

Investment Committee Meeting- November 7, 2018 (November 07, 2018)

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**KENTUCKY RETIREMENT SYSTEMS
INVESTMENT COMMITTEE MEETING
AGENDA
Wednesday, November 7, 2018
9:00 a.m.**

- 9:00AM Call to Order
- 9:01AM [Approval of Minutes*- August 28th, 2018](#)
- 9:02AM [Investment Policies Review* – Jared Crawford](#)
- 9:10AM [Standard Reports – Rich Robben](#)
- 9:30AM [Core Fixed Income Restructuring* – Rich Robben & Wilshire](#)
- 10:00AM [Absolute Return Portfolio Restructuring Plan – Anthony Chiu & Wilshire](#)
- 10:30AM Adjourn

** All times are approximations, one or more items on this agenda may be discussed in closed session.*

**MINUTES OF MEETING
KENTUCKY RETIREMENT SYSTEMS
QUARTERLY INVESTMENT COMMITTEE
AUGUST 28, 2018, 9:00 A.M., E.T.
1270 LOUISVILLE ROAD, FRANKFORT, KENTUCKY 40601**

At the August 28, 2018 Quarterly Investment Committee Meeting, the following Committee members were present: Neil Ramsey (Chair), William Cook, Kelly Downard, John Farris, Sherry Kremer, Dave Harris, Keith Peercy and Jerry Powell. Board of Trustee, Betty Pendergrass, was also present. Staff members present were David Eager, Karen Roggenkamp, Rich Robben, Anthony Chiu, Andy Kiehl, Joe Gilbert, Ann Case, Natalie Young, Shaun Case, Jared Crawford, Kristen Coffey, Dale DeVore, David Ziegler, Joe Bowman, Erin Surratt, Connie Davis, Cassandra Weiss and Alane Foley.

Mr. Ramsey called the meeting to order and Ms. Alane Foley called roll.

Mr. Ramsey introduced the agenda item *Approval of Minutes- June 27, 2018*. Mr. Harris moved and was seconded by Mr. Powell to approve the minutes as presented. The motion passed unanimously.

Mr. Ramsey introduced agenda item *Investment Staff Activities Update*. Mr. Rich Robben provided an update to the Investment Committee on performance and investment activity. This was provided for informational purposes only.

Mr. Ramsey introduced agenda item *ETF Market Presentation*. Mr. Rich Robben introduced Mr. Rob Melton, Mr. Brad Kotler and Mer. David Settles from State Street Global Advisors. This presentation was for informational purposes only.

Mr. Ramsey introduced agenda item *Barings European Real Estate Fund*. Mr. Rich Robben and Mr. Andy Kiehl introduced Ms. Valeria Falcone, Mr. Kevin Ryan and Mr. James Fink from Barings to provide an overview to the Committee on Barings European Value Add Fund I. KRS

staff is recommending an investment up to \$175MM in this fund. Mr. Farris moved and was seconded by Mr. Cook to approve this investment. The motion passed unanimously.

Mr. Ramsey called for a short recess.

Mr. Ramsey called the meeting back into session and introduced agenda item *Transparency Legislation Compliance Update*. Mr. David Eager updated the Committee regarding KRS transparency compliance. This was provided for informational purposes only.

Mr. Ramsey introduced agenda item *Private Equity Program Review*. Mr. Anthony Chiu and Mr. Marc Friedberg from Wilshire provided a Private Equity update to the Committee. This was for informational purposes only.

Mr. Ramsey introduced agenda item *Cash Equitization Overlay Strategy Update*. Mr. Andy Kiehl, KRS staff and the Committee discussed futures overlay. This was for informational purposes only.

Mr. Ramsey introduced agenda item *Core Fixed Income Benchmark Review*. Mr. Rich Robben introduced Mr. Dave Lindburg, Mr. Chris Tessman and Mr. Craig Morten from Wilshire. They provided an update to the Committee. This was for informational purposes only.

Mr. Ramsey advised the committee that the Actuarial Committee met prior to the Investment Committee and approved a rate of 7.50% for service purchase types of Recontribution of Refund, Omitted with Interest, Installment Purchase of Service Agreements (IPS contracts), delinquent Pension Spiking invoices and member reinstatements and use 5.25% discount rate for benefit payments. Ms. Kremer moved and was seconded by Mr. Harris to ratify this motion. The motion passed unanimously.

Mr. Ramsey introduced agenda item *Closed Session*. Mr. Powell moved and was seconded by Mr. Harris to go in to closed session. The motion passed unanimously.

Mr. Ramsey read the following statement and the meeting moved into closed session: A motion having been made in open session to move into closed session for a specific purpose, and such

motion having carried by majority vote in open, public session, the Board shall now enter closed session to consider litigation, pursuant to KRS 61.810(1)(c), because of the necessity of protecting the confidentiality of the Systems' litigation strategy and preserving any available attorney-client privilege. All public attendees exited the meeting.

The meeting was called back into open session.

There being no further business, Mr. Powell moved and was seconded by Mr. Downard to adjourn the meeting at 12:19 p.m. The next meeting of the Investment Committee is scheduled for 9:00 a.m. November 7, 2018. Copies of all documents presented are incorporated as part of the minutes of the Investment Committee meeting held August 28, 2018.

CERTIFICATION

I do certify that I was present at this meeting and I have recorded above the action of the Committee on the various items considered by it at this meeting. Further, I certify that all requirements of KRS 61.805-61.850 were met in connection with this meeting.

Recording Secretary

I, as Chair of the Investment Committee of the Board of Trustees of the Kentucky Retirement Systems, do certify that the Minutes of the meeting held on August 28, 2018 were approved by the Investment Committee on November 7, 2018

Committee Chair

I have reviewed the Minutes of the Investment Committee Meeting on August 28, 2018 for form, content, and legality.

Office of Legal Services



KENTUCKY RETIREMENT SYSTEMS

David L. Eager, Executive Director

Perimeter Park West • 1260 Louisville Road • Frankfort, Kentucky 40601
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MEMORANDUM

Date: November 7, 2018

To: Mr. Neil P. Ramsey, Chair
Investment Committee of the Board of Trustees

From: J. Jared Crawford
Assistant Director of Internal Audit Division and Investment Compliance Officer

Re: Manager Onboarding Policy

Pursuant to Senate Bill 2 (SB2), which was signed into law on March 10, 2017, Kentucky Retirement Systems (KRS) endeavors to create a Manager Onboarding Policy that is intended to increase transparency. SB2 requires that KRS disclose, "...all contracts or offering documents for services, goods, or property purchased or utilized by the system...If any public record contains material which is not excepted under KRS 61.878, the system shall separate the excepted material by removal, segregation, or redaction, and make the nonexcepted [sic] material available for examination." This policy will delineate the most efficient way to process these contracts to Trustees and Employees and ensure KRS fulfills all institutional and statutory requirements as governed by the Commonwealth of Kentucky and the KRS Board of Trustees. Enclosed you will find a draft addendum detailing the policy.

cc:

William S. Cook, Member
Investment Committee of the Board of Trustees

David L. Harris, Member
Investment Committee of the Board of Trustees

Kelly Downard, Member
Investment Committee of the Board of Trustees

David L. Eager
Executive Director

John R. Farris, Member
Investment Committee of the Board of Trustees

Karen Roggenkamp
Executive Director, Office of Operations

Sherry L. Kremer, Member
Investment Committee of the Board of Trustees

Mark Blackwell
Executive Director, Office of Legal Services

Matthew Monteiro, Member
Investment Committee of the Board of Trustees

Rich Robben,
Interim Executive Director of Office of Investments.
Officer and Director of Fixed Income

Keith Percy, Member
Investment Committee of the Board of Trustees

Kristen Coffey
Director of Internal Audit Division

Jerry Powell, Member
Investment Committee of the Board of Trustees

AN ACT relating to retirement and declaring an emergency.

- Amend KRS 21.530 to require Senate confirmation of the gubernatorial appointments to the Judicial Form Retirement System;
- amend KRS 21.540 to require the Judicial Form Retirement System, which administers the Legislators' Retirement Plan and the Judicial Retirement Plan, to post descriptive and financial information to the system's Web site, and to delineate that investment fee and commission reporting include profit sharing, carried interest, and partnership incentives;
- amend KRS 61.645 to narrow the definition of investment experience on the board of trustees, to specify that vacancies to elected positions be filled by majority vote of the remaining elected members, to require Senate confirmation of gubernatorial appointments to the board, and to delineate that investment fee and commission reporting requirements for the Kentucky Retirement Systems shall include profit sharing, carried interest, and partnership incentives;
- provide that the systems may not have to disclose contracts on a Web site if disclosure would result in a competitive disadvantage, but require those contracts to be released to the trustees, the State Auditor, and the LRC Govt. Contract Review Committee, subject to the redaction of otherwise exempted material;
- subject the Kentucky Retirement Systems to KRS Chapter 18A regarding personnel;
- cap the reimbursement rate for legal services at the Government Contract Review Committee maximum hourly rate; make technical amendments;
- amend KRS 161.250 to add two gubernatorial appointments to the board subject to Senate confirmation, to specify that investment fee and commission reporting requirements for the Kentucky Teachers' Retirement System must include profit sharing, carried interest, and partnership incentives;
- provide that the Teachers' Retirement System may not have to disclose contracts on a Web site if disclosure would result in a competitive disadvantage, but require those contracts to be released to the trustees, the State Auditor, and the LRC Govt. Contract Review Committee, subject to the redaction of otherwise exempted material;
- cap the reimbursement rate for legal services to the Teachers' Retirement System at the Government Contract Review Committee maximum hourly rate;
- amend various KRS sections to place all state retirement systems under the Model Procurement Code regarding contracts and improve definition of placement agents to include nonemployees and subsidiary firms;
- amend KRS 7A.220 to increase the membership of the Public Pension Oversight Board;
- amend KRS 7A.255 to require annual reporting of the percentage of system assets being reported by external managers and partnerships;
- amend KRS 6.350 to declare noncompliant any actuarial analyses returning negligible or indeterminable cost results; EMERGENCY.

Kentucky Retirement Systems

Domestic and Global Commissions Report

Quarter Ending: September 30, 2018

Kentucky Retirement Systems					
Domestic Equity - Common Stock Commissions					
Quarter Ended September 30, 2018					

Broker/Account	Shares Traded	Commission	Value of Trade	Per Share	% Cost of Trade
BAIRD, ROBERT W & CO INC, MILWAUKEE	13,980	559	632,829	0.0400	0.0884%
BARCLAYS	75,567	2,810	4,571,272	0.0372	0.0615%
BERNSTEIN SANFORD C & CO, NEW YORK	401,930	10,583	22,966,279	0.0263	0.0461%
BMO CAPITAL MARKETS CORP, NEW YORK	16,820	673	3,135,151	0.0400	0.0215%
BTIG LLC, NEW YORK	145,002	4,412	11,107,565	0.0304	0.0397%
CANTOR FITZGERALD & CO INC, NEW YORK	241,061	4,852	17,470,974	0.0201	0.0278%
CITIGROUP	106,266	2,390	3,345,714	0.0225	0.0714%
COWEN AND CO LLC, NEW YORK	56,265	1,768	1,864,953	0.0314	0.0948%
CREDIT SUISSE	81,489	2,100	5,310,359	0.0258	0.0395%
DEUTSCHE BANK	19,940	765	1,791,537	0.0384	0.0427%
DIRECT TRADING, UNITED STATES	118,100	3,543	3,780,345	0.0300	0.0937%
GOLDMAN SACHS	198,890	3,165	7,571,380	0.0159	0.0418%
GUGGENHEIM CAPITAL MARKETS LLC, NEW YORK	950	38	83,699	0.0400	0.0454%
INSTINET CORP	84,243	1,323	4,401,490	0.0157	0.0301%
INVESTMENT TECH GROUP INC, NEW YORK	1,127,815	14,308	54,363,800	0.0127	0.0263%
ISI GROUP	106,819	3,035	4,812,625	0.0284	0.0631%
ITG INC, NEW YORK	140,135	1,673	4,922,049	0.0119	0.0340%
J.P MORGAN SECURITIES INC, NEW YORK	112,407	1,402	7,025,565	0.0125	0.0200%
JEFFERIES & CO INC, NEW YORK	20,870	827	2,273,339	0.0396	0.0364%
JMP SECURITIES, SAN FRANCISCO	23,320	933	2,131,799	0.0400	0.0438%
JONESTRADING INST SVCS LLC, NEW YORK	12,870	386	1,151,322	0.0300	0.0335%
JP MORGAN SECURITIES	12,488	94	256,956	0.0075	0.0364%
KEEFE BRUYETTE + WOODS INC, NEW YORK	8,910	356	828,023	0.0400	0.0430%
KEYBANC CAPITAL MARKETS INC, NEW YORK	33,885	1,355	1,663,348	0.0400	0.0815%
LIQUIDNET INC, NEW YORK	1,576,170	19,481	70,773,787	0.0124	0.0275%
MERRILL LYNCH	47,630	1,297	3,270,459	0.0272	0.0397%
MKM PARTNERS LLC, GREENWICH	28,470	1,139	611,195	0.0400	0.1863%
NATIONAL FINL SVCS CORP, NEW YORK	2,690	81	259,782	0.0300	0.0311%
NEEDHAM AND CO LLC, NEW YORK	17,360	694	875,689	0.0400	0.0793%
OPPENHEIMER & CO INC, NEW YORK	11,960	478	2,303,035	0.0400	0.0208%
PIPER JAFFRAY & CO., JERSEY CITY	2,470	99	348,885	0.0400	0.0283%
RAYMOND JAMES & ASSOC INC, ST PETERSBURG	59,490	1,772	2,234,841	0.0298	0.0793%
RBC CAPITAL MARKETS	64,819	974	2,089,773	0.0150	0.0466%
SANDLER ONEILL AND PARTNER LP, NEW YORK	26,220	787	1,326,152	0.0300	0.0593%
STEPHENS INC, LITTLE ROCK	4,245	170	857,441	0.0400	0.0198%
STIFEL NICOLAUS	176,202	4,761	8,640,409	0.0270	0.0551%
SUNTRUST CAPITAL MARKETS INC, NEW YORK	8,960	269	638,180	0.0300	0.0421%
UBS	618,869	5,705	38,356,671	0.0092	0.0149%
WEDBUSH MORGAN SECS INC, LOS ANGELES	13,860	554	1,727,193	0.0400	0.0321%
WEEDEN and CO	555,891	16,621	12,210,915	0.0299	0.1361%
WELLS FARGO SECURITIES, LLC, NEW YORK	230,658	3,960	10,552,686	0.0172	0.0375%
WOLFE TRAHAN SECURITIES, NEW YORK	7,870	315	698,055	0.0400	0.0451%
TOTAL DOMESTIC	6,613,856	122,508	325,237,521	0.0185	0.0377%

Broker/Account	Shares Traded	Commission	Value of Trade	Per Share	% Cost of Trade
GREEN EQTY INVST V	49,173	492	6,155,844	0.0100	0.0080%
INST VEN PTRN XII	200,831	2,008	4,462,469	0.0100	0.0450%
RIVER ROAD	42,616	1,048	1,385,834	0.0246	0.0757%
RIVER ROAD FAV	1,516,013	39,527	64,042,500	0.0261	0.0617%
S&P 500 INDEX	315,490	1,580	26,089,849	0.0050	0.0061%
SYSTEMATIC	3,258,227	46,182	136,503,657	0.0142	0.0338%
TORTOISE CAP	480,298	6,439	13,265,709	0.0134	0.0485%
WESTFIELD CAPITAL	751,208	25,232	73,331,659	0.0336	0.0344%
TOTAL DOMESTIC	6,613,856	122,508	325,237,521	0.0185	0.0377%

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Kentucky Retirement Systems					
Global Equity - Common Stock Commissions					
Quarter Ended September 30, 2018					

Broker/Account	Shares Traded	Commission	Value of Trade	Per Share	% Cost of Trade
BANCO SANTANDER, NEW YORK	550,000	1,651	1,648,398	0.0030	0.1001%
BARCLAYS	218,824	442	1,478,662	0.0020	0.0299%
BERNSTEIN SANFORD C & CO, NEW YORK	35,100	303	1,518,090	0.0086	0.0200%
BNP PARIBUS	26,290	368	642,007	0.0140	0.0573%
BNY MELLON CLEARING	110,000	3,793	2,524,931	0.0345	0.1502%
CITIGROUP	999,230	8,135	14,315,256	0.0081	0.0568%
CREDIT LYONNAIS SECS (ASIA), HONG KONG	926,000	8,586	4,920,207	0.0093	0.1745%
CREDIT LYONNAIS SECS, SINGAPORE	78,400	2,276	3,624,394	0.0290	0.0628%
CREDIT SUISSE	2,115,457	13,327	24,555,358	0.0063	0.0543%
DAVY STOCKBROKERS, DUBLIN	5,116	426	558,264	0.0832	0.0763%
DEUTSCHE BANK	100,969	5,175	6,512,541	0.0513	0.0795%
DEUTSCHE MORGAN GRENPELL SEC, SYDNEY	14,000	2,352	2,135,996	0.1680	0.1101%
FIDELITY CLEARING CANADA ULC, TOR (FIDC)	1,300	23	67,030	0.0177	0.0343%
GOLDMAN SACHS	664,890	6,617	9,802,136	0.0100	0.0675%
HSBC	475,309	986	3,299,266	0.0021	0.0299%
INVESTMENT TECHNOLOGY GROUP LTD, DUBLIN	477,203	3,197	4,776,774	0.0067	0.0669%
ITG AUSTRALIA LTD, MELBOURNE	304,700	262	254,943	0.0009	0.1027%
J.P MORGAN SECURITIES INC, NEW YORK	37,549	193	3,329,999	0.0051	0.0058%
JEFFERIES & CO INC, NEW YORK	142,846	3,385	5,712,891	0.0237	0.0592%
JEFFERIES & CO LTD, LONDON	35,000	275	844,609	0.0078	0.0325%
JP MORGAN SECURITIES	410,881	9,841	16,608,286	0.0240	0.0593%
JPMORGAN SECURITIES INC, NEW YORK	99,780	240	556,815	0.0024	0.0431%
LIQUIDNET CANADA INC, TORONTO	13,400	187	419,483	0.0140	0.0447%
LIQUIDNET INC, NEW YORK	104,237	1,042	8,394,278	0.0100	0.0124%
MACQUARIE SECURITIES	5,349,072	7,205	7,958,416	0.0013	0.0905%
MAINFIRST BANK AG, FRANKFURT AM MAIN	14,080	5,384	4,481,556	0.3824	0.1201%
MERRILL LYNCH	1,558,054	22,331	51,017,398	0.0143	0.0438%
MORGAN STANLEY	1,978,785	25,982	24,638,539	0.0131	0.1055%
NESBITT BURNS, TORONTO (NTDT)	355,100	3,232	2,057,905	0.0091	0.1570%
RBC CAPITAL MARKETS	706,500	12,468	13,459,311	0.0176	0.0926%
REDBURN PARTNERS LLP, LONDON	35,372	500	837,179	0.0141	0.0597%
S G WARBURG, SEOUL	10,900	247	493,662	0.0226	0.0500%
SANFORD C BERNSTEIN & CO INC, LONDON	20,850	2,426	2,111,632	0.1163	0.1149%
SCOTIA CAPITAL MKTS, TORONTO	3,200	73	66,996	0.0228	0.1090%
SG SEC (LONDON) LTD, LONDON	79,500	785	1,376,836	0.0099	0.0570%
SMBC SECURITIES, INC NEW YORK	88,050	3,436	3,901,992	0.0390	0.0881%
SOCIETE GENERALE LONDON BRANCH, LONDON	263,289	5,260	10,266,130	0.0200	0.0512%
TORONTO DOMINION SEC, TORONTO	22,122	166	1,275,505	0.0075	0.0130%
UBS	5,023,619	30,003	37,327,886	0.0060	0.0804%
XP INVESTIMENTOS CCTVM SA, RIO DE JANEIRO	510,000	1,360	1,361,728	0.0027	0.0999%
TOTAL GLOBAL	23,964,974	193,938	281,133,285	0.0081	0.0690%

Broker/Account	Shares Traded	Commission	Value of Trade	Per Share	% Cost of Trade
AMERICAN CENTURY	10,288,749	79,803	112,403,365	0.0078	0.0710%
COLUMBIA	(12)	2,088	173,430	(174.0383)	1.2042%
FRANKIN TEMPLETON	5,115,854	57,686	71,621,016	0.0113	0.0805%
LAZARD ASSET MGMT	1,479,765	21,672	35,930,547	0.0146	0.0603%
LSV ASSET MANAGEMENT	5,225,204	19,433	42,711,738	0.0037	0.0455%
LSV ASSET MGMT	1,855,120	7,481	16,516,983	0.0040	0.0453%
MANULIFE ASSET MGMT	294	5,774	1,776,206	19.6402	0.3251%
TOTAL GLOBAL	23,964,974	193,938	281,133,285	0.0081	0.0690%

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Kentucky Retirement Systems

Security Litigation Report

Quarter Ending: September 30, 2018

Claims Filed during the Quarter (pg 3):

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Proceeds Received during the Quarter (pg 4):

\$111,145.01

Kentucky Retirement Systems	
Quarterly Securities Litigation Report	
Quarter Ended 09/30/18	
Total Claims Filed	
No Claim on File	9
Fiscal Year 1997	1
Fiscal Year 1998	2
Fiscal Year 1999	5
Fiscal Year 2000	9
Fiscal Year 2001	8
Fiscal Year 2002	33
Fiscal Year 2003	45
Fiscal Year 2004	38
Fiscal Year 2005	89
Fiscal Year 2006	150
Fiscal Year 2007	70
Fiscal Year 2008	73
Fiscal Year 2009	85
Fiscal Year 2010	65
Fiscal Year 2011	69
Fiscal Year 2012	54
Fiscal Year 2013	48
Fiscal Year 2014	65
Fiscal Year 2015	80
Fiscal Year 2016	224
Fiscal Year 2017	140
Fiscal Year 2018	74
Fiscal Year 2019	10
Total Filed	1,446
Proceeds Received	
Fiscal Year 1998	\$67,682
Fiscal Year 1999	\$233,370
Fiscal Year 2000	\$303,918
Fiscal Year 2001	\$415,502
Fiscal Year 2002	\$387,318
Fiscal Year 2003	\$519,059
Fiscal Year 2004	\$1,080,920
Fiscal Year 2005	\$1,645,440
Fiscal Year 2006	\$797,535
Fiscal Year 2007	\$5,398,363
Fiscal Year 2008	\$5,402,336
Fiscal Year 2009	\$3,504,682
Fiscal Year 2010	\$2,776,544
Fiscal Year 2011	\$1,292,484
Fiscal Year 2012	\$468,657
Fiscal Year 2013	\$1,070,427
Fiscal Year 2014	\$308,704
Fiscal Year 2015	\$23,639,565
Fiscal Year 2016	\$2,417,957
Fiscal Year 2017	\$1,886,532
Fiscal Year 2018	\$2,247,966
Fiscal Year 2019	\$111,145
Total Proceeds	\$55,976,108

Investment Committee Meeting- November 7, 2018 - Standard Reports

Class Action Name	TNT Status Code	Status as of Date	Class Period Start Date	Class Period End Date	Class Account Id	Claimed Account Name
GT ADVANCED TECHNOLOGIES INC. (UNDERWRITER DEFENDANTS) & (INDIVIDUAL DEFENDANTS)(GTAT)	FILED	7/6/2018	11/5/2013	10/6/2014	KR3F1003002	SYSTEMATIC
GT ADVANCED TECHNOLOGIES INC. (UNDERWRITER DEFENDANTS) & (INDIVIDUAL DEFENDANTS)(GTAT)	FILED	7/9/2018	11/5/2013	10/6/2014	KR2F1003002	SYSTEMATIC
RESOURCE CAPITAL CORP	FILED	7/11/2018	10/30/2012	8/4/2015	2602408	ZZ*KRS PEN NTGI STRUCTURED SM-
RESOURCE CAPITAL CORP	FILED	7/11/2018	10/30/2012	8/4/2015	2688058	ZZKRS INS NTGI STRUCTURED SM
AAC HOLDINGS, INC	FILED	7/16/2018	10/2/2014	8/4/2015	KR2F1002002	NTGI STRUCTURED
RESOURCE CAPITAL CORP.	FILED	7/17/2018	10/31/2012	8/5/2015	KR3F1002002	NTGI STRUCTURED
ALLERGAN, INC. (2014) (C.D. CAL.) (SECTION 14(E))	FILED	7/30/2018	2/25/2014	4/21/2014	KR2F1902002	S&P 500 INDEX
ALLERGAN, INC. (2014) (C.D. CAL.) (SECTION 14(E))	FILED	7/30/2018	2/25/2014	4/21/2014	KR3F1902002	S&P 500 INDEX
BANCORPSOUTH, INC. (2014)	FILED	8/2/2018	7/12/2013	7/21/2014	KR3F1002002	NTGI STRUCTURED
BANCORPSOUTH, INC. (2014)	FILED	8/2/2018	7/12/2013	7/21/2014	KR2F1002002	NTGI STRUCTURED
INSULET CORPORATION	FILED	8/16/2018	5/6/2013	7/29/2015	2602408	ZZ*KRS PEN NTGI STRUCTURED SM-
INSULET CORPORATION	FILED	8/16/2018	5/6/2013	7/29/2015	2688058	ZZKRS INS NTGI STRUCTURED SM
YAHOO! INC. (2017)	FILED	8/23/2018	4/29/2013	3/14/2017	2606488	ZZKRS PEN INVESCO US QUANT C-S
YAHOO INC. (2017)	FILED	8/31/2018	4/30/2013	12/14/2016	KR2F1901002	TRANSITION ACCT
YAHOO INC. (2017)	FILED	8/31/2018	4/30/2013	12/14/2016	KR3F1011002	KRS INTERNAL EQUITY
YAHOO INC. (2017)	FILED	8/31/2018	4/30/2013	12/14/2016	KR2F1011002	KRS INTERNAL EQUITY
YAHOO INC. (2017)	FILED	8/31/2018	4/30/2013	12/14/2016	KR2F1009002	INVESCO
INSULET CORPORATION	FILED	9/4/2018	5/7/2013	4/30/2015	KR3F1002002	NTGI STRUCTURED
INSULET CORPORATION	FILED	9/4/2018	5/7/2013	4/30/2015	KR2F1002002	NTGI STRUCTURED
PTC THERAPEUTICS, INC.	FILED	9/25/2018	11/6/2014	2/23/2016	KR3F1006002	WESTFIELD CAPITAL
PTC THERAPEUTICS, INC.	FILED	9/26/2018	11/6/2014	2/23/2016	KR2F1006002	WESTFIELD CAPITAL
BIG LOTS INC.	FILED	9/28/2018	3/1/2012	11/20/2012	2644683	ZZKRS PEN SASCO CAPITAL INC-SL
BIG LOTS INC.	FILED	9/28/2018	3/1/2012	11/20/2012	2644684	ZZKRS INS SASCO CAPITAL INC-SL
BIG LOTS INC.	FILED	9/28/2018	3/1/2012	11/20/2012	2672606	ZZKRS PEN WESTWOOD MANAGEMEN-S
BIG LOTS INC.	FILED	9/28/2018	3/1/2012	11/20/2012	2672607	ZZKRS INS WESTWOOD MANAGEMEN-S
VIRTUS INVESTMENT PARTNERS	FILED	9/28/2018	1/24/2013	8/7/2015	2602408	ZZ*KRS PEN NTGI STRUCTURED SM-
VIRTUS INVESTMENT PARTNERS	FILED	9/28/2018	1/24/2013	8/7/2015	2688058	ZZKRS INS NTGI STRUCTURED SM

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Transaction Detail
Reported By Transaction Category
 6/30/2018 - 9/30/2018

Report ID : IACS0008
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 Status : REVISED

Trans Code Link Ref	Shares/Par Security ID	Description Broker Transaction No./Client Ref No.	Trade Date C. Settle Date Reported Date	Price Local/Base	Cost Local/Base	Amount Local/Base	Net Gain/Loss Local/Base
CLASS ACTIONS							
CASH & CASH EQUIVALENTS							
U.S. DOLLAR							
CD	0.000 NA9123459	13 CIV. 3851 (RMB)BARRICK GOLD CORPORATION (2013) Distributi 20180709S000010 / 000000000005 KR2F20010002: KRS NONUS ACWI-EX	7/9/2018 7/9/2018	0.000000 0.000000	2,983.17 2,983.17	2,983.17 2,983.17	2,983.17 2,983.17 Gain/Loss Local Amounts: 2,983.17 Long Gain/Loss Base Amounts: 2,983.17 Long
CD	0.000 NA9123459	13 CIV. 3851 (RMB)BARRICK GOLD CORPORATION (2013) Distributi 20180709S000060 / 000000000005 KR2F10030002: SYSTEMATIC	7/9/2018 7/9/2018	0.000000 0.000000	609.39 609.39	609.39 609.39	609.39 609.39 Gain/Loss Local Amounts: 609.39 Long Gain/Loss Base Amounts: 609.39 Long
CD	0.000 NA9123459	COMVERGE, INC. (DELAWARE CHANCERY) 20180711S000190 / 31359484 KR2F10020002: NTGI STRUCTURED	7/11/2018 7/11/2018	0.000000 0.000000	599.35 599.35	599.35 599.35	599.35 599.35 Gain/Loss Local Amounts: 599.35 Long Gain/Loss Base Amounts: 599.35 Long
CD	0.000 NA9123459	WESTAFF, INC (PRESS V. DELSTAFF LLC) 05/20/09 20180711S000200 / 31359484 KR2F10020002: NTGI STRUCTURED	7/11/2018 7/11/2018	0.000000 0.000000	73.85 73.85	73.85 73.85	73.85 73.85 Gain/Loss Local Amounts: 73.85 Long Gain/Loss Base Amounts: 73.85 Long
CD	0.000 NA9123459	8396-VCLSAUER-DANFOSS, INC. Distribution 1ST DISTRIBUTION PR 20180716S000520 / 000000000010 KR2F10020002: NTGI STRUCTURED	7/16/2018 7/16/2018	0.000000 0.000000	3,592.71 3,592.71	3,592.71 3,592.71	3,592.71 3,592.71 Gain/Loss Local Amounts: 3,592.71 Long Gain/Loss Base Amounts: 3,592.71 Long
CD	0.000 NA9123459	3 14-CV-00663AGFEED INDUSTRIES, INC. (SEC) Distribution 1ST 20180718S000050 / 000000000000 KR2F10020002: NTGI STRUCTURED	7/17/2018 7/17/2018	0.000000 0.000000	940.21 940.21	940.21 940.21	940.21 940.21 Gain/Loss Local Amounts: 940.21 Long Gain/Loss Base Amounts: 940.21 Long

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Transaction Detail
Reported By Transaction Category
 6/30/2018 - 9/30/2018

Report ID : IACS0008
 Base Currency : USD
 Status : REVISED

Trans Code Link Ref	Shares/Par Security ID	Description Broker Transaction No./Client Ref No.	Trade Date C. Settle Date Reported Date	Price Local/Base	Cost Local/Base	Amount Local/Base	Net Gain/Loss Local/Base
CD	0.000 NA9123459	C.A. No. 6350-VCLRURALMETRO CO RPORATION Distribution 3RD DIS 20180719S000320 / 000000000000 KR2F10020002: NTGI STRUCTURED	7/19/2018 7/19/2018	0.000000 0.000000	201.58 201.58	201.58 201.58	201.58 201.58 Gain/Loss Local Amounts: 201.58 Long Gain/Loss Base Amounts: 201.58 Long
CD	0.000 NA9123459	ST. JUDE MEDICAL, INC (2012) 0 2/04/10 20180720S000010 / 20JUL1840005 KR2F70110002: LIBREMAX CAPITAL	7/20/2018 7/20/2018	0.000000 0.000000	2,733.54 2,733.54	2,733.54 2,733.54	2,733.54 2,733.54 Gain/Loss Local Amounts: 2,733.54 Long Gain/Loss Base Amounts: 2,733.54 Long
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (COMPAN Y) 10/27/99 20180720S000020 / 20JUL1840005 KR2F70110002: LIBREMAX CAPITAL	7/20/2018 7/20/2018	0.000000 0.000000	7,413.67 7,413.67	7,413.67 7,413.67	7,413.67 7,413.67 Gain/Loss Local Amounts: 7,413.67 Long Gain/Loss Base Amounts: 7,413.67 Long
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (STARR DEFENDENTS) 10/27/99 20180720S000030 / 20JUL1840005 KR2F70110002: LIBREMAX CAPITAL	7/20/2018 7/20/2018	0.000000 0.000000	1,077.91 1,077.91	1,077.91 1,077.91	1,077.91 1,077.91 Gain/Loss Local Amounts: 1,077.91 Long Gain/Loss Base Amounts: 1,077.91 Long
CD	0.000 NA9123459	AIG - GENERAL REINSURANCE CORP 10/27/99 20180720S000040 / 20JUL1840005 KR2F70110002: LIBREMAX CAPITAL	7/20/2018 7/20/2018	0.000000 0.000000	728.72 728.72	728.72 728.72	728.72 728.72 Gain/Loss Local Amounts: 728.72 Long Gain/Loss Base Amounts: 728.72 Long
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (PWC) 1 0/27/99 20180720S000050 / 20JUL1840005 KR2F70110002: LIBREMAX CAPITAL	7/20/2018 7/20/2018	0.000000 0.000000	979.98 979.98	979.98 979.98	979.98 979.98 Gain/Loss Local Amounts: 979.98 Long Gain/Loss Base Amounts: 979.98 Long
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (COMPAN Y) 10/27/99 20180720S000080 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	3,066.01 3,066.01	3,066.01 3,066.01	3,066.01 3,066.01 Gain/Loss Local Amounts: 3,066.01 Long Gain/Loss Base Amounts: 3,066.01 Long

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Transaction Detail
Reported By Transaction Category
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Trans Code Link Ref	Shares/Par Security ID	Description Broker Transaction No./Client Ref No.	Trade Date C. Settle Date Reported Date	Price Local/Base	Cost Local/Base	Amount Local/Base	Net Gain/Loss Local/Base
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (STARR DEFENDENTS) 10/27/99 20180720S000090 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	473.03 473.03	473.03 473.03	473.03 473.03 Gain/Loss Local Amounts: 473.03 Long Gain/Loss Base Amounts: 473.03 Long
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (STARR DEFENDENTS) 10/27/99 20180720S000100 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	2,123.92 2,123.92	2,123.92 2,123.92	2,123.92 2,123.92 Gain/Loss Local Amounts: 2,123.92 Long Gain/Loss Base Amounts: 2,123.92 Long
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (STARR DEFENDENTS) 10/27/99 20180720S000110 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	430.59 430.59	430.59 430.59	430.59 430.59 Gain/Loss Local Amounts: 430.59 Long Gain/Loss Base Amounts: 430.59 Long
CD	0.000 NA9123459	AIG - GENERAL REINSURANCE CORP 10/27/99 20180720S000120 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	377.23 377.23	377.23 377.23	377.23 377.23 Gain/Loss Local Amounts: 377.23 Long Gain/Loss Base Amounts: 377.23 Long
CD	0.000 NA9123459	AIG - GENERAL REINSURANCE CORP 10/27/99 20180720S000130 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	2,443.50 2,443.50	2,443.50 2,443.50	2,443.50 2,443.50 Gain/Loss Local Amounts: 2,443.50 Long Gain/Loss Base Amounts: 2,443.50 Long
CD	0.000 NA9123459	AIG - GENERAL REINSURANCE CORP 10/27/99 20180720S000140 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	254.25 254.25	254.25 254.25	254.25 254.25 Gain/Loss Local Amounts: 254.25 Long Gain/Loss Base Amounts: 254.25 Long
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (PWC) 1 0/27/99 20180720S000150 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	492.82 492.82	492.82 492.82	492.82 492.82 Gain/Loss Local Amounts: 492.82 Long Gain/Loss Base Amounts: 492.82 Long

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Transaction Detail
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 Base Currency : USD
 Status : REVISED

Trans Code Link Ref	Shares/Par Security ID	Description Broker Transaction No./Client Ref No.	Trade Date C. Settle Date Reported Date	Price Local/Base	Cost Local/Base	Amount Local/Base	Net Gain/Loss Local/Base
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (PWC) 1 0/27/99 20180720S000160 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	2,551.21 2,551.21	2,551.21 2,551.21	2,551.21 2,551.21 Gain/Loss Local Amounts: 2,551.21 Long Gain/Loss Base Amounts: 2,551.21 Long
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (PWC) 1 0/27/99 - 20180720S000170 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	357.49 357.49	357.49 357.49	357.49 357.49 Gain/Loss Local Amounts: 357.49 Long Gain/Loss Base Amounts: 357.49 Long
CD	0.000 NA9123459	ST. JUDE MEDICAL, INC (2012) 0 2/04/10- 20180720S000180 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	8,355.71 8,355.71	8,355.71 8,355.71	8,355.71 8,355.71 Gain/Loss Local Amounts: 8,355.71 Long Gain/Loss Base Amounts: 8,355.71 Long
CD	0.000 NA9123459	ST. JUDE MEDICAL, INC (2012) 0 2/04/10- 20180720S000190 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	199.86 199.86	199.86 199.86	199.86 199.86 Gain/Loss Local Amounts: 199.86 Long Gain/Loss Base Amounts: 199.86 Long
CD	0.000 NA9123459	ST. JUDE MEDICAL, INC (2012) 0 2/04/10- 20180720S000200 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	35.10 35.10	35.10 35.10	35.10 35.10 Gain/Loss Local Amounts: 35.10 Long Gain/Loss Base Amounts: 35.10 Long
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (COMPAN Y) 10/27/99 20180720S000210 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	13,851.56 13,851.56	13,851.56 13,851.56	13,851.56 13,851.56 Gain/Loss Local Amounts: 13,851.56 Long Gain/Loss Base Amounts: 13,851.56 Long
CD	0.000 NA9123459	AMER. INTL. GRP (2004) (COMPAN Y) 10/27/99 20180720S000220 / 20JUL1840005 KR2F19020002: S&P 500 INDEX	7/20/2018 7/20/2018	0.000000 0.000000	3,536.55 3,536.55	3,536.55 3,536.55	3,536.55 3,536.55 Gain/Loss Local Amounts: 3,536.55 Long Gain/Loss Base Amounts: 3,536.55 Long

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Transaction Detail
Reported By Transaction Category
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Report ID : IACS0008
 Base Currency : USD
 Status : REVISED

Trans Code Link Ref	Shares/Par Security ID	Description Broker Transaction No./Client Ref No.	Trade Date C. Settle Date Reported Date	Price Local/Base	Cost Local/Base	Amount Local/Base	Net Gain/Loss Local/Base
CD	0.000 NA9123459	8922-VCGCORNERSTONE THERAPEUTI CS INC Distribution 1ST DISTRI 20180808S000170 / 000000000008 KR2F10020002: NTGI STRUCTURED	8/8/2018 8/8/2018	0.000000 0.000000	4,412.75 4,412.75	4,412.75 4,412.75	4,412.75 4,412.75 Gain/Loss Local Amounts: 4,412.75 Long Gain/Loss Base Amounts: 4,412.75 Long
CD	0.000 NA9123459	SAUER-DANFOSS INC. 03/15/13-05 /30/13 CLASS ACTION PROCEEDS 20180813S000180 / 13AUG1840003 KR2F10020002: NTGI STRUCTURED	8/13/2018 8/13/2018	0.000000 0.000000	3,495.86 3,495.86	3,495.86 3,495.86	3,495.86 3,495.86 Gain/Loss Local Amounts: 3,495.86 Long Gain/Loss Base Amounts: 3,495.86 Long
CD	0.000 NA9123459	302-CV-1152-MHALLIBURTON COMPA NY (EPJ FUND) Distribution 1ST 20180820S000140 / 000000000082 KR2F19020002: S&P 500 INDEX	8/20/2018 8/20/2018	0.000000 0.000000	30,682.76 30,682.76	30,682.76 30,682.76	30,682.76 30,682.76 Gain/Loss Local Amounts: 30,682.76 Long Gain/Loss Base Amounts: 30,682.76 Long
CD	0.000 NA9123459	WEATHERFORD INTERNATIONAL LTD 03/01/11 - 10/22/12 CLASS 20180828S000050 / 31636996 KR2F10060002: WESTFIELD CAPITAL	8/28/2018 8/28/2018	0.000000 0.000000	3,589.24 3,589.24	3,589.24 3,589.24	3,589.24 3,589.24 Gain/Loss Local Amounts: 3,589.24 Long Gain/Loss Base Amounts: 3,589.24 Long
CD	0.000 NA9123459	14-cv-01243-CMA-KMTADVANCED EM ISSIONS SOLUTIONS, INC. Distri 20180911S000170 / 000000000000 KR2F10020002: NTGI STRUCTURED	9/11/2018 9/11/2018	0.000000 0.000000	54.10 54.10	54.10 54.10	54.10 54.10 Gain/Loss Local Amounts: 54.10 Long Gain/Loss Base Amounts: 54.10 Long
TOTAL U.S. DOLLAR CASH & CASH EQUIVALENTS:					102,717.62	102,717.62	102,717.62
TOTAL CASH & CASH EQUIVALENTS CLASS ACTIONS:					102,717.62	102,717.62	102,717.62
TOTAL CLASS ACTIONS:					102,717.62	102,717.62	102,717.62
TOTAL TRANSACTIONS BASE:					102,717.62	102,717.62	102,717.62

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Transaction Detail
Reported By Transaction Category
 6/30/2018 - 9/30/2018

