

Fixed Income Performance

Arizona State Retirement System

as of June 30, 2018

Total Fixed Income Allocation

Fixed Income Positioning versus Interim SAA as of June 30, 2018				
	Actual	SAA Target	Interim SAA	Over/(Under) Interim SAA
Total Fixed Income	26.6%	25.0%	25.0%	1.6%
Interest Rate Sensitive	9.7%	11.0%	12.0%	-2.3%
High Yield	0.8%	2.0%	2.0%	-1.2%
Private Debt	11.9%	12.0%	11.0%	0.9%
Opportunistic Debt	4.2%	0.0%	0.0%	4.2%

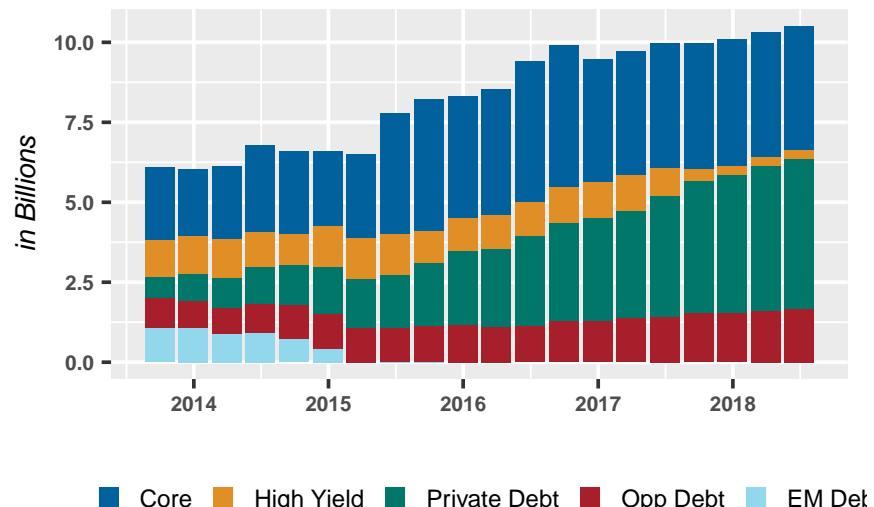
¹ Interim SAA prorates unfunded Private Debt to Interest Rate Sensitive and High Yield.

Total Fixed Income

Annualized Returns

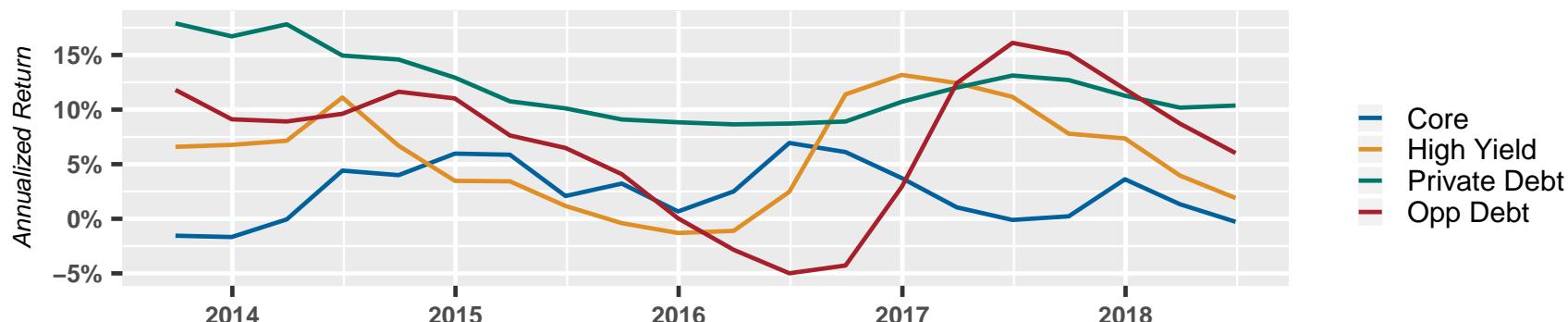
	1 Year	3 Year	5 Year
Core Fixed Income	-0.28	2.13	2.58
Barclay's Aggregate	-0.40	1.72	2.27
Core Composite Excess	0.12	0.41	0.30
High Yield	1.90	5.10	5.47
Barclay's HY Index	2.62	5.53	5.51
HY Composite Excess	-0.72	-0.43	-0.05
Private Debt	10.41	10.82	10.98
S&P/LSTA Leveraged Loan + 250bps	7.08	7.37	7.07
Private Debt Excess	3.33	3.45	3.91
Opportunistic Debt	6.07	5.71	6.56
Fixed 8% Return	8.00	8.00	8.00
Opportunistic Debt Excess	-1.93	-2.28	-1.44

