Credit Asset Class Implementation Plan FY 2019

Investment Committee Meeting

12/14/18

Credit

- The Credit Asset Class is focused on debt obligations – bonds or loans to companies or individuals – where the primary risk is the ability of the borrower to perform on the debt obligation (ex. pay interest on time, not violate covenants) and repay it as agreed.
- Because some borrowers inevitably cannot repay their debts, bonds and loans may become "distressed" which can lead to attractive investment opportunities for new investors.
- The Credit asset class is primarily comprised of <u>below</u> investment-grade debt obligations – both performing and distressed.

Credit

- We view the Credit Asset Class as having four areas of investment opportunity:

  - **Private Debt** – illiquid loans and bonds that typically fund highly leveraged, below investment-grade equivalent companies and real estate properties that are typically too small in size to meet the requirements of the tradable leveraged loan, high yield bond, commercial mortgage-backed and asset-backed securities markets.

  - **Distressed Debt** – loans or bonds in which the borrower has defaulted on its obligation to repay, is expected to default or is in financial distress.

  - **High Yield** – tradable below investment-grade corporate bonds in the US which are included in a market index such as the Bloomberg Barclays U.S. Corporate High Yield Index. Unlike Interest Rate Sensitive Fixed Income which has a high correlation with Treasury rates, High Yield has historically had a negative correlation with Treasury rates and a positive correlation with the equity markets.

  - **Other Credit** – credit opportunities that are not encompassed in Private Debt, Distressed Debt or High Yield, and offer an expected return which will likely meet or exceed the Credit Asset Class benchmark.

Credit

- As of October 24, 2018, we had a 16.9% allocation to the Credit Asset Class vs. an SAA target of 20.0% (with a range of 10-30%).
- Within the Credit asset class, we are allocated as follows:

	% of Total Fund
Private Debt	12.3%
Distressed Debt	3.6%
Other Credit	1.0%
High Yield	0.0%
Total Credit	16.9%

