion (Paris) or other asset management businesses of Lazard Ltd.

<sup>2</sup> Other represents clients invested in hedge funds, mutual funds, and other investment vehicles for which client type is not reported.

# Lazard Global Emerging Markets

## A Broad Range of Resources



As of 30 September 2016.

This information represents the portfolio management team, and those serving in a dedicated relationship to the team.

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**B**

Team, Philosophy and Process Overview

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# Portfolio Management & Investment Philosophy

## Lazard Emerging Markets Equity

### Portfolio Management Team

		Joined Lazard	Years in Industry
	<b>James Donald, CFA</b> Managing Director, Portfolio Manager/Analyst <i>Sector: Energy</i>	1996	33
	<b>Rohit Chopra</b> Managing Director, Portfolio Manager/Analyst <i>Sector: Telecom, Consumer</i>	1999	20
	<b>Monika Shrestha</b> Director, Portfolio Manager/Analyst <i>Sector: Financials</i>	2003	19
	<b>Lada Emelianova</b> Senior Vice President, Research Analyst <i>Sector: Materials</i>	2010	18
	<b>Donald Floyd</b> Director, Research Analyst <i>Sector: Tech, Industrials</i>	2011	21
	<b>Ben Wulfsohn, CFA</b> Director, Research Analyst <i>Sector: Utilities, Health Care</i>	2001	25

### Investment Profile

Benchmark	MSCI EM Index
Inception Date	1 July 1994
Range of Holdings	70-90

### Our Investment Philosophy (What We Believe)

- Focus on those companies that are financially productive and inexpensively valued
- Add value through stock selection and portfolio management

### Our Investment Objectives (What We Seek to Do)

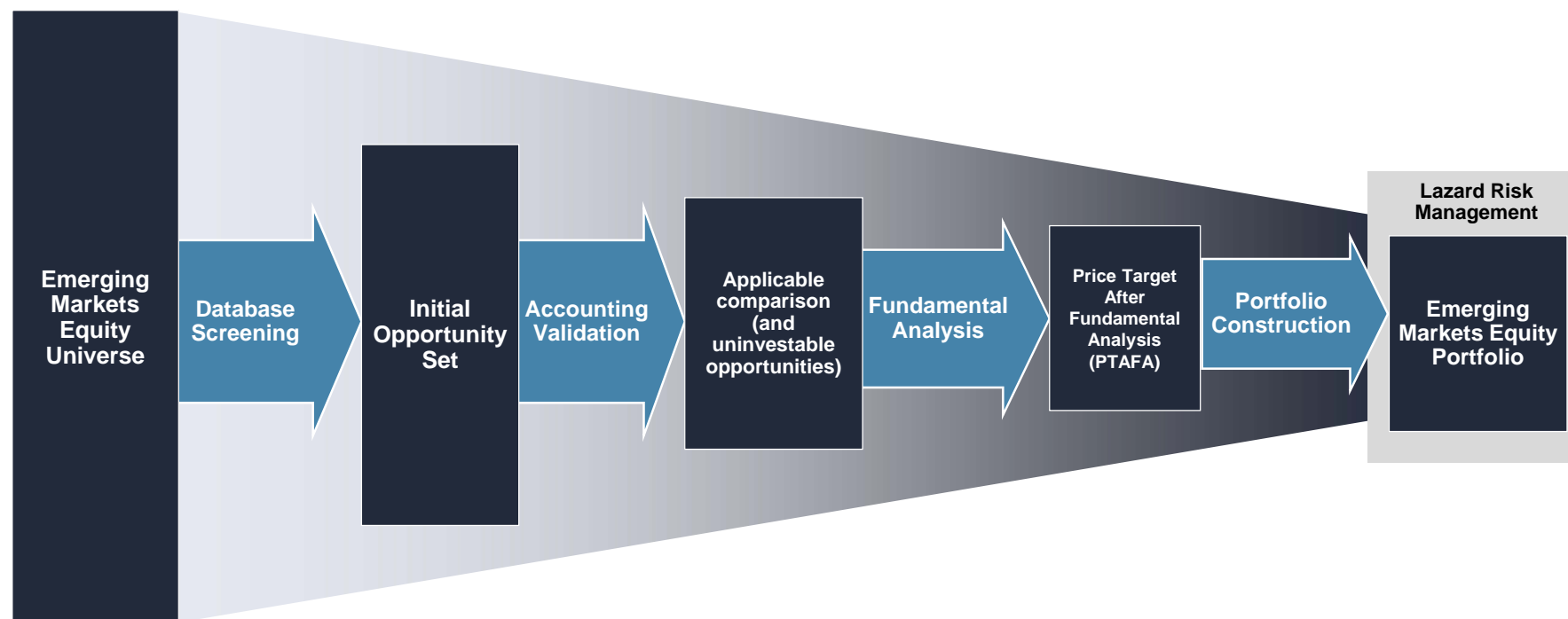
- Outperform relevant benchmark over a full market cycle
- Participate in rising markets; preserve capital in falling markets
- Outperform our investment competitors
- Generate consistent results

Team membership is current as of the date of this document. Personnel data are calculated as of year-end 2015, YTD 2016 experience/tenure is not reflected.

Lazard's investment process is presented here in sequential steps for illustrative purposes only. In practice, the process is not sequential and will, as needed, weigh certain criteria over others.

# Investment Process

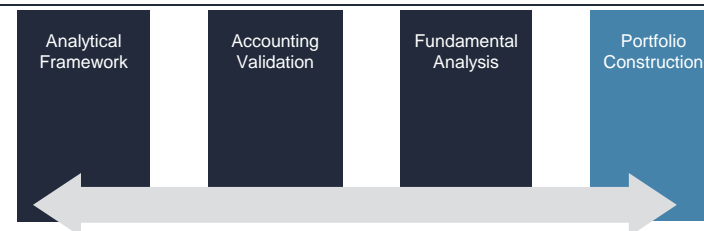
## Lazard Emerging Markets Equity



- Relationships between valuations and profitability proficiency
- Back testing periods
- Identify appropriate industry valuation drivers
- How representative are the financial statements and footnotes?
- Consider material and specific accounting issues
- Can comparable (historical) ratios be computed?
- Expectations over next 3 years for revenues, margins, and ROEs?
- Focus on potential catalysts
- Can returns be sustained?

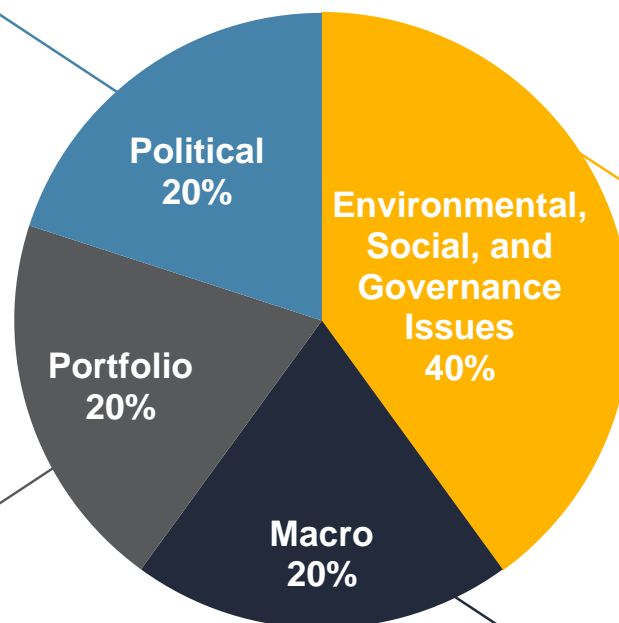
Lazard's investment process is presented here in sequential steps for illustrative purposes only. In practice, the process is not sequential and will, as needed, weigh certain criteria over others.

# Portfolio Construction/Risk Evaluation (Determination Step)



## Political Risk

- Government policy effect on company?
- Regulatory bodies effect on company?
- Other (including local empowerment/national service) effects on company?



