1.0 ROLL CALL

2.0 PLEDGE OF ALLEGIANCE

3.0 APPROVAL OF MINUTES
   3.01 Approval of the minutes for the Financial Meeting of September 25, 2015
   3.02 Board to approve minutes

4.0 CONSENT ITEMS
   4.01 Report of Closed Sessions
       - On October 24, 2014, the Real Estate Committee unanimously approved Resolution 2014-10-03 titled "Principal US Property Account" and authorized the Chair to sign the necessary documents to invest $20 million in the Fund.

5.0 INVESTMENT OPPORTUNITIES
   5.01 CRESTLINE OPPORTUNITY FUND III
       - Presentation by Managing Directors Sean Gannon and Keith Williams of Crestline Associates, L.P.
   5.02 WHITE OAK SUMMIT FUND
       - Presentation by Barbara McKee, Founder and Managing Partner, Milbrey “Casey” Jones, Managing Director, and Diane Altieri, Director of Operations of White Oak Global Advisors
   5.03 PCA Book on Direct Lending Manager Search
   5.04 Board to review and give direction to staff and consultant as necessary

6.0 2015 ASSET-LIABILITY STUDY
   6.01 2015 Asset-Liability Study Results - Strategic Allocation Decision
   6.02 Presentation by David Sancewich, Principal, and Ryan Lobdell, Research Analyst, of PCA
   6.03 Board to discuss and determine strategic asset allocation policy for SJCERA

7.0 BOARD EVALUATION OF CONSULTANTS
   7.01 Consulting Actuary - Board Evaluation Summary
   7.02 General Investment Consultant - Board Evaluation Summary
7.03 Real Estate Investment Consultant - Board Evaluation Summary
7.04 Board to discuss and give direction to staff and consultants as appropriate

8.0 REPORTS

8.01 Monthly Investment Performance Updates
   01 Manager Performance Flash Report (to be provided at the meeting)
   02 PCA Investment Market Risk Metrics October 2015

8.02 PCA Manager Due Diligence Meetings and Reports
   01 Manager Due Diligence Schedule
   02 PCA Memo on meeting with Parametric regarding Policy Implementation Overlay Service (PIOS) - October 2015
   03 PCA Memo on meeting with Parametric regarding Contraction Strategy - October 2015

8.03 CIO Report
   01 Proposed Financial Agenda Topics

8.04 Trustee and Executive Staff Travel
   01 Conferences and Events Summary for 2015-2016
      a 2015 Opal Financial Group Alternative Investing Summit
      b 2016 Public Funds Roundtable
   02 Summary of Pending Trustee and Executive Staff Travel
   03 Summary of Completed Trustee and Executive Staff Travel and Travel Report (1)
      a 2015 CALAPRS Administrators’ Institute

8.05 Report from Real Estate Committee
   01 SJCERA Committee Chair and staff will provide a brief summary of the outcome of the Real Estate Committee meeting and investments

8.06 Board to accept and file reports

9.0 CORRESPONDENCE

9.01 Letters Received

9.02 Letters Sent

9.03 Market Commentary/Newsletters
   01 Research Affiliates Fundamentals October 2015

10.0 COMMENTS

10.01 Comments from the Board of Retirement
10.02 Comments from the Chief Executive Officer
10.03 Comments from the Public
11.0 CLOSED SESSION - CONSIDERATION OF INVESTMENT TRANSACTIONS, PURCHASES, SALES; GOVERNMENT CODE SECTION 54956.81 (1)

12.0 CALENDAR

12.01 Regular Meeting, November 13, 2015 at 9:00 AM

12.02 Financial Meeting, November 13, 2015 directly following Regular Meeting

13.0 ADJOURNMENT
MINUTES

FINANCIAL MEETING
SAN JOAQUIN COUNTY EMPLOYEES RETIREMENT ASSOCIATION
BOARD OF RETIREMENT
FRIDAY, SEPTEMBER 25, 2015
AT 9:00 AM
Location: SJCERA Board Room
6 S. El Dorado Street, Suite 400, Stockton, California.

1.0 ROLL CALL

1.01 MEMBERS PRESENT: Shabbir Khan, J.C. Weydert (Absent from 9:53 to 9:56), Michael Duffy, Michael Restuccia (left at 11:29), David Souza (left at 11:29), Adrian Van Houten, Margo Praus and Raymond McCray presiding
MEMBERS ABSENT: Cindy Garman, Katherine Miller
STAFF PRESENT: Chief Executive Officer Annette St. Urbain, Assistant Chief Executive Officer Patricia Pabst, Chief Investment Officer Nancy Calkins, Information Systems Manager Tallie Claypool, Retirement Investment Accountant Fe Maliwat, Management Analyst III Greg Frank, Department Information Systems Specialist II Jordan Regevig, and Office Assistant Andrea Ireland
OTHERS PRESENT: Deputy County Counsel Jason Morrish; David Sancewich and John Linder of PCA; Robert McCrory and Graham Schmidt of Cheiron; Rob Arnott of Research Affiliates; Matt Clark and Sasha Talcott of PIMCO; Assistant County Administrator Rosa Lee and Senior Deputy County Administrator Chris Rose

2.0 PLEDGE OF ALLEGIANCE

2.01 Led by Michael Restuccia

3.0 APPROVAL OF MINUTES

3.01 Approval of the minutes for the Financial Meeting of August 19, 2015
3.02 Approval of the minutes for the Special Meeting of August 19-20, 2015
3.03 Board unanimously approved the Minutes of the Financial Meeting of August 19, 2015 and the Special Meeting of August 19-20, 2015.

4.0 CONSENT ITEMS

4.01 Report of Closed Sessions
01 On July 10th, 2015, the Board unanimously approved Resolution 2015-07-01 titled "Raven Asset-Based Opportunity Fund III" and authorized the Chair to sign the necessary documents to invest $50 million in the Fund.

5.0 2015 ASSET-LIABILITY STUDY

5.01 2015 Asset-Liability Study Results - Strategic Allocation Discussion
5.02 Discussion with David Sancewich and John Linder, Principals of PCA and Robert McCrory, Principal Consulting Actuary of Cheiron on preliminary results of the 2015 Asset Liability Study
5.03 Board requested PCA to provide a “middle ground” alternative to the Model Output and Adjusted Output as presented. Messrs. Weydert and Restuccia noted they would be comfortable giving consideration to the model output.

6.0 RESPONSE TO INQUIRY ON BANK LOAN PORTFOLIO
   6.01 Bank Loan Portfolio Review from PCA
   6.02 This is an information item. PCA noted its manager due diligence meeting is scheduled with this manager is planned for October.

7.0 POLICY IMPLEMENTATION OVERLAY SERVICE (PIOS)
   7.01 Parametric PIOS - Variation Margin Recommendation
   7.02 The Board unanimously approved the recommendation to modify the Parametric PIOS variation margin from the current 1-3% to an increased 3-5% range.

   (Mr. Weydert left the meeting room before, and returned to the meeting room after the Board voted on this item.)

8.0 2015 ANNUAL INVESTMENT MANAGER ROUNDTABLE EVALUATION
   8.01 PCA Summary of Key Points from the Roundtable
   8.02 Summary of Roundtable Evaluations
   8.03 Trustee Restuccia congratulated David Sancewich and stated that he did an excellent job. Restuccia also expressed that this year’s Roundtable was one of the best that we’ve had.

   Chair McCray noted that more Trustees need to complete the evaluations going forward. He also noted that the facility was outstanding. For next year, McCray suggested to change the setup of the room so that the Trustees and moderators face the public and other attendees that are not seated at the roundtable.

   Trustee Weydert stated that the event was more focused this year and that the appropriate people were seated at the roundtable. He suggested expanding the list to more firms and also suggested that the Trustees get to chose a topic of their interest for the break out sessions.

   Trustee Souza stated he did not care for the break out sessions.

   CEO St. Urbain suggested that for future breakout sessions, different tables could discuss different topics and report out key points from their discussion to the larger group.

9.0 PORTFOLIO UPDATE - PIMCO (APPROXIMATELY 10:00 A.M.)
   9.01 Strategy Review of SJCERA’s PIMCO / RAE Funds
   9.02 Presentation by Rob Arnott, Founder and Chairman of Research Affiliates and Matt Clark, Sr. Vice President and Sasha Talcott, Vice President of PIMCO
   9.03 Board thanked the representatives for their presentation.

10.0 ACTUARIAL VALUATION REPORT AND GASB 67/68 REPORT
   10.01 Annual Actuarial Valuation Report as of January 1, 2015 prepared by Cheiron
10.02 Annual GASB 67/68 Report as of December 31, 2014 prepared by Cheiron

10.03 Robert McCrory and Graham Schmidt, Principal Consulting Actuaries of Cheiron, presented the reports

10.04 The Board unanimously accepted the Actuarial Valuation and GASB 67/68 reports.

11.0 CYBER LIABILITY INSURANCE

11.01 Summary of Coverage offered by Travelers

11.02 Cyber Risk News Article and FBI Alerts

11.03 Mr. Duffy expressed that the quote from Travelers seemed a little high so he would like to compare coverage and cost with another carrier. Trustee Duffy also suggested that SJCERA should have a Cyber Security Audit conducted by a third party and estimated the cost around $20,000. He would also like staff to determine if Travelers has mailing service coverage.

Board deferred action until a future meeting to allow for additional review and potentially obtaining additional quotes for the coverage.

12.0 REPORTS

12.01 Monthly Investment Performance Updates

   01 Manager Performance Flash Report
      a For Periods Ending August 31, 2015 (provided at the meeting)
      b For Periods Ending July 31, 2015

   02 PCA Investment Market Risk Metrics September 2015

12.02 PCA Manager Compliance Report - Second Quarter 2015

12.03 PCA Manager Due Diligence Meetings and Reports

   01 Manager Due Diligence Schedule

12.04 SJCERA Expected Cash Flows and Rebalancing

   01 Memo from CIO summarizing recent actions to meet near-term cash needs
   02 SJCERA Projected Cash Flows through calendar year end
   03 Rebalancing Recommendation Summary from PCA

12.05 CIO Report

   01 Proposed Financial Agenda Topics
   02 Memo from PCA regarding actions and notices as Raven LPAC Member

12.06 Trustee and Executive Staff Travel

   01 Conferences and Events Summary for 2015-2016
      a Risk & Liquidity Forum 2016
   02 Summary of Pending Trustee and Executive Staff Travel
   03 Summary of Completed Trustee and Executive Staff Travel
12.07 Board accepted and filed reports.

13.0 CORRESPONDENCE

13.01 Letters Received

01 9/18/15 PCA Crisis Risk Offset

13.02 Letters Sent

13.03 Market Commentary/Newsletters

14.0 COMMENTS

14.01 Comments from the Board of Retirement

01 Mr. Weydert thanked CEO St. Urbain for keeping the Board updated via email on proposed pension reform initiatives.

02 Chair McCray appointed Mr. Van Houten to serve on the Board’s Administrative Committee.

03 Chair McCray also expressed his sympathy for the Mills family’s tragic loss.

14.02 Comments from the Chief Executive Officer

01 **SACRS Legislative Proposals for 2016** - The SACRS Legislative Committee received four proposals for potential sponsorship; two are recommended by the Legislative Committee, one is deferred until more information is obtained, and the last was withdrawn. Staff will submit the proposals that will require a vote of the membership at the Fall Conference to the SJCERA Board for direction to its voting delegate at an October meeting, as well as an update to the SJCERA’s Voting Proxy to reflect the new officers of the Board.

02 **Flethez case Amicus Brief** - Ashely Dunning of Nossaman LLP recently advised that as of Tuesday (9/22), eight systems have agreed to participate in the amicus brief, which brings the per system cost to $11,000; with expenses estimated not to exceed $1,000 per system. The parties’ briefing is expected to conclude in early November, with the Amicus brief due in early December. Ashley is scheduling a call among the Amicus systems for October, for those who wish to participate in discussing the strategy for the brief.

03 **SJCERA’s Remedial Cycle E Filing with IRS** - Hanson Bridgett plans to be ready to submit SJCERA’s filing the week of October 5th. Filing fee is $2,500 (one tenth of the fee for the initial filing) Judy Boyette and Anne Hydorn have done a great job for us and made this a very easy process. CEO St. Urbain acknowledged Patricia Pabst and Greg Frank for their efforts in coordinating with Hanson Bridgett.

04 **Fourth Annual Educational Symposium (for employers and labor reps)** - Will be held this afternoon beginning at 1:00 p.m. 18 attendees have registered in advance. CEO St. Urbain thanked both Cheiron and PCA for their participation. This year’s Symposium introduces PCA as SJCERA’s new general investment consultant, and will provide an overview of the Board’s recent Asset / Liability Study process and results.
CALAPRS Administrators Institute - CEO St. Urbain reminded the Board that she will be out of the office next Wednesday through Friday to attend this annual conference.

14.03 Comments from the Public - None

15.0 CALENDAR

15.01 Regular Meeting, October 9, 2015 at 9:00 AM
15.02 Financial Meeting, October 23, 2015 at 9:00 AM

16.0 ADJOURNMENT

16.01 There being no further business the meeting was adjourned at 11:41 a.m.

Respectfully Submitted:

________________________
Raymond McCray, Chair

Attest:

________________________
Michael Restuccia, Secretary
San Joaquin County Employees’ Retirement Association

October 23, 2015
Performance History & Comparisons

Past performance is not a guaranty of future results. Current and prospective investors should not assume that the future performance of any Crestline fund will equal its prior performance results or the results of any previous fund with a similar strategy, and investors risk loss of their entire investment. Each fund’s performance results portrayed reflect the deduction of that fund’s advisory fees, brokerage commissions and other expenses. The performance results also include the reinvestment of income and dividends, in investment vehicles where such are applicable. For each Crestline fund, an individual investor’s returns will vary from the historical performance due to restrictions on participation in certain types of investments and due to the timing of subscriptions, withdrawals, and redemptions; further, the general economic conditions during extreme highs and lows may have affected the returns of the funds.

Within a particular strategy, Crestline may offer a domestic fund and an offshore fund ("Funds") that are managed pari passu. In such cases the Funds managed by Crestline will have investment objectives that are identical or substantially similar. It is not anticipated, however, that the Funds managed by Crestline having identical or substantially similar investment objectives will have identical or substantially similar investment portfolios. Differing investment portfolios can be expected to result from several factors, including, without limitation, the following:

- regulatory constraints that apply to the Funds managed by Crestline;
- investment constraints imposed by the Investment Managers of the underlying fund that the Funds may invest in;
- the availability of underlying funds for investment at certain times but not at others; and
- the amount of cash available for investment at certain times by the Funds.

As a result of factors such as these, Funds that are managed pari passu may have a different investment portfolio (and, as a result, different performance results) even though the funds may have identical or substantially similar investment objectives.

Principal executive officers of Crestline are also associated with Bratton Capital Management, LP ("BCM") a firm that acts as the investment adviser and general partner to single family-office-related investments. Crestline and BCM are under common control.

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This document is a summary, is for informational purposes only and does not constitute an offer to sell or a solicitation of any offer to buy or sell securities of any entity, investment product or investment advisory service. Any offer will be made only pursuant to a confidential offering memorandum. There can be no guarantee that the Funds will achieve their investment objective. An investment in the Funds is speculative and involves a high degree of risk, and investors risk loss of their entire investment. Past performance is not indicative of future performance.

The specialized investment program of the Crestline Recovery Funds (the "Funds") involves a number of risks including the risk of loss of the entire amount invested. Moreover an investment in the Funds is very illiquid since the interests are not freely transferable and the investments the Funds make are illiquid. Any information in this material regarding market or economic trends or the factors influencing Crestline’s historical or future performance are statements of opinion as of the date this material was produced. There is no guarantee that any forecasted opinions will be realized. The Recovery Fund’s investment program is by design an illiquid investment strategy since the Funds invest in generally illiquid fund interests on the secondary market generally at a discount due to the investments’ illiquid nature. As a result, it is possible an investor may not receive a return of their capital for a considerable period of time. Therefore, an investment in the Funds is not suitable for an investor seeking periodic or routine liquidity.

Any opinions expressed herein are our current opinions only. There can be no assurance or guarantee that Crestline’s investment strategy will achieve its stated goal. All information provided in this presentation is for informational purposes only. In addition, it should not be assumed that any of the securities and/or strategies discussed herein were or will prove to be profitable. Crestline accepts no liability for loss arising from the use of this material.

General Risks of Investing in the Crestline Funds

An investment in the Funds is speculative and involves a high degree of risk. Crestline Management, L.P., is a federally registered investment adviser and serves as the investment manager to the domestic and offshore hedge fund of funds. Crestline Canada, Inc., an affiliate, provides portfolio overlay and hedging execution capabilities to client portfolios as well as Crestline’s diversified fund of hedge funds. Crestline Investors, Inc., Crestline Management, L.P. and Crestline Canada, Inc. are individually and collectively referred to herein as “Crestline” or “the Firm.” Crestline’s investment funds (the “Funds”) utilize a fund of funds investment approach whereby Fund assets are allocated among portfolio managers. As a result, the success of the Funds is dependent on the portfolio managers’ ability to develop and implement investment strategies that achieve the Funds’ investment strategies. The Funds are generally not subject to regulatory restrictions or oversight. The principals of Crestline Investors, Inc. are Douglas K. Bratton, John Cochran and Caroline Cooley (the “Principals”). The success of the Funds’ investment program will also depend on the expertise of the Principals in choosing portfolio managers and executing on investment transactions. If the Principals were to cease to be associated with the Funds it is likely that the success of their investment program would be adversely affected. The Funds may employ leverage, which among other investment techniques, can make their investment performance volatile. Opportunities for redemptions and transfers of interests in the Funds are restricted so investors may not have access to their capital if and when it is needed. There is generally no secondary market for an investor’s interest in the Funds and none is expected to develop. The Funds’ management fees, incentive fees/allocation, and expenses, may offset their trading profits. An investor should not invest in the Funds unless it is prepared to lose all or a substantial portion of its investment.
The targeted returns are forward-looking statements that are subject to uncertainties described further in the relevant offering memorandum. The targeted returns are based on research conducted by Crestline and the conclusions are Crestline’s opinions based on its own independent study. The return targets are supported by various quantitative measures including 1) the actual track record of the funds, 2) back-tested returns of a pro-forma portfolio using the fund’s current asset allocation and 3) a forecast return calculated using a third-party risk model. For further information on targeted returns including input data and calculation methodology please contact Client Servicing. While Crestline believes that the return targets are supportable, there is no guarantee that the funds will achieve the targeted returns. The targeted rates of return included in this presentation are hypothetical returns, and are for illustrative purposes only. Accordingly, no assumptions or comparisons should be made based upon these returns. Targeted returns are subject to inherent limitations, including but not limited to the fact that the returns do not take into account the impact that market and economic risks may have on investment decision trading. In no circumstances should the targeted returns be regarded as a representation, warranty or prediction that the fund will reflect any particular performance or that it will achieve or is likely to achieve any particular result or that investors will be able to avoid losses, including total losses of their investment.
Keith Williams, Managing Director, Senior Portfolio Manager, joined Crestline in 2012 as the Managing Director and Senior Portfolio Manager in and is responsible for co-managing Crestline’s Opportunistic Strategies. Prior to joining Crestline, Mr. Williams was Executive Vice President/Partner of McKinsey & Company’s Recovery and Transformation group. At McKinsey, Mr. Williams was responsible for providing restructuring and turnaround services to distressed or underperforming companies. Mr. Williams also served as Senior Vice President/Director in Goldman Sachs’ Special Situations Group where he developed and implemented liquid and illiquid distressed investing strategies and sourced, evaluated, negotiated, and executed investment opportunities. Mr. Williams has a BBA in Finance from Southern Methodist University and a MBA from Rice University.
Office: (817) 339-7343
Email: kwilliams@crestlineinc.com

Sean Gannon, Managing Director, Opportunistic Strategies Specialist, joined Crestline in 2010 and is responsible for Client Development. Mr. Gannon has 25 years of experience in the investment industry including: Director of Marketing & Client Service at Dorchester Capital Advisors, Senior Vice President & Investment Committee Chairman at a $2.5B private bank, and Director of Marketing and Client Service at Lipper & Company, a $4.5B hedge fund. Mr. Gannon also spent 9 years at Mellon’s Global Corporate Banking Department as Vice President & Team Leader where he focused on leveraged finance transactions. Mr. Gannon is a graduate of Miami University where he received his B.A. in Political Science and the University of Pittsburgh where he received an M.B.A. He is a member of the Finance Advisory Board at Miami University.
Office: (310) 379-4135
Email: sgannon@crestlineinc.com
Topics to be Addressed

- Firm Overview
- Opportunity Fund II Account Update
- Crestline Opportunity Fund III
## Organization

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<tr>
<th>Department</th>
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<td>Andrey Panna, MD</td>
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<td>Curt Futch, MD</td>
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<td>Matt McCutchen, Dir</td>
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<td>W.B. “Bud” Kirchner,</td>
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<td>Strategic Partnerships</td>
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<td>Total Firm: 73 Investment Professionals</td>
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$9.9 billion of Firm AUM

95% of Crestline’s assets are from institutional investors

AUM for Crestline, its affiliates and its affiliated management team is estimated at $9.9 billion, which includes uncalled capital commitments and $2.4 billion of beta overlay notional amounts, $1.1 billion of AUM consists of previous funds managed by principals of Denali via DC Funding Partners LLC independently of Crestline. The above estimate is based on valuations as of 9/1/2015 except for certain assets managed by Crestline affiliates, which are valued as of earlier dates based on the most recently available data for such assets. Crestline Denali Capital also provides operational and administrative support services to DC Funding Partners LLC. Specialty Lending Fund AUM includes leverage. Other Category represents Hedge Funds and Asset Management Firms.
These strategies include other specialized portfolios in addition to the funds listed.

AUM for Crestline, its affiliates and its affiliated management team is estimated at $9.9 billion, which includes uncalled capital commitments and $2.4 billion of beta overlay notional amounts, $1.1 billion of AUM consists of previous funds managed by principals of Denali via DC Funding Partners LLC independently of Crestline. The above estimate is based on valuations as of 9/1/2015 except for certain assets managed by Crestline affiliates, which are valued as of earlier dates based on the most recently available data for such assets. Crestline Denali Capital also provides operational and administrative support services to DC Funding Partners LLC. Specialty Lending Fund AUM includes leverage.

Expected/Targeted returns are forward-looking statements that are subject to uncertainty as described further in the relevant offering memorandum and should not be regarded as a representation, warranty or prediction of any particular performance. See Notes to Performance History & Comparisons for further information.

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### Product Array

#### Credit and Opportunistic Strategies ($4.0 bn)

<table>
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<tr>
<th>Opportunity Investing</th>
<th>Senior Secured Credit</th>
<th>Fund Solutions</th>
<th>Hedge Fund and Private Equity Restructuring ($1.0 bn)</th>
<th>Hedge Fund Solutions ($2.5 bn)</th>
<th>Custom Derivative Based ($2.4 bn)</th>
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<td>Opportunity Fund I</td>
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<td>Recovery Funds</td>
<td>Crestline Partners</td>
<td>Beta, Hedging &amp; Trading Strategies</td>
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<td>Target return: L + 800bp</td>
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<td>Fund I Launched 2/2009</td>
<td>Non-directional</td>
<td>Portable Alpha</td>
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<td>$390mm peak committed capital</td>
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<td>Target return: 20% net</td>
<td>Low volatility, low beta</td>
<td>Equity and bond overlays</td>
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<td>Opportunity Fund II</td>
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<td>Fund II Launched 1/2011</td>
<td>Target return: &lt; 4%</td>
<td>Tail-risk hedging</td>
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<td>Launched 11/2012</td>
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<td>Target return: 18-20% net</td>
<td>Separate Accounts</td>
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<td>Target return: 12-16% net</td>
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<td>Fund III Launched 11/2012</td>
<td>Partner with investors to</td>
<td>Opportunistic trades</td>
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<td>$980mm committed capital</td>
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<td>Target return: 15-18% net</td>
<td>develop custom structures and</td>
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<td></td>
<td>Specialty Lending</td>
<td>crestline Summit</td>
<td></td>
</tr>
<tr>
<td>1st Quarter 2016 Launch</td>
<td></td>
<td></td>
<td>First Close: 10/2014</td>
<td>Equity Alpha Fund</td>
<td></td>
</tr>
<tr>
<td>Target return: 15% net</td>
<td></td>
<td></td>
<td>Closed-end drawdown style</td>
<td>Low beta US focused equity</td>
<td></td>
</tr>
<tr>
<td>Target fundraising: $1.0bn to $1.25bn</td>
<td></td>
<td></td>
<td>Target return: 10-13% net</td>
<td>long short</td>
<td></td>
</tr>
<tr>
<td>European Opportunity Fund</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Quarter 2016 Launch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target return: 15% net</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target fundraising: €350 to €450mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1 These strategies include other specialized portfolios in addition to the funds listed. AUM for Crestline, its affiliates and its affiliated management team is estimated at $9.9 billion, which includes uncalled capital commitments and $2.4 billion of beta overlay notional amounts, $1.1 billion of AUM consists of previous funds managed by principals of Denali via DC Funding Partners LLC independently of Crestline. The above estimate is based on valuations as of 9/1/2015 except for certain assets managed by Crestline affiliates, which are valued as of earlier dates based on the most recently available data for such assets. Crestline Denali Capital also provides operational and administrative support services to DC Funding Partners LLC. Specialty Lending Fund AUM includes leverage.

