ERSRI LIQUID CREDIT REVIEW

AUGUST BOARD MATERIALS

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INCOME CLASS OVERVIEW

THE ROLE OF THE INCOME CLASS PORTFOLIO

The Income Class portfolio is designed to provide a high and stable income stream to help offset the System's negative cashflow

As such, the Income Class consists of various yield focused investments across different asset classes and liquidity types

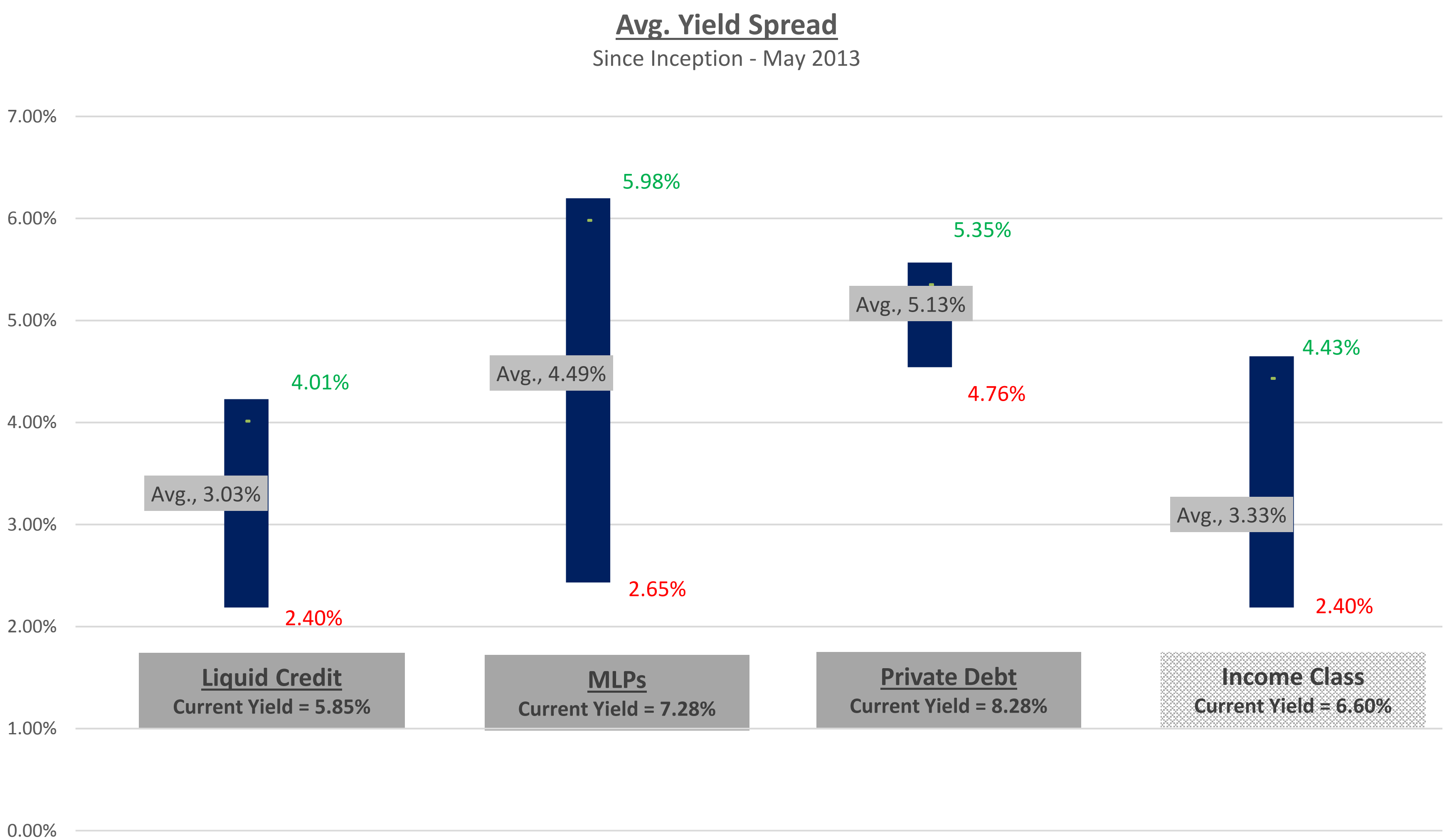
Income Class
(8%)

Liquid Credit (35%) High Yield Bank Loans	REITS (12.5%)	MLPs (12.5%)	Private Credit (40%)

The explicit goal of the Income Class portfolio is to produce a 400 bps yield premia above the Barclay's Aggregate, over a full market cycle

While some of the underlying components of the Income Class portfolio may not meet the 400 bps premium, the goal is that the premium is met for the Income Class in aggregate