## ESG Risk

- Environmental factors?
- Social factors?
- Corporate Governance?

## Portfolio Risk

- Will the addition of this stock enhance the overall risk/reward characteristics of the portfolio?
- Suboptimal concentrations? By country/sector/industry group.
- Index factors?
- Liquidity factors?

## Macro Risk

- Devaluation/revaluation effect on company?
- GDP effect on company?
- Inflation/interest rates effects on company?
- Other (including trade/capital account) effects on company?



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C

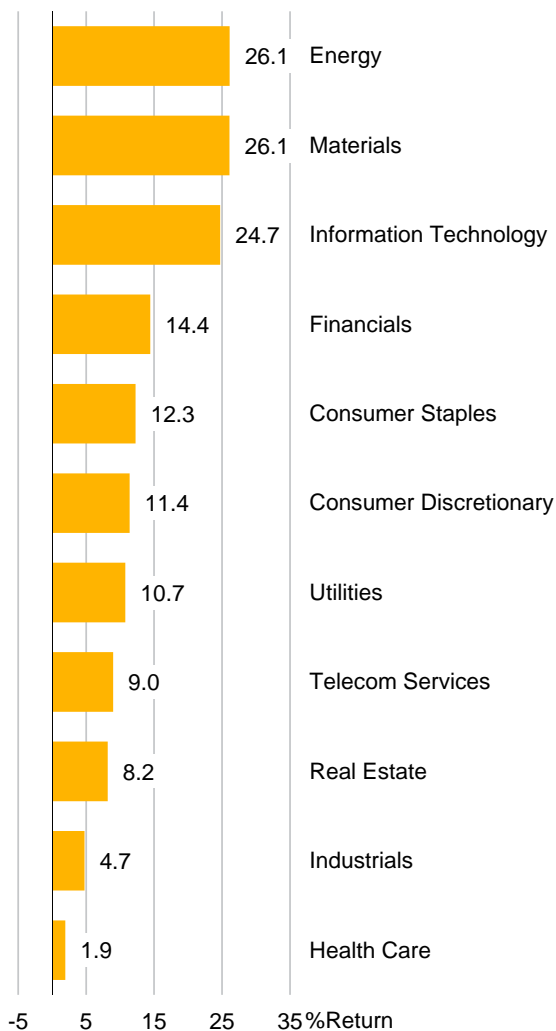
Emerging Markets and Performance  
Review

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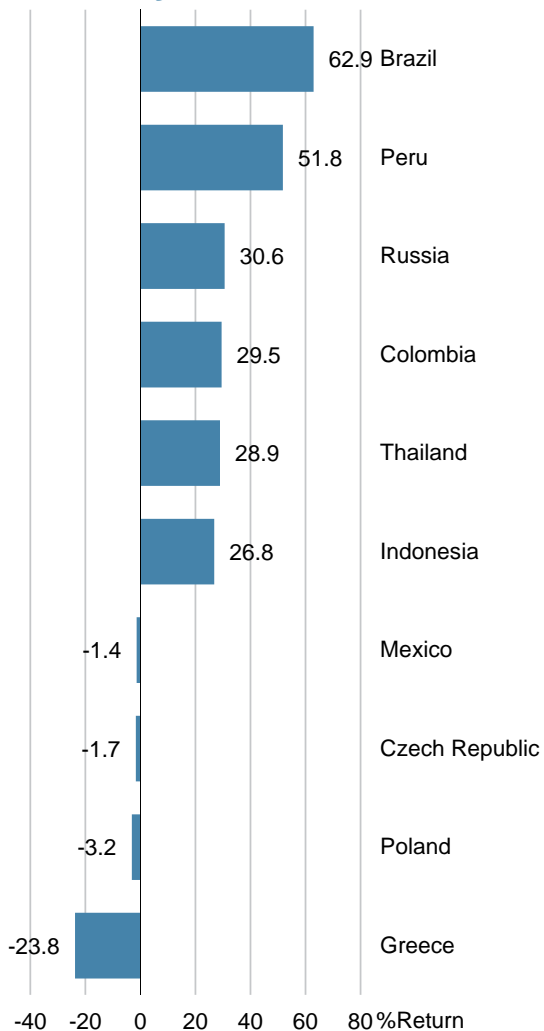
# Market Performance – YTD

## MSCI Emerging Markets Index

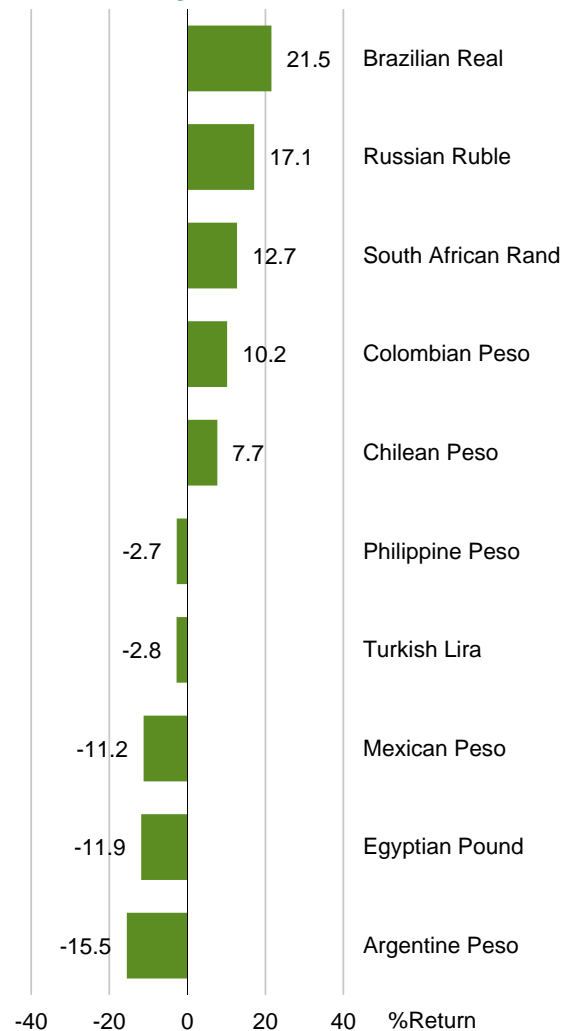
### Sector



### Country



### Currency



As of 30 September 2016. Shown in USD.

Note: Top 5/Bottom 5 countries are shown in the country and currency charts.

Past performance is not a reliable indicator of future results. For illustrative purposes only. This information is not representative of any product or strategy managed by Lazard.

The index is unmanaged and has no fees. One cannot directly invest in an index.

Source: MSCI

# Performance Summary

## Alaska Retirement Management Board

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### Performance as of 30 September 2016 (%)

	2016 Q3	YTD	1 Year	Annualized		
				3 Years	5 Years	Since Inception 19 Jan 2011
<b>Total Portfolio (Net of Fees)</b>	<b>8.85</b>	<b>24.02</b>	<b>23.65</b>	<b>-1.16</b>	<b>3.66</b>	<b>4.75</b>
MSCI Emerging Markets Index	9.03	16.02	16.78	-0.56	3.03	3.57
<b>Excess Return (bps)</b>	<b>-18</b>	<b>+800</b>	<b>+687</b>	<b>-60</b>	<b>+63</b>	<b>+118</b>

### Portfolio Composition as of 30 September 2016 (\$)

	# of Shares	Market Price (\$)	Total Value (\$)
<b>Total Portfolio</b>	28,006,586.72	\$16.57	<b>\$464,069,141.92</b>

Reporting Date: 30 September 2016.