Expected/Targeted returns are forward-looking statements that are subject to uncertainty as described further in the relevant offering memorandum and should not be regarded as a representation, warranty or prediction of any particular performance. See Notes to Performance History & Comparisons for further information.
## We believe:

- Market dislocations and inefficiencies create opportunities
- An experienced team is required to properly identify, diligence and execute
- A flexible mandate allows us to take advantage of investment opportunities
- We should always receive appropriate compensation for risk and illiquidity
- Capital preservation is paramount while seeking to generate our return objectives
Opportunity Fund II Account Update
Opportunity Fund II Summary

- Final Close on November 2, 2013: $980mm total capital raise
  - Approximately $450mm dedicated to direct investments
- Target net IRR to investors of 12-16%
- The objective was to achieve superior returns relative to traditional high yield and credit hedge fund strategies by investing across a wide range of opportunistic investments.
- Focused on building a unique portfolio of direct investments capitalizing on the illiquidity premium created by the current market inefficiencies. Each investment has at least one of the following attributes:
  - Providing capital to middle market and lower middle market companies with a focus on down-side protection
  - Purchasing, lending against or creating platforms around future cash flow streams backed by assets
  - Purchasing assets at a discount to intrinsic value
- The commingled share class includes 50% fund investments, 25% hedge fund secondaries and 25% direct investments

Expected/Targeted returns are forward-looking statements that are subject to uncertainty as described further in the relevant offering memorandum and should not be regarded as a representation, warranty or prediction of any particular performance. Past performance is not indicative of future results. See Notes to Performance History & Comparisons for further information.
SJCERA Account Overview

- Made 12 investments in funds across various strategies and asset classes (75% of commitment)
  - Our remaining fund allocation to be closed within 30 days

- Made 15 direct investments (25% of commitment)
  - 3 investments approved to close
  - Anticipated 2-3 remaining investments to be made

As of August 31, 2015

**Account Summary**

- Capital Commitment: $45,000,000 (100%)
- Committed Capital: $42,162,046 (94%)
- Funded Commitment: $26,763,010 (59%)
- Committed to Investments: $15,399,036 (34%)
- Uncommitted to Investments: $2,837,954 (6%)
- Total Capital Distributed: $-
- Current Value: $29,014,260

**Performance**

- IRR: 7.27%
- Realized MOIC: 0.0x
- Unrealized MOIC: 1.08x
- Total MOIC: 1.08x

**NAV by Strategy**

- Opportunistic Credit: 17.4%
- Performing Credit: 15.5%
- Real Assets: 22.0%
- Structured Finance: 1.2%
- Structured Credit: 5.6%
- Corporate Distressed: 0.9%
- Cash Flow Strategies: 3.8%
- Hedge Fund Secondaries: 28.5%

**NAV by Geography**

- North America: 64.6%
- Asia: 3.8%
- Europe: 6.7%
- Emerging Markets: 4.8%
- Cash: 5.1%
- Asia: 3.8%
- NAV Global: 15.0%

Past performance is not indicative of future results. See Notes to Performance History & Comparisons for further information.
Opportunity Fund II Direct Investment Portfolio Overview

- As of August 31, 2015, Crestline has committed $415mm or 92% of capital into 15 transactions:
  - 14-15 names are performing in-line or better than original underwriting expectations

- Crestline anticipates a near fully committed portfolio comprising 18-20 names upon the closing of the investment period or soon thereafter, with weighted average position sizes 5%

- Gross returns on closed transactions have been underwritten to a weighted average 20.2% IRR and a 1.80x MOIC

- Closed transactions at the time of underwriting, approximately 78% of the investments were senior secured debt or in asset backed cash flow/liquidating assets. A breakdown by investment type:
  - Senior Secured – 35%
  - Cash flowing or liquidating asset** - 43%
  - Mezzanine/Structured equity – 12%
  - Common equity – 9%

- Three transactions are currently approved, pending closing: two are senior secured loans and one is unsecured debt with attractive attachment points. Four additional deals are in underwriting, all are senior secured debt transactions

*Certain investments have closed out or returned capital, providing incremental availability for new investments
** Zero or minimal asset level debt
Expected/Targeted returns are forward-looking statements that are subject to uncertainty as described further in the relevant offering memorandum and should not be regarded as a representation, warranty or prediction of any particular performance. Past performance is not indicative of future results. See Notes to Performance History & Comparisons for further information.
Direct investments are currently tracking to achieve a 19% Gross IRR and 1.9x MOIC

<table>
<thead>
<tr>
<th>Investment Name</th>
<th>Investment Type</th>
<th>Industry</th>
<th>Expected Return¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Distressed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Spectrum</td>
<td>2nd Lien DIP and Exit Facility</td>
<td>Telecommunications</td>
<td>20%+</td>
</tr>
<tr>
<td>Project Greek</td>
<td>2nd Lien with Warrants</td>
<td>Food &amp; Beverage</td>
<td>20%+</td>
</tr>
<tr>
<td>Performing Credit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Rejuvenate</td>
<td>1st Lien and Warrants</td>
<td>Consumer</td>
<td>20%+</td>
</tr>
<tr>
<td>Project Outsource</td>
<td>2nd Lien/Structured Equity</td>
<td>Health Care</td>
<td>17%+</td>
</tr>
<tr>
<td>Project Urology</td>
<td>Structured Equity</td>
<td>Health Care</td>
<td>17%+</td>
</tr>
<tr>
<td>Project PCG</td>
<td>1st Lien</td>
<td>Real Estate</td>
<td>15%+</td>
</tr>
<tr>
<td>Project Shop</td>
<td>Convertible Note, Preferred and Common</td>
<td>Technology</td>
<td>20%+</td>
</tr>
<tr>
<td>Project Bluejack</td>
<td>1st Lien</td>
<td>Real Estate</td>
<td>17%+</td>
</tr>
<tr>
<td>Real Assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Appalachia</td>
<td>Cash Flowing Asset</td>
<td>Energy</td>
<td>20%+</td>
</tr>
<tr>
<td>Project Canada</td>
<td>Cash Flowing Asset</td>
<td>Energy</td>
<td>20%+</td>
</tr>
<tr>
<td>Project Brazil</td>
<td>Convertible Note and Common Equity</td>
<td>Agriculture/Real Estate</td>
<td>20%+</td>
</tr>
<tr>
<td>Project Telluride</td>
<td>Self Liquidating Asset</td>
<td>Real Estate</td>
<td>20%+</td>
</tr>
<tr>
<td>Project Pioneer</td>
<td>Common Equity</td>
<td>Transportation</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>Project Aztec</td>
<td>Cash Flowing Asset</td>
<td>Aviation</td>
<td>18%+</td>
</tr>
<tr>
<td>Structured Finance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Circle</td>
<td>Self Liquidating Asset</td>
<td>Insurance</td>
<td>20%+</td>
</tr>
</tbody>
</table>

¹ Expected returns are presented as gross.
Cash flowing or self liquidating assets have zero or very little asset level debt
Expected/Targeted returns are forward-looking statements that are subject to uncertainty as described further in the relevant offering memorandum and should not be regarded as a representation, warranty or prediction of any particular performance.
As of August 2015.
Opportunity Fund III Overview

Opportunity:

- Absence of capital in complex and bespoke situations
  - Regulatory change has made it harder for banks to provide credit to smaller companies
  - Proprietary provision of credit by investment banks has been reduced by Volker Rule
  - Challenging equity markets have reduced BDCs ability to raise fresh capital

- Underdeveloped competitive landscape
  - Fewer firms looking to capitalize on <$50mm transaction sizes
  - Specific skill set required to execute efficiently and consistently

- Global market volatility
  - China, Brazil, Southern Europe, Puerto Rico
  - Energy, Shipping, Minerals/Mining

- Increased global credit risk
  - Covenant-Lite and CCC issuance at the same or higher levels than previous cycles
  - Current leverage multiples resemble last two market dislocations
Capital solutions for underserved or credit constrained asset classes, including SME’s, out-of-favor sectors, stressed situations or special situations

Opportunity Fund III Strategy

- Providing capital to middle market and lower middle market companies with a focus on downside protection
- Purchasing, lending against or creating platforms around future cash flow streams backed by assets
- Purchasing assets at a discount to intrinsic value
Crestline Edge

Crestline Infrastructure
- Experienced management team
- Strong institutional focus and client base
- Stable organization
- $9.9bn AUM*
- 128 employees

People
- Crestline Partners – 90 years experience
- Opportunistic Senior Team - collective 100+ years of experience
- Blue chip institutional backgrounds, including Goldman Sachs SSG, Credit Suisse, UBS and DLJ

Experience
- Sourcing and relationships
- Direct lending
- Liquid credit
- Structured equity
- Private equity
- Esoteric asset types
- Restructuring and workout

Proven Strategy
- Identifying inefficiencies
- SME capital solution provider
- Asset backed / Cash flow strategies
- Discounted asset purchases
- Downside focus with equity-like returns

Proprietary Sourcing
- Principal’s extensive network
- Crestline / Bass network
- GP / Potential GP deal flow
- Cross platform idea generation
- Closed over 50 deals in the last three years

AUM for Crestline, its affiliates and its affiliated management team is estimated at $9.9 billion, which includes uncalled capital commitments and $2.4 billion of beta overlay notional amounts, $1.2 billion of AUM consists of previous funds managed by principals of Denali via DC Funding Partners LLC independently of Crestline. The above estimate is based on valuations as of 9/1/2015 except for certain assets managed by Crestline affiliates, which are valued as of earlier dates based on the most recently available data for such assets. Crestline Denali Capital also provides operational and administrative support services to DC Funding Partners LLC. Specialty Lending Fund AUM includes leverage.
# Opportunity Fund III Overview

<table>
<thead>
<tr>
<th>Opportunity Fund III</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure</strong></td>
</tr>
<tr>
<td>Private equity format with a drawdown structure</td>
</tr>
<tr>
<td><strong>Target Fundraise</strong></td>
</tr>
<tr>
<td>$1.00 billion to $1.25 billion</td>
</tr>
<tr>
<td>$350mm committed from an existing client. Additional $250mm approved and in documentation*</td>
</tr>
<tr>
<td><strong>Target Returns</strong></td>
</tr>
<tr>
<td>15% net</td>
</tr>
<tr>
<td>1.5x MOIC</td>
</tr>
<tr>
<td><strong>Investment Period</strong></td>
</tr>
<tr>
<td>Three years</td>
</tr>
</tbody>
</table>

*Committed amounts are for separately managed accounts. Expected/Targeted returns are forward-looking statements that are subject to uncertainty as described further in the relevant offering memorandum and should not be regarded as a representation, warranty or prediction of any particular performance. Past performance is not indicative of future results. See Notes to Performance History & Comparisons for further information.*
Crestline Opportunistic Team

**Investment Committee**

- **Doug Bratton**, President / CIO
- **Caroline Cooley**, Partner & CIO / Diversified Funds
- **John Cochran**, Partner & COO
- **Keith Williams**, Managing Director, Senior Portfolio Manager
- **Michael Guy**, CIO Europe

**Senior Investment Team**

- **Keith Williams**, Senior Portfolio Manager
- **Chris Semple**, Associate Portfolio Manager
- **Rahul Vaid**, Associate Portfolio Manager
- **Jeff Marcinowski**, Director
- **William Palmer**, Director
- **Alfonso Ramirez**, Director
- **Sanjeev Sarkar**, Managing Director Europe
- **Andrey Panna**, Managing Director Europe

**Investment Team**

- **James Delaune**, Vice President
- **Michael Bullard**, Senior Associate
- **Aaron Mack**, Associate
- **Eric Spector**, Associate
- **Brooke New**, Senior Analyst
- **Graham Grunow**, Analyst
- **Chris Michael**, Analyst
- **Robert Zell**, Associate Director, Due Diligence

**Operations and Middle Office**

- **Jeremiah Loeffler**, Director of Operations
- **Travis Keith**, Loan Analyst
- **Three Middle Office Professionals**

---

1 Anticipated start in November
European Performance Track Record – 2012 to 2015*

- Expected average investment level IRR of 18% and 1.3x MOIC on 31 investments made between May 2012 and May 2015

- To date, average investment level IRR on 14 achieved exits is 22.3% and 1.2x MOIC

- By number and by value more than 90% of investments were senior instruments

- Largest investment approximately 7% of fund commitments with a median investment size of approximately 4%

- Average gross yield on portfolio of circa 7.2%

- Over 70% of investor commitments invested within two years of launch and over 110% by end of investment period
European Performance Track Record – 2012 to 2015*

<table>
<thead>
<tr>
<th>Industry</th>
<th>Country</th>
<th>Investment Type</th>
<th>Realized or Expected Return¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorway Services</td>
<td>Germany</td>
<td>First Lien</td>
<td>13.9%</td>
</tr>
<tr>
<td>Packaging Solutions</td>
<td>Germany</td>
<td>First Lien</td>
<td>21.3%</td>
</tr>
<tr>
<td>Specialty Building Products</td>
<td>France</td>
<td>First Lien</td>
<td>37.0%</td>
</tr>
<tr>
<td>Specialty Building Products</td>
<td>France</td>
<td>First Lien</td>
<td>18.4%</td>
</tr>
<tr>
<td>Vending Services</td>
<td>Switzerland</td>
<td>First Lien</td>
<td>17.3%</td>
</tr>
<tr>
<td>Power and Gas Utilities</td>
<td>Germany</td>
<td>First Lien</td>
<td>9.2%</td>
</tr>
<tr>
<td>Electronic Test Equipment Leasing</td>
<td>UK</td>
<td>Second Lien</td>
<td>32.0%</td>
</tr>
<tr>
<td>Auto Dealership</td>
<td>UK</td>
<td>First Lien</td>
<td>56.0%</td>
</tr>
<tr>
<td>Secured Consumer Finance</td>
<td>US/UK</td>
<td>First Lien</td>
<td>40.9% ²</td>
</tr>
<tr>
<td>Leisure</td>
<td>UK</td>
<td>First Lien</td>
<td>14.2% ²</td>
</tr>
<tr>
<td>Shipping</td>
<td>Norway</td>
<td>First Lien</td>
<td>12.6%</td>
</tr>
<tr>
<td>Power and Gas Utilities</td>
<td>Ireland</td>
<td>First Lien</td>
<td>13.9%</td>
</tr>
<tr>
<td>Telecom Infrastructure</td>
<td>France</td>
<td>First Lien</td>
<td>12.9%</td>
</tr>
<tr>
<td>Luxury Retail</td>
<td>UK/Cayman</td>
<td>First Lien</td>
<td>13.0%</td>
</tr>
<tr>
<td>Specialty Materials</td>
<td>UK</td>
<td>First Lien</td>
<td>24.8%</td>
</tr>
<tr>
<td>Onshore Wind Turbine Parks</td>
<td>Germany</td>
<td>First Lien</td>
<td>15.1%</td>
</tr>
<tr>
<td>Offshore Drilling</td>
<td>Bermuda</td>
<td>First Lien</td>
<td>9.1%</td>
</tr>
<tr>
<td>Specialty Chemicals</td>
<td>Sweden</td>
<td>First Lien</td>
<td>12.5%</td>
</tr>
<tr>
<td>Specialty Chemicals</td>
<td>Sweden</td>
<td>First Lien</td>
<td>11.5%</td>
</tr>
<tr>
<td>Shipping</td>
<td>US</td>
<td>Equity</td>
<td>-11.6%</td>
</tr>
<tr>
<td>Wind Turbine Offshore Maintenance</td>
<td>Denmark</td>
<td>First Lien</td>
<td>13.9%</td>
</tr>
<tr>
<td>Vending Services</td>
<td>Switzerland</td>
<td>First Lien</td>
<td>10.3%</td>
</tr>
<tr>
<td>Specialty Real Estate</td>
<td>UK</td>
<td>First Lien</td>
<td>23.9%</td>
</tr>
<tr>
<td>Steel Manufacturing</td>
<td>UK</td>
<td>First Lien</td>
<td>19.7%</td>
</tr>
<tr>
<td>Offshore Drilling</td>
<td>Norway</td>
<td>Second Lien</td>
<td>9.0%</td>
</tr>
<tr>
<td>Oil &amp; Gas Production</td>
<td>Canada/UK</td>
<td>First Lien</td>
<td>11.6% ³</td>
</tr>
<tr>
<td>Specialty Materials</td>
<td>Germany</td>
<td>First Lien</td>
<td>11.2%</td>
</tr>
<tr>
<td>Defense Industry</td>
<td>Germany</td>
<td>First Lien</td>
<td>14.0%</td>
</tr>
<tr>
<td>Facility Maintenance</td>
<td>Netherlands</td>
<td>First Lien</td>
<td>13.5%</td>
</tr>
<tr>
<td>Renewables</td>
<td>UK</td>
<td>First Lien</td>
<td>26.6%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>UK</td>
<td>First Lien</td>
<td>28.6%</td>
</tr>
</tbody>
</table>

* Deals attributable to the individuals within the Crestline Europe team
¹ Realized or Expected returns are presented as gross.
² Realized IRR as presented includes estimated value of equity and equity warrants
³ Purchase cost of the bonds includes net cost of a small equity add-on
White Oak Summit Fund
Senior Secured Loans to Non-Sponsored SMEs

October 2015
White Oak is a direct lending specialist which has focused on making senior secured loans to non-sponsored small and medium enterprises ("SMEs") in the U.S. and Canada since 2007

- White Oak ("WO") offers term loans, asset based loans and other specialty lending products to companies with an enterprise value between $50 million and $1 billion. All loans are senior secured
- White Oak has 57 professionals split between its head office in San Francisco and satellite offices in New York, Denver and Atlanta.
- It has assets under management of $1.8 billion¹

Direct origination of non-sponsored SMEs
- Dedicated team of originators
- Focused on non-sponsored origination via: commercial banks; proprietary direct calling; and specialized investment banking and broker communities
- Allows better access to borrowers management and financials, stronger underwriting, higher margins and lower loss rate
- Current pipeline of opportunities exceeds $2.1 billion

Strong and consistent track record
- Consistent returns through challenging economic conditions
- Proven ability to recover capital

Contracted, stable cash flows
- Structurally and contractually secured cash flows (fees + cash coupon)
- Cash dividend paid quarterly
- Targeted net return independent of market conditions

¹ The AUM is estimated as of June 30, 2015, based on year end value of $1.818 billion plus current first quarter commitments, and includes White Oak’s Regulatory Assets under Management in addition to the uncalled capital commitments of the Firm’s separately managed accounts.
White Oak – Uncompromised Downside Protection

Best of Class Underwriting

- Senior secured loans
- Covenant heavy
- Low to moderate LTVs
- Low debt-to-EBITDA multiples
- Extensive PE-style due diligence with strong focus on value of collateral
- Tailored lending arrangements

Applied Risk Management

- Strict portfolio construction & diversification protocol (collateral, industry, geography)
- Direct monitoring of borrowers, not filtered via sponsor
- Quarterly portfolio valuation and quarterly 3rd-party validation
- Demonstrable hands-on capital recovery skills

Institutional Platform

- 57 dedicated professionals, with expertise in originating, underwriting and investing in private credit opportunities
- Average relevant experience across the team of >12 years
- Partner for institutional investors since 2007
- State-of-the-art investment infrastructure and systems
# A Cohesive, Experienced Direct Lending Team

<table>
<thead>
<tr>
<th>SENIOR TEAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing Partner</td>
</tr>
</tbody>
</table>

- 32 direct lending professionals with expertise in originating, underwriting and investing in private credit opportunities
- Supported by 23 seasoned professionals in marketing, investor relations, legal, operations and accounting
## Market Opportunity – Increasing Unmet Demand from SMEs

| U.S. SMEs have significant financing requirements | • WO estimates there are approximately 370,000 SMEs in the U.S.  
| • Total loans made to these companies exceed $1 trillion, much of which will need to be refinanced within the next 3-5 years |
| Bank lending to SMEs continues to shrink | • Recent regulatory changes have permanently decreased the banking industry’s appetite for traditional lending to non-rated borrowers  
| • Risk-based capital requirements such as Basel III, Dodd-Frank and regulations yet to be written, increase banks’ capital costs and restrict their ability to participate in private loans  
| • On-going consolidation has reduced the number of active banks by approximately two thirds  
| • As a result, bank lending to SMEs has contracted severely and continues to shrink |
| Demand from unsponsored SMEs largely unmet | • SMEs need to find alternative sources of capital to replace traditional bank financing  
| • WO estimate that between 50 - 60 direct lending managers have been established to address this need (including speciality finance and commercial firms), however many of these firms are focussed on lending to PE sponsored companies  
| • Approximately 80% of U.S. SMEs are unsponsored, and the needs of these companies remain largely unmet |
| WO has the requisite platform to address this need | • With fully dedicated and experienced origination and underwriting teams, WO is excellently positioned to provide capital to unsponsored SMEs at favourable terms and with uncompromised downside protection |
## Continuous Focus on Risk Management

**WO continuously monitors risk, both at a fund and individual loan level**

<table>
<thead>
<tr>
<th>Portfolio Construction</th>
<th>At a fund level, WO adheres to strict guidelines to ensure the portfolio is well diversified in terms of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Sector focus – no sector will account for more than 25% of the fund total</td>
</tr>
<tr>
<td></td>
<td>• Size of loan – no single loan will exceed 8% of the fund total</td>
</tr>
<tr>
<td></td>
<td>• Tenor of loan – averages ~ 3 years across the portfolio</td>
</tr>
<tr>
<td></td>
<td>• Loan to value – averages ~ 50% across the portfolio</td>
</tr>
<tr>
<td>Exit Planning and Repayment Strategies</td>
<td>Prior to making any investment, WO develops an exit plan in place to ensure it can recover capital should the borrower be unable to meet loan repayments. The exit plan typically includes:</td>
</tr>
<tr>
<td></td>
<td>• Mapping of potential buyers of the company or underlying assets (strategic and financial)</td>
</tr>
<tr>
<td></td>
<td>• Identification of managers / turnaround specialists that might be able to help turn the company around</td>
</tr>
<tr>
<td></td>
<td>Collateral analysis performed during the due diligence process helps ensure there is excess value in the borrower’s assets, above WO’s investment amount</td>
</tr>
<tr>
<td></td>
<td>WO also incorporates other features into its loans that reduce loan risk over time, such as minimum amortization and cash flow sweeps</td>
</tr>
<tr>
<td>Continuous Monitoring</td>
<td>Post funding, WO follows rigorous monitoring procedures for each loan, comprising:</td>
</tr>
<tr>
<td></td>
<td>• Monthly review of financials, covenant evaluation, and calls with management</td>
</tr>
<tr>
<td></td>
<td>• Monthly valuation committee meetings where the status of each loan and performance of the underlying borrower is discussed, and any issues / concerns are raised</td>
</tr>
<tr>
<td></td>
<td>• Detailed quarterly review – deep analysis of each loan / borrower is performed, comprising detailed analysis of business performance (including variance and trend analysis) and valuation of collateral</td>
</tr>
<tr>
<td></td>
<td>• Quarterly third party valuation of collateral value on all loans</td>
</tr>
</tbody>
</table>
Appendix III

Case Studies
Case Study: Project Sail

Product Type
Senior Secured Term Loan: Cash flow based with significant asset and IP coverage

Business Description
- Leading manufacturer of high quality glass systems and accessories to the recreational boating industry, and fabricated glass systems for recreational vehicles and industrial applications

Sourcing
- The deal was referred through a senior WO relationship at Houlihan Lokey. WO was able to secure the transaction given its ability to offer a flexible solution, replacing both the senior bank debt and mezzanine elements of the existing debt package.

Investment Attractions
- Strong hard-asset collateral base
- Reputable and long-standing customer base
- Strong brand recognition - 105 year old business
- Key component to nearly every company within the boating sector
- Diversifying into the industrial sector
- Proven management team and valuable industry relationships
- High barriers to entry with significant intellectual property and expertise

Funding Requirement
- Funding was required to refinance its existing debt

Exit Strategy
- Cash flow sweep, strategic sale, refinancing
- Current status: Realized

SUMMARY OF TERMS

<table>
<thead>
<tr>
<th>Company Code Name:</th>
<th>Sail Group, LLC</th>
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<tbody>
<tr>
<td>Region:</td>
<td>Northeast</td>
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<tr>
<td>Security:</td>
<td>First Lien Senior Secured Term Loan</td>
</tr>
<tr>
<td>Loan Amount:</td>
<td>$38.2 million</td>
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<td>Investment Amount:</td>
<td>$37.7 million</td>
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<tr>
<td>OID:</td>
<td>1.50%</td>
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<td>Term of Loan:</td>
<td>3.5 years</td>
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<tr>
<td>Interest Rate:</td>
<td>13.50%</td>
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<td>Transaction Fee:</td>
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<tr>
<td>Sector:</td>
<td>Consumer Discretionary</td>
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<tr>
<td>FY2013A (9/30/13) Revenue:</td>
<td>$111.9 million</td>
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<td>FY2013A (9/30/13) EBITDA:</td>
<td>$10.4 million</td>
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<tr>
<td>Senior Leverage Ratio:</td>
<td>3.6x</td>
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<tr>
<td>Loan-to-Value (at origination):</td>
<td>61.7%</td>
</tr>
<tr>
<td>Excess Cash Flow Sweep:</td>
<td>50%</td>
</tr>
<tr>
<td>Call Premium:</td>
<td>103 / 102 / 101, plus 12 months of yield maintenance</td>
</tr>
<tr>
<td>Collateral Package:</td>
<td>All assets, PP&amp;E, A/R, inventory, cash flow, equity guaranty</td>
</tr>
<tr>
<td>Number of Employees:</td>
<td>50+</td>
</tr>
</tbody>
</table>

1 This investment is one of 87 total investments made by WO managed funds or accounts since WO's inception in 2007. A full list containing details about all 80 such investments is set forth in Appendix I of this presentation.
Case Study: Project Bluetooth

SUMMARY OF TERMS

<table>
<thead>
<tr>
<th>Company Code Name:</th>
<th>Bluetooth Communications, LLC</th>
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<tr>
<td>Region:</td>
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<tr>
<td>Security:</td>
<td>Senior Secured Revolving Facility</td>
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<tr>
<td>Loan/Investment Amount:</td>
<td>$67.0 million</td>
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<tr>
<td>Term of Loan:</td>
<td>2.0 years</td>
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<tr>
<td>Interest Rate:</td>
<td>3-month LIBOR + 10.375%</td>
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<td>Transaction Fee:</td>
<td>2.0%</td>
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<tr>
<td>Sector:</td>
<td>Consumer Discretionary</td>
</tr>
<tr>
<td>LTM Revenue (at origination):</td>
<td>$516.0 million</td>
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<tr>
<td>LTM EBITDA (at origination):</td>
<td>$4.8 million</td>
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<tr>
<td>Advanced Rate:</td>
<td>Up to 80.0% of eligible A/R</td>
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<tr>
<td>Loan-to-Value (at origination):</td>
<td>51.1%</td>
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<tr>
<td>Excess Cash Flow Sweep:</td>
<td>0.0%</td>
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<tr>
<td>Call Premium:</td>
<td>102.5 / 102, plus 12 months of yield maintenance</td>
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<tr>
<td>Collateral Package:</td>
<td>All assets</td>
</tr>
<tr>
<td>Number of Employees:</td>
<td>200+</td>
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Product Type
Senior Secured Asset Based Loan

Business Description
- Wholesale distribution company specializing in integrated supply chain solutions for the wireless industry.