LOOKING BACK AT INCOME CLASS YIELD SPREAD COMPONENTS



*Above information is as of 5.31.18

**The Liquid Credit yield is based on its newly approved asset class benchmark (50% US HY / 50% Bank Loans)

*** The current yield of the BC Agg.. is 3.2% as of 5.31.18

LOOKING FORWARD…NEPC 5-7 YEAR YIELD SPREAD EXPECTATIONS

*Based on NEPC 2018 Assumptions

**Income Class projected spread is based in part on the newly approve Liquid Credit benchmark (50% US HY / 50% Bank Loans)

NEPC'S FINDINGS: A DEEPER LOOK INTO LIQUID CREDIT

The existing policy design of the Income Class is consistent with its Policy objectives and NEPC's view on the credit markets

- Mix of bank loan and high yield exposure can meet excess return goal over time
- Pairing with Private Credit and MLPs should generate 400 bps excess yield over Inv. Grade fixed income
- Fee structure highly attractive and tied to performance

However, NEPC felt a deeper look in the Liquid Credit portfolio was warranted for several reasons:

- The investment guidelines of the Liquid Credit managers (PIMCO and WAMCO) are unique and could limit their ability to help meet the policy objective
- The long-term performance of each of the managers has continued to lag the benchmark

LIQUID CREDIT REVIEW

NEPC, LLC

OVERVIEW OF ERSRI LIQUID CREDIT PORTFOLIO STRUCTURE

The ERSRI credit mandates were initially funded in 2013 with guidelines that are relatively unique compared to other credit products

The guidelines included a 30/70 target to short duration high yield and bank loans

- The duration constraint and 30/70 target allocation were likely implemented with the expectation of rising rates and a credit bear market

Recently, ERSRI has approved moving the Liquid Credit guidelines to a 50/50 split between bank loans and traditional high yield

Moving to 50/50 bank loan/high yield mix is consistent with the role of the Income Class

Pairing with Private Credit and MLPs designed to deliver consistent higher current yield

OVERVIEW OF ERSRI LIQUID CREDIT MANAGERS

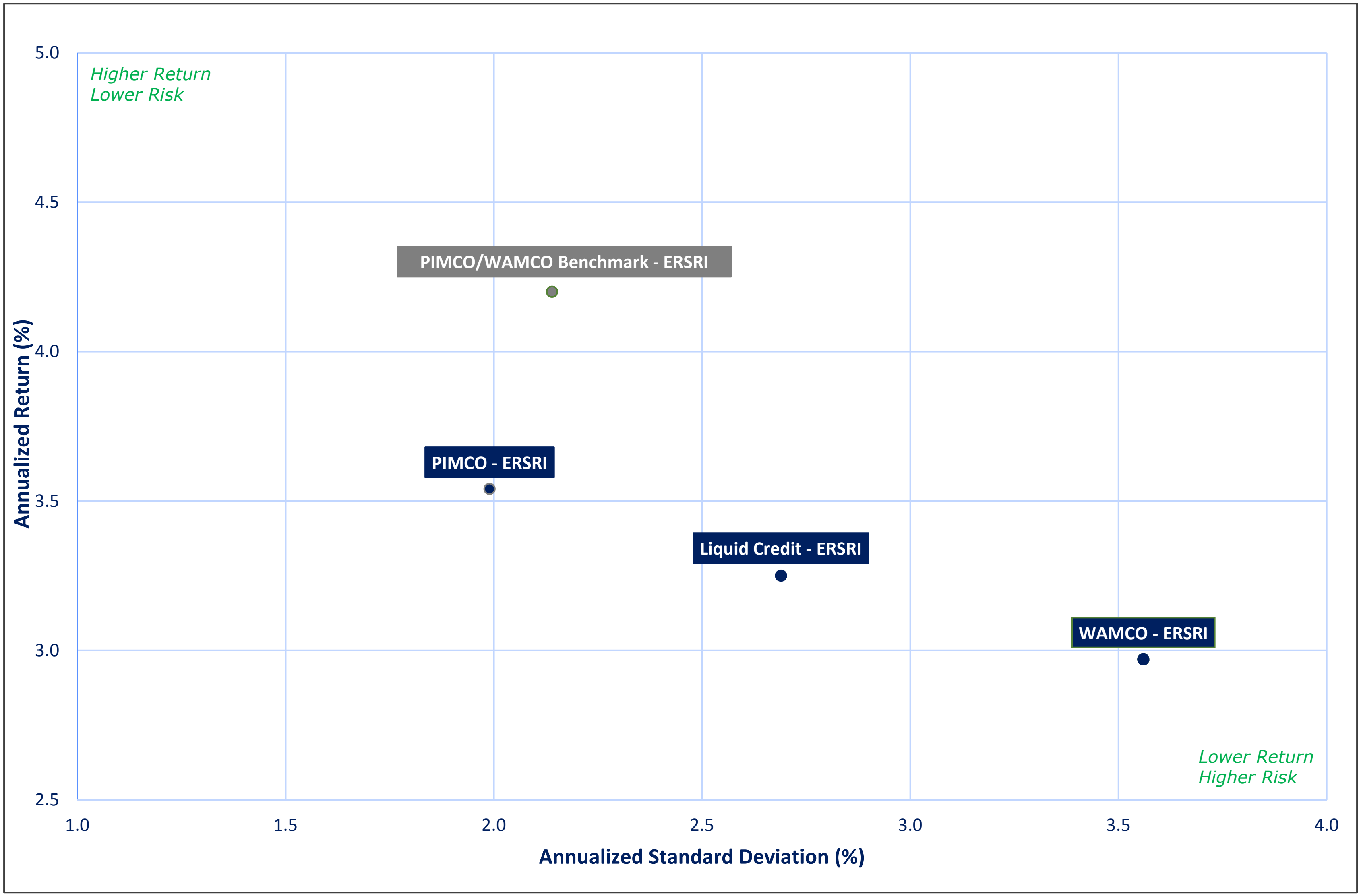
Since their 2013 inception, PIMCO and WAMCO, have trailed their respective benchmarks on a net of fee basis