Total Fixed Income Market Values



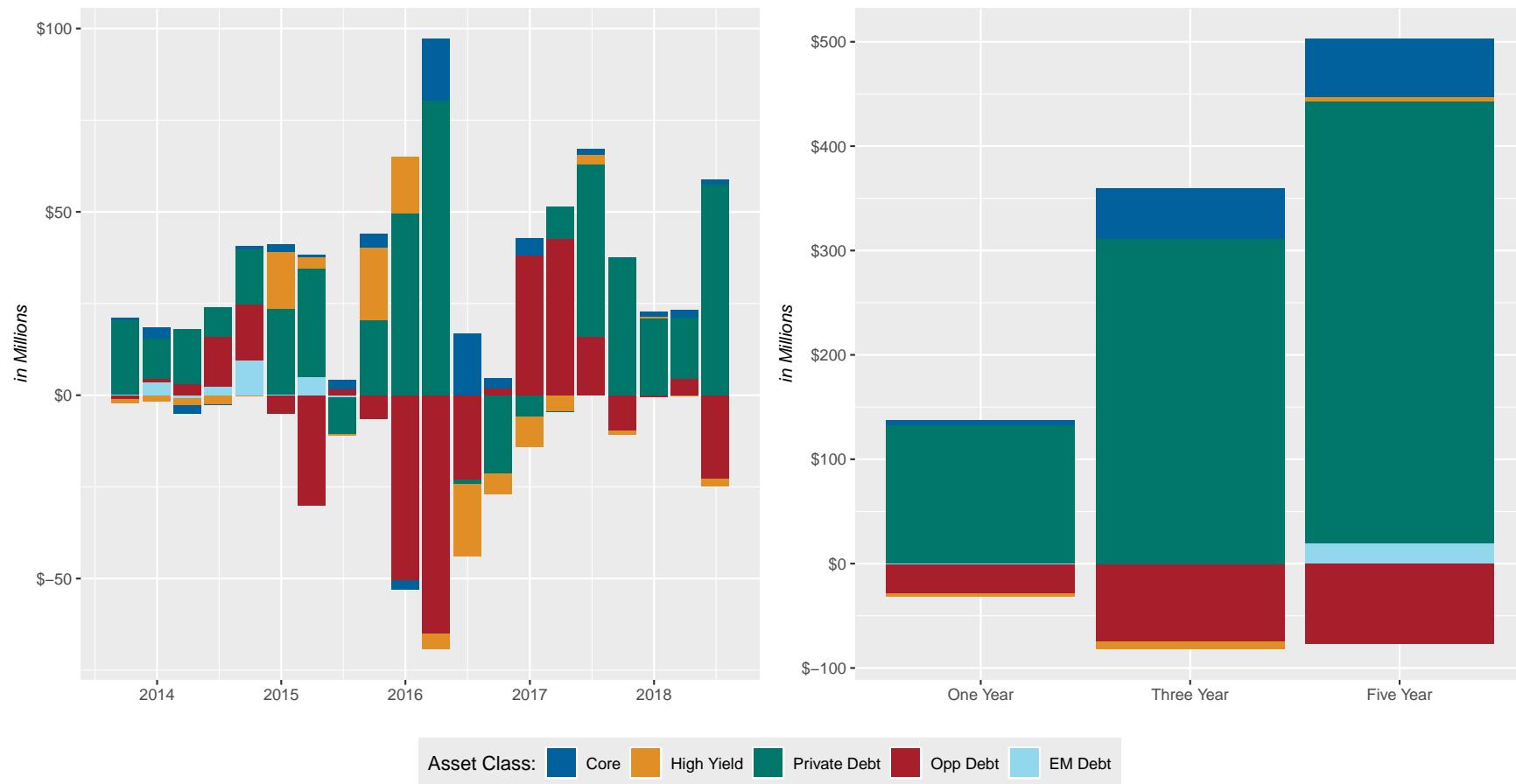
Total Fixed Income Rolling Returns

One Year Trailing Returns through June 30, 2018



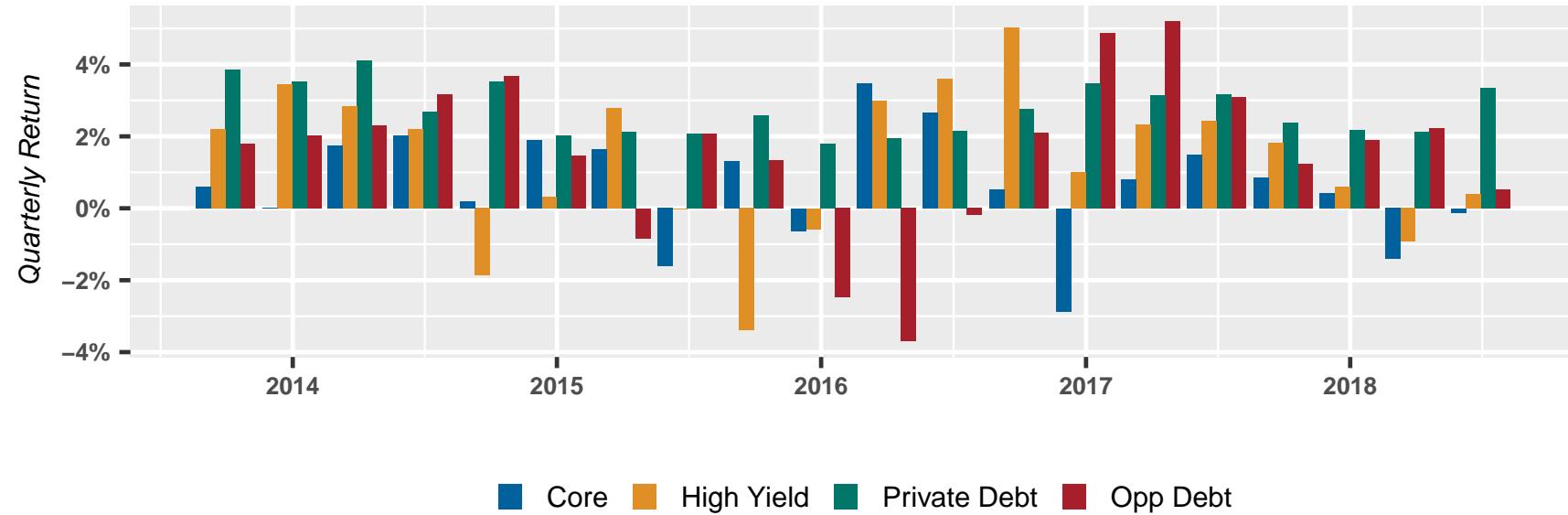
Total Fixed Income Dollar Value Added

**Total Fixed Income Dollar Value Added
 Relative to Sub-Asset Class Benchmarks**

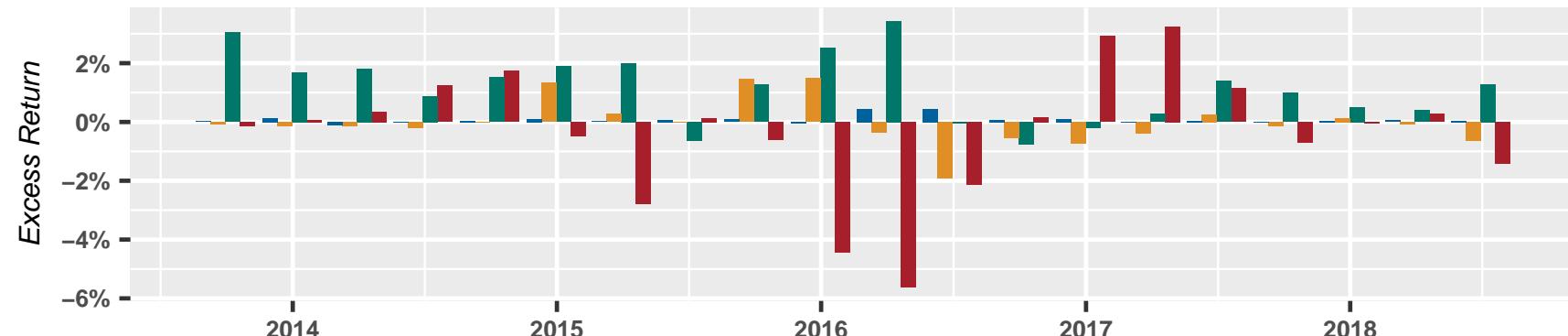


Total Fixed Income Quarterly Returns

Total Fixed Income Quarterly Return



Total Fixed Income Quarterly Excess Return

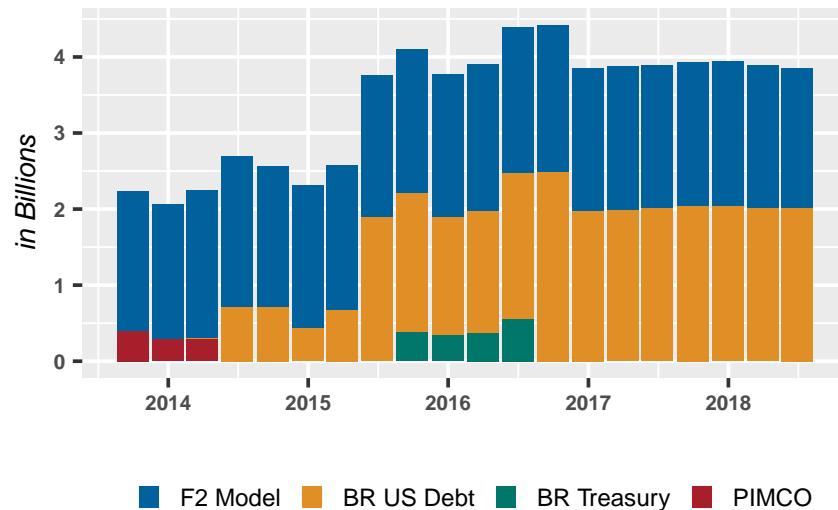


Core Fixed Income

Annualized Returns

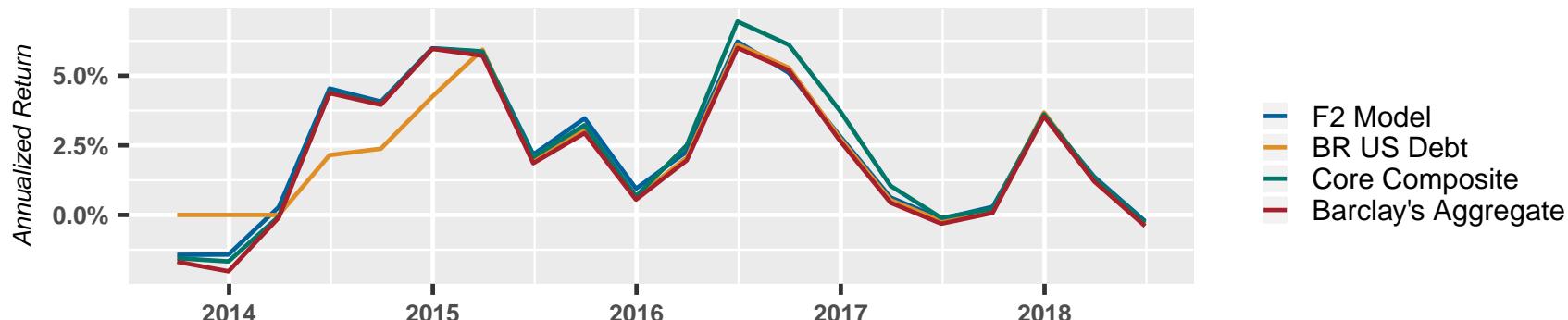
	1 Year	3 Year	5 Year
Core Composite	-0.28	2.13	2.58
Barclay's Aggregate	-0.40	1.72	2.27
Core Composite Excess	0.12	0.41	0.30
F2 Model	-0.22	1.91	2.48
Barclay's Aggregate	-0.40	1.72	2.27
F2 Excess	0.18	0.19	0.21
BlackRock US Debt Fund	-0.33	1.82	
Barclay's Aggregate	-0.40	1.72	
BlackRock Excess	0.07	0.10	