Sourcing
- Sourced through a WO contact at a bank
- WO completed an 8 week diligence process

Investment Attractions
- Deal too large for many specialty finance companies
- Asset backed loan (ABL)
- Strong cash collection cycle
- Loan turnover – 37 days
- Fully supported by A/R with inventory as boot collateral
- Daily monitoring and unlimited access to general ledger
- Unlimited personal guarantee by owner with validity guarantees from CEO and CFO

Funding Requirement
- Funding was required to refinance existing credit facility

Exit Strategy
- Amortization, refinancing
- Current status: Realized

1 This investment is one of 87 total investments made by WO managed funds or accounts since WO’s inception in 2007. A full list containing details about all 80 such investments is set forth in Appendix I of this presentation.
Case Study: Project Canary

Product Type
Senior Secured Term Loan: Cash flow based with significant asset

Business Description
• A highly productive longwall coal mining operation.

Sourcing
• Sourced through a direct contact by WO
• WO completed 11 week diligence process prior to completing the loan

Investment Attractions
• High quality coal that is valued both domestically and abroad
• Long-term contracted revenue
• Several performing mines in geographic region
• Recent strong financial performance

Funding Requirement
• Funding was required to refinance existing debt

Exit Strategy
• Amortization, cash flow sweep refinancing
• Current status: Realized (prepaid in full; acquired by third party)

<table>
<thead>
<tr>
<th>SUMMARY OF TERMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company Code Name:</strong></td>
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<td><strong>Region:</strong></td>
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<td><strong>Loan/Investment Amount:</strong></td>
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<tr>
<td><strong>Term of Loan:</strong></td>
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<tr>
<td><strong>Interest Rate:</strong></td>
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<tr>
<td><strong>Transaction Fee:</strong></td>
</tr>
<tr>
<td><strong>Sector:</strong></td>
</tr>
<tr>
<td><strong>LTM Revenue (at origination):</strong></td>
</tr>
<tr>
<td><strong>LTM EBITDA (at origination):</strong></td>
</tr>
<tr>
<td><strong>Senior Leverage Ratio:</strong></td>
</tr>
<tr>
<td><strong>Loan-to-Value (at origination):</strong></td>
</tr>
<tr>
<td><strong>Excess Cash Flow Sweep:</strong></td>
</tr>
<tr>
<td><strong>Call Premium:</strong></td>
</tr>
<tr>
<td><strong>Collateral Package:</strong></td>
</tr>
<tr>
<td><strong>Number of Employees:</strong></td>
</tr>
</tbody>
</table>

1 This investment is one of 87 total investments made by WO managed funds or accounts since WO’s inception in 2007. A full list containing details about all 80 such investments is set forth in Appendix I of this presentation.
Appendix IV

Organizational Chart, Investment Professionals Team and Biographies
Biographies – Operating Committee and Investment Committee

Andre A. Hakkak – Founder and Managing Partner: Operating Committee and Investment Committee

Mr. Hakkak has served as co-portfolio manager and Investment Committee member of White Oak since March 2007. Mr. Hakkak was previously the Founder and Chief Investment Officer of Alpine Global, Inc., a multi-strategy investment management firm which focused on originating alternative fixed income and real estate investments that provided steady and uncorrelated returns to institutional investors. Mr. Hakkak was also the Founder and Portfolio Manager at Suisse Global Investments, an investment management firm that developed investment strategies customized to meet the risk-adjusted return requirements of institutional clients in over 30 countries. He previously served at Robertson Stephens & Co. as an Investment Banker and Principal in its Investment Company Act platform. Mr. Hakkak has been a co-founder and board member of several financial technology platforms that facilitate the distribution of philanthropic and financial products, and has served as a limited partner, general partner or board member of various investment funds and companies. Mr. Hakkak received a B.S. in Finance and Marketing from the Haas School of Business at the University of California at Berkeley and has held Series 7, 63, and 24 designations from FINRA since 1992.

Barbara J. S. McKee – Founder and Managing Partner: Operating Committee and Investment Committee

Ms. McKee has served as co portfolio manager and Investment Committee member of White Oak since March 2007. Previously Ms. McKee was a member of the team that founded KKR Financial LLC, where she served as Senior Vice President and concurrently as General Counsel of KKR Financial Corp. (NYSE: KFN), and played a key role in structuring and implementing debt investments. Prior to KFN, Ms. McKee served as Senior Counsel with the Securities and Investment Group at Wells Fargo Bank, N.A., which structured and implemented the debt investment platform for the Bank’s proprietary capital and investment accounts. She was previously with Deutsche Bank AG in both New York and Frankfurt as Acting Deputy General Counsel for the finance and derivatives departments; Skadden, Arps, Slate, Meagher & Flom in New York and Tokyo as a structured finance and bankruptcy attorney; and Sidley Austin as a finance, bankruptcy and distressed asset attorney. Ms. McKee received a B.A. with a double major in Economics and Comparative Literature from Yale University, a J.D. from the University of Chicago and an M.A. in Comparative Literature from the University of California at Berkeley. Ms. McKee is a member of both the California and New York State Bar Associations.

John H. Fitzpatrick – Chairman and Partner: Operating Committee

Mr. Fitzpatrick serves White Oak as Chairman and Partner and is a member of the Operating Committee. Mr. Fitzpatrick serves AIG, Inc. as a non-executive board member where he is Chairman of the Risk and Capital Committee and a member of the Audit Committee. Previously he served as Secretary General of The Geneva Association, the leading international think tank of the insurance industry. Mr. Fitzpatrick was a partner at Pension Corporation and a director of Pension Insurance Corporation Ltd. He was also a member of Swiss Re’s Executive Board Committee and served Swiss Re as Chief Financial Officer, Head of the Life and Health Reinsurance Business Group and Head of Financial Services. Mr. Fitzpatrick served as a partner in insurance private equity firms sponsored by Zurich Insurance Group, Credit Suisse and Swiss Re. He also served as the Chief Financial Officer and a Director of Kemper Corporation, a NYSE-listed insurance and financial services organization where he started his career in corporate finance in 1978. Since 2010 Mr. Fitzpatrick has been Chairman of Oak Street Management Co., LLC, an insurance management consulting firm, and Oak Family Advisors, LLC, a family office. Mr. Fitzpatrick is a Certified Public Accountant and Chartered Financial Analyst, and he received his BBA in Accounting from Loyola University of Chicago.
Biographies – Operating Committee and Investment Committee

David B. Hackett – Partner and Head of Underwriting: Operating Committee and Investment Committee

Mr. Hackett joined White Oak in January 2008, and has been a member of the Investment Committee since June 2011. He has primary responsibility for structuring and underwriting new investments. Prior to joining White Oak, Mr. Hackett served as Portfolio Co-Manager at North Point Investors, a real estate investment company investing in public real estate securities; as an Associate at Alpine Global, Inc., where he researched and recommended buy/sell opportunities; and as a Director at Redler Group, Ltd., a Geneva-based family office offering financial advisory services. He received a B.S. in Finance from the Haas School of Business at the University of California at Berkeley.

Ali A. Amiry, CFA – Partner and Chief Risk Officer: Investment Committee

Dr. Amiry has served White Oak as Chief Risk Officer and a member of the Investment Committee since July 2011. In his prior professional experience, Dr. Amiry has served as Investment Officer for the City of San Jose’s Retirement Services Department, where he oversaw the allocation of a $5 billion pension portfolio; Director of Research at Alan D. Biller & Associates; Partner/Portfolio Manager at Quant Investment Strategies; and Portfolio Manager at Harris Investment Management (Bank of Montreal). He has also lectured in finance, financial accounting and investment management at the University of Southern Queensland (Auckland, New Zealand). Dr. Amiry received an M.B.A. from the Wharton School of the University of Pennsylvania, a Ph.D. in Physics from SUNY-Stony Brook, and a B.A. in Physics from the University of Chicago. Dr. Amiry is a holder of the right to use the Chartered Financial Analyst designation.

Darius J. Mozaffarian – Partner and Head of Originations: Operating Committee and Investment Committee

Mr. Mozaffarian joined White Oak in May 2008, became Partner in 2010 and currently serves as Head of Originations. He has primary responsibility for originating and structuring new transaction opportunities for White Oak’s private debt funds and has been a member of the Investment Committee since 2014. Previously, Mr. Mozaffarian served at Goldman, Sachs & Co.in the leveraged finance group of the investment banking division, where he worked on myriad buyouts, corporate restructurings and rescue financings within the leveraged loan and high-yield bond market; at Telephia, Inc. (part of Nielsen Media), where he consulted and advised national wireless operators on their suite of product offerings and their competitive landscape; and at Microsoft Corporation where he held a new business development role. He received an M.B.A. from the Haas School of Business and both a B.S. in Industrial Engineering & Operations Research and a B.A. in Economics from the University of California at Berkeley. Mr. Mozaffarian and currently a member of the Association for Corporate Growth and the Turnaround Management Association.

Diane C. Altieri – Director of Operations: Operating Committee

Ms. Altieri serves White Oak as Director of Operations, with primary responsibility for the firm’s Technology and Operations. She was previously Founder and President of J.P. Mitchell & Company, a boutique consulting firm serving Fortune 50 Financial Services and Top 100 Financial Technology and Services firms. She has also served as a Principal in the Financial Services Practice at Ernst & Young, where she managed large-scale technology initiatives and operations strategy for Fortune 50 clients, and as a Manager of Investment Technology and Operations at American International Group. She holds a B.S. in Accounting and Computer Science from University of Dayton.
Biographies – Marketing Team

Landy P. Pheloung – Managing Director, Marketing

Mr. Pheloung serves White Oak as Managing Director of Marketing, with primary responsibility for new business development. He previously served at Deutsche Bank as head of foundation and endowment business development. Mr. Pheloung has over 25 years of sales and trading experience in New York and Australia, including at Macquarie Bank, Oppenheimer Co. and EF Hutton. He holds a Bachelor of Business from the University of Technology in Sydney.

Milbrey “Casey” Jones – Managing Director, Marketing

Mr. Jones serves White Oak as Managing Director of Marketing, with primary responsibility for new business development. He was previously with Maybridge Partners, an investment management consulting firm specializing in defined benefit pension plans, which he founded. Mr. Jones has also served as a partner at Salus Capital Management, and as vice president of marketing and client servicing at Alliance Capital Management. Mr. Jones served the Marin County Retirement System as a Trustee and Chairman of the Investment Committee for over a decade, and as President of SACRS (State Association of County Retirement Systems, the 20 largest counties in California, representing over $100 billion in defined benefit plans assets). Mr. Jones holds a B.S. in Industrial Management from San Jose State University, an Advanced Management Certification from The Wharton School of Business at the University of Pennsylvania, and Series 7 and 63 designations from FINRA.

Jonathan D. Moll, CFA – Managing Director, Marketing

Mr. Moll serves White Oak as Managing Director of Marketing. He has approximately 20 years of asset management experience and has held senior positions at PIMCO, KKR, Vector Capital, Hewitt and Morgan Creek Capital Management. Mr. Moll holds an M.B.A. from Carnegie Mellon University’s Tepper Business School where graduated with Distinction, and a B.A., summa cum laude, in Chemistry from Gettysburg College, where he was a Presidential Scholar and was elected to Phi Beta Kappa. Mr. Moll has earned the right to use the Chartered Financial Analyst designation.

Paul C. Ahrens – Managing Director, Marketing

Mr. Ahrens serves White Oak as Managing Director of Marketing, responsible for new business development. He previously served Southfield Capital, where he was responsible for marketing their SBIC mezzanine fund, and FrontPoint Partners (Morgan Stanley), where he was responsible for marketing and communications of the direct lending strategy. He has developed marketing and communications strategies for Fortune 500 companies, and served at global advertising agencies including Lowe Worldwide, McKinney & Silver and TBWA\Chiat Day. Mr. Ahrens holds a B.A. in Business Management from Gettysburg College.
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The risk of any decline in value of the investment during the period from the date of notice of the redemption until the redemption date will be borne by the investors requesting a redemption. An investor’s ability to redeem capital at any time may be further substantially restricted by the illiquid nature of investments in certain asset strategies pursued by White Oak. Reliance on White Oak. Investors rely on White Oak for the management of their investment portfolios. There could be adverse consequences to investors in the event that White Oak’s principals cease to be available to devote their services to White Oak. In addition, White Oak’s past experience may not improve investors’ results. Changes in Applicable Law. Changes in applicable tax laws could affect, perhaps adversely, the tax consequences of an investment. Fees and Expenses. Certain fees and expenses charged to investors may not be represented in some White Oak’s performance presentations and would have the effect of lowering an investor’s actual results. Interest Rate Risk. The value of debt security investments may fluctuate with changes in interest rates. When interest rates rise, prices of debt securities generally fall, and when interest rates fall, debt securities generally increase in price. Interest rate changes may adversely affect an investor’s return. Default Risk; Credit Risk. The performance of White Oak debt investments could be adversely affected if the issuers of the instruments default or if events occur that reduce the creditworthiness of those issuers. If a bond or other debt instrument were to become subject to such an event, the value of the instrument could be significantly reduced, conceivably to zero. Limited Diversification. An investor’s portfolio could become significantly concentrated in any one issuer, industry, sector, country or geographic region, and such concentration of risk may increase the loss of capital. Non-Investment Grade/Low Quality Instruments/Distressed Debt, Generally. White Oak may invest in non-investment grade securities and similar obligations and instruments. Investing and trading in debt instruments are subject to various risks, including issuer risk, credit risk, market risk, interest rate risk, prepayment risk, derivatives risk and liquidity risk, as well as the risk of improper valuation. Many of these risks are greater as to non-investment grade debt instruments than they are as to higher quality instruments. Trading and investing in non-investment grade instruments can be highly speculative. Additional Risk Factors Related to an Investment in Alternative Investment Asset Classes. As further described in White Oak’s relevant offering documents, an investment in an alternative investment asset class (including hedge funds, private equity funds and managed accounts making similar investments) can be speculative and not suitable for all investors. Investing in such alternative investment asset classes is only intended for experienced and sophisticated investors who are willing to bear the risks associated with such an investment. 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Manager Search Interview Materials:
Direct Lending (Credit)

San Joaquin County Employees Retirement System (SJCERA)
Interview Materials

Interview Schedule

Friday, October 23, 2015

Candidates in presentation order

Crestline

White Oak
Executive Summary

Manager / Fund Overviews

Appendix

Preliminary Manager Questionnaires

Key Personnel Bios
Executive Summary

In October of 2015, following a cursory review of manager materials, an interview with each manager’s staff, and discussion with SJCERA staff, the SJCERA Board approved finalist interviews of two direct lending managers. These two managers were selected from a pool of three managers, which were reviewed and discussed at the October 7, 2015 meeting. The purpose of these interviews is to approve an investment commitment to one of the manager’s funds with the purpose of continuing to build out the SJCERA credit allocation under the new asset allocation framework. Following these interviews and subsequent discussions with the Board, PCA will move forward with additional final due diligence on the selected manager.

This document serves as a means to further implement the Board’s decision to move forward in hiring a direct lending manager and to provide an overview of the candidates and their proposed funds. The two Direct Lending manager finalist candidates and their abbreviations used throughout this report are presented below in order of their interview times:

<table>
<thead>
<tr>
<th>Manager: Fund</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crestline: Opportunity Fund III</td>
<td>Crestline</td>
</tr>
<tr>
<td>White Oak: Summit Fund</td>
<td>White Oak</td>
</tr>
</tbody>
</table>

Both managers are Direct Lending strategies and offer a diversity of investment philosophies as further described below.

**Crestline** is a hedge fund and opportunistic manager that invests in several private transactions, both in fund vehicles and in direct investments. Funded in 2013, SJCERA currently has a $29 million investment in the firm’s Opportunity Fund II. Their new fund, Opportunity Fund III, is an absolute return strategy with a flexible mandate to invest across a broad range of credit or credit-related opportunities. Crestline seeks to take advantage of illiquidity premiums that exist in the markets by tactically allocating capital to take advantage of market dislocations and inefficiencies. The portfolio will be constructed by investing in a wide range of directly originated investments emphasizing current yield, downside protection and upside optionality. The fund’s geographic focus will be primarily North America with a minority exposure to European opportunities.

**White Oak** is a direct lending manager specializing in underwriting capital to middle market companies. The company is based in San Francisco and currently has approximately 57 employees across four offices. The firm offers term loans, asset based loans, and other specialty lending products to companies with enterprise value between $50 million and $1 billion. The firm is launching its summit fund that is seeking to make 30-40 investments in senior secured loans. The Fund is seeking total commitments of $1-1.2 billion.
Crestline Overview

Firm Overview
Crestline is an alternative investment manager specializing in providing investors a broad product array of complimentary investment approaches, which include credit and opportunistic strategies (including private credit, specialty lending, CLOs, and opportunistic funds), and diversified multi-manager hedge fund portfolios with consistent, low volatility returns and low betas to traditional markets. The objective of these approaches is to achieve targeted risk-adjusted total returns over the long term by investing in absolute return strategies, end of life hedge fund and private equity restructuring and customized beta and hedging solutions.

The Firm was founded in 1997, originating from the Bass family office. Crestline currently has approximately $9.9 billion of assets under management, including over $4 billion in opportunistic and private credit strategies, 73 investment professionals, and 129 total employees. Products are delivered through commingled funds, custom client strategic partnerships, fiduciary co-investment programs, and direct funds.

Investment Strategy
Opportunity Fund III is an absolute return strategy with a flexible mandate focused on taking advantage of market dislocations and inefficiencies through credit or credit related investing. In Crestline’s opinion, the dynamics that create a compelling environment for investors include:

- Absence of capital in complex and bespoke situations
  - Regulatory change has made it harder for banks to provide credit to smaller companies
  - Proprietary provision of credit by investment banks has been reduced by Volker Rule
  - Challenging equity markets have reduced BDCs ability to raise fresh capital
- Underdeveloped, competitive landscape
  - Fewer firms looking to capitalize on <$50mm transaction sizes
  - Specific skill set required to execute efficiently and consistently
- Global market volatility
  - China, Brazil, Southern Europe, Puerto Rico
  - Energy, Shipping, Minerals/Mining

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1 AUM for Crestline, its affiliates and its affiliated management team is estimated at $9.9 billion, which includes uncalled capital commitments and $2.4 billion of beta overlay notional amounts, $1.1 billion of AUM consists of previous funds managed by principals of Denali via DC Funding Partners LLC independently of Crestline. The above estimate is based on valuations as of 9/1/2015, except for certain assets managed by Crestline affiliates, which are valued as of earlier dates based on the most recently available data for such assets. Crestline Denali Capital also provides operational and administrative support services to DC Funding Partners LLC. Specialty Lending Fund AUM includes leverage.
Increased global credit risk
  - Covenant-Lite and CCC issuance at the same or higher levels than previous cycles
  - Current leverage multiples resemble last two market dislocations

Crestline seeks to provide capital solutions for underserved or credit constrained asset classes, including small and medium enterprises, out of favor sectors, stressed situations or special situations. The portfolio will be constructed by investing in a wide range of directly originated investments emphasizing current yield, downside protection and upside optionality. The Fund’s geographic focus will be primarily North America with a minority exposure to European opportunities. Opportunity Fund III will focus on three primary types of investments:

1. Providing capital to middle market and lower middle market companies with a focus on downside protection;
2. Purchasing, lending against or creating platforms around future cash flow streams backed by assets; and
3. Purchasing assets at a discount to intrinsic value

Management Team
Deal sourcing and execution for the Fund is led by senior portfolio managers who have deep experience in distressed securities, private equity, corporate credit, restructuring and investment banking. The team consists of 13 investment professionals. The senior portfolio managers report to Doug Bratton, Chief Investment Officer and Chairman of the Opportunistic Investment Committee. All investments are approved by the Investment Committee, comprised of: Doug Bratton, John Cochran, Caroline Cooley, Keith Williams, and Michael Guy (see appendix for detailed roles and experience).

Investment Merits
Crestline Opportunistic Strategies seeks to create favorably skewed risk/reward characteristics by targeting investments that are difficult to source, analyze or execute due to complexity. Crestline believes the preservation of capital should be the key component of every deal and that there is rarely a set of outcomes that can compensate you for taking binary or unquantifiable downside risk. Given this belief, their first objective is to fully understand the downside protection before considering the “upside” merits of a deal.

The Fund will seek to maximize risk/reward skew by investing in the senior parts of capital structures or in assets or platforms that provide Crestline with substantial downside protection and adequate compensation for the underlying risk. Downside protection may come from businesses or assets with highly recurring contractual revenue streams, diversified pools of assets or value, tangible real collateral, defensible strategies/assets, non-core unrelated collateral, intellectual property rights, and deal structural enhancements such as covenants, incurrence, put or control features.
White Oak Overview

Firm Overview
White Oak is a registered investment advisor focused on direct lending and specialty finance that serves as an intermediary between companies that merit financing and investors that are seeking yield. White Oak specializes in financing solutions and advice to middle market businesses supporting a variety of growth, acquisition, and recapitalization needs. White Oak currently employs over 50 professionals and has underwritten over 90 loans with over $2 billion in loan volume. This includes financing businesses in all sectors with loan hold positions as small as $10 million and as large as $80 million. The firm is headquartered in San Francisco with additional offices in New York, Atlanta and Denver.

Investment Strategy
The Fund will primarily focus on making senior secured loans to non-sponsored, privately-held borrowers in the U.S. and Canada. The Fund will target investments of between $5 million and $70 million and borrowers with enterprise values of between $50 million and $1 billion. The Fund is expected to make 30 to 40 investments and will focus on a wide range of sectors, including but not limited to Industrials, Manufacturing, Transportation, Energy & Natural Resources, Aerospace & Defense, Healthcare, Materials and Financials. In addition, White Oak will seek to diversify the Fund’s investments by company, collateral, investment size, industry and geography.

Management Team
White Oak is a fully independent firm, wholly owned by its partners. It was founded in 2007 by Andre Hakkak (former Founder and CIO of Alpine Global Inc.) and Barbara McKee (previously a founding team member of KKR Financial LLC) to address a significant requirement for debt financing from small and medium-sized enterprises in the U.S. and Canada. The members of White Oak’s Investment Committee, comprised of five full-time partners (Andre Hakkak, Barbara McKee, Ali Amiry, Darius Mozaffarian and David B. Hackett - together the “Investment Committee”) have an average of approximately 20 years of experience in direct lending and related fields, including corporate bankruptcies, restructurings and workouts; finance and capital markets; transaction structuring; and risk management.

Investment Merits
White Oak’s investment thesis is to underwrite loans to companies in which it holds a senior secured position in a capital structure in order to enhance its ability to protect the Fund’s investment. Typically, this will involve lending against collateral, including but not limited to property, plant and equipment, inventory, receivables, trade claims and intellectual
property, while taking into consideration a borrower’s cash flows and its ability to reduce risk.

The Fund will focus its lending activities on companies that White Oak believes have verifiable collateral and produce consistent cash flows. These loans are typically secured by a priority lien on the assets of the companies and typically bear interest at floating or fixed rates. White Oak typically targets investments that have attractive LTVs of approximately 50% or less at the time of origination; the collateral valuations for which are verified by third-party valuation firms and appraisers.

In addition to its focus on collateral and cash flows, White Oak structures what it believes to be comprehensive financial covenant packages for the Fund’s investments that are intended to provide notification of potential credit deterioration. This strategy is intended to minimize downside risk for the Fund’s investments and to provide investors with stable returns that have low correlation with the capital markets.
Crestline Key Personnel:

Doug Bratton – CIO / Managing Partner
- Thirty-one years of experience in alternative asset strategies
- Expertise in hedge funds, private equity, venture capital, structured products, manager seeding and activist investing

John Cochran – COO / Partner
- Twenty-seven years of experience in alternative investment strategies
- Expertise in financial statement auditing, and operational and financial due diligence across alternative investment strategies including hedge funds, private equity and venture capital

Caroline Cooley – CIO / Diversified Funds / Partner
- Thirty-two years of experience in alternative asset strategies
- Expertise in multi manager portfolio construction, risk management and trading equity derivatives and fixed income arbitrage

Keith Williams – Senior PM, Opportunistic Credit
- Nineteen years of credit/private equity/distressed investing and advisory experience
- Previous experience includes distressed and credit investing in the Special Situations Group at Goldman Sachs and founder of the restructuring advisory practice at McKinsey

White Oak Key Personnel:

Andre Hakkak, Founder and Managing Partner
Mr. Hakkak has served as co-portfolio manager and Investment Committee member of White Oak since March 2007. Mr. Hakkak was previously the Founder and Chief Investment Officer of Alpine Global, Inc., a multi-strategy investment management firm which focused on originating alternative fixed income and real estate investments that provided steady and uncorrelated returns to institutional investors. Mr. Hakkak was also the Founder and Portfolio Manager at Suisse Global Investments, an investment management firm that developed investment strategies customized to meet the risk-adjusted return requirements of institutional clients in over 30 countries. He previously served at Robertson Stephens & Co. as an Investment Banker and Principal in its Investment Company Act platform. Mr. Hakkak has been a co-founder and board
member of several financial and asset management businesses, and has served as a limited partner, general partner or board member of various investment funds and companies. Mr. Hakkak received a Bachelor of Science ("B.S.") in Finance and Marketing from the Haas School of Business at the University of California at Berkeley and has held Series 7, 63, and 24 designations from FINRA since 1992.