Credit Asset Class Benchmark

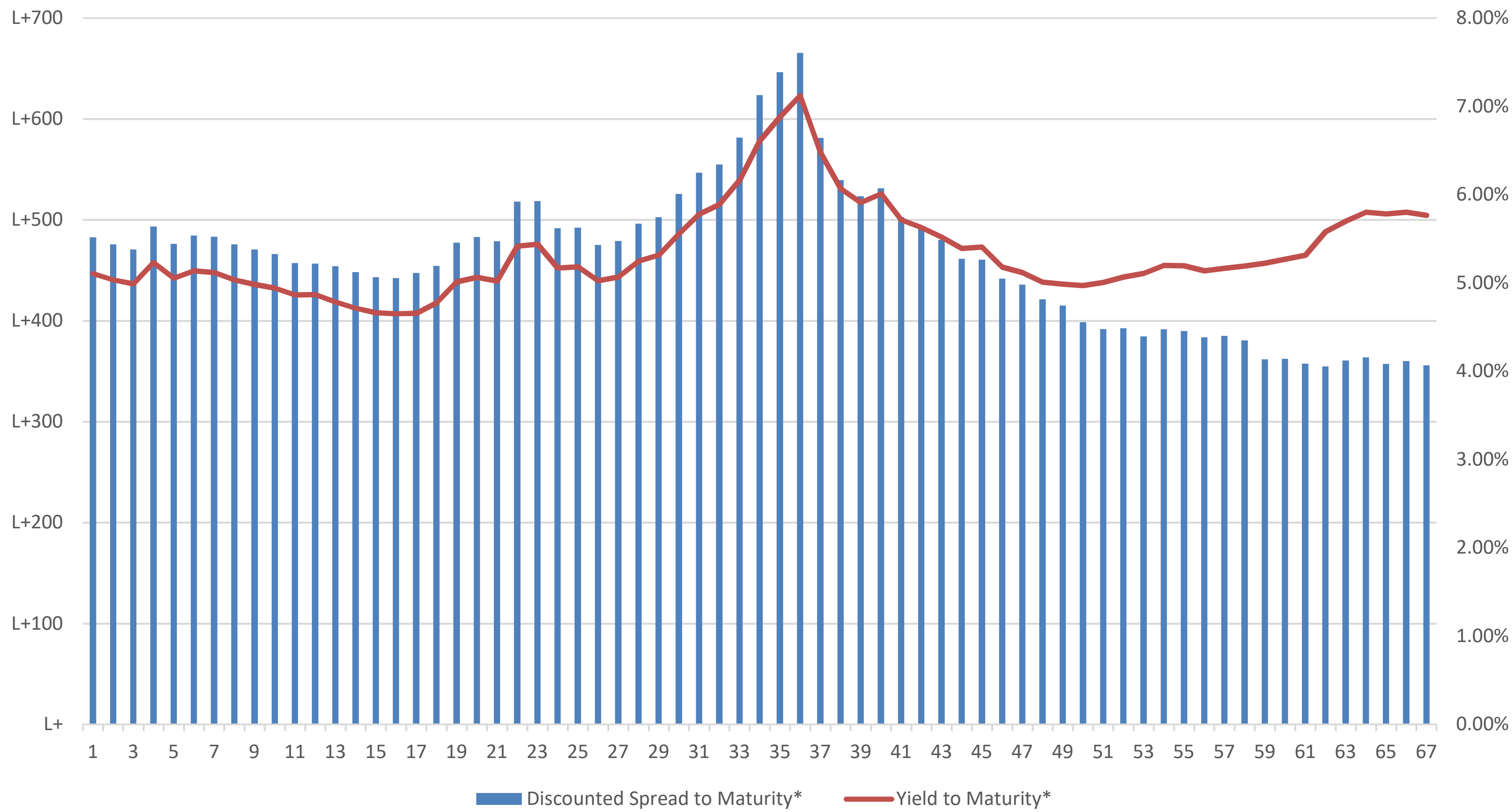
- The benchmark for the Credit Asset Class is the S&P/LSTA Leveraged Loan Index plus 250 bps. This metric was the benchmark for the Private Debt Asset class in the prior SAA (2015-2018).
- The S&P/LSTA Leveraged Loan Index measures the tradable, broadly syndicated leveraged loan market in the U.S.
- As leveraged loans are floating-rate instruments and not subject to interest-rate risk, we believe the S&P/LSTA Leveraged Loan Index is a very good measure of pure credit risk in the below investment-grade, tradable market.
- The 250 bps reflects an assumed illiquidity premium as we expect the vast majority of investments in the Credit Asset Class to be in illiquid investments or structures.

Historical Performance

- Over the past five years, Private Debt, which comprises over 70% of our expected allocation, has significantly outperformed the benchmark for the Credit Asset Class (+3.4% and +4.0% for the 3-year and 5-year periods).
- In contrast, Distressed Debt and Other Credit (formerly aggregated as Opportunistic Debt) underperformed the benchmark. High Yield substantially underperformed.

Historical Performance for Periods Ended March 31, 2018			
	1 Yr	3 Yrs	5 yrs
Returns			
Private Debt	10.4%	10.8%	11.0%
Opportunistic Debt (Distressed and Other Credit Under Current SAAP)	6.1%	5.7%	6.6%
High Yield - Bloomberg Barclays US Corporate High Yield Index	3.8%	5.2%	5.0%
Credit Asset Class benchmark - S&P LSTA Leveraged Loan Index + 250 bps	7.1%	7.4%	7.0%
Excess (Under) Performance			
Private Debt	3.3%	3.4%	4.0%
Opportunistic Debt	-1.0%	-1.7%	-0.4%
High Yield	-3.3%	-2.2%	-2.0%

S&P/LSTA Leveraged Loan Index
YTM and Spread
February 2013 – September 2018



Expected Outperformance

- The yield-to-maturity of the S&P/LSTA Leverage Loan Index was approximately 5.8% as of September 2018 or ≈ 6%.
- We view yield-to-maturity as a general proxy for the expected return of tradable leverage loans, which is the base component of the benchmark for the Credit Asset Class. The actual return of the S&P/LSTA Leverage Loan Index will be deviate from yield-to-maturity depending on changes in the LIBOR rate and credit spreads.
- With the addition of the illiquidity premium of 2.5%, the expected return of the benchmark is approximately 8.5%.
- Over time, we believe the Credit Asset Class could generate a 10% IRR. **This implies expected outperformance for the asset class of 1.5%.**

Historical Tracking Error

- Below is a summary of the historical tracking error of ASRS investments in Distressed Debt and Other Credit (formerly aggregated as Opportunistic Debt) over the five-year period ended 3/31/18. In addition, the historical tracking error of the Bloomberg Barclays U.S. Corporate High Yield Index for the same period is shown as well.