Core Market Values



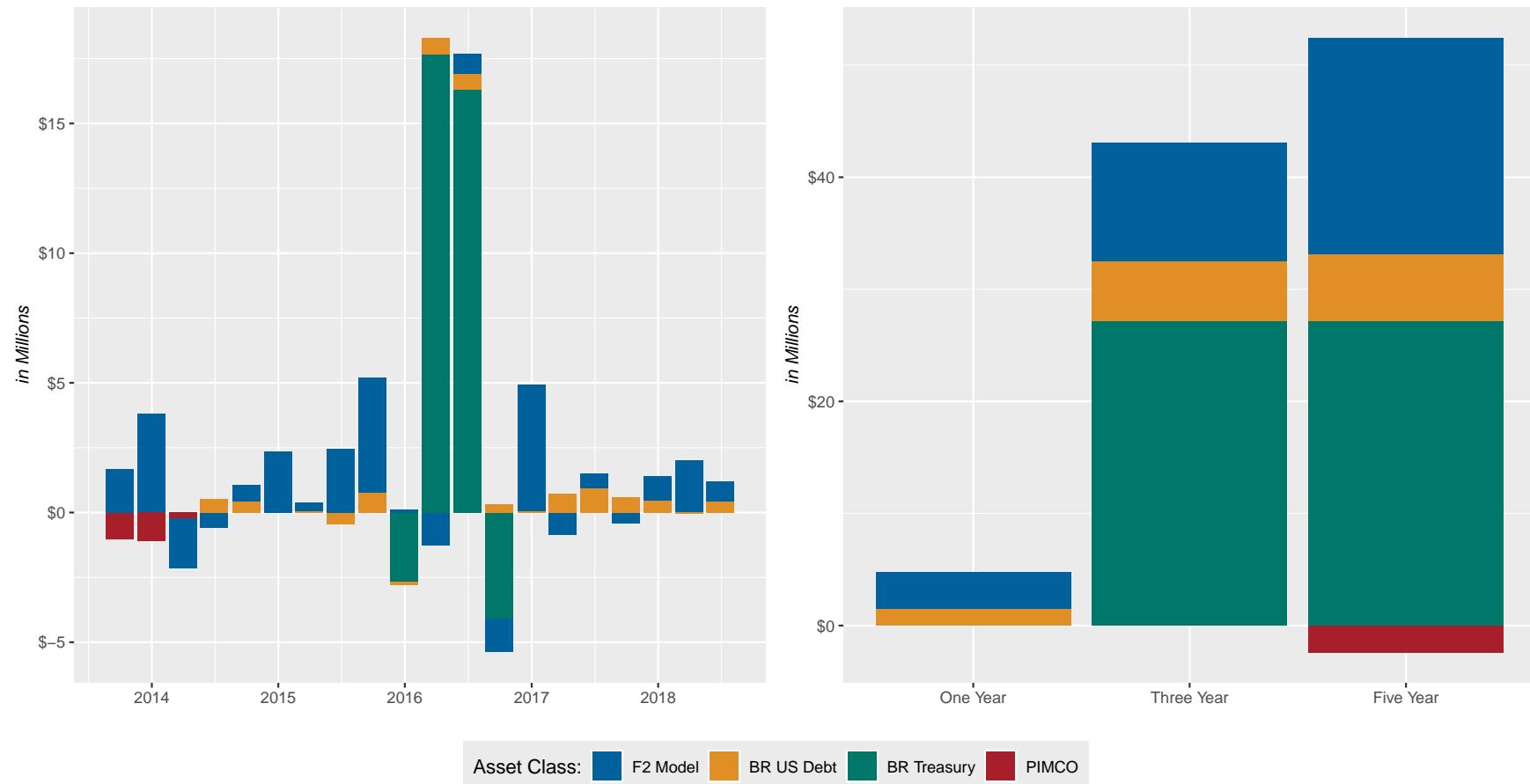
Core Rolling Returns

One Year Trailing Returns through June 30, 2018



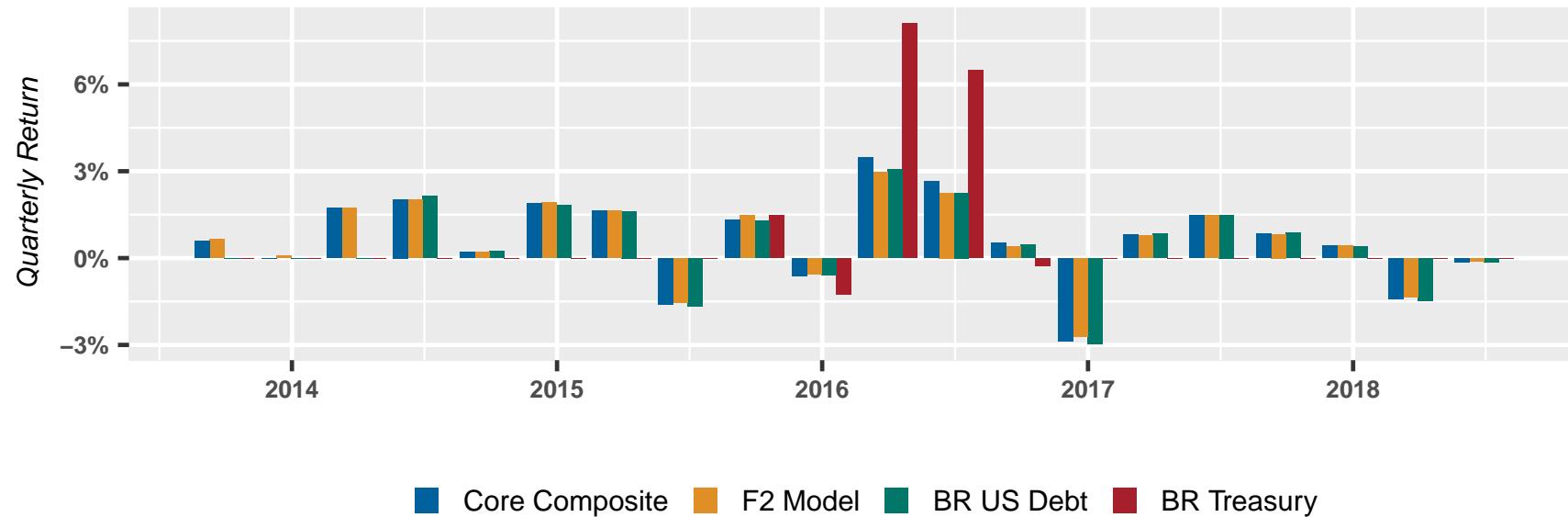
Core Fixed Income Dollar Value Added

Core Fixed Income Dollar Value Added
Relative to Barclay's Aggregate Benchmark

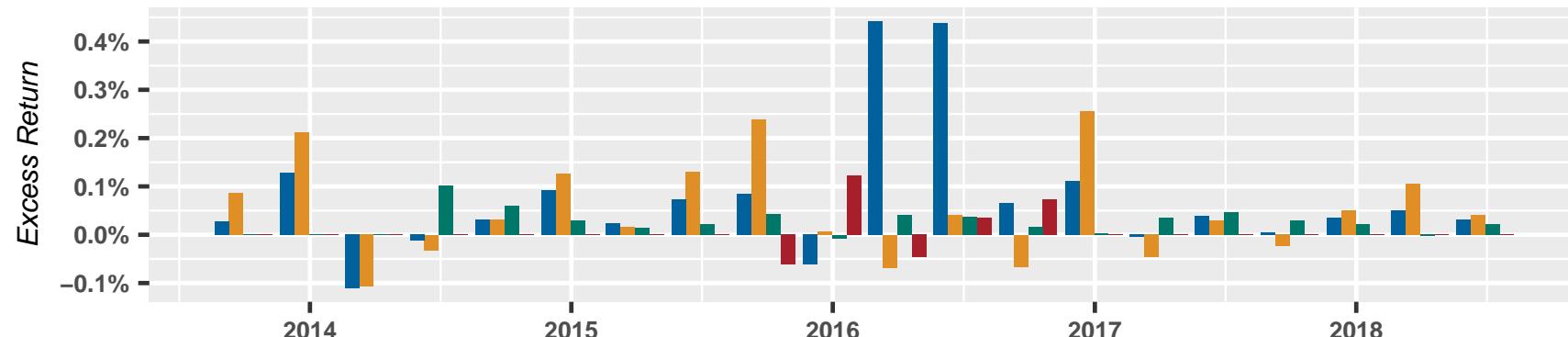


Core Fixed Income Quarterly Returns

Core Quarterly Return



Core Quarterly Excess Return

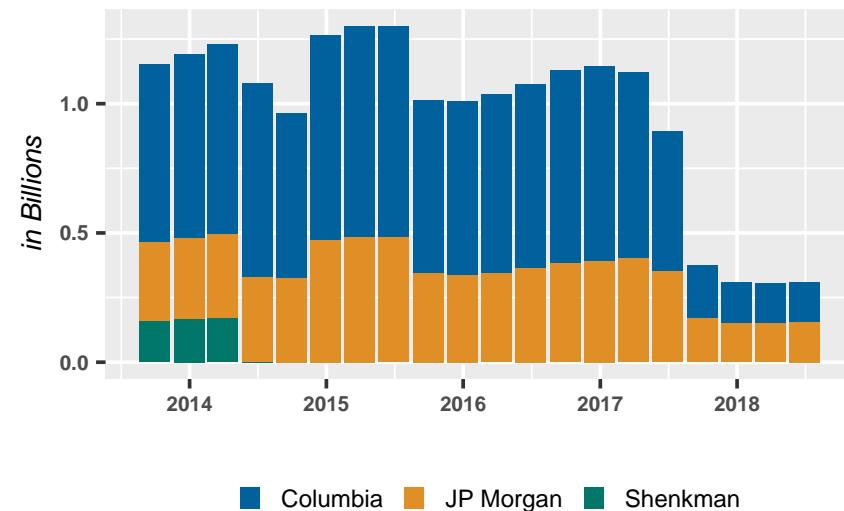


High Yield

Annualized Returns

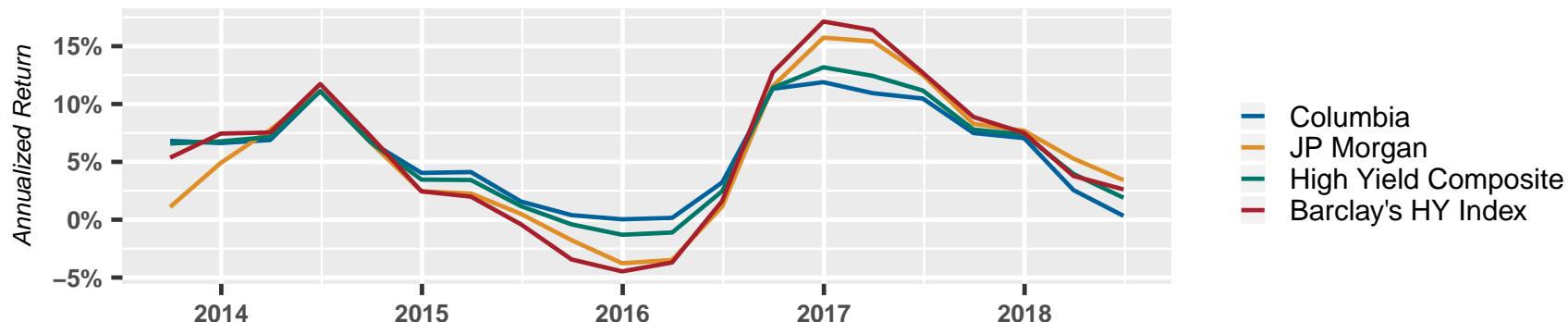
	1 Year	3 Year	5 Year
High Yield Composite	1.90	5.10	5.47
Barclay's HY Index	2.62	5.53	5.51
Composite Excess	-0.72	-0.43	-0.05
Columbia	0.33	4.59	5.25
Barclay's HY Index	2.62	5.53	5.51
Columbia Excess	-2.29	-0.94	-0.26
JP Morgan	3.42	5.57	
Barclay's HY Index	2.62	5.53	
JP Morgan Excess	0.80	0.05	