Barbara McKee – Founder and Managing Partner
Ms. McKee has served as co-portfolio manager and Investment Committee member of White Oak since March 2007. Previously, Ms. McKee was a member of the team that founded KKR Financial LLC, where she served as Senior Vice President and concurrently as General Counsel of KKR Financial Corp. (NYSE: KFN), and she played a key role in structuring and implementing debt investments. Prior to KFN, Ms. McKee served as Senior Counsel with the Securities and Investment Group at Wells Fargo Bank, N.A., which structured and implemented the debt investment platform for the Bank’s proprietary capital and investment accounts. She was previously with Deutsche Bank AG in both New York and Frankfurt as Acting Deputy General Counsel for the finance and derivatives departments; Skadden, Arps, Slate, Meagher & Flom in New York and Tokyo as a structured finance and bankruptcy attorney; and Sidley Austin as a finance, bankruptcy and distressed asset attorney. Ms. McKee received a Bachelor of Arts ("B.A.") with a double major in Economics and Comparative Literature from Yale University, a Juris Doctor ("J.D.") from the University of Chicago and a Master of Arts ("M.A.") in Comparative Literature from the University of California at Berkeley. Ms. McKee is a member of both the California and New York State Bar Associations.
An investment in the Fund is speculative and involves a degree of risk and no assurance can be provided that the investment objectives of the Fund will be achieved. Investment in the Fund is suitable only for sophisticated investors who are in a position to tolerate such risk and satisfy themselves that such investment is appropriate for them. The Fund may lack diversification, thereby increasing the risk of loss, and the Fund’s performance may be volatile. As a result, an investor could lose all or a substantial amount of its investment. The Fund’s governing documents will contain descriptions of certain of the risks associated with an investment in the Fund. In addition, the Fund’s fees and expenses may offset its profits. It is unlikely that there will be a secondary market for the shares. There are restrictions on redeeming and transferring shares of the Fund. In making an investment decision, you must rely on your own examination of the Fund and the terms of the offering.
SJCERA Strategic Allocation Decision
# Agenda Items

<table>
<thead>
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<th>Section</th>
<th>Page</th>
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</thead>
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<td>Asset Allocation Portfolios</td>
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<td>Appendix:</td>
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<td>Review of Strategic Class</td>
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<tr>
<td>Review of Asset Liability Analysis Findings</td>
<td></td>
</tr>
<tr>
<td>Modeled Portfolio Classes</td>
<td></td>
</tr>
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</table>
Section 1: Asset Liability Study Calendar
## Asset Liability Study Calendar

<table>
<thead>
<tr>
<th>Month</th>
<th>Session Description</th>
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<tbody>
<tr>
<td>March 2015</td>
<td>Introductory Session - PCA Process / Schedule</td>
</tr>
<tr>
<td>April 2015</td>
<td>Discuss Class Framework / Potential New Strategic Class(es) - PCA</td>
</tr>
<tr>
<td></td>
<td>Does the class framework provide meaningful insight? Are classes distinct?</td>
</tr>
<tr>
<td>May 2015</td>
<td>Model Expected Return and Behavior of All Classes – PCA</td>
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<tr>
<td></td>
<td>Education concerning class modeling process</td>
</tr>
<tr>
<td>June 2015</td>
<td>Initial Presentation of Asset/Liability Model – PCA / Cheiron</td>
</tr>
<tr>
<td></td>
<td>Interactive discussion concerning decision factors (return driven / risk driven)</td>
</tr>
<tr>
<td>July 2015</td>
<td>Model and Consider of Various Portfolio Options - PCA / Cheiron</td>
</tr>
<tr>
<td></td>
<td>Iterative Voting process, tradeoff analysis</td>
</tr>
<tr>
<td>Sept 2015</td>
<td>Discussion of New Strategic Asset Allocation – PCA</td>
</tr>
<tr>
<td>Oct 2015</td>
<td>Recommendation and Decision on New Asset Allocation</td>
</tr>
</tbody>
</table>
Points to remember as we discuss the strategic asset allocation:

• The proposed new asset class structure is a change from the current policy
  — It is designed to identify the role/risks of assets within the portfolio

• This new structure does not limit investment opportunities in the portfolio

• This new structure does not change the process for evaluating and discussing existing classes such as Real Estate

• This is an interactive process – we need input from the SJCERA board/staff

• This final target portfolio is a balance between “Art (knowledge and Experience) and Science (the modeled portfolio)”!

The Goal: Increase efficiency and simplify the overall portfolio structure
Section 2: Asset Allocation Portfolios
The modeled policy portfolio allocation is a result of the decision factor weightings, which resulted in:

- Lower risk than current policy targets
- Less growth exposure than current policy targets
- Higher return-to-volatility than current policy targets

<table>
<thead>
<tr>
<th>Return (Geo)</th>
<th>Current Policy</th>
<th>Model Output</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.0%</td>
<td>7.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Deviation</th>
<th>Current Policy</th>
<th>Model Output</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11.7%</td>
<td>10.1%</td>
</tr>
</tbody>
</table>
Additional Portfolio Considerations (September 2015)

- Following the September 2015 meeting, the Board asked for an additional portfolio option that had a more meaningful reduction in Global Public Equities
  - The additional portfolio maintains a meaningful allocation to stable fixed income
  - The additional portfolio is structured around increased down-side protection
- All of the portfolio options increase the return and reduce the risk of the current allocation
Modeled and Additional Portfolio Considerations

- All portfolios have a smaller allocation to Global Public Equities
- Maintains meaningful weight to stable fixed income
- Improves on risk / return versus current policy
Model Output Observations

Both the modeled and adjusted portfolios:

- Better reflect the Board’s preferences for downside risk protection
- Offer meaningful risk/return improvements
  - Assumptions assume passive management and active management can add value in some classes
- Offer meaningful improvements of the “decision factor” outcomes
Recommendation and Next Steps

- Select a new target allocation for the SJCERA portfolio, PCA recommends either option 1 or option 2

- Once a new strategic asset allocation is selected, PCA will develop an implementation plan
  - This includes asset class and manager restructurings
Appendix: Review of Strategic Class
Review – Strategic Class Framework

1) Purpose (Role)

2) Risk exposure(s)

3) Publicly traded and daily priced, deep liquid markets or is it in private markets?

4) Investible at your scale?
Review – Strategic Investment Classes

SJCERA Current Strategic Classes - 8 Classes

<table>
<thead>
<tr>
<th>Existing Class Name</th>
<th>Purpose</th>
<th>Main Risk Exposures</th>
<th>Public / Private?</th>
<th>Policy %</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Public Equity</td>
<td>Return</td>
<td>Growth</td>
<td>Publicly-traded</td>
<td>16.25%</td>
</tr>
<tr>
<td>Non-US Public Equity</td>
<td>Return</td>
<td>Growth, Currency</td>
<td>Publicly-traded</td>
<td>16.25%</td>
</tr>
<tr>
<td>Global Equity</td>
<td>Return</td>
<td>Growth, Currency</td>
<td>Publicly-traded</td>
<td>1.50%</td>
</tr>
<tr>
<td>U.S. Fixed Income</td>
<td>Income/Stability</td>
<td>Rates, Growth</td>
<td>Public / Private</td>
<td>24.00%</td>
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<td>Risk Parity</td>
<td>Balanced Return</td>
<td>Growth, Rates, Inf</td>
<td>Public</td>
<td>10.00%</td>
</tr>
<tr>
<td>Global Opportunistic</td>
<td>Return</td>
<td>Growth</td>
<td>Public / Private</td>
<td>15.00%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>Income / Return</td>
<td>Rates, growth</td>
<td>Public / Private</td>
<td>10.00%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>Inflation adj. inc.</td>
<td>Real rates</td>
<td>Public</td>
<td>7.00%</td>
</tr>
</tbody>
</table>

Questions:

1. Is the purpose of the class accurately described?
2. Is it meaningful?
3. Is it redundant?
4. Can we simplify?
## Review – Strategic Investment Classes

### SJCERA Current Strategic Classes – Reorganization

<table>
<thead>
<tr>
<th>Existing Class Name =&gt; potential reorg</th>
<th>Purpose</th>
<th>Main Risk Exposures</th>
<th>Public / Private?</th>
<th>%</th>
</tr>
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</tr>
<tr>
<td>Global Equity</td>
<td>Return</td>
<td>Growth, Currency</td>
<td>Publicly-traded</td>
<td>1.50%</td>
</tr>
<tr>
<td>U.S. FI =&gt; Stable FI</td>
<td>Stability/Liquidity</td>
<td>Rates</td>
<td>Publicly-traded</td>
<td>15.00%</td>
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<td>U.S. FI =&gt; Credit</td>
<td>Return / Income</td>
<td>Rates, Growth</td>
<td>Public / Private</td>
<td>9.00%</td>
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<td>Risk Parity</td>
<td>Balanced Return</td>
<td>Growth, Rates, Inf</td>
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<td>Growth</td>
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<tr>
<td>Global Ops =&gt; PE</td>
<td>Return</td>
<td>Growth</td>
<td>Private</td>
<td>1.00%</td>
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<tr>
<td>Real Estate =&gt; PE</td>
<td>Return</td>
<td>Rates, growth</td>
<td>Private</td>
<td>7.50%</td>
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<tr>
<td>Real Estate =&gt; REITS</td>
<td>Return</td>
<td>Growth</td>
<td>Publicly-Traded</td>
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<tr>
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<td>Uncorr. Returns</td>
<td>Variable</td>
<td>Publicly-Traded</td>
<td>5.00%</td>
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</table>
Review – Strategic Investment Classes

SJCERA Current Strategic Classes – Reorganization

<table>
<thead>
<tr>
<th>Existing Class Name =&gt; potential reorg</th>
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<td>Growth, Currency</td>
<td>Publicly-traded</td>
<td>1.50%</td>
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<tr>
<td>Real Estate =&gt; REITS</td>
<td>Return</td>
<td>Growth</td>
<td>Publicly-Traded</td>
<td>2.50%</td>
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<td>Risk Parity</td>
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<td>Growth, Rates, Inf</td>
<td>Publicly-Traded</td>
<td>10.00%</td>
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<td>Real Rates</td>
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<td>U.S. FI =&gt; Credit</td>
<td>Return / Income</td>
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<td>Public / Private</td>
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<td>Global Ops =&gt; Credit</td>
<td>Return / Income</td>
<td>Growth</td>
<td>Public / Private</td>
<td>9.00%</td>
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<tr>
<td>Global Ops =&gt; PE</td>
<td>Return</td>
<td>Growth</td>
<td>Private</td>
<td>1.00%</td>
</tr>
<tr>
<td>Real Estate =&gt; PE</td>
<td>Return</td>
<td>Rates, growth</td>
<td>Private</td>
<td>7.50%</td>
</tr>
<tr>
<td>Global Ops =&gt; Alpha</td>
<td>Uncorr. Returns</td>
<td>Variable</td>
<td>Publicly-Traded</td>
<td>5.00%</td>
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- The Goal: Simplify to 6 classes
### Review – Strategic Investment Classes

#### SJCERA Current Strategic Classes – Reorganization

<table>
<thead>
<tr>
<th>Recommended class reorganization</th>
<th>Purpose</th>
<th>Main Risk Exposures</th>
<th>Public / Private?</th>
<th>%</th>
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<td>Global Equity</td>
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<td>36.5%</td>
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<td>Balanced Return</td>
<td>Growth, Rates, Inf</td>
<td>Publicly-Traded</td>
<td>17.0%</td>
</tr>
<tr>
<td>Stable Fixed Income</td>
<td>Stability/Liquidity</td>
<td>Rates</td>
<td>Publicly-traded</td>
<td>15.0%</td>
</tr>
<tr>
<td>Credit</td>
<td>Return / Income</td>
<td>Growth, rates</td>
<td>Public / Private</td>
<td>18.0%</td>
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<tr>
<td>Private Equity / RE</td>
<td>Return</td>
<td>Growth, illiquidity</td>
<td>Private</td>
<td>8.5%</td>
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<tr>
<td>Alpha / Alt Premia</td>
<td>Uncorr. Returns</td>
<td>Variable</td>
<td>Publicly-Traded</td>
<td>5.0%</td>
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</tbody>
</table>

- More risk aligned strategic classes provide modeling insights
- However, the portfolio remains growth risk dominated
  - 65% on a capital weighted basis, 85%+ on a risk weighted basis
- Any new class should address this growth heavy reality
- New class structure was modeled to help meet the goals of SJCERA
- Reorganizing the classes does not limit our investment opportunity set
Mapping of SJ CERA Managers to More Risk Consistent Groupings

Current Manager Mix

- BlackRock - Large Cap Core
- Capital Prospects - Small Cap Value
- Legato - Small Cap Growth
- BlackRock - World EX-US
- Research Affiliates - Enhanced Int'l
- Research Affiliates - Emerging Markets
- KBI - Water/Ag
- INVESCO - Equity REIT
- BlackRock - Developed ex-US REIT
- Dodge & Cox - Core
- Doubleline Capital - MBS
- PRIMA - Mortgage Inv. Trust
- Stone Harbor - Absolute Return
- Stone Harbor - Bank Loans
- Mesa West - RE Income II
- Mesa West - RE Income III
- Crestline - Opportunity Fund II
- Marinus Capital - Opportunity Master Fund
- Raven Capital - Fund II
- Medley Capital - Opportunity Fund II
- All Private Real Estate
- Ocean Avenue
- Morgan Creek
- Bridgewater - All Weather (AW)
- PIMCO - All Asset All Authority
- Parametric Clifton - Contraction Fund
- Bridgewater - Real Asset
- Bridgewater - Pure Alpha & PAMM
- Mount Lucas - Managed Futures

Current Policy %s into New Classes

- Global Public Equities
  - US Equity
  - REITs
  - Intl Equity
  - Global Equity
  - 36.5%

- Stable Fixed Income
  - 15.0%

- Credit
  - 18.0%

- Private Appreciation
  - 8.5%

- Risk Parity
  - TAA/Risk Parity
  - Real Assets
  - 17.0%

- CRO
  - Alpha / Trend / Alt. Premia / Duration
  - 5.0%

- The new class structure assigns a role/risk to assets within the portfolio
Appendix: Review of Asset Liability Analysis Findings
**Decision Factor Review (June / July 2015)**

- Determine a risk philosophy that best represents the Board’s consensus view by determining a consensus weighting of decision factors.
- Used asset-liability portfolio modeling analysis to help decision-makers conduct a tradeoff analysis and zero in on an strategic policy.

<table>
<thead>
<tr>
<th>Decision Factor</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td><strong>Seek Funding Improvement</strong></td>
<td><em>Long-term measure.</em> Portfolios are ranked by counting the number of times the funding ratio achieves the 85% level after a 15-year period. The higher the frequency of occurrences the higher (better) the rank.</td>
</tr>
<tr>
<td><strong>Avoid Funding Deterioration</strong></td>
<td><em>Single-period measure.</em> Rank is determined by counting the number of years a portfolio causes the Plan funded ratio to fall below (breaches) 65%. A 15-year horizon is utilized and each portfolio is examined across 1,000 simulated 15-year periods. The higher the count of breaches, the lower (worse) the portfolio ranking.</td>
</tr>
<tr>
<td><strong>Seek Lower Average Employer Costs</strong></td>
<td><em>Long-term measure.</em> Portfolios are ranked by the level of average annual employer costs the Plan incurs as a result of the portfolio’s investment results over a 15-year period. The lower the employer cost the higher (better) the rank.</td>
</tr>
<tr>
<td><strong>Avoid Employer Cost Spikes</strong></td>
<td><em>Single-period measure.</em> Rank is determined by counting the number of years a portfolio causes the Plan employer cost to exceed (breaches) 50% of pay. A 15-year horizon is utilized and each portfolio is examined across 1,000 simulated 15-year periods. The higher the count of breaches, the lower (worse) the portfolio ranking.</td>
</tr>
<tr>
<td><strong>Avoid Asset Drawdown in Any Two-Year Period</strong></td>
<td><em>Single-period measure.</em> Portfolios are ranked by counting the number of years a portfolio causes the two-year average return on assets to fall below 0%. A two-year return below this figure would result in two years of losses of 7.5% per year relative to the 7.5% assumed rate of return, resulting in a 15% loss in assets below versus the expected level. A 15-year horizon is utilized and each portfolio is examined across 1,000 simulated 15-year periods. The higher the count of breaches, the lower (worse) the portfolio ranking.</td>
</tr>
</tbody>
</table>
Decision Factor Voting Review (July 2015)

Decision Factor Voting Results

<table>
<thead>
<tr>
<th>Decision Factor</th>
<th>Ballot 1 Weighting</th>
<th>Ballot 2 Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seek &gt;85% Funding</td>
<td>36.6%</td>
<td>40.8%</td>
</tr>
<tr>
<td>Avoid &lt;65% Funding</td>
<td>15.2%</td>
<td>14.7%</td>
</tr>
<tr>
<td>Seek Lower Avg Cost</td>
<td>23.8%</td>
<td>25.1%</td>
</tr>
<tr>
<td>Avoid Cost &gt;50% of pay</td>
<td>18.0%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Avoid 2-year Asset Drawdown &lt;0%</td>
<td>6.4%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

- Decision factor results were similar in both rounds of voting
- Greatest emphasis on 85% or greater funded ratio
Example – How Will Benchmarking Change?

1. Managers/strategies will still be evaluated against their individual benchmarks.

2. More efficient strategic classes = a more efficient and intuitive policy benchmark.

3. Currently there are 8 strategic classes, 4 of which have complicated custom benchmarks = 15 total benchmarks:

<table>
<thead>
<tr>
<th>Current Policy Benchmark Weight</th>
<th>Current Strategic Class</th>
<th>Current Policy Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.25%</td>
<td>US Equity</td>
<td>Russell 3000</td>
</tr>
<tr>
<td>16.25%</td>
<td>Intl Equity</td>
<td>MSCI ACWI ex US</td>
</tr>
<tr>
<td>1.50%</td>
<td>Global Equity</td>
<td>MSCI World</td>
</tr>
<tr>
<td>24.00%</td>
<td>Fixed Income</td>
<td>60.8% BC Agg, 16.7% 3-month LIBOR, 12.5% 9% Annual, 10% S&amp;P/LSTA Leveraged Loan</td>
</tr>
<tr>
<td>10.00%</td>
<td>Real Estate</td>
<td>75% NCREIF ODCE Net + 1%, 15% FTSE NAREIT Equity REIT, and 10% FTSE NAREIT Developed ex-US</td>
</tr>
<tr>
<td>7.00%</td>
<td>Real Assets</td>
<td>58% Bridgewater RA Custom Benchmark, 42% Schroder RA Custom Benchmark</td>
</tr>
<tr>
<td>15.00%</td>
<td>Global Opportunistic</td>
<td>9% Annual</td>
</tr>
<tr>
<td>10.00%</td>
<td>Risk Parity</td>
<td>70% 91-Day T-Bill + 6%, 30% Contraction Custom Benchmark</td>
</tr>
</tbody>
</table>

4. The new structure would have 6 strategic classes, 4 of which have simplified custom benchmarks ≈ 9 total benchmarks:

<table>
<thead>
<tr>
<th>Example Policy Weights</th>
<th>Potential New Strategic Classes</th>
<th>Example Policy Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>34.0%</td>
<td>Global Public Equities</td>
<td>MSCI ACWI</td>
</tr>
<tr>
<td>10.0%</td>
<td>Stable Fixed Income</td>
<td>BC Aggregate Bond</td>
</tr>
<tr>
<td>14.0%</td>
<td>Credit</td>
<td>50% BC High Yield, 50% S&amp;P/LSTA Leveraged Loans</td>
</tr>
<tr>
<td>12.0%</td>
<td>Private Appreciation</td>
<td>MSCI ACWI + 200bps</td>
</tr>
<tr>
<td>15.0%</td>
<td>Risk Parity</td>
<td>T-bills + 4%</td>
</tr>
<tr>
<td>15.0%</td>
<td>Crisis Risk Offset</td>
<td>3 Part Custom Benchmark (i.e. 33% BTOP 50, 33% BC Long Duration Treasuries, 33% at 5% Annual)</td>
</tr>
</tbody>
</table>
Appendix: Modeled Portfolio Classes
## SJCERA Strategic Class Assumptions

<table>
<thead>
<tr>
<th>Strategic Class</th>
<th>Arith. Return*</th>
<th>StDev.</th>
<th>Geom. Return*</th>
<th>Historical Series</th>
<th>Notes*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Public Equity</td>
<td>9.35</td>
<td>19.00</td>
<td>7.55</td>
<td>1973-1987 MSCI World 1988-2014 MSCI ACWI</td>
<td>PCA Global Equity assumption plus 50 basis points*</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>8.00</td>
<td>10.00</td>
<td>7.50</td>
<td>1973-05/1996 Bridgewater AW Mix Simulation (10% Vol) 06/1996-2014 Bridgewater AW(10% Vol)</td>
<td>Return assumption is based on historical Sharpe ratio adjusted downward and 10% volatility target over a 2.5% cash assumption</td>
</tr>
<tr>
<td>Private Appreciation</td>
<td>12.35</td>
<td>26.00</td>
<td>8.97</td>
<td>1973-2014 Venture Capital Journal PVCI</td>
<td>PCA Private Equity assumption plus 50 basis points*</td>
</tr>
<tr>
<td>CRO – Existing</td>
<td>8.63</td>
<td>13.28</td>
<td>7.82</td>
<td>Treasury Rate Duration Trend Following Liquid Alternative Premia Global Macro</td>
<td>Existing CRO is based upon the percentage allocations to MLM and Bridgewater PA</td>
</tr>
<tr>
<td>CRO – Proposed</td>
<td>7.68</td>
<td>11.83</td>
<td>7.03</td>
<td>See series description on following pages in Appendix Each return series is built over a cash assumption of 2.5%</td>
<td>Proposed CRO is based upon PCA proposed class build, and modeled as 50% Trend, 25% alt premia, and 25% Treasury Duration</td>
</tr>
<tr>
<td>Cash</td>
<td>2.50</td>
<td>1.00</td>
<td>2.50</td>
<td>1973-2014 Citigroup 3-Month T-Bills</td>
<td>PCA Cash assumption plus 50 basis points*</td>
</tr>
<tr>
<td>Inflation</td>
<td>3.00</td>
<td>1.25</td>
<td>3.00</td>
<td>1973-2014 CPI</td>
<td>For consistency in asset and liability assumptions, PCA has adopted Cheiron’s inflation assumption</td>
</tr>
</tbody>
</table>

*PCA’s generic asset class assumptions assume inflation of 2.5% because PCA has adopted Cheiron’s inflation assumption of 3% for this analysis. PCA has adjusted its generic asset class assumptions up by 50 basis points to reflect this inflation assumption difference.*
## Generic PCA Assumptions

### 2015 Ten-Year Return, Risk, and Correlation Assumptions

<table>
<thead>
<tr>
<th>Expected Inflation, Average Annual Risk Free Rates &amp; Annual Risk Premiums for Various Classes - %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td>Inflation</td>
</tr>
</tbody>
</table>

### Real Risk-Free Rates

<table>
<thead>
<tr>
<th>Category</th>
<th>Expectation – Annual %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term (Cash)</td>
<td>-0.20</td>
</tr>
</tbody>
</table>

The expected long-term real yield is projected as the current 10-year TIPS real yield. As of December 2014, the 10-Year TIPS real yield was approximately 0.50%, decreasing from 0.75% in December 2013.

### Risk Premiums over Short-term Risk-free Rate:

<table>
<thead>
<tr>
<th>Category</th>
<th>Expectation – Annual %</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Treasuries Only Fixed Income</td>
<td>0.15</td>
</tr>
<tr>
<td>US Core Fixed Income</td>
<td>0.75</td>
</tr>
<tr>
<td>US Credit Fixed Income</td>
<td>1.50</td>
</tr>
<tr>
<td>Core Real Estate</td>
<td>4.00</td>
</tr>
<tr>
<td>Basic Real Return</td>
<td>3.50</td>
</tr>
<tr>
<td>Domestic Equity</td>
<td>0.50</td>
</tr>
<tr>
<td>International Equity</td>
<td>7.25</td>
</tr>
<tr>
<td>Global Equity</td>
<td>0.85</td>
</tr>
<tr>
<td>Hedged International Equity</td>
<td>7.15</td>
</tr>
<tr>
<td>Alternative Investments/Private Equity</td>
<td>9.85</td>
</tr>
</tbody>
</table>

As of December 2014, the yield-to-maturity (YTM) on the U.S. Treasury Index was 1.4%. The YTM on the 10-year treasury was 2%. The YTM on the Barclays Capital U.S. Universal as of December 2014 was 2.75%. The YTM on the U.S. Universal Spread 11 to 16 year index was 3.6%. 2014 saw credit spreads widen year-over-year, while long-term bond yields fell across the maturity spectrum. The Fed ended bond purchases in October but indicated that they would take a cautious approach to raising interest rates in 2015. Current expected returns represent no spread compression and minimal interest rate declines. Our long-term, higher expected inflation level is expected to prove detrimental to fixed income returns. Thus, our estimate reflects reversion of the recent declining trend in the fixed income rate premiums, to positive levels, hurting forward-looking returns.

Combination of TIPS, Timber, Commodities, and Hedge Funds of Funds. The projected return premium of TIPS is below that of year due to a decline in inflation expectations and real yields. Commodity prices are trending low. Extrapolation of recent historical premium trends is warranted.

Over the past 5 years, the realized U.S. equity risk premium has been above historical averages. We expect some mean reversion to occur over the next several years in this premium. Fundamental expectations are in line with these expectations. Current U.S. equity valuations are well above historical averages. While the non-U.S. equity valuations are slightly below historical averages. For longer-term planning purposes, we assume non-U.S. equities to deliver slightly higher returns.

International equity premium less fractional cost of hedging. Note that no long-term impact from currency movements is assumed on U.S. Dollar-based international equity returns.