Report ID : IACS0008
 Base Currency : USD
 Status : REVISED

Trans Code	Shares/Par	Description	Trade Date	Price	Cost	Amount	Net Gain/Loss
Link Ref	Security ID	Broker	C. Settle Date	Local/Base	Local/Base	Local/Base	Local/Base
		Transaction No./Client Ref No.	Reported Date				
CLASS ACTIONS							
CASH & CASH EQUIVALENTS							
U.S. DOLLAR							
CD	0.000	13 CIV. 3851 (RMB)BARRICK GOLD NA9123459 CORPORATION (2013) Distributi	7/9/2018	0.000000	1,096.03	1,096.03	1,096.03
		20180709S000010 / 000000000005	7/9/2018	0.000000	1,096.03	1,096.03	1,096.03
		KR3F20010002: KRS NONUS ACWI-EX					Gain/Loss Local Amounts: 1,096.03 Long Gain/Loss Base Amounts: 1,096.03 Long
CD	0.000	13 CIV. 3851 (RMB)BARRICK GOLD NA9123459 CORPORATION (2013) Distributi	7/9/2018	0.000000	223.59	223.59	223.59
		20180709S000060 / 000000000005	7/9/2018	0.000000	223.59	223.59	223.59
		KR3F10030002: SYSTEMATIC					Gain/Loss Local Amounts: 223.59 Long Gain/Loss Base Amounts: 223.59 Long
CD	0.000	8396-VCLSAUER-DANFOSS, INC. Di NA9123459 stribution 1ST DISTRIBUTION PR	7/16/2018	0.000000	1,690.84	1,690.84	1,690.84
		20180716S000460 / 000000000010	7/16/2018	0.000000	1,690.84	1,690.84	1,690.84
		KR3F10020002: NTGI STRUCTURED					Gain/Loss Local Amounts: 1,690.84 Long Gain/Loss Base Amounts: 1,690.84 Long
CD	0.000	3 14-CV-00663AGFEED INDUSTRIES NA9123459 , INC. (SEC) Distribution 1ST	7/17/2018	0.000000	243.89	243.89	243.89
		20180718S000050 / 000000000000	7/17/2018	0.000000	243.89	243.89	243.89
		KR3F10020002: NTGI STRUCTURED					Gain/Loss Local Amounts: 243.89 Long Gain/Loss Base Amounts: 243.89 Long
CD	0.000	302-CV-1152-MHALLIBURTON COMPA NA9123459 NY (EPJ FUND) Distribution 1ST	8/20/2018	0.000000	4,155.77	4,155.77	4,155.77
		20180820S000200 / 000000000082	8/20/2018	0.000000	4,155.77	4,155.77	4,155.77
		KR3F19020002: S&P 500 INDEX					Gain/Loss Local Amounts: 4,155.77 Long Gain/Loss Base Amounts: 4,155.77 Long
CD	0.000	WEATHERFORD INTERNATIONAL LTD NA9123459 03/01/11 - 10/22/12 CLASS	8/28/2018	0.000000	970.60	970.60	970.60
		20180828S000050 / 31636996	8/28/2018	0.000000	970.60	970.60	970.60
		KR3F10060002: WESTFIELD CAPITAL					Gain/Loss Local Amounts: 970.60 Long Gain/Loss Base Amounts: 970.60 Long

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Transaction Detail
Reported By Transaction Category
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Report ID : IACS0008
 Base Currency : USD
 Status : REVISED

Trans Code Link Ref	Shares/Par Security ID	Description Broker Transaction No./Client Ref No.	Trade Date C. Settle Date Reported Date	Price Local/Base	Cost Local/Base	Amount Local/Base	Net Gain/Loss Local/Base
CD	0.000	14-cv-01243-CMA-KMTADVANCED EM	9/11/2018	0.000000	46.67	46.67	46.67
	NA9123459	ISSIONS SOLUTIONS, INC. Distri		0.000000	46.67	46.67	46.67
		20180911S000150 / 000000000000	9/11/2018				
		KR3F10020002: NTGI STRUCTURED					
						Gain/Loss Local Amounts: 46.67 Long	
						Gain/Loss Base Amounts: 46.67 Long	
TOTAL U.S. DOLLAR CASH & CASH EQUIVALENTS:					8,427.39	8,427.39	8,427.39
					8,427.39	8,427.39	8,427.39
TOTAL CASH & CASH EQUIVALENTS CLASS ACTIONS:					8,427.39	8,427.39	8,427.39
					8,427.39	8,427.39	8,427.39
TOTAL CLASS ACTIONS:					8,427.39	8,427.39	8,427.39
					8,427.39	8,427.39	8,427.39
TOTAL TRANSACTIONS BASE:					8,427.39	8,427.39	8,427.39
					8,427.39	8,427.39	8,427.39

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KENTUCKY RETIREMENT SYSTEMS						
Investment Fees and Expenses						
For the Year Ended September 30, 2018						
Pension						
	2019			2018		
	FYTD Fees	% of MV	Market Value	FYTD Fees	% of MV	Market Value
Absolute Return	\$ 1,264,575	0.25%	\$ 513,698,482	\$ 1,419,059	0.42%	\$ 813,007,110
Investment Adv so y Fees	1,052,247			2,094,649		
Pe fo mance Fees	212,329			1,324,410		
M scellaneous Fees and Expenses						
Fixed Income	165,719	0.01%	2,014,569,194	2,703,505	0.11%	2,360,887,659
Investment Adv so y Fees	165,719			2,131,723		
Pe fo mance Fees	-			457,799		
M scellaneous Fees and Expenses	-			113,983		
Opportunistic	-	0.00%	20,642,147	-	#DIV/0!	
Investment Adv so y Fees	-			-		
Pe fo mance Fees	-			-		
M scellaneous Fees and Expenses	-			-		
Private Equity	6,125,613	0.49%	1,240,097,473	11,286,443	0.93%	1,209,709,833
Investment Adv so y Fees	1,768,624			2,526,563		
Pe fo mance Fees	3,716,049			7,639,005		
M scellaneous Fees and Expenses	640,940			1,120,875		
Public Equity	2,359,635	0.05%	4,831,041,634	2,905,813	0.05%	5,656,385,764
Investment Adv so y Fees	2,255,970			2,849,805		
Pe fo mance Fees	103,665			56,008		
M scellaneous Fees and Expenses	-			-		
Real Estate	3,485,721	0.80%	433,888,869	3,868,351	0.96%	402,682,320
Investment Adv so y Fees	1,116,406			2,092,168		
Pe fo mance Fees	2,121,091			1,017,156		
M scellaneous Fees and Expenses	248,225			759,027		
Real Return	2,208,595	0.21%	1,062,850,954	1,369,253	0.13%	1,041,033,317
Investment Adv so y Fees	1,509,102			1,586,030		
Pe fo mance Fees	482,585			(281,028)		
M scellaneous Fees and Expenses	216,907			66,251		
Specialty Credit Fixed Income	4,781,800	0.25%	1,878,342,402	-		
Investment Adv so y Fees	2,450,605			-		
Pe fo mance Fees	2,232,898			-		
M scellaneous Fees and Expenses	98,297			-		
Cash	408,957	0.08%	495,105,466	597,785		617,126,178
Consu t na	64,407			208,567		
T rustee	291,935			329,959		
M scellaneous Fees and Expenses	52,615			59,259		
Total Investment Mgmt Fees	20,800,616	0.17%	12,490,236,621	26,150,208	0.22%	12,100,832,221

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KENTUCKY RETIREMENT SYSTEMS						
Investment Fees and Expenses						
For the Year Ended September 30, 2018						
Insurance						
	2019			2018		
	FYTD Fees	% of MV	Market Value	FYTD Fees	% of MV	Market Value
Absolute Return	\$ 528,256	0.25%	\$ 211,655,490	\$ 1,482,035	0.45%	\$ 326,917,714
Investment Adv so y Fees	433,435			824,315		
Pe fo mance Fees	94,821			657,720		
M scellaneous Fees and Expenses	-			-		
Fixed Income	167,280	0.02%	798,692,824	1,057,385	0.12%	895,925,840
Investment Adv so y Fees	167,280			827,521		
Pe fo mance Fees	-			182,359		
M scellaneous Fees and Expenses	-			47,505		
Opportunistic	-	0.00%	10,511,108	-	#DIV/0!	
Investment Adv so y Fees	-			-		
Pe fo mance Fees	-			-		
M scellaneous Fees and Expenses	-			-		
Private Equity	3,564,535	0.65%	549,714,528	5,272,242	1.12%	470,377,777
Investment Adv so y Fees	1,095,575			1,300,215		
Pe fo mance Fees	2,079,680			3,491,258		
M scellaneous Fees and Expenses	389,280			480,769		
Public Equity	1,039,780	0.05%	2,125,492,814	1,249,634	0.05%	2,430,774,911
Investment Adv so y Fees	993,794			1,225,796		
Pe fo mance Fees	45,986			23,838		
M scellaneous Fees and Expenses	-			-		
Real Estate	1,474,277	0.83%	178,100,520	1,619,887	1.00%	162,407,571
Investment Adv so y Fees	516,213			894,155		
Pe fo mance Fees	851,750			400,850		
M scellaneous Fees and Expenses	106,314			324,882		
Real Return	934,470	0.21%	447,049,147	566,144	0.13%	438,993,530
Investment Adv so y Fees	660,790			652,105		
Pe fo mance Fees	160,695			(101,601)		
M scellaneous Fees and Expenses	106,985			15,640		
Specialty Credit Fixed Income	1,906,931	0.26%	743,546,220	-		
Investment Adv so y Fees	965,194			-		
Pe fo mance Fees	893,698			-		
M scellaneous Fees and Expenses	48,038			-		
Cash	249,951	0.14%	177,855,862	325,449	0.16%	201,193,289
Consu t na	26,806			84,122		
T rustee	202,741			204,102		
M scellaneous Fees and Expenses	20,404			37,225		
Total Investment Mgmt Fees	9,865,481	0.19%	5,242,618,513	11,572,776	0.23%	4,926,590,642

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System	Investment	Vintage	Commitment	Period Contributions	Period Distributions	Ending Valuation	IRR	TVPI
Kentucky Retirement Systems - Pension Fund	VantagePoint Venture Partners IV, L.P.	2000	36,000,000	27,360,000	31,408,077	2,688,556	3.77	1.25
Kentucky Retirement Systems - Pension Fund	MatlinPatterson Global Opportunities Partners	2001	45,000,000	46,823,474	82,308,316	0	29.81	1.76
Kentucky Retirement Systems - Pension Fund	JW Childs Equity Partners III, L.P.	2002	36,000,000	34,874,154	69,706,309	1,951	15.89	2
Kentucky Retirement Systems - Pension Fund	Green Equity Investors IV, L.P.	2003	67,500,000	69,946,178	132,444,496	3,124,334	10.96	1.94
Kentucky Retirement Systems - Pension Fund	MatlinPatterson Global Opportunities Partners II	2003	45,000,000	66,660,213	38,123,519	1,374,395	-20.2	0.59
Kentucky Retirement Systems - Pension Fund	Oak Hill Capital Partners II, L.P.	2004	67,500,000	67,254,986	110,042,116	2,445,751	9.84	1.67
Kentucky Retirement Systems - Pension Fund	Columbia Capital Equity Partners IV, L.P.	2005	27,000,000	26,584,270	54,576,400	4,067,988	11.89	2.21
Kentucky Retirement Systems - Pension Fund	H.I.G. Ventures II, L.P.	2005	18,000,000	17,904,467	14,856,926	11,031,408	5.36	1.45
Kentucky Retirement Systems - Pension Fund	Institutional Venture Partners XI, L.P.	2005	0	13,500,000	12,207,000	0	-2.55	0.9
Kentucky Retirement Systems - Pension Fund	Merit Mezzanine Fund IV, L.P.	2005	27,000,000	25,264,286	39,258,172	8,253,962	11.02	1.88
Kentucky Retirement Systems - Pension Fund	New Mountain Partners II, L.P.	2005	25,000,000	41,162,151	68,084,844	886,975	11.77	1.68
Kentucky Retirement Systems - Pension Fund	Sun Capital Partners IV	2005	0	16,667,323	20,313,285	0	4.66	1.22
Kentucky Retirement Systems - Pension Fund	Warburg, Pincus Private Equity IX, L.P.	2005	50,000,000	89,727,250	129,385,935	4,222,000	7.88	1.49
Kentucky Retirement Systems - Pension Fund	Wayzata Opportunities Fund, L.P.	2005	67,500,000	100,068,206	142,676,001	323,926	8.42	1.43
Kentucky Retirement Systems - Pension Fund	Arbor Capital II, L.P.	2006	22,500,000	18,914,727	41,658,880	4,261,149	19.4	2.43
Kentucky Retirement Systems - Pension Fund	Blackstone Capital Partners V, L.P.	2006	47,174,735	108,148,633	139,803,007	5,491,671	5.69	1.34
Kentucky Retirement Systems - Pension Fund	DAG Ventures II, L.P.	2006	27,000,000	27,605,187	11,043,878	5,637,294	-5.61	0.6
Kentucky Retirement Systems - Pension Fund	GTCR Fund IX-A, L.P.	2006	63,000,000	59,988,544	108,163,250	-599,163	13.67	1.79
Kentucky Retirement Systems - Pension Fund	MHR Institutional Partners III, L.P.	2006	0	25,419,681	21,007,000	0	-6.11	0.83
Kentucky Retirement Systems - Pension Fund	TCV VI, L.P.	2006	0	20,655,000	21,961,213	0	2.46	1.06
Kentucky Retirement Systems - Pension Fund	VantagePoint Venture Partners 2006, L.P.	2006	27,000,000	27,000,000	2,655,806	6,959,435	-14.3	0.36
Kentucky Retirement Systems - Pension Fund	Bay Hills Capital I, L.P.	2007	67,500,000	46,469,456	70,879,474	20,126,913	13.08	1.96
Kentucky Retirement Systems - Pension Fund	DAG Ventures III, L.P.	2007	27,000,000	26,980,598	41,611,971	3,001,224	9.03	1.65
Kentucky Retirement Systems - Pension Fund	Green Equity Investors V, L.P.	2007	90,000,000	92,799,293	146,835,680	57,832,837	18.32	2.21
Kentucky Retirement Systems - Pension Fund	Harvest Partners V, L.P.	2007	36,000,000	33,206,012	55,090,716	8,359,592	18.32	1.91
Kentucky Retirement Systems - Pension Fund	Hellman and Friedman Capital Partners VI, L.P.	2007	20,000,000	60,887,605	83,260,923	1,524,142	9.61	1.39
Kentucky Retirement Systems - Pension Fund	Institutional Venture Partners XII, L.P.	2007	27,000,000	27,000,000	65,095,684	7,554,372	26.13	2.69
Kentucky Retirement Systems - Pension Fund	MatlinPatterson Global Opportunities Partners III	2007	45,000,000	56,001,197	58,168,234	12,704,258	4.95	1.27
Kentucky Retirement Systems - Pension Fund	New Mountain Partners III, L.P.	2007	33,750,000	58,234,040	65,207,234	21,901,286	10.01	1.5
Kentucky Retirement Systems - Pension Fund	Oak Hill Capital Partners III, L.P.	2007	33,750,000	91,307,505	88,456,411	17,195,402	3.95	1.16
Kentucky Retirement Systems - Pension Fund	Tenaska Power Fund II, L.P.	2007	27,000,000	23,663,214	21,307,248	681,578	-1.74	0.93
Kentucky Retirement Systems - Pension Fund	Vista Equity Partners III, L.P.	2007	45,000,000	46,845,176	110,631,000	12,771,798	29	2.63
Kentucky Retirement Systems - Pension Fund	Warburg, Pincus Private Equity X, L.P.	2007	38,750,000	59,039,371	62,494,394	18,366,333	6.66	1.37
Kentucky Retirement Systems - Pension Fund	Wayzata Opportunities Fund II, L.P.	2007	67,500,000	78,637,500	144,816,467	2,685,835	16.46	1.88
Kentucky Retirement Systems - Pension Fund	Crestview Partners II, L.P.	2008	67,500,000	77,374,472	89,494,966	45,229,953	14.17	1.74
Kentucky Retirement Systems - Pension Fund	DAG Ventures IV, L.P.	2008	90,000,000	95,221,127	37,582,596	64,967,269	1.13	1.08
Kentucky Retirement Systems - Pension Fund	Essex Woodlands Fund VIII, L.P.	2008	22,500,000	31,050,000	18,405,201	12,090,455	-0.42	0.98
Kentucky Retirement Systems - Pension Fund	Mill Road Capital I, L.P.	2008	27,000,000	23,895,550	26,098,423	14,682,054	10.18	1.71
Kentucky Retirement Systems - Pension Fund	OCM Opportunities Fund VIIb, L.P.	2008	0	60,750,000	80,969,000	0	13.78	1.33
Kentucky Retirement Systems - Pension Fund	Bay Hills Emerging Partners II LP	2009	45,000,000	35,408,754	31,715,336	66,475,393	25.86	2.77
Kentucky Retirement Systems - Pension Fund	Horsley Bridge International Fund V, L.P.	2009	45,000,000	42,901,789	16,627,934	74,277,387	18.98	2.12
Kentucky Retirement Systems - Pension Fund	Walton Street Real Estate Fund VI, LP	2009	36,000,000	32,575,469	35,121,631	14,787,733	9.06	1.53
Kentucky Retirement Systems - Pension Fund	Arcano KRS Fund I, L.P.	2010	36,000,000	27,180,000	10,009,438	28,280,455	7.55	1.41
Kentucky Retirement Systems - Pension Fund	Bay Hills Emerging Partners II-B LP	2010	45,000,000	42,668,939	11,182,771	53,830,670	11.42	1.52
Kentucky Retirement Systems - Pension Fund	Camelot Opportunities Fund, L.P.	2010	23,400,000	23,370,718	539,274	10,699,131	-9.44	0.48
Kentucky Retirement Systems - Pension Fund	DCM VI, L.P.	2010	13,500,000	11,137,500	2,092,500	13,183,658	5.57	1.37
Kentucky Retirement Systems - Pension Fund	Keyhaven Capital Partners Fund III, L.P.	2010	29,307,190	26,886,737	12,539,307	24,660,207	10.26	1.38
Kentucky Retirement Systems - Pension Fund	Mesa West Real Estate Income Fund II	2010	9,999,999	31,489,805	41,848,088	0	12.61	1.33
Kentucky Retirement Systems - Pension Fund	Blackstone Capital Partners VI, L.P.	2011	60,000,000	62,233,793	37,032,883	59,819,626	13.59	1.56
Kentucky Retirement Systems - Pension Fund	DAG Ventures V, L.P.	2011	8,000,000	9,677,036	11,370,032	25,701,023	31.58	3.83
Kentucky Retirement Systems - Pension Fund	H.I.G. BioVentures II, L.P.	2011	13,500,000	9,034,411	2,446,284	9,989,903	11.28	1.38
Kentucky Retirement Systems - Pension Fund	Harvest Partners VI, L.P.	2011	28,400,000	29,581,978	42,489,941	12,705,760	22.14	1.87

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Kentucky Retirement Systems - Pension Fund	Vista Equity Partners IV, L.P.	2011	27,000,000	27,293,690	30,085,254	22,396,437	17.83	1.92
Kentucky Retirement Systems - Pension Fund	Green Equity Investors VI, L.P.	2012	32,000,000	36,759,064	22,707,080	33,212,824	15.77	1.52
Kentucky Retirement Systems - Pension Fund	AMERRA Agri Fund II, LP	2013	40,100,000	40,461,183	24,029,940	23,695,229	4.65	1.18
Kentucky Retirement Systems - Pension Fund	Bay Hills Capital III, L.P.	2013	51,250,000	42,075,202	4,437,995	49,019,170	13.62	1.27
Kentucky Retirement Systems - Pension Fund	Greenfield Acquisition Partners VI, L.P.	2013	38,100,000	37,184,296	46,149,161	6,296,725	12.26	1.41
Kentucky Retirement Systems - Pension Fund	H.I.G. Capital Partner V, L.P.	2013	13,100,000	8,692,346	3,103,712	9,452,061	23.75	1.44
Kentucky Retirement Systems - Pension Fund	Levine Leichtman Capital Partners V, L.P.	2013	46,000,000	58,494,053	29,824,311	42,418,806	10.59	1.24
Kentucky Retirement Systems - Pension Fund	Mesa West Core Lending Fund, LP	2013	57,500,000	58,305,027	19,427,165	59,526,336	6.94	1.35
Kentucky Retirement Systems - Pension Fund	Riverside Capital Appreciation Fund VI, L.P.	2013	35,500,000	33,466,876	17,224,787	29,421,891	14.21	1.39
Kentucky Retirement Systems - Pension Fund	Rubenstein Properties Fund II	2013	20,800,000	27,078,346	17,086,737	15,987,639	11.76	1.22
Kentucky Retirement Systems - Pension Fund	Triton Fund IV, L.P.	2013	29,222,089	26,737,627	12,887,189	19,827,868	9.47	1.22
Kentucky Retirement Systems - Pension Fund	Walton Street Real Estate Fund VII, LP	2013	38,120,000	32,757,526	26,148,563	21,106,777	13.27	1.44
Kentucky Retirement Systems - Pension Fund	Wayzata Opportunities Fund III, L.P.	2013	35,500,000	17,383,896	9,328,682	7,568,673	-1.09	0.97
Kentucky Retirement Systems - Pension Fund	BTG Pactual Brazil Timberland Fund I	2014	34,500,000	20,955,053	0	17,530,001	-8.91	0.84
Kentucky Retirement Systems - Pension Fund	Cerberus KRS Levered Loan Opportunities Fund, L.P.	2014	87,500,000	83,627,287	24,150,000	86,103,705	8.57	1.32
Kentucky Retirement Systems - Pension Fund	Crestview Partners III, L.P.	2014	39,000,000	19,939,067	2,970,671	20,533,846	8.83	1.18
Kentucky Retirement Systems - Pension Fund	CVC European Equity Partners VI, L.P.	2014	25,460,974	25,200,904	7,861,681	22,698,551	11.38	1.21
Kentucky Retirement Systems - Pension Fund	DivcoWest Fund IV	2014	20,800,000	21,852,089	28,898,039	4,591,613	22.41	1.53
Kentucky Retirement Systems - Pension Fund	Greenfield Acquisition Partners VII, L.P.	2014	27,800,000	26,819,133	9,909,560	27,293,553	12.1	1.39
Kentucky Retirement Systems - Pension Fund	Lubert Adler VII	2014	34,750,000	33,269,041	10,039,666	28,783,475	6.08	1.17
Kentucky Retirement Systems - Pension Fund	New Mountain Partners IV, L.P.	2014	32,800,000	29,220,813	12,422,430	30,869,205	20.19	1.48
Kentucky Retirement Systems - Pension Fund	Oberland Capital Healthcare LP	2014	34,500,000	21,382,287	22,137,033	958,045	15.33	1.08
Kentucky Retirement Systems - Pension Fund	Secondary Opportunities Fund III, L.P.	2014	25,000,000	19,291,598	7,391,742	18,302,260	21.24	1.33
Kentucky Retirement Systems - Pension Fund	AMERRA-KRS Agri Holding Company, LP	2015	65,000,000	69,244,274	24,188,706	42,776,307	-2.16	0.97
Kentucky Retirement Systems - Pension Fund	Ares Special Situations Fund IV, L.P.	2015	26,192,000	23,145,737	2,074,501	17,745,958	-9.51	0.86
Kentucky Retirement Systems - Pension Fund	BDCM Opportunity Fund IV, L.P.	2015	35,580,000	32,754,059	9,006,008	28,813,569	10.67	1.15
Kentucky Retirement Systems - Pension Fund	Fundamental Partners III LP	2015	70,000,000	34,818,199	3,417,461	33,508,963	4.92	1.06
Kentucky Retirement Systems - Pension Fund	Harvest Partners VII LP	2015	20,000,000	11,534,733	721,150	11,547,163	6.4	1.06
Kentucky Retirement Systems - Pension Fund	KCP IV Co-Invest	2015	13,775,390	5,525,667	0	6,565,601	10.27	1.19
Kentucky Retirement Systems - Pension Fund	Keyhaven Capital Partners IV LP	2015	13,775,390	5,600,507	1,070,041	7,990,988	35.19	1.62
Kentucky Retirement Systems - Pension Fund	Magentar MTP Energy Opportunities Fund II LLC	2015	37,500,000	32,869,441	14,258,749	21,248,828	5.31	1.08
Kentucky Retirement Systems - Pension Fund	Mesa West Real Estate Income Fund IV LP	2015	36,000,000	11,200,000	869,718	11,128,940	6.13	1.07
Kentucky Retirement Systems - Pension Fund	Patron Capital V LP	2015	41,814,000	15,095,748	2,940,431	13,606,658	7.98	1.1
Kentucky Retirement Systems - Pension Fund	Taurus Mining Finance Fund LLC	2015	45,100,000	27,004,059	11,684,993	20,742,833	14.18	1.2
Kentucky Retirement Systems - Pension Fund	Green Equity Investors VII LP	2016	25,000,000	11,222,950	98,997	11,262,733	1.57	1.01
Kentucky Retirement Systems - Pension Fund	Kayne Anderson Energy Fund VII LP	2016	50,000,000	45,083,267	19,080,629	45,697,680	35.15	1.44
Kentucky Retirement Systems - Pension Fund	Vista Equity Partners VI LP	2016	25,000,000	24,390,246	2,519,803	24,316,034	8.18	1.1
Kentucky Retirement Systems - Pension Fund	BSP Private Credit Fund	2017	100,000,000	49,504,950	434,289	49,158,945	0.32	1
Kentucky Retirement Systems - Pension Fund	Levine Leichtman Capital Partners VI LP	2017	37,500,000	14,402,320	7,313,620	7,067,362	-0.28	1
Kentucky Retirement Systems - Pension Fund	Lubert-Adler Real Estate Fund VII-B LP	2017	36,750,000	15,866,887	488,315	15,573,215	1.75	1.01
Kentucky Retirement Systems - Pension Fund	White Oak Yield Spectrum Parallel Fund LP	2017	100,000,000	44,726,667	614,667	44,677,094	2.97	1.01
Kentucky Retirement Systems - Pension Fund	H&F Spock I LP	2018	3,250,153	3,252,171	0	3,582,934	10.17	1.1
Kentucky Retirement Systems - Pension Fund	Strategic Value Special Situations Fund IV LP	2018	43,300,000	6,416,016	0	6,449,757	0.69	1.01

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System	Investment	Vintage	Commitment	Period Contributions	Period Distributions	Ending Valuation	IRR	TVPI
Kentucky Retirement Systems - Insurance Fund	VantagePoint Venture Partners IV, L.P.	2000	4,000,000	3,040,000	3,489,787	298,728	3.77	1.25
Kentucky Retirement Systems - Insurance Fund	MatlinPatterson Global Opportunities Partners	2001	5,000,000	5,202,608	9,145,375	0	29.81	1.76
Kentucky Retirement Systems - Insurance Fund	JW Childs Equity Partners III, L.P.	2002	4,000,000	3,874,908	7,723,370	216	15.77	1.99
Kentucky Retirement Systems - Insurance Fund	Green Equity Investors IV, L.P.	2003	7,500,000	7,771,796	14,870,433	347,148	11.2	1.96
Kentucky Retirement Systems - Insurance Fund	MatlinPatterson Global Opportunities Partners II	2003	5,000,000	7,406,690	4,235,947	152,707	-20.2	0.59
Kentucky Retirement Systems - Insurance Fund	Oak Hill Capital Partners II, L.P.	2004	7,500,000	7,472,871	12,202,460	271,751	9.78	1.67
Kentucky Retirement Systems - Insurance Fund	Columbia Capital Equity Partners IV, L.P.	2005	3,000,000	2,953,808	6,064,037	452,000	11.9	2.21
Kentucky Retirement Systems - Insurance Fund	H.I.G. Ventures II, L.P.	2005	2,000,000	1,989,385	1,650,770	1,225,712	5.36	1.45
Kentucky Retirement Systems - Insurance Fund	Institutional Venture Partners XI, L.P.	2005	1,500,000	1,500,000	1,606,061	0	1.16	1.07
Kentucky Retirement Systems - Insurance Fund	Merit Mezzanine Fund IV, L.P.	2005	3,000,000	2,807,143	4,362,019	917,107	11.02	1.88
Kentucky Retirement Systems - Insurance Fund	New Mountain Partners II, L.P.	2005	5,000,000	4,609,028	8,819,376	177,399	13.79	1.95
Kentucky Retirement Systems - Insurance Fund	Sun Capital Partners IV	2005	2,000,000	2,517,694	2,811,721	443,150	4.53	1.29
Kentucky Retirement Systems - Insurance Fund	TCV VI, L.P.	2005	2,500,000	2,488,250	3,538,093	601,849	13.44	1.66
Kentucky Retirement Systems - Insurance Fund	Warburg, Pincus Private Equity IX, L.P.	2005	10,000,000	10,054,550	16,711,671	844,401	9.83	1.75
Kentucky Retirement Systems - Insurance Fund	Wayzata Opportunities Fund, L.P.	2005	7,500,000	11,118,689	15,853,073	36,015	8.4	1.43
Kentucky Retirement Systems - Insurance Fund	Arbor Capital II, L.P.	2006	2,500,000	2,101,636	4,628,764	473,461	19.4	2.43
Kentucky Retirement Systems - Insurance Fund	Blackstone Capital Partners V, L.P.	2006	12,414,403	12,468,815	20,078,799	1,444,962	8.23	1.73
Kentucky Retirement Systems - Insurance Fund	DAG Ventures II, L.P.	2006	3,000,000	3,067,243	1,227,107	626,357	-5.61	0.6
Kentucky Retirement Systems - Insurance Fund	GTCR Fund IX-A, L.P.	2006	7,000,000	6,665,394	12,018,319	-66,585	13.67	1.79
Kentucky Retirement Systems - Insurance Fund	MHR Institutional Partners III, L.P.	2006	4,000,000	4,469,019	4,209,516	1,781,396	5.76	1.34
Kentucky Retirement Systems - Insurance Fund	VantagePoint Venture Partners 2006, L.P.	2006	3,000,000	3,000,000	295,090	773,271	-14.29	0.36
Kentucky Retirement Systems - Insurance Fund	Avenue Special Situations Fund V, L.P.	2007	7,500,000	7,500,289	9,945,345	-10,266	11.17	1.32
Kentucky Retirement Systems - Insurance Fund	Bay Hills Capital I, L.P.	2007	7,500,000	5,163,273	7,875,497	2,236,324	13.08	1.96
Kentucky Retirement Systems - Insurance Fund	DAG Ventures III, L.P.	2007	3,000,000	2,997,844	4,623,565	333,456	9.03	1.65
Kentucky Retirement Systems - Insurance Fund	Green Equity Investors V, L.P.	2007	10,000,000	10,311,033	16,308,308	6,425,910	18.31	2.2
Kentucky Retirement Systems - Insurance Fund	Harvest Partners V, L.P.	2007	4,000,000	3,689,554	6,121,189	928,842	18.32	1.91
Kentucky Retirement Systems - Insurance Fund	Hellman and Friedman Capital Partners VI, L.P.	2007	7,500,000	7,362,213	13,089,203	571,565	12.91	1.86
Kentucky Retirement Systems - Insurance Fund	Institutional Venture Partners XII, L.P.	2007	3,000,000	3,000,000	7,232,978	839,249	25.93	2.69
Kentucky Retirement Systems - Insurance Fund	MatlinPatterson Global Opportunities Partners III	2007	5,000,000	6,222,355	6,463,100	1,411,642	4.95	1.27
Kentucky Retirement Systems - Insurance Fund	New Mountain Partners III, L.P.	2007	7,500,000	8,498,127	10,387,287	4,866,943	12.51	1.8
Kentucky Retirement Systems - Insurance Fund	Oak Hill Capital Partners III, L.P.	2007	12,500,000	14,568,786	16,505,895	6,368,667	9.72	1.57
Kentucky Retirement Systems - Insurance Fund	Tenaska Power Fund II, L.P.	2007	3,000,000	2,629,247	2,367,469	75,732	-1.74	0.93
Kentucky Retirement Systems - Insurance Fund	Vista Equity Partners III, L.P.	2007	5,000,000	5,205,019	12,292,325	1,419,088	29	2.63
Kentucky Retirement Systems - Insurance Fund	Warburg, Pincus Private Equity X, L.P.	2007	7,500,000	7,470,604	8,583,823	3,554,795	8.75	1.62
Kentucky Retirement Systems - Insurance Fund	Wayzata Opportunities Fund II, L.P.	2007	7,500,000	8,737,500	16,090,719	298,426	16.46	1.88
Kentucky Retirement Systems - Insurance Fund	Crestview Partners II, L.P.	2008	7,500,000	8,597,177	9,943,884	5,025,539	14.16	1.74
Kentucky Retirement Systems - Insurance Fund	DAG Ventures IV, L.P.	2008	10,000,000	10,580,125	4,175,844	7,218,585	1.13	1.08
Kentucky Retirement Systems - Insurance Fund	Essex Woodlands Fund VIII, L.P.	2008	5,000,000	5,000,000	2,551,425	2,686,768	0.93	1.05
Kentucky Retirement Systems - Insurance Fund	Mill Road Capital I, L.P.	2008	3,000,000	2,655,061	2,899,824	1,631,339	10.18	1.71
Kentucky Retirement Systems - Insurance Fund	OCM Opportunities Fund VIIb, L.P.	2008	7,500,000	6,773,977	11,112,431	396,499	16.15	1.7
Kentucky Retirement Systems - Insurance Fund	Bay Hills Emerging Partners II LP	2009	5,000,000	3,934,306	3,523,926	7,386,155	25.87	2.77
Kentucky Retirement Systems - Insurance Fund	Horsley Bridge International Fund V, L.P.	2009	5,000,000	4,766,865	1,847,551	8,253,038	18.98	2.12
Kentucky Retirement Systems - Insurance Fund	Walton Street Real Estate Fund VI LP	2009	4,000,000	3,619,497	3,902,404	1,643,081	9.06	1.53
Kentucky Retirement Systems - Insurance Fund	Arcano KRS Fund I, L.P.	2010	4,000,000	3,140,000	1,112,160	3,142,274	6.77	1.35
Kentucky Retirement Systems - Insurance Fund	Bay Hills Emerging Partners II-B LP	2010	5,000,000	4,740,993	1,242,530	5,981,186	11.42	1.52
Kentucky Retirement Systems - Insurance Fund	Camelot Opportunities Fund, L.P.	2010	2,600,000	2,596,747	59,916	1,188,791	-9.44	0.48
Kentucky Retirement Systems - Insurance Fund	DCM VI, L.P.	2010	1,500,000	1,237,500	232,500	1,464,851	5.57	1.37
Kentucky Retirement Systems - Insurance Fund	Keyhaven Capital Partners Fund III, L.P.	2010	3,252,200	2,987,334	1,393,042	2,740,022	10.26	1.38
Kentucky Retirement Systems - Insurance Fund	Mesa West Real Estate Income Fund II	2010	9,999,999	2,979,865	4,649,789	0	18.88	1.56
Kentucky Retirement Systems - Insurance Fund	Blackstone Capital Partners VI, L.P.	2011	40,000,000	41,366,732	24,688,589	39,879,750	13.68	1.56
Kentucky Retirement Systems - Insurance Fund	DAG Ventures V, L.P.	2011	7,000,000	8,698,112	9,948,778	22,488,395	31.18	3.73
Kentucky Retirement Systems - Insurance Fund	H.I.G. BioVentures II, L.P.	2011	11,500,000	7,695,980	2,083,871	8,509,915	11.28	1.38

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Investment Committee Meeting- November 7, 2018 - Standard Reports

Kentucky Retirement Systems - Insurance Fund	Harvest Partners VI, L.P.	2011	11,600,000	12,082,782	17,355,047	5,189,682	22.2	1.87
Kentucky Retirement Systems - Insurance Fund	Vista Equity Partners IV, L.P.	2011	23,000,000	23,253,206	25,628,179	19,078,440	17.82	1.92
Kentucky Retirement Systems - Insurance Fund	Green Equity Investors VI, L.P.	2012	28,000,000	32,207,465	19,868,685	29,061,221	15.71	1.52
Kentucky Retirement Systems - Insurance Fund	AMERRA Agri Fund II, LP	2013	16,200,000	16,318,047	9,691,306	9,556,317	4.65	1.18
Kentucky Retirement Systems - Insurance Fund	Bay Hills Capital III, L.P.	2013	48,750,000	35,977,624	3,830,142	41,942,085	14.37	1.27
Kentucky Retirement Systems - Insurance Fund	Greenfield Acquisition Partners VI, L.P.	2013	16,700,000	16,343,728	20,284,083	2,767,620	12.26	1.41
Kentucky Retirement Systems - Insurance Fund	H.I.G. Capital Partner V, L.P.	2013	6,900,000	4,578,411	1,634,780	4,978,567	23.76	1.44
Kentucky Retirement Systems - Insurance Fund	Levine Leichtman Capital Partners V, L.P.	2013	24,000,000	30,518,638	15,560,510	22,131,550	10.55	1.24
Kentucky Retirement Systems - Insurance Fund	Mesa West Core Lending Fund, LP	2013	29,600,000	34,994,589	9,319,869	35,821,657	6.65	1.29
Kentucky Retirement Systems - Insurance Fund	Riverside Capital Appreciation Fund VI, L.P.	2013	18,712,500	17,640,822	9,079,437	15,508,646	14.21	1.39
Kentucky Retirement Systems - Insurance Fund	Rubenstein Properties Fund II	2013	9,200,000	11,976,961	7,557,595	7,071,456	11.76	1.22
Kentucky Retirement Systems - Insurance Fund	Triton Fund IV, L.P.	2013	15,034,456	14,089,840	6,793,116	10,451,699	9.48	1.22
Kentucky Retirement Systems - Insurance Fund	Walton Street Real Estate Fund VII, LP	2013	16,755,000	14,345,798	11,493,158	9,277,127	13.42	1.45
Kentucky Retirement Systems - Insurance Fund	Wayzata Opportunities Fund III, L.P.	2013	18,712,500	9,163,277	4,917,271	3,989,543	-1.09	0.97
Kentucky Retirement Systems - Insurance Fund	BTG Pactual Brazil Timberland Fund I	2014	15,500,000	9,414,589	0	7,875,798	-8.91	0.84
Kentucky Retirement Systems - Insurance Fund	Cerberus KRS Levered Loan Opportunities Fund, L.P.	2014	37,500,000	35,803,897	10,350,000	36,901,587	8.6	1.32
Kentucky Retirement Systems - Insurance Fund	Crestview Partners III, L.P.	2014	21,000,000	10,736,419	1,599,593	11,056,685	8.83	1.18
Kentucky Retirement Systems - Insurance Fund	CVC European Equity Partners VI, L.P.	2014	14,054,382	13,316,098	4,154,093	11,993,857	11.38	1.21
Kentucky Retirement Systems - Insurance Fund	DivcoWest Fund IV	2014	9,200,000	9,665,347	12,781,821	2,030,909	22.41	1.53
Kentucky Retirement Systems - Insurance Fund	Greenfield Acquisition Partners VII, L.P.	2014	12,200,000	11,769,546	4,348,797	11,977,746	12.1	1.39
Kentucky Retirement Systems - Insurance Fund	Lubert Adler VII	2014	15,250,000	14,600,083	4,405,896	12,631,596	6.08	1.17
Kentucky Retirement Systems - Insurance Fund	New Mountain Partners IV, L.P.	2014	17,200,000	15,323,111	6,514,197	16,187,511	20.23	1.48
Kentucky Retirement Systems - Insurance Fund	Oberland Capital Healthcare LP	2014	15,500,000	9,606,535	9,945,623	430,427	15.33	1.08
Kentucky Retirement Systems - Insurance Fund	Secondary Opportunities Fund III, L.P.	2014	75,000,000	57,874,796	22,175,227	54,906,780	21.24	1.33
Kentucky Retirement Systems - Insurance Fund	AMERRA-KRS Agri Holding Company, LP	2015	35,000,000	37,285,378	13,024,688	23,033,395	-2.16	0.97
Kentucky Retirement Systems - Insurance Fund	Ares Special Situations Fund IV, L.P.	2015	13,808,000	12,202,060	1,093,643	9,355,383	-9.51	0.86
Kentucky Retirement Systems - Insurance Fund	BDCM Opportunity Fund IV, L.P.	2015	24,420,000	22,548,127	6,181,184	19,775,927	10.41	1.15
Kentucky Retirement Systems - Insurance Fund	Fundamental Partners III LP	2015	30,000,000	14,922,086	1,464,626	14,360,985	4.91	1.06
Kentucky Retirement Systems - Insurance Fund	Harvest Partners VII LP	2015	20,000,000	11,534,733	721,150	11,547,163	6.4	1.06
Kentucky Retirement Systems - Insurance Fund	KCP IV Co-Invest	2015	9,454,610	3,792,490	0	4,506,237	10.27	1.19
Kentucky Retirement Systems - Insurance Fund	Keyhaven Capital Partners IV LP	2015	9,454,610	3,843,856	734,413	5,484,540	35.19	1.62
Kentucky Retirement Systems - Insurance Fund	Magentar MTP Energy Opportunities Fund II LLC	2015	12,500,000	10,956,480	4,752,916	7,082,943	5.31	1.08
Kentucky Retirement Systems - Insurance Fund	Mesa West Real Estate Income Fund IV LP	2015	14,000,000	4,355,556	338,224	4,327,922	6.13	1.07
Kentucky Retirement Systems - Insurance Fund	Patron Capital V LP	2015	16,261,000	5,870,723	1,143,540	5,291,640	8.38	1.1
Kentucky Retirement Systems - Insurance Fund	Taurus Mining Finance Fund LLC	2015	19,900,000	11,915,318	5,155,908	9,152,602	14.18	1.2
Kentucky Retirement Systems - Insurance Fund	Green Equity Investors VII LP	2016	25,000,000	11,222,950	98,997	11,262,733	1.57	1.01
Kentucky Retirement Systems - Insurance Fund	Kayne Anderson Energy Fund VII LP	2016	50,000,000	45,083,267	19,080,629	45,697,680	35.15	1.44
Kentucky Retirement Systems - Insurance Fund	Vista Equity Partners VI LP	2016	25,000,000	24,390,246	2,519,803	24,316,034	8.18	1.1
Kentucky Retirement Systems - Insurance Fund	BSP Private Credit Fund	2017	50,000,000	24,752,475	217,145	24,579,472	0.32	1
Kentucky Retirement Systems - Insurance Fund	Levine Leichtman Capital Partners VI LP	2017	37,500,000	14,402,320	7,313,620	7,067,362	-0.28	1
Kentucky Retirement Systems - Insurance Fund	Lubert-Adler Real Estate Fund VII-B LP	2017	15,750,000	6,800,094	209,278	6,674,235	1.75	1.01
Kentucky Retirement Systems - Insurance Fund	White Oak Yield Spectrum Parallel Fund LP	2017	50,000,000	22,363,333	307,333	22,338,548	2.97	1.01
Kentucky Retirement Systems - Insurance Fund	H&F Spock I LP	2018	1,794,672	1,219,564	0	1,343,600	10.17	1.1
Kentucky Retirement Systems - Insurance Fund	Strategic Value Special Situations Fund IV LP	2018	21,700,000	3,215,415	0	3,232,326	0.69	1.01

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September
2018

KRS MONTHLY PERFORMANCE UPDATE

What's going on in the marketplace?

The quarter ending September 30th witnessed rising global equity markets driven almost entirely by the U.S. which gained over 7.0% (Russell 3000), while Non-U.S. markets gained a mere 0.4% per the MSCI ACWI Ex-US Index. Within the U.S., the earnings story remained intact, with companies continuing capital spending and hiring additional labor in response to the recent tax reform. Non-U.S. markets were subdued by concerns regarding the potential escalation of a trade war between the U.S. and China, and its influence across the emerging markets as a China slowdown appears more evident. Increased risk has led to multiple compression, which could also be attributable to a lack of performance outside of the U.S.

U.S. Equities

U.S. equity markets experienced modest gains during the month; the Russell 3000 Index added 17 basis points (bps). The market was driven by large caps, which returned 0.6%. Mid-caps and small caps were weak during the period (S&P 400: -1.1%, R2000: -2.4%). Growth outpaced value by 33 basis points as evidenced by the Russell 3000 style indices (R3000G 0.3%, R3000V 0.0%).

The KRS U.S. Equity portfolio underperformed the Russell 3000 by 38 bps during the month (-0.2% vs 0.2%). The portfolio's relative performance was driven by both stock selection and allocation. From a stock selection perspective, the portfolio's all cap mandates trailed their respective indices. From an allocation perspective, the value tilt and smaller cap positioning was a headwind during the period.