High Yield Market Values



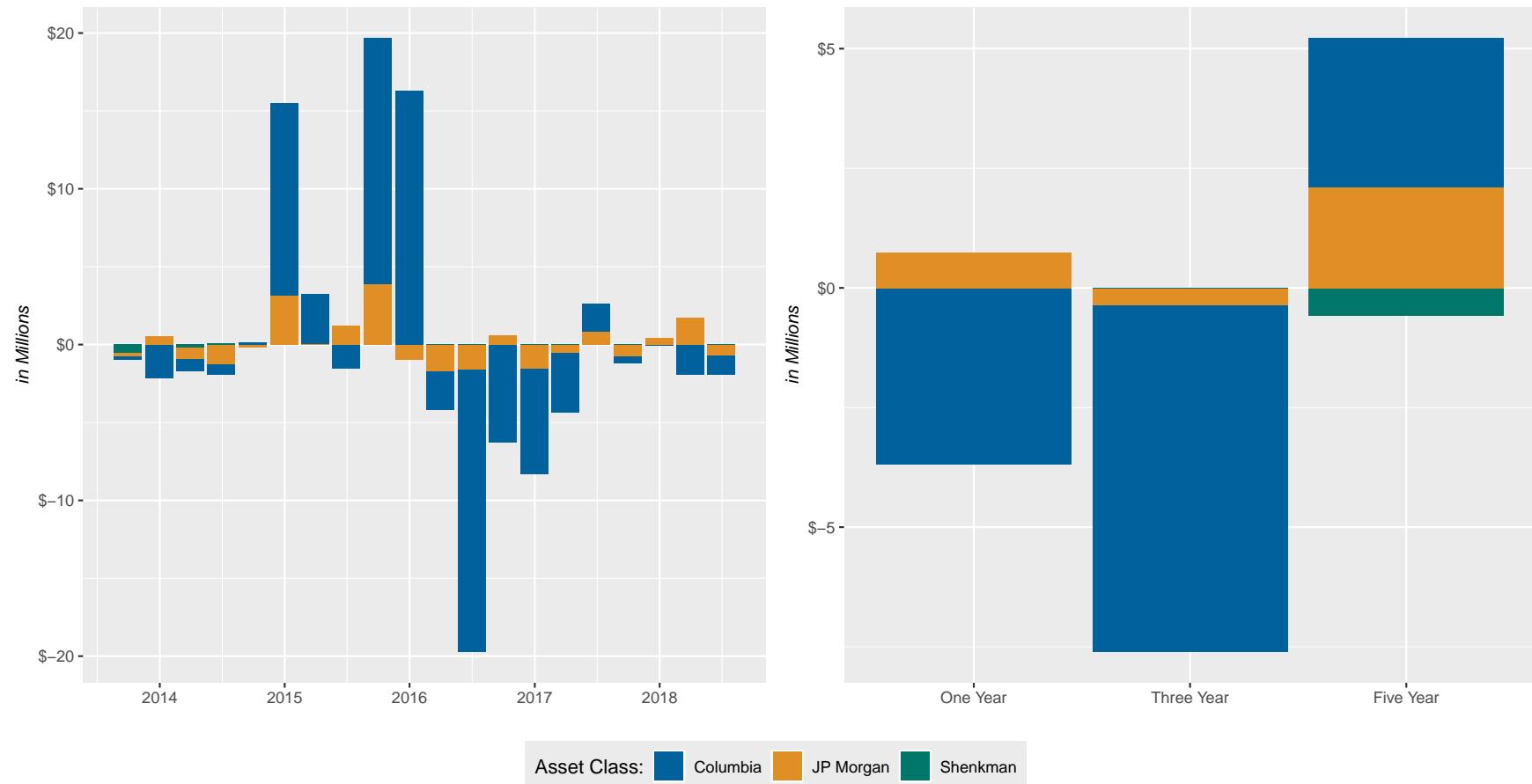
High Yield Rolling Returns

One Year Trailing Returns through June 30, 2018

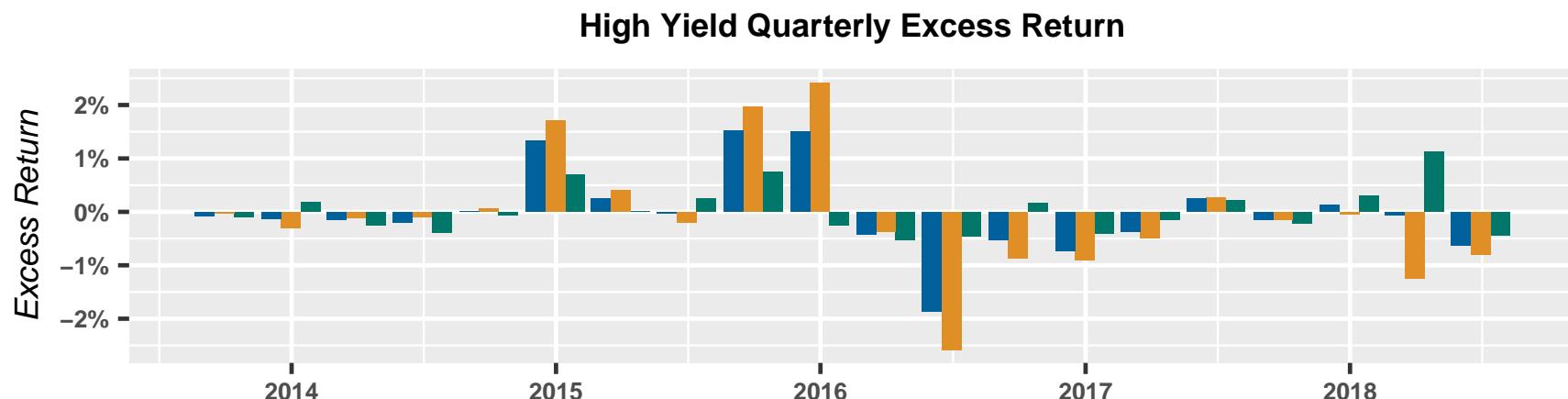
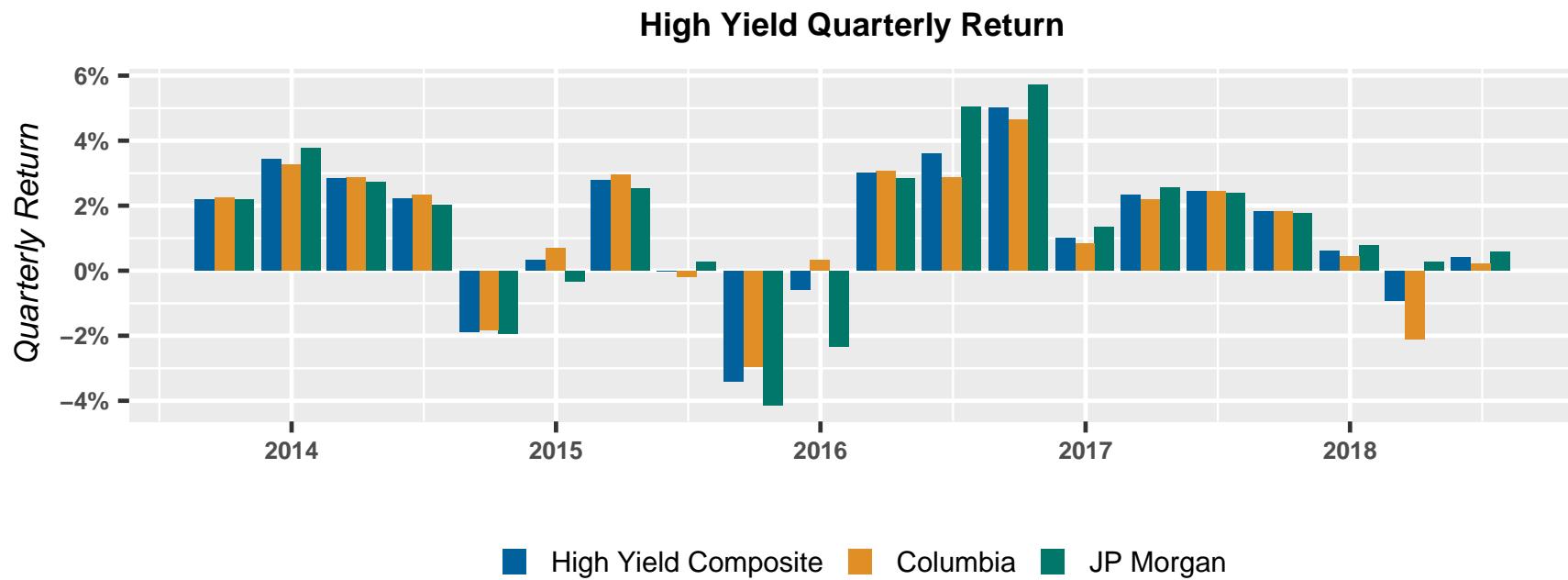