Expected long-term illiquidity premium over global public equity of 3.0%.
### Generic PCA Assumptions

#### 2015 Ten-Year Return, Risk, and Correlation Assumptions

<table>
<thead>
<tr>
<th>Summary of Investment Class Assumptions</th>
<th>Expected Arithmetic Average Nominal Annual Return</th>
<th>Expected Geometric Compound Nominal Annual Return</th>
<th>Expected Risk of Nominal Returns (Annual%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>2.00</td>
<td>2.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Treasury Int. Protected Securities</td>
<td>3.11</td>
<td>3.00</td>
<td>0.50</td>
</tr>
<tr>
<td>US Treasuries Only Fixed Income</td>
<td>2.15</td>
<td>2.00</td>
<td>0.50</td>
</tr>
<tr>
<td>US Core Fixed Income</td>
<td>2.75</td>
<td>2.65</td>
<td>0.50</td>
</tr>
<tr>
<td>US Credit Fixed Income</td>
<td>3.50</td>
<td>3.30</td>
<td>0.50</td>
</tr>
<tr>
<td>Core Real Estate</td>
<td>6.00</td>
<td>5.80</td>
<td>0.50</td>
</tr>
<tr>
<td>Real Return</td>
<td>5.50</td>
<td>5.20</td>
<td>0.50</td>
</tr>
<tr>
<td>Domestic Equity</td>
<td>8.00</td>
<td>7.80</td>
<td>0.50</td>
</tr>
<tr>
<td>International Equity</td>
<td>9.25</td>
<td>9.00</td>
<td>0.50</td>
</tr>
<tr>
<td>Global Equity</td>
<td>8.85</td>
<td>8.65</td>
<td>0.50</td>
</tr>
<tr>
<td>Hedged Equity</td>
<td>9.10</td>
<td>8.90</td>
<td>0.50</td>
</tr>
<tr>
<td>Private Equity/Venture Capital</td>
<td>11.85</td>
<td>11.65</td>
<td>0.50</td>
</tr>
<tr>
<td>Inflation</td>
<td>2.50</td>
<td>2.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>

#### Significant Changes from Last Year’s January 2014 Ten-Year Assumptions Update

- Inflation expectations declined with lower market breakeven inflation levels, lower realized inflation, and lower consensus projections.
- PCA divided fixed income expectations into US Treasuries Only, U.S. Core, and U.S. Credit. Rates fell in 2014, credit spreads widened.
- Real return class expected returns have been revised downward due to falling inflation and real rate expectations.
- Non-U.S. equity expectations have risen, following a year of flat returns, leading to improved valuations outside of the U.S.

#### Indices Used in Modeling Asset Class Assumptions

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>Citigroup 3 month US Treasury Bill Index</td>
</tr>
<tr>
<td>TIPS</td>
<td>Barclays Capital TIPS, simulated TIPS series per Enlargewater</td>
</tr>
<tr>
<td>US Treasuries Only Fixed Income</td>
<td>Barclays Capital US Treasuries Index</td>
</tr>
<tr>
<td>US Core Fixed Income</td>
<td>Barclays Capital Universal, Barclays Capital Aggregate Index, Barclays Capital G/C Index, Barclays Capital Intermediate Govt. Index, Barclays Capital Corp/Credit Index</td>
</tr>
<tr>
<td>US Credit Fixed Income</td>
<td>Barclays Capital US Universal Spread 1-10 Index, Barclays Capital Core/Credit Index</td>
</tr>
<tr>
<td>Core Real Estate</td>
<td>NAREIT NPI Index, Prior Indices, NAREIT Equity REIT Index</td>
</tr>
<tr>
<td>Real Return</td>
<td>Barclays Capital TIPS, various Hedge Fund Indices, NAREIT Timber Index, Dow Jones UBS Commodity Index</td>
</tr>
<tr>
<td>Domestic Equity</td>
<td>Russell 3000 Index, S&amp;P 500 Index</td>
</tr>
<tr>
<td>International Equity</td>
<td>MSCI/Barra ACWI ex-US Index, MSCI/Barra EAFE Index</td>
</tr>
<tr>
<td>Global Equity</td>
<td>MSCI/Barra ACWI Index</td>
</tr>
<tr>
<td>Hedged Equity</td>
<td>Hedged MSCI/Barra EAFE Index, MSCI/Barra ACWI ex-US Index, MSCI/Barra EAFE Index</td>
</tr>
<tr>
<td>Private Equity</td>
<td>Prior Bimson Venture Capital Index</td>
</tr>
</tbody>
</table>

1 Geometric returns are comparable to aduinal assumption rates for pension funds.

2 The compound return estimate of Global Equity is not a simple average between Domestic Equity and International Equity compound returns. International Equity and Domestic Equity are not perfectly correlated. Therefore, a Global Equity portfolio has lower volatility than the weighted average of component volatilities. Lower volatility results in higher compound returns.
Crisis Risk Offset (CRO): A class with a clear purpose

<table>
<thead>
<tr>
<th>Proposed New Class</th>
<th>Purpose</th>
<th>Risk Exposures</th>
<th>Public / Private?</th>
<th>Policy %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crisis Risk Offset (CRO)</td>
<td>Return and liquidity during a growth crisis</td>
<td>- Interest rates always</td>
<td>- 100% Public markets</td>
<td>&gt; 10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Variable based on trends</td>
<td>- Deep &amp; liquid only</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Alternative factor risks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Crisis Risk Offset Class:

1. Purpose?
   - Offset. Provide significant return during a growth crisis. Liquid.

2. Can it be meaningful? Is the purpose valuable?
   - Growth risk is the portfolio’s largest risk by far (65%+ of capital with significant growth exposure, contributing 85%+ of portfolio return volatility)
   - Growth risk diversification is thus very valuable to the portfolio
   - Growth risk is embedded in equities, so the size / volatility of the class must be significant to have an impact
   - Our research indicates that CRO elements are available, at scale, for a reasonable cost
Crisis Risk Offset Class – Goals

• Must diversify the entire portfolio. Since the portfolio is growth dominated, there is very low correlation to growth risk (do no harm):
  – Desire negative conditional correlation to equities (when equities decline, positive returns, not symmetric).
  – Desire meaningful reaction to negative equity events.

• Must have a positive expected standalone return to risk.

• The goal of the class is not to be low volatility. It is to be diversifying and meaningful (reactive).

• The class must be cost effective (less dependent upon manager skill, more dependent upon market adjustment mechanisms).

• The class must be liquid.
### Underlying Strategies for CRO Class

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description / Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Treasury Rate Duration</strong></td>
<td>Treasury securities (bonds) have duration, a measure of their sensitivity to interest rate changes. Since Treasury bonds are considered to be essentially default-risk free, pricing of Treasury bonds benefits from something called price certainty, given a level of yields across the yield curve. That is, all you need to price Treasury bonds is the level of interest rates. This means that Treasuries will rise, if interest rates decline, something that they have tended to do in most growth crises.</td>
</tr>
<tr>
<td><strong>Trend Following</strong></td>
<td>Trend following (trend capture) investing involves going long markets that have been rising and going short markets that have been falling, betting that those trends continue. This strategy is particularly suited to futures markets, where establishing a position, long or short, is effective zero cost. Opening futures position doesn’t cost anything, but movement of futures prices results in either gains or losses to the position, which result in a transfer of funds (margin) to or from the position holder. This strategy is often called systematic global macro in its hedge fund form (as opposed to discretionary global macro).</td>
</tr>
<tr>
<td><strong>Liquid Alternative Risk Premia</strong></td>
<td>Liquid Alternative Risk Premia investing involves going long and short securities and markets, in a market neutral fashion, to isolate returns historically attributable to the various factors of value, carry, momentum (cross-sectional), and low-volatility. These factors have historically been rewarded. The reasons ascribed to these structural “excess” returns vary. Academics and practitioners provide both behavioral- and risk-based explanations, but their historical existence is not in dispute.</td>
</tr>
<tr>
<td><strong>Discretionary Global Macro</strong></td>
<td>Global macro strategies focus on investing in instruments whose prices fluctuate based on the changes in economic policies, along with the flow of capital around the globe. These strategies generally focus on financial instruments that are broad in scope and move based on systemic risk. Systemic risk or market risk is not security specific. In general, portfolio managers who trade within the context of global macro strategies tend to focus on currency strategies, interest rates strategies, and stock index strategies. Discretionary global macro strategies are not systematic (rules-based), but rather rely upon discretionary decisions. Uncorrelated returns produced by global macro managers can rightly be called alpha, but are difficult to model. True alpha is difficult to source and maintain, is valuable, and typically expensive.</td>
</tr>
</tbody>
</table>
**CRO Class Component Modeling Detail**

- **Treasury Duration** excess return is the excess return on the 10 year “constant maturity” security for the year. It is calculated as the coupon \( \text{average of year end rates (e.g. (Dec 1969 rate + Dec 1970 rate)/2) } \), minus duration times the change in rates, minus the return on cash (T-bills) for the year. The excess return is the return of the strategy in excess of cash. Leverage can be added (subtracted) to increase (decrease) the strategy volatility and return. The Treasuries data in the GRO/CRO class is scaled to match the volatility of longer-maturity Treasuries.

- **Trend Capture** (or Trend Following) investing involves going long markets that have been rising and going short markets that have been falling, betting that those trends continue. The construction of the data set is an equal weighted combination of 1-month, 3-month, and 12-month time series momentum strategies for 59 markets across 4 major asset classes – 24 commodities, 11 equity indices, 15 bond markets, and 9 currency pairs. Leverage can be added (subtracted) to increase (decrease) the strategy volatility and return.

- **Alternative Risk Premium** investing involves going long and short securities and markets, in a market neutral fashion, to isolate returns historically attributable to the various factors of value, carry, momentum (cross-sectional), and low-volatility. The excess return is the return of the strategy in excess of cash. Leverage can be added (subtracted) to increase (decrease) the strategy volatility and return.

- **Trend Capture** and **Alternative Risk Premium** strategies might be considered active management. However, the strategies modeled here are highly systematic in nature, utilizing rules-based approaches to structuring portfolios and capturing the associated risk premiums.
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CBOE, not S&P, calculates and disseminates the BXM Index. The CBOE has a business relationship with Standard & Poor’s on the BXM. CBOE and Chicago Board Options Exchange are registered trademarks of the CBOE, and SPX, and CBOE S&P 500 BuyWrite Index BXM are servicemarks of the CBOE. The methodology of the CBOE S&P 500 BuyWrite Index is owned by CBOE and may be covered by one or more patents or pending patent applications.

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The Citigroup indices are trademarks of Citicorp or its affiliates.

The Merrill Lynch indices are trademarks of Merrill Lynch & Co. or its affiliates.
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<th>RATING SCALE:</th>
<th>Strongly Agree</th>
<th>Strongly Disagree</th>
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<td>(5)</td>
<td>(4)</td>
<td>(3)</td>
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1. **The written reports prepared by Cheiron are timely, accurate, useful, and clear**
   **Comments:**
   - I appreciate the relative simplicity given the complexity of the subject.
   - Superior.
   - Very clear.

2. **Cheiron's answers to questions raised by the Board are clear, timely, and complete**
   **Comments:**
   - Always insightful.
   - Again-very clear explanation.

3. **Cheiron's recommendations are very important to the Board of Retirement**
   **Comments:**
   - If not important then why have them?
   - Very appreciated.
   - Excellent work from our advisors.

4. **Data presented by Cheiron supports the recommendations of the actuaries**
   **Comments:**
   - How would I know if they didn't? (LOL)

5. **As a trustee, I am comfortable with the actuarial recommendations made by Cheiron to the Board**
   **Comments:**
   - Excellent work

6. **Cheiron keeps the Board informed of events affecting the Retirement System's overall status**
   **Comments:**
   - Superior foresight, excellent anticipating future issues/problems for the fund

Cheiron Consulting Services Evaluations 2015

*The comments reflect the views of individual trustees and not necessarily the views of the entire Board.*
7. I would like to see changes in presentations/materials from the actuaries as follows:
   Comments:
   I appreciate the way our actuaries do the co-presentation.
   Information is good.

8. I see Cheiron's consulting style with the Board as:
   a. Leading the discussion 2
   b. Following the policy set by the Board 3
   c. Working as a co-fiduciary with the Board 6
   d. Innovating solutions 4
   Comments:
   Should be all.

9. The consulting role I would prefer from Cheiron is:
   a. Leading the discussion 3
   b. Following the policy set by the Board 3
   c. Working as a co-fiduciary with the Board 6
   d. Innovating solutions 6
   e. Other (please describe)
   Comments:
   Comfortable with current working style.

RATING SCALE:

10. I have no concerns with Cheiron as a firm. If you "disagree" (2 or less), please explain.

                    Responses  Avg. Rating
   I don't know Cheiron as a firm; I know Bob and Graham. 6  4.83

11. I have no concerns with the consulting actuaries assigned to SJCERA? If you "disagree" (2 or less), please explain.

                    Responses  Avg. Rating
   Comments: Bob and Graham are great.
   High quality. I greatly appreciate our advisors. 7  5.00

Cheiron Consulting Services Evaluations 2015

The comments reflect the views of individual trustees and not necessarily the views of the entire Board.
RATING SCALE:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
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<td>(3)</td>
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12. I think there is a need for more training by the actuary on the fundamentals of plan funding and cost

Comments:
I think we all understand actuarial science.
I think they've done a pretty good job on training.

13. The plan and/or funding issues or areas of concern I would like the actuary to address in the next twelve months are:
(Please rank in order of importance to you with "1" the highest priority)

RANK

SJCERA Funding Policy
Impact of 2012 Pension Reform Act
Volatility of employer contributions
Mortality assumptions and experience
Economic Assumptions (real rate of return, inflation, etc.)
"Stable Funding" (asset/liability matching as introduced May 2008)

Other (please describe below and rank):
I am not very committed to those rankings.
Economic Assumptions (real rate of return, inflation, etc.) = least disruptive ways to lower assumed investment returns (current not realistic for future)

14. What additional information or services would you like to see from the actuaries?

(No)

15. Other remarks:
I think they know their stuff.
Keep up the good work!
Pleased with the actuaries.
Pension Consulting Alliance, LLC. Evaluations 2015

The comments reflect the views of individual trustees and not necessarily the views of the entire Board.

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**RATING SCALE:**

| 1. | The written reports prepared by PCA are timely, accurate, useful, and clear | Responses: 7 | Avg. Rating: 4.71 |
| 2. | PCA’s answers to questions raised by the Board are clear, timely, and complete | Responses: 7 | Avg. Rating: 5.00 |
| 3. | PCA’s recommendations are very important to the Board of Retirement | Responses: 7 | Avg. Rating: 5.00 |
| 4. | Data presented by PCA supports the recommendations of the consultant | Responses: 6 | Avg. Rating: 4.83 |
| 5. | As a trustee, I am comfortable with the consultant recommendations to the Board | Responses: 7 | Avg. Rating: 4.86 |

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Pension Consulting Alliance, LLC. Evaluations 2015

*The comments reflect the views of individual trustees and not necessarily the views of the entire Board.*
RATING SCALE:

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<td>(3)</td>
<td>(2)</td>
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<tr>
<td>6.</td>
<td>PCA keeps the Board informed of events affecting the fund’s investments.</td>
<td>Responses</td>
<td>6</td>
<td>Avg. Rating</td>
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<tr>
<td>Comments:</td>
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<tr>
<td></td>
<td>Been a smooth transition from former consultant.</td>
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<td></td>
<td>I think everything is still too new to assess.</td>
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<td></td>
<td>Contact is good - I like the two way dialogue.</td>
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<tr>
<td>7.</td>
<td>Is it important to meet with the consultant every month?</td>
<td>Responses</td>
<td>7</td>
<td>Avg. Rating</td>
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<td>Comments:</td>
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<tr>
<td></td>
<td>As necessary, even sooner if issue or opportunity needs immediate attention.</td>
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<tr>
<td></td>
<td>Very important.</td>
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<td>8.</td>
<td>I would like to see changes in presentations/materials from the consultant as follows:</td>
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<td></td>
<td>I review the agenda before the meeting, give news, don’t review what I already read.</td>
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</table>

Out of seven Trustees who responded to question 9, the following shows the number of Trustees who marked each option

9. I see PCA’s consulting style with the Board as:
   a. Leading the discussion | 3  |
   b. Following the policy set by the board | 4  |
   c. Working as a co-fiduciary with the Board | 7  |
   d. Innovating solutions | 4  |
   Comments: |   |
   Should be all. |   |

Out of seven Trustees who responded to question 10, the following shows the number of Trustees who marked each option

10. The consulting style I would prefer from PCA is:
   a. Leading the discussion | 3  |
   b. Following the policy set by the board | 4  |
   c. Working as a co-fiduciary with the Board | 7  |
   d. Innovating solutions | 4  |
   e. Other (none) |   |
   Comments: |   |
   Should be all. |   |
   Satisfied with current arrangement. |   |
11. The investment issues or areas of concern I would like the consultant to address in the next twelve months are:
   Economic forecast and basis for that.
   1) What do we own that we shouldn't? How do we get rid of those assets?
   2) Continue to evaluate and monitor risk so we get a better idea of our risk adjusted return.
   How can we continue at 7.5 when our plan is projected to return less than 7.5?
   Consider more income generating investments vs hold for appreciation, project completion. Move/Focus on CRO- downturn in equity market and/or bond market or investment class.
   Looking at trends and changes we've made. Rechecking our actions. We don't seem to look back at our actions.
   Down side risk control. Earning the assumed rate with low equity exposure and pursuing higher than risk-free (Treasuries) coupon earnings.

   RATING SCALE:

   12. I think there is a need for more training by the consultant in investment risk/return analysis and less focus on individual manager performance.
   Comments:
   Don't think this is Consultant's job; should be Board's.
   I prefer to have an 'acceptable' return at lower risk than a higher return at often much higher risk.
   I think reminding ourselves of "why" we sought diversification and lower risk is important when we're dissatisfied with return.

   13. I think the 2015 Asset Liability Study has been useful and I am satisfied with the process.
   If you "disagree" (2 or less), please explain.
   Comments:
   So far.
   I am a bit perplexed as to why we might be considering ignoring the asset allocation suggestions; i.e., more money to credit when the ALS indicated reducing money in credit.
   Aggregating/Limiting bucket classes has been good idea like CRO analysis.
   I think reviewing the Assets/Liabilities is important. Especially as we start the relationship with new consultants.

   14. I have no concerns with PCA as a firm.
   If you "disagree" (2 or less), please explain.
   Comments:
   I always have concerns.
   Performance commendable for time involved.

   15. I have no concerns with the consultants assigned to SJCERA? If you "disagree" (2 or less), please explain.
   Comments:
   I always have concerns, however, I am very satisfied with David and John

The comments reflect the views of individual trustees and not necessarily the views of the entire Board.
Other remarks:

- David and John should keep up their resistance to Board and for staff efforts to direct dollars to old favorites. I'd like to see PCA weigh in more on the RE recommendations.
- David and John are doing a good job of updating our portfolio.
- This was a good move by our Board.
The comments reflect the views of individual trustees and not necessarily the views of the entire Real Estate Committee.
RATING SCALE:

<table>
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7. Is it important to meet with the consultant every quarter?
   Comments:
   Or as soon as feasible if opportunity arises with short window.
   
8. I would like to see changes in presentations/materials from the consultant as follows:
   The Consultant needs to be more open to legitimate SJCERA questions and concerns.
   
   Out of four Trustees who responded to question 9, the following shows the number of Trustees who marked each option

   Out of three Trustees who responded to question 10, the following shows the number of Trustees who marked each option

9. I see CP’s consulting style with the RE Committee as:
   a. Leading the discussion
   b. Following the policy set by the board
   c. Working as a co-fiduciary with the Board
   d. Innovating solutions
   Comments:
   Bringing good ideas.
   
10. The consulting style I would prefer from CP is:
    a. Leading the discussion
    b. Following the policy set by the board
    c. Working as a co-fiduciary with the Board
    d. Innovating solutions
    e. Other (please describe)
    Comments:
    No changes to current interaction with Board.
    
11. The real estate investment issues or areas of concern I would like the consultant to address in the next twelve month are:
    Risk and performance metrics. How can we better standardize data so we can tell who is/has or has not helped us meet our assumed rate of return. How can we better analyze costs/fees, etc. How can we get more LP friendly terms. Who, if anyone, out there is best aligned with us?
    Cash flow, income generating vs. hold for appreciation, project completion. Possible expansion of opportunistic 'RE' participation in funds like Morgan Creek.

Courtland Consulting Services Evaluations 2015

The comments reflect the views of individual trustees and not necessarily the views of the entire Real Estate Committee.
12. I think there is a need for more training by the consultant in investment risk/return analysis and less focus on individual manager performance.
Comments: (None)

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<tr>
<td>Responses</td>
<td>3</td>
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<tr>
<td>Avg. Rating</td>
<td>4.33</td>
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</table>

13. I have no concerns with CP as a firm.
If you "disagree" (2 or less), please explain.
Comments: (None)

| Responses     | 3              |                  |     |     |     |
| Avg. Rating   | 3.33           |                  |     |     |     |

14. I have no concerns with the consultant assigned to SJCERA. If you "disagree" (2 or less), please explain.
Comments: (None)

| Responses     | 3              |                  |     |     |     |
| Avg. Rating   | 4.00           |                  |     |     |     |

15. Other remarks:
Room for improvement.

Sorry to see Joe "retire." No concerns so far.

The comments reflect the views of individual trustees and not necessarily the views of the entire Real Estate Committee.
Takeaways

- Market growth concerns compounded as the Federal Reserve decided not to raise interest rates in September.

- The VIX settled down somewhat, averaging 24 in September, after hitting 40 in August. 24 is above the average reading of 20.

- U.S. public equity valuations dropped below top decile levels on price declines, while U.S. private equity and private real estate continue to register top decile valuation levels, albeit on lagging price measures.

- U.S. credit spreads widened further in September and Treasury interest rates fell, as growth concerns grew.

- International equity valuations fell further below their historical average valuation levels, cheap relative to U.S. valuation levels.

- Commodity prices continued their five-year decline, and 10-year breakeven inflation levels dropped below 1.4%, a level of anticipated inflation not seen since the 2008 global financial crisis.

- The PCA Market Sentiment Indicator flipped to negative at month end. The spread element of the indicator was negative since last year. Now, year-over-year equity returns have turned negative as well. (page 4)

- While not a market timing indicator, should this negative reading be confirmed for a couple of months, client should consider this to be a less favorable growth environment.

1See Appendix for the rationale for selection and calculation methodology used for the risk metrics.
Risk Overview

Valuation Metrics versus Historical Range
A Measure of Risk

Top Decile
Average
Bottom Decile

US Equity (page 5)  Dev ex-US Equity (page 5)  EM Equity Relative to DM Equity (page 6)  Private Equity (page 6)  Private Real Estate Cap Rate (page 7)  Private Real Estate Spread (page 7)  US IG Corp Debt Spread (page 8)  US High Yield Debt Spread (page 8)

Unfavorable Pricing  Neutral  Favorable Pricing

Other Important Metrics within their Historical Ranges
Pay Attention to Extreme Readings

Top Decile
Average
Bottom Decile

Equity Volatility (page 9)  Yield Curve Slope (page 9)  Breakeven Inflation (page 10)  Interest Rate Risk (page 11)

Attention!  Neutral  Attention!
Market Sentiment

PCA Market Sentiment Indicator (1995-Present)

- Positive
- Neutral
- Negative

Avoid Growth Risk  Growth Risk Neutral  Embrace Growth Risk  PCA Sentiment Indicator

PCA Market Sentiment Indicator - Most Recent 3-Year Period

- Positive
- Neutral
- Negative

Avoid Growth Risk  Growth Risk Neutral  Embrace Growth Risk  PCA Sentiment Indicator

Bond Spread Momentum Trailing-Twelve Months: Negative
Equity Return Momentum Trailing-Twelve Months: Negative
Agreement Between Bond Spread and Equity Spread Momentum Measures?: Agree

Growth Risk Visibility (Current Overall Sentiment): Negative
Developed Public Equity Markets

U.S. Equity Market P/E Ratio\(^1\) versus Long-Term Historical Average

\[\text{US Markets Long-term Average (since 1880)} \quad P/E = 16.6x\]

\[\text{US Markets Current P/E as of 9/2015} = 24.4x\]

(Please note the different time scales)

Developed ex-US Equity Market P/E Ratio\(^1\) versus Long-Term Historical Average\(^2\)

\[\text{Average 1982-9/2015 EAFE Only P/E} = 23.9x\]

\[\text{Long-Term Average Historical}^2 \quad P/E = 16.9x\]

\[\text{Intl Developed Markets Current P/E as of 9/2015} = 13.3x\]

\(^1\) P/E ratio is a Shiller P/E-10 based on 10 year real S&P 500 earnings over S&P 500 index level.

\(^2\) To calculate the LT historical average, from 1881 to 1982 U.S. data is used as developed market proxy. From 1982 to present, actual developed ex-US market data (MSCI EAFE) is used.
Emerging Market Public Equity Markets

Emerging Markets PE / Developed Markets PE (100% = Parity between PE Ratios)

- Russian Crisis, LTCM implosion, currency devaluations
- Mexican Peso Crisis
- Technology and Telecom Crash
- World Financial Crisis
- EM/DM relative PE ratio is slightly below the historical average
- Commodity price runup

Source: Bloomberg, MSCI World, MSCI EMF

US Private Equity

Price to EBITDA Multiples Paid in LBOs

- Multiples have risen above the pre-crisis highs.

Source: S&P LCD study, data presented is on 1-month lag

Disclosed U.S. Quarterly Deal Volume*

- Deal volume remains in an upward trend.

Source: Thomson Reuters Buyouts
* quarterly total deal size (both equity and debt)
Private Real Estate Markets

Monthly Report - October 2015
Quarterly Data, Updated to June 30th

**Core Real Estate Current Value Cap Rates**

[Graph showing cap rates from 1993 to 2015]

- Core Cap Rate
- LT Average Cap Rate
- 10 Year Treasury Rate

Core real estate cap rates remain low by historical standards (expensive).

**Core Cap Rate Spread over 10-Year Treasury Interest Rate**

[Graph showing spread from 1993 to 2015]

- Core Cap Rate Spread to Treasuries
- LT Average Spread

Spread to the 10-year Treasury narrowed due to recent rise of U.S. interest rates.

**Transactions as a % of Market Value Trailing-Four Quarters**

(a measure of property turnover activity)

[Graph showing percentage from 1993 to 2015]

Activity has plateaued over the last 2-year period.

Sources: NCRIEF, www.ustreas.gov

1 A cap rate is the current annual income of the property divided by an estimate of the current value of the property. It is the current yield of the property. Low cap rates indicate high valuations.
Credit Markets US Fixed Income

**Investment Grade Corporate Bond Spreads**

Investment grade spreads widened during September, ending the month slightly above the long-term average level.