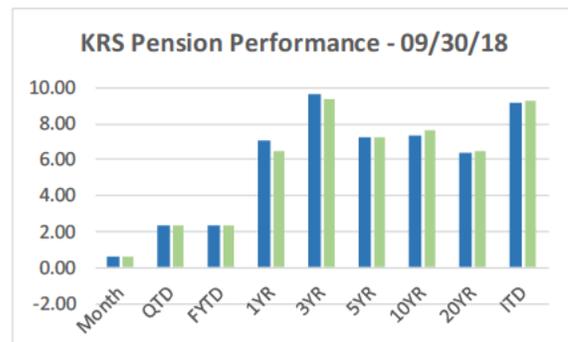
Non-U.S. Equities

Non-U.S. equities slightly outpaced the U.S. markets during the period, adding 22 bps. Developed markets outperformed their emerging market counterparts. While growth outperformed value in developed international large cap names, value outpaced growth in both the developed international small cap and emerging markets spaces.

The KRS Non-U.S. Equity portfolio performed in line with its benchmark, returning 0.2% during the month. Stock selection was mixed as two of the four active large cap managers and the portfolio's small cap mandate outperformed their associated indices. Allocation decisions had little impact on relative performance.

Fixed Income

Fixed income market segments were positive in terms of performance during the month. The corporate high yield market rose three-quarters of a point, the core space as defined by the U.S. Aggregate gained 64 bps, intermediate credit was up 0.6%, and leveraged loans were up 40 bps during the period.



The specialty credit portion of the KRS portfolio returned 58 bps on the month, while the core fixed income piece of the portfolio fell -0.3%. Within the specialty credit bucket, relative outperformance was provided by strong selection within some of the lending, leveraged loan, and global bond mandates. Within the core portion of the portfolio, the intermediate corporate credit and aggregate investments held up slightly better than the market.

Alternative Assets

The diversifying strategy group was relatively flat during the month, gaining 5 bps. The Real Estate and Opportunistic portion of the portfolio gained 1.3% and 0.8%, respectively. The Absolute Return and Real Return portions of the portfolio declined

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during the period, posting a return of -0.1% and -0.4%, respectively. The Private Equity portion of the portfolio provided a strong 5.3% return for the month.

Cash

The cash portfolio basically performed inline during the month (0.15% vs 0.17%). The cash allocation finished the period slightly above target due to transitioning assets while continuing to move toward the newly approved asset allocation.

NOTES:

- 1) Returns displayed are "net". For the purposes of this report, total fund return information is net of fees and expenses, with audited data beginning in July 2011. At the manager level returns are net of fees beginning with July 2011, and gross of fees for prior data.
- 2) Individual plan allocation and performance (pg.4).
- 3) Prior to January 1, 2014, the inception date for the Private Equity asset class was stated as 10/1/1990 for Pension Fund and 6/1/2001 for Insurance Fund. Prior to 07/01/02, the characteristics of the allocation, and the benchmark itself, were more closely aligned with Real Estate. As such, it is not appropriate to report this portion of the return stream within the Private Equity allocation, whose true inception date has been determined to be 07/01/02 based on funding the Systems first private equity mandate. The portion of the original return streams that are no longer reported within the Private Equity allocation (Pension from 10/1/90 to 06/30/02; Insurance 06/01/01 to 06/30/02) are reported within the Fund Level performance figures.
- 4)

Private Equity Composite (Pension) Inception (07/01/02) to 06/30/11 60.00% S&P 1500 Composite Index 40.00% Barclays US Corporate High Yield Index 07/01/11 to 12/31/15 100.00% Russell 3000 Index + 4% (Qtr Lag) 01/01/16 to Present 100.00% Russell 3000 Index + 3% (Qtr Lag)	Private Equity Composite (Insurance) Inception (07/01/02) to 06/30/11 80.00% S&P 1500 Composite Index 20.00% Barclays US Corporate High Yield Index 07/01/11 to 12/31/15 100.00% Russell 3000 Index + 4% (Qtr Lag) 01/01/16 to Present 100.00% Russell 3000 Index + 3% (Qtr Lag)
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- 5) The Private Equity & Real Return Benchmarks, from one month returns up until five year returns, is equal to the performance of the associated KRS allocations. Given there is not appropriate benchmark to use for short term performance evaluation, this will allow greater focus on longer term returns, which is more appropriate given the long term nature of these investments.

<u>Pension Benchmark Composite 01/01/16 to 08/31/17</u> US Equity: Russell 3000 (25.6%) Non US Equity: MSCI AXCI Ex-US IMI (25.2%) Global Fixed Income: Barclays Universal Index (6.8%) Credit Fixed Income: Barclays US High Yield (7.2%) Real Estate: NCREIF ODCE (5.0%) Absolute Return: HFRI Diversified FOF (10.0%) Real Return: Allocation Specific (8.0%) Private Equity<5Yrs: Actual Performance Private Equity>5Yrs: Russell 3000 Index+3% (10.0%) Cash: Cit Grp 3-mos Treasury Bill (2.2%) <u>Pension Benchmark Composite 09/01/17 to 05/31/18 - Transition Period w/Sliding Targets</u> US Equity: Russell 3000 (23.6%) Non US Equity: MSCI AXCI Ex-US IMI (23.2%) Global Fixed Income: Barclays Universal Index (9.0%) Credit Fixed Income: Barclays US High Yield (9.0%) Real Estate: NCREIF ODCE (5.0%) Absolute Return: HFRI Diversified FOF (10.0%) Real Return<5Yrs: Actual Performance Real Return>5Yrs: CPI+3% (8%) Private Equity<5Yrs: Actual Performance Private Equity>5Yrs: Russell 3000 Index+3% (10.0%) Cash: Cit Grp 3-mos Treasury Bill (2.2%) <u>Pension Benchmark Composite 06/01/18 to Present</u> US Equity: Russell 3000 (17.0%) Non US Equity: MSCI AXCI Ex-US IMI (21.0%) Global Fixed Income: Barclays Universal Index (13.0%) Credit Fixed Income: Barclays US High Yield (12.4%) Real Estate: NCREIF ODCE (5.0%) Absolute Return: HFRI Diversified FOF (10.0%) Real Return<5Yrs: Actual Performance Real Return>5Yrs: CPI+3% (10.0%) Private Equity<5Yrs: Actual Performance Private Equity>5Yrs: Russell 3000 Index+3% (9.4%) Cash: Cit Grp 3-mos Treasury Bill (2.2%) **Fund composite benchmark is a roll-up of individual plans, which may differ from one another.	<u>Insurance Benchmark Composite 01/01/16 to 08/31/17</u> US Equity: Russell 3000 (26.5%) Non US Equity: MSCI AXCI Ex-US IMI (26.5%) Global Fixed Income: Barclays Universal Index (6.0%) Credit Fixed Income: Barclays US High Yield (6.0%) Real Estate: NCREIF ODCE (5.0%) Absolute Return: HFRI Diversified FOF (10.0%) Real Return: Allocation Specific (8.0%) Private Equity<5Yrs: Actual Performance Private Equity>5Yrs: Russell 3000 Index+3% (10.0%) Cash: Cit Grp 3-mos Treasury Bill (2.0%) <u>Insurance Benchmark Composite 09/01/17 to 05/31/18 - Transition Period w/Sliding Targets</u> US Equity: Russell 3000 (24.5%) Non US Equity: MSCI AXCI Ex-US IMI (24.5%) Global Fixed Income: Barclays Universal Index (8.0%) Credit Fixed Income: Barclays US High Yield (8.0%) Real Estate: NCREIF ODCE (5.0%) Absolute Return: HFRI Diversified FOF (10.0%) Real Return<5Yrs: Actual Performance Real Return>5Yrs: CPI+3% (8%) Private Equity<5Yrs: Actual Performance Private Equity>5Yrs: Russell 3000 Index+3% (10.0%) Cash: Cit Grp 3-mos Treasury Bill (2.0%) <u>Insurance Benchmark Composite 06/01/18 to Present</u> US Equity: Russell 3000 (17.9%) Non US Equity: MSCI AXCI Ex-US IMI (21.9%) Global Fixed Income: Barclays Universal Index (13.0%) Credit Fixed Income: Barclays US High Yield (11.0%) Real Estate: NCREIF ODCE (5.0%) Absolute Return: HFRI Diversified FOF (10.0%) Real Return<5Yrs: Actual Performance Real Return>5Yrs: CPI+3% (10.0%) Private Equity<5Yrs: Actual Performance Private Equity>5Yrs: Russell 3000 Index+3% (9.2%) Cash: Cit Grp 3-mos Treasury Bill (2.0%)
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KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - NET RETURNS - 09/30/18

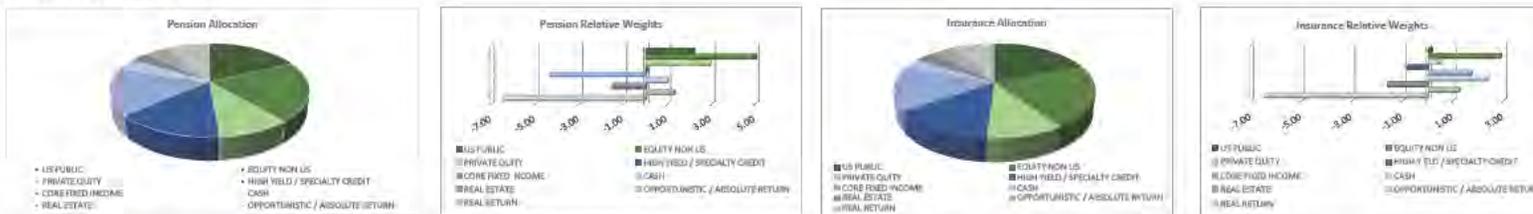
FUND/CATEGORY	Benchmark	Inception	Market Value	% of Total	1 Month		3 Months		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		TDE	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark		KRS
TOTAL FUND	KY Ret. Blended Index	4/1/1984	12,490,236,621.01	100.00	0.57	0.64	2.30	2.37	2.30	2.37	7.03	6.46	9.61	9.35	7.22	7.21	7.28	7.63	6.37	6.42	9.14	9.25
GROWTH			7,949,481,508.34	63.65	0.94	0.64	3.23	3.27	3.23	3.27	7.03	6.46	9.61	9.35	7.22	7.21	7.28	7.63	6.37	6.42	9.14	9.25
US PUBLIC	KY Domestic Equity Blend	4/1/1994	2,238,347,312.10	17.92	-0.19	0.17	6.13	7.12	6.13	7.12	16.47	17.58	16.45	17.07	12.48	13.46	11.37	11.95	7.92	8.06	11.47	11.52
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	7/1/2000	2,592,694,321.57	20.76	0.21	0.22	0.86	0.39	0.46	0.39	4.51	3.79	11.44	10.38	5.36	4.54	6.14	5.79			3.26	3.31
PRIVATE EQUITY	Russell 3000 3%(Qtr Lag)	7/1/2002	1,240,097,473.04	9.93	5.27	5.27	5.43	5.43	5.43	5.43	15.32	15.32	11.55	11.55	13.50	13.50	9.48	14.94			11.35	11.45
HIGH YIELD / SPECIALTY CREDIT	Bloomberg Barclays US High Yield		1,878,342,401.63	15.04	0.58				2.04		4.99										6.40	
FIXED INCOME / LIQUIDITY			2,309,983,009.56	20.30	-0.18				0.57												0.57	
CORE FIXED INCOME	Bloomberg Barclays US Aggregate		2,014,569,193.82	16.13	-0.28	-0.64	0.59	0.02	0.59	0.02	0.06	-1.22	1.38	1.31	2.48	2.16					2.55	3.52
CASH	Citigroup Treasury Bill-3 Month	1/1/1988	495,414,615.74	3.97	0.15	0.17	0.49	0.50	0.49	0.50	2.10	1.57	1.26	0.80	0.83	0.49	0.75	0.32	2.29	1.84	3.58	3.13
DIVERSIFYING STRATEGIES			2,031,080,452.43	16.26	0.05				0.93												0.93	
REAL ESTATE	NCREIF NPI-ODCE Net 1 Qtr in Arrears Index*	7/1/1984	433,888,868.93	3.47	1.30	1.31	2.80	1.31	2.80	1.81	11.15	7.47	10.04	8.38	9.47	10.05	8.63	4.34	7.05	7.65	6.14	6.46
OPPORTUNISTIC / ABSOLUTE R	HFRI Diversified		536,340,629.21	4.28	-0.09	0.07	0.12	0.64	0.12	0.64	3.58	3.49	2.23	2.55	3.58	3.43					4.64	3.06
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	1,062,850,964.29	8.51	-0.41	-0.41	0.64	0.64	0.64	0.64	1.00	1.00	5.89	5.89	2.85	2.85					3.67	2.52

KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - PLAN NET RETURNS - 09/30/18

Plan	Benchmark	Inception	Market Value	% of Total	1 Month		3 Months		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		TDE	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark		
KERS	KY Ret. KERS Plan Index		2,042,658,737.31	100.00	0.69	0.86	2.31	2.29	2.31	2.29	6.31	5.92	8.46	8.70	6.82	6.86	7.06	7.45	6.26	6.33	9.08	9.20
KERS-H	KY Ret. KERS Haz Plan Index		663,677,299.92	100.00	0.55	0.67	2.10	2.41	2.30	2.41	7.08	6.63	9.74	9.53	7.28	7.13	7.11	7.61	6.19	6.41	9.15	9.25
CERS	KY Ret. CERS Plan Index		7,129,833,530.11	100.00	0.54	0.67	2.20	2.41	2.20	2.41	7.12	6.67	9.66	9.58	7.29	7.13	7.12	7.61	6.39	6.41	9.15	9.24
CERS-H	KY Ret. CERS Haz Plan Index		2,384,305,997.05	100.00	0.55	0.67	2.29	2.41	2.29	2.41	7.15	6.63	9.85	9.56	7.31	7.13	7.13	7.61	6.39	6.41	9.16	9.24
SPRS	KY Ret. SPRS Plan Index		269,781,057.00	100.00	0.45	0.86	2.11	2.57	2.11	2.57	6.18	6.57	8.70	9.22	6.57	6.89	6.96	7.51	6.21	6.36	9.06	9.21



Note: The above chart displays the average monthly asset allocation.



KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - NET RETURNS - 09/30/18

FUND/CATEGORY	Benchmark	Inception	Market Value	% of Total	1 Month		3 Months		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		TDE	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark		
TOTAL FUND	KY Ret. Blended Index	4/1/1987	5,242,618,532.72	100.00	0.48	0.53	2.23	2.27	2.23	2.27	7.37	6.82	10.05	9.72	7.28	7.40	6.97	7.60	5.79	6.08	7.48	7.84
GROWTH		7/1/2018	3,418,753,561.89	65.21	0.79				3.09												3.09	
US PUBLIC	KY Domestic Equity Blend	7/1/1992	990,909,936.97	18.90	-0.20	0.17	6.13	7.12	6.13	7.12	16.41	17.58	16.74	17.07	12.66	13.46	11.47	11.92	7.85	7.87	9.90	9.80
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	4/1/2000	1,134,582,876.90	21.64	0.19	0.22	0.65	0.39	0.65	0.39	4.30	3.79	11.36	10.38	5.26	4.54	5.69	5.42			3.24	2.67
PRIVATE EQUITY	Russell 3000 3%(Qtr Lag)	7/1/2002	549,714,527.57	10.49	-0.23	0.23	4.57	4.37	4.57	4.37	17.96	17.96	13.67	13.67	15.80	15.80	12.05	14.53			10.38	10.88
HIGH YIELD / SPECIALTY CREDIT	Bloomberg Barclays US High Yield		743,546,220.45	14.18	0.57				1.97		4.62										5.90	
FIXED INCOME / LIQUIDITY		7/1/2018	976,759,004.00	18.63	-0.18				0.59												0.59	
CORE FIXED INCOME	Bloomberg Barclays US Aggregate	7/1/2013	798,692,824.19	15.23	-0.27	-0.64	0.59	0.02	0.59	0.02	0.02	-1.22	1.99	1.31	2.07	2.16					2.17	2.48
CASH	Citigroup Treasury Bill-3 Month	7/1/1992	178,066,179.81	3.40	0.16	0.17	0.50	0.50	0.50	0.5	1.82	1.57	0.38	0.80	0.67	0.49	0.48	0.32	2.02	1.84	2.64	2.30
DIVERSIFYING STRATEGIES		7/1/2018	847,316,244.94	16.16	0.06				0.85												0.85	
REAL ESTATE	NCREIF NPI-ODCE Net 1 Qtr in Arrears Index*	5/1/2009	178,100,530.39	3.40	-1.22	1.01	2.82	1.81	2.82	1.81	11.07	7.47	10.25	8.38	10.19	10.03					9.29	6.01
OPPORTUNISTIC / ABSOLUTE R	HFRI Diversified		222,166,597.82	4.24	-0.08	0.07	0.15	0.64	0.15	0.64	3.61	3.49	2.30	2.55	3.58	3.49					3.98	3.06
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	447,049,146.63	8.53	-0.39	-0.39	0.46	0.46	0.46	0.46	0.92	0.92	5.46	5.46	2.62	2.62					3.27	2.57

KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - PLAN NET RETURNS - 09/30/18

Plan	Benchmark	Inception	Market Value	% of Total	1 Month		3 Months		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		TDE	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark		
KERS INS	KY Ins. KERS Plan Index		859,394,253.93	100.00	0.26	0.40	2.14	2.25	2.14	2.25	6.38	6.88	9.65	9.86	6.82	7.32	6.71	7.48	5.88	6.02	7.40	7.80
KERS-H INS	KY Ins. KERS Haz Plan Index		630,125,166.25	100.00	0.45	0.57	2.18	2.28	2.18	2.28	7.18	6.86	9.97	9.84	7.23	7.29	6.95	7.52	5.78	6.04	7.48	7.81
CERS INS	KY Ins. CERS Plan Index		2,382,115,190.76	100.00	0.52	0.57	2.23	2.28	2.23	2.28	7.50	6.86	10.09	9.78	7.35	7.32	7.01	7.53	5.81	6.04	7.48	7.81
CERS-H INS	KY Ins. CERS Haz Plan Index		1,288,052,207.26	100.00	0.55	0.57	2.25	2.28	2.25	2.28	7.61	6.86	10.16	9.79	7.40	7.32	7.03	7.53	5.82	6.04	7.50	7.82
SPRS INS	KY Ins. SPRS Plan Index		192,937,696.92	100.00	0.55	0.57	2.28	2.28	2.28	2.28	7.65	6.86	10.14	9.78	7.39	7.33	7.03	7.54	5.82	6.05	7.50	7.82

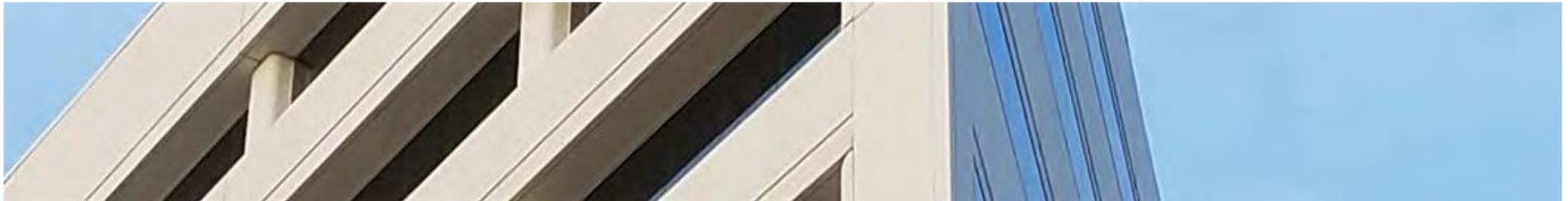


Note: The above chart displays the average monthly asset allocation.



WILSHIRE ASSOCIATES

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Kentucky Retirement Systems Pension

Monthly Performance Summary

September 30, 2018



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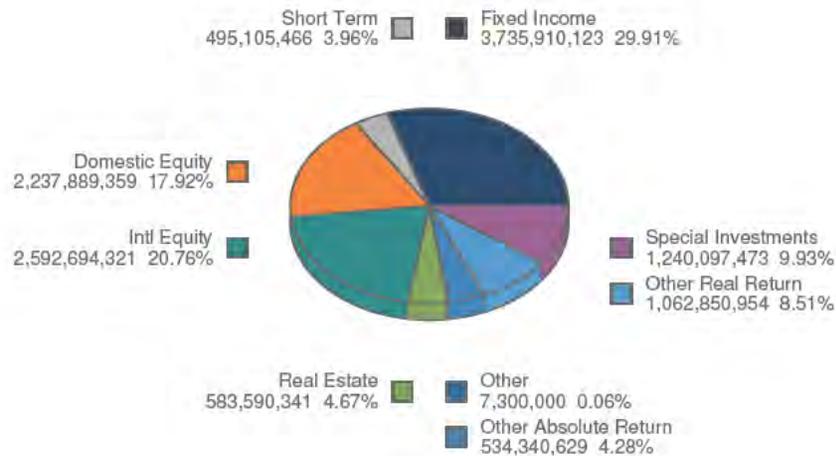
ACTUAL ALLOCATION VS POLICY ALLOCATION

KRS Pension Plan Composite

As of September 30, 2018

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Total Fund



Policy Index





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MONTHLY SUMMARY

Investment Performance and Market Values

For Periods Ending September 30, 2018

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	Net of Fee Returns									Market Value
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$
KRS Pension Plan	0.57	2.30	3.51	2.30	7.01	9.61	7.22	9.14	3/31/84	12,489,778,668
KRS Allocation Index	0.49	2.43	2.96	2.43	6.49	9.50	7.39	9.28	3/31/84	
Value Added	0.08	-0.13	0.55	-0.13	0.52	0.11	-0.17	-0.13	3/31/84	
KRS IPS Benchmark	0.46	2.52	3.44	2.52	6.30				3/31/84	
KERS Pension Plan	0.69	2.32	3.30	2.32	6.32	8.47	6.82	9.08	3/31/84	2,042,658,737
KERS Allocation Index	0.57	2.40	2.58	2.40	5.57	8.47	6.73	9.18	3/31/84	
Value Added	0.12	-0.07	0.72	-0.07	0.74	-0.01	0.09	-0.10	3/31/84	
KERS IPS Benchmark	0.34	2.26	2.73	2.26	5.51				3/31/84	
Assumed Rate 5.25%	0.43	1.29	3.91	1.29	5.25				3/31/84	
KERS (H) Pension Plan	0.55	2.30	3.49	2.30	7.05	9.73	7.28	9.15	3/31/84	663,677,300
KERS (H) Allocation Index	0.50	2.46	3.07	2.46	6.73	9.76	7.38	9.28	3/31/84	
Value Added	0.05	-0.16	0.42	-0.16	0.32	-0.03	-0.11	-0.13	3/31/84	
KERS (H) IPS Benchmark	0.48	2.57	3.56	2.57	6.43				3/31/84	
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/84	
CERS Pension Plan	0.54	2.28	3.53	2.28	7.12	9.86	7.29	9.15	3/31/84	7,129,813,530
CERS Allocation Index	0.50	2.45	3.10	2.45	6.77	9.78	7.39	9.28	3/31/84	
Value Added	0.04	-0.16	0.43	-0.16	0.35	0.08	-0.10	-0.13	3/31/84	
CERS IPS Benchmark	0.48	2.56	3.59	2.56	6.47				3/31/84	
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/84	



Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

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	Net of Fee Returns									Market Value
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$
CERS (H) Pension Plan	0.55	2.29	3.57	2.29	7.16	9.85	7.31	9.16	3/31/84	2,384,305,997
CERS (H) Allocation Index	0.50	2.45	3.15	2.45	6.82	9.80	7.40	9.29	3/31/84	
Value Added	0.05	-0.16	0.43	-0.16	0.34	0.06	-0.10	-0.13	3/31/84	
CERS (H) IPS Benchmark	0.48	2.57	3.64	2.57	6.52				3/31/84	
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/84	
SPRS Pension Plan	0.45	2.12	3.02	2.12	6.18	8.70	6.57	9.05	3/31/84	269,781,057
SPRS Allocation Index	0.82	2.65	3.14	2.65	6.39	9.34	7.12	9.24	3/31/84	
Value Added	-0.37	-0.53	-0.12	-0.53	-0.21	-0.64	-0.55	-0.19	3/31/84	
SPRS IPS Benchmark	0.30	2.22	2.87	2.22	5.69				3/31/84	
Assumed Rate 5.25%	0.43	1.29	3.91	1.29	5.25				3/31/84	



Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns									Market Value	
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
KERS Pension Plan	0.69	2.32	3.30	2.32	6.32	8.47	6.82	9.08	3/31/84	2,042,658,737	
KERS Allocation Index	0.57	2.40	2.58	2.40	5.57	8.47	6.73	9.18	3/31/84		
Value Added	0.12	-0.07	0.72	-0.07	0.74	-0.01	0.09	-0.10	3/31/84		
KERS IPS Benchmark	0.34	2.26	2.73	2.26	5.51				3/31/84		
Assumed Rate 5.25%	0.43	1.29	3.91	1.29	5.25				3/31/84		
US Equity Composite	-0.21	6.11	9.78	6.11	16.36	16.59	13.09	13.94	6/30/13	307,115,381	15.04
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	14.11	6/30/13		
Value Added	-0.37	-1.02	-0.79	-1.02	-1.22	-0.49	-0.37	-0.17	6/30/13		
Non-US Equity Composite	0.22	0.67	-0.99	0.67	4.49	11.04	5.09	6.76	6/30/13	371,710,103	18.20
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	6.26	6/30/13		
Value Added	0.00	0.28	2.28	0.28	2.70	0.66	0.55	0.50	6/30/13		
Fixed Income Composite	0.06	1.31	1.25	1.31	1.82	4.74	3.99	4.03	6/30/13	658,034,583	32.21
Policy Index	-0.40	0.38	-0.75	0.38	-0.17	4.85	4.25	4.19	6/30/13		
Value Added	0.45	0.93	2.01	0.93	1.99	-0.11	-0.26	-0.16	6/30/13		
Real Return Composite	-0.28	0.87	0.87	0.87	1.83	6.10	2.78	2.92	6/30/13	161,690,137	7.92
Real Return Index (P)	-0.89	0.62	0.37	0.62	0.92	3.38	1.62	1.76	6/30/13		
Value Added	0.61	0.25	0.50	0.25	0.91	2.72	1.16	1.15	6/30/13		
Real Estate Composite	0.88	2.56	6.71	2.56	8.87	8.70	8.12	8.06	6/30/13	96,949,805	4.75
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	10.28	6/30/13		
Value Added	0.88	0.71	0.93	0.71	1.36	0.31	-1.92	-2.23	6/30/13		

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns									Market Value	
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.05	0.22	2.38	0.22	3.71	2.34	3.56	3.43	6/30/13	97,469,800	4.77
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.14	6/30/13		
Value Added	-1.03	-0.77	-0.53	-0.77	-0.92	-0.27	0.04	0.29	6/30/13		
Private Equity Composite	5.86	6.06	8.67	6.06	11.52	10.95	12.86	12.69	6/30/13	238,083,021	11.66
KERS Short Term PE Index	5.86	6.06	8.67	6.06	11.52	10.95	12.86	12.69	6/30/13		
Value Added	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6/30/13		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	17.30	6/30/13		
Cash Composite	0.15	0.51	1.49	0.51	2.09	1.24	0.82	0.83	6/30/13	109,726,004	5.37
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	0.49	6/30/13		
Value Added	0.00	0.02	0.19	0.02	0.50	0.41	0.31	0.34	6/30/13		
Other Assets	0.00	0.00	0.00	0.00	0.00			0.00	8/31/17	1,879,904	0.09

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
KERS (H) Pension Plan	0.55	2.30	3.49	2.30	7.05	9.73	7.28	9.15	3/31/84	663,677,300	
KERS (H) Allocation Index	0.50	2.46	3.07	2.46	6.73	9.76	7.38	9.28	3/31/84		
Value Added	0.05	-0.16	0.42	-0.16	0.32	-0.03	-0.11	-0.13	3/31/84		
KERS (H) IPS Benchmark	0.48	2.57	3.56	2.57	6.43				3/31/84		
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/84		
US Equity Composite	-0.21	6.11	9.78	6.11	16.36	16.32	12.36	13.16	6/30/13	121,785,539	18.35
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	14.11	6/30/13		
Value Added	-0.37	-1.02	-0.79	-1.02	-1.22	-0.75	-1.10	-0.95	6/30/13		
Non-US Equity Composite	0.22	0.67	-0.99	0.67	4.49	11.57	5.44	7.10	6/30/13	139,763,720	21.06
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	6.26	6/30/13		
Value Added	0.00	0.28	2.28	0.28	2.70	1.19	0.90	0.84	6/30/13		
Fixed Income Composite	0.16	1.28	0.74	1.28	1.18	4.45	3.85	3.90	6/30/13	197,984,497	29.83
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	4.45	6/30/13		
Value Added	0.10	-0.05	0.17	-0.05	0.16	-0.86	-0.68	-0.55	6/30/13		
Real Return Composite	-0.41	0.61	0.32	0.61	1.05	5.84	2.88	3.15	6/30/13	55,553,873	8.37
Real Return Index (P)	-0.89	0.62	0.37	0.62	0.92	3.38	1.62	1.76	6/30/13		
Value Added	0.48	-0.01	-0.05	-0.01	0.13	2.47	1.26	1.38	6/30/13		
Real Estate Composite	1.46	2.71	7.24	2.71	9.75	9.68	9.40	9.23	6/30/13	30,124,620	4.54
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	10.28	6/30/13		
Value Added	1.46	0.86	1.47	0.86	2.24	1.29	-0.64	-1.05	6/30/13		

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.05	0.23	2.39	0.23	3.72	2.34	3.61	3.47	6/30/13	25,599,897	3.86
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.14	6/30/13		
Value Added	-1.03	-0.76	-0.51	-0.76	-0.91	-0.27	0.08	0.33	6/30/13		
Private Equity Composite	5.21	5.37	12.21	5.37	15.82	13.08	14.41	14.25	6/30/13	63,680,793	9.60
KERS (H) Short Term PE Index	5.21	5.37	12.21	5.37	15.82	13.08	14.41	14.25	6/30/13		
Value Added	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6/30/13		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	17.30	6/30/13		
Cash Composite	0.15	0.52	1.54	0.52	2.18	1.28	0.85	0.86	6/30/13	27,643,638	4.17
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	0.49	6/30/13		
Value Added	0.00	0.03	0.24	0.03	0.60	0.45	0.33	0.36	6/30/13		
Other Assets	0.00	0.00	0.00	0.00	0.00			0.00	8/31/17	1,540,723	0.23

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns									Market Value	
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
CERS Pension Plan	0.54	2.28	3.53	2.28	7.12	9.86	7.29	9.15	3/31/84	7,129,813,530	
CERS Allocation Index	0.50	2.45	3.10	2.45	6.77	9.78	7.39	9.28	3/31/84		
Value Added	0.04	-0.16	0.43	-0.16	0.35	0.08	-0.10	-0.13	3/31/84		
CERS IPS Benchmark	0.48	2.56	3.59	2.56	6.47				3/31/84		
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/84		
US Equity Composite	-0.21	6.11	9.78	6.11	16.36	16.40	12.34	13.14	6/30/13	1,325,096,742	18.59
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	14.11	6/30/13		
Value Added	-0.37	-1.02	-0.79	-1.02	-1.22	-0.68	-1.11	-0.97	6/30/13		
Non-US Equity Composite	0.22	0.67	-0.99	0.67	4.49	11.55	5.43	7.09	6/30/13	1,523,062,340	21.36
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	6.26	6/30/13		
Value Added	0.00	0.28	2.28	0.28	2.71	1.17	0.90	0.83	6/30/13		
Fixed Income Composite	0.15	1.29	0.80	1.29	1.25	4.44	3.87	3.92	6/30/13	2,087,493,767	29.28
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	4.45	6/30/13		
Value Added	0.09	-0.04	0.23	-0.04	0.23	-0.87	-0.66	-0.54	6/30/13		
Real Return Composite	-0.42	0.60	0.30	0.60	1.03	5.86	2.87	2.99	6/30/13	614,036,003	8.61
Real Return Index (P)	-0.89	0.62	0.37	0.62	0.92	3.38	1.62	1.76	6/30/13		
Value Added	0.47	-0.02	-0.07	-0.02	0.12	2.49	1.24	1.22	6/30/13		
Real Estate Composite	1.46	2.71	7.22	2.71	9.72	9.73	9.41	9.29	6/30/13	337,471,391	4.73
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	10.28	6/30/13		
Value Added	1.46	0.86	1.45	0.86	2.21	1.34	-0.63	-1.00	6/30/13		

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns									Market Value	
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.05	0.23	2.39	0.23	3.71	2.34	3.62	3.48	6/30/13	304,374,697	4.27
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.14	6/30/13		
Value Added	-1.03	-0.76	-0.52	-0.76	-0.92	-0.27	0.09	0.34	6/30/13		
Private Equity Composite	5.12	5.27	12.53	5.27	16.23	13.47	14.70	14.51	6/30/13	683,962,893	9.59
CERS Short Term PE Index	5.12	5.27	12.53	5.27	16.23	13.47	14.70	14.51	6/30/13		
Value Added	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6/30/13		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	17.30	6/30/13		
Cash Composite	0.15	0.52	1.61	0.52	2.32	1.33	0.87	0.88	6/30/13	252,633,237	3.54
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	0.49	6/30/13		
Value Added	0.00	0.03	0.31	0.03	0.73	0.49	0.36	0.39	6/30/13		
Other Assets	0.00	0.00	0.00	0.00	0.00			0.00	8/31/17	1,682,460	0.02

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
CERS (H) Pension Plan	0.55	2.29	3.57	2.29	7.16	9.85	7.31	9.16	3/31/84	2,384,305,997	
CERS (H) Allocation Index	0.50	2.45	3.15	2.45	6.82	9.80	7.40	9.29	3/31/84		
Value Added	0.05	-0.16	0.43	-0.16	0.34	0.06	-0.10	-0.13	3/31/84		
CERS (H) IPS Benchmark	0.48	2.57	3.64	2.57	6.52				3/31/84		
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/84		
US Equity Composite	-0.21	6.11	9.78	6.11	16.36	16.45	12.38	13.17	6/30/13	442,267,173	18.55
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	14.11	6/30/13		
Value Added	-0.37	-1.02	-0.79	-1.02	-1.22	-0.62	-1.08	-0.94	6/30/13		
Non-US Equity Composite	0.22	0.67	-0.99	0.67	4.49	11.54	5.44	7.09	6/30/13	509,058,791	21.35
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	6.26	6/30/13		
Value Added	0.00	0.28	2.28	0.28	2.70	1.16	0.90	0.83	6/30/13		
Fixed Income Composite	0.15	1.27	0.72	1.27	1.17	4.39	3.84	3.89	6/30/13	698,551,676	29.30
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	4.45	6/30/13		
Value Added	0.08	-0.06	0.15	-0.06	0.16	-0.92	-0.69	-0.57	6/30/13		
Real Return Composite	-0.41	0.63	0.34	0.63	1.08	5.91	2.91	3.09	6/30/13	209,479,089	8.79
Real Return Index (P)	-0.89	0.62	0.37	0.62	0.92	3.38	1.62	1.76	6/30/13		
Value Added	0.48	0.00	-0.03	0.00	0.16	2.53	1.28	1.32	6/30/13		
Real Estate Composite	1.45	2.71	7.22	2.71	9.72	9.70	9.40	9.27	6/30/13	106,474,637	4.47
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	10.28	6/30/13		
Value Added	1.45	0.86	1.45	0.86	2.21	1.31	-0.64	-1.01	6/30/13		

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MONTHLY SUMMARY
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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.05	0.23	2.39	0.23	3.72	2.34	3.62	3.48	6/30/13	96,577,996	4.05
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.14	6/30/13		
Value Added	-1.03	-0.76	-0.52	-0.76	-0.91	-0.27	0.09	0.34	6/30/13		
Private Equity Composite	5.17	5.32	13.06	5.32	16.76	13.83	15.15	14.99	6/30/13	233,260,039	9.78
CERS (H) Short Term PE Index	5.17	5.32	13.06	5.32	16.76	13.83	15.15	14.99	6/30/13		
Value Added	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6/30/13		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	17.30	6/30/13		
Cash Composite	0.15	0.52	1.59	0.52	2.29	1.32	0.87	0.88	6/30/13	86,804,897	3.64
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	0.49	6/30/13		
Value Added	0.00	0.03	0.29	0.03	0.70	0.48	0.35	0.38	6/30/13		
Other Assets	0.00	0.00	0.00	0.00	0.00			0.00	8/31/17	1,831,701	0.08

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
SPRS Pension Plan	0.45	2.12	3.02	2.12	6.18	8.70	6.57	9.05	3/31/84	269,781,057	
SPRS Allocation Index	0.82	2.65	3.14	2.65	6.39	9.34	7.12	9.24	3/31/84		
Value Added	-0.37	-0.53	-0.12	-0.53	-0.21	-0.64	-0.55	-0.19	3/31/84		
SPRS IPS Benchmark	0.30	2.22	2.87	2.22	5.69				3/31/84		
Assumed Rate 5.25%	0.43	1.29	3.91	1.29	5.25				3/31/84		
US Equity Composite	-0.21	6.10	9.76	6.10	16.34	15.82	12.07	12.92	6/30/13	42,082,479	15.60
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	14.11	6/30/13		
Value Added	-0.38	-1.03	-0.81	-1.03	-1.24	-1.26	-1.39	-1.19	6/30/13		
Non-US Equity Composite	0.22	0.67	-0.99	0.67	4.49	11.10	5.15	6.81	6/30/13	49,099,367	18.20
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	6.26	6/30/13		
Value Added	0.00	0.28	2.28	0.28	2.70	0.71	0.61	0.55	6/30/13		
Fixed Income Composite	0.07	1.20	0.61	1.20	1.05	4.27	3.76	3.82	6/30/13	93,845,599	34.79
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	4.45	6/30/13		
Value Added	0.01	-0.14	0.04	-0.14	0.04	-1.05	-0.77	-0.63	6/30/13		
Real Return Composite	-0.46	0.53	0.16	0.53	0.88	5.58	2.72	2.94	6/30/13	22,091,854	8.19
Real Return Index (P)	-0.89	0.62	0.37	0.62	0.92	3.38	1.62	1.76	6/30/13		
Value Added	0.43	-0.09	-0.21	-0.09	-0.03	2.20	1.10	1.17	6/30/13		
Real Estate Composite	1.30	2.67	7.12	2.67	9.57	9.59	9.18	9.20	6/30/13	12,569,887	4.66
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	10.28	6/30/13		
Value Added	1.30	0.82	1.34	0.82	2.06	1.20	-0.86	-1.08	6/30/13		

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	Net of Fee Returns									Market Value	
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.05	0.23	2.39	0.23	3.72	2.34	3.58	3.44	6/30/13	10,318,239	3.82
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.14	6/30/13		
Value Added	-1.03	-0.76	-0.52	-0.76	-0.91	-0.26	0.05	0.30	6/30/13		
Private Equity Composite	5.36	5.57	9.96	5.57	13.23	11.49	13.05	12.96	6/30/13	21,110,727	7.83
SPRS Short Term PE Index	5.36	5.57	9.96	5.57	13.23	11.49	13.05	12.96	6/30/13		
Value Added	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6/30/13		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	17.30	6/30/13		
Cash Composite	0.15	0.51	1.49	0.51	2.08	1.25	0.83	0.84	6/30/13	18,297,692	6.78
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	0.49	6/30/13		
Value Added	0.00	0.02	0.19	0.02	0.49	0.41	0.31	0.34	6/30/13		
Other Assets	0.00	0.00	0.00	0.00	0.00			0.00	8/31/17	365,213	0.14

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
KRS Pension Plan	0.57	2.30	3.51	2.30	7.01	9.61	7.22	9.14	3/31/84	12,489,778,668	100.00
KRS Allocation Index	0.49	2.43	2.96	2.43	6.49	9.50	7.39	9.28	3/31/84		
Value Added	0.08	-0.13	0.55	-0.13	0.52	0.11	-0.17	-0.13	3/31/84		
KRS IPS Benchmark	0.46	2.52	3.44	2.52	6.30				3/31/84		
US Equity Composite	-0.21	6.11	9.79	6.11	16.37	16.45	12.48	11.47	3/31/84	2,237,889,359	17.92
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	11.52	3/31/84		
Value Added	-0.37	-1.01	-0.78	-1.01	-1.21	-0.62	-0.98	-0.05	3/31/84		
S&P 500 Index	0.59	7.52	10.72	7.52	18.11	17.27	13.91	7.69	6/30/01	1,049,195,410	8.40
Standard & Poor's 500	0.57	7.71	10.57	7.71	17.92	17.31	13.95	7.28	6/30/01		
Value Added	0.02	-0.19	0.15	-0.19	0.19	-0.04	-0.04	0.41	6/30/01		
Scientific Beta	0.02	5.34	7.96	5.34	14.58			14.49	6/30/16	301,279,731	2.41
Standard & Poor's 500	0.57	7.71	10.57	7.71	17.92			18.04	6/30/16		
Value Added	-0.55	-2.37	-2.60	-2.37	-3.34			-3.55	6/30/16		
River Road									6/30/11	19,588,962	0.16
Russell 3000 Value									6/30/11		
Value Added									6/30/11		
River Road FAV	0.46	6.69	11.40	6.69	12.70			18.74	6/30/16	132,298,145	1.06
Russell 3000 Value	-0.00	5.39	4.17	5.39	9.46			12.89	6/30/16		
Value Added	0.46	1.30	7.23	1.30	3.24			5.86	6/30/16		

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	Net of Fee Returns									Market Value	
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Westfield Capital	-0.10	8.02	16.05	8.02	21.97	17.13	13.40	13.75	6/30/11	146,994,990	1.18
Russell 3000 Growth	0.33	8.88	16.99	8.88	25.89	20.36	16.23	15.50	6/30/11		
Value Added	-0.43	-0.86	-0.94	-0.86	-3.92	-3.22	-2.83	-1.75	6/30/11		
Systematic	-1.91	2.99	2.91	2.99	11.27	14.78	9.09	12.56	6/30/12	253,960,066	2.03
Russell Mid Cap Value	-0.79	3.30	3.13	3.30	8.81	13.09	10.72	13.84	6/30/12		
Value Added	-1.12	-0.30	-0.22	-0.30	2.46	1.68	-1.62	-1.29	6/30/12		
Internal US Mid Cap	-1.03	4.00	8.62	4.00	15.56	16.06		11.72	7/31/14	137,287,804	1.10
S&P 400 Mid Cap	-1.10	3.86	7.49	3.86	14.21	15.68		11.51	7/31/14		
Value Added	0.07	0.13	1.13	0.13	1.35	0.38		0.22	7/31/14		
NTGI Structured	-2.43	3.73	12.05	3.73	15.78	17.41	11.87	10.64	9/30/99	197,233,183	1.58
Russell 2000	-2.41	3.58	11.51	3.58	15.24	17.12	11.07	8.96	9/30/99		
Value Added	-0.02	0.15	0.54	0.15	0.54	0.29	0.79	1.68	9/30/99		
Invesco									7/31/05	657	0.00
Transition Account									6/30/11	50,412	0.00