Tracking Error	1-Year	3-Year	5-Year
Private Debt	0.8%	2.4%	2.3%
Distressed Debt and Other Credit	1.8%	3.0%	2.7%
Bloomberg Barclays U.S. Corporate High Yield Index	3.4%	3.8%	3.3%

- Note that High Yield, which underperformed the Credit Asset Class benchmark, also exhibited the highest tracking error.

Expected Tracking Error

- Over the past five-year period, Private Debt, Distressed Debt and Other Credit had tracking errors of 2.4%-2.7% or ≈2.5%.
- In contrast, High Yield, which we do not expect to be part of the Credit Asset Class for the foreseeable future, had a five-year tracking error of 3.3%.
- **We believe that 2.5% is a reasonable estimate of the expected tracking error of the Credit Asset Class.**

Investment Strategy

- We seek to identify investment opportunities in Credit - both public and private - that can exceed the benchmark of the asset class while taking an acceptable level of risk.
- We seek to create a diversified portfolio of investments across a wide variety of potential market opportunities in the U.S. and in international markets.

Implementation Approach

- Identify attractive market opportunities (both established and developing).
- Partner with leading managers in their respective markets.
- Use scale to negotiate lower fees and improve expected returns.
- Focus on fund-of-one partnerships with customized terms that offer the following advantages to ASRS:
    - Scalable Commitment
    - Early termination right/liquidity option
    - Customized investment restrictions
    - Evergreen
- Utilize leverage when appropriate to enhance returns on diversified portfolios of assets with relatively low expected losses.

House Views

- We believe there are compelling investment opportunities to exceed the expected performance (≈8.5%) of the Credit Asset Class benchmark over time in Private Debt, Distressed Debt and Other Credit.
  - These opportunities are almost exclusively in private rather than public markets or are in areas of the market, such as distressed debt, which are best approached in locked-up investment vehicles with limited liquidity.
- We do <u>not</u> believe that attractive investment opportunities exist in the public credit markets that will deliver expected returns that will meet the expected return of the Credit Asset Class benchmark over an extended period of time.

New Investment Opportunities

- For the Credit Asset Class, we recently expanded our commitments to two existing investment partnerships and made a commitment to a new investment strategy. These commitments represent a total of $750 million of potential new investments:
  - $250 million to expand an existing middle market lending partnership in Europe with expected net returns of 10-12%.
  - $200 million to expand an existing lending partnership in the U.S. for middle market CLO investments with expected net returns of 15-17%.
  - $300 million for a new partnership to provide small-ticket, lease financing to SMEs (small or medium-sized enterprises) in Europe with expected net returns of 10-12%.
- In addition, we are actively considering over $1.5 billion of new investment opportunities with expected net returns of 12-15%. These opportunities are in various stages of consideration, due diligence or legal documentation.

Withdrawals

- We have withdrawn funds, or have begun the process of withdrawing funds, from investment strategies that we believe that are unlikely to meet the Credit Asset Class benchmark going forward and/or that we believe are unattractive in comparison to new opportunities:
  - From August to October, we liquidated our remaining investments with our two High Yield managers.
  - We have begun to withdraw funds from two existing Private Debt strategies.

Projected Allocation

- The Credit Asset Class has a 20% SAAP target (with a range of 10-30%).
- In summary, we project that the Credit Asset Class will grow from 16.6% of the total fund at the end of FY 2018 to 18.4% at the end of FY 2019. Furthermore, we expect to achieve the 20% SAAP target at approximately the end of FY 2020 and likely exceed it in FY 2021.
- We expect that nearly all of allocation will be in private market strategies.
- We project that investments in the Credit Asset Class will be well within the leverage and liquidity constraints of the SAA.