Source: LehmanLive: Barclays Capital US Corporate Investment Grade Index Intermediate Component.

**High Yield Corporate Bond Spreads**

High yield spreads widened materially during September, ending the month well above the long-term average level.

Source: LehmanLive: Barclays Capital U.S. Corporate High Yield Index.
**Other Market Metrics**

**VIX - a measure of equity market fear / uncertainty**

Equity market volatility (VIX) remained elevated in September, varying within the 20-30 range throughout the month and ending slightly above the long-term average level (≈ 20) at 24.5.


**Yield Curve Slope**

The average 10-year Treasury interest rate was unchanged in September. The average short-term rate (the one-year Treasury) was also unchanged and remains at low levels (≈ 40 bps). The yield curve remains upward sloping.

Yield curve slopes that are negative (inverted) portend a recession.

Source: [www.ustreas.gov](http://www.ustreas.gov) (10 yr treasury yield minus 1 year treasury yield)

Measures of Inflation Expectations

10-Year Breakeven Inflation
(10-year nominal Treasury yield minus 10-year TIPS yield)

Breakeven inflation ended September at 1.41%, decreasing from the end of August. The 10-year TIPS real-yield increased to 0.65%, and the nominal 10-year Treasury yield decreased to 2.06%.

Source: www.ustreas.gov

(Please note the different time scales)

Inflation Adjusted Dow Jones UBS Commodity Price Index (1991 = 100)

Broad commodity prices dropped during September, ending the month at the lowest levels (inflation adjusted) since the dataset began in 1991.

Source: Bloomberg Commodity Index, St. Louis Fed for US CPI all urban consumers.
Measures of U.S. Treasury Interest Rate Risk

**Estimate of 10-Year Treasury Forward-Looking Real Yield**

The forward-looking annual real yield on 10-year Treasuries is estimated at approximately 0.02% real, assuming 10-year annualized inflation of 2.15%* per year.

**10-Year Treasury Duration**

(Change in Treasury price with a change in interest rates)

Interest rate risk is off the 30-year high, but not by much.

If the 10-year Treasury yield rises by 100 basis points from today’s levels, the capital loss from the change in price is expected to be -8.9%.

*Sources: www.ustreas.gov for 10-year constant maturity rates
*Federal Reserve Bank of Philadelphia survey of professional forecasts for inflation estimates
Appendix

METRIC DESCRIPTION, RATIONALE FOR SELECTION AND CALCULATION METHODOLOGY

US Equity Markets:
Metric: P/E ratio = Price / “Normalized” earnings for the S&P 500 Index

To represent the price of US equity markets, we have chosen the S&P 500 index. This index has the longest published history of price, is well known, and also has reliable, long-term, published quarterly earnings. The price=P of the P/E ratio is the current price of the market index (the average daily price of the most recent full month for the S&P 500 index). Equity markets are very volatile. Prices fluctuate significantly during normal times and extremely during periods of market stress or euphoria. Therefore, developing a measure of earnings power (E) which is stable is vitally important, if the measure is to provide insight. While equity prices can do double, or get cut in half, real earnings power does not change nearly as much. Therefore, we have selected a well known measure of real, stable earnings power developed by Yale Professor Robert Shiller known as the Shiller E-10. The calculation of E-10 is simply the average real annual earnings over the past 10 years. Over 10 years, the earnings shenanigans and boom and bust levels of earnings tend to even out (and often times get restated). Therefore, this earnings statistic gives a reasonably stable, slow-to-change estimate of average real earnings power for the index. Professor Shiller’s data and calculation of the E-10 are available on his website at http://www.econ.yale.edu/~shiller/data.htm. We have used his data as the base for our calculations. Details of the theoretical justification behind the measure can be found in his book Irrational Exuberance [Princeton University Press 2000, Broadway Books 2001, 2nd ed., 2005].

 Developed Equity Markets Excluding the US:
Metric: P/E ratio = Price / “Normalized” earnings for the MSCI EAFE Index

To represent the price of non-US developed equity markets, we have chosen the MSCI EAFE index. This index has the longest published history of price for non-US developed equities. The price=P of the P/E ratio is the current price of the market index (the average daily price of the most recent full month for the MSCI EAFE index). The price level of this index is available starting in December 1969. Again, for the reasons described above, we elected to use the Shiller E-10 as our measure of earnings (E). Since 12/1972, a monthly price earnings ratio is available from MSCI. Using this quoted ratio, we have backed out the implied trailing-twelve month earnings of the EAFE index for each month from 12/1972 to the present. These annualized earnings are then inflation adjusted using CPI-U to represent real earnings in US dollar terms for each time period. The Shiller E-10 for the EAFE index (10 year average real earnings) is calculated in the same manner as detailed above.

However, we do not believe that the pricing and earnings history of the EAFE markets are long enough to be a reliable representation of pricing history for developed market equities outside of the US. Therefore, in constructing the Long-Term Average Historical P/E for developed ex-US equities for comparison purposes, we have elected to use the US equity market as a developed market proxy, from 1881 to 1982. This lowers the Long-Term Average Historical P/E considerably. We believe this methodology provides a more realistic historical comparison for a market with a relatively short history.
Appendix

METRIC DESCRIPTION, RATIONALE FOR SELECTION AND CALCULATION METHODOLOGY

Emerging Market Equity Markets:
Metric: Ratio of Emerging Market P/E Ratio to Developed Market P/E Ratio

To represent the Emerging Markets P/E Ratio, we have chosen the MSCI Emerging Market Free Index, which has P/E data back to January 1995 on Bloomberg. To represent the Developed Markets PE Ratio, we have chosen the MSCI World Index, which also has data back to January 1995 on Bloomberg. Although there are issues with published, single time period P/E ratios, in which the denominator effect can cause large movements, we feel that the information contained in such movements will alert investors to market activity that they will want to interpret.

US Private Equity Markets:
Metrics: S&P LCD Average EBITDA Multiples Paid in LBOs and US Quarterly Deal Volume

The Average Purchase Price to EBITDA multiples paid in LBOs is published quarterly by S&P in their LCD study. This is the total price paid (both equity and debt) over the trailing-twelve month EBITDA (earnings before interest, taxes, depreciation and amortization) as calculated by S&P LCD. This is the relevant, high-level pricing metric that private equity managers use in assessing deals. Data is published monthly. US quarterly deal volume for private equity is the total deal volume in $ billions (both equity and debt) reported in the quarter by Thomson Reuters Buyouts. This metric gives a measure of the level of activity in the market. Data is published quarterly.

U.S Private Real Estate Markets:
Metrics: US Cap Rates, Cap Rate Spreads, and Transactions as a % of Market Value

Real estate cap rates are a measure of the price paid in the market to acquire properties versus their annualized income generation before financing costs (NOI=net operating income). The data, published by NCREIF, describes completed and leased properties (core) on an unleveraged basis. We chose to use current value cap rates. These are capitalization rates from properties that were revalued during the quarter. This data relies on estimates of value and therefore tends to be lagging (estimated prices are slower to rise and slower to fall than transaction prices). The data is published quarterly. Spreads between the cap rate (described above) and the 10-year nominal Treasury yield, indicate a measure of the cost of properties versus a current measure of the cost of financing. Transactions as a % of Market Value Trailing-Four Quarters is a measure of property turnover activity in the NCREIF Universe. This quarterly metric is a measure of activity in the market.

Credit Markets US Fixed Income:
Metric: Spreads

The absolute level of spreads over treasuries and spread trends (widening / narrowing) are good indicators of credit risk in the fixed income markets. Spreads incorporate estimates of future default, but can also be driven by technical dislocations in the fixed income markets. Abnormally narrow spreads (relative to historical levels) indicate higher levels of valuation risk; wide spreads indicate lower levels of valuation risk and / or elevated default fears. Investment grade bond spreads are represented by the Barclays Capital US Corporate Investment Grade Index Intermediate Component. The high yield corporate bond spreads are represented by the Barclays Capital US Corporate High Yield Index.
**Metric Description, Rationale for Selection and Calculation Methodology**

**Measure of Equity Market Fear / Uncertainty**  
**Metric:** VIX – Measure of implied option volatility for U.S. equity markets  

The VIX is a key measure of near-term volatility conveyed by implied volatility of S&P 500 index option prices. VIX increases with uncertainty and fear. Stocks and the VIX are negatively correlated. Volatility tends to spike when equity markets fall.

**Measure of Monetary Policy**  
**Metric:** Yield Curve Slope  

We calculate the yield curve slope as the 10 year treasury yield minus the 1 year treasury yield. When the yield curve slope is zero or negative, this is a signal to pay attention. A negative yield curve slope signals lower rates in the future, caused by a contraction in economic activity. Recessions are typically preceded by an inverted (negatively sloped) yield curve. A very steep yield curve (2 or greater) indicates a large difference between shorter-term interest rates (the 1 year rate) and longer-term rates (the 10 year rate). This can signal expansion in economic activity in the future, or merely higher future interest rates.

**Measures of US Inflation Expectations**  
**Metrics:** Breakeven Inflation and Inflation Adjusted Commodity Prices  

Inflation is a very important indicator impacting all assets and financial instruments. Breakeven inflation is calculated as the 10 year nominal treasury yield minus the 10 year real yield on US TIPS (treasury inflation protected securities). Abnormally low long-term inflation expectations are indicative of deflationary fears. A rapid rise in breakeven inflation indicates an acceleration in inflationary expectations as market participants sell nominal treasuries and buy TIPS. If breakeven inflation continues to rise quarter over quarter, this is a signal of inflationary worries rising, which may cause Fed action and / or dollar decline. Commodity price movement (above the rate of inflation) is an indication of anticipated inflation caused by real global economic activity putting pressure on resource prices. We calculate this metric by adjusted in the Dow Jones UBS Commodity Index (formerly Dow Jones AIG Commodity Index) by US CPI-U. While rising commodity prices will not necessarily translate to higher US inflation, higher US inflation will likely show up in higher commodity prices, particularly if world economic activity is robust. These two measures of anticipated inflation can, and often are, conflicting.

**Measures of US Treasury Bond Interest Rate Risk**  
**Metrics:** 10-Year Treasury Forward-Looking Real Yield and 10-Year Treasury Duration  

The expected annualized real yield of the 10 year U.S. Treasury Bond is a measure of valuation risk for U.S. Treasuries. A low real yield means investors will accept a low rate of expected return for the certainly of receiving their nominal cash flows. PCA estimates the expected annualized real yield by subtracting an estimate of expected 10 year inflation (produced by the Survey of Professional Forecasters as collected by the Federal Reserve Bank of Philadelphia), from the 10 year Treasury constant maturity interest rate. Duration for the 10-Year Treasury Bond is calculated based on the current yield and a price of 100. This is a measure of expected percentage movements in the price of the bond based on small movements in percentage yield. We make no attempt to account for convexity.

Definition of “extreme” metric readings  

A metric reading is defined as “extreme” if the metric reading is in the top or bottom decile of its historical readings. These “extreme” reading should cause the reader to pay attention. These metrics have reverted toward their mean values in the past.
PCA Market Sentiment Indicator

Explanation, Construction and Q&A

By:

Pension Consulting Alliance, LLC.

John Linder, CFA, CPA
Neil Rue, CFA

PCA has created the PCA Market Sentiment Indicator (PMSI) to complement our valuation-focused PCA Investment Market Risk Metrics. This measure of sentiment is meant to capture significant and persistent shifts in long-lived market trends of economic growth risk, either towards a risk-seeking trend or a risk-aversion trend.

This paper explores:

- What is the PCA Market Sentiment Indicator (PMSI)?
- How do I read the indicator graph?
- How is the PCA Market Sentiment Indicator (PMSI) constructed?
- What do changes in the indicator mean?
PCA has created a market sentiment indicator for monthly publication (the PMSI – see below) to complement PCA’s Investment Market Risk Metrics.

PCA’s Investment Market Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk concerns long before a market corrections take place. The PMSI helps to address this early-warning bias by measuring whether the markets are beginning to acknowledge key Risk Metrics trends, and / or indicating non-valuation based concerns. Once the PMSI indicates that the market sentiment has shifted, it is our belief that investors should consider significant action, particularly if confirmed by the Risk Metrics. Importantly, PCA believes the Risk Metrics and PMSI should always be used in conjunction with one another and never in isolation.

The questions and answers below highlight and discuss the basic underpinnings of the PCA PMSI:

What is the PCA Market Sentiment Indicator (PMSI)?
The PMSI is a measure meant to gauge the market’s sentiment regarding economic growth risk. Growth risk cuts across most financial assets, and is the largest risk exposure that most portfolios bear. The PMSI takes into account the momentum (trend over time, positive or negative) of the economic growth risk exposure of publicly traded stocks and bonds, as a signal of the future direction of growth risk returns; either positive (risk seeking market sentiment), or negative (risk averse market sentiment).

How do I read the PCA Market Sentiment Indicator (PMSI) graph?
Simply put, the PMSI is a color coded indicator that signals the market’s sentiment regarding economic growth risk. It is read left to right chronologically. A green indicator on the PMSI indicates that the market’s sentiment towards growth risk is positive. A gray indicator indicates that the market’s sentiment towards growth risk is neutral or inconclusive. A red indicator indicates that the market’s sentiment towards growth risk is negative. The black line on the graph is the level of the PMSI. The degree of the signal above or below the neutral reading is an indication the signal’s current strength.

Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.
PCA Market Sentiment Indicator

How is the PCA Market Sentiment Indicator (PMSI) Constructed?

The PMSI is constructed from two sub-elements representing investor sentiment in stocks and bonds:

1. Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months)
2. Bond yield spread momentum: Momentum of bond yield spreads (excess of the measured bond yield over the identical duration U.S. Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight). The scale of this measure is adjusted to match that of the stock return momentum measure.

The black line reading on the graph is calculated as the average of the stock return momentum measure and the bonds spread momentum measure. The color reading on the graph is determined as follows:

1. If both stock return momentum and bond spread momentum are positive = GREEN (positive)
2. If one of the momentum indicators is positive, and the other negative = GRAY (inconclusive)
3. If both stock return momentum and bond spread momentum are negative = RED (negative)

What does the PCA Market Sentiment Indicator (PMSI) mean? Why might it be useful?

There is strong evidence that time series momentum is significant and persistent. In particular, across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12 month period. The PMSI is constructed to measure this momentum in stocks and corporate bond spreads. A reading of green or red is agreement of both the equity and bond measures, indicating that it is likely that this trend (positive or negative) will continue over the next 12 months. When the measures disagree, the indicator turns gray. A gray reading does not necessarily mean a new trend is occurring, as the indicator may move back to green, or into the red from there. The level of the reading (black line) and the number of months at the red or green reading, gives the user additional information on which to form an opinion, and potentially take action.

1 Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.

ii “Time Series Momentum” Moskowitz, Ooi, Pedersen, August 2010
<table>
<thead>
<tr>
<th>Manager</th>
<th>Asset Class</th>
<th>Under Review</th>
<th>Last Rvw</th>
<th>Next Rvw</th>
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<th>Most Recent Visit to PCA</th>
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*General PCA On-Site Review
Date: October 23, 2015

To: SJCERA Board of Retirement

From: Pension Consulting Alliance, LLC (PCA)

CC: John Linder - PCA  
    David Sancewich - PCA  
    Annette St. Urbain - SJCERA  
    Nancy Calkins - SJCERA

RE: Parametric Policy Implementation Overlay Service (PIOS)

Recommendations:

Per PCA’s review of the Parametric Policy Implementation Overlay Service (PIOS), PCA believes that the strategy is a useful portfolio allocation management tool, providing liquidity and facilitating seamless cash employment into non-cash strategic classes. PCA recommends a continuation of Parametric’s overlay services. However, we believe that a review of rebalancing policy should be conducted within the next 12 months.

Recap of PCA’s onsite meeting with Parametric, to review PIOS:

<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>September 8, 2015</th>
</tr>
</thead>
</table>
| **Manager Attendees** | Thomas Lee, Managing Director – Investment Strategy & Research  
                          Jason Nelson, CFA, Assistant Portfolio Manager  
                          Adam Swinney, investment Analyst  
                          Chris Haskamp, CFA, Senior Portfolio Manager |
| **PCA Attendees** | John Linder, Principal |

Summary and Findings

John Linder (PCA) met with Parametric on September 8, 2015 at their in Minneapolis, MN, offices to conduct an onsite review of the organization and to review the PIOS service that Parametric implements on behalf of SJCERA.

The strength of the Parametric organization is implementation. They are good at implementing what clients direct them to implement, seamlessly and without error. PCA believes that they do this well at reasonable cost.
Key Meeting Takeaways / Onsite Observations

- Tom Lee, on the client service side, is very attuned to client needs.
- The interface with Staff is daily. A file is received each day with the physical asset values of the portfolio, and compared against the overlay instructions.
- Utilize exchange-traded futures only to implement the overlay. 100% liquid.
- Illiquid exposures, and risk parity assets, are not included
- Rebalance the remainder of the portfolio (fixed income, public equity, commodities, and TIPS) back to policy weights when the portfolio deviates > 15% from policy.
- Overlay positions are backed by cash.
- For fixed income replication, only Treasury futures are used. They adjust only the duration to that of the BC Aggregate. This is reasonable.
- For TIPS, there is no Futures market. Utilize the 2-year Treasury future as a proxy, per discussion with Bridgewater. This is probably worth reviewing in the future.
- The overlay allows staff to run the portfolio at a higher level of liquidity and cash availability, than if they didn’t have the PIOS overlay.

Organizational Overview

The Clifton Group, founded in 1972 in Minneapolis, had a high net worth focus. Partners were focused on taxes of high net worth individuals. Clifton reformed (started over) in 1987, going after institutional clients. Their first institutional client was Wisconsin Power & Light, for whom they ran a tactical asset allocation strategy using derivatives. In 1994/1995, they introduced the Policy Implementation Overlay Service (PIOS) cash equitization strategy. At that time, the goal was to eliminate “cash drag”, but also permitted easy rebalancing, in a cost effective and disciplined manner.

In 2006, started working with State of Wisconsin Investment Board (SWIB). SWIB wanted a more risk balanced portfolio (towards risk parity), but wanted to keep their underlying active equity and fixed income managers. Again, Clifton Group was able to implement what SWIB wanted, according to their specs.

In 2012, Clifton Group sold to Parametric, and became a fully owned subsidiary of Eaton Vance, a publically traded company. The owners of Clifton rolled their ownership into Parametric stock. Five more key employees were made equity owners, making eight total equity owners at the former Clifton group in Minneapolis. Eaton Vance owns 93% of Parametric, and Parametric owns 100% of the former Clifton Group. There are puts on Parametric equity back to Eaton Vance.
The Minneapolis office of Parametric (the former Clifton Group) operates independently of Seattle, where Parametric was historically based, but they cooperate. Parametric’s commodity strategy is run out of Minneapolis.

Parametric has a total of 76 investment professionals (300 total employees) across the firm, with 26 investment professionals in Minneapolis, 40 in Seattle, and 10 in Westport, CT. Parametric has $95 billion in assets under management. Clients include 20 public funds, including 9 California public fund clients.

In late September, Brad Berggren, Managing Director and CIO of the Westport Investment Center, announced his plans to retire from Parametric, at the end of fiscal 2016, to pursue personal interests outside of the investment industry. As the first step of this transition, Parametric is making the following changes effective November 1, 2015.

- Kip Chaffee, Managing Principal for the Minneapolis Investment Center, will add the role of Managing Principal of the Westport Investment Center.
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Over the course of fiscal 2016, Mr. Berggren will transition these management responsibilities fully to Tom Lee. Mr. Lee will maintain his current role relative to Minneapolis investment strategies.

**Investment Philosophy / Value Add**

The philosophy is focused on implementation. Parametric implements client instructions well. Their systems are setup around this concept of risk managed, error-free implementation. Parametric can focus on reducing tracking error to policy, or implementing rebalancing policy for the client based on client specifications, ignoring tracking error. Regardless, their strength is in implementing the client’s policy, allowing staff to focus on other duties beyond policy rebalancing. They serve as an extension of staff.

**Pros:**

1. Excellent implementer of policy
2. Do what you ask them to
3. Low cost
4. Extension of staff
5. Good to work with
6. Provides a liquidity source and flexibility
7. Experienced senior team

Cons:
1. No alpha outside of rebalancing expectations
2. Recent client service turnover
3. Parametric is now a small part of a public company

Recommendation:
Per PCA’s review of manager provided documents, an onsite visit to the manager’s headquarters, interviews of manager staff, and a review of historical strategy implementation; PCA believes that the PIOS Overlay is an effective tool for portfolio management, and Parametric is an effective implementer. PCA recommends continuation of Parametric’s overlay services. However, we believe that a review of rebalancing policy should be conducted within the next 12 months.
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While PCA has reviewed the terms of the Fund referred to in this document and other accompanying financial information on predecessor partnerships, this document does not constitute a formal legal review of the partnership terms and other legal documents pertaining to the Fund. PCA recommends that its clients retain separate legal and tax counsel to review the legal and tax aspects and risks of investing in the Fund. Information presented in this report was gathered from documents provided by third party sources, including but not limited to, the private placement memorandum and related updates, due diligence responses, marketing presentations, limited partnership agreement and other supplemental materials. Analysis of information was performed by PCA.

An investment in the Fund is speculative and involves a degree of risk and no assurance can be provided that the investment objectives of the Fund will be achieved. Investment in the Fund is suitable only for sophisticated investors who are in a position to tolerate such risk and satisfy themselves that such investment is appropriate for them. The Fund may lack diversification, thereby increasing the risk of loss, and the Fund’s performance may be volatile. As a result, an investor could lose all or a substantial amount of its investment. The Fund’s governing documents will contain descriptions of certain of the risks associated with an investment in the Fund. In addition, the Fund’s fees and expenses may offset its profits. It is unlikely that there will be a secondary market for the shares. There are restrictions on redeeming and transferring shares of the Fund. In making an investment decision, you must rely on your own examination of the Fund and the terms of the offering.
Date: October 23, 2015

To: SJCERA Board of Retirement

From: Pension Consulting Alliance, LLC (PCA)

CC: John Linder - PCA  
    David Sancewich - PCA  
    Annette St. Urbain - SJCERA  
    Nancy Calkins - SJCERA

RE: Parametric Contraction Strategy

Recommendations:

Per PCA’s review of the Parametric Contraction Strategy, PCA believes that the strategy will likely be superseded, when risk parity is reviewed under the revised strategic allocation. By design, the Contraction Strategy is not balanced, only benefiting the portfolio in an environment of below trend growth and above trend inflation. This is a very rare environment. In the meanwhile, there is little expected return to the standing risk exposures of the strategy. PCA believes that the new strategic allocation, expected to be adopted by SJCERA, will provide adequate offset against this rare environment, should it arise, without the ongoing long-term expected return drag. Such offset is expected from the long duration Treasury exposure and the managed futures strategies of the CRO class, in addition to the Risk Parity strategic class.

Recap of PCA’s onsite meeting with Parametric, to review the Contraction Strategy:

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Summary and Findings

John Linder (PCA) met with Parametric on September 8, 2015 at their in Minneapolis, MN, offices to conduct an onsite review of the organization and to review the Contraction Strategy that Parametric implements on behalf of SJCERA.

The strength of the Parametric organization is implementation. They are good at implementing what clients direct them to implement, seamlessly and without error. PCA believes that they do this well, at reasonable cost. However, PCA questions the value of the Contraction Strategy as a long term allocation, given the zero return expectation and that we expect the new strategic allocation to be adopted by SJCERA will include a CRO class and a Risk Parity class, that provide offset against an inflationary slow growth environment, should it arise, without the ongoing expected return drag.

Key Meeting Takeaways / Onsite Observations

- Tom Lee, on the client service side, is attuned to client needs.
- Utilize exchange-traded futures and liquid physical instruments (global inflation-linked bonds US Dollar hedged) to implement the overlay. 100% liquid.
- A “completion” portfolio of exposures SJCERA did not have enough of elsewhere to offset growth risk.
- The strategy was run at 300% leverage (15% volatility) when incepted in March 2012, reduced to 150% leverage (7.5% volatility) in 2014.
- Since inception, equities and nominal fixed income have performed well. Commodities and Inflation Protected Securities have performed poorly.
- Since inception returns to active risk taking are negative.

Organizational Overview

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Over the course of fiscal 2016, Mr. Berggren will transition these management responsibilities fully to Tom Lee. Mr. Lee will maintain his current role relative to Minneapolis investment strategies.

**Investment Philosophy / Value Add**

The philosophy is focused on implementation to a benchmark of 24% commodities (DJ/UBS Commodities index ex. Precious Metals), 46% International Sovereign Bonds (Citigroup World Government Bond index ex-US), 40% Global Inflation Linked Bonds ex US, hedged to USD. The benchmark weights to not sum to 100% as this strategy utilizes
moderate leverage. Parametric implements client instructions well. Their systems are setup around this concept of risk managed, error-free implementation.

However, this strategy also has a number of active tilts to it. Active commodity weighting (active term-structure/roll implementation), active bond weightings (equal dollar-weight implementation), active duration (shorter duration than index). PCA believes there are other implementers of active management that are likely better positioned to succeed. The strategy has trailed the implementation benchmark since inception.