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Non-US Equity Composite	0.22	0.67	-0.98	0.67	4.50	11.44	5.35	3.41	6/30/00	2,592,694,321	20.76
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	3.51	6/30/00		
Value Added	0.00	0.28	2.29	0.28	2.72	1.06	0.82	-0.10	6/30/00		
BlackRock ACWI Ex US	0.49	0.72	-2.87	0.72	2.02	10.29	4.39	7.25	6/30/09	1,024,570,581	8.20
MSCI ACWI X US (N)	0.46	0.71	-3.09	0.71	1.76	9.97	4.12	7.02	6/30/09		
Value Added	0.03	0.02	0.22	0.02	0.26	0.32	0.27	0.23	6/30/09		
American Century	-0.77	-0.42	3.53	-0.42	9.05	12.46		5.25	6/30/14	350,535,341	2.81
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.32		2.77	6/30/14		
Value Added	-0.99	-0.81	6.80	-0.81	7.27	2.14		2.48	6/30/14		
Franklin Templeton	-2.55	-2.21	3.96	-2.21	10.04	15.62		7.57	6/30/14	260,685,107	2.09
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.32		2.77	6/30/14		
Value Added	-2.77	-2.60	7.23	-2.60	8.26	5.30		4.80	6/30/14		
Lazard Asset Mgmt	0.92	0.73	-1.26	0.73	5.27	9.82		3.98	6/30/14	463,582,192	3.71
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.32		2.77	6/30/14		
Value Added	0.70	0.34	2.01	0.34	3.48	-0.51		1.21	6/30/14		
LSV Asset Mgmt	1.68	3.76	-1.99	3.76	3.36	9.88		3.17	6/30/14	408,227,722	3.27
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.32		2.77	6/30/14		
Value Added	1.46	3.37	1.28	3.37	1.58	-0.45		0.40	6/30/14		
NTGI Int'l Small Cap	-1.04	-1.51	-3.88	-1.51	2.22	11.43	6.37	12.52	11/30/08	81,097,775	0.65
MSCI ACWI X US Small Cap (N)	-1.23	-1.51	-4.41	-1.51	1.86	11.24	6.14	12.82	11/30/08		
Value Added	0.19	-0.00	0.53	-0.00	0.36	0.19	0.23	-0.30	11/30/08		

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	Net of Fee Returns							Market Value			
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Pyramis Intl									7/31/01	2,159,463	0.02
Boston Company									4/30/05	751,365	0.01
Non-US Equity Transition									5/31/14	1,084,776	0.01



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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Fixed Income Composite	0.13	1.29	0.88	1.29	1.33	4.59	4.16	7.47	3/31/84	3,735,910,123	29.91
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	7.31	3/31/84		
Value Added	0.07	-0.04	0.31	-0.04	0.32	-0.72	-0.37	0.16	3/31/84		
Bloomberg Global Aggregate	-0.86	-0.92	-2.37	-0.92	-1.32	1.98	0.75		3/31/84		
NISA	-0.63	-0.05	-1.63	-0.05	-1.17	1.60	2.41	3.72	1/31/09	585,142,075	4.68
Bloomberg Aggregate	-0.64	0.02	-1.60	0.02	-1.22	1.31	2.16	3.52	1/31/09		
Value Added	0.01	-0.07	-0.03	-0.07	0.05	0.29	0.25	0.20	1/31/09		
Lord Abbett										541,345,589	4.33
Manulife Asset Mgmt	0.34	0.84	-1.28	0.84	-1.05	2.56	2.72	3.70	11/30/11	456,052,462	3.65
Policy Index	-0.43	0.27	-1.41	0.27	-1.00	1.86	0.66	1.00	11/30/11		
Value Added	0.77	0.57	0.12	0.57	-0.04	0.69	2.06	2.70	11/30/11		
BlackRock IG Credit	0.00	1.02	-0.48	1.02	-0.37			1.20	3/31/17	3,825	0.00
Bloomberg Int Credit	-0.24	0.73	-0.73	0.73	-0.62			1.16	3/31/17		
Value Added	0.24	0.30	0.25	0.30	0.25			0.04	3/31/17		
BNY IG Credit	-0.21	0.74	-0.71	0.74				-0.92	11/30/17	887,869,284	7.11
Bloomberg Int Credit	-0.24	0.73	-0.73	0.73				-0.48	11/30/17		
Value Added	0.03	0.01	0.02	0.01				-0.43	11/30/17		
Columbia	0.73	3.05	1.77	3.05	1.97	6.77	5.49	6.83	10/31/11	352,960,753	2.83
Bloomberg High Yield	0.56	2.40	2.57	2.40	3.05	8.15	5.54	6.84	10/31/11		
Value Added	0.17	0.65	-0.80	0.65	-1.08	-1.38	-0.05	-0.01	10/31/11		

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Marathon Bluegrass	0.29	3.31	4.93	3.31	5.77			7.95	12/31/15	323,642,641	2.59
Bloomberg High Yield	0.56	2.40	2.57	2.40	3.05			9.75	12/31/15		
Value Added	-0.27	0.91	2.36	0.91	2.72			-1.80	12/31/15		
Waterfall	0.14	1.72	6.34	1.72	8.17	10.01	9.85	11.90	1/31/10	170,469,450	1.36
Policy Index	0.43	1.74	2.42	1.74	3.11	6.04	4.18	5.26	1/31/10		
Value Added	-0.29	-0.02	3.91	-0.02	5.06	3.97	5.67	6.64	1/31/10		
Shenkman Capital	0.79	2.03	4.14	2.03	4.88	4.45	3.96	4.81	9/30/10	239,192,693	1.92
S&P LSTA Leverage Loan	0.69	1.84	4.03	1.84	5.20	5.32	4.61	5.73	9/30/10		
Value Added	0.10	0.19	0.10	0.19	-0.32	-0.87	-0.65	-0.93	9/30/10		
Cerberus Capital Mgmt	0.83	2.68	6.86	2.68	7.99	8.25		8.19	8/31/14	85,131,118	0.68
S&P LSTA Leverage Loan	0.69	1.84	4.03	1.84	5.20	5.32		3.96	8/31/14		
Value Added	0.14	0.84	2.82	0.84	2.79	2.93		4.22	8/31/14		
BSP Private Credit	0.36	0.36		0.36				0.07	1/31/18	49,158,945	0.39
S&P LSTA Leverage Loan Index	0.69	1.84		1.84				3.04	1/31/18		
Value Added	-0.33	-1.48		-1.48				-2.97	1/31/18		
White Oak Yield Spectrum	1.23	1.23		1.23				1.57	2/28/18	44,677,095	0.36
S&P LSTA Leverage Loan Index	0.69	1.84		1.84				2.84	2/28/18		
Value Added	0.54	-0.61		-0.61				-1.26	2/28/18		
Loomis									10/31/11	55,773	0.00

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
PIMCO									12/31/09	208,420	0.00
Real Return Composite	-0.39	0.66	0.36	0.66	1.11	5.90	2.86	3.67	6/30/11	1,062,850,954	8.51
Real Return Index (P)	-0.89	0.62	0.37	0.62	0.92	3.38	1.62	2.52	6/30/11		
Value Added	0.50	0.03	-0.01	0.03	0.20	2.53	1.24	1.15	6/30/11		
Internal TIPS	-0.51	-0.19	-0.00	-0.19	0.33	1.88	1.49	4.76	4/30/02	225,796,373	1.81
Bloomberg 1-10 Yrs TIPS	-0.70	-0.42	-0.20	-0.42	0.33	1.65	1.14	4.63	4/30/02		
Value Added	0.19	0.22	0.20	0.22	0.00	0.23	0.35	0.13	4/30/02		
PIMCO All Asset	0.60	0.34	0.34	0.34	1.35	8.25	3.44	4.67	11/30/11	344,362,785	2.76
Bloomberg 1-10 Yrs TIPS	-0.70	-0.42	-0.20	-0.42	0.33	1.65	0.94	0.73	11/30/11		
Value Added	1.30	0.76	0.55	0.76	1.02	6.60	2.50	3.94	11/30/11		
Tortoise Capital	-2.48	2.91	2.99	2.91	2.31	5.72	1.13	11.45	7/31/09	153,606,720	1.23
Alerian MLP	-1.57	6.57	5.90	6.57	4.89	4.43	-2.72	7.99	7/31/09		
Value Added	-0.91	-3.66	-2.90	-3.66	-2.58	1.29	3.85	3.46	7/31/09		
Nuveen Real Asset	-0.39	1.51	0.24	1.51	1.62	8.04		4.70	1/31/15	211,452,254	1.69
Policy Index	-1.23	-0.22	-1.01	-0.22	0.05	7.07		4.34	1/31/15		
Value Added	0.84	1.72	1.26	1.72	1.57	0.97		0.37	1/31/15		
Amerra AGRI Fund II	-1.41	-1.41	-4.45	-1.41	-6.38	0.25	4.65	3.74	11/30/12	23,695,229	0.19
Amerra AGRI Holdings	-1.82	-1.82	-3.47	-1.82	-4.66	-1.74		-1.65	7/31/15	42,776,307	0.34

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns							Market Value			
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
BTG Pactual	-6.99	-6.99	-11.17	-6.99	-8.56	-7.71		-10.65	11/30/14	17,530,001	0.14
Magnetar MTP EOF II	3.34	3.34	6.56	3.34	11.92	2.65		2.51	7/31/15	21,248,829	0.17
Oberland Capital								-14.47	7/31/18	958,045	0.01
Taurus Mine Finance	7.14	7.14	11.77	7.14	10.06	17.81		14.45	3/31/15	20,742,833	0.17
TPF II									9/30/08	681,578	0.01

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Real Estate Composite	1.36	2.66	7.19	2.66	9.65	9.44	9.12	6.09	6/30/84	583,590,341	4.67
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04		6/30/84		
Value Added	1.36	0.81	1.41	0.81	2.14	1.05	-0.92		6/30/84		
Divcowest IV	7.41	7.41	25.52	7.41	25.77	30.11		24.02	2/28/14	4,591,613	0.04
Greenfield Acq VI	-11.16	-11.16	-19.57	-11.16	-18.55	-2.73	4.64	5.76	11/30/12	6,296,725	0.05
Greenfield Acq VII	5.21	5.21	12.43	5.21	13.34	13.79		12.39	6/30/14	27,965,571	0.22
H/2 Credit Partner	0.00	1.18	2.15	1.18	2.29	5.21	5.69	6.10	6/30/11	86,346,197	0.69
Harrison Street	1.79	3.45	7.96	3.45	10.99	10.24	10.19	9.05	4/30/12	81,628,836	0.65
Lubert Adler VII	2.95	2.95	8.04	2.95	12.69	7.09		-1.48	6/30/14	28,783,475	0.23
Mesa West Core Lend	3.35	3.35	6.97	3.35	8.71	8.16	7.19	6.95	4/30/13	59,526,336	0.48
Prologis Targeted US	0.00	5.13	14.62	5.13	21.77	17.00		15.81	9/30/14	77,472,351	0.62
Rubenstein PF II	4.86	4.86	11.74	4.86	17.82	9.62	14.80	14.05	6/30/13	15,987,639	0.13
Stockbridge Sm/Mkts	0.00	1.64	5.35	1.64	7.11	8.73		9.10	4/30/14	85,279,315	0.68
Walton St RE VI	2.23	2.23	7.05	2.23	9.80	4.12	8.09	-17.57	4/30/09	14,787,733	0.12
Walton St RE VII	0.26	0.26	-4.61	0.26	6.82	10.35	12.67	12.58	6/30/13	21,106,776	0.17
Fundamental Partners III	1.71	1.71	3.31	1.71	5.28			4.84	4/30/17	33,508,963	0.27
Lubert Adler VII B	2.12	2.12	3.16	2.12	-1.08			-0.86	6/30/17	15,573,215	0.12
Mesa West IV	2.38	2.38	6.26	2.38	7.61			4.22	2/28/17	11,128,939	0.09
Patron Capital	2.65	2.29	22.48	2.29	21.38			-0.56	7/31/16	13,606,658	0.11

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.05	0.23	2.39	0.23	3.72	2.34	3.60	4.06	3/31/10	534,340,629	4.28
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.08	3/31/10		
Value Added	-1.03	-0.76	-0.52	-0.76	-0.91	-0.27	0.07	0.97	3/31/10		
Anchorage Capital	1.07	1.29	2.58	1.29	5.81			5.58	7/31/16	12,094,478	0.10
Arrowmark	0.84	2.58		2.58				2.58	5/31/18	20,642,147	0.17
Blackstone Strat Opp	0.53	1.25	4.35	1.25	5.72			5.31	7/31/17	7,030,668	0.06
Coatue Qualified Partners									6/30/15	678,142	0.01
Credit Suisse	0.50	1.54	5.03	1.54	6.64			7.20	5/31/17	31,492,607	0.25
Davidson Kempner LP	0.00	0.76	2.33	0.76	3.14			5.90	1/31/16	4,940,099	0.04
Gotham Neutral Strategies	-0.91	-1.16	1.14	-1.16	1.04			-2.37	3/31/17	13,277,757	0.11
Governors Lane Onshore	0.87	1.88	0.27	1.88	-1.43			1.80	3/31/17	22,057,057	0.18
Knighthead									12/31/13	353,736	0.00
Liquidalts H2O Force	6.22	1.70	1.80	1.70	-0.03			6.27	7/31/16	16,349,166	0.13
Luxor Capital	-0.01	0.26	8.03	0.26	13.85	7.73		1.55	3/31/14	2,040,386	0.02
Myriad Opportunities	-0.35	-3.88	-3.13	-3.88	0.28			6.69	4/30/16	47,035,526	0.38
PAAMCO									8/31/11	380,348	0.00
Pine River									4/30/14	486,999	0.00
PRISMA Capital	-0.42	0.84	4.04	0.84	5.29	-2.29	3.40	3.87	8/31/11	298,910,032	2.39
Prudential Fund I	0.38	1.36	3.35	1.36	3.31			5.10	3/31/17	16,513,348	0.13
SRS Partners US	-4.72	-8.01	-4.81	-8.01	-1.95			7.05	7/31/17	7,449,926	0.06
Senator LP	0.61	0.88	0.12	0.88	2.74			6.62	8/31/16	7,432,042	0.06
Systematica Blue Matrix	-1.89	-4.44	-3.43	-4.44	-2.69			1.11	3/31/17	12,019,420	0.10
Tide Point Partners									3/31/17	803,023	0.01
Tourbillon Global Equity	1.93	-1.16	-1.58	-1.16	-10.55			-8.08	10/31/15	7,718,545	0.06

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

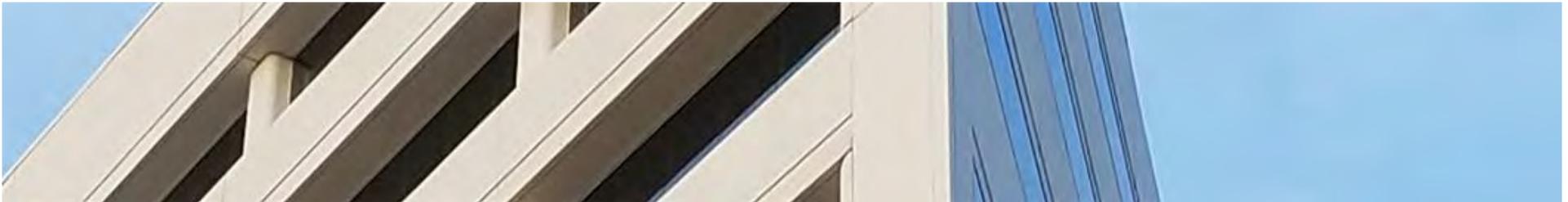
	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Tricadia Select	-0.19	-5.61	-18.26	-5.61	-21.53			-20.25	8/31/17	4,635,177	0.04
Private Equity Composite	5.27	5.43	11.84	5.43	15.37	11.58	13.52	11.36	6/30/02	1,240,097,473	9.93
KRS Short Term PE Index	5.27	5.43	11.85	5.43	15.37	11.58	13.52	11.36	6/30/02		
Value Added	0.00	0.00	-0.00	0.00	-0.00	-0.00	-0.00	-0.00	6/30/02		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	11.09	6/30/02		
Cash Composite	0.15	0.53	1.56	0.53	2.22	1.30	0.85	3.58	12/31/87	495,105,466	3.96
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	3.28	12/31/87		
Value Added	0.00	0.04	0.25	0.04	0.63	0.46	0.34	0.31	12/31/87		
Other Assets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.12	3/31/99	7,300,000	0.06
Perimeter Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.12	3/31/99	7,300,000	0.06

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WILSHIRE ASSOCIATES

Wilshire Consulting



Kentucky Retirement Systems Insurance

Monthly Performance Summary

September 30, 2018



Wilshire Consulting

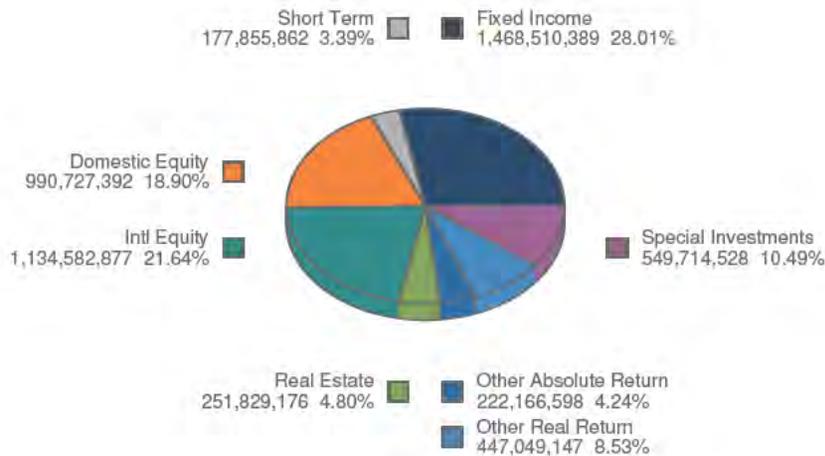
ACTUAL ALLOCATION VS POLICY ALLOCATION

KRS Insurance Plan Composite

As of September 30, 2018

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Total Fund



Policy Index





Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

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	Net of Fee Returns									Market Value
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$
KRS Insurance Plan	0.48	2.23	3.69	2.23	7.35	10.05	7.28	7.48	3/31/87	5,242,435,968
KRS Allocation Index	0.38	2.32	3.15	2.32	6.84	9.89	7.76	7.89	3/31/87	
Value Added	0.10	-0.09	0.55	-0.09	0.51	0.16	-0.48	-0.40	3/31/87	
KRS IPS Benchmark	0.39	2.43	3.69	2.43	6.59				3/31/87	
KERS Insurance Plan	0.26	2.15	2.92	2.15	6.35	9.64	6.82	7.40	3/31/87	859,384,254
KERS Allocation Index	0.24	2.29	2.73	2.29	6.35	9.69	7.52	7.85	3/31/87	
Value Added	0.02	-0.13	0.19	-0.13	0.00	-0.05	-0.70	-0.45	3/31/87	
KERS IPS Benchmark	0.37	2.41	3.35	2.41	6.19				3/31/87	
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/87	
KERS (H) Insurance Plan	0.46	2.19	3.55	2.19	7.18	9.98	7.23	7.48	3/31/87	520,125,166
KERS (H) Allocation Index	0.41	2.32	3.14	2.32	6.82	9.85	7.61	7.87	3/31/87	
Value Added	0.05	-0.13	0.41	-0.13	0.35	0.12	-0.38	-0.39	3/31/87	
KERS (H) IPS Benchmark	0.38	2.42	3.64	2.42	6.54				3/31/87	
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/87	
CERS Insurance Plan	0.52	2.24	3.80	2.24	7.50	10.10	7.35	7.49	3/31/87	2,382,119,191
CERS Allocation Index	0.41	2.33	3.21	2.33	6.91	9.88	7.63	7.87	3/31/87	
Value Added	0.11	-0.09	0.59	-0.09	0.59	0.21	-0.28	-0.38	3/31/87	
CERS IPS Benchmark	0.39	2.43	3.71	2.43	6.62				3/31/87	
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/87	



Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

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	Net of Fee Returns									Market Value
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$
CERS (H) Insurance Plan	0.55	2.26	3.90	2.26	7.61	10.16	7.40	7.50	3/31/87	1,288,052,207
CERS (H) Allocation Index	0.42	2.33	3.23	2.33	6.92	9.89	7.63	7.87	3/31/87	
Value Added	0.13	-0.07	0.67	-0.07	0.69	0.28	-0.23	-0.37	3/31/87	
CERS (H) IPS Benchmark	0.39	2.43	3.73	2.43	6.64				3/31/87	
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/87	
SPRS Insurance Plan	0.54	2.27	3.90	2.27	7.63	10.14	7.38	7.50	3/31/87	192,937,697
SPRS Allocation Index	0.41	2.32	3.17	2.32	6.86	9.87	7.62	7.87	3/31/87	
Value Added	0.13	-0.05	0.73	-0.05	0.77	0.27	-0.24	-0.37	3/31/87	
SPRS IPS Benchmark	0.38	2.42	3.67	2.42	6.58				3/31/87	
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/87	



Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
KERS Insurance Plan	0.26	2.15	2.92	2.15	6.35	9.64	6.82	7.40	3/31/87	859,384,254	
KERS Allocation Index	0.24	2.29	2.73	2.29	6.35	9.69	7.52	7.85	3/31/87		
Value Added	0.02	-0.13	0.19	-0.13	0.00	-0.05	-0.70	-0.45	3/31/87		
KERS IPS Benchmark	0.37	2.41	3.35	2.41	6.19				3/31/87		
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/87		
US Equity Composite	-0.21	6.11	9.75	6.11	16.34	16.68	12.65	13.44	6/30/13	179,995,756	20.94
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	14.11	6/30/13		
Value Added	-0.38	-1.02	-0.82	-1.02	-1.24	-0.39	-0.80	-0.67	6/30/13		
Non-US Equity Composite	0.19	0.66	-1.22	0.66	4.27	11.24	5.16	6.81	6/30/13	200,805,730	23.37
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	6.26	6/30/13		
Value Added	-0.03	0.27	2.05	0.27	2.49	0.86	0.62	0.55	6/30/13		
Fixed Income Composite	0.15	1.32	0.93	1.32	1.34	4.45	3.69	3.79	6/30/13	255,834,806	29.77
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	4.45	6/30/13		
Value Added	0.08	-0.02	0.36	-0.02	0.33	-0.86	-0.84	-0.66	6/30/13		
Real Return Composite	-0.53	0.36	0.06	0.36	0.84	5.42	2.59	2.76	6/30/13	73,083,875	8.50
Real Return Index (I)	-0.88	0.34	0.11	0.34	0.64	3.30	1.68	1.80	6/30/13		
Value Added	0.36	0.02	-0.05	0.02	0.20	2.12	0.91	0.96	6/30/13		
Real Estate Composite	1.41	2.66	7.06	2.66	9.49	9.58	9.80	8.94	6/30/13	35,466,360	4.13
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	10.28	6/30/13		
Value Added	1.41	0.81	1.29	0.81	1.98	1.19	-0.24	-1.34	6/30/13		

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns									Market Value	
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.03	0.28	2.42	0.28	3.75	2.35	3.62	3.48	6/30/13	35,075,458	4.08
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.14	6/30/13		
Value Added	-1.02	-0.72	-0.48	-0.72	-0.87	-0.26	0.09	0.34	6/30/13		
Private Equity Composite	4.10	4.18	10.50	4.18	13.79	11.14	13.32	13.41	6/30/13	47,342,736	5.51
KERS Short Term PE Index	4.10	4.18	10.50	4.18	13.79	11.14	13.32	13.41	6/30/13		
Value Added	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6/30/13		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	17.30	6/30/13		
Cash Composite	0.16	0.50	1.54	0.50	2.10	1.11	0.75	0.73	6/30/13	31,779,532	3.70
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	0.49	6/30/13		
Value Added	0.01	0.01	0.24	0.01	0.51	0.27	0.23	0.23	6/30/13		

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
KERS (H) Insurance Plan	0.46	2.19	3.55	2.19	7.18	9.98	7.23	7.48	3/31/87	520,125,166	
KERS (H) Allocation Index	0.41	2.32	3.14	2.32	6.82	9.85	7.61	7.87	3/31/87		
Value Added	0.05	-0.13	0.41	-0.13	0.35	0.12	-0.38	-0.39	3/31/87		
KERS (H) IPS Benchmark	0.38	2.42	3.64	2.42	6.54				3/31/87		
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/87		
US Equity Composite	-0.22	6.11	9.74	6.11	16.34	16.50	12.58	13.34	6/30/13	96,649,605	18.58
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	14.11	6/30/13		
Value Added	-0.38	-1.02	-0.83	-1.02	-1.24	-0.57	-0.88	-0.76	6/30/13		
Non-US Equity Composite	0.19	0.66	-1.22	0.66	4.27	11.34	5.27	6.92	6/30/13	111,370,138	21.41
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	6.26	6/30/13		
Value Added	-0.03	0.27	2.05	0.27	2.49	0.96	0.74	0.66	6/30/13		
Fixed Income Composite	0.10	1.24	0.80	1.24	1.19	4.38	3.65	3.75	6/30/13	148,955,217	28.64
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	4.45	6/30/13		
Value Added	0.04	-0.09	0.23	-0.09	0.18	-0.94	-0.88	-0.70	6/30/13		
Real Return Composite	-0.43	0.42	0.23	0.42	0.96	5.38	2.56	2.73	6/30/13	43,196,513	8.31
Real Return Index (I)	-0.88	0.34	0.11	0.34	0.64	3.30	1.69	1.83	6/30/13		
Value Added	0.46	0.07	0.12	0.07	0.32	2.08	0.87	0.90	6/30/13		
Real Estate Composite	1.45	2.67	7.05	2.67	9.45	9.88	9.95	9.13	6/30/13	26,728,111	5.14
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	10.28	6/30/13		
Value Added	1.45	0.82	1.27	0.82	1.94	1.49	-0.09	-1.15	6/30/13		

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	Net of Fee Returns									Market Value	
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.04	0.27	2.42	0.27	3.75	2.35	3.61	3.47	6/30/13	23,218,675	4.46
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.14	6/30/13		
Value Added	-1.02	-0.72	-0.49	-0.72	-0.88	-0.26	0.08	0.33	6/30/13		
Private Equity Composite	4.20	4.33	13.55	4.33	17.43	13.41	15.58	15.53	6/30/13	51,248,808	9.85
KERS (H) Short Term PE Index	4.20	4.33	13.55	4.33	17.43	13.41	15.58	15.54	6/30/13		
Value Added	0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	-0.00	6/30/13		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	17.30	6/30/13		
Cash Composite	0.16	0.50	1.63	0.50	2.21	1.17	0.78	0.76	6/30/13	18,758,100	3.61
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	0.49	6/30/13		
Value Added	0.01	0.01	0.32	0.01	0.62	0.33	0.26	0.27	6/30/13		

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
CERS Insurance Plan	0.52	2.24	3.80	2.24	7.50	10.10	7.35	7.49	3/31/87	2,382,119,191	
CERS Allocation Index	0.41	2.33	3.21	2.33	6.91	9.88	7.63	7.87	3/31/87		
Value Added	0.11	-0.09	0.59	-0.09	0.59	0.21	-0.28	-0.38	3/31/87		
CERS IPS Benchmark	0.39	2.43	3.71	2.43	6.62				3/31/87		
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/87		
US Equity Composite	-0.21	6.11	9.75	6.11	16.34	16.71	12.63	13.45	6/30/13	439,682,656	18.46
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	14.11	6/30/13		
Value Added	-0.38	-1.02	-0.83	-1.02	-1.24	-0.36	-0.83	-0.66	6/30/13		
Non-US Equity Composite	0.19	0.66	-1.22	0.66	4.27	11.36	5.29	6.94	6/30/13	506,491,155	21.26
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	6.26	6/30/13		
Value Added	-0.03	0.27	2.05	0.27	2.49	0.97	0.75	0.68	6/30/13		
Fixed Income Composite	0.09	1.22	0.79	1.22	1.21	4.39	3.68	3.78	6/30/13	655,873,223	27.53
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	4.45	6/30/13		
Value Added	0.03	-0.12	0.22	-0.12	0.19	-0.92	-0.85	-0.68	6/30/13		
Real Return Composite	-0.34	0.51	0.35	0.51	1.07	5.52	2.64	2.80	6/30/13	207,808,847	8.72
Real Return Index (I)	-0.88	0.34	0.11	0.34	0.64	3.30	1.69	1.83	6/30/13		
Value Added	0.55	0.17	0.24	0.17	0.43	2.21	0.95	0.97	6/30/13		
Real Estate Composite	1.44	2.67	7.04	2.67	9.44	9.91	9.98	9.15	6/30/13	115,882,502	4.86
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	10.28	6/30/13		
Value Added	1.44	0.82	1.27	0.82	1.93	1.52	-0.06	-1.13	6/30/13		

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.03	0.27	2.42	0.27	3.75	2.35	3.61	3.48	6/30/13	99,499,083	4.18
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.14	6/30/13		
Value Added	-1.02	-0.72	-0.49	-0.72	-0.88	-0.26	0.09	0.34	6/30/13		
Private Equity Composite	4.23	4.38	14.29	4.38	18.35	13.83	15.92	15.84	6/30/13	273,637,886	11.49
CERS Short Term PE Index	4.23	4.38	14.29	4.38	18.35	13.83	15.92	15.84	6/30/13		
Value Added	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6/30/13		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	17.30	6/30/13		
Cash Composite	0.16	0.50	1.58	0.50	2.16	1.14	0.76	0.75	6/30/13	83,243,839	3.49
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	0.49	6/30/13		
Value Added	0.01	0.01	0.28	0.01	0.57	0.30	0.25	0.25	6/30/13		

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
CERS (H) Insurance Plan	0.55	2.26	3.90	2.26	7.61	10.16	7.40	7.50	3/31/87	1,288,052,207	
CERS (H) Allocation Index	0.42	2.33	3.23	2.33	6.92	9.89	7.63	7.87	3/31/87		
Value Added	0.13	-0.07	0.67	-0.07	0.69	0.28	-0.23	-0.37	3/31/87		
CERS (H) IPS Benchmark	0.39	2.43	3.73	2.43	6.64				3/31/87		
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/87		
US Equity Composite	-0.21	6.11	9.75	6.11	16.34	16.74	12.65	13.46	6/30/13	238,219,687	18.49
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	14.11	6/30/13		
Value Added	-0.38	-1.02	-0.82	-1.02	-1.24	-0.34	-0.81	-0.65	6/30/13		
Non-US Equity Composite	0.19	0.66	-1.22	0.66	4.27	11.40	5.31	6.95	6/30/13	274,490,270	21.31
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	6.26	6/30/13		
Value Added	-0.03	0.27	2.05	0.27	2.49	1.01	0.77	0.69	6/30/13		
Fixed Income Composite	0.08	1.20	0.80	1.20	1.21	4.38	3.66	3.77	6/30/13	353,373,410	27.43
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	4.45	6/30/13		
Value Added	0.02	-0.14	0.23	-0.14	0.20	-0.93	-0.86	-0.69	6/30/13		
Real Return Composite	-0.34	0.50	0.35	0.50	1.07	5.47	2.62	2.79	6/30/13	108,009,755	8.39
Real Return Index (I)	-0.88	0.34	0.11	0.34	0.64	3.30	1.69	1.83	6/30/13		
Value Added	0.54	0.16	0.25	0.16	0.44	2.17	0.93	0.96	6/30/13		
Real Estate Composite	1.44	2.66	7.04	2.66	9.43	9.90	9.97	9.14	6/30/13	63,570,702	4.94
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	10.28	6/30/13		
Value Added	1.44	0.81	1.26	0.81	1.92	1.51	-0.07	-1.14	6/30/13		

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.04	0.27	2.42	0.27	3.75	2.35	3.61	3.47	6/30/13	55,672,325	4.32
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.14	6/30/13		
Value Added	-1.02	-0.72	-0.49	-0.72	-0.88	-0.26	0.08	0.33	6/30/13		
Private Equity Composite	4.28	4.42	14.47	4.42	18.52	13.94	16.11	16.02	6/30/13	154,074,546	11.96
CERS (H) Short Term PE Index	4.28	4.42	14.47	4.42	18.52	13.94	16.11	16.02	6/30/13		
Value Added	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6/30/13		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	17.30	6/30/13		
Cash Composite	0.16	0.50	1.55	0.50	2.13	1.13	0.76	0.74	6/30/13	40,641,512	3.16
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	0.49	6/30/13		
Value Added	0.01	0.01	0.25	0.01	0.54	0.29	0.24	0.25	6/30/13		

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
SPRS Insurance Plan	0.54	2.27	3.90	2.27	7.63	10.14	7.38	7.50	3/31/87	192,937,697	
SPRS Allocation Index	0.41	2.32	3.17	2.32	6.86	9.87	7.62	7.87	3/31/87		
Value Added	0.13	-0.05	0.73	-0.05	0.77	0.27	-0.24	-0.37	3/31/87		
SPRS IPS Benchmark	0.38	2.42	3.67	2.42	6.58				3/31/87		
Assumed Rate 6.25%	0.51	1.53	4.65	1.53	6.25				3/31/87		
US Equity Composite	-0.22	6.11	9.74	6.11	16.33	16.72	12.62	13.44	6/30/13	36,362,235	18.85
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	14.11	6/30/13		
Value Added	-0.38	-1.02	-0.83	-1.02	-1.25	-0.36	-0.84	-0.67	6/30/13		
Non-US Equity Composite	0.19	0.66	-1.22	0.66	4.27	11.43	5.32	6.97	6/30/13	41,425,584	21.47
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	6.26	6/30/13		
Value Added	-0.03	0.27	2.05	0.27	2.49	1.05	0.78	0.71	6/30/13		
Fixed Income Composite	0.08	1.20	0.84	1.20	1.26	4.43	3.72	3.82	6/30/13	54,473,734	28.23
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	4.45	6/30/13		
Value Added	0.02	-0.14	0.27	-0.14	0.25	-0.88	-0.81	-0.64	6/30/13		
Real Return Composite	-0.35	0.47	0.38	0.47	1.09	5.40	2.59	2.76	6/30/13	14,950,156	7.75
Real Return Index (I)	-0.88	0.34	0.11	0.34	0.64	3.30	1.69	1.83	6/30/13		
Value Added	0.54	0.13	0.27	0.13	0.45	2.09	0.91	0.93	6/30/13		
Real Estate Composite	1.44	2.67	7.05	2.67	9.45	9.89	9.94	9.12	6/30/13	10,181,501	5.28
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	10.28	6/30/13		
Value Added	1.44	0.82	1.27	0.82	1.93	1.50	-0.10	-1.16	6/30/13		

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	Net of Fee Returns									Market Value	
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.04	0.27	2.42	0.27	3.75	2.35	3.61	3.47	6/30/13	8,701,056	4.51
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.14	6/30/13		
Value Added	-1.02	-0.72	-0.49	-0.72	-0.88	-0.26	0.08	0.33	6/30/13		
Private Equity Composite	4.19	4.35	13.88	4.35	17.86	13.25	15.30	15.27	6/30/13	23,410,550	12.13
SPRS Short Term PE Index	4.19	4.35	13.88	4.35	17.86	13.25	15.30	15.27	6/30/13		
Value Added	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6/30/13		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	17.30	6/30/13		
Cash Composite	0.16	0.50	1.53	0.50	2.10	1.12	0.75	0.73	6/30/13	3,432,880	1.78
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	0.49	6/30/13		
Value Added	0.01	0.01	0.23	0.01	0.52	0.28	0.24	0.24	6/30/13		

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
KRS Insurance Plan	0.48	2.23	3.69	2.23	7.35	10.05	7.28	7.48	3/31/87	5,242,435,968	100.00
KRS Allocation Index	0.38	2.32	3.15	2.32	6.84	9.89	7.76	7.89	3/31/87		
Value Added	0.10	-0.09	0.55	-0.09	0.51	0.16	-0.48	-0.40	3/31/87		
KRS IPS Benchmark	0.39	2.43	3.69	2.43	6.59				3/31/87		
US Equity Composite	-0.21	6.11	9.76	6.11	16.35	16.72	12.65	9.89	6/30/92	990,727,392	18.90
Russell 3000	0.17	7.12	10.57	7.12	17.58	17.07	13.46	10.08	6/30/92		
Value Added	-0.38	-1.01	-0.81	-1.01	-1.23	-0.35	-0.81	-0.18	6/30/92		
S&P 500 Index	0.59	7.51	10.72	7.51	18.10	17.36	13.97	7.74	6/30/01	465,401,449	8.88
Standard & Poor's 500	0.57	7.71	10.57	7.71	17.92	17.31	13.95	7.28	6/30/01		
Value Added	0.02	-0.20	0.15	-0.20	0.19	0.05	0.02	0.46	6/30/01		
Scientific Beta	0.02	5.34	8.03	5.34	14.65			13.84	6/30/16	133,222,414	2.54
Standard & Poor's 500	0.57	7.71	10.57	7.71	17.92			18.04	6/30/16		
Value Added	-0.55	-2.37	-2.54	-2.37	-3.27			-4.21	6/30/16		
River Road									6/30/11	8,742,847	0.17
Russell 3000 Value									6/30/11		
Value Added									6/30/11		
River Road FAV	0.31	6.48	11.10	6.48	12.37			18.61	6/30/16	59,618,933	1.14
Russell 3000 Value	-0.00	5.39	4.17	5.39	9.46			12.89	6/30/16		
Value Added	0.31	1.09	6.93	1.09	2.91			5.73	6/30/16		

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Westfield Capital	-0.10	8.03	16.01	8.03	21.93	17.17	13.55	13.86	6/30/11	65,426,665	1.25
Russell 3000 Growth	0.33	8.88	16.99	8.88	25.89	20.36	16.23	15.50	6/30/11		
Value Added	-0.43	-0.85	-0.98	-0.85	-3.96	-3.19	-2.68	-1.64	6/30/11		
Systematic	-1.91	3.02	2.92	3.02	11.28	14.78	9.07	12.53	6/30/12	110,798,563	2.11
Russell Mid Cap Value	-0.79	3.30	3.13	3.30	8.81	13.09	10.72	13.84	6/30/12		
Value Added	-1.12	-0.27	-0.22	-0.27	2.47	1.68	-1.64	-1.31	6/30/12		
Internal US Mid Cap	-1.06	4.02	8.69	4.02	15.63	16.27		11.87	7/31/14	60,404,190	1.15
S&P 400 Mid Cap	-1.10	3.86	7.49	3.86	14.21	15.68		11.51	7/31/14		
Value Added	0.04	0.15	1.20	0.15	1.43	0.60		0.37	7/31/14		
NTGI Structured	-2.43	3.78	11.63	3.78	15.57	17.13	11.58	12.78	6/30/11	87,105,572	1.66
Russell 2000	-2.41	3.58	11.51	3.58	15.24	17.12	11.07	11.95	6/30/11		
Value Added	-0.02	0.20	0.12	0.20	0.33	0.01	0.51	0.83	6/30/11		
Transition Account									5/31/11	6,758	0.00

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	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Non-US Equity Composite	0.19	0.66	-1.18	0.66	4.30	11.35	5.27	2.43	3/31/00	1,134,582,877	21.64
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.38	4.54	2.67	3/31/00		
Value Added	-0.03	0.27	2.09	0.27	2.52	0.97	0.73	-0.24	3/31/00		
BlackRock ACWI Ex US	0.46	0.70	-3.06	0.70	1.86	10.35	4.37	8.02	5/31/12	449,787,763	8.58
MSCI ACWI X US (N)	0.46	0.71	-3.09	0.71	1.76	9.97	4.12	7.93	5/31/12		
Value Added	0.00	-0.00	0.03	-0.00	0.10	0.38	0.25	0.09	5/31/12		
American Century	-0.78	-0.43	3.51	-0.43	9.02	12.40		5.20	6/30/14	153,350,093	2.93
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.32		2.77	6/30/14		
Value Added	-1.00	-0.82	6.78	-0.82	7.23	2.08		2.43	6/30/14		
Franklin Templeton	-2.54	-2.20	3.87	-2.20	10.04	15.45		7.42	6/30/14	112,066,843	2.14
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.32		2.77	6/30/14		
Value Added	-2.76	-2.59	7.14	-2.59	8.25	5.13		4.65	6/30/14		
Lazard Asset Mgmt	0.91	0.69	-1.37	0.69	5.12	9.66		3.85	6/30/14	203,763,307	3.89
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.32		2.77	6/30/14		
Value Added	0.69	0.30	1.90	0.30	3.34	-0.66		1.08	6/30/14		
LSV Asset Mgmt	1.59	3.70	-2.30	3.70	2.96	9.66		2.93	6/30/14	177,893,422	3.39
Policy Index	0.22	0.39	-3.27	0.39	1.78	10.32		2.77	6/30/14		
Value Added	1.37	3.31	0.97	3.31	1.18	-0.66		0.17	6/30/14		
Blackrock ACWI Ex-US Small Cap	-1.22	-1.15	-4.31	-1.15	2.02	11.38	6.26	8.78	6/30/13	36,466,444	0.70
MSCI ACWI X US Small Cap (N)	-1.23	-1.51	-4.41	-1.51	1.86	11.24	6.14	8.22	6/30/13		
Value Added	0.01	0.36	0.10	0.36	0.15	0.14	0.12	0.56	6/30/13		

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

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	Net of Fee Returns							Market Value			
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Boston Company									5/31/08	136,777	0.00
Pyramis Intl									7/31/01	750,357	0.01
Non-US Equity Transition									5/31/14	367,871	0.01



Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Fixed Income Composite	0.10	1.24	0.80	1.24	1.19	4.39	3.68	6.29	6/30/92	1,468,510,389	28.01
Policy Index	0.06	1.33	0.57	1.33	1.01	5.31	4.53	6.29	6/30/92		
Value Added	0.04	-0.10	0.22	-0.10	0.18	-0.92	-0.85	0.00	6/30/92		
Bloomberg Global Aggregate	-0.86	-0.92	-2.37	-0.92	-1.32	1.98	0.75	4.94	6/30/92		
NISA	-0.62	-0.03	-1.64	-0.03	-1.17	1.53	2.35	2.64	6/30/11	231,684,138	4.42
Bloomberg Aggregate	-0.64	0.02	-1.60	0.02	-1.22	1.31	2.16	2.48	6/30/11		
Value Added	0.02	-0.05	-0.04	-0.05	0.05	0.21	0.19	0.15	6/30/11		
Lord Abbett										209,132,911	3.99
BlackRock IG Credit	0.15	1.17	-0.38	1.17	-0.27			1.26	3/31/17	6,291	0.00
Bloomberg Int Credit	-0.24	0.73	-0.73	0.73	-0.62			1.16	3/31/17		
Value Added	0.39	0.45	0.35	0.45	0.35			0.10	3/31/17		
BNY IG Credit	-0.21	0.74	-0.70	0.74				-0.91	11/30/17	357,869,485	6.83
Bloomberg Int Credit	-0.24	0.73	-0.73	0.73				-0.48	11/30/17		
Value Added	0.03	0.01	0.03	0.01				-0.42	11/30/17		
Manulife Asset Mgmt	0.36	0.83	-1.23	0.83	-0.95	2.54	2.57	3.69	11/30/11	192,151,593	3.67
Policy Index	-0.43	0.27	-1.41	0.27	-1.00	1.86	0.66	1.00	11/30/11		
Value Added	0.79	0.56	0.18	0.56	0.05	0.68	1.91	2.70	11/30/11		
Columbia	0.68	2.97	1.67	2.97	1.93	6.93	5.58	6.84	10/31/11	90,515,841	1.73
Bloomberg High Yield	0.56	2.40	2.57	2.40	3.05	8.15	5.54	6.84	10/31/11		
Value Added	0.12	0.56	-0.90	0.56	-1.12	-1.22	0.04	0.01	10/31/11		