Projected Allocation

	FY 2018	FY 2019	FY 2020	FY 2021
Total Fund (assumes 4.5% per annum growth)	$ 39,625	$ 41,408	$ 43,271	$ 45,218
US Corporate - Private Debt	2,780	3,223	3,823	4,344
US Real Estate and Asset Backed	1,376	1,417	1,498	1,546
European Credit	496	795	1,197	1,614
Total Private Debt ($)	4,651	5,435	6,518	7,504
Total Private Debt (% of Total Fund)	11.7%	13.1%	15.1%	16.6%
Distressed Debt ($)	1,277	1,633	1,699	1,774
Distressed Debt (% of Total Fund)	3.2%	3.9%	3.9%	3.9%
Other Credit ($)	360	538	402	500
Other Credit (% of Total Fund)	0.9%	1.3%	0.9%	1.1%
High Yield ($)	308	-	-	-
High Yield (% of Total Fund)	0.8%	0.0%	0.0%	0.0%
Total Credit Asset Class ($)	$ 6,597	$ 7,606	$ 8,620	$ 9,778
Total Credit Asset Class (% of Total Fund)	16.6%	18.4%	19.9%	21.6%
Liquidity - % of portfolio with an active lockup restriction	8.0%	15.1%	17.6%	13.6%
Maximum Constrained Liquidity Allowed Per SAA	30.0%	30.0%	30.0%	30.0%
Leverage - % of debt used to fund the portfolio	32.4%	33.9%	34.4%	34.4%
Maximum Leverage Allowed Per SAA	60.0%	60.0%	60.0%	60.0%

Note: All of the Credit Asset class, with the exception of High Yield, is reported and estimated with a 3-month lag (i.e. as of March 31).

Liquidity Constraint

- Liquidity Constraint of the SAAP:
  - Within the Credit Asset Class, investment structures with lockups may not exceed 30% of the portfolio. For Credit, if ASRS can direct the run-off off the portfolio (i.e. the investment period can be terminated at our direction), the structure is not considered to have a lockup.

- We project that the asset class will stay well within the liquidity constraint of the SAAP.
  - Investment structures with lockups are projected to grow from approximately 8% of the portfolio in FY 2018 to 15-18% in FY 2019-2020 before declining to less than 14% in FY 2021. This is ***well below*** the 30% constraint in the SAAP.

	FY 2018	FY 2019	FY 2020	FY 2021
Total Credit Asset Class – investments with active lock-up restriction ($)	$ 525	$ 1,147	$ 1,519	$ 1,325
Total Credit Asset Class – investments with active lock-up restriction (%)	8.0%	15.1%	17.6%	13.6%

  - The vast majority of the Credit Asset Class is invested in fund-of-one partnerships which have an early termination right that allows ASRS to terminate the investment period (usually with one year). The allows ASRS to stop the partnership from making new investments and force the portfolio into run-off.

Leverage

- Fund level leverage is primarily utilized by Private Debt managers to enhance returns.
- Our partnership agreements place limits on the maximum leverage that can be utilized; these limits are typically expressed as a multiple of the equity in the partnership. Depending on the expected diversification of the underlying portfolio, maximum leverage for our Private Debt partnerships ranges from 1.0x to 1.5x.
- In addition, small amounts of fund level leverage in the form of subscription lines may be utilized to facilitate capital calls. Managers which hedge currency exposure may also utilize a small amount of leverage in the form of a working capital line for the posting of margin.
- It should be noted that a number of strategies in the Credit Asset Class invest in stand-alone, separate investment structures that in turn borrow to enhance returns on stable pools of assets. Borrowings in these investment structures are done on a non-recourse basis to the overall fund or partnership. These borrowings are not debt obligations of the fund, and, consequently, are not included on the balance sheet of the fund. Examples include investments in the equity or first loss tranche of CLOs, Freddie B securitizations and aircraft leasing e-note securitizations.

Leverage Constraint

- Leverage Constraint of the SAAP:
  - Up to 60% on a portfolio basis
- We project that the asset class will stay well within the leverage constraint of the SAAP.
  - Leverage on the portfolio is projected to grow from to grow slightly from approximately 32% of the portfolio in FY to 34% in FY 2019-2021 which is ***well below*** the 60% constraint in the SAAP.