High Yield Dollar Value Added

High Yield Dollar Value Added
Relative to Barclay's High Yield Benchmark



High Yield Quarterly Returns

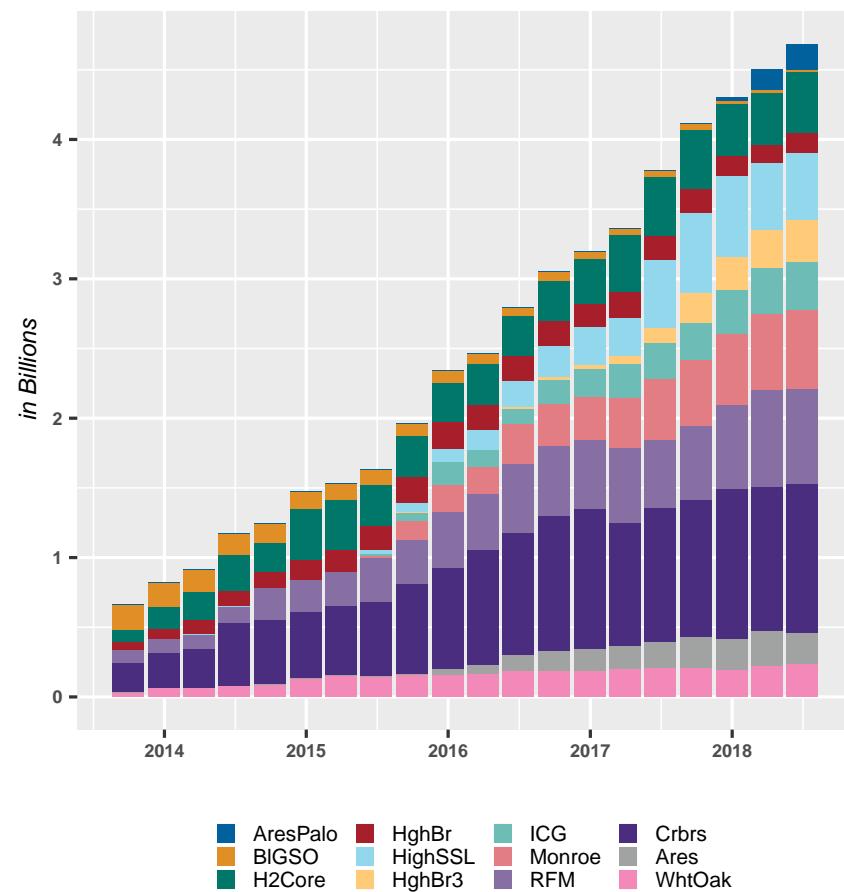


Private Debt

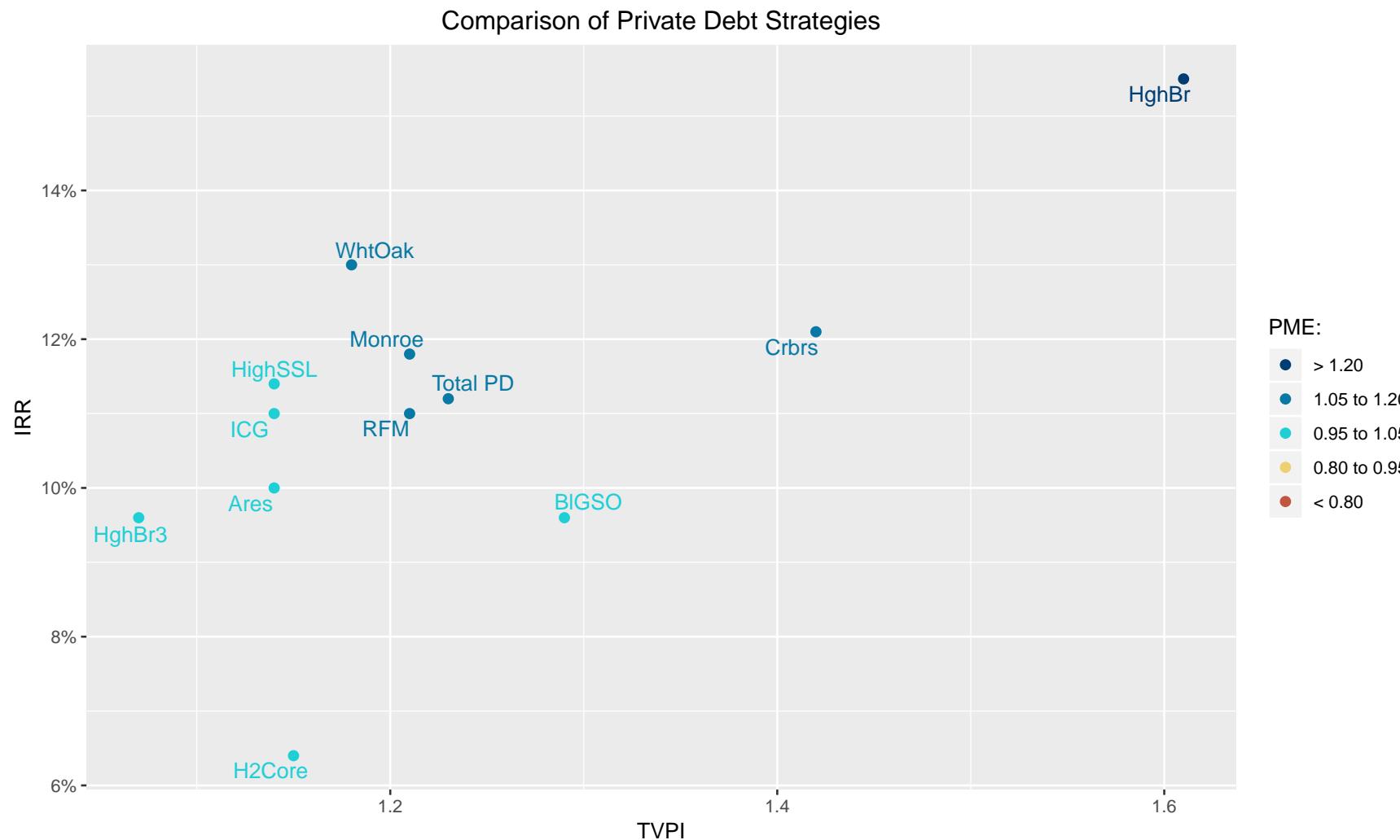
Private Debt IRRs

	QTR	1 YEAR	3 YEAR	ITD
Total.PD	3.3	10.4	10.8	11.2
Benchmark	2.1	7.1	7.4	7.2
BIGSO	-0.1	-8.0	-3.6	9.6
H2Core	1.3	6.0	6.7	6.4
HghBr	12.2	21.8	16.2	15.5
HighSSL	2.2	8.1	11.4	11.4
HghBr3	2.0	10.2		9.6
ICG	3.6	11.9	11.0	11.0
Monroe	3.0	10.9		11.8
RFM	6.4	14.4	11.7	11.0
Crbrs	2.8	10.1	11.6	12.1
Ares	2.1	9.1		10.0
WhtOak	0.1	7.7	10.9	13.0

Private Debt Market Values

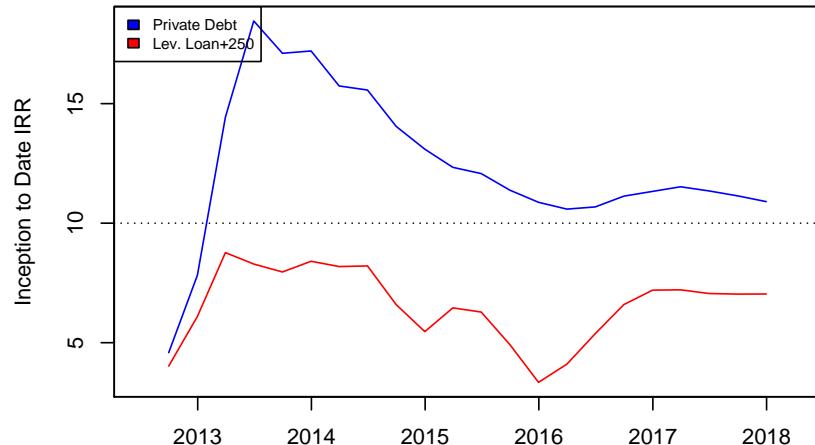


Private Debt: TVPI and PME

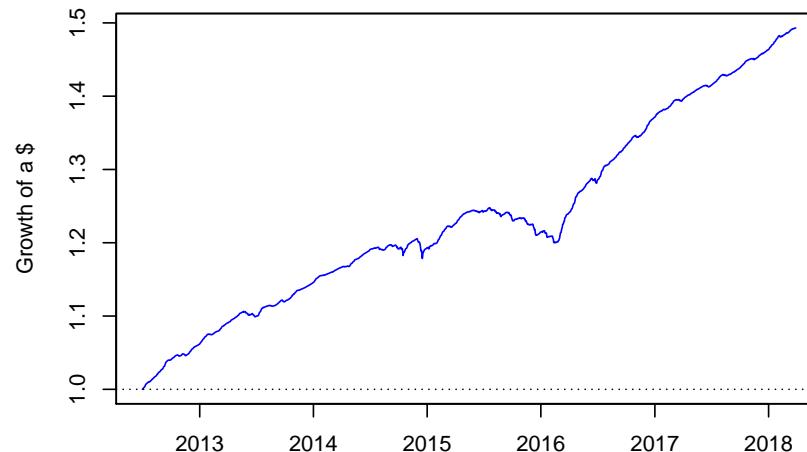


Private Debt Portfolio

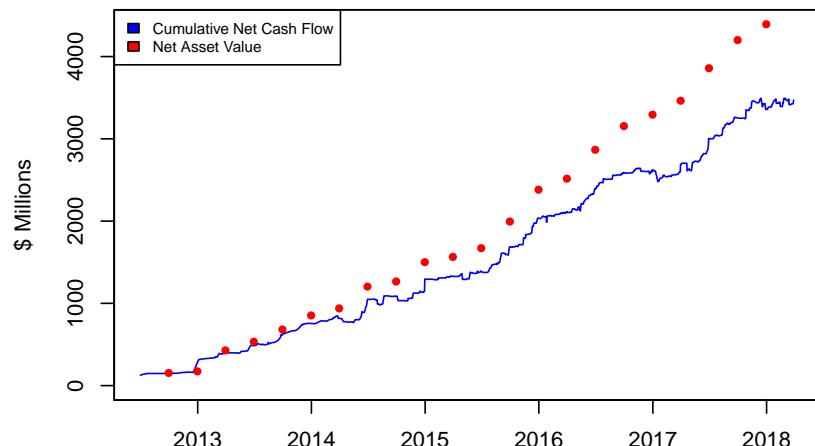
**Private Debt IRRs
 compared to Lev Loan+250**