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Marathon Bluegrass	0.29	3.31	4.91	3.31	5.66			8.06	12/31/15	127,480,744	2.43
Bloomberg High Yield	0.56	2.40	2.57	2.40	3.05			9.75	12/31/15		
Value Added	-0.27	0.91	2.34	0.91	2.61			-1.69	12/31/15		
Shenkman Capital	0.57	2.00	3.78	2.00	4.51	4.50	3.28	4.12	6/30/11	117,871,042	2.25
S&P LSTA Leverage Loan	0.69	1.84	4.03	1.84	5.20	5.32	4.61	5.33	6/30/11		
Value Added	-0.12	0.16	-0.25	0.16	-0.69	-0.82	-1.33	-1.21	6/30/11		
Waterfall	0.02	1.77	6.43	1.77	7.77	8.81	8.53	10.16	6/30/11	58,352,443	1.11
Policy Index	0.43	1.74	2.42	1.74	3.11	6.04	4.18	4.59	6/30/11		
Value Added	-0.41	0.03	4.00	0.03	4.66	2.76	4.35	5.58	6/30/11		
Cerberus Capital Mgmt	0.83	2.68	6.86	2.68	7.99	8.25		8.19	8/31/14	36,484,764	0.70
S&P LSTA Leverage Loan	0.69	1.84	4.03	1.84	5.20	5.32		3.96	8/31/14		
Value Added	0.14	0.84	2.82	0.84	2.79	2.93		4.22	8/31/14		
BSP Private Credit	0.36	0.36		0.36				0.07	1/31/18	24,579,472	0.47
S&P LSTA Leverage Loan Index	0.69	1.84		1.84				3.04	1/31/18		
Value Added	-0.33	-1.48		-1.48				-2.97	1/31/18		
White Oak Yield Spectrum	1.23	1.23		1.23				1.57	2/28/18	22,338,548	0.43
S&P LSTA Leverage Loan Index	0.69	1.84		1.84				2.84	2/28/18		
Value Added	0.54	-0.61		-0.61				-1.26	2/28/18		
Loomis									10/31/11	43,118	0.00

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Real Return Composite	-0.37	0.48	0.23	0.48	0.97	5.47	2.63	3.37	6/30/11	447,049,147	8.53
Real Return Index (I)	-0.88	0.34	0.11	0.34	0.64	3.30	1.69	2.57	6/30/11		
Value Added	0.51	0.14	0.12	0.14	0.33	2.17	0.94	0.80	6/30/11		
Internal TIPS	-0.49	-0.17	0.04	-0.17	0.37	1.77	1.44	4.15	9/30/03	114,215,587	2.18
Bloomberg 1-10 Yrs TIPS	-0.70	-0.42	-0.20	-0.42	0.33	1.65	1.14	3.85	9/30/03		
Value Added	0.21	0.24	0.24	0.24	0.04	0.12	0.30	0.30	9/30/03		
PIMCO All Asset	0.60	0.34	0.34	0.34	1.35	8.21	3.40	4.65	11/30/11	140,375,333	2.68
Bloomberg 1-10 Yrs TIPS	-0.70	-0.42	-0.20	-0.42	0.33	1.65	0.94	0.73	11/30/11		
Value Added	1.30	0.76	0.55	0.76	1.02	6.56	2.46	3.91	11/30/11		
Tortoise Capital	-2.50	2.90	2.92	2.90	2.23	5.64	0.99	11.59	7/31/09	48,729,597	0.93
Alerian MLP	-1.57	6.57	5.90	6.57	4.89	4.43	-2.72	7.99	7/31/09		
Value Added	-0.93	-3.67	-2.98	-3.67	-2.66	1.22	3.72	3.60	7/31/09		
Nuveen Real Asset	-0.47	1.39	0.28	1.39	1.68	8.06		4.71	1/31/15	86,521,413	1.65
Policy Index	-1.23	-0.22	-1.01	-0.22	0.05	7.07		4.34	1/31/15		
Value Added	0.76	1.60	1.30	1.60	1.63	1.00		0.38	1/31/15		
Amerra AGRI Fund II	-1.41	-1.41	-4.45	-1.41	-6.38	0.25	4.45	3.57	11/30/12	9,556,317	0.18
Amerra AGRI Holdings	-1.82	-1.82	-3.47	-1.82	-4.66	-1.74		-1.65	7/31/15	23,033,396	0.44
BTG Pactual	-6.99	-6.99	-11.17	-6.99	-8.56	-7.71		-10.65	11/30/14	7,875,798	0.15
Magnetar MTP EOF II	3.34	3.34	6.56	3.34	11.92	2.65		2.51	7/31/15	7,082,943	0.14
Oberland Capital									7/31/18	430,427	0.01

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Taurus Mine Finance	7.14	7.14	11.77	7.14	10.06	17.81		14.45	3/31/15	9,152,602	0.17
TPF II									9/30/08	75,732	0.00
Real Estate Composite	1.44	2.68	7.12	2.68	9.55	9.63	9.81	9.09	4/30/09	251,829,176	4.80
NCREIF ODCE NOF 1 Quarter Lag	0.00	1.85	5.78	1.85	7.51	8.39	10.04	7.72	4/30/09		
Value Added	1.44	0.83	1.34	0.83	2.04	1.24	-0.23	1.38	4/30/09		
Divcowest IV	7.41	7.41	25.52	7.41	25.77	30.11		24.01	2/28/14	2,030,909	0.04
Greenfield Acq VI	-11.16	-11.16	-19.57	-11.16	-18.55	-2.73	4.64	5.75	11/30/12	2,767,620	0.05
Greenfield Acq VII	5.21	5.21	12.43	5.21	13.34	13.79		12.39	6/30/14	12,272,660	0.23
H/2 Credit Partner	0.00	1.18	2.15	1.18	2.29	5.17	5.66	6.07	6/30/11	33,579,077	0.64
Harrison Street	1.81	3.48	8.00	3.48	11.04	10.38	13.20	8.57	4/30/12	35,868,105	0.68
Lubert Adler VII	2.95	2.95	8.04	2.95	12.69	7.09		-1.48	6/30/14	12,631,596	0.24
Mesa West Core Lend	3.25	3.25	6.73	3.25	8.39	7.79	6.89	6.68	4/30/13	35,821,657	0.68
Prologis Targeted US	0.00	5.06	14.62	5.06	21.77	17.61		15.75	9/30/14	30,660,521	0.58
Rubenstein PF II	4.86	4.86	11.74	4.86	17.82	9.62	14.80	14.05	6/30/13	7,071,455	0.13
Stockbridge Sm/Mkts	0.00	1.62	5.29	1.62	7.04	8.64		9.07	4/30/14	37,550,587	0.72
Walton St RE VI	2.23	2.23	7.05	2.23	9.80	4.12	8.09	-17.57	4/30/09	1,643,081	0.03
Walton St RE VII	0.26	0.26	4.61	0.26	6.82	10.35	12.67	12.58	6/30/13	9,277,126	0.18
Fundamental Partners III	1.71	1.71	3.31	1.71	5.28			4.84	4/30/17	14,360,985	0.27
Lubert Adler VII B	2.12	2.12	3.16	2.12	-1.08			-0.86	6/30/17	6,674,235	0.13
Mesa West IV	2.38	2.38	6.26	2.38	7.61			4.22	2/28/17	4,327,922	0.08
Patron Capital	2.65	2.29	22.48	2.29	21.38			-0.77	7/31/16	5,291,641	0.10

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Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Absolute Return Composite	-0.03	0.28	2.43	0.28	3.76	2.35	3.61	4.00	3/31/10	222,166,598	4.24
HFRI FOF Div (1 Month Lag)	0.98	0.99	2.91	0.99	4.63	2.60	3.53	3.08	3/31/10		
Value Added	-1.01	-0.71	-0.48	-0.71	-0.87	-0.26	0.09	0.91	3/31/10		
Anchorage Capital	1.09	1.90	3.19	1.90	6.45			5.93	7/31/16	5,906,166	0.11
Arrowmark	0.84	2.58		2.58				2.58	5/31/18	10,511,108	0.20
Blackstone Strat Opp	0.61	1.53	6.27	1.53	7.68			7.31	7/31/17	2,414,865	0.05
Coatue Qualified Partners									6/30/15	226,047	0.00
Credit Suisse	0.50	1.54	5.03	1.54	6.64			6.77	4/30/17	13,080,393	0.25
Davidson Kempner LP	0.00	0.76	2.33	0.76	3.14			5.93	1/31/16	1,944,001	0.04
Gotham Neutral Strategies	-0.91	-1.16	1.14	-1.16	1.04			-2.37	3/31/17	5,514,890	0.11
Governors Lane Onshore	0.87	1.88	0.27	1.88	-1.43			1.80	3/31/17	9,161,355	0.17
Knighthead									12/31/13	117,913	0.00
Liquidalts H2O Force	6.22	1.70	1.80	1.70	-0.03			6.30	7/31/16	6,868,603	0.13
Luxor Capital									3/31/14	680,461	0.01
Myriad Opportunities	-0.35	-3.89	-3.14	-3.89	0.27			6.69	4/30/16	18,731,408	0.36
PAAMCO									8/31/11	102,067	0.00
Pine River									4/30/14	162,333	0.00
PRISMA Capital	-0.42	0.84	4.04	0.84	5.29	-2.30	3.39	3.89	8/31/11	124,161,971	2.37
Prudential Fund I	0.38	1.36	3.35	1.36	3.31			5.11	3/31/17	6,858,787	0.13
Senator LP	0.61	0.88	-0.26	0.88	2.35			6.43	8/31/16	3,062,665	0.06
SRS Partners US	-4.72	-8.01	-4.81	-8.01	-1.95			7.05	7/31/17	2,936,141	0.06
Systematica Blue Matrix	-1.89	-4.44	-3.43	-4.44	-2.69			1.11	3/31/17	4,992,243	0.10
Tide Point Partners									3/31/17	333,534	0.01
Tourbillon Global Equity	1.93	-1.16	-1.58	-1.16	-10.55			-8.07	10/31/15	2,572,848	0.05

6.8



Wilshire Consulting
MONTHLY SUMMARY
 Investment Performance and Market Values
 For Periods Ending September 30, 2018

	Net of Fee Returns								Market Value		
	Month	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	Inception Return	Inception Date	\$	Percent
Tricadia Select	-0.19	-5.61	-18.26	-5.61	-21.53			-20.25	8/31/17	1,826,801	0.03
Private Equity Composite	4.23	4.37	14.04	4.37	18.04	13.72	15.83	10.39	6/30/02	549,714,528	10.49
KRS Short Term PE Index	4.23	4.37	14.04	4.37	18.04	13.72	15.83	10.39	6/30/02		
Value Added	0.00	0.00	-0.00	0.00	-0.00	-0.00	-0.00	-0.00	6/30/02		
Russell 3000 +3% Qtr Lag	0.90	4.66	12.22	4.66	18.22	15.76	17.41	11.09	6/30/02		
Cash Composite	0.16	0.50	1.50	0.50	2.13	1.13	0.76	2.65	6/30/92	177,855,862	3.39
91-Day Treasury Bill	0.15	0.49	1.30	0.49	1.58	0.84	0.52	2.62	6/30/92		
Value Added	0.01	0.01	0.19	0.01	0.55	0.30	0.25	0.03	6/30/92		

6.8



KENTUCKY RETIREMENT SYSTEMS
INVESTMENTS



To: Investment Committee – Kentucky Retirement Systems
From: Rich Robben, Interim CIO
Date: November 7th, 2018
Subject: Loomis Sayles Intermediate Core FI Recommendation

7.1

Staff has been working with Wilshire for the past few months to review our Core Fixed Income portfolio. Currently, that portfolio consists of the following 3 investments:

- 1.) **NISA Investment Advisors** - \$585MM Pension / \$231MM Insurance benchmarked to the Bloomberg Barclays Aggregate Index
- 2.) **Lord Abbett** - \$541MM Pension / \$209MM Insurance benchmarked to the Bloomberg Barclays 1-3yr Credit Index
- 3.) **BNY Intermediate Credit Index Collective Trust Fund** - \$887MM Pension / \$358MM indexed to the Bloomberg Barclays Intermediate Credit Index.

The BNY Collective Trust Indexed Fund was approved by the IC last year as a temporary placeholder, and staff has worked with Wilshire to develop this recommendation on the permanent structure of the Core Fixed Income allocation. To this end, staff asked Wilshire to suggest 4 potential new Core FI managers to replace the BNY Fund. On October 11th, Wilshire brought the following 4 managers to Frankfort for presentations to staff:

Prudential
Loomis Sayles
Payden and Rygel
C.S. McKee

While all 4 managers were very qualified, Loomis Sayles was ultimately selected for a new Intermediate Aggregate mandate based on staff's familiarity with the Loomis team and process (Loomis has been part of the KRS fixed income portfolio previously) and their willingness to manage the mandate at a fee equal to or better than the tail fee schedule of either NISA or Lord Abbett.

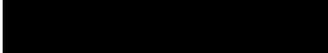
With the inclusion of Loomis, we expect the core fixed income portfolio to have an overall duration of 4.4 years, and a yield of approximately 3.6%, and will contain the following 3 managers:

Manager	Weight	Market Value	Duration	Yield
NISA	42.00%	\$1,030,179,811.75	6	3.52%
Lord Abbett	30.00%	\$735,842,722.68	1.85	3.86%
Loomis	28.00%	\$686,786,541.17	4.7	3.39%
		Total Estimated	4.391	3.59%

Type of Investment: Core Fixed Income

Structure: Separately managed account

Benchmark:  Intermediate Aggregate Index

Management Fee:  (basis points)

Liquidity: 3 day

Performance Fee: None

Term of Structure: Evergreen

Risks: Credit Risk, Interest Rate Risk, Liquidity Risk, Manager Risk, Macroeconomic Risk

Staff is recommending an initial investment up to \$1,000,000,000 with Loomis Sayles to be managed to the Bloomberg Barclays Intermediate Aggregate Index.



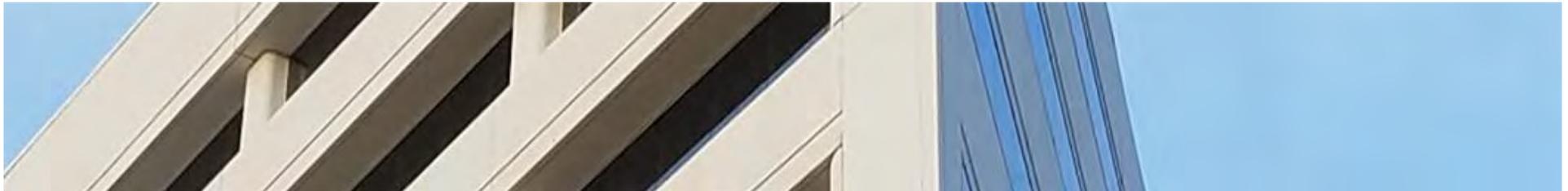
Prepared for



7.2

WILSHIRE ASSOCIATES

Wilshire Consulting



Core Fixed Income Manager Search

November 7, 2018



Core Fixed Income Manager Search Background

- Interest rate environment
 - Flat Yield Curve
 - » Spreads between 2-year and 10-year Treasuries are as tight as they have been since 2007, at 2.60% vs. 2.82% as of August 22nd
 - » Concerns about Yield per unit of Duration
- Balancing Asset Allocation Policy vs current environment
 - » Policy assumes Bloomberg Barclays Aggregate Index exposure for the core/safety allocation – highest duration in the last 30+ years
 - » Shortening duration expected to provide improved yield per unit of volatility in the near term
 - » However, shortening duration also introduces higher level of “active risk”
 - Performance of fixed income *relative to benchmark* will deviate by greater amounts – positive or negative

7.2



Core Fixed Income Manager Search Background

- Wilshire Manager Research identified four candidates to present at the KRS offices on October 11th based on several criteria:
 - Strong score by Wilshire manager research process
 - High conviction in the manager's ability to add value in Core and Intermediate
 - Ability to handle a mandate of this size (\$500m+)
 - At least one Diverse-Owned manager option

7.2



Core Fixed Income Manager Search Candidate Scoring

- Wilshire Manager Research scoring (decile rankings):

7.2

Manager	Organization			Information	Forecasting	Portfolio Construct	Implement-ation	Attribution	Overall
	Firm	Team	Overall						
CS McKee	3rd	1st	2nd	4th	1st	3rd	1st	5th	2nd
Loomis Sayles	2nd	3rd	2nd	1st	1st	1st	1st	1st	1st
Payden & Rygel	3rd	3rd	3rd	3rd	5th	2nd	3rd	3rd	4th
PGIM	1st	1st	1st	1st	1st	1st	1st	1st	1st

Attribute	Weight
Organization	20%
<i>Firm (50% of Org.)</i>	10%
<i>Team (50% of Org.)</i>	10%
Information	20%
Forecasting	20%
Portfolio Construction	20%
Implementation	10%
Attribution	10%

Wilshire's Decile Ranking System										
Letter Grade	A		B		C		D		F	
Decile Ranking	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th

4



Core Fixed Income Manager Search

Firm and Product Comparison

Firm (Inception) Strategy (Inception) Location	Firm AUM (\$MM)	Core Strategy AUM (\$MM)	Intern. Strategy AUM (\$MM)
CS McKee (1931) Aggregate Fixed Income (1992) Intermediate Aggregate Fixed Income (1997) <i>Pittsburgh, PA</i>	\$9,935	\$2,856	\$2,352
Loomis, Sayles & Company (1926) Core Disciplined Alpha (2010) <i>Boston, MA (team in San Francisco, CA)</i>	\$264,433	\$7,290	
Payden & Rygel (1983) Core Bond (1984) Broad Intermediate Aggregate (2003) <i>Los Angeles, CA</i>	\$112,200	\$12,091	\$3,084
PGIM Investments (1987) Core Fixed Income (1991) Intermediate Core Fixed Income (2012) <i>Newark, NJ</i>	\$716,286	\$36,976	\$8,686

7.2



Core Fixed Income Manager Search

Performance Comparison – Calendar Year

Manager	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
CS McKee L.P. - Aggregate Fixed Income	3.63	2.93	1.56	5.78	-1.68	5.07	8.62	7.06	8.73	7.18
Loomis, Sayles & Company, L.P. - Core Disciplined Alpha	3.93	3.67	1.09	6.53	-1.31	6.60	8.77			
PGIM Fixed Income - Core Fixed Income	4.62	3.81	0.84	6.55	-0.96	7.16	8.11	8.87	14.22	-0.42
Payden & Rygel - Core Bond	5.25	3.77	1.26	6.09	-1.28	6.95	6.35	6.33	8.64	3.29
Bloomberg Barclays - U.S. Aggregate Index	3.54	2.65	0.55	5.97	-2.02	4.22	7.84	6.54	5.93	5.24

CS McKee L.P. - Intermediate Aggregate Fixed Income	2.39	2.36	1.90	3.88	-0.68	3.86	6.59	5.89	7.83	7.17
PGIM Fixed Income - Intermediate Core Fixed Income	2.91	2.86	1.49	4.54	-0.60					
Payden & Rygel - Broad Intermediate Aggregate	3.10	2.58	1.61	4.45	-1.04	6.34	5.02	5.99	9.64	2.29
Bloomberg Barclays - U.S. Aggregate Intermediate Index	2.27	1.97	1.21	4.12	-1.02	3.56	5.96	6.14	6.46	4.86

In Excess of the Appropriate Benchmark

Manager	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
CS McKee L.P. - Aggregate Fixed Income	0.09	0.28	1.01	-0.19	0.34	0.85	0.78	0.52	2.80	1.94
Loomis, Sayles & Company, L.P. - Core Disciplined Alpha	0.39	1.02	0.54	0.56	0.71	2.38	0.93			
PGIM Fixed Income - Core Fixed Income	1.08	1.16	0.29	0.58	1.06	2.94	0.27	2.33	8.29	-5.66
Payden & Rygel - Core Bond	1.71	1.12	0.71	0.12	0.74	2.73	-1.49	-0.21	2.71	-1.95

CS McKee L.P. - Intermediate Aggregate Fixed Income	0.12	0.39	0.69	-0.24	0.34	0.30	0.63	-0.25	1.37	2.31
PGIM Fixed Income - Intermediate Core Fixed Income	0.64	0.89	0.28	0.42	0.42					
Payden & Rygel - Broad Intermediate Aggregate	0.83	0.61	0.40	0.33	-0.02	2.78	-0.94	-0.15	3.18	-2.57



Core Fixed Income Manager Search

Performance Comparison – As of June 30, 2018

Manager	Year-to-date	One Year	Three Years	Five Years	Seven Years	Ten Years
CS McKee L.P. - Aggregate Fixed Income	-1.23	0.18	2.13	2.60	3.08	4.40
Loomis, Sayles & Company, L.P. - Core Disciplined Alpha	-1.54	-0.06	2.28	2.89	3.43	
PGIM Fixed Income - Core Fixed Income	-1.60	0.10	2.48	3.06	3.53	4.95
Payden & Rygel - Core Bond	-1.28	0.68	2.84	3.30	3.43	4.50
Bloomberg Barclays - U.S. Aggregate Index	-1.62	-0.40	1.72	2.27	2.57	3.72
CS McKee L.P. - Intermediate Aggregate Fixed Income	-0.71	0.07	1.62	2.08	2.38	3.70
PGIM Fixed Income - Intermediate Core Fixed Income	-0.97	-0.02	1.82	2.39		
Payden & Rygel - Broad Intermediate Aggregate	-0.69	0.34	1.90	2.44	2.64	3.88
Bloomberg Barclays - U.S. Aggregate Intermediate Index	-0.97	-0.32	1.27	1.83	2.03	3.29
In Excess of the Appropriate Benchmark						
Manager	Year-to-date	One Year	Three Years	Five Years	Seven Years	Ten Years
CS McKee L.P. - Aggregate Fixed Income	0.39	0.58	0.41	0.33	0.51	0.68
Loomis, Sayles & Company, L.P. - Core Disciplined Alpha	0.08	0.34	0.56	0.62	0.86	
PGIM Fixed Income - Core Fixed Income	0.02	0.50	0.76	0.79	0.96	1.23
Payden & Rygel - Core Bond	0.34	1.08	1.12	1.03	0.86	0.78
CS McKee L.P. - Intermediate Aggregate Fixed Income	0.26	0.39	0.35	0.25	0.35	0.41
PGIM Fixed Income - Intermediate Core Fixed Income	0.00	0.30	0.55	0.56		
Payden & Rygel - Broad Intermediate Aggregate	0.28	0.66	0.63	0.61	0.61	0.59

7.2



Core Fixed Income Manager Search

CS McKee - Overview

- Focused primarily on security selection in the agency and corporate sectors.
 - Most of the historic alpha generation is from overweights to high quality corporate and callable agency debentures.
 - Systematically underweights BBB securities and uses no derivatives nor invests in emerging market debt.
- Relative to its peers, the investment team is small but has demonstrated consistent alpha generation using a fairly concentrated portfolio holding 70-90 issues.
- The strategy is benchmarked against the Bloomberg Barclays Aggregate Bond Index, and its expected alpha is 80-90 bps.

7.2



Core Fixed Income Manager Search

Loomis Sayles - Overview

- The Disciplined Alpha philosophy, based on a foundation of fundamental research, relative value decision-making, and systematic risk management, successfully implemented with Lynne Royer since 1996.
- The strategy has a bias against smaller issues as they often limit the ability to engage in relative value trading, a key component of the investment strategy.
- Housed in an internally developed team application called Disciplined Alpha Risk Tool (DART), the group manages portfolios to PI targets and ranges that has historically produced average tracking error between 30-90 bps over a full market cycle.
- The Disciplined Alpha team applies the investment process primarily to high-grade bonds and builds portfolios whose alpha is expected to be derived principally from security selection rather than exposures to duration, yield curve, or sector positions. About 85% of historical alpha came from security selection, 10% sector rotation, and 5% duration and curve positioning.

7.2



Core Fixed Income Manager Search

Payden & Rygel - Overview

- Payden & Rygel's Core Bond strategy is managed starting with a top down macro view created by the Investment Policy Committee (IPC), comprised of ten senior investment professionals at the firm.
 - These views are then implemented by the portfolio managers along with bottom up research from the investment team.
- The strategy is measured against the Barclays US Aggregate and is looking to produce alpha of 60bps over a three year period with tracking error in the range of 1-1.5%.

7.2



Core Fixed Income Manager Search PGIM - Overview

- The strategy is implemented through a pre-established risk budget that seeks modest increments of value from making small bets on multiple sources; such as sector allocation, subsector and industry allocation, security selection and modest duration/yield curve positioning.
- The breadth and depth of the team, along with the robust risk managed investing style make this strategy stand out.
- The Prudential Core fixed income strategy seeks to add 60 basis points of alpha over the Bloomberg Barclays Capital Aggregate Index, with 100 basis points of tracking error.
- The strategy maintains duration of ± 0.25 , with no non-dollar emerging markets exposure and limited (0-5%) high yield exposure.

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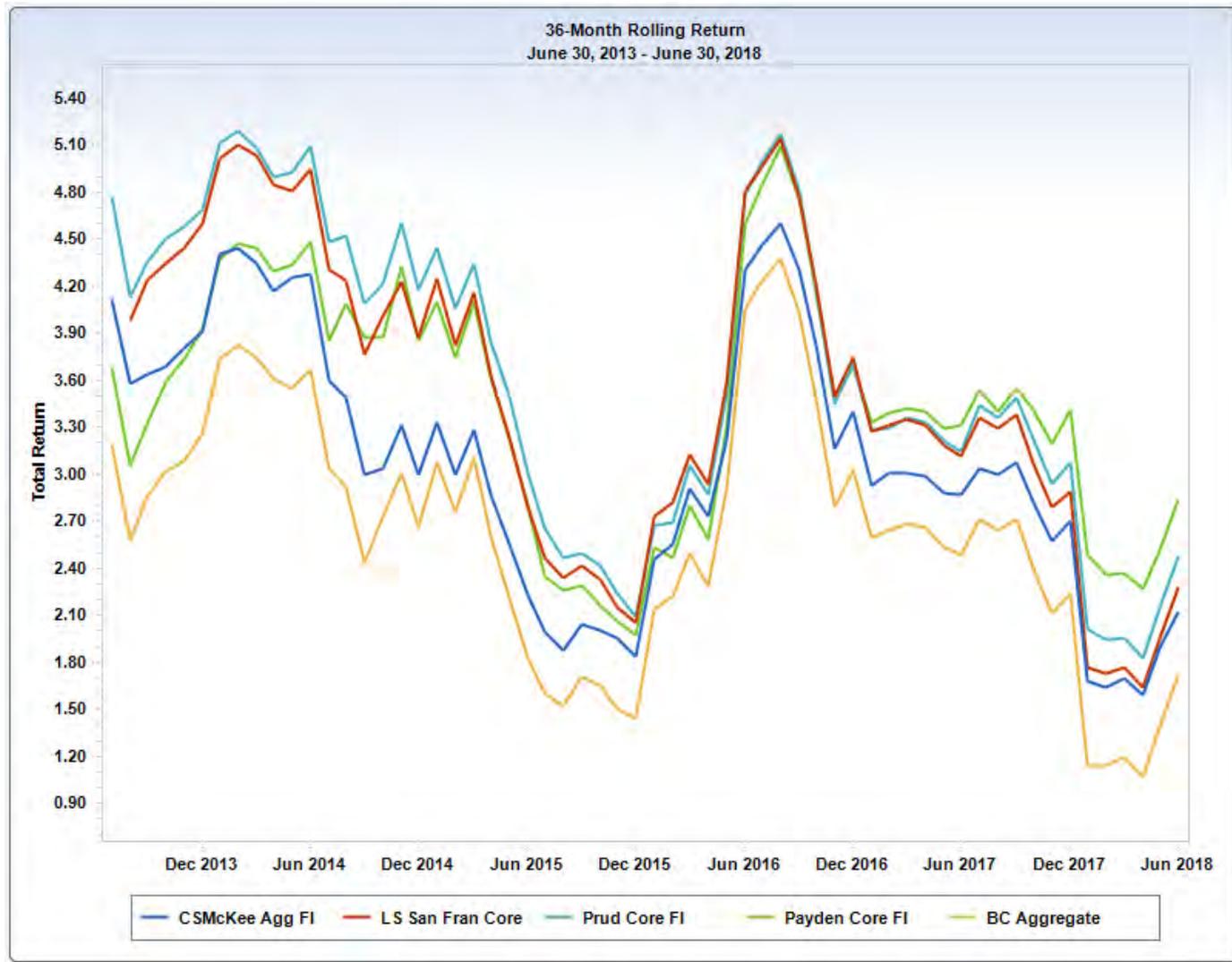


Core



Core Fixed Income Manager Search

Rolling Return - Core

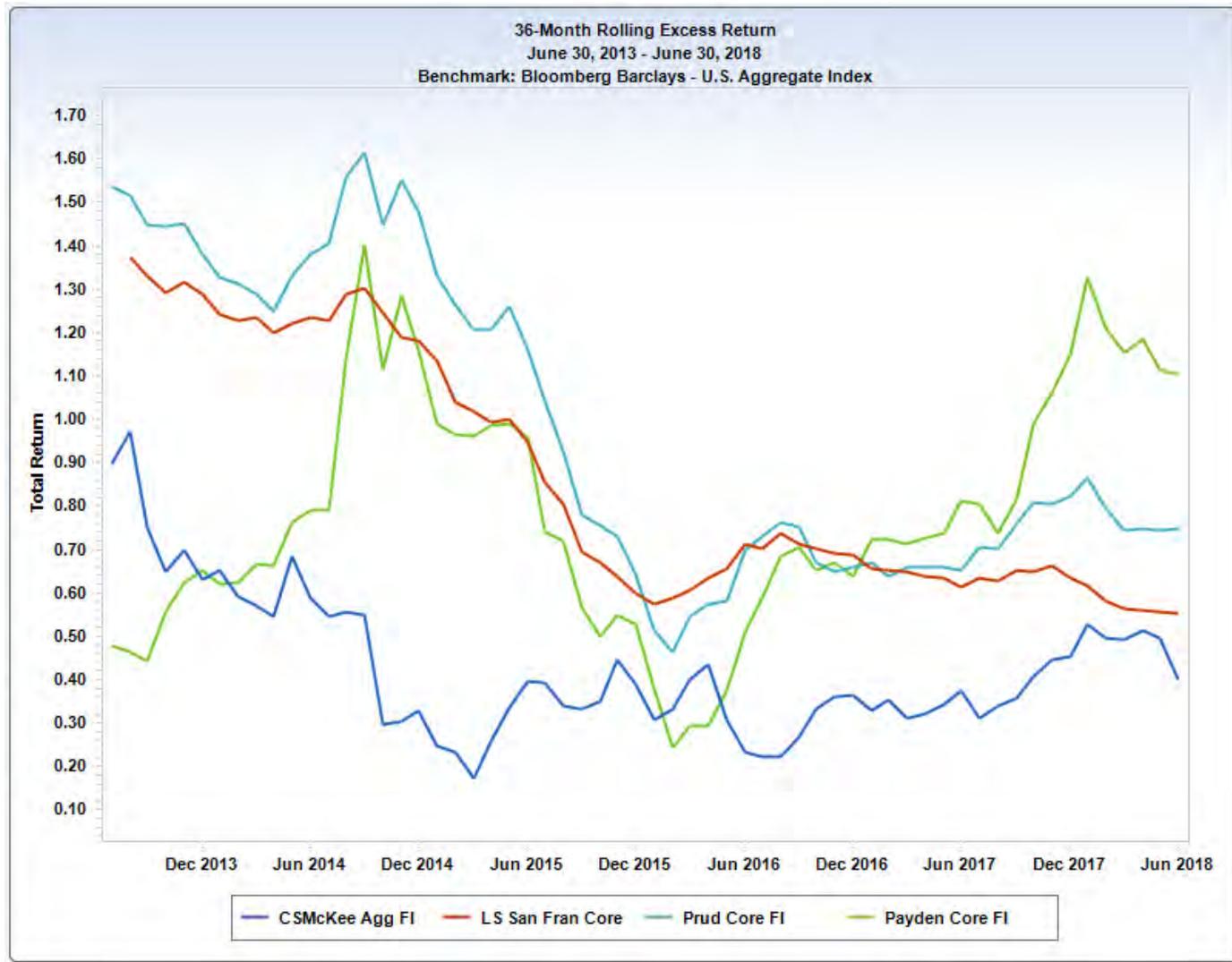


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Core Fixed Income Manager Search

Rolling Excess Return - Core



7.2



Core Fixed Income Manager Search

Rolling Risk - Core

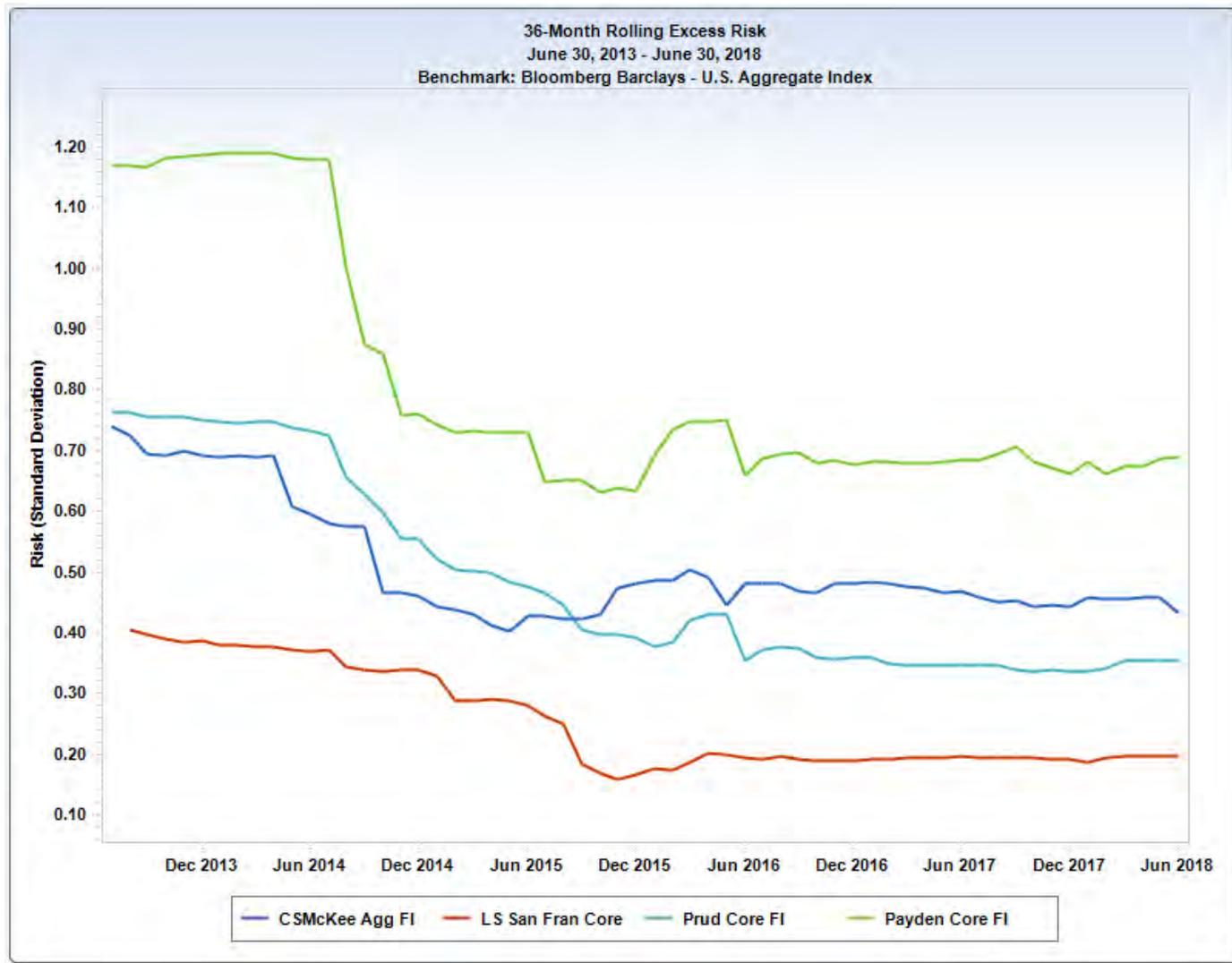


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Core Fixed Income Manager Search

Rolling Excess Risk - Core

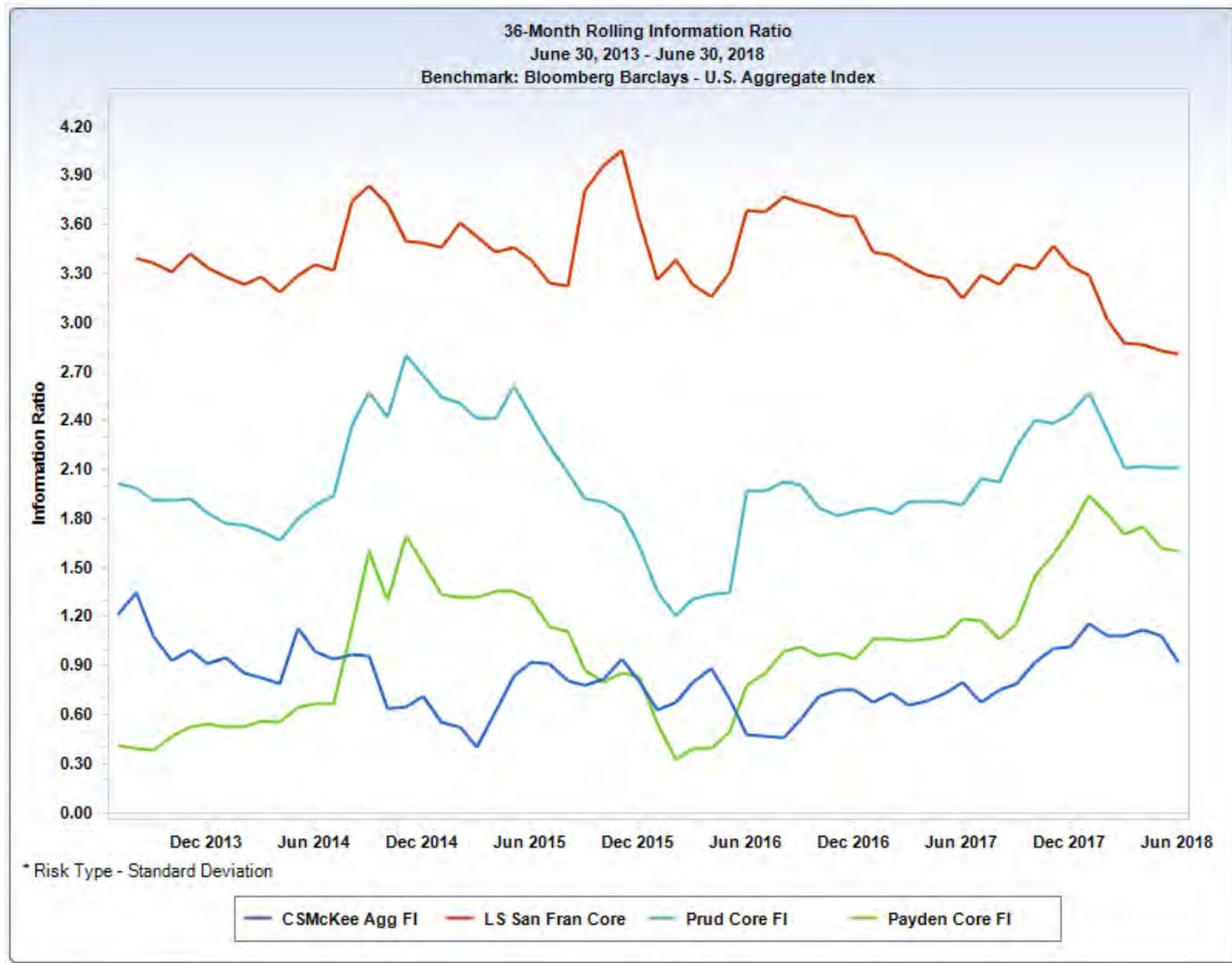


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Core Fixed Income Manager Search

Rolling Information Ratio - Core

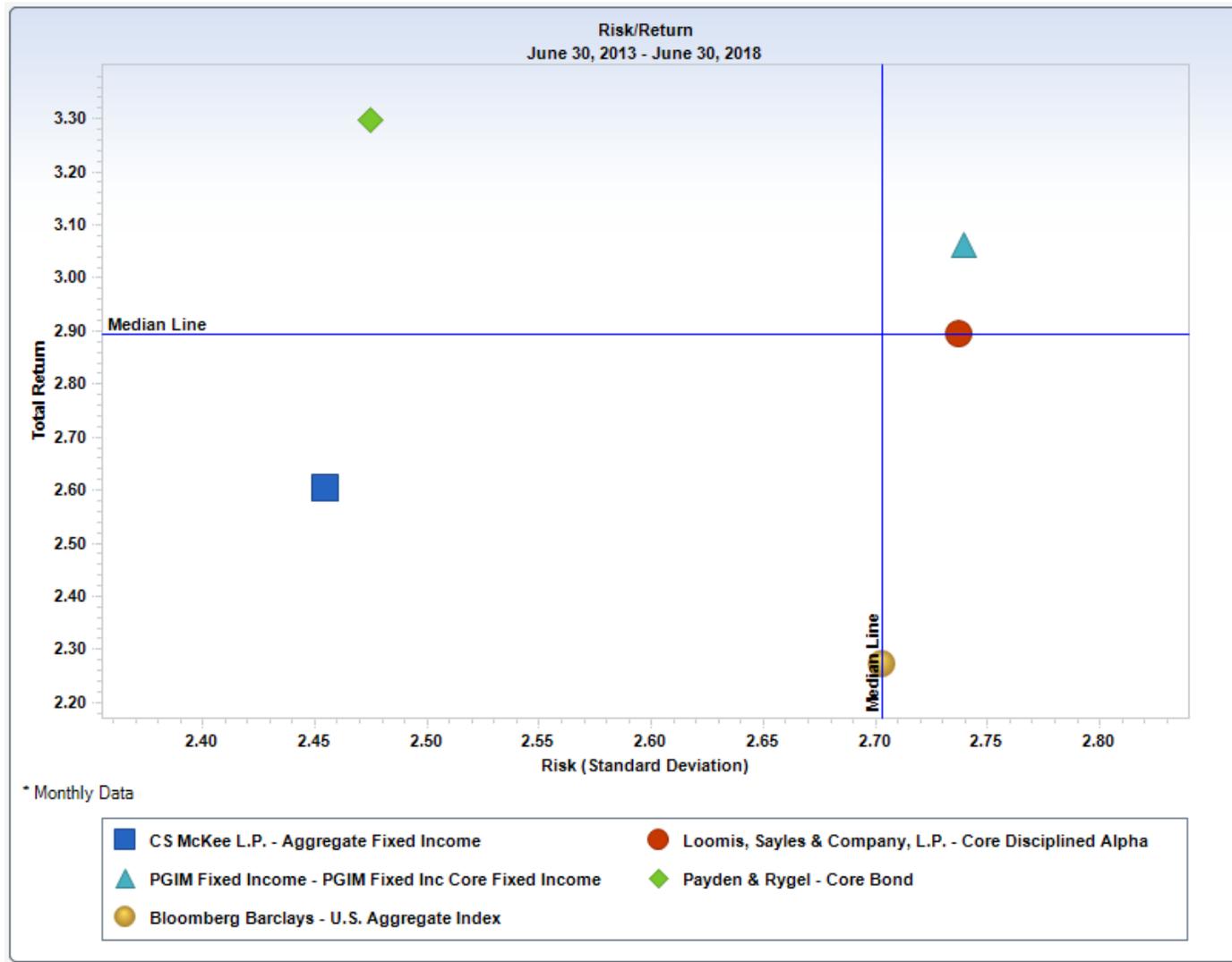


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Core Fixed Income Manager Search