	Since Inception
PIMCO (net)	3.54%
30/70 PIMCO Benchmark	4.18%
Over/Under	*-0.64%*

	Since Inception
WAMCO (net)	3.05%
30/70 Benchmark	4.24%
Difference	-1.19%

**As of 3/31/2018 (net of fees), PIMCO since inception is May 2013, WAMCO since inception is April 2013*

SINCE INCEPTION LIQUID CREDIT RISK/RETURN - (NET OF FEES)



*Return source for the ERSRI accounts were provided by BNY Mellon, *PIMCO/WAMCO Benchmark - ERSRI = Blended benchmark of the PIMCO BM (30% BofA 1-3 BB-B HY/70% JPMB/BBLLI) & WAMCO BM (30% BofA 1-3 BB-B HY/70% CS LLI*); Since inception (May 2013)

Past performance is no guarantee of future results

Performance as of March 31, 2018

EXISTING MANAGER EVALUATION

Long-term performance of both managers has been mixed in the dedicated component (proxy) products

- Bank loan products have under-performed median
- High yield products closer to median performance
- PIMCO's investment-grade credit selection strongest

NEPC's evaluation also included a discussion of ERSRI account attribution to the extent available

PIMCO performance attribution suggests primary detractors are as follows (offset in aggregate by some positive contributors):

- Duration positioning (including use of cash)
- High Yield credit selection in Financials & Industrials
- Allocation to Investment-grade (out of custom benchmark)

WAMCO performance attribution suggests primary detractors are as follows:

- Credit selection in the Industrial sector, with Energy being the largest detractor

NEPC'S FINDINGS & RECOMMENDATION

Key conclusions regarding the existing managers:

1) ERSRI account guidelines impacted performance

2) **PIMCO** under-performance was mostly due to duration and tactical positioning resulting in a lower risk profile than the hybrid benchmark

3) **WAMCO** under-performance came with higher volatility more consistent with longer-duration strategy over this time period

Survey of the other multi-sector credit products finds the following

Few products are anchored exclusively with bank loans and allow for greater range of duration exposure

Most managers allocating to other sub-sectors (IG, Securitized, Non-US/EMD)