All data in USD

The performance quoted represents past performance. Past performance does not guarantee future results. The current performance may be lower or higher than the performance data quoted. An investor may obtain performance data current to the most recent month-end online at [www.LazardNet.com](http://www.LazardNet.com). The investment return and principal value of the Portfolio will fluctuate; an investor's shares, when redeemed, may be worth more or less than their original cost. The MSCI Emerging Markets Index is comprised of emerging market securities in countries open to non-local investors. The index is unmanaged and has no fees. One cannot invest directly in an index

# Lazard Emerging Markets Equity Portfolio Performance

## Institutional Shares

### Annual Performance (%)

	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
<b>Lazard Emerging Markets Equity Portfolio</b>	<b>-20.16</b>	<b>-4.16</b>	<b>-0.80</b>	<b>22.36</b>	<b>-17.75</b>	<b>22.81</b>	<b>69.82</b>	<b>-47.88</b>	<b>33.05</b>	<b>30.32</b>	<b>41.40</b>
MSCI Emerging Markets Index	-14.92	-2.19	-2.60	18.22	-18.42	18.88	78.50	-53.33	39.38	32.17	34.00
<b>Excess Return (bps)</b>	<b>-524</b>	<b>-197</b>	<b>+180</b>	<b>+414</b>	<b>+67</b>	<b>+393</b>	<b>-868</b>	<b>+545</b>	<b>-633</b>	<b>-185</b>	<b>+740</b>

### Annualized Performance (%)

	2016 Q3	YTD	1 Year	Annualized			Since Inception 18 Jul 1994
				3 Years	5 Years	10 Years	
<b>Lazard Emerging Markets Equity Portfolio</b>	<b>8.85</b>	<b>23.99</b>	<b>23.62</b>	<b>-1.17</b>	<b>3.65</b>	<b>4.71</b>	<b>6.76</b>
MSCI Emerging Markets Index	9.03	16.02	16.78	-0.56	3.03	3.94	5.12
<b>Excess Return (bps)</b>	<b>-18</b>	<b>+797</b>	<b>+684</b>	<b>-61</b>	<b>+62</b>	<b>+77</b>	<b>+164</b>

Reporting Date: 30 September 2016.

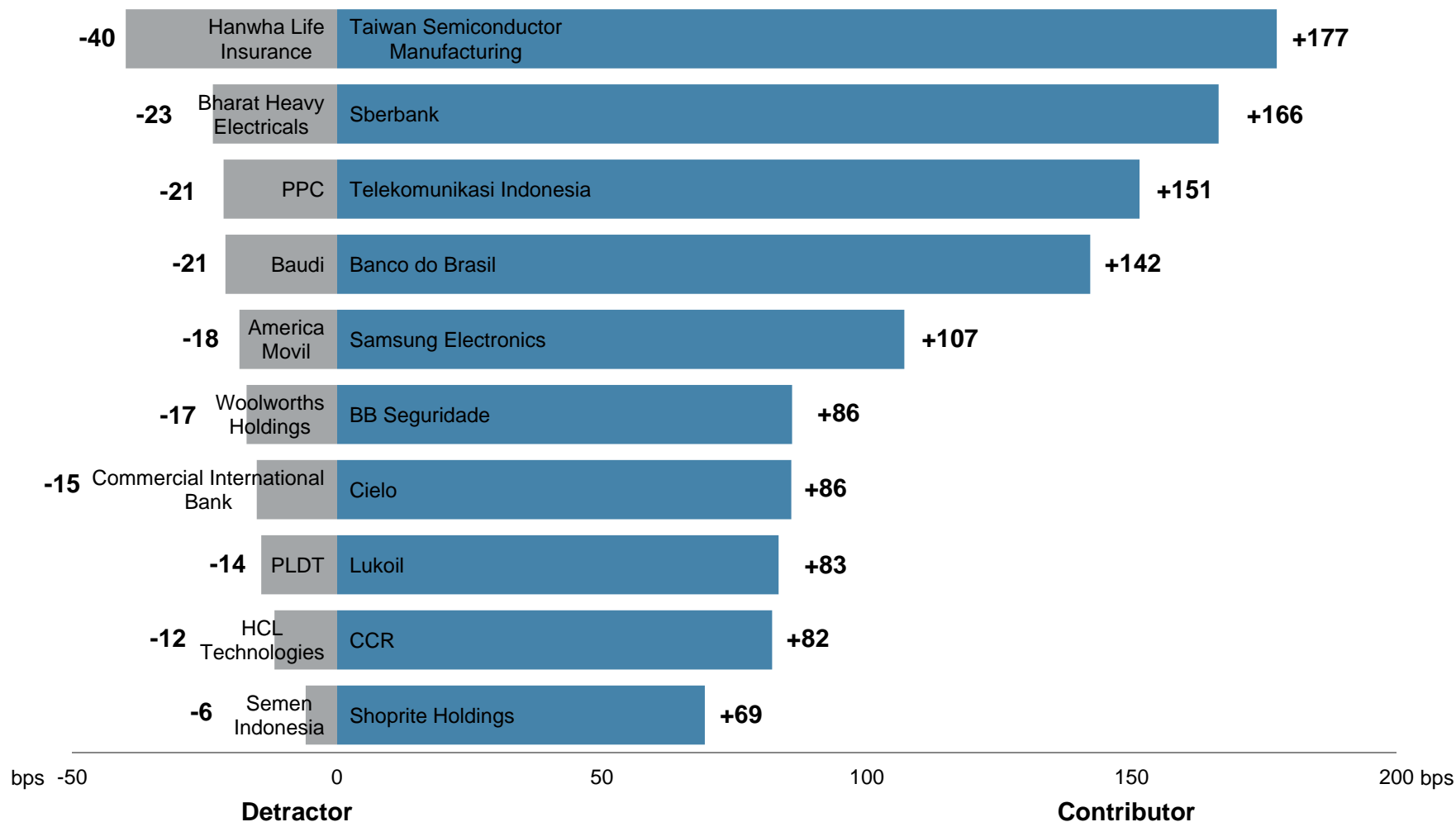
All data in USD

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# Top 10 Contributors/Detractors by Performance Contribution

## Lazard Emerging Markets Equity Portfolio

### 2016 YTD



As of 30 September 2016.

Investment characteristics are based upon the Lazard Emerging Markets Equity Portfolio. Contribution analysis is provided for illustrative purposes only, as values are calculated based on returns gross of fees. Performance would be lower if fees and expenses were included. Past performance is not a reliable indicator of future results.

The securities mentioned are not necessarily held by Lazard for all client portfolios, and their mention should not be considered a recommendation or solicitation to purchase or sell these securities. It should not be assumed that any investment in these securities was, or will prove to be, profitable, or that the investment decisions we make in the future will be profitable or equal to the investment performance of securities referenced herein. There is no assurance that any securities referenced herein are currently held in the portfolio or that securities sold have not been repurchased. The securities mentioned may not represent the entire portfolio.

# Lazard Emerging Markets Equity Portfolio

## Drivers of Excess Return

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### 2016 Q3

- MSCI EM Index (+9.0%) vs. MSCI World Index (+4.9%)
- Key Contributors
  - Stock selection in the Financials, Consumer Staples and Industrials sectors (130 bps) and in South Africa, Korea and Indonesia (100 bps) helped performance
  - Lower-than-index exposure to Malaysia (23 bps)
- Key Detractors
  - Lower-than-index exposure to China and higher-than-index exposure to Turkey detracted from returns (88 bps)

### 2016 YTD

- MSCI EM Index (+16.0%) vs. MSCI World Index (+5.6%)
- Key Contributors
  - Stock selection within the Financials, Consumer, Industrials and Telecom sectors (860 bps), as well as in China, Russia and Taiwan (320 bps) helped performance
  - Higher exposure to Brazil, Russia and Indonesia (260 bps) and lower exposure to China (80 bps) was additive
- Key Detractors
  - Stock selection within the Philippines and Egypt detracted from returns (50 bps)

As of 30 September 2016.