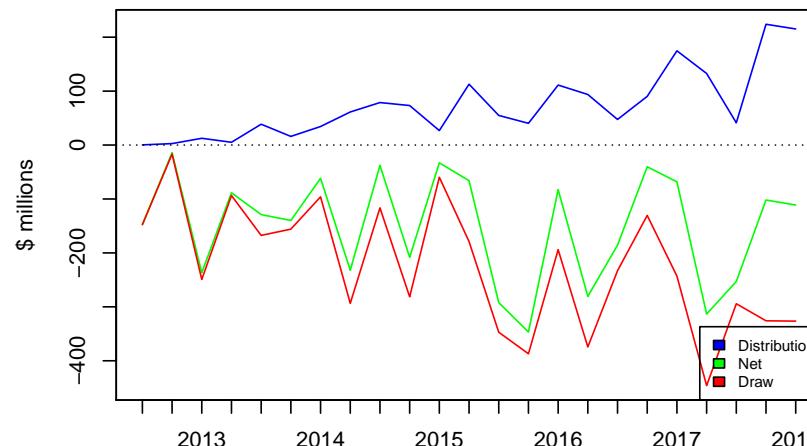
Lev Loan+250



**Private Debt Cumulative Net Capital Contributed
 Compared to Value**



**Private Debt
 Quarterly Draws and Distributions**



Private Debt: United States Corporate

Portfolio	Commitment (\$MM)	Market Value 6/30/2018	Target Net Return	IMD Commentary
Sonoran Private Credit Opportunities Fund, LLC (Managed by Cerberus)	\$1,200	\$1,069	13%	Separate account that invests in floating-rate secured loans primarily to fund private-equity sponsored middle market leveraged transactions . The LLC can leverage ASRS's investment by up to 1.5x to boost returns.
Cactus Direct Lending Fund, LP (Partnership with HPS)	\$850	\$487	12%	Fund-of-one partnership that invests in floating-rate secured loans primarily to fund middle market leveraged transactions (ex. buyouts, recapitalizations) often without a private equity sponsor. The partnership can leverage ASRS's equity investment by up to 1.25x to boost returns.
Monroe Private Credit Fund A	\$850	\$570	11%	Fund-of-one partnership that invests in floating-rate secured loans primarily to fund smaller middle market leveraged transactions . The partnership can leverage ASRS's equity investment by up to 1.5x to boost returns.
AP Mezzanine Partners III , LP (Partnership with HPS)	\$500	\$287	11%	Fund-of-one partnership that invests primarily in mezzanine debt to fund highly leveraged transactions for larger capitalization companies.
Arizona – White Oak Investor LLC	\$300	\$237	12%	Separate account that invests in floating-rate secured loans for small- to mid-size companies typically lacking a deal sponsor.
AP Mezzanine Partners II, LP (Partnership with HPS, in liquidation)	\$146	\$146	11%	Fund-of-one partnership that invests primarily in mezzanine debt to fund highly leveraged transactions for larger capitalization companies. Investment period expired 6/30/16.
Blackstone/GSO Capital Solutions Fund (in liquidation)	\$22	\$22	13%	Commingled fund which provided rescue financing to companies seeking to avoid a bankruptcy or restructuring. Investment period ended in 2013 and portfolio is liquidating.
Total	\$3,867	\$2,818		

Private Debt: European Corporate

Portfolio	Commitment (\$MM)	Market Value 6/30/2018	Target Net Return	IMD Commentary
ICG Arizona Senior Direct Lending Credit Fund	\$401	\$300	11%	Separate account that invests in floating-rate secured loans primarily to fund private-equity sponsored middle market leveraged transactions in Europe. The partnership can leverage ASRS's equity investment by up to 1.0x.
Ares European Credit Strategies Fund VII (Palo Verde), LP	\$350	\$146	11%	Fund-of-one partnership that invests primarily in floating-rate secured loans as well as second lien loans and mezzanine debt to fund middle market leveraged transactions in Europe. The partnership can leverage ASRS's equity investment by up to 1.0x.
Total	\$751	\$446		

Private Debt: Real Estate and Asset Backed

Portfolio	Commitment (\$MM)	Market Value 6/30/2018	Target Net Return	IMD Commentary
RFM Cactus Holding Company, LLC (Partnership with Related)	\$775	\$654	10%	Fund-of-one partnership that invests in: 1) "Freddie B" securities (first loss tranches of multi-family property securitizations that have been pooled and sponsored by Freddie Mac;) and 2) mezzanine debt to finance real estate properties.
H/2 Core Real Estate Debt Fund	\$400	\$431	6%	Open-ended fund that invests in floating-rate senior mortgage loans and other conservatively underwritten real estate finance investments. The fund will utilize leverage of up to 60%.
Sonoran Cactus Private Asset Backed Fund, LLC (Managed by Ares)	\$500	\$226	10%	Separate account that invests in loans backed by consumer and commercial receivables.
Marathon Aviation Fund, LP	\$100	-	10%	Commingled fund that invests in commercial aircraft leases backed primarily by Boeing and Airbus narrow body planes.
Total	\$1,875	\$1,311		

Private Debt: Aggregate Portfolio

Aggregated Portfolio

ASSET TYPE		
PORTFOLIO	ASRS COMMITMENT ¹	MARKET VALUE (MM) ²
U.S. Corporate	60%	\$2,657
Real Estate and Asset-Backed	28%	\$1,220
European Corporate	12%	\$516
TOTAL	100%	\$4,393

FUND TYPE		
STRATEGY	ASRS COMMITMENT ¹	MARKET VALUE (MM) ²
Separate Account	91%	\$3,995
Open-ended Fund	9%	\$377
Commingled	0%	\$21
TOTAL	100%	\$4,393

NOTE:

¹ % of ASRS Commitment represents the % of total commitment amounts.

² Market Values represent actual invested capital as of 12/31/17.

Private Debt: Aggregate Portfolio

Aggregated Portfolio

SECURITY TYPE		
SECURITY	% MV	MARKET VALUE (MM)
Senior Secured	73	\$3,220
Freddie Mac B	11%	\$497
Equity	5%	\$204
Mezzanine	5%	\$192
Structured	3%	\$123
2nd Lien	2%	\$96
Other*	1%	\$48
Senior Unsecured	0%	\$13
TOTAL	100%	\$4,393

***Other:**

Common Stock, Preferred Equity, Other

SECURITY STATUS		
STATUS	% MV	MARKET VALUE (MM)
Performing	94%	\$4,135
Covenant Default	4%	\$159
Payment Default	2%	\$99
TOTAL	100%	\$4,393

INTEREST RATE TYPE		
INTEREST RATE	% MV	MARKET VALUE (MM)
Floating Rate	82%	\$3,615
Fixed Rate	15%	\$ 639
N/A*	3%	\$ 139
TOTAL	100%	\$4,393

***N/A Interest Rate Type:**

Common Stock, Preferred Equity, Restructured Debt

Private Debt: Aggregate Portfolio

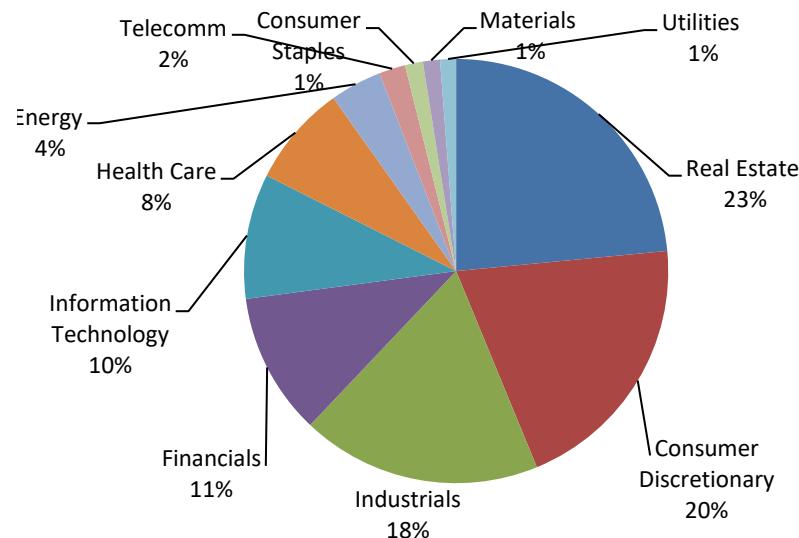
Aggregated Portfolio

LEVERAGED STRATEGIES	
MANAGER	DEBT TO EQUITY RATIO
H/2 Core Real Estate Debt Funds	1.38 : 1.00
Sonoran Private Credit Opp Fund (Managed by Cerberus)	1.10: 1.00
Cactus Direct Lending	0.97 : 1.00
Monroe Private Credit Fund A	0.97 : 1.00
ICG Arizona Senior Direct Lending Credit Fund	0.68 : 1.00

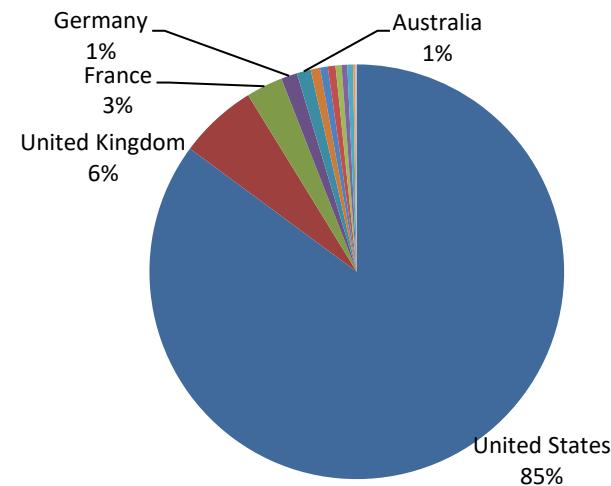
Private Debt: Aggregate Portfolio

Aggregated Portfolio

**Sector Allocation
as % of Market Value**



**Country Allocation as
% of Market Value**



**TOP 5 SECTORS
AS % OF MARKET VALUE**

SECTOR	% MV	MV (MM)
Real Estate	23%	\$1,032
Consumer Discretionary	20%	\$892
Industrials	18%	\$803
Financials	11%	\$476
Information Technology	10%	\$419
TOTAL	82%	\$3,622