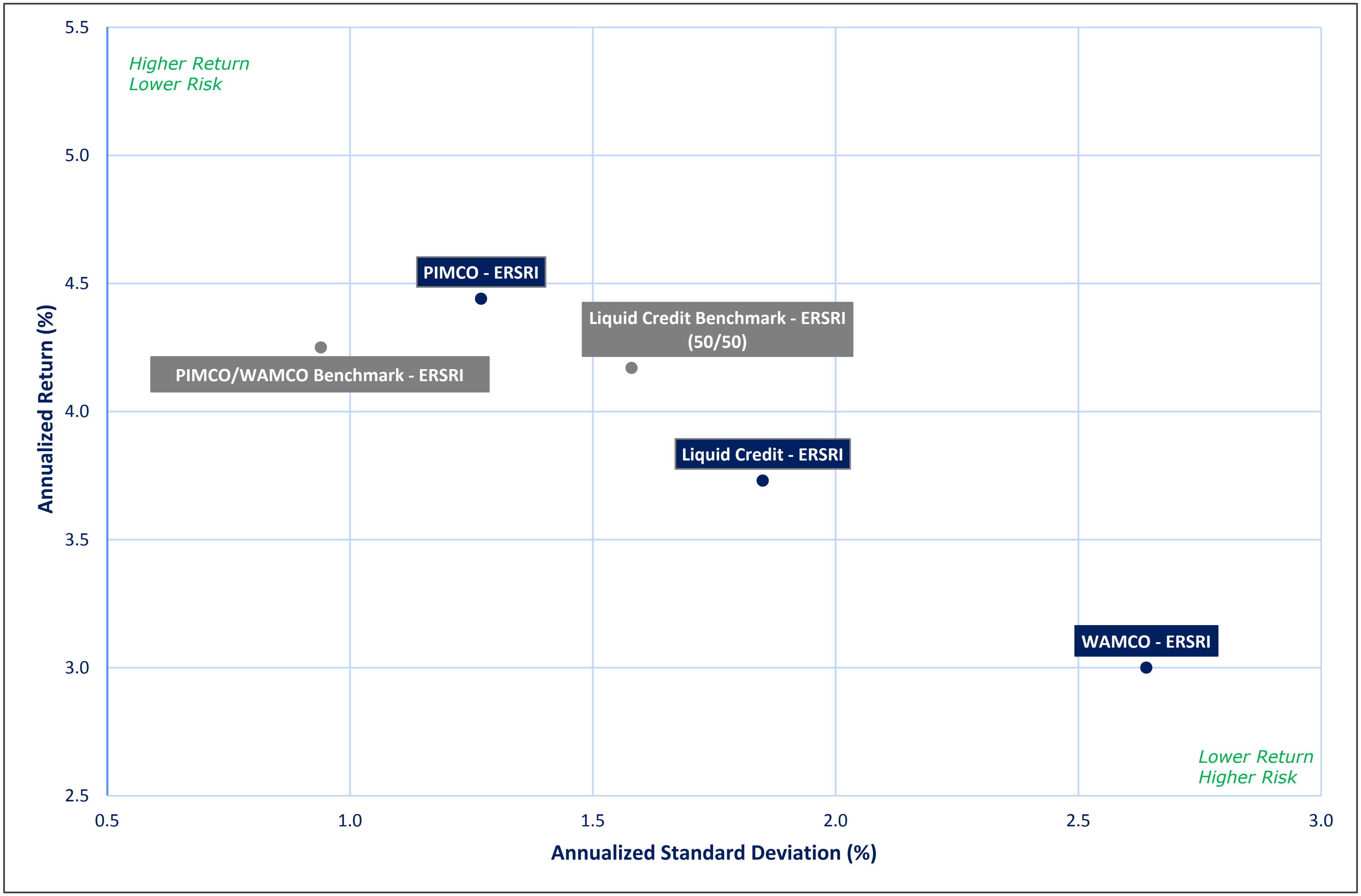
Risk profile would be different than existing ERSRI accounts

NEPC recommends that the SIC consider the following:

1) Retain PIMCO as lower-risk mandate with a 50/50 manager benchmark which would move away from the previous duration constraints
2) Review other manager offerings to consider replacing WAMCO account with a more diversified, less-constrained multi-sector product