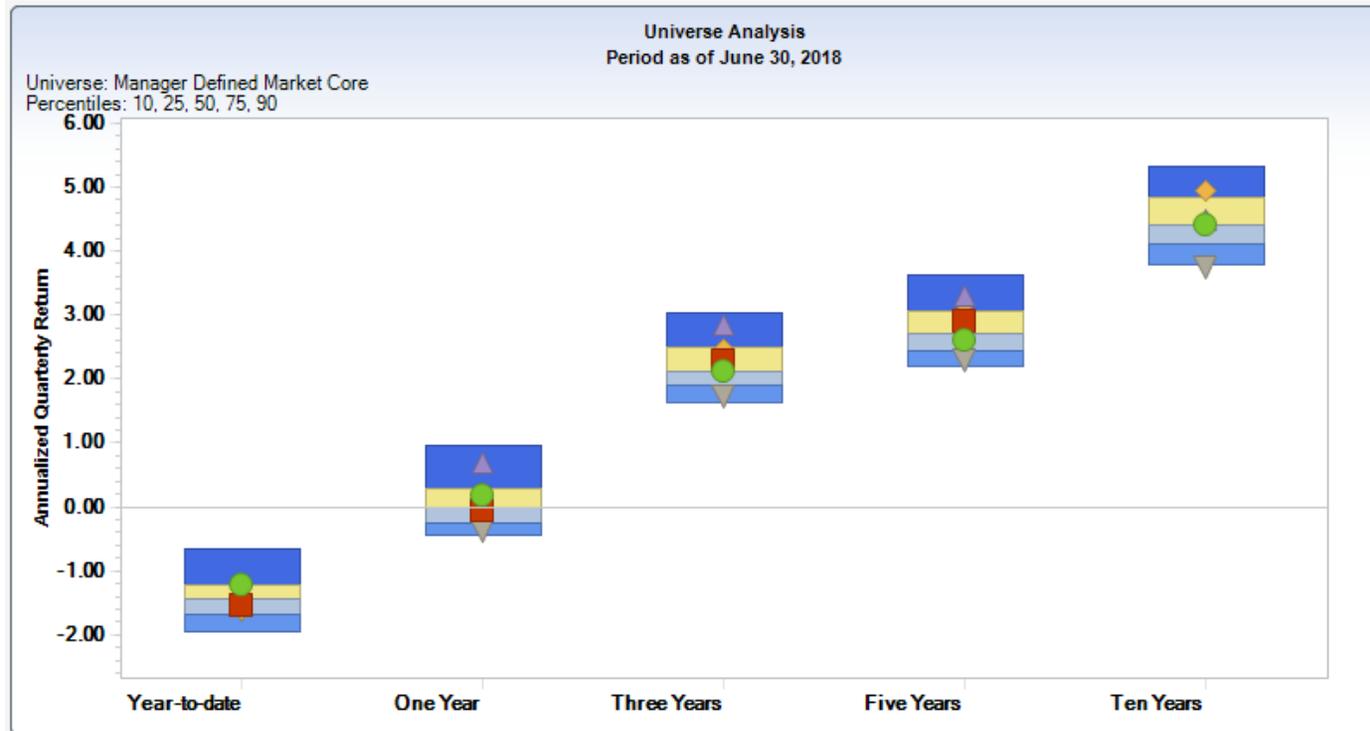
Risk/Return - Core



7.2



Core Fixed Income Manager Search Universe Ranking - Core



7.2

		Year-to-date	One Year	Three Years	Five Years	Ten Years
●	CSMcKee Agg FI	-1.23 (29%)	0.18 (34%)	2.13 (48%)	2.60 (58%)	4.40 (50%)
■	LS San Fran Core	-1.54 (60%)	-0.06 (56%)	2.28 (40%)	2.89 (32%)	
▲	Payden Core FI	-1.28 (31%)	0.68 (14%)	2.84 (13%)	3.30 (18%)	4.50 (48%)
◆	Prud Core FI	-1.60 (65%)	0.10 (40%)	2.48 (26%)	3.06 (26%)	4.95 (17%)
▼	BC Aggregate	-1.62 (67%)	-0.40 (88%)	1.72 (85%)	2.27 (88%)	3.72 (91%)
	# of Products	169	168	159	152	136



Intermediate



Core Fixed Income Manager Search

Rolling Return - Intermediate



7.2



Core Fixed Income Manager Search

Rolling Excess Return - Intermediate



7.2



Core Fixed Income Manager Search

Rolling Risk - Intermediate

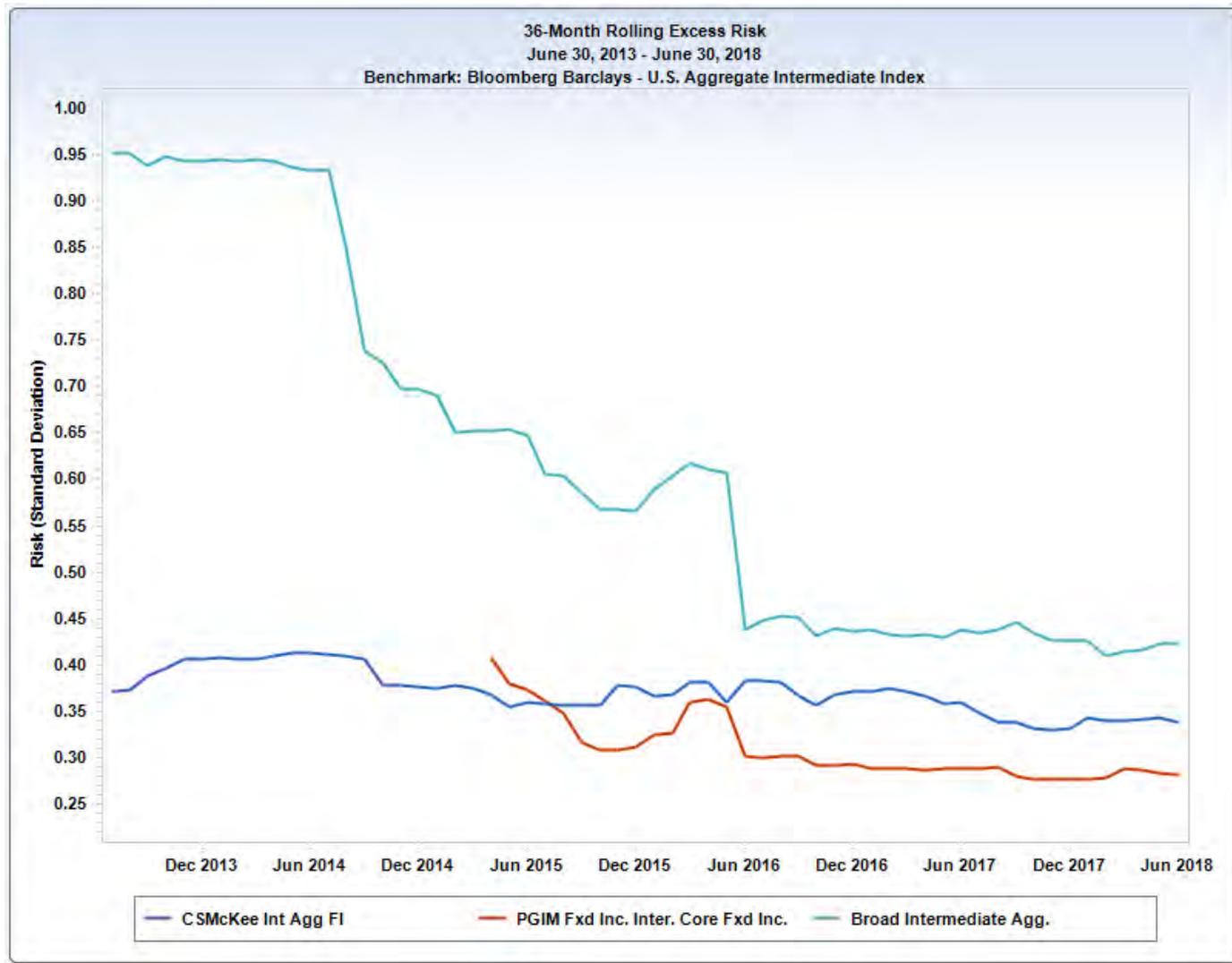


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Core Fixed Income Manager Search

Rolling Excess Risk - Intermediate



7.2

Core Fixed Income Manager Search



Rolling Information Ratio - Intermediate



7.2



Core Fixed Income Manager Search

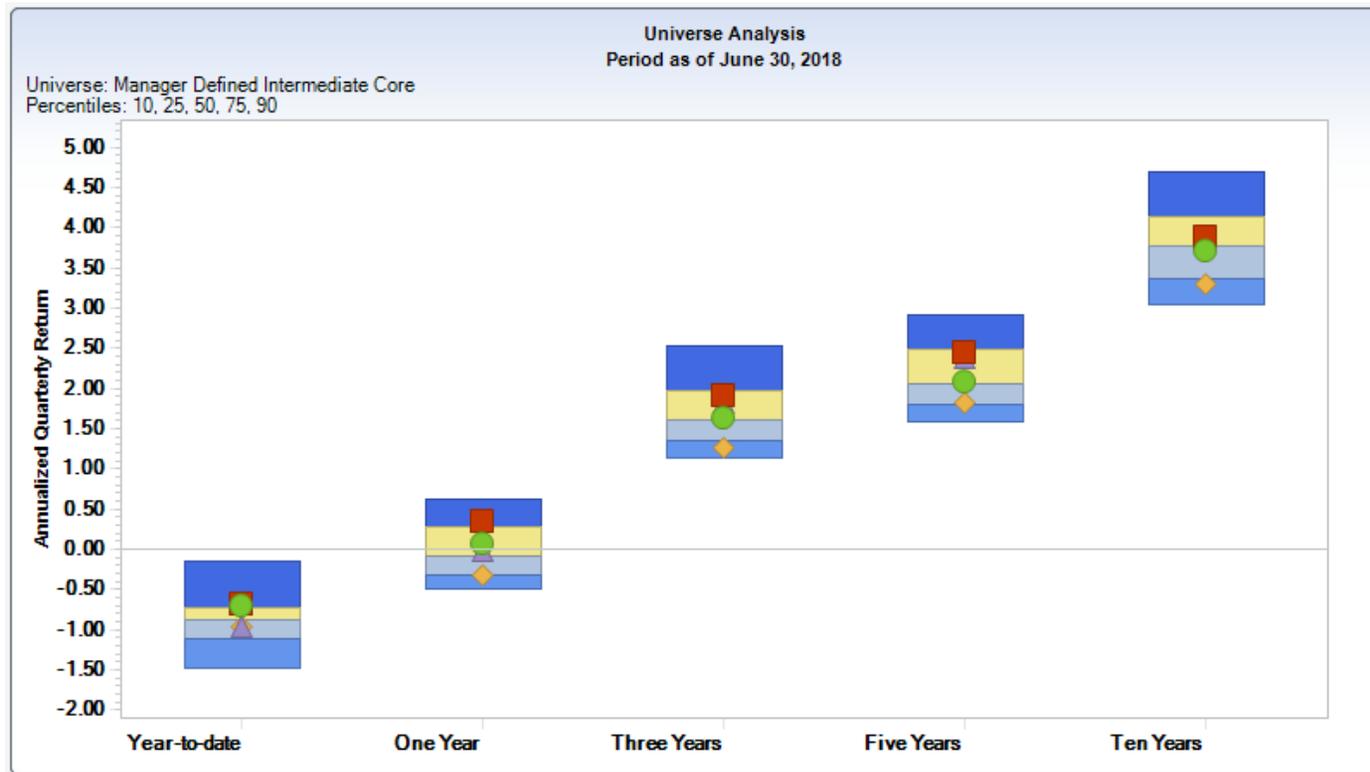
Risk/Return - Intermediate



7.2



Core Fixed Income Manager Search Universe Ranking - Intermediate



		Year-to-date	One Year	Three Years	Five Years	Ten Years
●	CSMcKee Int Agg FI	-0.71 (24%)	0.07 (36%)	1.62 (50%)	2.08 (48%)	3.70 (55%)
■	Broad Intermediate Agg.	-0.69 (23%)	0.34 (22%)	1.90 (29%)	2.44 (27%)	3.88 (38%)
▲	PGIM Fxd Inc. Inter. Core Fxd Inc.	-0.97 (62%)	-0.02 (44%)	1.82 (34%)	2.39 (29%)	
◆	BC Int Agg	-0.97 (62%)	-0.32 (75%)	1.27 (84%)	1.83 (72%)	3.29 (83%)
	# of Products	146	144	139	134	123

7.2



Wilshire Consulting

From ADV Regulatory Disclosure

Wilshire reviewed the SEC Form ADV Part I and IIA (as posted on the SEC investment advisor search website at <http://www.adviserinfo.sec.gov>) of each investment manager in the table below only to determine whether the manager had made any disclosures in the listed categories. If the manager disclosed information in a category, it is the client's responsibility to review and assess the provided information. The information was collected as of the date(s) indicated and may change. Wilshire assumes no responsibility for the accuracy of the information provided by a manager.

Investment Manager	Date of Review	ADV Part I		ADV Part IIA		
		Item 11: Disclosure Information		Item 9: Disciplinary Information	Item 19 (D): Requirements for State-Registered Advisors	
		Form ADV Part I Date	Disclosure (Yes or No)	Disclosure (Yes or No)	Form ADV Part IIA Date	Disclosure (Yes or No)
C.S. McKee, L.P.	10/9/2018	Mar-18	No	No	Mar-18	No
Loomis, Sayles & Company, L.P.	10/9/2018	Aug-18	No	No	Aug-18	No
Payden & Rygel	10/9/2018	Mar-18	No	No	Mar-18	No
PGIM Investments LLC	10/9/2018	Mar-18	Yes	Yes	Mar-18	No

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7.2

Wilshire Consulting



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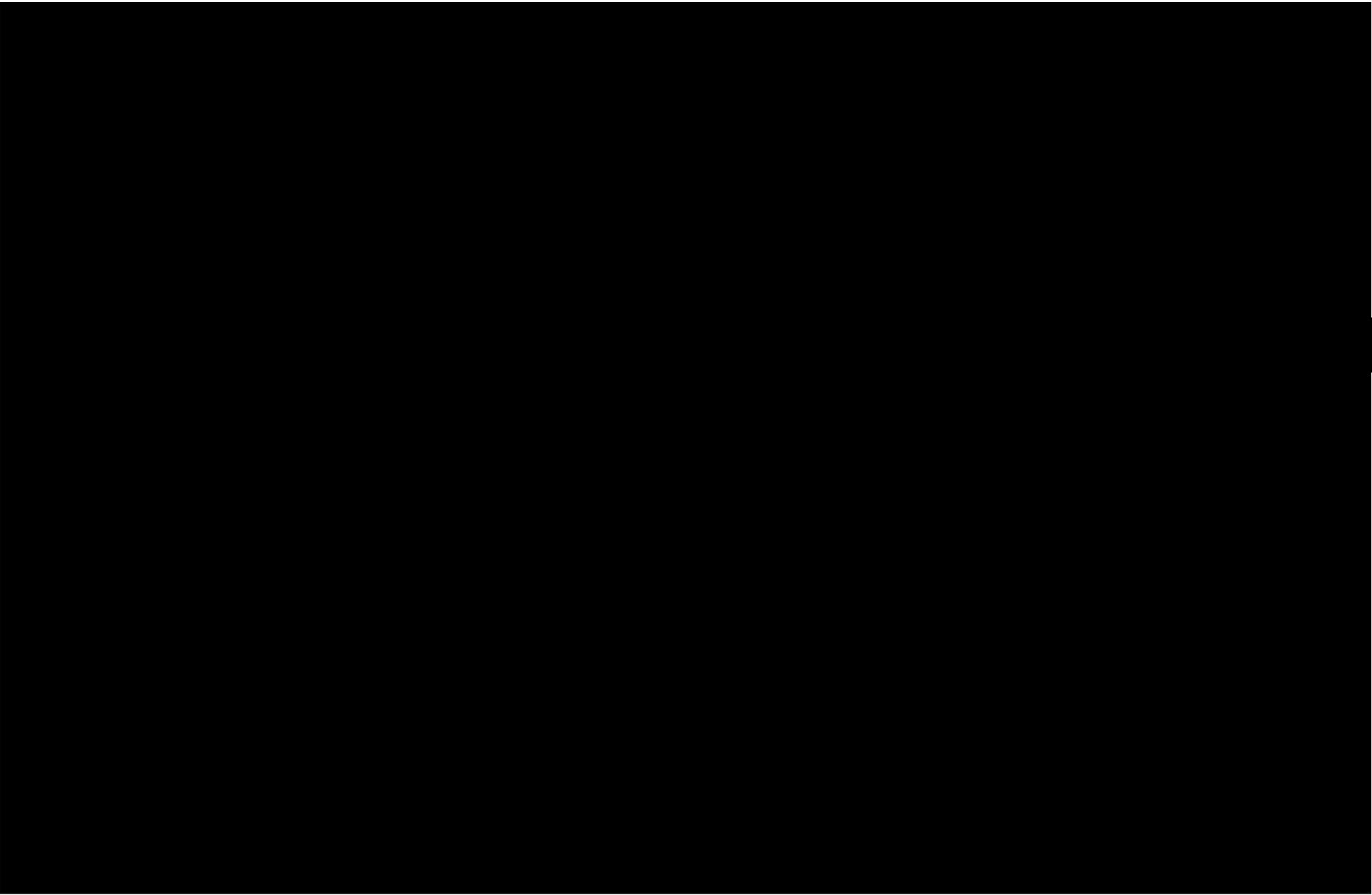
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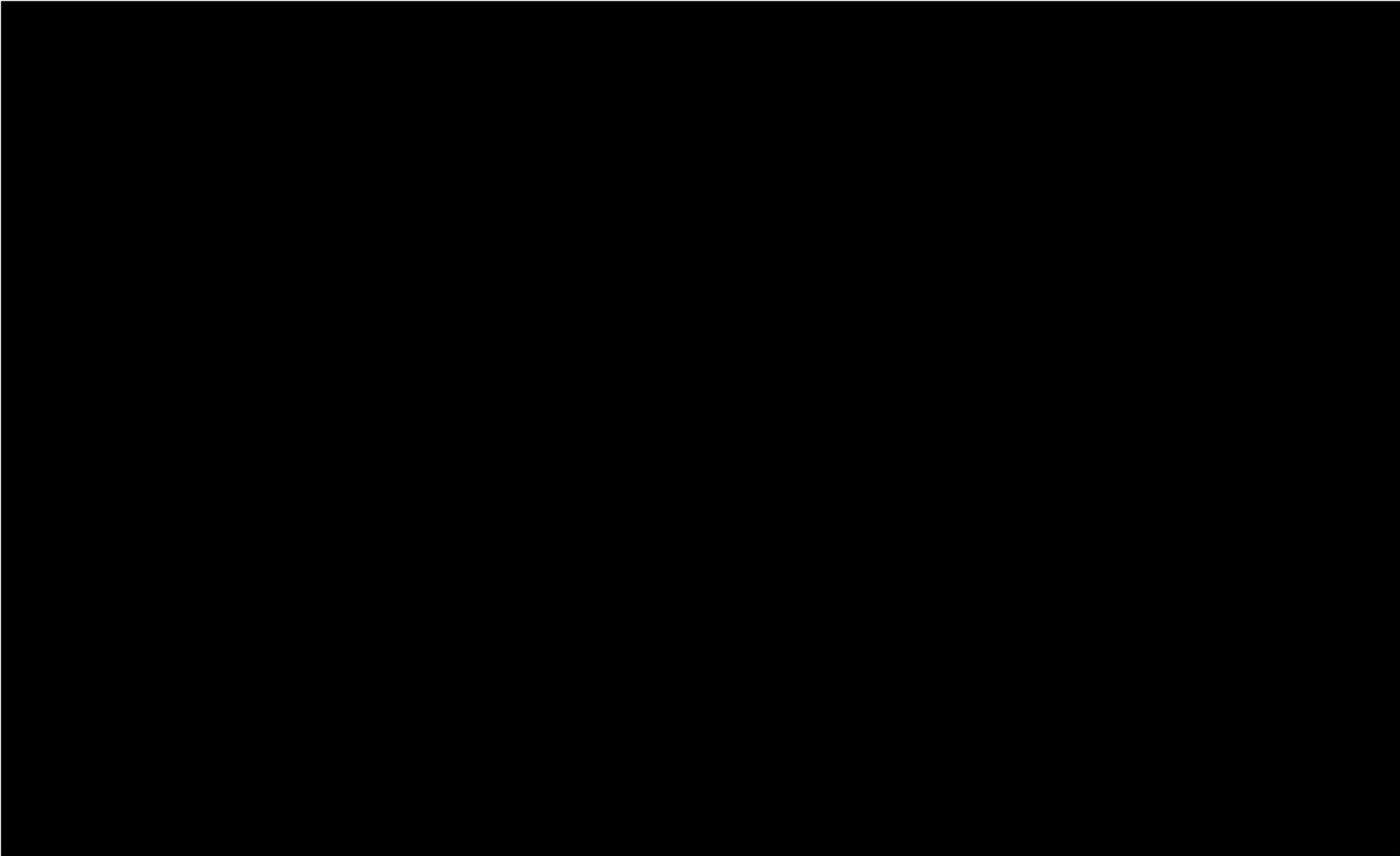
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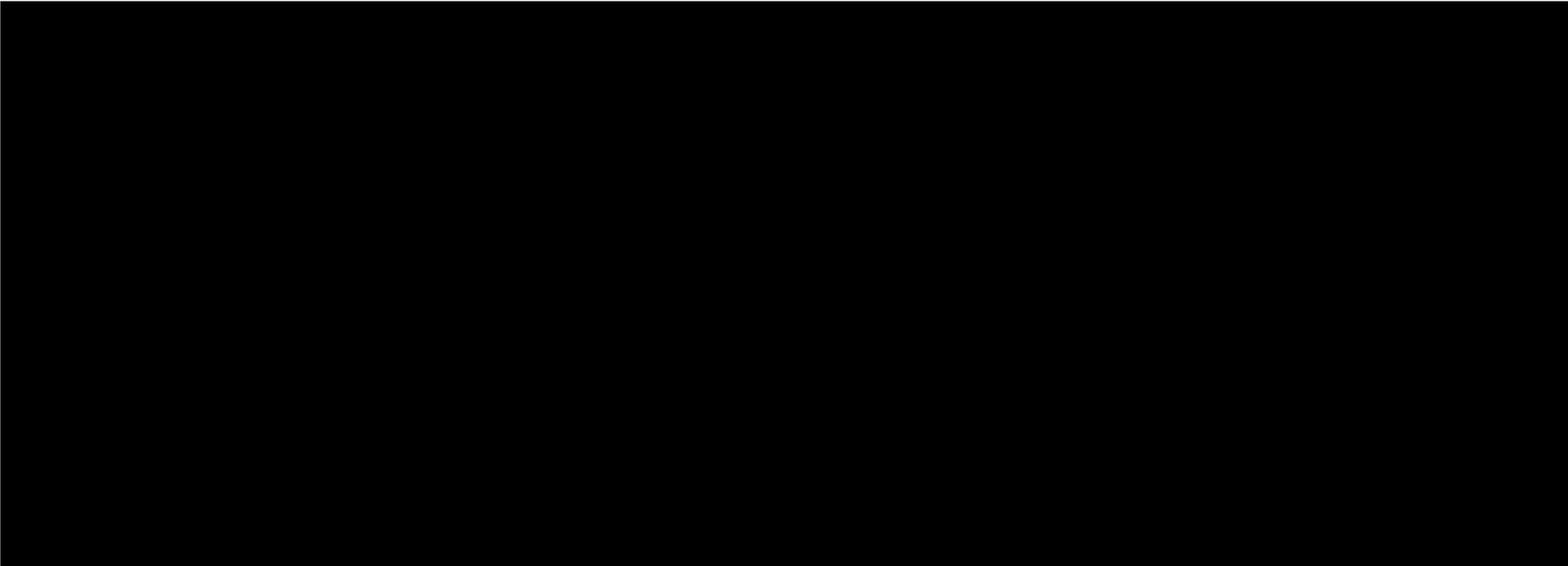
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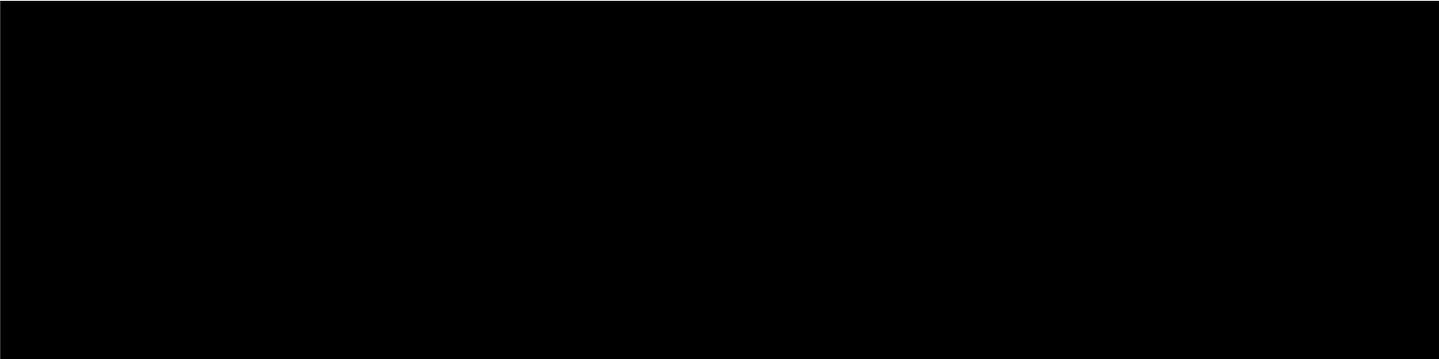




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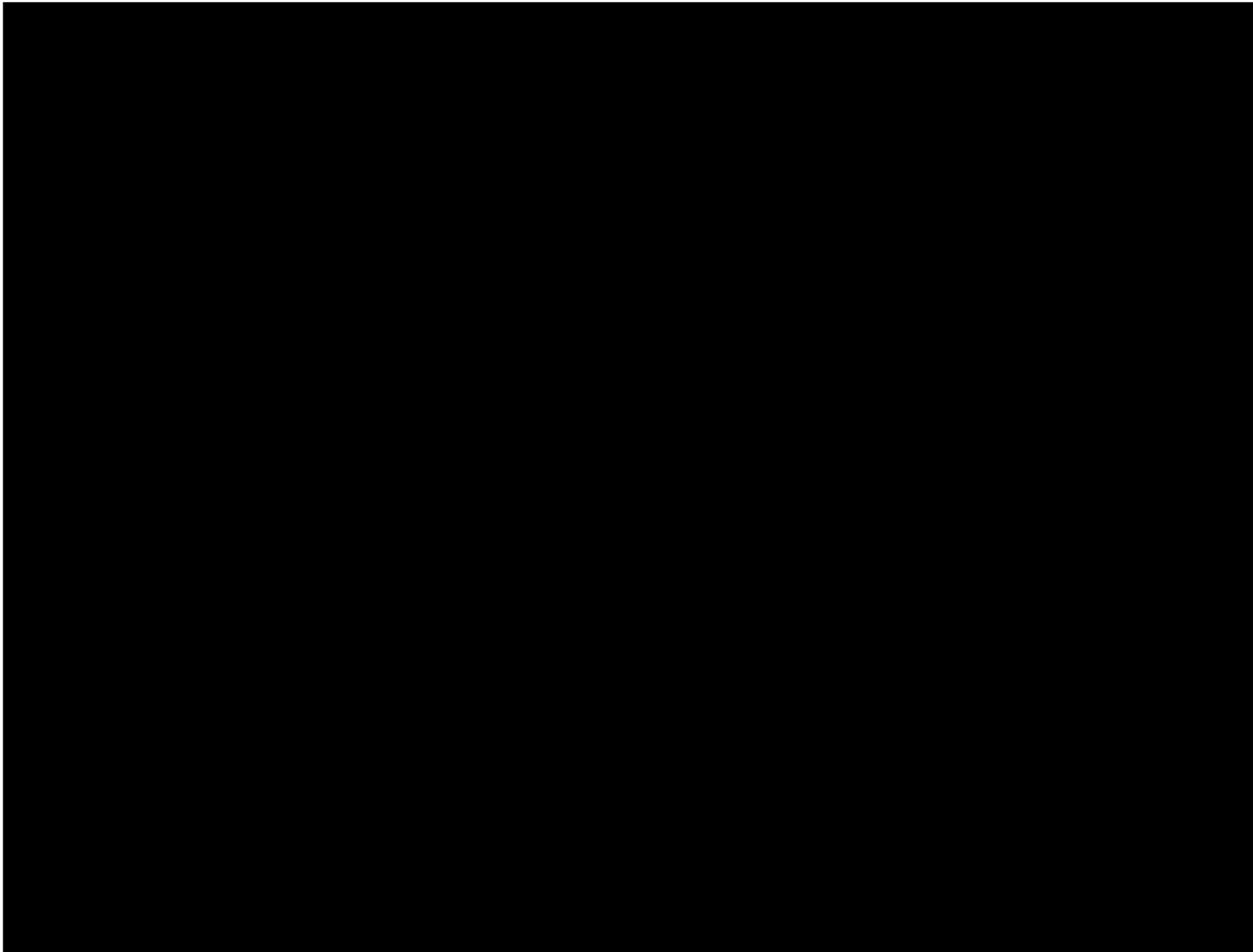
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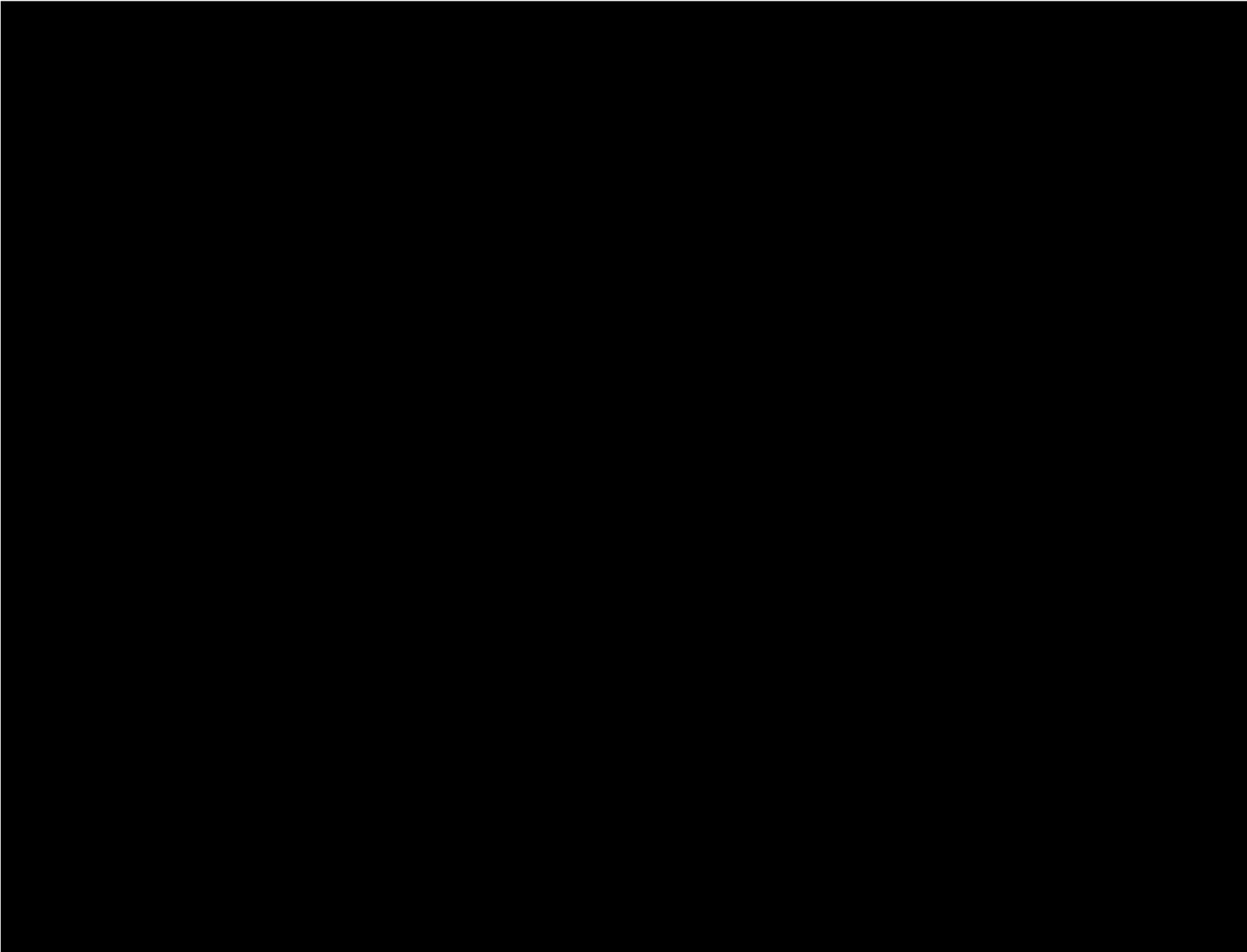






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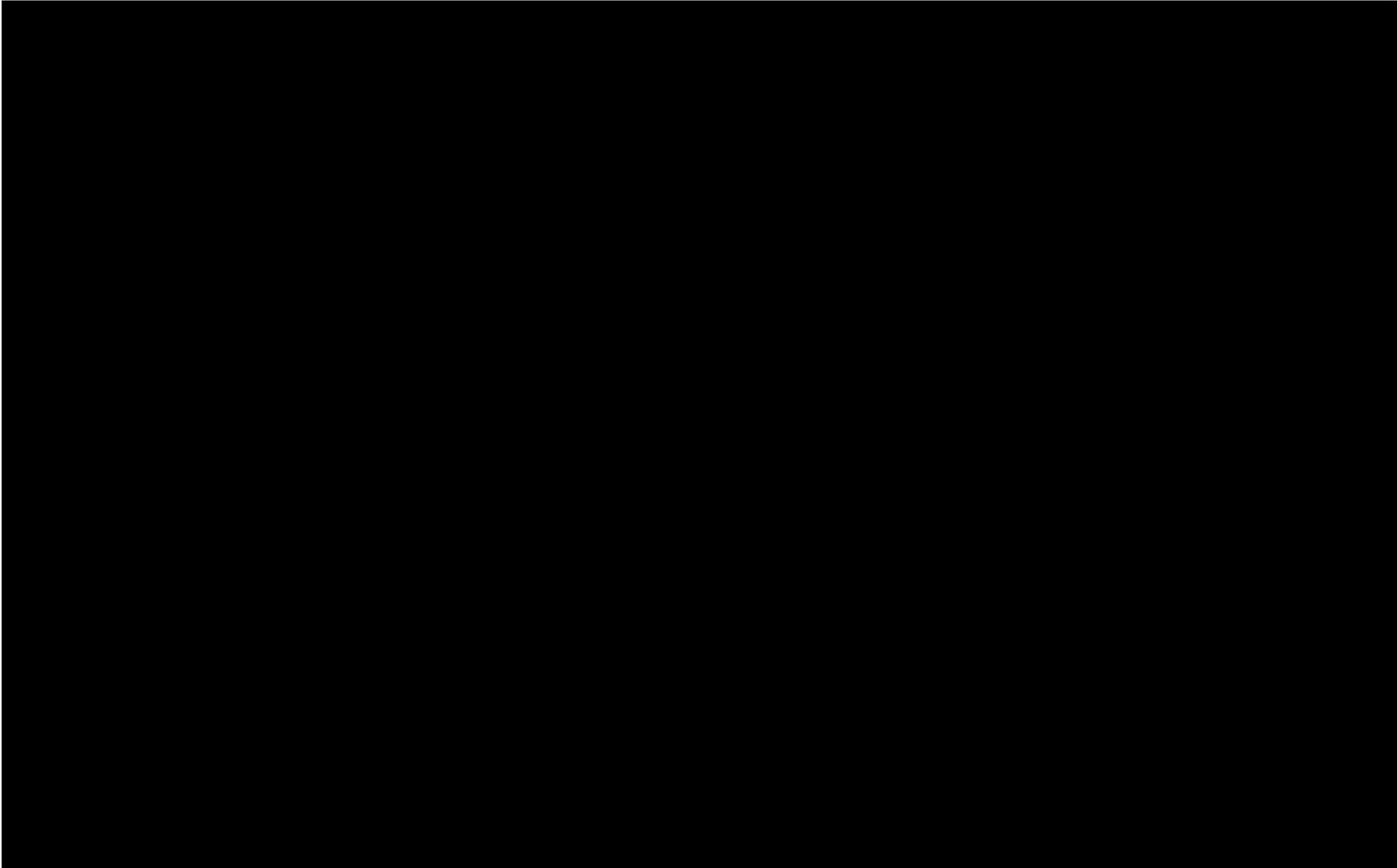




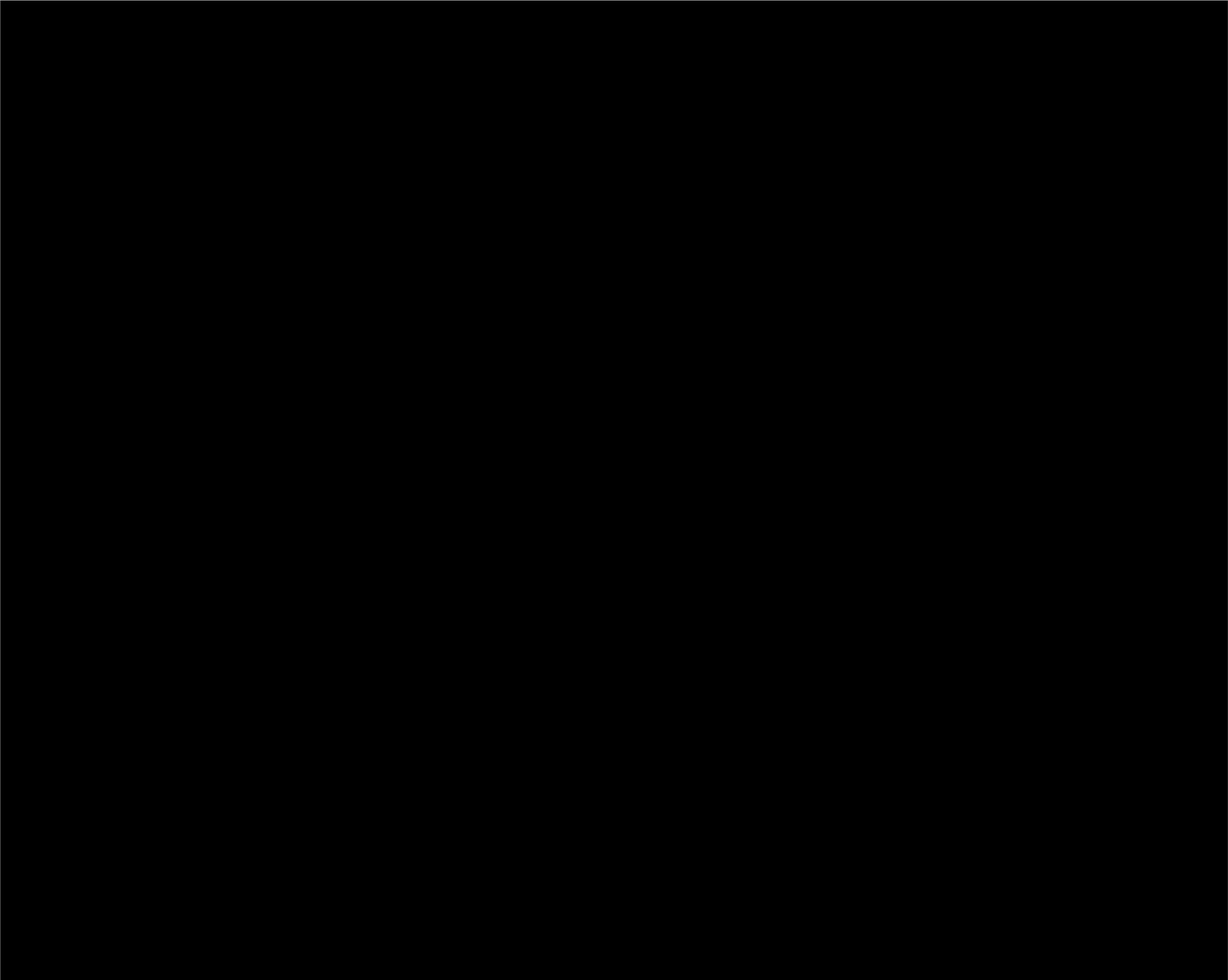
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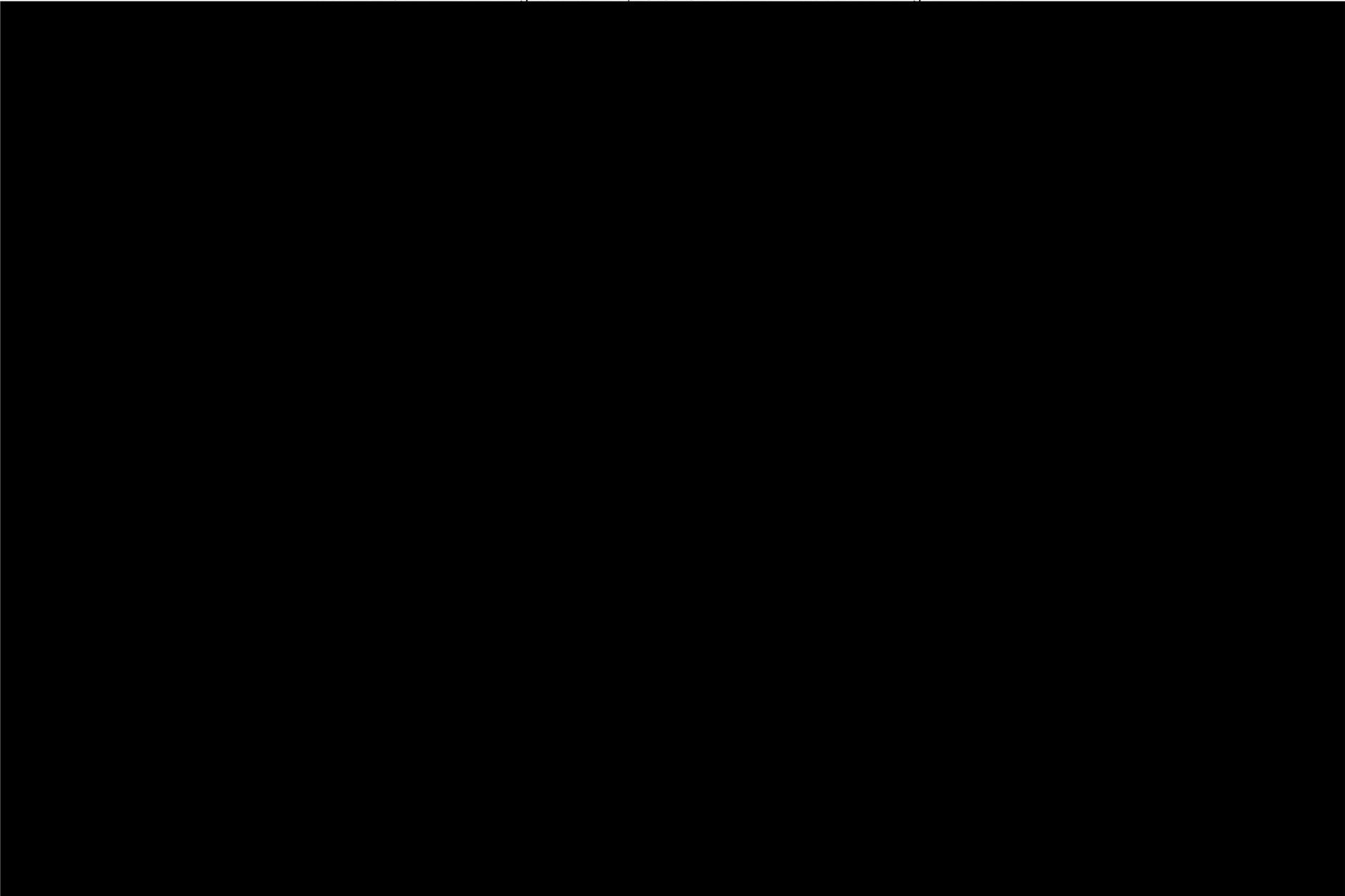


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7.2





7.2



KENTUCKY RETIREMENT SYSTEM

7.3

PRESENTED BY:

Lynne Royer
Head of Disciplined Alpha Fixed Income

John H. Meyer, CFA, CAIA, FRM
Vice President



November 7, 2018

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7.3

loomis sayles at a glance

Firm Overview

A RICH INVESTMENT TRADITION

Serving clients with integrity since 1926
\$267.3 billion assets under management*
Expertise across all major asset classes
75% of investment professionals dedicated to research & trading; 162 CFA® charterholders**
Global perspective: investors in Boston, San Francisco, Detroit, London and Singapore

WHAT DEFINES US

Core attributes: integrity, transparency and a team-oriented culture
Rigorous fundamental analysis complemented by robust macro and market insight
Portfolio managers, strategists, research analysts and traders collaborating to identify our best ideas
Small, accountable product teams implementing portfolio decisions
Disciplined risk awareness integrated into a high conviction investment process

WHERE WE INVEST

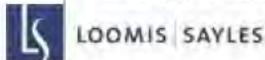


AUM BY GLOBAL ACCOUNTS



As of 9/30/2018.