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# Helped/Hurt

## Lazard Emerging Markets Equity Portfolio

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### 2016 Q3

#### What Helped

- Banco do Brasil, a Brazilian bank, benefited from an improving return outlook with rising margins and healthier capital ratios.
- Taiwan Semiconductor Manufacturing (TSMC), a Taiwanese semiconductor manufacturer, benefited from positive trends in the semiconductor industry as well as from reports of stronger-than-expected iPhone sales.
- Shares of NetEase, a Chinese publisher of online games and web portal, jumped after its new Japanese-themed roll-playing game, Onmyoji, became a surprise hit.
- Shares of Samsung Electronics, a Korean manufacturer of electronic goods, rose amid expectations of a strong launch for the Galaxy Note 7 and a memory and display divisions turnaround.
- China Construction Bank, a Chinese bank, benefited from stabilizing economic data in China.
- Stock selection in the financials sector helped performance.

#### What Hurt

- PLDT, a Philippine telecom services company, fell amid expectations for further weakness as the company pursues its three-year turnaround strategy.
- Shares of Turkcell, a Turkish telecom services company, fell due to concerns over a slowdown in mobile revenue growth and an increased capital expenditure-to-sales ratio for the company.
- Mobile TeleSystems, a Russian telecom services company, was negatively affected by increased political risk in Uzbekistan.
- Shares of Akbank, a Turkish bank, declined in the aftermath of a failed coup in Turkey and the consequent declaration of a state of emergency by the government.
- Shares of Cielo, a Brazilian credit card processor, declined amid concerns over regulatory pressures and increased competition.
- Stock selection in the information technology sector detracted from performance.

As of 30 September 2016.

The allocations and specific securities mentioned are based upon the Lazard Emerging Markets Equity Portfolio. Allocations and security selection are subject to change. The securities mentioned are not necessarily held by Lazard for all client portfolios, and their mention should not be considered a recommendation or solicitation to purchase or sell these securities. It should not be assumed that any investment in these securities was, or will prove to be, profitable, or that the investment decisions we make in the future will be profitable or equal to the investment performance of securities referenced herein. There is no assurance that any securities referenced herein are currently held in the portfolio or that securities sold have not been repurchased. The securities mentioned may not represent the entire portfolio.

# Helped/Hurt

## Lazard Emerging Markets Equity Portfolio

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### 2016 YTD

#### What Helped

- Sberbank, a Russian bank, gained as reported earnings continued to show strength in August.
- Taiwan Semiconductor Manufacturing (TSMC), a Taiwanese semiconductor manufacturer, benefited from positive trends in the semiconductor industry as well as from reports of stronger-than-expected iPhone sales.
- Shares of Telekomunikasi Indonesia gained after the Indonesian telecom services company experienced strong growth in data usage leading to improving ARPUs (average revenue per user).
- Stock selection in the financials, industrials, consumer staples, and consumer discretionary sectors helped performance.
- Stock selection in China added to returns.

#### What Hurt

- Shares of Hanwha Life Insurance, a Korean insurance company, fell on expectations for a continued environment of low interest rates in Korea.
- Shares of Baidu declined after the Chinese Internet company's management guided down expectations for the quarter on continued weakness in its healthcare vertical after the government clampdown.
- Shares of PPC, a South African based cement manufacturer, plunged after the company warned of a potential credit-rating downgrade and its plans for a significant capital raise.

As of 30 September 2016.

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**D**

Portfolio Review

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# Trading Activity and Top Ten Positions

## Lazard Emerging Markets Equity Portfolio

### 2016 YTD Buy/Sells

#### Bought

- AAC Technologies Holdings
- Life Healthcare
- Turpras

#### Sold

- CEMIG
- CP All Public
- MegaFon
- Via Varejo
- Vale
- Wynn Macau

### Top Ten Positions

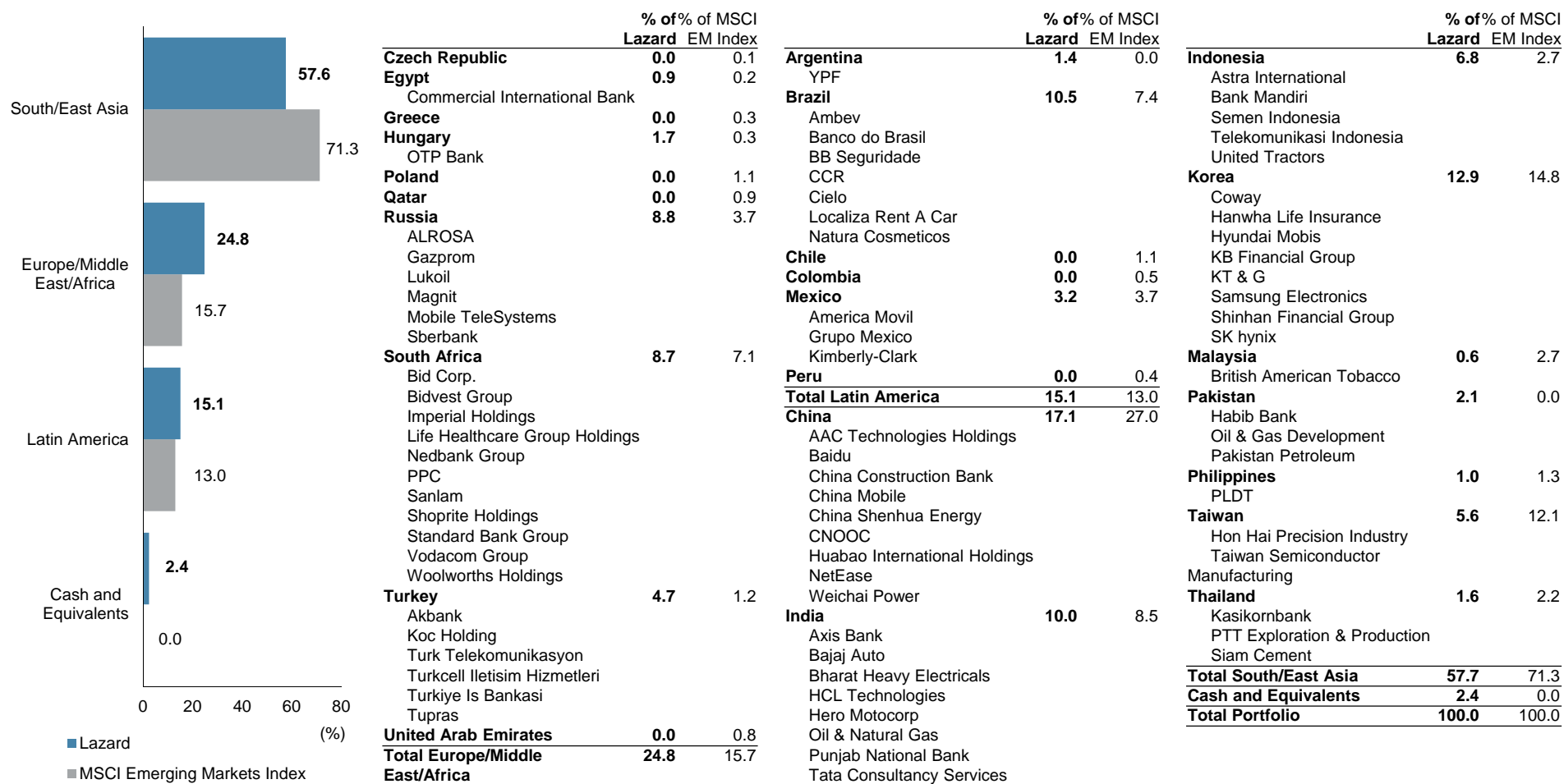
	% of Lazard
Taiwan Semiconductor Manufacturing	4.8
China Construction Bank	4.5
Samsung Electronics	3.6
Sberbank	3.0
Baidu	2.9
China Mobile	2.9
NetEase	2.9
Telekomunikasi Indonesia	2.8
Tata Consultancy Services	2.6
Cielo	2.1
<b>Total</b>	<b>32.0</b>
<b>Total Number of Holdings</b>	<b>76</b>

As of 30 September 2016.