PERFORMANCE

1 YEAR TOTAL RISK/RETURNS COMPARISON - (NET OF FEES)



*Return source for the ERSRI accounts were provided by BNY Mellon

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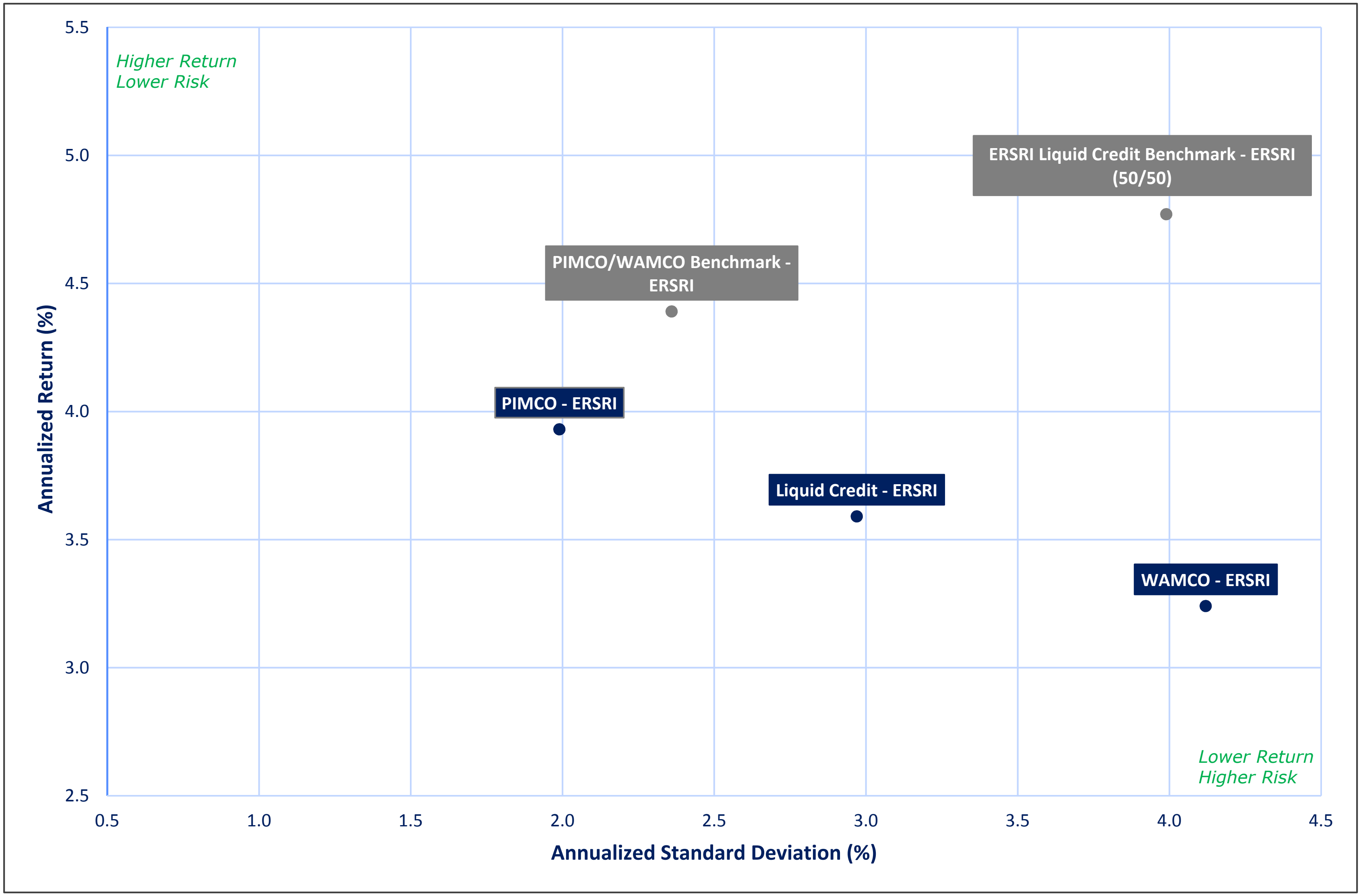
3 YEAR TOTAL RISK/RETURNS COMPARISON - (NET OF FEES)



*Return source for the ERSRI accounts were provided by BNY Mellon

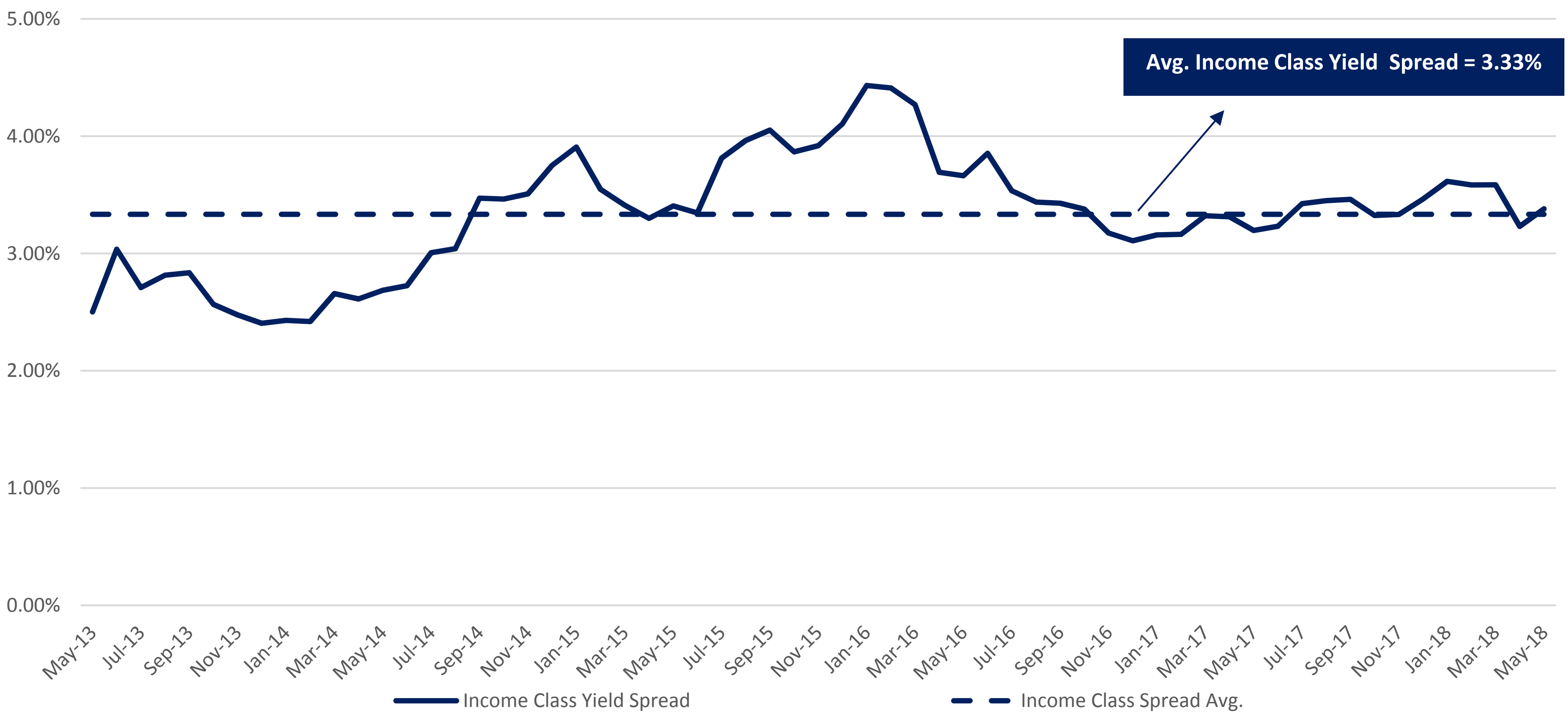
Past performance is no guarantee of future results