*Includes the assets of both Loomis, Sayles & Co., LP, and Loomis Sayles Trust Company, LLC. (\$22.2 billion for the Loomis Sayles Trust Company). Loomis Sayles Trust Company is a wholly owned subsidiary of Loomis, Sayles & Company, L.P. **As of 12/31/2017. 296 investment professionals. 83% of CFA charterholders are investment professionals and 17% are non-investment professionals.



a common foundation lies at the heart of all our investment strategies

Firm Overview



A SOUND PHILOSOPHY



A RIGOROUS, REPEATABLE PROCESS



PROPRIETARY RESEARCH



DISCIPLINED PORTFOLIO CONSTRUCTION



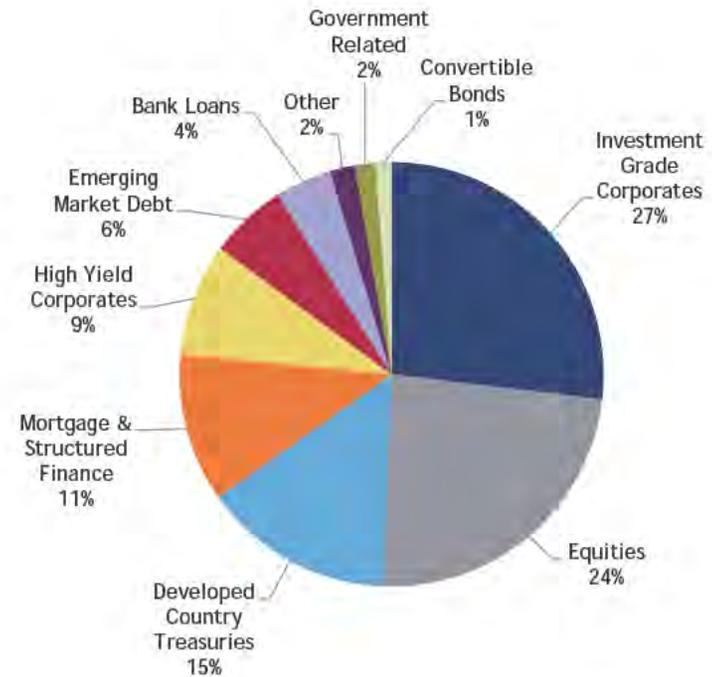
INTEGRATED RISK MANAGEMENT

7.3

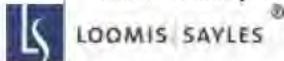
comprehensive expertise

Firm Overview

By Global Sector	Assets (\$ Millions)
Investment Grade Corporates	72,318
Equities	64,293
Developed Country Treasuries	38,861
Mortgage & Structured Finance	30,320
High Yield Corporates	23,132
Emerging Market Debt	15,747
Bank Loans	11,576
Other	5,281
Government Related	4,368
Convertible Bonds	3,283



*As of 9/30/2018. Due to rounding, pie chart total may not equal 100%.
Sector level assets include all accrued interest, cash and unrealized gain/loss on currency forwards.
Other includes municipals, cash & equivalents, and derivatives.
Includes the assets of both Loomis, Sayles & Co., L.P., and Loomis Sayles Trust Company LLC.*



our investment platform

MICHAEL GILES
Chief Investment Risk Officer

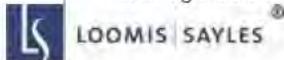
JAE PARK
Chief Investment Officer

DAVID WALDMAN
Deputy CIO

Firm Overview

ALPHA STRATEGIES	BANK LOANS	DISCIPLINED ALPHA	EMERGING MARKET DEBT	FULL DISCRETION	GLOBAL	RELATIVE RETURN	MORTGAGE & STRUCTURED FINANCE
Credit Asset	Senior Loans	Core	Corporate	Multisector	Global Bond	Short Duration	Agency MBS
World Credit Asset	Senior Floating Rate and Fixed Income	Corporate Long Corporate	Local Currency Short Duration Hard/Local Currency Blend	Core Plus High Yield Full Discretion	Global Credit Global Debt Unconstrained	Inter. Duration Core Core Plus	Investment Grade Securitized Credit (ERISA)
Multi-Asset Income	Credit Opportunities	Long Credit		Global High Yield US High Yield	Global Disciplined Alpha*	IG Corporate IG Inter. Corporate	High Yield Private Debt and Equity
Inflation Protected (TIPS)		Long Gov't/Corp		High Yield Conservative Strategic Alpha		Long Corporate Long Credit Long Gov't/Credit Custom LDI	
Risk Premia Strategies		Global Disciplined Alpha*					
GLOBAL EQUITY OPPORTUNITIES		GROWTH		SMALL CAP GROWTH		SMALL CAP VALUE	
Global Allocation		All Cap Growth		Small Cap Growth		Small Cap Value	
Global Equity Opportunities		Global Growth Large Cap Growth Long/Short Equity		Small/Mid Cap Growth		Small/Mid Cap Core	

As of 9/30/2018.
* Co-managed investment strategy

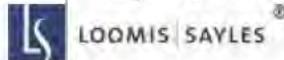


deep insight fuels our pursuit of alpha

Firm Overview

MACRO STRATEGIES	CREDIT RESEARCH	QUANTITATIVE RESEARCH & RISK ANALYSIS	TRADING
<ul style="list-style-type: none"> • Director <i>38 years experience</i> • Associate Director/Senior Global Macro Strategist <i>23 years experience</i> • Senior Equity Strategist <i>33 years experience</i> • Economist <i>38 years experience</i> • Senior Commodities Analyst <i>10 years experience</i> • 2 Research Analysts <i>9 years average experience</i> • 2 Research Assistants 	<ul style="list-style-type: none"> • Director <i>35 years experience</i> • 33 Senior Credit Analysts <i>20 years average experience</i> • 7 Credit Analysts <i>9 years average experience</i> • 8 Research Associates • 8 Research Assistants • Proprietary credit rating system since the 1930s 	<ul style="list-style-type: none"> • 2 Directors <i>22 years average experience</i> • Associate Director, Fixed Income QRRA <i>11 years experience</i> • Quantitative Strategist <i>23 years experience</i> • Director, LDI & Solutions <i>12 years experience</i> • 3 Senior Quantitative Analysts <i>15 years average experience</i> • 9 Quantitative Analysts <i>8 years average experience</i> 	<ul style="list-style-type: none"> • Head of Trading <i>30 years experience</i> • 4 Trading Directors <i>25 years average experience</i> • 34 Traders (incl. 4 directors above) <i>17 years average experience</i> • Dir. of Portfolio Implementation <i>12 years experience</i> • 19 Portfolio Specialists <i>20 years average experience</i> • Dir. of Operational Trading Risk Mgmt. <i>17 years experience</i> • Risk Analyst <i>11 years experience</i> • 10 distinct asset class teams
SOVEREIGN RESEARCH	MORTGAGE & STRUCTURED FINANCE	CONVERTIBLES & SPECIAL SITUATIONS	EQUITY RESEARCH
<ul style="list-style-type: none"> • 3 Senior Sovereign Analysts <i>20 years average experience</i> • 2 Analysts <i>4 years experience</i> • Research Associate 	<ul style="list-style-type: none"> • 2 Co-Heads <i>20 years average experience</i> • Portfolio Manager <i>20 years experience</i> • 3 Strategists <i>25 years average experience</i> • 2 Senior Analysts <i>17 years average experience</i> • Senior Portfolio Analyst <i>10 years experience</i> • 2 Research Analysts <i>8 years average experience</i> • 2 Research Associates 	<ul style="list-style-type: none"> • Associate Director <i>23 years experience</i> • 3 Senior Research Analysts <i>17 years average experience</i> • 2 Research Analysts <i>7 years average experience</i> • Research Associate 	<ul style="list-style-type: none"> • 13 Senior Analysts <i>21 years average experience</i> • 5 Analysts <i>7 years average experience</i> • Research Associate

As of 9/30/2018; Years experience indicates industry experience.



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7.3

fixed income

RESEARCH COVERAGE SPANS THE GLOBE

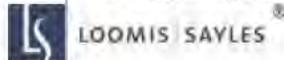
We cover...

- 105 countries
 - 31 developed markets
 - 74 emerging markets*
- 1884 corporate credits and 383 unique bank loans (includes 144a and other non-index eligible issuers)
- Industry coverage conducted on a global basis, across quality spectrum and includes:
 - 98% of investment grade issuers in the Bloomberg Barclays Corporate Index
 - 91% of investment grade issuers in the Bloomberg Barclays Global Aggregate Corporate Index
 - 665 high yield issuers
 - Ability to provide an in-depth credit analysis of all major sectors in the Bloomberg Barclays Securitized Index including commercial real estate, residential real estate, and asset-backed-related

7.3

*As of 12/31/2017. *Emerging market countries include any country determined by Loomis Sayles to have an emerging market economy, taking into account a number of factors, which may include whether the country has a low-to-middle-income economy according to the International Bank for Reconstruction and Development (the World Bank), the country's foreign currency debt rating, its location and neighboring countries, its political and economic stability and the development of its financial and capital markets. These countries include those located in Latin America, Asia, Africa, the former Soviet Union, the Middle East and the developing countries of Europe, primarily Eastern Europe. A complete list of emerging market countries, as defined by Loomis Sayles, is available upon request.*

Coverage percentages above are based on market value of issuers covered. Covered includes all issues with Loomis Sayles research coverage.



investment summary

STRATEGY HIGHLIGHTS

Style:

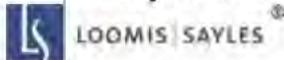
- Security selection based alpha
- Fundamental research based security selection
- Benchmark driven
- Historically below average tracking error

Characteristics:

- Diversified portfolio
- Highly integrated risk management
- Primarily benchmark-like securities
- Seek little duration or curve risk

7.3

There is no guarantee that the investment objective will be realized or that the strategy will generate excess return. Diversification does not ensure a profit or guarantee against loss. Past performance is no guarantee of future results.



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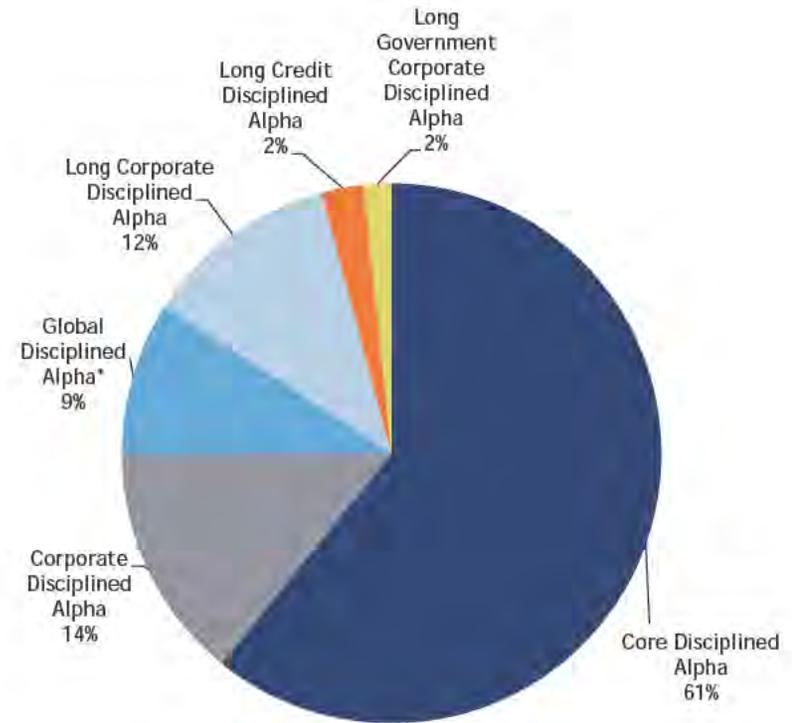
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disciplined alpha platform

TEAM ASSETS UNDER MANAGEMENT

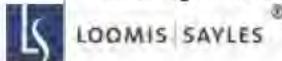
\$12.0 billion as of September 30, 2018

	Strategy Inception Date	Assets (\$ billions)
Core Disciplined Alpha	7/28/2010	7.3
Corporate Disciplined Alpha	5/31/2013	1.7
Long Corporate Disciplined Alpha	6/30/2013	1.4
Global Disciplined Alpha*	10/31/2013	1.1
Long Credit Disciplined Alpha	5/15/2017	0.3
Long Government Corporate Disciplined Alpha	2/16/2018	0.2



As of 9/30/2018. Due to rounding, pie chart total may not equal 100%.

*Managed by Global Disciplined Alpha team, with Co-Heads Lynne Rayer, Lynda Schweitzer and Scott Service. The DA Team has day-to-day responsibility for the USD-denominated assets in the GDA strategy and Lynda Schweitzer and Scott Service and their team have day-to-day responsibility for the Non-USD assets in the GDA strategy. The split between USD and non-USD assets is determined by market weight in the benchmark, and the team rebalances each month.



investment philosophy

INTENSE FOCUS ON RELATIVE VALUE INVESTING

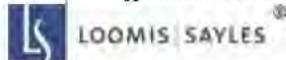
- Gain an edge through better research and use of market information
- Add value for clients through security selection
- Harvest value through continuous rotation to the best opportunities*

RISK MANAGEMENT IS FUNDAMENTAL TO THE PROCESS

- Security selection decisions are made using the team's risk-adjusted framework concept of portfolio impact (PI)
- Limited sector positioning helps reduce relative return noise
- Disciplined duration and curve positioning focuses investment process

7.3

*There is no guarantee that the investment objective will be realized or that the strategy will generate positive or excess return.
Opportunities in the strategy's investment universe available to the team.



investment team

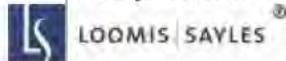
HIGHLY EXPERIENCED, SEASONED TEAM OF INVESTMENT PROFESSIONALS

Disciplined Alpha

<p>DISCIPLINED ALPHA TEAM</p> <p>PORTFOLIO MANAGEMENT TEAM</p>	<p style="text-align: center;">LYNNE ROYER Head of Disciplined Alpha</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 16.6%; text-align: center;"> <p>Credit Portfolio Manager Seth Timen</p> </td> <td style="width: 16.6%; text-align: center;"> <p>Credit Portfolio Manager Andrew Henwood</p> </td> <td style="width: 16.6%; text-align: center;"> <p>Mortgage Portfolio Manager Sudhir Bhat</p> </td> <td style="width: 16.6%; text-align: center;"> <p>Securitized Products Portfolio Manager Monica Mehra</p> </td> <td style="width: 16.6%; text-align: center;"> <p>Quantitative Strategist Oren Cheyette</p> </td> <td style="width: 16.6%;"></td> </tr> <tr> <td style="text-align: center;"> <p>Credit Portfolio Manager Brad Stevens</p> </td> <td style="text-align: center;"> <p>Sr. Credit Analyst Mirsada Durakovic</p> </td> <td style="text-align: center;"> <p>Trader Matthew Boynton</p> </td> <td style="text-align: center;"> <p>Junior Trader Vienna Bai</p> </td> <td style="text-align: center;"> <p>Quantitative Analyst Bruce Saldinger</p> </td> <td></td> </tr> <tr> <td style="text-align: center;"> <p>Credit Trader Marc Frank</p> </td> <td style="text-align: center;"> <p>Junior Trader Brian Gibbs</p> </td> <td style="text-align: center;"> <p>Trading Assistant Roosevelt Kirk</p> </td> <td style="text-align: center;"> <p>Portfolio Analyst Melissa Jones</p> </td> <td style="text-align: center;"> <p>Product Manager Jonathan Kimbro</p> </td> <td></td> </tr> </table>						<p>Credit Portfolio Manager Seth Timen</p>	<p>Credit Portfolio Manager Andrew Henwood</p>	<p>Mortgage Portfolio Manager Sudhir Bhat</p>	<p>Securitized Products Portfolio Manager Monica Mehra</p>	<p>Quantitative Strategist Oren Cheyette</p>		<p>Credit Portfolio Manager Brad Stevens</p>	<p>Sr. Credit Analyst Mirsada Durakovic</p>	<p>Trader Matthew Boynton</p>	<p>Junior Trader Vienna Bai</p>	<p>Quantitative Analyst Bruce Saldinger</p>		<p>Credit Trader Marc Frank</p>	<p>Junior Trader Brian Gibbs</p>	<p>Trading Assistant Roosevelt Kirk</p>	<p>Portfolio Analyst Melissa Jones</p>	<p>Product Manager Jonathan Kimbro</p>	
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<p>FIRMWIDE RESOURCES</p>	<table border="0" style="width: 100%;"> <tr> <td style="width: 33.3%; vertical-align: top;"> <p>Macro Strategies Director Assoc. Director/ Senior Global Macro Strategist Senior Equity Strategist Economist Senior Commodities Analyst 2 Research Analysts Research Assistant</p> <p>Sovereign Research 3 Senior Analysts 2 Analysts Research Associate</p> </td> <td style="width: 33.3%; vertical-align: top;"> <p>Credit Research Director 33 Senior Analysts 7 Analysts 8 Research Associates 8 Research Assistants</p> <p>Mortgage & Structured Finance 2 Co-Heads Portfolio Manager 3 Strategists 2 Senior Analysts Senior Portfolio Analyst 2 Research Analysts 2 Research Associates</p> </td> <td style="width: 33.3%; vertical-align: top;"> <p>Quant. Research & Risk Analysis 2 Directors Assoc. Director, Fixed Income QRRR Quantitative Strategist Director, LDI & Solutions 3 Senior Quantitative Analysts 9 Quantitative Analysts</p> <p>Equity Research 13 Senior Analysts 5 Analysts Research Associate</p> </td> <td style="width: 33.3%; vertical-align: top;"> <p>Convertibles & Special Situations Assoc. Director 3 Senior Analysts 2 Research Analysts Research Associate</p> <p>Fixed Income Trading 28 Traders/TAs Director, Portfolio Implementation 16 Portfolio Specialists Director, Operational Trading Risk Mgt. Risk Analyst</p> </td> </tr> </table>						<p>Macro Strategies Director Assoc. Director/ Senior Global Macro Strategist Senior Equity Strategist Economist Senior Commodities Analyst 2 Research Analysts Research Assistant</p> <p>Sovereign Research 3 Senior Analysts 2 Analysts Research Associate</p>	<p>Credit Research Director 33 Senior Analysts 7 Analysts 8 Research Associates 8 Research Assistants</p> <p>Mortgage & Structured Finance 2 Co-Heads Portfolio Manager 3 Strategists 2 Senior Analysts Senior Portfolio Analyst 2 Research Analysts 2 Research Associates</p>	<p>Quant. Research & Risk Analysis 2 Directors Assoc. Director, Fixed Income QRRR Quantitative Strategist Director, LDI & Solutions 3 Senior Quantitative Analysts 9 Quantitative Analysts</p> <p>Equity Research 13 Senior Analysts 5 Analysts Research Associate</p>	<p>Convertibles & Special Situations Assoc. Director 3 Senior Analysts 2 Research Analysts Research Associate</p> <p>Fixed Income Trading 28 Traders/TAs Director, Portfolio Implementation 16 Portfolio Specialists Director, Operational Trading Risk Mgt. Risk Analyst</p>														
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7.3

As of 9/30/2018.



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distributed decision-making

DRAWING ON FIRM-WIDE RESOURCES THROUGHOUT THE INVESTMENT PROCESS

Team Breakdown	<p>Head of Disciplined Alpha Lynne Royer</p>	<p>Corporate Investment Team Mirsada Durakovic Marc Frank Brian Gibbs Andrew Henwood Bradley Stevens Seth Timen</p>	<p>Securitized Investment Team Vienna Bai Sudhir Bhat Monica Mehra</p>	<p>Risk Management & Compliance Matthew Boynton Oren Cheyette Melissa Jones Roosevelt Kirk Bruce Saldinger</p>
Responsibilities	<ul style="list-style-type: none"> • Set target exposure with senior sector specialists* • Vet investment process and new strategies • Coach and guide investment team • Ultimate veto authority 	<ul style="list-style-type: none"> • Know bonds in investment universe • Collaborate with firm wide research • Fundamental analysis of credit and durations • Assess relative value • Identify buy/sell 		<ul style="list-style-type: none"> • Product and process development • Proprietary attribution • Risk monitoring • Create tools (DART)
Firm-wide Resources	<ul style="list-style-type: none"> • Macro Strategies • Sector Teams • Sovereign Research • QRRR 	<ul style="list-style-type: none"> • Credit Research • Sovereign Research • Fixed Income Trading 	<ul style="list-style-type: none"> • Mortgage & Structured Finance Research • Fixed Income Trading • Sector Teams 	<ul style="list-style-type: none"> • CRD • QRRR • Loomis Compliance • Accounting

*Senior sector specialists responsible for setting target exposures include Sudhir Bhat, Monica Mehra, and Seth Timen.

security selection process

WE SOURCE IDEAS BY SEEKING THE BEST RELATIVE VALUE EVERY DAY

We focus primarily on liquid securities where we believe we have an analytic or informational advantage

- Fundamental research underpins all decisions
- Changing spreads and new information help create continuous opportunities

All opportunities evaluated in a Portfolio Impact (PI) framework

FUNDAMENTAL RESEARCH	CHANGING SPREADS
<p>Loomis firm-wide resources</p> <ul style="list-style-type: none"> • Change in Loomis research views • Relative value recommendation (LRR)[†] • Industry analysis and research reports <p>Headline/news screening</p> <p>Issuer communications</p> <p>External research</p> <ul style="list-style-type: none"> • Rating Agency • Wall Street 	<p>Trading desk</p> <ul style="list-style-type: none"> • Street relationships • Market technicals • Trends <p>Quantitative models</p> <ul style="list-style-type: none"> • Proprietary models, i.e. URV (Unified Relative Value) • Third party models, i.e. Point and Moody's CreditEdge

[†]Loomis Research Recommendation; Relative to the analyst's industry coverage in market segment (e.g., investment grade or high yield).

Portfolio Impact (PI) is a proprietary risk-adjusted duration measure. Durations are calculated by the Disciplined Alpha team using their own internal methodologies and may result in different calculations than are used by other investment teams at Loomis Sayles and by third parties.

risk management

HOW WE MEASURE RISKS IN THE PORTFOLIO

We believe our risk management measure can help lead to better security selection decisions and better portfolio construction

Portfolio Impact (PI)

- Risk decisions are evaluated based on their Portfolio Impact (PI)
- PI is based on the size, duration, and expected price volatility of each position
- PI is intuitive: a 10 PI position impacts portfolio returns by 10 basis points in a 100 basis point move
- Attribution is based on PI
- Position sizing guided by PI
- Sector risk measured by PI

PI is a proprietary risk adjusted duration measure. Durations are calculated by the Disciplined Alpha team using their own internal methodologies and may result in different calculations than are used by other investment teams at Loomis Sayles and by third parties.



risk management process

WE BELIEVE OUR RISK MANAGEMENT PROCESS HELPS ENABLE BETTER SECURITY SELECTION DECISIONS

How our risk process works:

- Risk targets set by Lynne Royer and senior sector specialists
- Risk measured relative to the benchmark
- Weekly formal meeting to review risk targets
- DART: Real-time, PI-based risk management for continuous monitoring
- Quantitative Research Risk Analysis provides additional analytic perspective

DART
Disciplined Alpha Risk Tool

product overview

INVESTMENT UNIVERSE

Benchmark: Bloomberg Barclays U.S. Aggregate Index

Investment universe

- Agencies
- Asset-backed securities
- Commercial mortgage-backed securities
- Investment grade credit
- Mortgage-backed securities
- US Treasurys
- US dollar-denominated bonds only
- Other investments up to 5% in aggregate

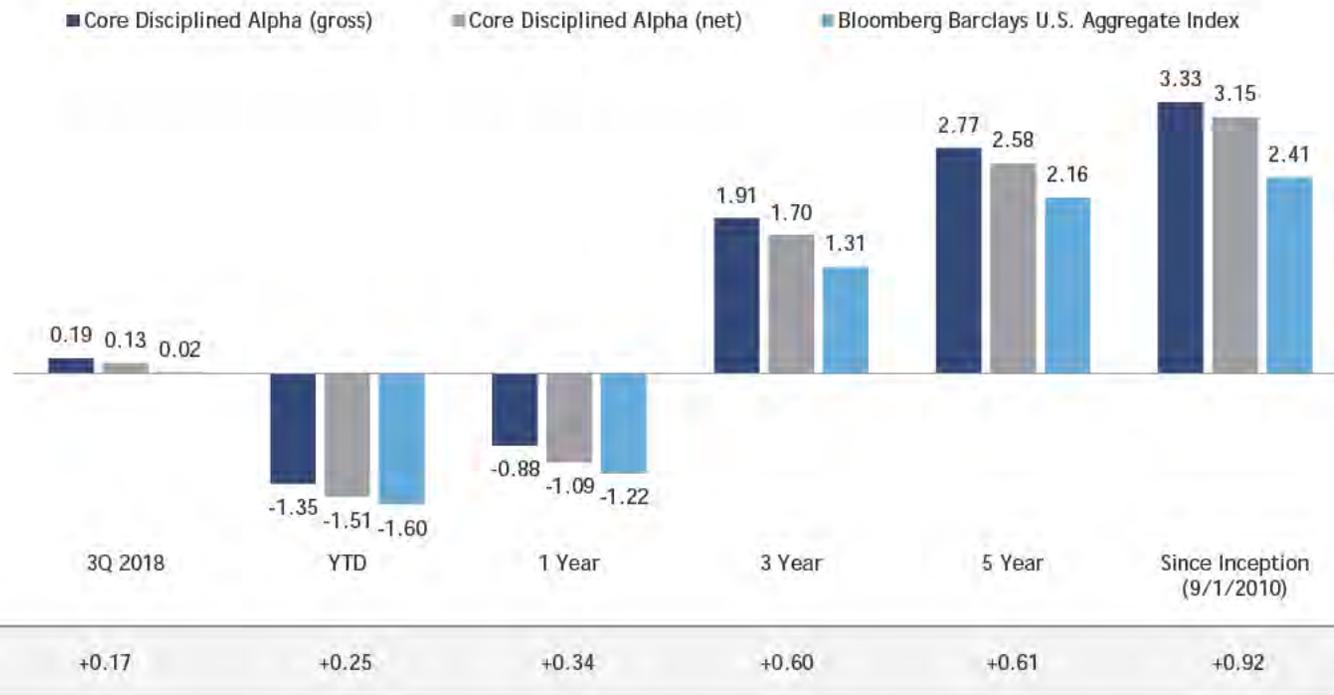
Core Disciplined Alpha

7.3

portfolio review

COMPOSITE PERFORMANCE AS OF 9/30/2018 (%)

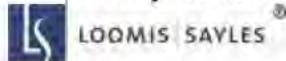
Trailing returns



Data Source: Loomis Sayles and Bloomberg Barclays.

Gross returns are net of trading costs. Net returns are gross returns less effective management fees. Returns for multi-year periods are annualized. Please see Disclosure Statement at the end of this presentation for a complete description of the Loomis Sayles Core Disciplined Alpha Composite. Returns may increase or decrease as a result of currency fluctuations.

Past performance is no guarantee of future results.



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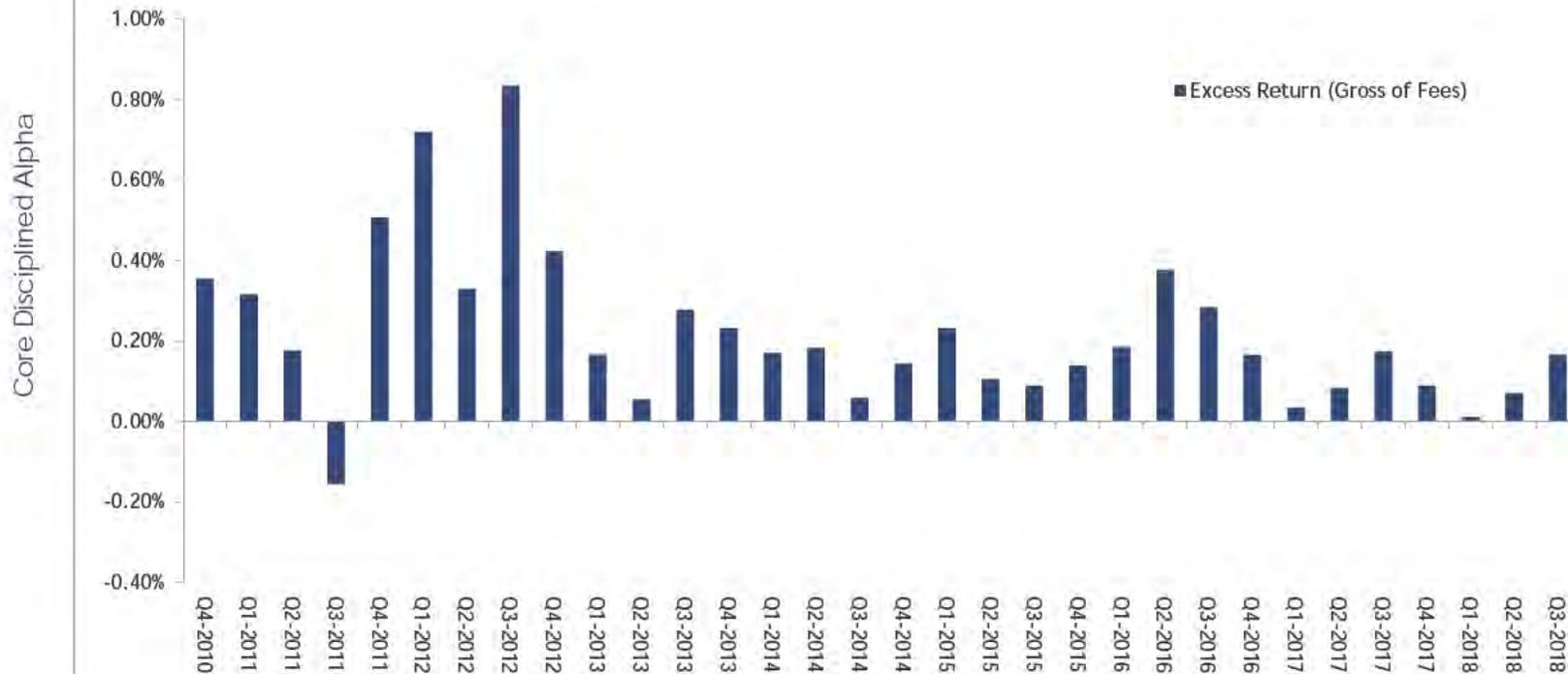
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portfolio review

QUARTERLY EXCESS RETURN HISTORY

Core Disciplined Alpha Composite

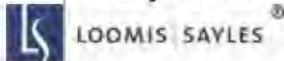


Data Source: Loomis Sayles and Bloomberg Barclays.

Composite inception: September 1, 2010. Excess return is relative to the Bloomberg Barclays U.S. Aggregate Index. Gross returns are net of trading costs but do not include management fees. Please see Disclosure Statement at the end of this presentation for a complete description of the Loomis Sayles Core Disciplined Alpha Composite.

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Past performance is no guarantee of future results.



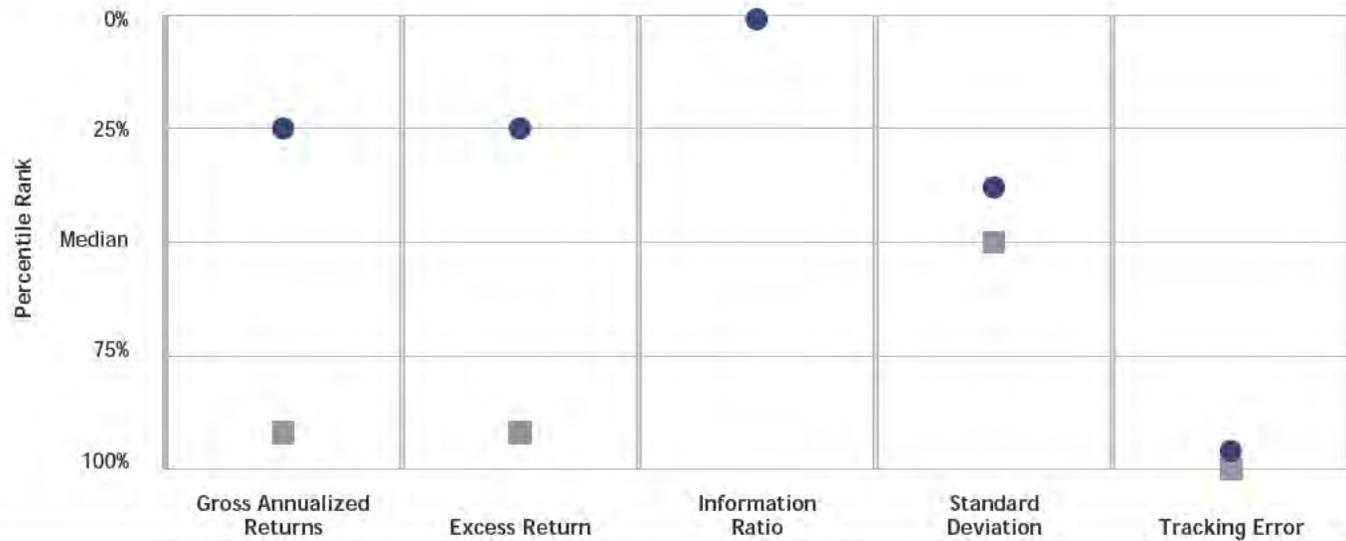
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investment performance - supplemental

CORE DISCIPLINED ALPHA COMPOSITE SINCE INCEPTION* AS OF 9/30/2018

Statistics & Rankings vs Index



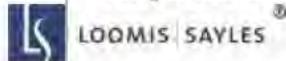
	Gross Annualized Returns	Excess Return	Information Ratio	Standard Deviation	Tracking Error
● Core Disciplined Alpha	3.32	0.91	3.03	2.76	0.30
% Ranking	25 th	25 th	1 st	38 th	96 th
■ Bloomberg Barclays US Aggregate Index	2.41	0.00	n/a	2.72	0.00
% Ranking	92 nd	92 nd	n/a	50 th	100 th
Median	3.00	0.59	0.86	2.71	0.72
Observations	228	228	228	228	228

Source: eASE Analytics System; eVestment Alliance is the ranking agency. *Inception Date: 9/1/2010. Universe: eA US Core Fixed Income. This material is provided as supplemental to a full product presentation book. Annualized performance is calculated as the geometric mean of the product's returns with respect to one year. Returns are gross of management fees and net of trading costs. Median is the middle value for the observations as of the end of each period shown. Although we believe it is reliable, we cannot guarantee the accuracy of data from a third party source. This information cannot be copied or redistributed in any form.

Past performance is no guarantee of future results.

Core Disciplined Alpha

7.3



portfolio review

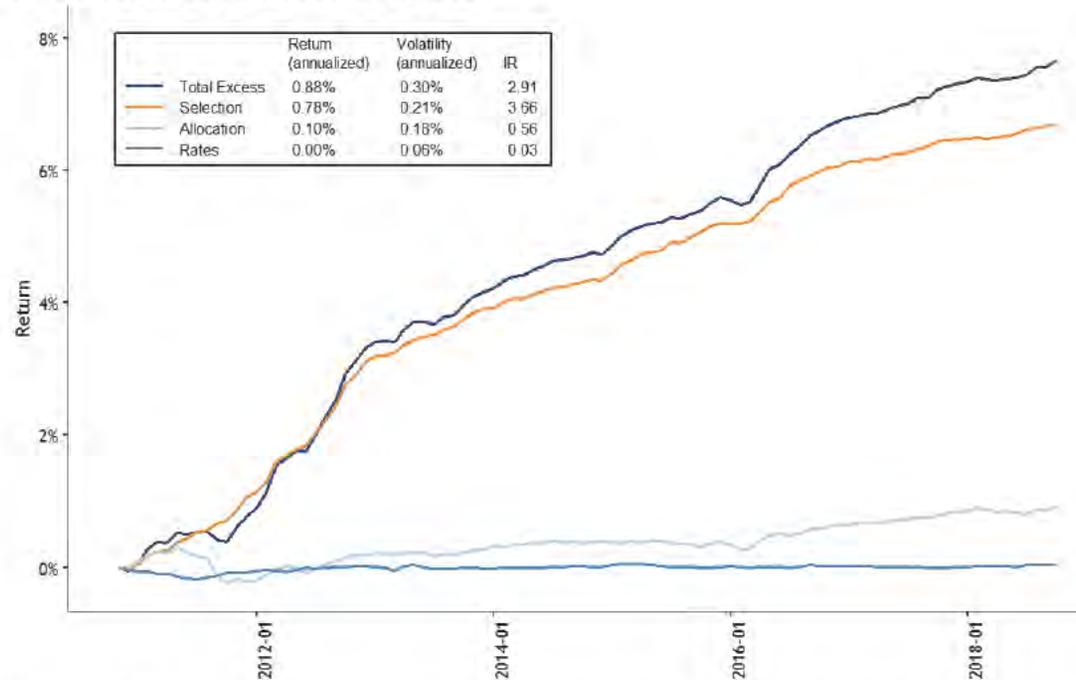
SECURITY SELECTION DRIVES ALPHA

Core Disciplined Alpha Representative Account (gross)

November 1, 2010 through September 30, 2018

7.3

Core Disciplined Alpha



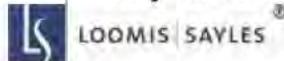
Data Source: Loomis Sayles and Bloomberg Barclays.

Representative account inception: November 1, 2010. Excess return is relative to the Bloomberg Barclays U.S. Aggregate Index. Gross returns are net of trading costs but do not include management fees.

Characteristics are shown for a representative account as supplemental information. Due to system limitations, it is difficult to analyze this data on a composite basis. This representative account was selected because it closely reflects the Loomis Sayles Core Disciplined Alpha investment strategy. Due to guideline restrictions and other factors, there is some dispersion between the returns of this account and other accounts managed in the Core Disciplined Alpha investment style. The Disclosure Statement at the end of this presentation displays performance, including dispersion, for the Loomis Sayles Core Disciplined Alpha Composite.

Returns may increase or decrease as a result of currency fluctuations.

Past performance is no guarantee of future results.



portfolio review

CORE DISCIPLINED ALPHA REPRESENTATIVE ACCOUNT CHARACTERISTICS AS OF 9/30/2018

7.3

Core Disciplined Alpha

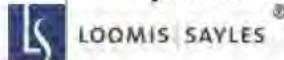
	Core Disciplined Alpha Representative Account	Bloomberg Barclays U.S. Aggregate Index	Quality	% of Core Disciplined Alpha Representative Account	% Bloomberg Barclays U.S. Aggregate Index
Average duration (years)*	5.97	5.91	US Treasurys	28.8	37.9
Average yield (%)	3.62	3.45	AAA	43.7	34.4
Average maturity (years)	8.61	8.33	AA	4.9	5.3
Average quality	AA3	AA2	A	13.5	12.2
Average OAS (bps)	53	39	BAA	14.6	9.8
Average coupon	3.43	3.14	BA & Lower	0.2	0.0
			Other/Not Rated	2.0	0.0
			Cash & Equivalents	-7.7	0.5

Data source: Loomis Sayles and Bloomberg Barclays.