Pros:
1. Excellent implementer of policy
2. Do what you ask them to
3. Low cost
4. Good to work with
5. Provides a liquidity source and flexibility
6. Experienced senior team

Cons:
1. Policy benchmark exposure should be rethought given strategic allocation changes that provide contraction offset in the CRO and Risk Parity Classes
2. Parametric is not an active management culture
3. Negative alpha of strategy since inception
4. Recent client service personnel turnover
5. Parametric is now a small part of a public company

Recommendation:

Per PCA’s review of manager provided documents, an onsite visit to the manager’s headquarters, interviews of manager staff, and a review of historical strategy implementation; PCA believes that the Contraction Strategy is not best in class. We believe that a review of the strategy’s policy benchmark should be conducted given the new strategic allocation. It is likely that the strategy will be subsumed in changes to the strategic allocation. Until that time, it is reasonable to maintain the exposure.
Parametric Contraction
August 2015
Custom Benchmark = RB Benchmark

GROWTH OF $100 (Mar 12-Aug 15)

<table>
<thead>
<tr>
<th>Month</th>
<th>S&amp;P 500 R2</th>
<th>RB Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar-12</td>
<td>$100</td>
<td>$100</td>
</tr>
<tr>
<td>Dec-12</td>
<td>$101</td>
<td>$102</td>
</tr>
<tr>
<td>Jun-13</td>
<td>$103</td>
<td>$104</td>
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<tr>
<td>Dec-13</td>
<td>$105</td>
<td>$106</td>
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<tr>
<td>Aug-15</td>
<td>$107</td>
<td>$108</td>
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</table>

MONTHLY DISTRIBUTION OF RETURNS (Apr 12-Aug 15)

PARAMETRIC CONTRACTION

PERFORMANCE STATISTICS

<table>
<thead>
<tr>
<th>Period</th>
<th>Fund</th>
<th>Custom BM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Return, %</td>
<td>-0.93%</td>
<td>0.11%</td>
</tr>
<tr>
<td>Months</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>Beat Month</td>
<td>Jul-12</td>
<td>Jul-12</td>
</tr>
<tr>
<td>Beat Monthly Return</td>
<td>4.43</td>
<td>3.57</td>
</tr>
<tr>
<td>Worst Month</td>
<td>Jun-13</td>
<td>Jun-13</td>
</tr>
<tr>
<td>Worst Monthly Return</td>
<td>-10.78%</td>
<td>-3.57%</td>
</tr>
</tbody>
</table>

RISK STATS (3 Year Annualized)

<table>
<thead>
<tr>
<th></th>
<th>Standard Deviation</th>
<th>Downside Deviation</th>
<th>Sortino Ratio</th>
<th>Sharpe Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fund</td>
<td>10.40%</td>
<td>10.51%</td>
<td>-0.87%</td>
<td>-1.41%</td>
</tr>
<tr>
<td>Custom BM</td>
<td>5.77%</td>
<td>4.34%</td>
<td>-0.11%</td>
<td>-0.08%</td>
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</table>

MPT STATISTICS

<table>
<thead>
<tr>
<th></th>
<th>Alpha</th>
<th>Beta</th>
<th>R-Squared</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fund</td>
<td>-12.45%</td>
<td>1.19%</td>
<td>0.4482%</td>
<td>0.78%</td>
</tr>
<tr>
<td>Custom BM</td>
<td>-6.93%</td>
<td>2.75%</td>
<td>0.5388%</td>
<td>0.72%</td>
</tr>
</tbody>
</table>

NOTES:
The Risk Balanced (RB) benchmark is constructed as 27.5% MSCI ACWI IMI, 27.5% Bloomberg Commodity Index, 45.0% Barclays Long Government, rebalanced monthly.
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An investment in the Fund is speculative and involves a degree of risk and no assurance can be provided that the investment objectives of the Fund will be achieved. Investment in the Fund is suitable only for sophisticated investors who are in a position to tolerate such risk and satisfy themselves that such investment is appropriate for them. The Fund may lack diversification, thereby increasing the risk of loss, and the Fund’s performance may be volatile. As a result, an investor could lose all or a substantial amount of its investment. The Fund’s governing documents will contain descriptions of certain of the risks associated with an investment in the Fund. In addition, the Fund’s fees and expenses may offset its profits. It is unlikely that there will be a secondary market for the shares. There are restrictions on redeeming and transferring shares of the Fund. In making an investment decision, you must rely on your own examination of the Fund and the terms of the offering.
## SJCERA - CIO Report October 23, 2015

### Calendar Year 2015 Proposed Topics and Meeting Schedule

<table>
<thead>
<tr>
<th>January 23, 2015</th>
<th>February 27, 2015</th>
<th>March 27, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. General Investment Consultant Interviews</td>
<td>2. Quarterly Reports (Q4)</td>
<td>General Pension Consultant Plan/Transition Transition Data from SIS Asset/Liability Introduction</td>
</tr>
<tr>
<td>3. Discussion on 2015 Roundtable &amp; Due Diligence meetings</td>
<td>3. Real Estate Implementation Plan</td>
<td></td>
</tr>
<tr>
<td>4. RE Committee Meeting Implementation Plan</td>
<td>4. General Pension Consultant Contract</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Managed Futures Account - Mt. Lucas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Funding Policy Cheiron</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. RE Committee Meeting Quarterly Report</td>
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<table>
<thead>
<tr>
<th>April 24, 2015</th>
<th>May 8, 2015</th>
<th>June 26, 2015</th>
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<tbody>
<tr>
<td>Asset/Liability Study- Class Framework</td>
<td>2. Quarterly Reports (Q1)</td>
<td>2. Raven Fund III presentation &amp; due diligence</td>
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<tr>
<td></td>
<td>Model Expected and Behavior for all Classes</td>
<td>3. Initial Asset Liability Modeling Results &amp; Asset Class Discussion PCA/Cheiron</td>
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<tr>
<td></td>
<td></td>
<td>4. Proposed Outline for All Asset Roundtable</td>
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<tr>
<td></td>
<td></td>
<td>5. Quarterly Reports</td>
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<tr>
<td></td>
<td></td>
<td>6. Reports: Monthly Perf. (May), Due Diligence, CIO, Travel, RE Committee</td>
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<tr>
<td></td>
<td></td>
<td>June 4, 2015 RE Committee</td>
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<tr>
<td></td>
<td></td>
<td>Quarterly reports &amp; Real Estate Roundtable</td>
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<tr>
<td></td>
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<td>June 26, 2015 RE Committee</td>
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<tr>
<th>July 24, 2015</th>
<th>August 2015</th>
<th>September 25, 2015</th>
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<tbody>
<tr>
<td>1. Model and Consideration of Various Portfolio Options PCA/Cheiron</td>
<td>August 19 &amp; 20 Financial Board meeting Monthly Perf. (July)</td>
<td>Monthly Perf. (August)</td>
</tr>
<tr>
<td>2. Actuarial Valuation and Funding Policy</td>
<td>Quarterly Reports (Q2) Reports: Due Diligence, CIO, Travel, Education Session on Changing Interest Rates</td>
<td>1. Preliminary Results of A/L Study</td>
</tr>
<tr>
<td></td>
<td>10th Annual Roundtable Event RE Committee Qtrly Report</td>
<td>2. 2015 Roundtable - Summary &amp; Evaluations</td>
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<tr>
<td></td>
<td></td>
<td>4. Actuarial Valuation Report &amp; GASB 67/68</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. PIMCO portfolio review - Rob Arnott</td>
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<tr>
<td></td>
<td></td>
<td>6. Cyber Liability Insurance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sept. 11th Regular Meeting - presentations by Ocean Avenue &amp; Mesa West follow-on funds.</td>
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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Monthly Perf. (September)</td>
<td>Monthly Perf. (September)</td>
<td>Monthly Perf. (October)</td>
</tr>
<tr>
<td>Recommendation / Approval of New Strategic Policy Mix Investment Opportunities - Direct Lending Consultant Evaluations</td>
<td>Quarterly Reports (Q3) Begin Investment Policy Review to Update Policies to Reflect A/L decisions Begin Risk Parity Review Quarterly RE Committee meeting</td>
<td>RE Delegation Policy approval by Board (if needed)</td>
</tr>
<tr>
<td></td>
<td>1. Quarterly Reports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. RE Delegation Policy Review</td>
<td></td>
</tr>
</tbody>
</table>
Topics of Interest to Bring Forward:

Alpha Generation (low correlation to equities)
Asset/Liability Study - March thru October 2015
2015 Follow on Funds

Recent Topics Brought to SJERA Board:
- Agriculture/Farmland - investment opportunities - October 2014
- Venture & Growth Equity Educational Session - October 2014
- Real Assets Structure - May 2014
- Revisit Infrastructure - Educational Session April 2014
  - Continue to Monitor—Look for Right Opportunities; Portfolio Fit
- Operational Due Diligence - March 2014
- Risk Parity Review - February 2014
- Global Opportunistic Strategies - ongoing
- Fixed Income—Floating Rate Notes (Bank Loans) - February 2014
- Real Assets (Education and Manager Structure) Review -
  - Infrastructure - April 2014; AA Policy revision for Real Assets - May 2014
## 2015 CONFERENCES AND EVENTS SCHEDULE

<table>
<thead>
<tr>
<th>EVENT DATES 2015</th>
<th>EVENT TITLE</th>
<th>EVENT SPONSOR</th>
<th>LOCATION</th>
<th>REG. FEE</th>
<th>WEBSITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct 26 Oct 30</td>
<td>Investment Strategies &amp; Portfolio Management</td>
<td>Wharton School of Business</td>
<td>Philadelphia, PA</td>
<td>$10,000</td>
<td>wharton.upenn.edu</td>
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<tr>
<td>Nov 3 Nov 5</td>
<td>Invesco Real Estate US Client Conf</td>
<td>Invesco</td>
<td>La Jolla, CA</td>
<td>N/A</td>
<td>invesco.com</td>
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<tr>
<td>Nov 17 Nov 20</td>
<td>SACRS Fall Conference</td>
<td>SACRS</td>
<td>San Diego, CA</td>
<td>$120</td>
<td>sacrs.org</td>
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<tr>
<td>Dec 9 Dec 11</td>
<td>Alternate Investing Summit</td>
<td>Opal Financial Group</td>
<td>Dana Point, CA</td>
<td>N/A</td>
<td>opalgroup.net</td>
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## 2016 CONFERENCES AND EVENTS SCHEDULE

<table>
<thead>
<tr>
<th>EVENT DATES 2016</th>
<th>EVENT TITLE</th>
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<th>LOCATION</th>
<th>REG. FEE</th>
<th>WEBSITE</th>
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<tbody>
<tr>
<td>Jan 26 Jan 27</td>
<td>Risk and Liquidity Forum</td>
<td>Institutional Investor</td>
<td>San Francisco, CA</td>
<td>N/A</td>
<td><a href="http://www.iiconferences.com/risk&amp;liquidity">www.iiconferences.com/risk&amp;liquidity</a></td>
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<tr>
<td>Jan 27 Jan 29</td>
<td>2015 Visions, Insights &amp; Perspectives (VIP)</td>
<td>Institutional Real Estate Inc.</td>
<td>Carlsbad, CA</td>
<td>N/A</td>
<td>irei.com</td>
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<tr>
<td>Jan 27 Jan 29</td>
<td>Advanced Principles of Pension Management for Trustees at UCLA</td>
<td>CALAPRS</td>
<td>Los Angeles, CA</td>
<td>$3,100</td>
<td>calaprs.org</td>
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<td>Mar 5 Mar 8</td>
<td>CALAPRS General Assembly</td>
<td>CALAPRS</td>
<td>Indian Wells, CA</td>
<td>$100</td>
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<td>Apr 5 Apr 6</td>
<td>Annual Investor Meeting</td>
<td>Miller Global</td>
<td>San Antonio, TX</td>
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<td>Apr 27 Apr 29</td>
<td>2016 Public Funds Roundtable</td>
<td>Institutional Investor</td>
<td>Los Angeles, CA</td>
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<td>institutionalinvestor.com</td>
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Printed 10/14/15 2:39 PM
Conference Day 1: Wednesday, December 9, 2015

7:00 am  Golf Tournament
10:00 am  Registration Opens
12:00 pm  Welcoming Remarks
11:40 pm  SECURITIES FRAUD WHITE COLLAR COORDINATOR
          BOXED LUNCH SERVED
          The presentation is called "The FBI on Wall Street." It encompasses the FBI and SEC's seminal
          and sweeping investigation into insider trading conduct in the hedge fund industry as well as
          collusion with expert networks. The presentation provides an understanding of how the FBI
          became involved, case studies, compliance best practices, use of sophisticated techniques
          (wire taps/undercover operations), and recruitment of cooperators.
          Senior Agent, Federal Bureau of Investigation
12:40 pm  Not just another REIT – A Unique Approach
          CEO, Preferred Apartment Communities, Inc.
1:00 pm   STANDALONE
1:20 pm   STANDALONE
1:40 pm   Are Alternatives the solution? Investor Roundtable
          Moderator: Vice President, Director | MPPP Plan Administrator, Innovest Portfolio Solutions LLC
          Panelists:
          Director of Finance, Victoria University in the University of Toronto
          Chairman, Inter-Local Pension Fund
          President, Cooper Family Office (SFO)
          Acting CIO, Chicago (IL) Policemen's Annuity & Benefit Fund
          Chief Investment Officer, The Laughren Group (SFO)
2:45 pm   Alternative Styles and Strategies to generate returns
          Moderator: Executive Director, Strategic Investors (SIFIRM) US Family Office Syndicate
          Panelists:
          Chairman, INDORUS Holdings LLP
          Managing Partner, Shinnecock Partners
          Managing Partner, Eastern Point Capital Management LLC
3:30 pm   Digital Currency
          Moderator: TBA
          Panelists:
          Founder & CEO, Digital Currency Group / Grayscale
          Chief Executive Officer, Genesis Global Trading
          President, Xapo
          TBA, Wedbush Securities
4:00 pm   One on One Meetings open
          (Refreshment Area Open)
6:00 pm   Cocktail Reception
          Sponsored by: Preferred Apartment Communities, Inc.

Conference Day 2: Thursday, December 10, 2015

7:00 am  Continental Breakfast
          Sponsored by: Preferred Apartment Communities, Inc.
8:00 am  Welcoming Remarks
8:10 am  STANDALONE

8:30 am  TRACK A

What role should Hedge Funds play in your portfolio?

Moderator:  Hedge Fund Analyst, Wolfson Group (SFO)

Panelists:
Managing Director Investments, Efficient Capital Management
Family Investment Officer, Gerdspring Family Offices (MFO)

TRACK B

8:30 am  What role should Hedge Funds play in your portfolio?

Moderator:  Chief Executive Officer, Macian Wealth Management, LLC (MFO)

Panelists:
President & CEO, Bradford Energy Capital, LLC
Head of Corporate Development Group, Tortoise Capital Advisors
TBA, Pipeline Oil & Gas

9:30 am  TRACK A

What role should Hedge Funds play in your portfolio?

Moderator:  Chief Financial Officer and Treasurer, The New York Community Trust

Panelists:
TBA, BLACKROCK

TRACK B

9:30 am  What role should Hedge Funds play in your portfolio?

Moderator:  Chief Financial Officer and Treasurer, The New York Community Trust

Panelists:
President, Coomber Family Estates Family Office (SFO) / Dragon Trust Family Office (SFO)

10:00 am  ONE ON ONE MEETINGS OPEN

12:30 pm  NETWORKING LUNCHEON

2:00 pm  ONE ON ONE MEETINGS OPEN

4:30 pm  NON CORRELATED ASSETS

Panelists:
Chief Financial Officer, GWG HOLDINGS, INC.

5:15 pm  ALTERNATIVE CREDIT OPPORTUNITIES

Panelists:
Trustee, San Antonio Fire and Police Pension Fund

6:00 pm  COCKTAIL RECEPTION

Conference Day 3: Friday, December 11, 2015

7:00 am  CONTINENTAL BREAKFAST

8:00 am  ONE ON ONE MEETINGS OPEN

11:30 am  PRIVATE EQUITY AND VENTURE CAPITAL

Panelists:
Senior Vice President, Wells Fargo, Alternative Equity Investor

12:30 pm  HOW TO SELECT MANAGERS THAT WILL BEAT THE BENCHMARK

Panelists:
Director of Manager Research, Bel Air Investment Advisors

1:15 pm  REGULATION, COMPLIANCE AND FIDUCIARY RESPONSIBILITY

Panelists:
General Counsel, Pennsylvania State Association of County Controllers
Assistant Chief Counsel, Enforcement Division, California Department of Business Oversight
Managing Partner/Consultant-Counsel, SCA COMPLIANCE+CONSULTING
Dear Annette,

Institutional Investor we are pleased to invite you to the 2016 Public Funds Roundtable on April 27-29, 2016 at The Beverly Hilton in Los Angeles, CA. Join your industry peers for a series of closed-door panel discussions, debates, workshops and private conversations. Gather information, intelligence and practical takeaways in order to meet your challenges, both short and long-term, head on. As a qualified investment executive your registration fee is waived to attend this event. Register today as space is limited.

This program was shaped under the guidance of an advisory board of your fellow senior public plan executives who had 100% editorial control:

**Advisory Board**

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  CalSTRS

- Cheryl D. Alston  
  Employees' Retirement Fund of the City of Dallas

- Arn Andrews  
  City of San Jose Department of Retirement Services

- Carlos Borromeo  
  Arkansas Public Employees' Retirement System

- Fadi J. BouSamra  
  The Metropolitan Government of Nashville & Davidson County Employee Benefit System

- Derek M. Brudersen, CFA  
  Alberta Teachers' Retirement Fund

- Aaron Brown  
  Alberta Treasury Board and Finance

- Gary Bruebaker  
  Washington State Investment Board

- Jerome Burns  
  Michigan Municipal Employees Retirement

- Nancy Calkins  
  San Joaquin County Employees' Retirement
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.J. Carlson</td>
<td>Texas Municipal Retirement System</td>
</tr>
<tr>
<td>Elizabeth Crisafi</td>
<td>San Diego City Employees' Retirement System</td>
</tr>
<tr>
<td>Michelle Cunningham, CFA</td>
<td>CalSTRS</td>
</tr>
<tr>
<td>James L. Failor, CFA</td>
<td>Sonoma County Employees Retirement Association</td>
</tr>
<tr>
<td>Jonathan Grabel</td>
<td>New Mexico Public Employees' Retirement Association</td>
</tr>
<tr>
<td>Robert Jacksha</td>
<td>New Mexico Educational Retirement Board</td>
</tr>
<tr>
<td>David Kaposi</td>
<td>Ontario Power Generation</td>
</tr>
<tr>
<td>Daniel MacDonald</td>
<td>Ontario Teachers' Pension Plan</td>
</tr>
<tr>
<td>James P. Maloney</td>
<td>Chicago Policemen’s Annuity and Benefit Fund</td>
</tr>
<tr>
<td>Christopher McDonough</td>
<td>State of New Jersey Investments</td>
</tr>
<tr>
<td>David Ourlicht</td>
<td>New York State Insurance Fund</td>
</tr>
<tr>
<td>Jennifer Paquette, CFA</td>
<td>Colorado Public Employees Retirement Association</td>
</tr>
<tr>
<td>Donald Pierce</td>
<td>San Bernardino County Employees’ Retirement Association</td>
</tr>
<tr>
<td>R. Stanley Rupnik</td>
<td>Teachers’ Retirement System of Illinois</td>
</tr>
<tr>
<td>David Silber</td>
<td>Employees’ Retirement System of Milwaukee</td>
</tr>
<tr>
<td>Terry Slattery</td>
<td>Municipal Fire &amp; Police Retirement System of</td>
</tr>
<tr>
<td>Matthew Clark, CFA</td>
<td>South Dakota Investment Council</td>
</tr>
<tr>
<td>Bruce H. Cundick</td>
<td>Utah Retirement Systems</td>
</tr>
<tr>
<td>Steve Davis</td>
<td>Sacramento County Employees' Retirement System</td>
</tr>
<tr>
<td>David Finstad</td>
<td>OMERS Capital Markets</td>
</tr>
<tr>
<td>Andrew Greene</td>
<td>Ontario Public Service Employees Union (OPSEU)</td>
</tr>
<tr>
<td>Rodney June</td>
<td>Los Angeles City Employees Retirement System</td>
</tr>
<tr>
<td>Curtis M. Loftis</td>
<td>South Carolina Retirement Systems</td>
</tr>
<tr>
<td>Dale MacMaster</td>
<td>Alberta Investment Management Corporation</td>
</tr>
<tr>
<td>Robert M. Maynard</td>
<td>Public Employee Retirement System of Idaho</td>
</tr>
<tr>
<td>Lars Meuller</td>
<td>Canada Pension Plan Investment Board</td>
</tr>
<tr>
<td>Andrew Palmer</td>
<td>Maryland State Retirement and Pension System</td>
</tr>
<tr>
<td>Mansco Perry, III, CFA, CAIA, CIPM</td>
<td>Minnesota State Board of Investment</td>
</tr>
<tr>
<td>Donald Pierce</td>
<td>Contra Costa County Employees’ Retirement Association</td>
</tr>
<tr>
<td>Kevin SigRist</td>
<td>North Carolina Department of State Treasurer</td>
</tr>
<tr>
<td>John D. Skjervem</td>
<td>Oregon State Treasury</td>
</tr>
<tr>
<td>Terri Troy</td>
<td>Halifax Regional Municipality Pension Plan</td>
</tr>
</tbody>
</table>
Discuss and debate important issues with colleagues and peers, and gather information and ideas. Hear from leading industry thought leaders, investment experts and political and economic experts. Address important concerns and determine the best strategies. Sign up today.

2015 Public Funds Roundtable

There is NO FEE for qualified investment executives to attend the Roundtable. The Institutional Investor Institute Memberships underwrite this educational forum. As a guest of the Membership you are only
responsible for your travel and hotel expenses, and we request that you attend the luncheons as well as the educational sessions.

[Register to attend the 2016 Public Funds Roundtable.](#) If you have any questions, please contact Katarina Storfer, Senior Director of Investor Relations, at kstorfer@institutionalinvestor.com or (212) 224-3073.

We look forward to seeing you in Los Angeles.

Sincerely,

Katarina Storfer
Head of Research and Institutional Relations Institutional Investor
Institutional Investor, Inc.

Unsubscribe from email communications
<table>
<thead>
<tr>
<th>Event Dates</th>
<th>Sponsor / Event Description</th>
<th>Location</th>
<th>Traveler(s)</th>
<th>Estimated Cost</th>
<th>BOR Approval Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov 3 - 5</td>
<td>Invesco Real Estate Conference</td>
<td>La Jolla, CA</td>
<td>Garman</td>
<td>$2,500</td>
<td>August 14, 2015</td>
</tr>
<tr>
<td>Nov 17 - 20</td>
<td>SACRS Fall Conference</td>
<td>SACRS</td>
<td>Garman, McCray, Praus, Souza, Weydert, Eshoo, St. Urbain, Pabst, Calkins</td>
<td>TBD</td>
<td>Approved by Board Policy</td>
</tr>
</tbody>
</table>
## SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

### SUMMARY OF COMPLETED TRUSTEE AND EXECUTIVE STAFF TRAVEL

<table>
<thead>
<tr>
<th>Event Dates 2015</th>
<th>Sponsor / Event Description</th>
<th>Location</th>
<th>Traveler(s)</th>
<th>Estimated Cost</th>
<th>Actual Cost</th>
<th>Event Filed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 13</td>
<td>Due Diligence visit Portland, OR</td>
<td>St. Urbain, Calkins</td>
<td>$1,320</td>
<td>$1,334</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Jan 15</td>
<td>Due Diligence visit Santa Monica, CA</td>
<td>St. Urbain, Calkins Restuccia, Garman, Calkins St. Urbain</td>
<td>$1,100</td>
<td>$979</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Jan 28-30</td>
<td>2015 Visions, Insights &amp; Perspectives (VIP) Dana Point, CA</td>
<td>Restuccia, Garman, Calkins St. Urbain (Audit course as CALAPRS Board Member)</td>
<td>$4,265</td>
<td>$1,977</td>
<td>2/20/15</td>
<td></td>
</tr>
<tr>
<td>Jan 28-30</td>
<td>Advanced Principles of Pension Management for Trustee at UCLA Los Angeles, CA</td>
<td>$300</td>
<td>$942</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar 7-10</td>
<td>CALAPRS General Assembly Monterey, CA</td>
<td>Garman, McCray, Souza, Weydert, Duffy, St. Urbain, Calkins Pabst, Calkins</td>
<td>$5,000</td>
<td>$7,392</td>
<td></td>
<td>N/A</td>
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<tr>
<td>Mar 17-19</td>
<td>2015 Real Asset Conference Dana Point, CA</td>
<td>Calkins</td>
<td>$1,950</td>
<td>$1,130</td>
<td>4/10/15</td>
<td></td>
</tr>
<tr>
<td>Apr 7-8</td>
<td>Pension Bridge San Francisco, CA</td>
<td>McCray, Calkins St. Urbain</td>
<td>$2,370</td>
<td>$1,495</td>
<td>6/26/15</td>
<td></td>
</tr>
<tr>
<td>Apr 8-9</td>
<td>Miller Global Annual Investor Meeting San Antonio, TX</td>
<td>St. Urbain (as Program Faculty)</td>
<td>$2,000</td>
<td>$1,387</td>
<td>4/24/15</td>
<td></td>
</tr>
<tr>
<td>Apr 20-21</td>
<td>CALAPRS Management Academy Pasedena, CA</td>
<td>St. Urbain</td>
<td>$1,250</td>
<td>$385</td>
<td>N/A</td>
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<tr>
<td>Apr 21-23</td>
<td>IREI Editorial Board Meeting San Diego, CA</td>
<td>Garman</td>
<td>$1,750</td>
<td>$371</td>
<td>N/A</td>
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<tr>
<td>Apr 28-29</td>
<td>Mesa West Annual Investors Meeting Santa Monica, CA</td>
<td>Calkins</td>
<td>$1,500</td>
<td>$632</td>
<td>6/26/15</td>
<td></td>
</tr>
<tr>
<td>May 12-15</td>
<td>SACRS Spring Conference Anaheim, CA</td>
<td>Garman, Khan, Mills, Eshoo, St. Urbain, Pabst, Calkins</td>
<td>$12,000</td>
<td>$8,443</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>May 17-20</td>
<td>World Investment Forum Newport Coast, CA</td>
<td>Calkins</td>
<td>$1,250</td>
<td>$1,024</td>
<td>6/26/15</td>
<td></td>
</tr>
<tr>
<td>May 31 - Jun 3</td>
<td>GFOA Annual Conference Philadelphia, PA</td>
<td>Cherng</td>
<td>$2,500</td>
<td>$2,305</td>
<td>8/6/15</td>
<td></td>
</tr>
<tr>
<td>Jul 26 - 29</td>
<td>SACRS Public Pension Investment Management Program Berkeley, CA</td>
<td>Van Houten</td>
<td>$2,851</td>
<td>$3,482</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Aug 25 - 28</td>
<td>Principles of Pension Management for Trustees at Pepperdine Malibu, CA</td>
<td>Van Houten, St. Urbain (as Program Faculty)</td>
<td>$4,500</td>
<td>$2,920</td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>
### SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

#### SUMMARY OF COMPLETED TRUSTEE AND EXECUTIVE STAFF TRAVEL

<table>
<thead>
<tr>
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<th>Estimated Cost</th>
<th>Actual Cost</th>
<th>Event Report Filed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 31-Sep 1</td>
<td>Global CFO Forum</td>
<td>Sacramento, CA</td>
<td>St. Urbain, Cherng</td>
<td>$1,000</td>
<td>$340</td>
<td>Pending</td>
</tr>
<tr>
<td>Sep 1-3</td>
<td>IREI Editorial Board Meeting</td>
<td>Laguna Beach, CA</td>
<td>Restuccia</td>
<td>$750</td>
<td>$461</td>
<td>N/A</td>
</tr>
<tr>
<td>Sep 18</td>
<td>CALAPRS Attorney Roundtable</td>
<td>San Jose, CA</td>
<td>Eshoo</td>
<td>$1,000</td>
<td>$335</td>
<td>N/A</td>
</tr>
<tr>
<td>Sep 24-25</td>
<td>Public Pensions &amp; Investment Forum</td>
<td>San Francisco, CA</td>
<td>Eshoo</td>
<td>$1,000</td>
<td>$756</td>
<td>Pending</td>
</tr>
<tr>
<td>Sep 30-Oct 2</td>
<td>Meeting with Cheiron &amp; IG</td>
<td>Portland, OR</td>
<td>Claypool</td>
<td>$1,300</td>
<td>$1,037</td>
<td>Pending</td>
</tr>
<tr>
<td>Sep 30-Oct 2</td>
<td>CALAPRS Administrator’s Institute</td>
<td>Carmel, CA</td>
<td>St. Urbain</td>
<td>$2,000</td>
<td>$1,213</td>
<td>10/16/15</td>
</tr>
</tbody>
</table>
MEMORANDUM

DATE: October 16, 2015

TO: Board of Retirement

FROM: Annette H. St. Urbain
Chief Executive Officer

SUBJECT: Report on CALAPRS Administrators’ Institute
September 30-October 2, 2015 Carmel Valley, CA

Twenty-one public pension administrators from state, county, and local systems throughout California attended this year's Institute. The conference agenda is attached for your reference.