APPENDIX

LOOKING BACK…HAS THE INCOME CLASS MET ITS GOAL?

On average, the Income Class as a whole has underperformed its goal of delivering a yield of 4% above the BC Agg.

This is in part due to the fact that the Private Debt program is still being built out and will take time to reach its strategic policy target



*The Income Class Yield is a weighted average of the actual/approximated yields of the managers within the Income class (HY, Bank Loans, Private Debt, MLPs); The weights are determined by each manager's market values

A REMINDER OF RECENT IPS CHANGES

	Inception	Jul '17 SIC	Sep '17 SIC
Segment of Total Plan BM	30% Short HY/ 70% Bank Loans	→	50% HY/ 50% Bank Loans *
Liquid Credit Asset Class BM	30% Short HY/ 70% Bank Loans	50% HY/ 50% Bank Loans	→
PIMCO/WAMCO Manager BM	30% Short HY/ 70% Bank Loans	→	→

Total Plan benchmark subsequently changed for Q3 2017 to be consistent with Income Asset Class benchmark

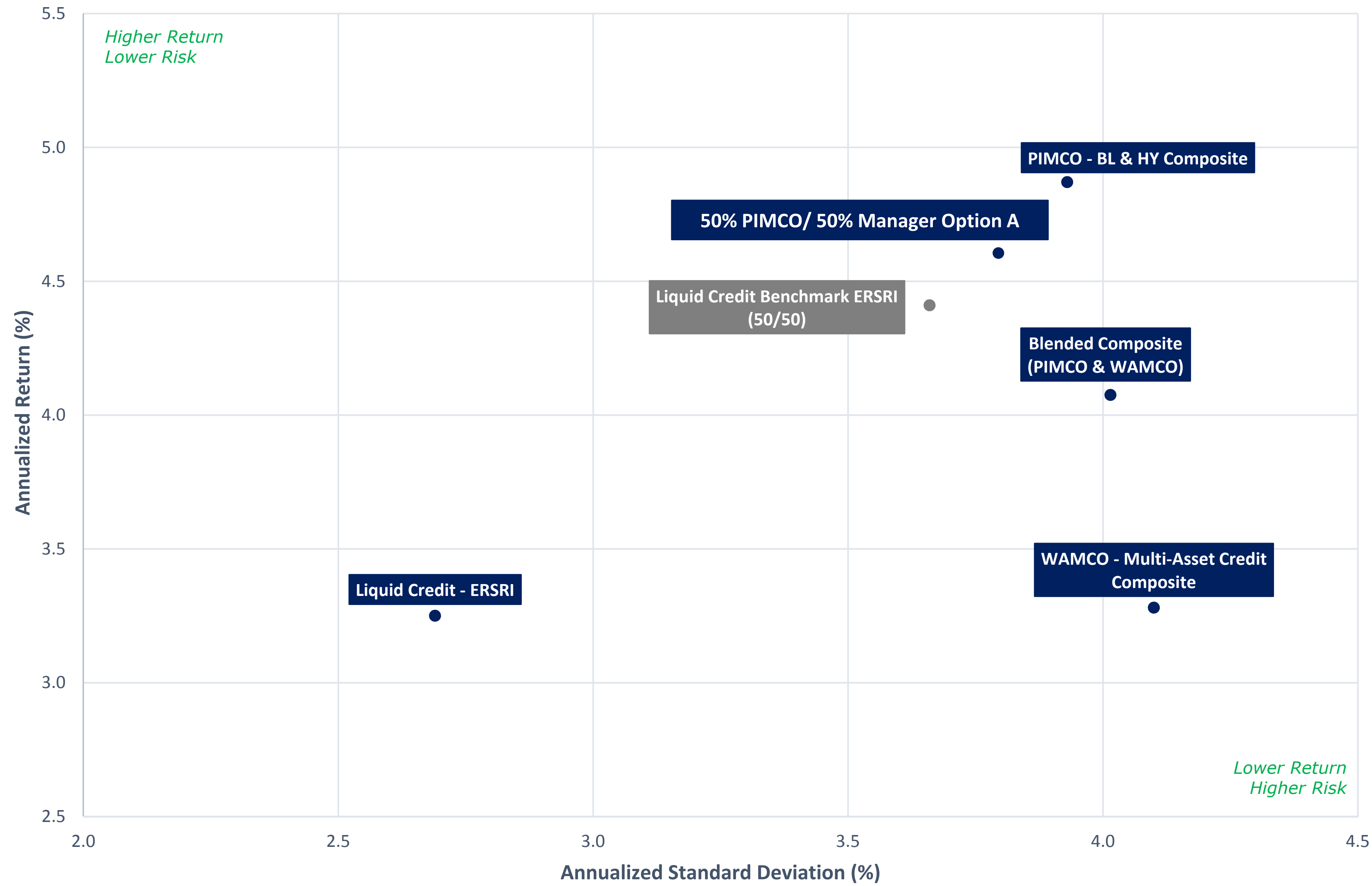
THE EVOLUTION OF CREDIT PORTFOLIOS

Consistent with our 2018 Capital Market Observations, NEPC recommends a 50/50 Bank Loans and High Yield allocation as a starting point

NEPC is also a proponent of providing managers the flexibility to tactically deviate away from the benchmark and consider out-of-benchmark allocations

- Allow high conviction managers to have small allocations to sectors where they've historically added value and that are underrepresented in the broader portfolio
  - Securitized Credit and local EMD