**TOP 5 COUNTRIES
AS % OF PORTFOLIO**

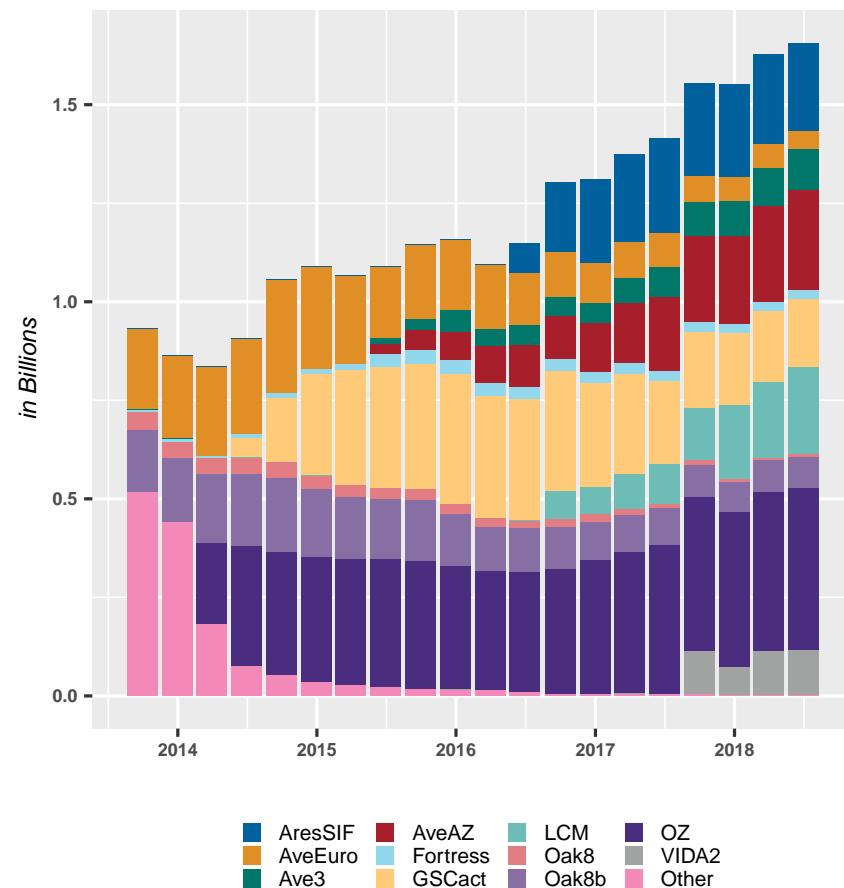
COUNTRY	% MV	MV (MM)
United States of America	85%	\$3,739
United Kingdom	6%	\$268
France	3%	\$125
Germany	1%	\$55
Australia	1%	\$48
TOTALS	96%	\$4,235

Opportunistic Debt

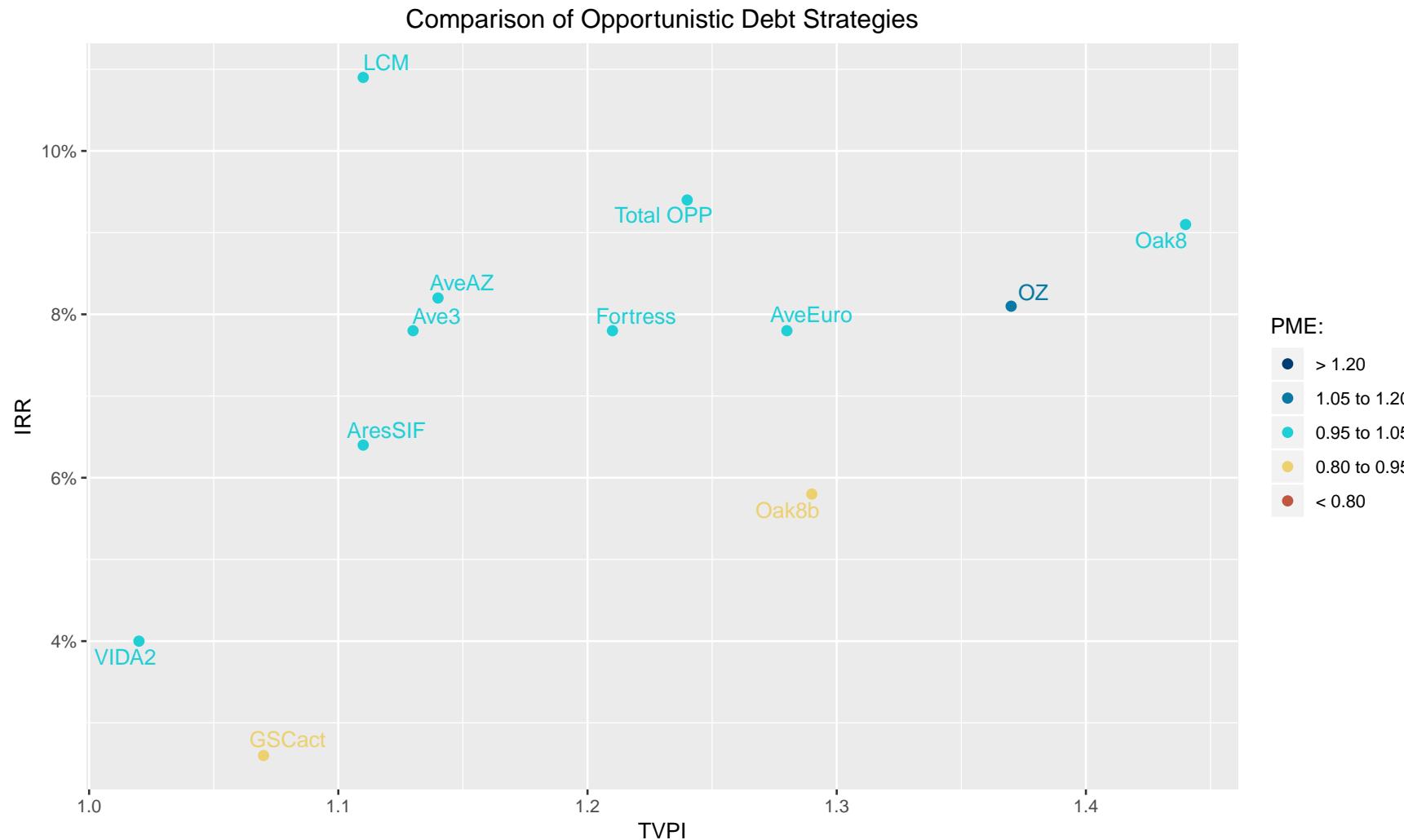
Opportunistic Debt IRRs

	QTR	1 YEAR	3 YEAR	ITD
Total.OPP	0.5	6.1	5.7	9.4
Benchmark	1.9	8.0	8.0	8.0
AresSIF	-1.8	-6.8		6.4
AveEuro	-0.1	6.6	5.4	7.8
Ave3	0.8	8.0		7.8
AveAZ	0.3	8.4		8.2
Oak8	7.6	20.3	1.7	9.1
Oak8b	4.5	19.6	2.7	5.8
Fortress	0.8	5.8	5.6	7.8
GSCact	-3.8	1.1	1.2	2.6
LCM	2.6	12.2		10.9
OZ	2.3	9.4	8.4	8.1
VIDA2	-0.6			4.0

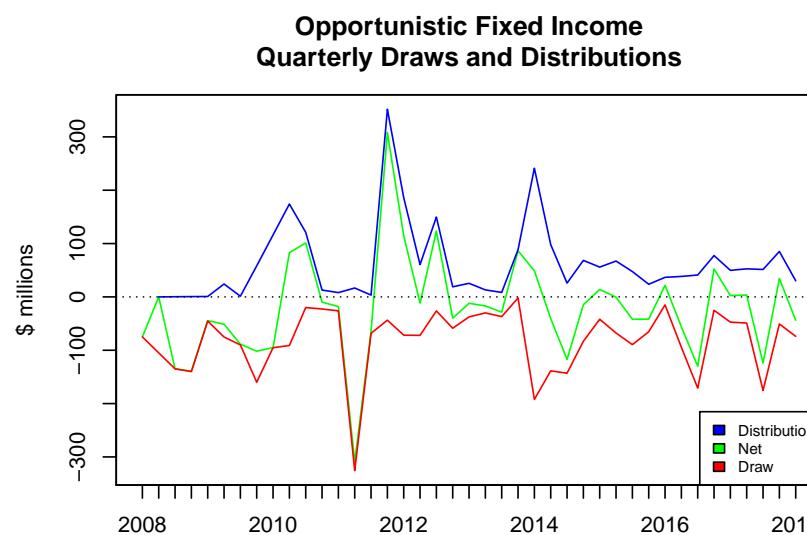
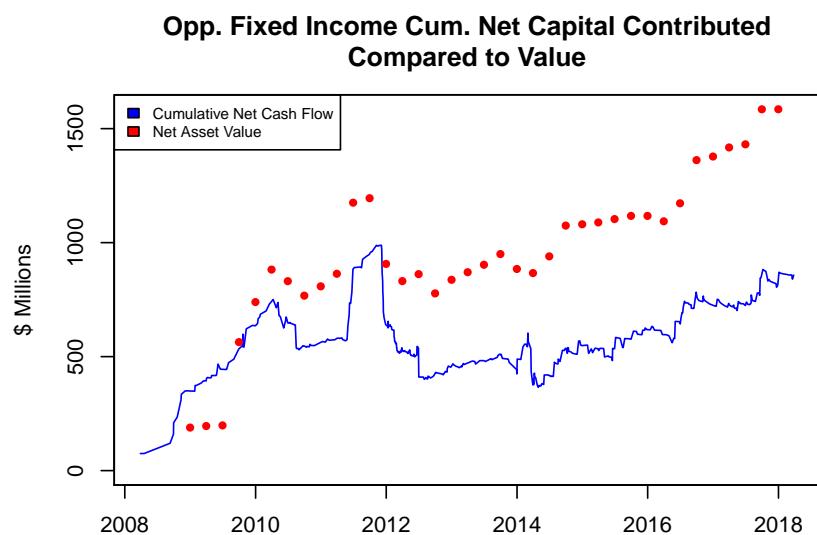
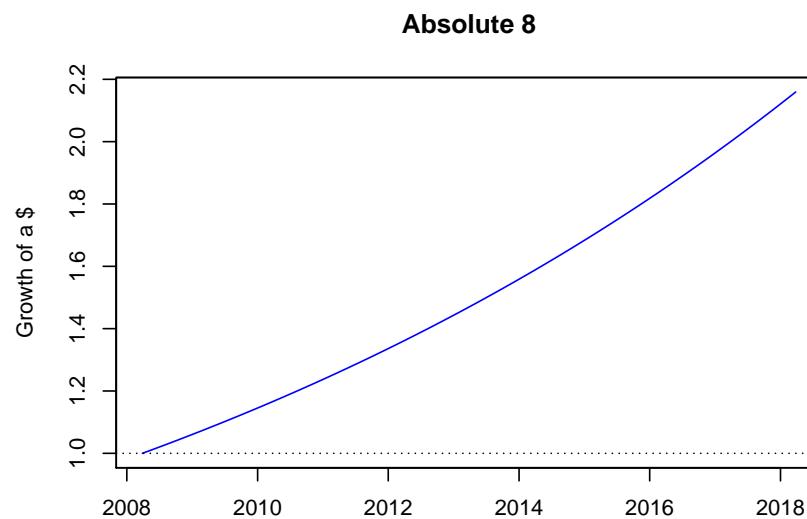
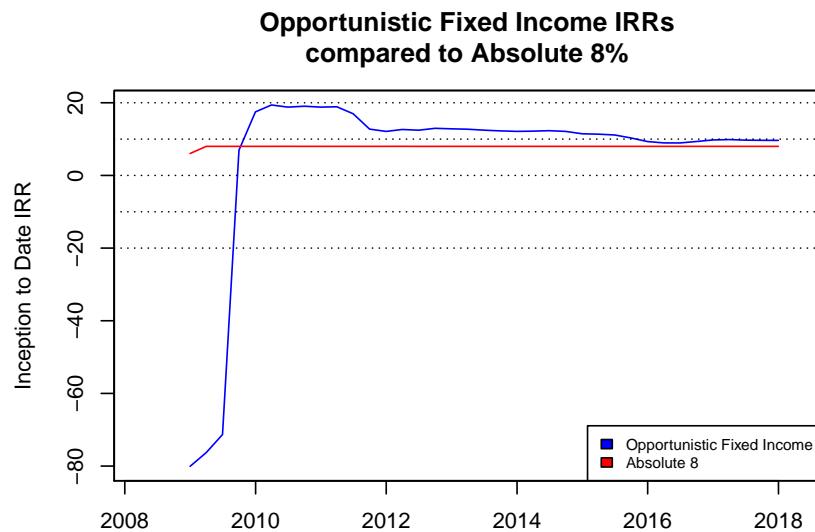
Opportunistic Debt Market Values