	FY 2018	FY 2019	FY 2020	FY 2021
Total Credit Asset Class - ASRS Investment	$ 6,597	$ 7,606	$ 8,620	$ 9,778
Total Credit Asset Class - Leverage ($)	$ 3,160	$ 3,908	$ 4,518	$ 5,123
Total Credit Asset Class - Portfolio Value ($)	$ 9,756	$ 11,515	$ 13,137	$ 14,901
Total Credit Asset Class - Expected Leverage (%)	32.4%	33.9%	34.4%	34.4%

Appendix

Summary of
Credit Asset Class Managers

Private Debt Managers

US Corporate

Portfolio	ASRS Commitment ($MM)	Market Value ($MM) 10/19/18	Target Net Return	IMD Commentary
Sonoran Private Credit Opportunities Fund, LLC (Managed by Cerberus)	$1,200	1,011	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	491	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	643	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	320	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	310	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)	$111	111	11%	Fund-of-one partnership that invests primarily in mezzanine debt to fund highly leveraged transactions for larger capitalization companies. **In liquidation; investment period ended in 2016.**
Blackstone/GSO Capital Solutions Fund (in liquidation)	$23	23	13%	Commingled fund which provided rescue financing to companies seeking to avoid a bankruptcy or restructuring. **In liquidation; investment period ended in 2013.**
Total	$3,834	$2,909		

Private Debt Managers

Real Estate and Asset-Backed

Portfolio	ASRS Commitment ($MM)	Market Value ($MM) 10/19/18	Target Net Return	IMD Commentary
RFM Cactus Holding Company, LLC (Partnership with Related)	$775	668	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	$382	382	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)	$600	215	10%	Separate account that invests in loans backed by consumer and commercial receivables.
Total	$1,757	$1,265		

Private Debt Managers
European Credit

Portfolio	ASRS Commitment ($MM)	Market Value ($MM) 10/19/18	Target Net Return	IMD Commentary
ICG Arizona Senior Direct Lending Credit Fund	$401	$294	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	$278	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	$571		

Distressed Debt Managers

Portfolio	ASRS Commitment ($MM)	Market Value ($MM) 10/19/18	Target Net Return	IMD Commentary
Cerberus Sonoran NPL Fund	$500	$ 51	15%	Fund-of-one partnership with Cerberus to primarily invest in large pools of European non-performing loans (“NPLs”), platform investments (ex. a loan servicer or bank) and pools of performing loans.
Avenue-ASRS Europe Opportunities Fund & Avenue Europe Capital Partners III	$350	$383	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	$235	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	$427	12%	Comingled 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.
GSO Cactus Credit Opportunities Fund	$160	$160	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. **In liquidation; investment period ended in 2016.**
Oaktree Opportunities Fund VIII and VIIIb	$87	$87	15%	Funds invest in distressed debt primarily corporate such as leveraged loans. **In liquidation; investment periods ended in 2012 and 2014, respectively.**
Avenue Europe Capital Partners II	$45	$45	15%	Fund invests in distressed debt of European companies. **In liquidation; investment period ended in 2014.**
Total	$1,792	$1,393		

Other Credit Managers

Portfolio	ASRS Commitment ($MM)	Market Value ($MM) 10/19/18	Target Net Return	IMD Commentary
Ares Saguaro Income Opportunity Fund	$300	$233	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	$125	12%	Commingled fund managed by Vida Capital to invest in life settlements (unwanted life insurance policies).
Marathon Aviation Fund, LP	$100	$ 1	10%	Commingled fund that invests in commercial aircraft leases backed primarily by Boeing and Airbus narrow body planes.
Fortress MSR Opportunities Fund II	$21	$21	12%	Fund invests in excess mortgage-servicing rights. **In liquidation; investment period ended in 2015.**
TCW Capital Trust	$4	$ 4	10%	Fund invests in four asset classes: leveraged loans, high yield bonds, private debt and mezzanine debt. **In liquidation; investment period ended in 2013.**
Total	$ 625	$ 384		

High Yield Bond Managers

Portfolio	Market Value ($MM) 10/19/18	Target Net Return	IMD Commentary
Columbia Threadneedle Separate Account	$0	Benchmark[1] + 50 bps	Active manager with flexible investment style that adjusts portfolio risk based on the investment outlook. Liquidated in August-September 2018.
J.P. Morgan Separate Account	$8	Benchmark[1] + 50 bps	Active manager with a flexible investment style that is relatively agnostic to credit quality. Liquidated in August-October 2018.
Total	$8		

[1] Bloomberg Barclays U.S. Corporate High Yield Index