SINCE INCEPTION RISK/RETURN (NET) COMPARISON – MAY 2013

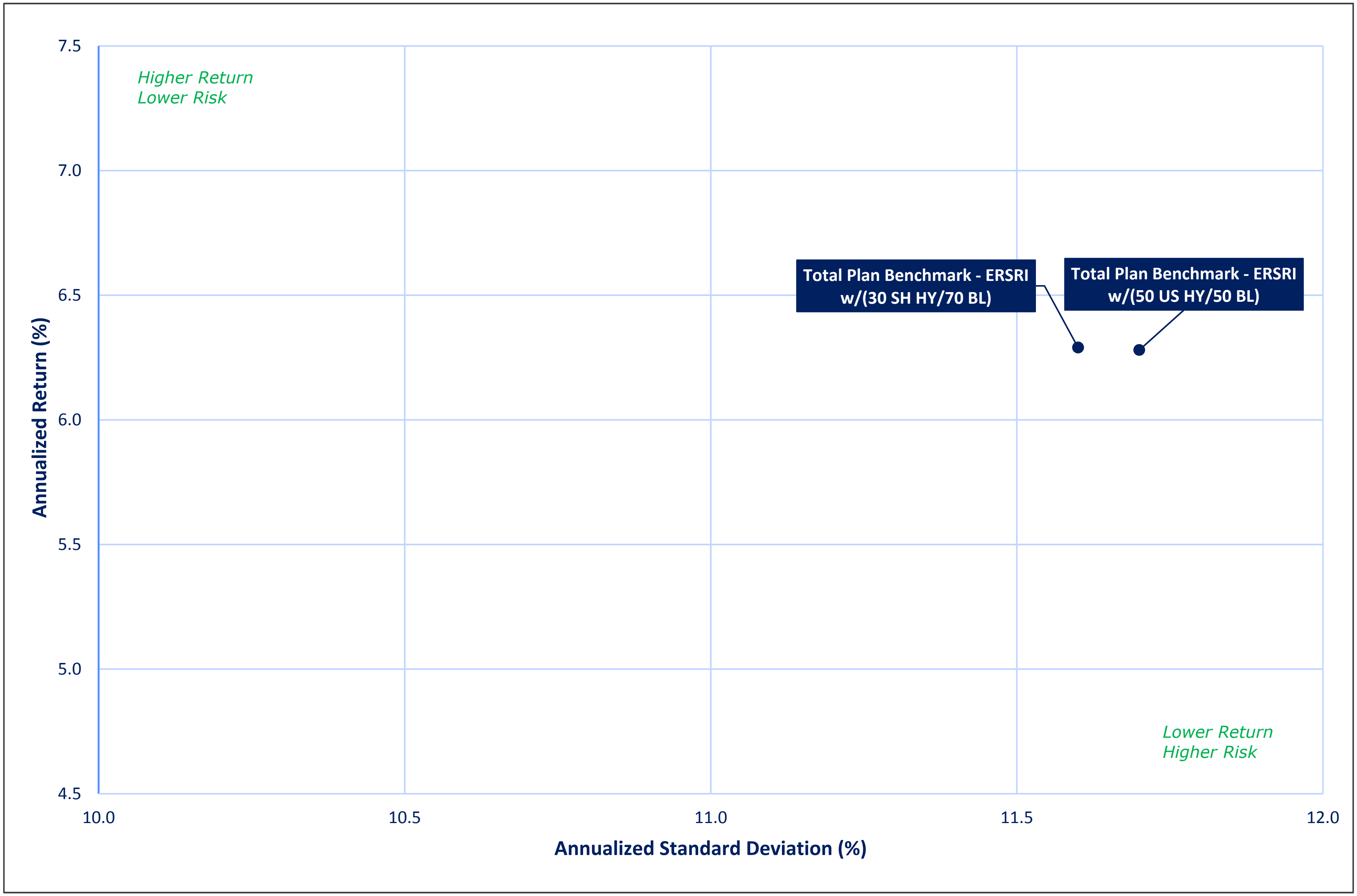


*Return source for the ERSRI accounts were provided by BNY