Opportunistic Debt: TVPI and PME



Opportunistic Debt Portfolio



Opportunistic Debt: Funds Making New Investments

Portfolio	Commitment (\$MM)	Market Value 6/30/2018	Target Net Return	IMD Commentary
Avenue-ASRS Europe Opportunities Fund & Avenue Europe Capital Partners III	\$350	\$358	12%	\$250 million fund-of-one partnership with Avenue and \$100 million co-mingled fund commitment to invest in distressed debt of European companies.
LCM Partners CO IV LP	\$350	\$196	10%	Fund-of-one partnership with LCM Capital that invest in pools of small European loans, both non-performing and performing, sold by European banks and other financial institutions.
OZ Credit Opportunities Domestic Partners L.P.	\$300	\$412	12%	Co-mingled fund managed by Och-Ziff utilizes a multi-strategy approach to allocate to both distressed structured and corporate credit as it sees fit based on the opportunity.
Ares Saguaro Income Opportunity Fund	\$300	\$223	8%	Fund-of-one partnership with Ares that invests in publicly-traded, high-yielding business development companies ("BDCs") and commercial mortgage REITs.
Vida Insurance Credit Opportunity Fund II, LP	\$200	\$114	12%	Co-mingled fund managed by Vida Capital that invests in the life settlements market (unwanted life insurance policies).
Total	\$1,500	\$1,303		

Opportunistic Debt: Funds in Liquidation

Portfolio	Commitment (\$MM)	Market Value 6/30/2018	Target Net Return	IMD Commentary
GSO Cactus Credit Opportunities Fund	\$175	\$175	12%	Fund-of-one partnership with GSO to exploit the highest conviction, risk-adjusted corporate credit opportunities across the GSO platform including distressed debt in the US and Europe. Investment period ended in October 2016.
Avenue Europe Capital Partners II	\$48	\$48	15%	Fund invests in distressed debt of European companies. Investment period ended in 2014.
Oaktree Opportunities Fund VIIib	\$79	\$79	15%	Funds invests in distressed debt primarily corporate such as leveraged loans. Investment period ended in 2014.
Fortress MSR Opportunities Fund II	\$22	\$22	12%	Fund invests in excess mortgage-servicing rights. Investment period ended in 2015.
Oaktree Opportunities Fund VIII	\$6	\$6	15%	Funds invests in distressed debt primarily corporate such as leveraged loans. Investment period ended in 2012.
TCW Capital Trust	\$4	\$4	10%	Fund invests in four asset classes: leveraged loans, high yield bonds, private debt and mezzanine debt. Investment period ended in 2013.
Total	\$334	\$334		

Opportunistic Debt: Aggregate Portfolio

Aggregated Portfolio

FUND TYPE		
STRATEGY	ASRS COMMITMENT ¹	MARKET VALUE (MV) ²
Separate Account	58%	\$ 925
Closed-End Fund	26%	\$ 406
Open-End Fund	16%	\$ 254
TOTAL	100%	\$ 1,585

FUND TYPE		
PORTFOLIO	ASRS COMMITMENT ¹	MARKET VALUE (MV) ²
Active	80%	\$ 1,268
In Liquidation	20%	\$ 317
TOTAL	100%	\$ 1,585

NOTE:

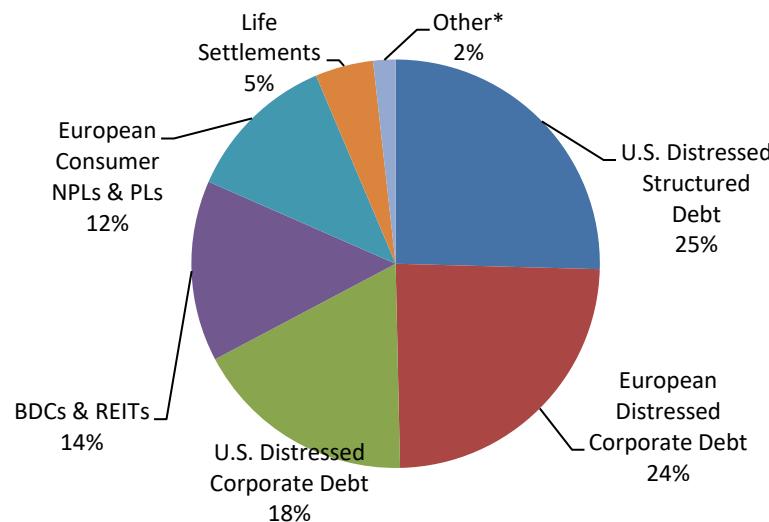
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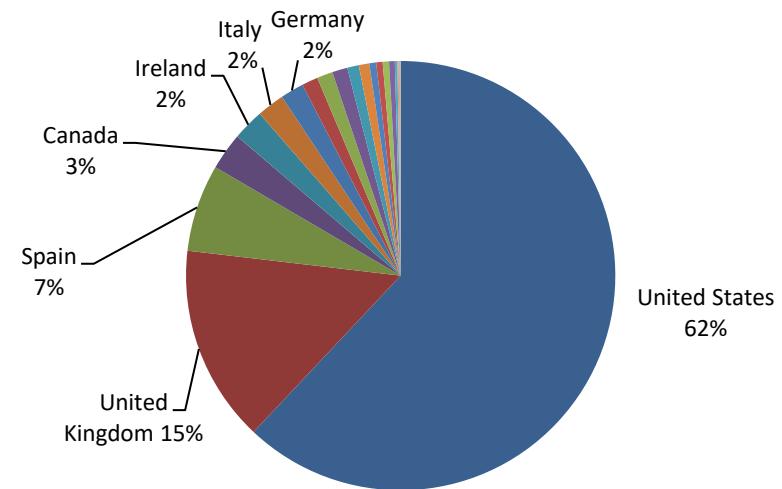
Opportunistic Debt: Aggregate Portfolio

Aggregated Portfolio

**Sector Allocation
as % of Market Value**



**Country Allocation as
% of Market Value**



**SECTORS
AS % OF MARKET VALUE**

SECTOR	% MV	MV (MM)
U.S. Distressed Structured Debt	25%	\$403
European Distressed Corporate Debt	24%	\$384
U.S. Distressed Corporate Debt	18%	\$279
BDCs & REITs	14%	\$227
European Consumer NPLs & PLs	12%	\$191
Life Settlements	5%	\$73
Other* (Mezzanine Debt, Mtg. Servicing Rights)	2%	\$28
TOTALS	100%	\$1,585

**TOP 5 COUNTRIES
AS % OF MARKET VALUE**

COUNTRY	% MV	MV (MM)
United States of America	62%	\$983
United Kingdom	15%	\$238
Spain	7%	\$111
Canada	3%	\$48
Ireland	2%	\$32
TOTALS	89%	\$1,411

Private Market Fund Names

Private Debt

ID	Name
AresPalo	Ares European Credit Strategies Fund VII (Palo Verde), L.P.
BIGSO	Blackstone / GSO Capital Solutions Fund LP
H2Core	H/2 Core Real Estate Debt Fund L.P.
HghBr	Highbridge Principal Strategies and Mezzanine Partners II, L.P.
HighSSL	Highbridge Principal Strategies-Cactus Direct Lending Fund, L.P.
HghBr3	AP Mezzanine Partners III, L.P. (HPS)
ICG	ICG Senior Debt Partners Fund
Monroe	Monroe Private Credit Fund A, L.P.
RFM	RFM Cactus Holding Company, LLC
Crbrs	Sonoran (Cerberus) Private Credit Opportunities LLC
Ares	Sonoran Cactus (Ares) Private Asset Backed Fund, L.P.
WhtOak	White Oak Global Advisors Private Debt

Opportunistic Debt

ID	Name
AresSIF	Ares Saguaro Income Opportunity Fund, L.P.
AveEuro	Avenue Europe Special Situations Fund II (U.S.), L.P.
Ave3	Avenue Europe Special Situations Fund III (U.S.), L.P.
AveAZ	Avenue-ASRS Europe Opportunities Fund L.P.
Oak8	Oaktree Opportunities Fund VIII, L.P.
Oak8b	Oaktree Opportunities Fund VIIIb, L.P.
Fortress	Fortress MSR Opportunities Fund II A LP
GSCact	GSO Cactus Credit Opportunities Fund LP
LCM	LCM Partners CO IV LP
OZ	OZ Credit Opportunities Domestic Partners, L.P.
VIDA2	Vida Insurance Credit Opportunity Fund II, LP