The allocations and specific securities mentioned are based upon the Lazard Emerging Markets Equity Portfolio. Allocations and security selection are subject to change. The securities mentioned are not necessarily held by Lazard for all client portfolios, and their mention should not be considered a recommendation or solicitation to purchase or sell these securities. It should not be assumed that any investment in these securities was, or will prove to be, profitable, or that the investment decisions we make in the future will be profitable or equal to the investment performance of securities referenced herein. There is no assurance that any securities referenced herein are currently held in the portfolio or that securities sold have not been repurchased. The securities mentioned may not represent the entire portfolio.

# Holdings by Country

## Lazard Emerging Markets Equity Portfolio



As of 30 September 2016.

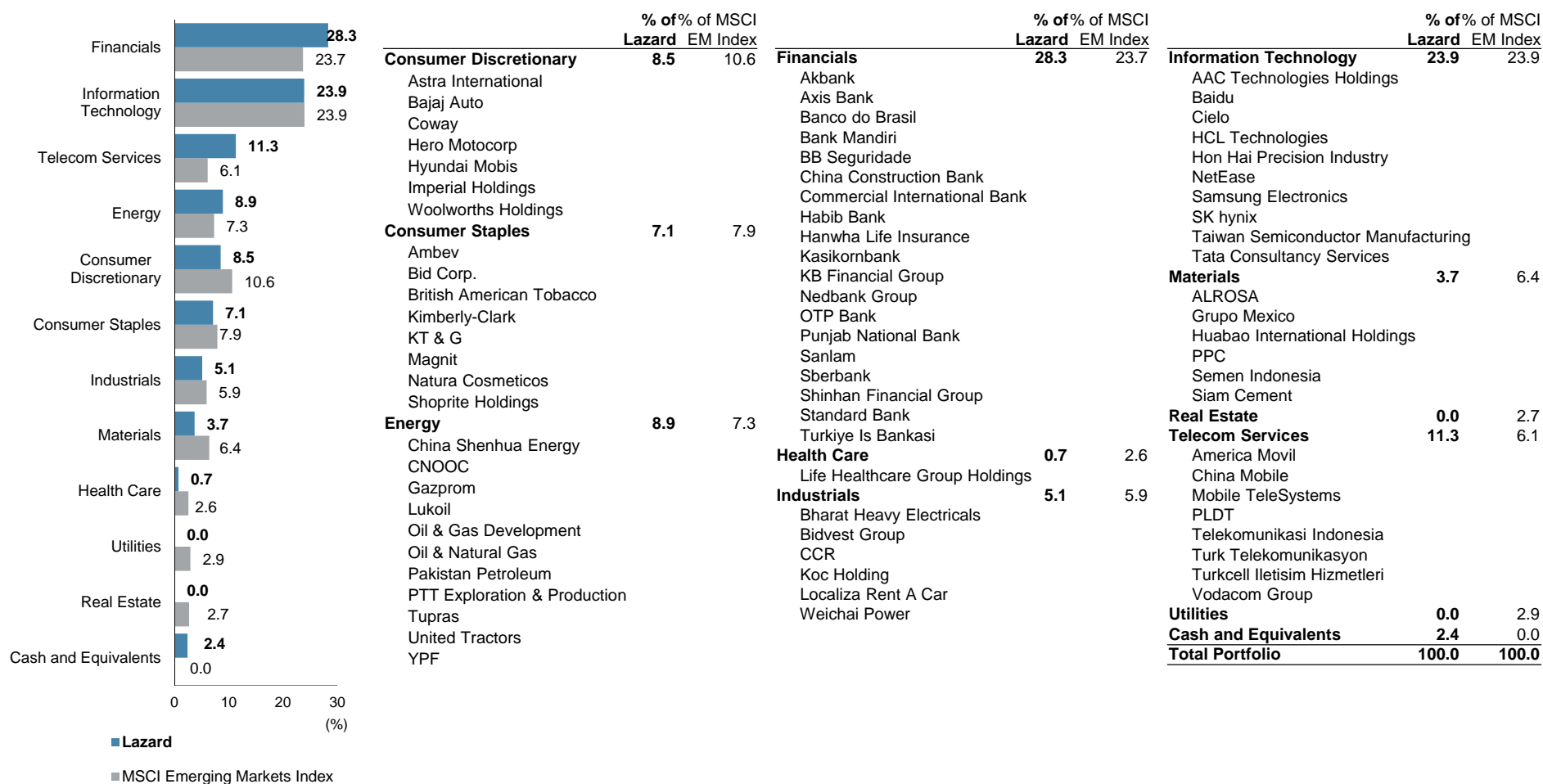
The allocations and specific securities mentioned are based upon a portfolio that represents the proposed investment for a fully discretionary account. Allocations and security selection are subject to change. The securities mentioned are not necessarily held by Lazard for all client portfolios, and their mention should not be considered a recommendation or solicitation to purchase or sell these securities. It should not be assumed that any investment in these securities was, or will prove to be, profitable, or that the investment decisions we make in the future will be profitable or equal to the investment performance of securities referenced herein. There is no assurance that any securities referenced herein are currently held in the portfolio or that securities sold have not been repurchased.

Please note that cash is not viewed as a strategic asset class.

Source: Lazard, MSCI

# Holdings by Sector

## Lazard Emerging Markets Equity Portfolio



As of 30 September 2016.

Allocations and security selection are subject to change.

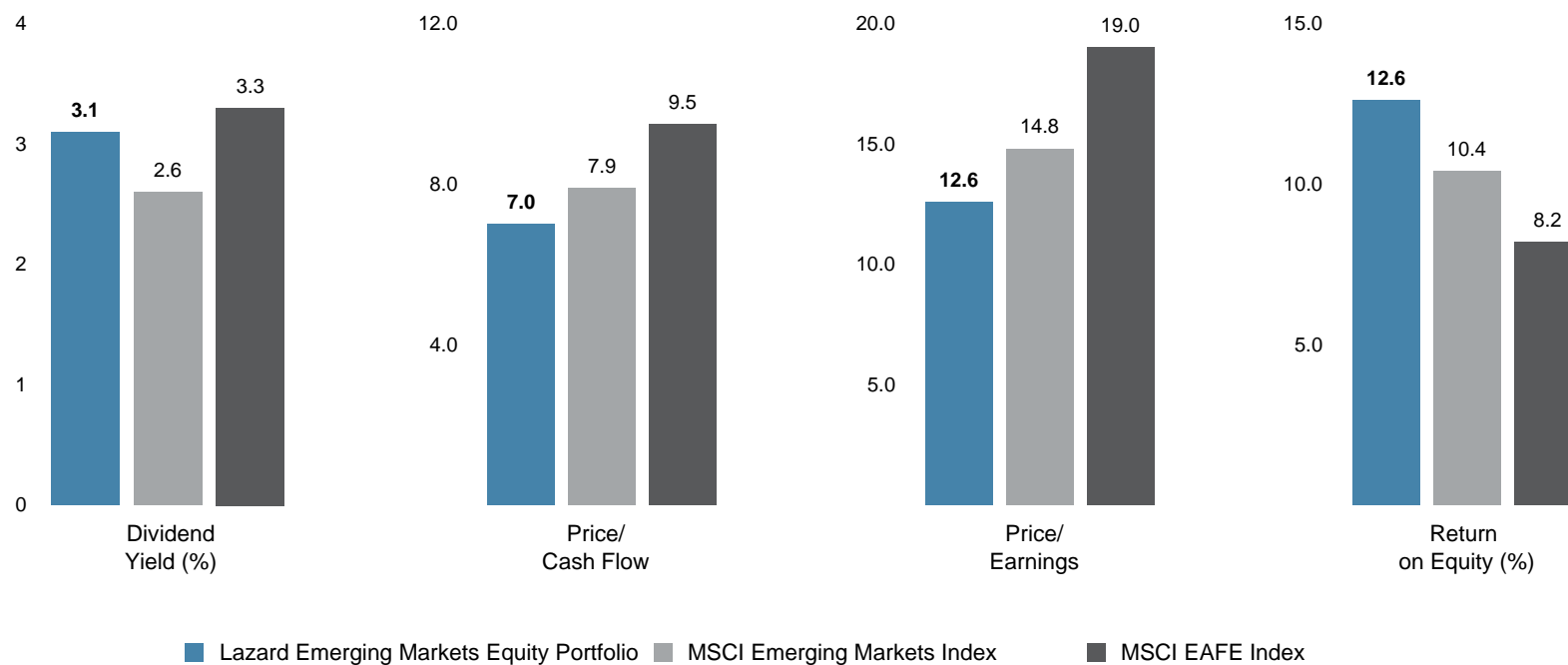
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Please note that cash is not viewed as a strategic asset class.