Both duration and maturity for equity securities are deemed to be zero. Due to active management, characteristics will evolve over time.

*Durations are calculated by the Disciplined Alpha team using their own internal methodologies and may result in different calculations than are used by other investment teams at Loomis Sayles and by third parties. Characteristics are shown for a representative account as supplemental information. Due to system limitations, it is difficult to analyze this data on a composite basis. This representative account was selected because it closely reflects the Loomis Sayles Core Disciplined Alpha investment strategy. Due to guideline restrictions and other factors, there is some dispersion between the returns of this account and other accounts managed in the Core Disciplined Alpha investment style. The Disclosure Statement at the end of this presentation displays performance, including dispersion, for the Loomis Sayles Core Disciplined Alpha Composite.

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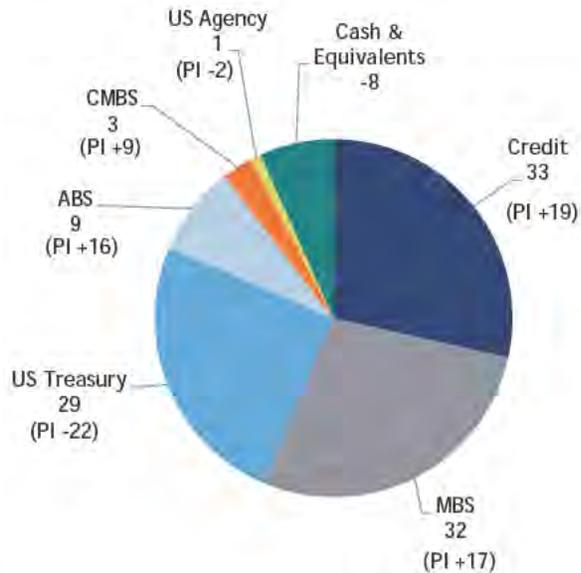
portfolio review

CORE DISCIPLINED ALPHA REPRESENTATIVE ACCOUNT SECTOR DISTRIBUTION AS OF 9/30/2018 (%)

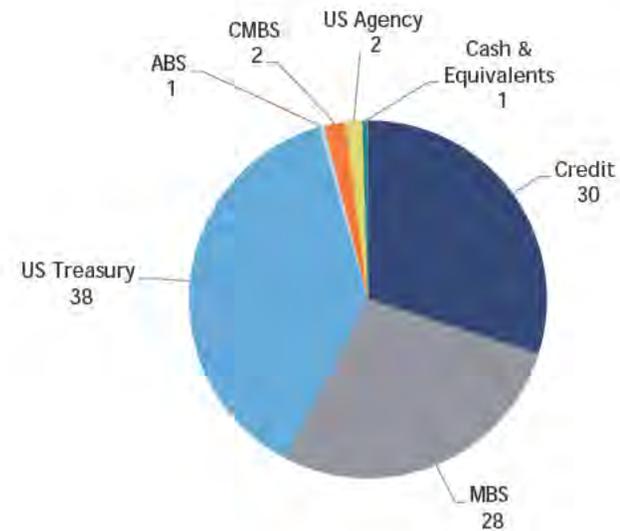
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Core Disciplined Alpha

CORE DISCIPLINED ALPHA REPRESENTATIVE ACCOUNT



BLOOMBERG BARCLAYS U.S. AGGREGATE INDEX

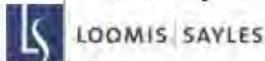


Data Source: Loomis Sayles and Bloomberg Barclays.

Due to active management, characteristics will evolve over time. Sector totals that do not round up to 1% are not shown in pie chart. Due to rounding, pie chart totals may not equal 100%.

PI is a proprietary risk adjusted duration measure. Durations are calculated by the Disciplined Alpha team using their own internal methodologies and may result in different calculations than are used by other investment teams at Loomis Sayles and by third parties.

Characteristics are shown for a representative account as supplemental information. Due to system limitations, it is difficult to analyze this data on a composite basis. This representative account was selected because it closely reflects the Loomis Sayles Core Disciplined Alpha investment strategy. Due to guideline restrictions and other factors, there is some dispersion between the returns of this account and other accounts managed in the Core Disciplined Alpha investment style. The Disclosure Statement at the end of this presentation displays performance, including dispersion, for the Loomis Sayles Core Disciplined Alpha Composite.



portfolio review

REPRESENTATIVE ACCOUNT CREDIT INDUSTRY DISTRIBUTION AS OF 9/30/2018 (%)

	% REP ACCOUNT	% BBG BARC US AGGREGATE INDEX	RELATIVE PI ¹		% REP ACCOUNT	% BBG BARC US AGGREGATE INDEX	RELATIVE PI ¹
Midstream	1.8	1.0	12.2	Gaming	0.0	0.0	-0.4
Electric	4.5	1.6	11.1	Airlines	0.0	0.1	-0.4
Independent	1.5	0.5	6.6	Food And Beverage	1.3	1.1	-0.5
Owned No Guarantee	1.6	0.6	5.6	Government Guarantee	0.0	0.8	-0.6
Banking	7.4	5.9	4.2	Supermarkets	0.0	0.1	-0.6
Sovereign	1.0	0.9	2.9	Building Materials	0.0	0.1	-0.7
REITs	0.4	0.6	2.8	Supranational	0.0	1.5	-0.7
Life	0.7	0.4	2.4	Oil Field Services	0.3	0.1	-0.8
Restaurants	0.4	0.1	2.3	P&C	0.2	0.4	-0.9
Natural Gas	0.5	0.1	1.9	Healthcare	1.4	1.0	-1.1
Metals And Mining	1.1	0.3	1.9	Transportation Services	0.1	0.1	-1.1
Industrial Other	0.2	0.1	1.5	Paper	0.0	0.1	-1.2
Health Insurance	0.9	0.3	1.5	Brokerage Asset Managers Exchanges	0.0	0.2	-1.4
Diversified Manufacturing	1.0	0.7	1.1	Consumer Products	0.0	0.2	-1.5
Local Authorities	0.6	0.9	0.7	Railroads	0.1	0.4	-1.5
Telecom	1.5	1.2	0.5	Aerospace/Defense	0.4	0.4	-2.0
Construction Machinery	0.2	0.2	0.5	Cable Satellite	0.1	0.4	-2.2
Automotive	0.9	0.6	0.3	Tobacco	0.0	0.3	-2.4
Refining	0.2	0.1	0.3	Consumer Cyclical Services	0.0	0.4	-2.6
Home Construction	0.0	0.0	0.0	Chemicals	0.2	0.3	-2.7
Financial Other	0.0	0.0	0.0	Integrated	0.0	0.6	-2.8
Leisure	0.0	0.0	-0.1	Media Entertainment	0.2	0.5	-2.9
Packaging	0.0	0.0	-0.1	Pharmaceuticals	0.6	1.3	-2.9
Lodging	0.0	0.0	-0.2	Retailers	0.1	0.6	-3.0
Finance Companies	0.2	0.1	-0.2	Technology	1.0	2.0	-3.5
Environmental	0.0	0.1	-0.3	Total	32.9	29.9	18.6
Utility Other	0.0	0.0	-0.4				

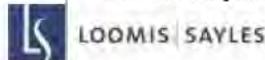
Data Source: Loomis Sayles and Bloomberg Barclays.

Due to active management, characteristics will change over time. Allocation includes credit industries only; therefore totals may not equal 100%.

¹PI is a proprietary risk adjusted duration measure. Durations are calculated by the Disciplined Alpha team using their own internal methodologies and may result in different calculations than are used by other investment teams at Loomis Sayles and by third parties.

Distribution is shown for a representative account as supplemental information. Due to system limitations, it is difficult to analyze this data on a composite basis. This representative account was selected because it closely reflects the Loomis Sayles Core Disciplined Alpha investment strategy. Due to guideline restrictions and other factors, there is some dispersion between the returns of this account and other accounts managed in the Core Disciplined Alpha investment style. The Disclosure Statement at the end of this presentation displays performance, including dispersion, for the Loomis Sayles Core Disciplined Alpha Composite.

Core Disciplined Alpha



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7.3

portfolio review

REPRESENTATIVE ACCOUNT SECURITIZED INDUSTRY DISTRIBUTION AS OF 9/30/2018 (%)

	% REP ACCOUNT	% BBG BARC US AGGREGATE INDEX	RELATIVE PI ¹
ABS	9.4	0.5	16.0
Auto	5.7	0.3	7.9
Senior Floorplan	0.2	0.0	0.5
Senior Prime Loan	1.7	0.1	2.4
Senior Subprime Loan	2.1	0.0	1.6
Subordinated Subprime Loan	1.4	0.0	3.5
Credit Card	3.6	0.3	7.9
Senior Bank	3.6	0.2	8.0
Senior Retail	0.0	0.0	-0.1
Other	0.1	0.0	0.2
CMBS	3.2	1.9	8.6
Agency CMBS	0.4	0.7	0.0
Conduit	2.6	1.2	8.2
2013 AAA LCF	0.9	0.1	2.8
2014 AAA LCF	0.3	0.1	0.8
2015 AAA LCF	0.6	0.1	3.4
2016 AAA LCF	0.3	0.1	2.0
2017 AAA LCF	0.0	0.1	-0.9
2018 AAA LCF	0.5	0.1	4.1
AAA Non-LCF	0.0	0.4	-2.2
Mezzanine	0.0	0.1	-1.7
Single Asset Single Borrower	0.2	0.0	0.5

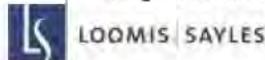
	% REP ACCOUNT	% BBG BARC US AGGREGATE INDEX	RELATIVE PI ¹
MBS	32.2	27.7	17.4
Conventional 30 Year	20.4	15.7	19.9
FHLMC 3.0	1.6	1.6	0.6
FHLMC 3.5	2.3	2.2	0.6
FHLMC 4.0	1.5	1.5	-0.3
FHLMC 4.5	0.5	0.5	0.1
FHLMC 5.0	0.0	0.2	-0.4
FNMA 3.0	3.0	2.3	2.5
FNMA 3.5	5.0	3.2	7.4
FNMA 4.0	3.8	2.4	5.6
FNMA 4.5	1.5	0.9	2.4
FNMA 5.0	0.9	0.3	1.9
GNMA 30 Year	6.9	8.0	-3.7
GNMA 3.0	2.4	2.0	2.0
GNMA 3.5	1.6	3.2	-6.0
GNMA 4.0	1.5	1.6	-0.6
GNMA 4.5	1.1	0.7	1.0
GNMA 5.0	0.3	0.3	0.3
Conventional 20 Year	0.2	0.9	-2.0
Conventional 15 Year	2.6	2.9	0.8
GNMA 15 Year	0.0	0.1	-0.2
Non-Agency CMO	2.0	0.0	2.7

Data Source: Loomis Sayles and Bloomberg Barclays.

Due to active management, characteristics will change over time. Allocation includes credit industries only; therefore totals may not equal 100%.

¹PI is a proprietary risk adjusted duration measure. Durations are calculated by the Disciplined Alpha team using their own internal methodologies and may result in different calculations than are used by other investment teams at Loomis Sayles and by third parties. Distribution is shown for a representative account as supplemental information. Due to system limitations, it is difficult to analyze this data on a composite basis. This representative account was selected because it closely reflects the Loomis Sayles Core Disciplined Alpha investment strategy. Due to guideline restrictions and other factors, there is some dispersion between the returns of this account and other accounts managed in the Core Disciplined Alpha investment style. The Disclosure Statement at the end of this presentation displays performance, including dispersion, for the Loomis Sayles Core Disciplined Alpha Composite.

Core Disciplined Alpha



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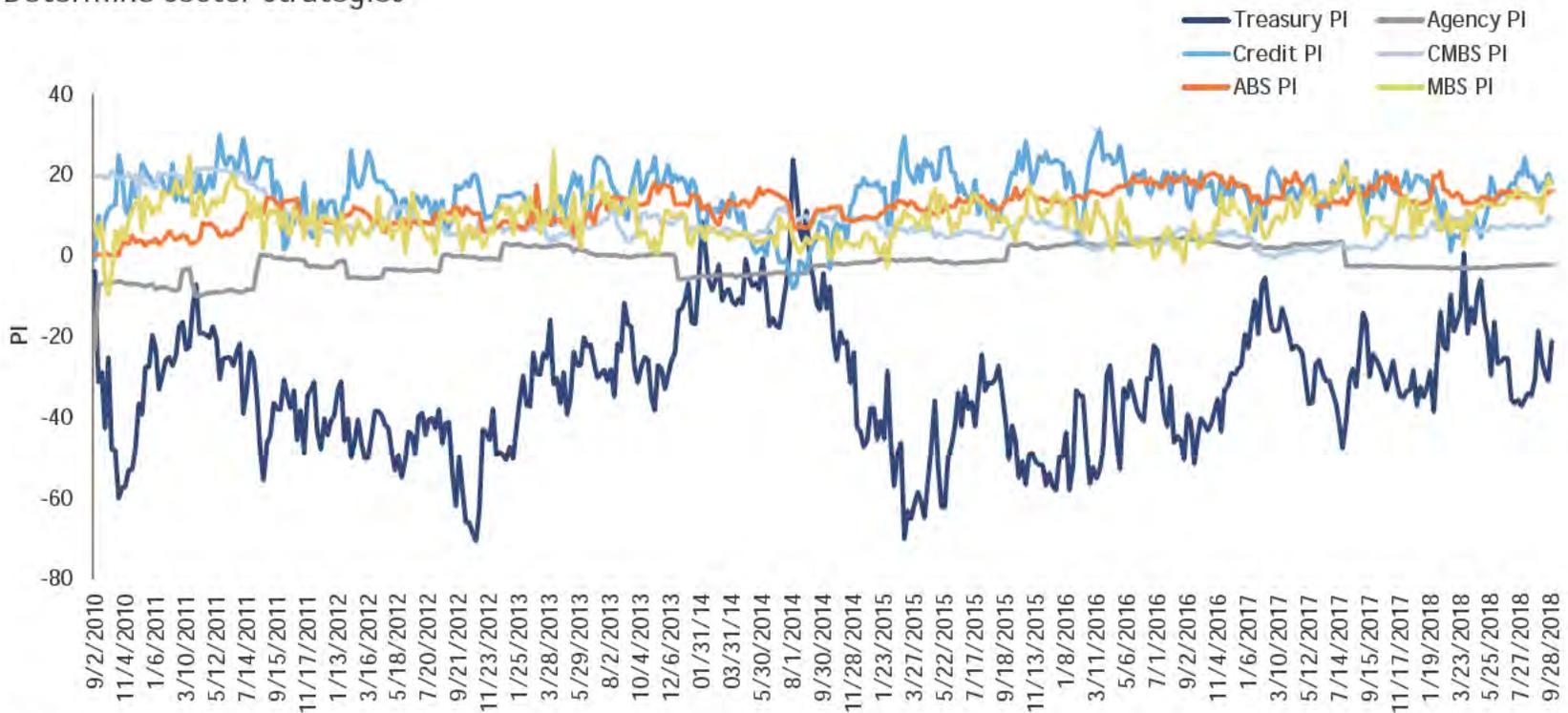
7.3

portfolio review

CORE DISCIPLINED ALPHA COMPOSITE RELATIVE PORTFOLIO IMPACT (PI) OVER TIME

Determine sector strategies

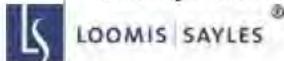
Core Disciplined Alpha



Data Source: Loomis Sayles. As of 9/30/2018 based on weekly calculations.

Due to active management, characteristics will evolve over time.

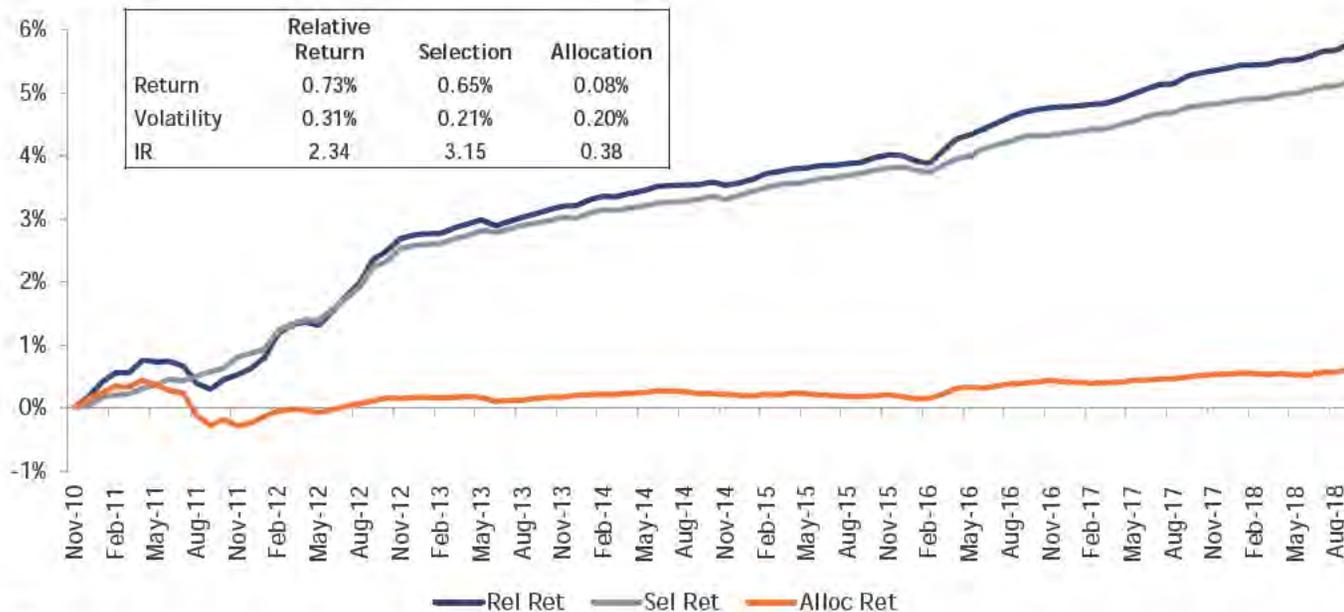
PI is a proprietary risk adjusted duration measure relative to the Bloomberg Barclays U.S. Aggregate Index. Durations are calculated by the Disciplined Alpha team using their own internal methodologies and may result in different calculations than are used by other investment teams at Loomis Sayles and by third parties. Please see the Disclosure Statement at the end of this presentation for a complete description of the Loomis Sayles Core Disciplined Alpha Composite.



supplemental performance

HYPOTHETICAL INTERMEDIATE AGGREGATE PORTFOLIO RETURN HISTORY

As of 9/30/2018



Source: Loomis Sayles.

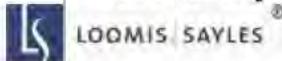
Return results are annualized over the time period, since account inception.

This representative account was selected because it closely reflects the Loomis Sayles Core Disciplined Alpha investment strategy. Due to guideline restrictions and other factors, there is some dispersion between the returns of this account and other accounts managed in the Core Disciplined Alpha investment style. The Hypothetical Portfolio shown does not represent the performance of any actual investment product or strategy. It represents a mathematical simulation of a hypothetical portfolio that was not managed by Loomis Sayles as a stand-alone strategy during the period shown.

The hypothetical results do not reflect the impact of actual trading which may affect the price and availability of securities, nor do they reflect the impact of management fees, brokerage fees or commissions and other expenses, which would lower returns. For example, applying the top tier of the ADV management fee of .35% would lower the return of the Hypothetical Portfolio since inception to 2.35%.

Methodology: The model intermediate aggregate portfolio includes all positions held in the Core Disciplined Alpha representative account conforming to the benchmark maturity criteria - i.e., all Securitized positions (MBS, ABS, CMBS, including non-benchmark), Corporate, Gov't and Agency bonds with maturity / first call within 10 years of the start of the month. We assume that we are able to hedge yield curve exposures as we do for our other portfolios (i.e., negligible exposure to rates). Please refer to the Additional Notes for further details on the methodology used for creating the hypothetical portfolio.

Past simulated performance and experience are no guarantee of future results.



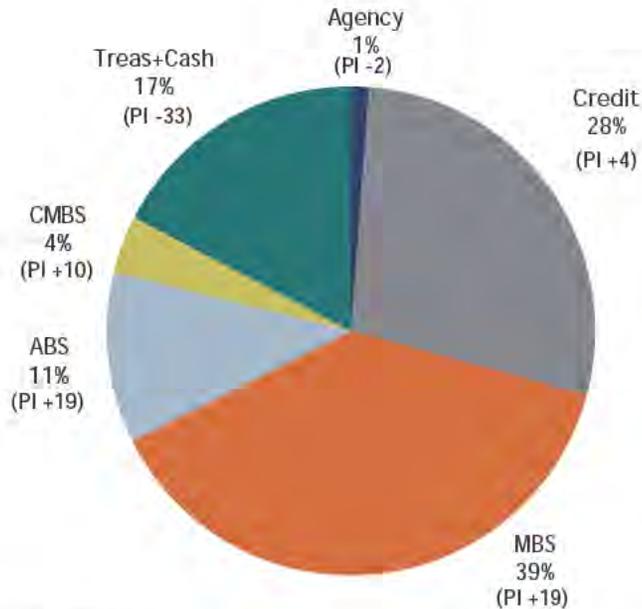
supplemental characteristic details

HYPOTHETICAL INTERMEDIATE AGGREGATE PORTFOLIO SECTOR DISTRIBUTION

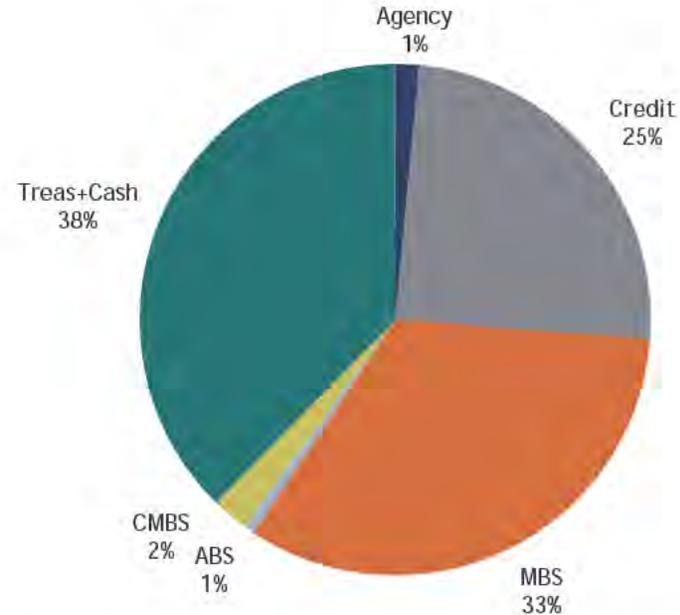
As of 9/30/2018

7.3

HYPOTHETICAL INTERMEDIATE AGGREGATE PORTFOLIO



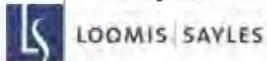
BLOOMBERG BARCLAYS U.S. INTERMEDIATE AGGREGATE INDEX



Source: Loomis Sayles.

This representative account was selected because it closely reflects the Loomis Sayles Core Disciplined Alpha investment strategy. Due to guideline restrictions and other factors, there is some dispersion between the returns of this account and other accounts managed in the Core Disciplined Alpha investment style. The Hypothetical Portfolio shown does not represent the performance of any actual investment product or strategy. It represents a mathematical simulation of a hypothetical portfolio that was not managed by Loomis Sayles as a stand-alone strategy during the period shown.

Methodology: The model intermediate aggregate portfolio includes all positions held in the Core Disciplined Alpha representative account conforming to the benchmark maturity criteria - i.e., all Securitized positions (MBS, ABS, CMBS, including non-benchmark), Corporate, Gov't and Agency bonds with maturity / first call within 10 years of the start of the month. We assume that we are able to hedge yield curve exposures as we do for our other portfolios. Please refer to the Additional Notes for further details on the methodology used for creating the hypothetical portfolio.



supplemental characteristic details

HYPOTHETICAL INTERMEDIATE AGGREGATE PORTFOLIO RATING AND DURATION PROFILE

As of 9/30/2018



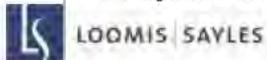
	Key Rate Duration Contribution						
	\$ Duration	6M	2Y	5Y	10Y	20Y	30Y
Agency	0.02	0.00	0.01	0.01	0.00	0.00	0.00
Credit	0.95	0.02	0.23	0.51	0.19	0.00	0.00
MBS	1.89	0.05	0.21	0.46	0.69	0.44	0.05
ABS	0.11	0.02	0.05	0.03	0.00	0.00	0.00
CMBS	0.22	0.00	0.00	0.07	0.14	0.00	0.00
Covered	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Treasuries+Cash	1.06	0.00	0.25	0.60	0.21	0.00	0.00
Hypothetical Int Agg Portfolio Total	4.27	0.10	0.75	1.69	1.23	0.44	0.05
BbgBARC Int Agg Total	4.27	0.10	0.76	1.68	1.31	0.40	0.03
Relative	0.00	0.00	-0.01	0.01	-0.07	0.04	0.02

Source: Loomis Sayles.

Credit Quality reflects the highest credit rating assigned to individual holdings of the representative account among Moody's, S&P or Fitch; ratings are subject to change.

This representative account was selected because it closely reflects the Loomis Sayles Core Disciplined Alpha investment strategy. Due to guideline restrictions and other factors, there is some dispersion between the returns of this account and other accounts managed in the Core Disciplined Alpha investment style. The Hypothetical Portfolio shown does not represent the performance of any actual investment product or strategy. It represents a mathematical simulation of a hypothetical portfolio that was not managed by Loomis Sayles as a stand-alone strategy during the period shown.

Methodology: The model intermediate aggregate portfolio includes all positions held in the Core Disciplined Alpha representative account conforming to the benchmark maturity criteria - i.e., all Securitized positions (MBS, ABS, CMBS, including non-benchmark), Corporate, Gov't and Agency bonds with maturity / first call within 10 years of the start of the month. We assume that we are able to hedge yield curve exposures as we do for our other portfolios. Please refer to the Additional Notes for further details on the methodology used for creating the hypothetical portfolio.



hypothetical intermediate aggregate portfolio

ADDITIONAL NOTES:

Methodology

The model intermediate aggregate portfolio includes all positions held in the Core Disciplined Alpha representative account conforming to the benchmark maturity criteria - i.e., all Securitized positions (MBS, ABS, CMBS, including non-benchmark), Corporate, Gov't and Agency bonds with maturity / first call within 10 years of the start of the month. We assume that we are able to hedge yield curve exposures as we do for our other portfolios (i.e., negligible exposure to rates). Return results are annualized over the time period, since account inception.

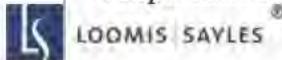
Benchmark excess returns are computed bottom-up (from security returns) using Loomis Sayles' key rate durations (which, for MBS, may be substantially different from those of the index provider). Relative return is the difference of calculated excess returns between the simulated Intermediate Aggregate portfolio and the Bloomberg Barclays Intermediate Aggregate Index. Security selection and allocation returns are computed from the relative return based on the Disciplined Alpha PI (portfolio impact) model.

Benchmark total returns are provided for reference (based on Loomis Sayles's prices), as are modeled portfolio total returns assuming zero return due to yield curve. Our computed benchmark total returns differ from those of the index provider over the same period by a cumulative +5 basis points (that is, our cumulative bottom-up calculation of benchmark total return is higher than Bloomberg Barclays by that amount over the 7 years, 11 months of the backtested results), presumably due to pricing differences and possible slight discrepancies in return calculation methodology.

This material is provided by Loomis Sayles for informational purposes in response to your specific request and should not be construed as investment advice. Future investment decisions may be inconsistent with these opinions. Accuracy of data is not guaranteed but represents our best judgment and can be derived from a variety of sources.

The Hypothetical Portfolio shown does not represent the performance of any actual investment product or strategy. It represents a mathematical simulation of a hypothetical portfolio that was not managed by Loomis Sayles as a stand-alone strategy during the period shown. Although we believe that such a portfolio could be constructed, we make no representation that an actual portfolio with these characteristics and results could be produced. You should expect actual results to be different. The use of hypothetical results has inherent limitations. These results do not reflect all material economic and market factors that may have affected investment decisions if this was an actual account. The hypothetical results do not reflect the impact of actual trading which may affect the price and availability of securities, nor do they reflect the impact of management fees, brokerage fees or commissions and other expenses, which would lower returns. For example, applying the top tier of the ADV management fee of .35% would lower the return of the Hypothetical Portfolio since inception to 2.35%. The Hypothetical Portfolio does not necessarily reflect an actual portfolio that could have been constructed during the period. Loomis Sayles clients had different investment results from those portrayed. Actual accounts have the potential for loss as well as profit.

Past performance and experience are no guarantee of future results.



summary

WHY THE DISCIPLINED ALPHA TEAM?

Deep Resources

- The Disciplined Alpha team consists of 16 investment professionals dedicated to fundamental research-based security selection and integrated risk management
- Loomis Sayles' depth of resources across our fundamental and quantitative research platforms are an integral part of the Disciplined Alpha investment process

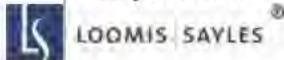
Distinct and Repeatable Investment Process

- The Disciplined Alpha team aims to produce consistent alpha by understanding where we believe bonds should trade at any given time and adjusting portfolio positioning within a structured process every day
- Portfolio managers, analysts and traders continually discuss investment ideas, risks and trading levels in their efforts to outperform their benchmarks while maintaining targeted risk levels across portfolios

Dedicated to Investment Excellence

- The Disciplined Alpha team's investment process has been in place for over 20 years
- We believe our investment philosophy supports a process that can result in strong risk-adjusted outperformance for our clients

As of 9/30/2018.



sector teams

EXPERTISE OF INDIVIDUAL

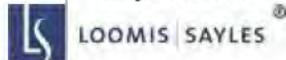
- Portfolio Manager/Strategist
- Research
- Trading

MICHAEL GILES Chief Investment Risk Officer	JAE PARK Chief Investment Officer	DAVID WALDMAN Deputy Chief Investment Officer
CHIP BANKES Head of Trading	ALESSANDRO PAGANI & DMITRI RABIN Co- Heads of Mortgage & Structured Finance	CHRIS GOOTKIND Director of Credit Research
TERI MASON Director of Macro Strategies	MICHAEL CROWELL & BOBBY BAKSHI Directors of Quantitative Research & Risk Analysis	RICH CRABLE Associate Director of Convertibles & Special Situations

7.3

Global Asset Allocation	Inv. Grade Corporate	Global Credit	Mortgage & Structured Finance	US Government	US Yield Curve	Emerging Markets			
K. Buntrock M. Crowell M. Eagan T. Fahey M. Gladchun A. Pagani	J. Park K. Perry R. Raczkowski C. Rowe S. Service R. Skaggs E. Sternberg	P. Agrawal N. Burke J. DeVoy C. Embree B. Kennedy J. McIntosh	M. McDade R. Raczkowski L. Royer S. Service D. Simmons K. Wagner	K. Buntrock J. DeVoy O. Diolosa C. Kenny H. Ridill L. Schweitzer S. Service E. Thaute R. Wilkin	K. Allman I. Anderson D. Farina S. L'Heureux M. Meyer A. Pagani D. Rabin C. Rowe B. Sankaran J. Thomas	M. Gladchun J. Hyll P. Palfrey L. Schweitzer	T. Fahey M. Gladchun B. Hess B. Horrigan J. Hyll P. Palfrey D. Rolley L. Schweitzer	B. Aumond T. Chow E. Colleran P. Frick S. Hoppe J. Mueller	N. Oulidi D. Rolley A. Saw E. Sternberg D. Sunnerberg C. Tay M. Welch
High Yield	Convertibles	Developed Markets/ Non-US Sovereign		Bank Loans	Municipals	Commodities	Equity		
J. Bell M. Crowell J. DeVoy M. Eagan R. MacKay	T. O'Brien E. Stokes T. Stolberg T. Vandam B. Wright	R. Crable C. Murphy M. Ravanese J. Slankas P. Sheehan O. Tatar T. Zimmer	K. Buntrock T. Fahey D. Rolley L. Sarlo L. Schweitzer	S. Service D. Sunnerberg C. Tay S. Walton M. Winkelman	J. Bell M. Klawitter R. Leitzer C. Maniatis K. Perry B. Wright H. Young	K. Gribben J. Martin L. Royer S. Timen	A. DiCenso K. Kearns S. Lele M. Murphy L. Sarlo H. Sundaresh	B. Bakshi K. Bochman M. Ravanese E. Riley R. Skaggs J. Slankas J. Slavik	

As of 9/30/2018.

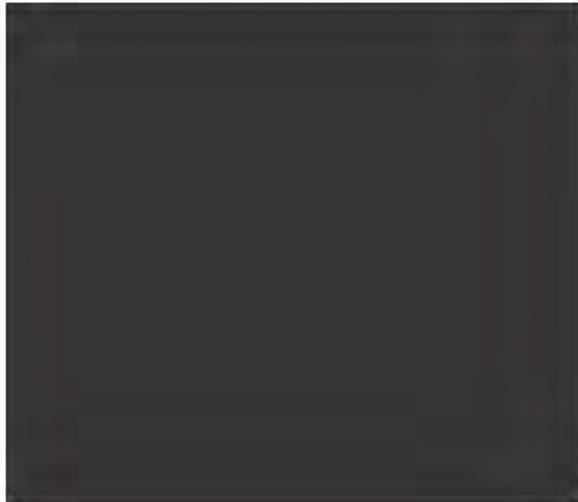


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fee schedule

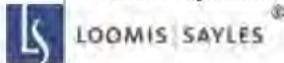
Annual rates applied to separate account assets under management



Core Disciplined Alpha

7.3

Additional information about fees can be found in Loomis Sayles' Form ADV, which is available upon request.



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additional notes

ERISA FIDUCIARY DISCLOSURE¹

We are not undertaking to provide impartial advice or advice in a fiduciary capacity in connection with the sales and distribution of our investment products or services.

We have a financial interest in connection with the sale of our products and services. We are compensated through the receipt of investment management fees with respect to the assets we manage, which can be found in our Form ADV and other documents provided to clients pertaining to the provision of our investment products and services.

KEY INVESTMENT RISKS

Credit Risk

The risk that the issuer or borrower will fail to make timely payments of interest and/or principal. This risk is heightened for lower rated or higher yielding fixed income securities and lower rated borrowers.

Issuer Risk

The risk that the value of securities may decline due to a number of reasons relating to the issuer or the borrower or their industries or sectors. This risk is heightened for lower rated fixed income securities or borrowers.

Liquidity Risk

The risk that the strategy may be unable to find a buyer for its investments when it seeks to sell them, which is heightened for high yield, mortgage-backed and asset-backed securities.

Interest Rate Risk

The risk that the value of a debt obligation falls as interest rates rise.

Non-U.S. Securities Risk

The risk that the value of non-U.S. investments will fall as a result of political, social, economic or currency factors or other issues relating to non-U.S. investing generally. Among other things, nationalization, expropriation or confiscatory taxation, currency blockage, political changes or diplomatic developments can negatively impact the value of investments. Non-U.S. securities markets may be relatively small or underdeveloped, and non-U.S. companies may not be subject to the same degree of regulation or reporting requirements as comparable U.S. companies. This risk is heightened for underdeveloped or emerging markets, which may be more likely to experience political or economic stability than larger, more established countries. Settlement issues may occur.

Currency Risk

The risk that the value of investments will fall as a result of changes in exchange rates, particularly for global portfolios.

Derivatives Risk (for portfolios that utilize derivatives)

The risk that the value of the Strategy's derivatives instruments will fall because of changes in the value of the underlying reference instrument, pricing difficulties or lack of correlation with the underlying investment.

Leverage Risk (for portfolios that utilize leverage)

The risk of increased loss in value or volatility due to the use of leverage, or obtaining investment exposure greater than the value of an account.

Counterparty Risk

The risk that the counterparty to a swap or other derivatives contract will default on its obligations.

Prepayment Risk

The risk that debt securities, particularly mortgage-related securities, may be prepaid, resulting in reinvestment of proceeds in securities with lower yields. An investment may also incur a loss when there is a prepayment of securities purchased at a premium. Prepayments are likely to be greater during periods of declining interest rates.

Extension Risk

The risk that an unexpected rise in interest rates will extend the life of a mortgage or asset-backed security beyond the expected prepayment time, typically reducing the security's value.

Equity Risk

The risk that the value of stock may decline for issuer-related or other reasons.

Non-Diversified Strategies

Non-diversified strategies tend to be more volatile than diversified strategies and the market as a whole.

¹ For ERISA accounts only.

composite disclosure statement

AS OF 12/31/2017

Firm

Loomis, Sayles & Company, L.P. ("Loomis Sayles") is an autonomous investment advisory firm registered under the Investment Advisers Act of 1940. Registration does not imply a certain level of skill or training.

Selection Criteria for the Core Disciplined Alpha Composite ("Composite")

The Composite includes all discretionary accounts with market values greater than \$30 million managed by Loomis Sayles that seek to add value for clients primarily through security selection, intending to gain an edge through analysis and market information and minimizing duration, curve, and large sector mismatches with the following additional considerations. The investment universe is primarily investment grade bonds, with a bias for liquidity. Accounts may allow up to 5% in securities below investment grade. Portfolio duration is tightly constrained and normally managed within 10% of the benchmark. The Composite was created in 2010.

Loomis Sayles claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Loomis Sayles has been independently verified for the periods January 1, 1999 through December 31, 2017. The verification reports are available upon request.

Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. Verification does not ensure the accuracy of any specific composite presentation.

Since Composite inception, Loomis Sayles adopted a significant cash flow policy where portfolios are removed from the Composite when net monthly cash flow exceeds 30% of the portfolio's beginning market value.

Benchmark

The benchmark for the Composite is the Bloomberg Barclays U.S. Aggregate ("Index"). The Index represents securities that are SEC-registered, taxable, and dollar denominated. The Index covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities. These major sectors are subdivided into more specific indices that are calculated and reported on a regular basis. The investment portfolio underlying the Index is different from the investment portfolios of the accounts included in the Composite. The Index is used for comparative purposes only, is not intended to parallel the risk or investment style of the accounts in the Composite, and does not reflect the impact of fees and trading costs. The source of all data regarding the Index is Bloomberg Barclays.

Calculation Methodology

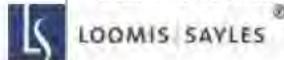
Gross of fee account returns are time-weighted rates of return, net of commissions and transaction costs. Net of fee account returns are the gross returns less the effective management fee for the measurement period. Beginning April 1, 2015 the effective fee for an account is derived by using beginning of measurement period assets and the standard fee schedule for the Composite to calculate an annual fee amount. Prior to April 1, 2015 the effective fee for an account was derived by using beginning of measurement period assets and the specific fee schedule for each account to calculate an annual fee amount. The fee amount is divided by the assets for an annual effective fee. The monthly effective fee is based on 1/12 of the annual effective fee.

All performance results are expressed in US dollars. Performance results include the reinvestment of dividends and other earnings on holdings in the Composite and Index. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request. Loomis Sayles's advisory fees are presented below and may also be found in Part II of Form ADV.

Annual Rates Applied to Assets Under Management

0.35% on the first \$20 million; 0.25% on the next \$80 million; 0.20% on the next \$100 million; 0.18% on value over \$200 million;
Minimum account size: \$50 million; Minimum annual fee: \$145,000.

Core Disciplined Alpha



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composite disclosure statement

AS OF 12/31/2017

Core Disciplined Alpha Composite

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Core Disciplined Alpha

Period	Composite Gross Return (%)	Composite Net Return (%)	Bloomberg Barclays U.S. Aggregate Index (%)	Composite 3-Yr St Dev* (%)	Benchmark 3-Yr St Dev* (%)	Number of Portfolios in Composite End of Period	Internal Dispersion of Returns** (%)	Composite Total Assets End of Period (USD M)	Total Firm Assets End of Period (USD M)
2017	3.93	3.71	3.54	2.80	2.78	8	0.05	2,706	268,086
2016	3.68	3.46	2.65	3.01	2.98	7	N/M	2,090	240,193
2015	1.12	0.93	0.55	2.95	2.88	≤ 5	N/M	1,701	229,126
2014	6.55	6.40	5.97	2.73	2.63	≤ 5	N/M	1,075	230,229
2013	-1.31	-1.43	-2.02	2.76	2.71	≤ 5	N/M	323	199,777
2012	6.61	6.47	4.21	N/A	N/A	≤ 5	N/M	843	186,115
2011	8.75	8.60	7.84	N/A	N/A	≤ 5	N/M	799	162,606
2010***	-0.58	-0.68	-1.19	N/A	N/A	≤ 5	N/M	737	151,550

*The three-year annualized standard deviation measures the variability of the gross composite returns and the benchmark returns over the preceding 36 month period.

**The internal dispersion of returns presented reflects the annual equal weighted standard deviation and is calculated as the average dispersion from the mean return of all accounts included in the Composite for the entire year.

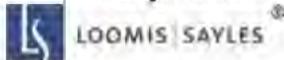
***Since Composite inception on September 1, 2010.

N/A - There are fewer than 36 months since the Composite inception.

N/M - Measures of internal dispersion with five or fewer accounts for the entire period are not considered meaningful.

The firm's list of composite descriptions is available upon request.

Past performance is no guarantee of future results.



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KRS Opportunistic Portfolio

Review and Structuring Update
November 7, 2018



Discussion Framework – Nov 2016

- Hedge Funds as a stand-alone self-diversifying allocation makes little sense for KRS
 - High fees
 - Unattractive **NET** returns
- All strategies that are not diversifying and /or don't have enough compensating return for the fee structure should be liquidated asap.
- The remaining potentially complementary strategies should be kept for additional in depth study to assure they meet KRS objectives



Overview of Previous Portfolio – Nov 2016

- Two separate portfolios
 - Direct Investments
 - Daniel Boone Fund
- IC recommended redemption list for both portfolios based on 3 factors
 - Excess beta
 - Opportunity relative to fee
 - AUM concern



Overview of Current Portfolio – Nov 2018

- Implemented recommended redemption list
- 5 direct fund investments remaining

Manager	Strategy	9/30/18	% Opp Portfolio	% KRS Portfolio
		Balance (\$ MM)		
Governors Lane	Directional	\$31.2	21%	0.18%
SRS	Directional	\$10.4	7%	0.06%
Myriad	Diversifying	\$66.6	44%	0.38%
H2O Alpha 10	Diversifying	\$23.2	15%	0.13%
Gotham Neutral	Diversifying	\$18.8	13%	0.11%
Total		\$150.2	100%	0.85%



Structuring Update and Recommendations

- 2018 Asset Allocation Update: 3% target weight
 - 0-10% range based on opportunities
 - Sizing based on volatility
- Two sets of strategies with corresponding benchmarks
 - Diversifying: 3 year Treasury + 2%
 - Directional: 0.6 x MSCI ACWI Total Return + 2%
- Portfolio of 8-10 investments