The Institute began, as usual, with a roundtable discussion of the latest noteworthy happenings at each system, which covered a variety of topics.

Tom Iannucci of Cortex Applied Research, and Dan Goldes of Dan Goldes Consulting, presented a session on Policy-Focused Governance: From Theory to Practice. Tom began by exploring the elements of a policy-focused governance model including board and staff roles, clear accountabilities, policy frameworks and planning processes. Policy-focused boards understand what is truly important from a Board perspective and spend as much of their time addressing those issues proactively through policy, before there is a problem. Things that are relatively less important from a Board perspective are delegated to others with oversight by the Board. Tom discussed how building best practices in these areas enhances the long-term sustainability of any public plan. Sample situations were reviewed to discuss whether the governing body was functioning in a “policy focused” or “operational” governance mode and the challenges and risks that may be introduced when the governing body is in “operational governance” mode.

Building on Tom’s presentation, Dan Goldes addressed how senior executives can prepare for and have important influence conversations with board members to develop alignment and agreement on moving toward policy-focused governance. Dan presented and discussed twelve specific influence skills, the importance of strategically planning for influence situations and facilitated the practice of the influence skills.
Jim Callahan, Executive Vice President and Head of Fund Sponsor Consulting at Callan, presented a session titled, “Have Public Funds Experienced Risk Drift?” Jim reviewed the current and historical funding status, return assumptions, and asset allocation changes for public funds; capital market expectations, actual volatility and market risk of public funds; and discussed other risks such as increased use of derivatives and leverage, counterparty risk, illiquidity risk, increased cost and oversight, headline risk, and “timeline” risk. A compelling point in this discussion was the very long-term time horizon that should be considered in establishing a governmental pension plan’s investment return assumption, despite the pressure to give greater weight to the nearer-term, forward-looking consensus expectations in setting the return assumption.

Graham Schmidt, Consulting Actuary with Cheiron, presented two sessions over the course of the Institute. The first described alternative approaches for paying plan administrative expense (Net Discount Rate method or Expected Expense method) and related impact on funding and/or GASB disclosures. The second addressed actuarial methods for controlling contribution rate volatility, and presented the direct rate smoothing method.

The final morning of the Institute began with Ashley Dunning of Nossaman LLP presenting an overview of the legal landscape for pension plans. Ashley reviewed two court decisions published in 2015 on the constitutionality of “pension reform” measures; four cases pending in the First District Court of Appeal challenging PEPRA provisions, and three other pending cases, two before the California Supreme Court and one on remand to trial court bit already with a published Court of Appeal decision, involving public agency and/or public pension system issues. Ashley also reviewed the earlier version of the Reed/DeMaio-sponsored “Voter Empowerment Act of 2016” pension reform ballot initiative.

Upon conclusion of the Institute, the CALAPRS Business Meeting was convened. The Nominating Committee members were appointed: Dave Kehler, Chair, Steve Delaney and Carl Nelson. Five CALAPRS Board seats are up for election this year, with four incumbent candidates and one vacancy due to retirement.

The next Administrators’ Institute will be held September 21-23, 2016, in Coronado.

As always, it was a great opportunity for education and to meet with my colleagues to exchange information and share experiences, ideas and perspectives.
# AGENDA

## Wednesday, September 30

<table>
<thead>
<tr>
<th>Time</th>
<th>EVENT or Discussion Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:00 – 5:30 PM</td>
<td>Check in at Quail Lodge, Carmel, CA</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Reception</td>
</tr>
<tr>
<td>6:30 PM</td>
<td>Welcome and Introductions&lt;br&gt;Speaker: Jeff Wickman, Marin County Employees’ Retirement Association</td>
</tr>
<tr>
<td>7:15 - 8:30 PM</td>
<td>Round Table Discussion of Retirement Administration Issues: What’s Happening At Your System?</td>
</tr>
</tbody>
</table>

## Thursday, October 1

<table>
<thead>
<tr>
<th>Time</th>
<th>EVENT or Discussion Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 AM</td>
<td>Buffet Breakfast</td>
</tr>
<tr>
<td>8:00 – 10:00 AM</td>
<td>Policy-Focused Governance: From Theory to Practice&lt;br&gt;Speaker: Tom Iannucci, Cortext Applied Research</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Break</td>
</tr>
<tr>
<td>10:15 AM- 12:00 PM</td>
<td>Policy-Focused Governance: From Theory to Practice (Cont.)&lt;br&gt;Speaker: Dan Goldes, Dan Goldes Consulting</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Buffet Lunch and Table Topics</td>
</tr>
<tr>
<td>1:30 - 2:30 PM</td>
<td>Funding Administrative Expenses&lt;br&gt;Speaker: Graham Schmidt, Cheiron</td>
</tr>
<tr>
<td>2:45 PM</td>
<td>Break</td>
</tr>
<tr>
<td>3:00 - 4:30 PM</td>
<td>Have our Portfolios Experienced Risk Drift Over Time?&lt;br&gt;Speaker: Jim Callahan, Callan Associates</td>
</tr>
<tr>
<td>5:30 – 6:30 PM</td>
<td>Reception (including Guests)</td>
</tr>
<tr>
<td>6:30 PM</td>
<td>Dinner (including Guests)</td>
</tr>
</tbody>
</table>

## Friday, October 2

<table>
<thead>
<tr>
<th>Time</th>
<th>EVENT or Discussion Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 AM</td>
<td>Buffet Breakfast</td>
</tr>
<tr>
<td>8:00 – 8:55 AM</td>
<td>Round Table Discussion</td>
</tr>
<tr>
<td>9:00 -10:00 AM</td>
<td>Legal Landscape for Pension Plans: What’s Going on in the Courts and Elsewhere&lt;br&gt;Speaker: Ashley Dunning, Nossaman LLP</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Break</td>
</tr>
<tr>
<td>10:15 -11:30 AM</td>
<td>Actuarial Methods for Controlling Contribution Rate Volatility&lt;br&gt;Speaker: Graham Schmidt, Cheiron</td>
</tr>
<tr>
<td>11:30 – 12:00 PM</td>
<td>CALAPRS Business Meeting</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Buffet &amp; Box Lunches to Go</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Institute Concludes</td>
</tr>
</tbody>
</table>

Institute Committee: Jeff Wickman (Chair), Mark Hovey, Donna Lum, Carl Nelson

CALAPRS/’575 Market Street, Suite 2125/’San Francisco, CA 94105’
Phone: 415-994-3626/Fax: 415-994-3915/Email: info@calaprs.org/Website: www.calaprs.org
Are Buybacks an Oasis or a Mirage?
Chris Brightman, CFA, Vitali Kalesnik, Ph.D., and Mark Clements, Ph.D.

Like travelers in the desert searching for water, we survey the parched investment landscape looking for high-yielding assets to quench our thirst for investment income. Shimmering on the barren surface of zero real yields, is that a lush garden of stock buybacks that we spy on the horizon? We examine the impact on investors of the recent increase in buybacks using an approach introduced by Bernstein and Arnott (2003).

In 2014, buybacks represented 2.9% of the S&P 500 Index’s market capitalization. When this distribution of cash is added to the 1.9% dividend yield of the S&P 500,\(^1\) it produces a dividend-plus-buyback yield of 4.8%. For yield-thirsty investors, this combination appears to be an oasis in the capital market desert. To be that oasis, however, buybacks must not be diluted by net new issuance. We scour a range of sources to tally new issuance, discuss why companies issue new stock, and explain the possible dilutive impact of this new issuance.

Who’s Buying Back Stock?
In 2013, S&P 500 companies, the largest in the United States but nonetheless a subset of the market, spent $521 billion on buybacks. In 2014 that amount rose to $634 billion and moved higher still to $696 billion when total repurchases by all publicly traded companies in the U.S. market are included.\(^2\) The top 15 companies by repurchases are listed in Table 1.

Six of the 15 top companies are in the tech sector: Apple, IBM, Intel, Cisco, Oracle, and Microsoft. Combined, these six huge cash-flow-generating companies are responsible for 14% of all public company buybacks in 2014. Apple alone bought back $45 billion of its stock, nearly equivalent to the annual gross national product of Costa Rica, a country with a population of 5 million.

In order to ascertain the true impact of a company’s repurchases on its shareholders, we need to determine the amount of stock a company issues over the same period it is buying back its stock.

Lifting the Veil on New Issuance
Companies do not make it easy for investors to know how much new stock they are issuing. Finding these numbers takes investigation and research, lifting the veil on a company’s true financial operations. Our first path of approach is a company’s cash flow statement. The financing section of the statement captures the securities sold to raise capital, transfers of different classes of shares into common stock, and the exercise...
of options and warrants. Table 2 lists the companies with the largest stock issuance as reported in their respective cash flow statements. Total issuance reported for the 2014 fiscal year equals $257 billion dollars, 1% of market capitalization.

Interestingly, 5 of the companies in the top 15 buyback list (Table 1) are also in the top 15 issuance list. These five companies are highlighted in Table 2. Delving deeper into these companies’ cash flow statements we see that they engaged in significant options-based compensation programs.

**Stock Options for Management**

The 5 companies in the top 15 buyback list that are also in the top 15 issuance list are Cisco, Oracle, Johnson and Johnson, Wells Fargo, and Merck. Although all five have massive buyback programs, the programs coincide with significant share issuance. Largely responsible for this overlap is employee compensation, in particular, stock options.

When management redeems stock options, new shares are issued to them, diluting other shareholders. A buyback is then announced that roughly matches the size of the option redemption. This facilitates management’s resale of the new stock they were issued in the option redemption. Buyback? Not really! Management compensation? Yes.³

Because the stock options a company issues its management dilute the value of its stockholders’ shares, companies often repurchase their stock to offset

### Table 1. Top 15 Largest Companies by Stock Repurchases (in 2014)

<table>
<thead>
<tr>
<th>Number</th>
<th>Company</th>
<th>Repurchases (in billions)</th>
<th>Number</th>
<th>Company</th>
<th>Repurchases (in billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Apple</td>
<td>$45.0</td>
<td>9</td>
<td>Microsoft</td>
<td>$7.3</td>
</tr>
<tr>
<td>2</td>
<td>IBM</td>
<td>$13.7</td>
<td>10</td>
<td>Johnson and Johnson</td>
<td>$7.1</td>
</tr>
<tr>
<td>3</td>
<td>Exxon Mobil</td>
<td>$13.2</td>
<td>11</td>
<td>Monsanto</td>
<td>$7.1</td>
</tr>
<tr>
<td>4</td>
<td>Intel</td>
<td>$10.8</td>
<td>12</td>
<td>Goldman Sachs</td>
<td>$7.1</td>
</tr>
<tr>
<td>5</td>
<td>Cisco</td>
<td>$9.8</td>
<td>13</td>
<td>Home Depot</td>
<td>$7.0</td>
</tr>
<tr>
<td>6</td>
<td>Wells Fargo</td>
<td>$9.4</td>
<td>14</td>
<td>Walt Disney</td>
<td>$6.5</td>
</tr>
<tr>
<td>7</td>
<td>Oracle</td>
<td>$8.1</td>
<td>15</td>
<td>Boeing</td>
<td>$6.0</td>
</tr>
<tr>
<td>8</td>
<td>Merck</td>
<td>$7.7</td>
<td></td>
<td>Total U.S. Market</td>
<td>$695.6</td>
</tr>
</tbody>
</table>

Source: Research Affiliates, LLC, based on data from Compustat. These numbers represent repurchases of common stock only.

### Table 2. Top 15 Largest Companies by Stock Issuance Measured by Cash Flow Statements (in 2014)

<table>
<thead>
<tr>
<th>Number</th>
<th>Company</th>
<th>Stock Issuance (in billions)</th>
<th>Number</th>
<th>Company</th>
<th>Stock Issuance (in billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Williams</td>
<td>$3.4</td>
<td>9</td>
<td>Oracle</td>
<td>$1.8</td>
</tr>
<tr>
<td>2</td>
<td>Thermo Fisher Scientific</td>
<td>$3.1</td>
<td>10</td>
<td>Johnson and Johnson</td>
<td>$1.8</td>
</tr>
<tr>
<td>3</td>
<td>General Electric</td>
<td>$2.8</td>
<td>11</td>
<td>Wells Fargo</td>
<td>$1.7</td>
</tr>
<tr>
<td>4</td>
<td>Synchrony Financial</td>
<td>$2.8</td>
<td>12</td>
<td>Merck</td>
<td>$1.6</td>
</tr>
<tr>
<td>5</td>
<td>Tyson Foods</td>
<td>$2.2</td>
<td>13</td>
<td>Coca Cola</td>
<td>$1.5</td>
</tr>
<tr>
<td>6</td>
<td>Investors Bancorp</td>
<td>$2.2</td>
<td>14</td>
<td>Platform Specialty Products</td>
<td>$1.5</td>
</tr>
<tr>
<td>7</td>
<td>Kennedy Wilson Holdings</td>
<td>$2.0</td>
<td>15</td>
<td>Overseas Shipholding Grp</td>
<td>$1.5</td>
</tr>
<tr>
<td>8</td>
<td>Cisco</td>
<td>$1.9</td>
<td></td>
<td>Total U.S. Market</td>
<td>$257.0</td>
</tr>
</tbody>
</table>

Source: Research Affiliates, LLC, based on data from Compustat.
this dilutive effect. The net impact is a transfer to management of more of a company’s cash flow than is reported as compensation on the income statement. Irrespective of the intent of the company to reduce the dilutive impact of its options-based stock issuance with buybacks, the reality is that the dilution is not always totally offset.

But We Must Lift the Veil Higher...

Upon closer examination, we find that the cash flow statement often fails to report the majority of a company’s stock issuance. How do we know this? We compare the market capitalization of a company at the end of the year to its market capitalization at the beginning of the year, adjusted for the change in the company’s stock price. If the market capitalization is up 10% and stock price is unchanged, there must have been 10% new share issuance. This analysis allows us to determine the amount of a company’s stock buybacks or issuance. We then follow a thorough process of fundamental research into each company’s corporate actions as described in its press releases and by the financial media to determine the source of and reason for the new issuance unexplained by the cash flow statement.

“With so much new issuance, the potential benefit of stock buybacks may not be realized by the investor.”

Aggregating the equity of all publicly held U.S. corporations, we find that U.S. companies issued stock equal to $1.2 trillion in 2014. Whereas part of this aggregate market issuance was in the form of initial public offerings, far more stock was issued by existing companies, the largest of which are listed in Table 3.

Why are companies issuing such large amounts of stock? In addition to stock options for management, we find that a substantial amount of new issuance is to support companies funding merger and acquisition activity. With so much new issuance, the potential benefit of stock buybacks may not be realized by the investor.

Currency for M&A

Companies are issuing new shares to fund merger and acquisition (M&A) activity. Like a corporate currency, companies print new stock, beyond the issuance that’s reported on their cash flow statements, to purchase other companies. These stock-for-stock transactions are not always reported as cash flows; neither are they necessarily nondilutive. Examples of such issuance in 2014 for M&A purposes are Kinder Morgan consolidating a few of its subsidiaries, Verizon acquiring Vodafone’s U.S. operations, and Facebook acquiring Whatsapp.

### Table 3. Top 15 Largest Companies by Stock Issuance Measured by Adjusted Market Capitalization (in 2014)

<table>
<thead>
<tr>
<th>Number</th>
<th>Company</th>
<th>Stock Issuance (in billions)</th>
<th>Number</th>
<th>Company</th>
<th>Stock Issuance (in billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kinder Morgan</td>
<td>$118.5</td>
<td>9</td>
<td>Comcast</td>
<td>$7.9</td>
</tr>
<tr>
<td>2</td>
<td>Verizon</td>
<td>$87.5</td>
<td>10</td>
<td>Berkshire Hathaway</td>
<td>$7.2</td>
</tr>
<tr>
<td>3</td>
<td>Facebook</td>
<td>$22.1</td>
<td>11</td>
<td>Tableau Software</td>
<td>$6.1</td>
</tr>
<tr>
<td>4</td>
<td>R C S Capital</td>
<td>$21.8</td>
<td>12</td>
<td>Alliance Data Systems</td>
<td>$6.0</td>
</tr>
<tr>
<td>5</td>
<td>Walgreens</td>
<td>$12.9</td>
<td>13</td>
<td>Pacwest Bancorp</td>
<td>$5.9</td>
</tr>
<tr>
<td>6</td>
<td>Tri Pointe Homes</td>
<td>$10.1</td>
<td>14</td>
<td>Thermo Fisher Scientific</td>
<td>$5.4</td>
</tr>
<tr>
<td>7</td>
<td>Level 3 Communications</td>
<td>$8.3</td>
<td>15</td>
<td>Zulily</td>
<td>$5.2</td>
</tr>
<tr>
<td>8</td>
<td>General Motors</td>
<td>$8.2</td>
<td></td>
<td>Total U.S. Market</td>
<td>$1,214.2</td>
</tr>
</tbody>
</table>

Source: Research Affiliates, LLC, based on data from CRSP and Compustat. Net Issuance for each firm is computed from CRSP as the gross growth rate in shares outstanding multiplied by the market capitalization at the end of the year. Repurchases of common stock are taken from Compustat. We avoid issuance data from Compustat here, as these data only include issuances that appear on the firm’s financing cash flow statement and leave out shares issued for corporate actions such as mergers and acquisitions. Issuance is then computed as net issuance plus repurchases.
The first two examples are of nondilutive transactions. Kinder Morgan was retiring the stock of subsidiary companies and concurrently issuing new stock of the parent company. The net effect is that no new stock was added to the market in aggregate. Similarly, acquisitions of one public company by another, such as Verizon acquiring Vodafone’s U.S. operations, are not dilutive to the aggregate public market. Because these types of transactions are accounted for in the $1.2 trillion of stock issuance reported in Table 3, this measure effectively overstates issuance in terms of the aggregate market.

The acquisition of Whatsapp by Facebook, however, is an example of a transaction in which net new shares were issued with a corresponding impact in the aggregate public equity market. Whatsapp was a private company prior to the acquisition, making the new shares used for its purchase true new issuance.

Swapping Equity for Debt

Dilution of earnings can also occur because a company issues debt, funneling earnings away from dividend payments to shareholders and toward principle and interest payments to the company’s lenders. Aggregate net debt issuance by public companies was $693 billion in 2014, almost equivalent to the $696 billion of buybacks in the same year. Our analysis of U.S. publicly held companies’ cash flow statements for the 2014 fiscal year reveals a similar story: often a company’s repurchase of its stock was accompanied by a net increase in debt. Table 4 reports the top 15 debt issuers in the U.S. public market (net of the rollover of existing debt).

For investors in the aggregate U.S. public equity market, buybacks are simply a mirage.

Five of the largest debt issuers (highlighted in Table 4) were also among the largest repurchasers of equity. Apple, the company that orchestrated the largest 2014 share buyback, financed a significant part of its buyback program by issuing debt in order to avoid the tax required to repatriate its foreign-based cash reserves. Apple’s net debt increase in 2014 was equal to 41% of its buybacks, and its share issuance equaled another 4% of buybacks. Still, over half of the buybacks at Apple were “real”, not so for some others. As a percentage of its buybacks, Cisco’s net debt issuance was 48% and share issuance was 37%; Oracle’s net debt issuance was 227% and share issuance was 42% of buybacks; and Microsoft had net debt issuance of 95% and share issuance of 48% as a percentage of buybacks.

The 2% Dilution

Bernstein and Arnott (2003) explain a simple and intuitive method for observing aggregate market dilution by taking the ratio of the proportionate increase in market capitalization to the proportionate increase in the market’s price index. This simple method provides a proxy for the change in shares outstanding by factoring out valuation changes, ignoring all the cases in which one public company acquires or merges with another. Positive dilution implies that, in aggregate, companies

Table 4. Top 15 Largest Companies by Net Debt Issuance (in 2014)

<table>
<thead>
<tr>
<th>Number</th>
<th>Company</th>
<th>Net Debt Issuance (in billions)</th>
<th>Number</th>
<th>Company</th>
<th>Net Debt Issuance (in billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wells Fargo</td>
<td>$34.4</td>
<td>9</td>
<td>Goldman Sachs</td>
<td>$11.8</td>
</tr>
<tr>
<td>2</td>
<td>JPMorgan Chase</td>
<td>$33.4</td>
<td>10</td>
<td>PNC Financial Services</td>
<td>$10.5</td>
</tr>
<tr>
<td>3</td>
<td>Medtronic</td>
<td>$18.7</td>
<td>11</td>
<td>Capital One</td>
<td>$7.6</td>
</tr>
<tr>
<td>4</td>
<td>Oracle</td>
<td>$18.3</td>
<td>12</td>
<td>Chevron</td>
<td>$7.4</td>
</tr>
<tr>
<td>5</td>
<td>Apple</td>
<td>$18.3</td>
<td>13</td>
<td>Ford Motor</td>
<td>$7.3</td>
</tr>
<tr>
<td>6</td>
<td>U.S. Bancorp</td>
<td>$14.6</td>
<td>14</td>
<td>Exxon Mobil</td>
<td>$7.0</td>
</tr>
<tr>
<td>7</td>
<td>Verizon</td>
<td>$12.8</td>
<td>15</td>
<td>Microsoft</td>
<td>$7.0</td>
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<tr>
<td>8</td>
<td>General Motors</td>
<td>$12.2</td>
<td></td>
<td>Total U.S. Market</td>
<td>$693.4</td>
</tr>
</tbody>
</table>

Source: Research Affiliates, LLC, based on data from Compustat. These numbers represent the change in total debt (change in current debt plus change in long-term debt).
are issuing more stock than they are repurchasing.\textsuperscript{4}

The dilution rate for the U.S. equity market in 2014 was 1.8%, equivalent to roughly $454 billion. Companies thus issued significantly more shares than they repurchased. Figure 1 plots the historical rate of dilution, 1.7%, for the 80-year period from 1935 to 2014. The 2014 dilution rate of 1.8% for U.S. equity market investors, in aggregate, was essentially the same. We find no evidence of a reduction in net dilution coincidental with the recent increase in buybacks.

The media has been all over the $700 billion in buybacks. But how many have noticed the $1.2 trillion in new share issuance? Commentators and strategists like to suggest that we add buybacks to the dividend yield. How many of them would be comfortable suggesting that we subtract net issuance from the yield?! Perhaps the dividend yield of 1.9% has been very nearly wiped out by the 1.8% net dilution? We don’t advocate this interpretation. But, for obvious reasons, we do not think that the naïve sum of dividends plus buybacks has merit.

**Mirage, Not Oasis**

Alas, like the cool pool of water shimmering on the desert horizon that turns out to be only the refraction of light from blue sky onto hot sand, the 4.8% dividend-plus-buyback yield in the U.S. equity market is a cruel mirage. The reality is that publicly traded companies in the United States are issuing far more new securities than they are buying back, diluting existing investors’ ownership and reducing growth in earnings and dividends per share well below the growth of their reported profits. There is, in fact, no net transfer of cash from the coffers of U.S. corporations to the wallets of U.S. equity investors. The buyback oasis evaporates as we approach it. For investors in the aggregate U.S. public equity market, buybacks are simply a mirage.

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**Figure 1. Historical U.S. Equity Market Dilution Rates, 1935–2014**

Source: Research Affiliates, LLC, based on data from CRSP and S&P.
Endnotes

1. This was the dividend yield as of December 31, 2014. As of the market close on September 21, 2015, the dividend yield for the S&P 500 was 2.06%.

2. The universe of companies includes all publicly traded U.S. and foreign companies as well as REITs traded on U.S. equity market exchanges.

3. We’re fine with huge compensation for management teams that create great wealth for society and for their shareholders. We’re not as enthusiastic about pretending that it’s a stock buyback!

4. The dilution measure is a proxy for the percentage change in shares outstanding; issuances and repurchases are reported in U.S. dollars. Though not directly comparable, to the extent that prices are being controlled for in the measure, positive dilution implies more issuances than repurchases.

Reference


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