Source: Lazard, MSCI

# Investment Characteristics

## Lazard Emerging Markets Equity Portfolio



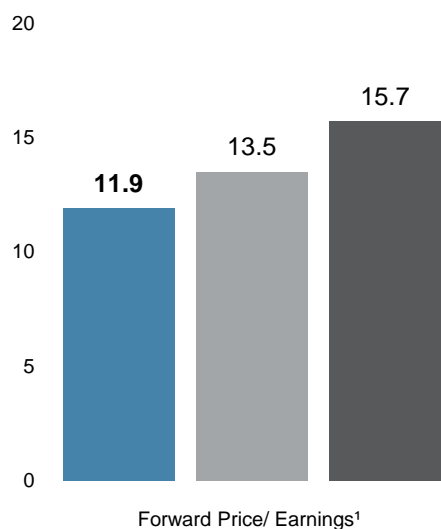
**Portfolio remains attractively priced with superior financial productivity**

# Investment Characteristics Forward Looking

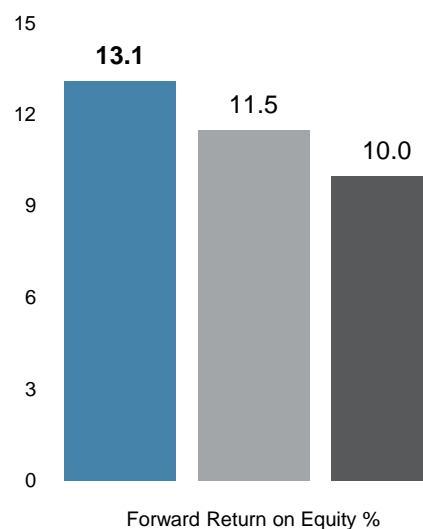
## Lazard Emerging Markets Equity Portfolio

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### Valuations



### Returns



■ Lazard Emerging Markets Equity Portfolio ■ MSCI Emerging Markets Index ■ MSCI EAFE Index

**Portfolio projected to offer superior financial productivity**

As of 30 September 2016.

<sup>1</sup> Forward P/E is defined as P/E FY1

Investment characteristics are based upon the Lazard Emerging Markets Equity Portfolio. Forward-looking figures represent expected returns. Expected returns do not represent a promise or guarantee of future results and are subject to change.

Source: Lazard, MSCI, I/B/E/S

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**E**

Drivers of Performance

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# Drivers of Emerging Markets Performance

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- I. Macro Assessment
- II. Relative Return on Equity
- III. Heighten Political Uncertainty
- IV. Different Commitment to Reform Agenda
- V. China Rebalancing



# Macro Assessment

Countries	% of Index	GDP Growth 2016E <sup>1</sup>	Political Stability	Current Account	Inflation Expectations	Central Bank Independence	External Vulnerabilities
China 	27.0	+6.6	↑	↑	Stable	↔	USD Strength
Korea 	14.8	+2.7	↔	↔	Stable	↑	Autos / Tech
Taiwan 	12.1	+1.0	↑	↑	Stable	↑	Tech / China
India 	8.5	+7.6	↑	↑	Decreasing	↔	
South Africa 	7.1	+0.1	↓	↔	Stable	↔	Commodities
Brazil 	7.4	-3.3	↔	↑	Decreasing	↑	China / Commodities
Russia 	3.7	-0.8	↔	↔	Decreasing	↑	Oil / Commodities
Indonesia 	2.7	+4.9	↑	↔	Decreasing	↑	China / Commodities
Turkey 	1.2	+3.3	↔	↔	Decreasing	↓	FX / Capital Inflows

**Emerging Markets are growing between 4-5% on average**

As of 30 September 2016.

1. GDP Growth is as of 4 October 2016.

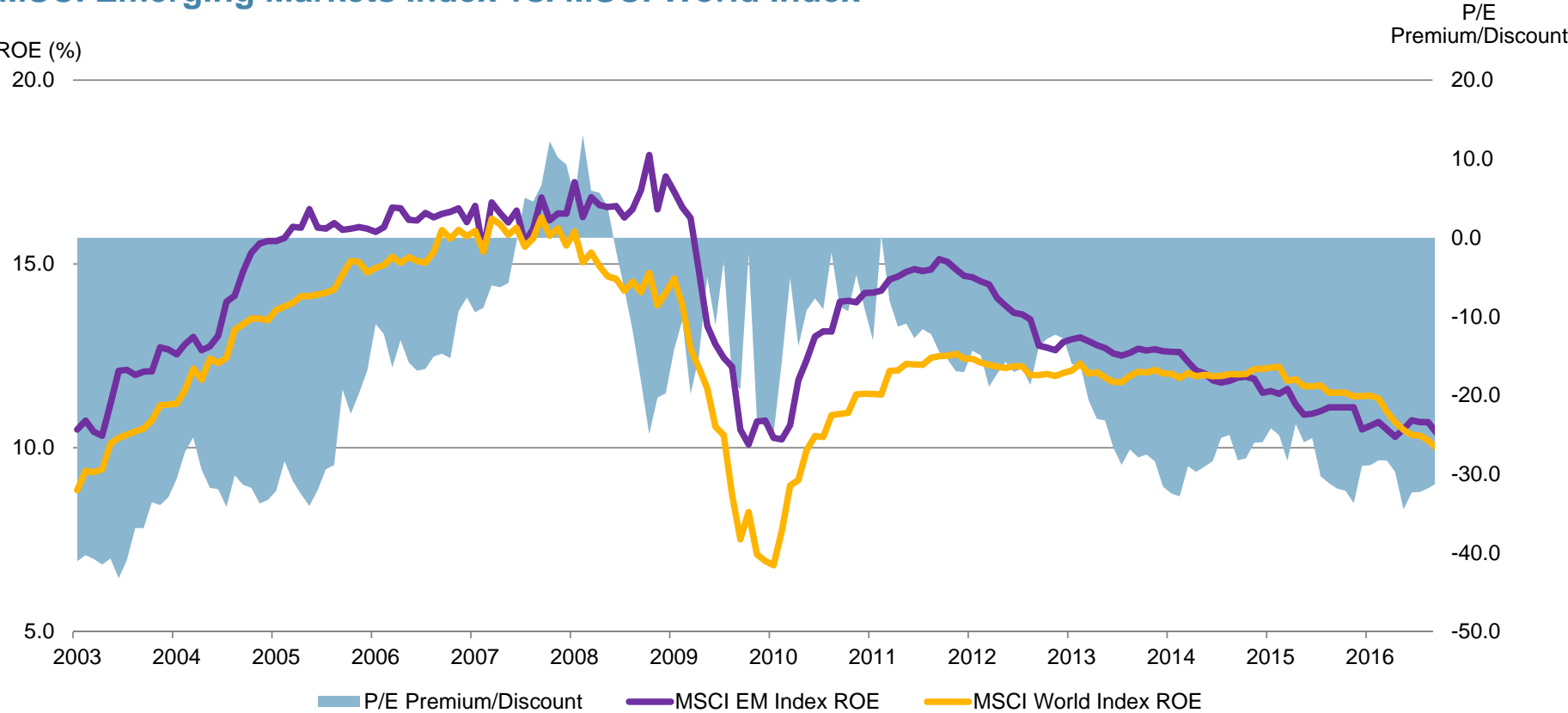
All opinions expressed on country specific strengths and challenges and are subject to change.

Forecasted or estimated results do not represent a promise or guarantee of future results and are subject to change".

Source: Economist, IMF, Haver Analytics, MSCI, WEO.

# Declining ROEs have Weighed on EM Asset Class

## MSCI Emerging Markets Index vs. MSCI World Index

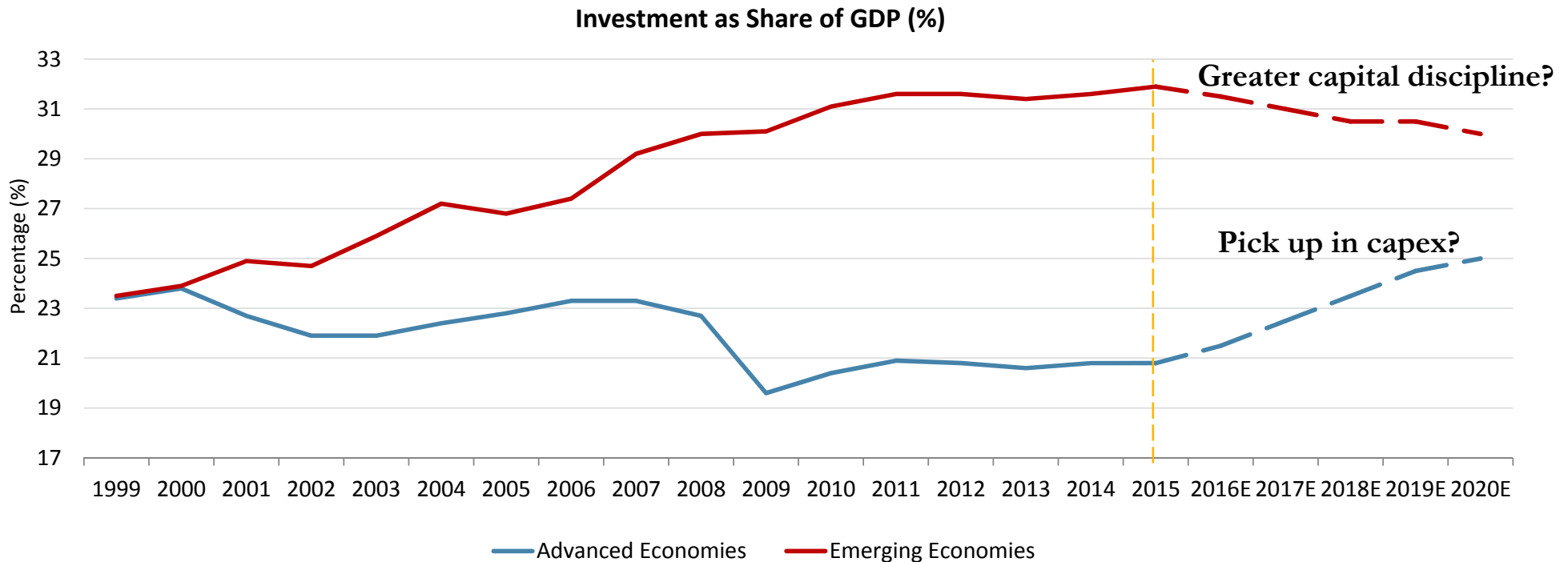


**Emerging Markets are trading at 2004 discounts**

As of 30 September 2016.  
 Characteristics shown are calculated on a trailing 1-year basis.  
 Source: Lazard, MSCI

# EM ROE set for Improvement?

- Higher EM economic growth over DM
- Improving EM capital discipline and select austerity measures
- Long term, EM is positioned to benefit from a revival of DM investment plans



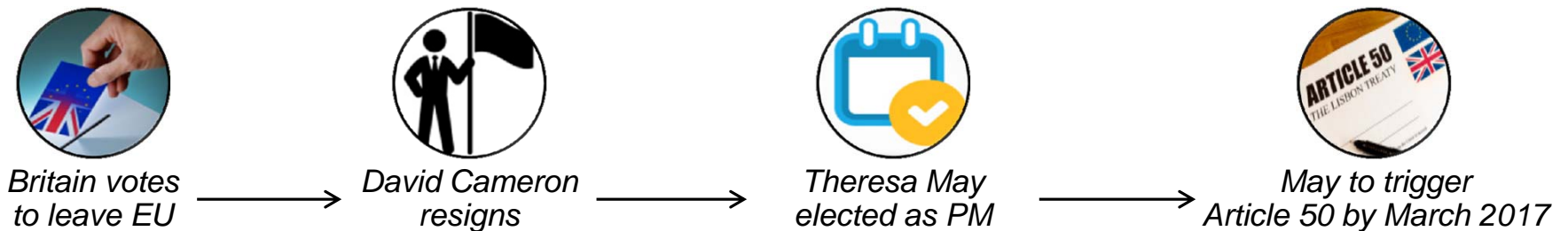
**EM should be a beneficiary as DM restarts their capital spending plans**

As of October 2015  
 For illustrative purposes only. Forecasted or estimated results do not represent a promise or guarantee of future results and are subject to change  
 Source: Haver Analytics, IMF

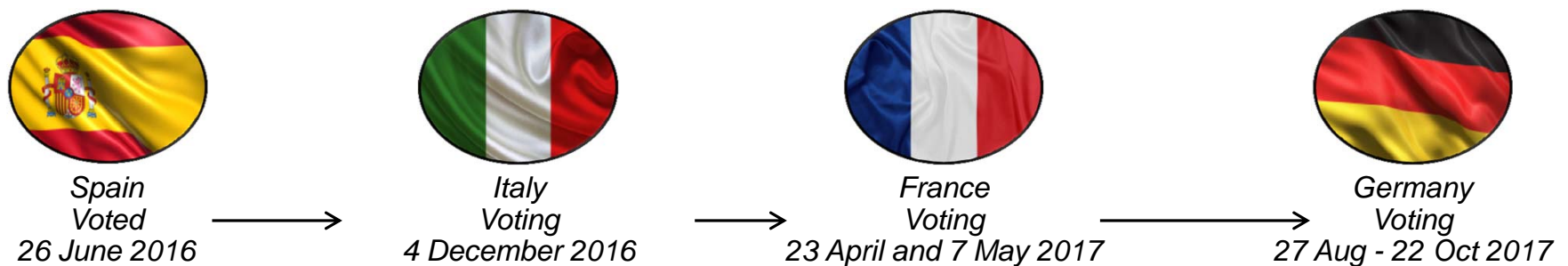
# EM an Unexpected Beneficiary of Political Uncertainty?

- Historic Brexit vote could lead to further anti-EU sentiment and increase the likelihood of additional referendums from populist and euroskeptical parties.
- Volatility expected to increase as timeline of withdrawal from EU and renegotiation of trade terms remains unclear and without precedent.
- Secondary effects remain unclear though lower capital spending, weaker investor and consumer confidence and lower growth are likely

## What's next for the UK?



## What's next for the EU?



# EM Reform Agenda Gathering Momentum

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## Notable Progress 25%

- **Mexico:** credible energy (oil, electricity), telecom, education, financial and labor reforms
- **India:** approval of GST; new bankruptcy code; +90% of population has access to a bank account and national ID; continuity of monetary policy under new RBI Governor
- **Indonesia:** infrastructure spending; cabinet reshuffle; reducing red tape; lower fuel subsidy
- **Russia:** committed to market based principles (free floating ruble); independent central bank; accelerated reforms needed (governance, protection of property rights)

## Aiming for Reform 60%

- **China:** market based mechanism for FX; capital account liberalization; SOE reform; Hukou and social welfare system
- **Korea:** structural reforms to rigid labor market to combat high wages and low productivity
- **Taiwan:** more advanced EM economy; continue to watch engagement with China
- **Brazil:** post-Rousseff impeachment, new administration is focused on fiscal adjustments; high reliance on indexation; national champions create moral hazard

## Two steps forward, one step back 15%

- **Turkey:** willingness to embrace structural reform remains uncertain as President Erdogan consolidated power post-attempted coup
- **S Africa:** inflexible unions amid rising discontent over economy; commodity centric exports; political infighting between President Zuma and Finance Minister Gordhan
- **Malaysia:** 1MDB corruption scandal; poor governance and transparency

# China's Rebalancing – A Bumpy, Multi-year Journey

Transparent and credible measures are critical when implementing reforms and policy changes

## Flexible Monetary Policy / Proactive Fiscal Reforms

- We expect additional monetary easing via lower interest rates and cuts to Reserve Requirement Ratio (RRR) to boost liquidity and offset capital outflows
- China's economic blueprint calls for a more “proactive” and “forceful” fiscal policy – it plans to diminish its reliance on FAI in favor of services and consumption sectors

## Anticorruption Campaign / Environmental Protection

- China is very focused on ensuring harmonious economic growth
- China has committed to reach peak emissions no later than 2030 – carbon trading system set to launch in 2017; Beijing has pledged to end its use of coal by 2020

## Capital Account Liberalization / SOE Reforms

- RMB's recent inclusion in IMF's Special Drawing Rights basket signals international recognition of capital account reform progress
- Consolidating underperforming SOEs in areas of overcapacity (e.g. steel, coal mining) – allowing private capital to participate in overhaul of state firms

Market Based Economy

# China: A Union of Provinces

## Equivalent Country to Province by GDP



Industry	September 2006	September 2016	Change
Industrials & Mining*	47.5%	39.8%	-7.7%
Services*	41.7%	51.4%	+9.7%
Agriculture*	10.8%	8.7%	-2.1%

As of 30 September 2016

\* The classification by the three strata of industry is based on the "Regulation on the Classification by Three Strata of Industry" made by the National Bureau of Statistics in 2012. Agriculture refers to the Primary Industry, which refers to agriculture, forestry, animal husbandry and fishery industries (except support services to agriculture, forestry, animal husbandry and fishery industries). Industrials & Mining refers to the Secondary Industry, which refers to mining (except auxiliary activities of mining), manufacturing (except repairs for metal products, machinery and equipment), production and supply of electricity, steam, gas and water, and construction. Services refers to the Tertiary Industry, which refers to all other industries not included in Primary or Secondary industry.

Source: Bloomberg, National Bureau of Statistics, Credit Suisse

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**F**

Outlook

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# Potential for Emerging Markets Outperformance over the Long Term

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## Valuations

- EM trades at a significant discount to DM with comparable ROE and dividend yield figures

## Monetary conditions

- Global monetary policy is expected to remain accommodative
- US dollar strength has historically weakened in past rate hiking cycles

## Outlook

- Though short term headwinds may weigh on EM, medium and long term catalysts argue for an EM recovery
- EM likely to outperform in an environment of stable and modest global growth and underperform in a global recession

# Headline Valuations Mask Opportunities Across EM

	Forward P/E <sup>1</sup>	Forward ROE (%) <sup>1</sup>	Dividend Yield (%)
EAFE	15.7	10.0	3.3
US	19.0	14.6	2.1
United Kingdom	17.6	11.2	3.9
Continental Europe	15.8	10.9	3.4
Asia	14.9	8.7	2.8
Japan	14.2	8.4	2.3
<b>Emerging Markets</b>	<b>13.6</b>	<b>11.5</b>	<b>2.6</b>
Brazil	14.5	10.9	3.7
Russia	6.8	10.9	4.5
India	19.1	15.6	1.3
China	13.4	11.9	2.2

As of 30 September 2016.

<sup>1</sup> Forward Price/Earnings is defined as Price/Earnings FY1 and Forward Return on Equity as Return on Equity NTM.

The figures above represent expected returns. Expected returns do not represent a promise or guarantee of future results and are subject to change.

Source: Lazard, MSCI, I/B/E/S Consensus

# Assessing an EM Recovery: Catalysts vs. Headwinds

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## Short Term

### Catalysts

- Stabilization of commodity prices
- Gradual Fed rate hike
- Asset class pessimism – buy signal
- Improving external balances

### Headwinds

- Political instability across DM & EM
- EM corporate debt
- China/global growth concerns
- Stronger dollar/weaker EM FX
- Flows continue to be negative

## Medium Term

### Catalysts

- Possibility of a soft landing in China
- Improved productivity
- Pick up in global trade

### Headwinds

- Are valuations really cheap?
- China demographics have peaked
- Lower EM-DM growth premium

## Long Term

### Catalysts

- EM valuations are attractive relative to history and vs. DM
- Capital spending from DM
- Favorable demographics and urbanization trends

### Headwinds

- End of commodity super cycle?
- Corruption and governance issues persist

# Potential for Emerging Markets Equities Outperformance

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## Three Scenarios ...

Global Recession  
Probability – 25%



**EM  
Underperforms**

Robust Global  
Growth  
Probability – 15%



**EM outperforms  
but inflation may become  
a headwind**

Stable & Modest  
Global Growth  
Probability – 60%



**EM  
Outperforms**

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**G**

Appendix

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# Important Information

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Equity securities will fluctuate in price; the value of your investment will thus fluctuate, and this may result in a loss. Securities in certain non-domestic countries may be less liquid, more volatile, and less subject to governmental supervision than in one's home market. The values of these securities may be affected by changes in currency rates, application of a country's specific tax laws, changes in government administration, and economic and monetary policy. Small- and mid-capitalization stocks may be subject to higher degrees of risk, their earnings may be less predictable, their prices more volatile, and their liquidity less than that of large-capitalization or more established companies' securities. Emerging-market securities carry special risks, such as less developed or less efficient trading markets, a lack of company information, and differing auditing and legal standards. The securities markets of emerging-market countries can be extremely volatile; performance can also be influenced by political, social, and economic factors affecting companies in emerging-market countries.

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Alaska Retirement Management Board  
2017 Meeting Calendar

March 1 – Wednesday	Committee Meetings: Actuarial Audit Defined Contribution Plan
March 2-3 Thursday-Friday Juneau	*Review Capital Market Assumptions *Manager Presentations
April 19 – Wednesday	Committee Meetings: Actuarial Committee
April 20-21 Thursday-Friday Anchorage	*Adopt Asset Allocation *Performance Measurement – 4 <sup>th</sup> Quarter *Buck Consulting Actuary Report *GRS Actuary Certification *Review Private Equity Annual Plan *Manager Presentations
June 21 – Wednesday	Committee Meetings: Actuarial Audit
June 22-23 Friday Anchorage	*Final Actuary Report/Adopt Valuation *Performance Measurement – 1 <sup>st</sup> Quarter *Manager Presentations
October 4 – Wednesday	Committee Meetings: Actuarial Audit Budget Defined Contribution
October 5-6 Thursday-Friday Anchorage	*Audit Results/Assets – KPMG *Approve Budget *Performance Measurement – 2 <sup>nd</sup> Quarter *Real Estate Annual Plan *Real Estate Evaluation – Townsend Group *Manager Presentations
November ____	Audit Committee
December 6 – Wednesday	Committee Meetings: Actuarial Audit
December 7-8 Thursday-Friday Anchorage	Audit Report - KPMG Performance Measurement – 3 <sup>rd</sup> Quarter Manager Review (Questionnaire) Private Equity Review *Manager Presentations

**ALASKA RETIREMENT MANAGEMENT BOARD  
M E M O R A N D U M**

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To: ARMB Trustees  
From: Judy Hall  
Date: November 22, 2016  
Subject: Financial Disclosures

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As required by AS 37.10.230 and Alaska Retirement Management Board policy relating to investment conduct and reporting, trustees and staff must disclose certain financial interests. We are hereby submitting to you a list of disclosures for individual transactions made by trustees and staff.

Name	Position Title	Disclosure Type	Disclosure Date
Scott Jones	Comptroller	Equities	10/3/16
Bob Mitchell	Deputy CIO	Equities	11/4/16