Mellon; Since inception (May 2013)

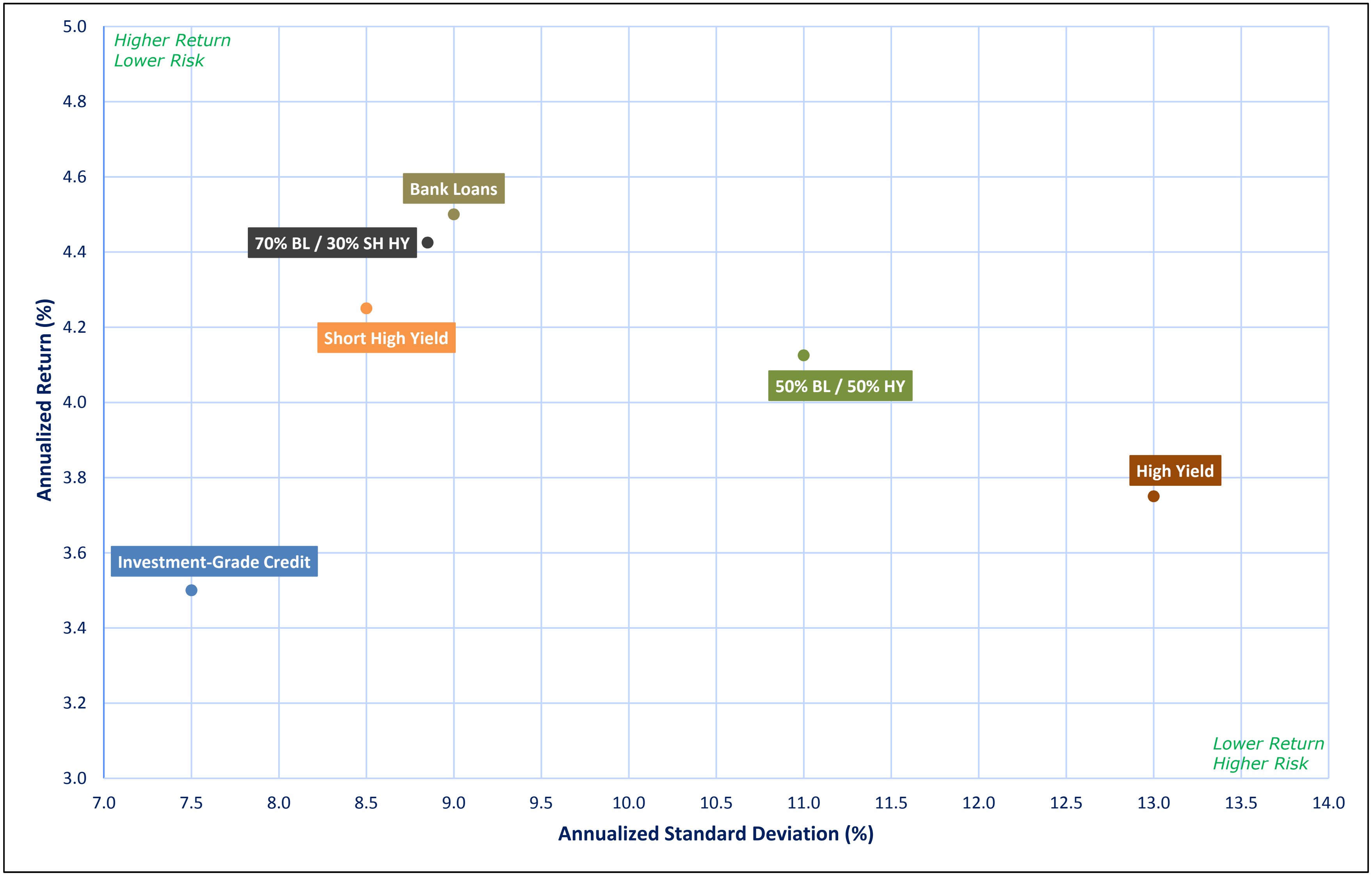
Past performance is no guarantee of future results

Performance as of March 31, 2018

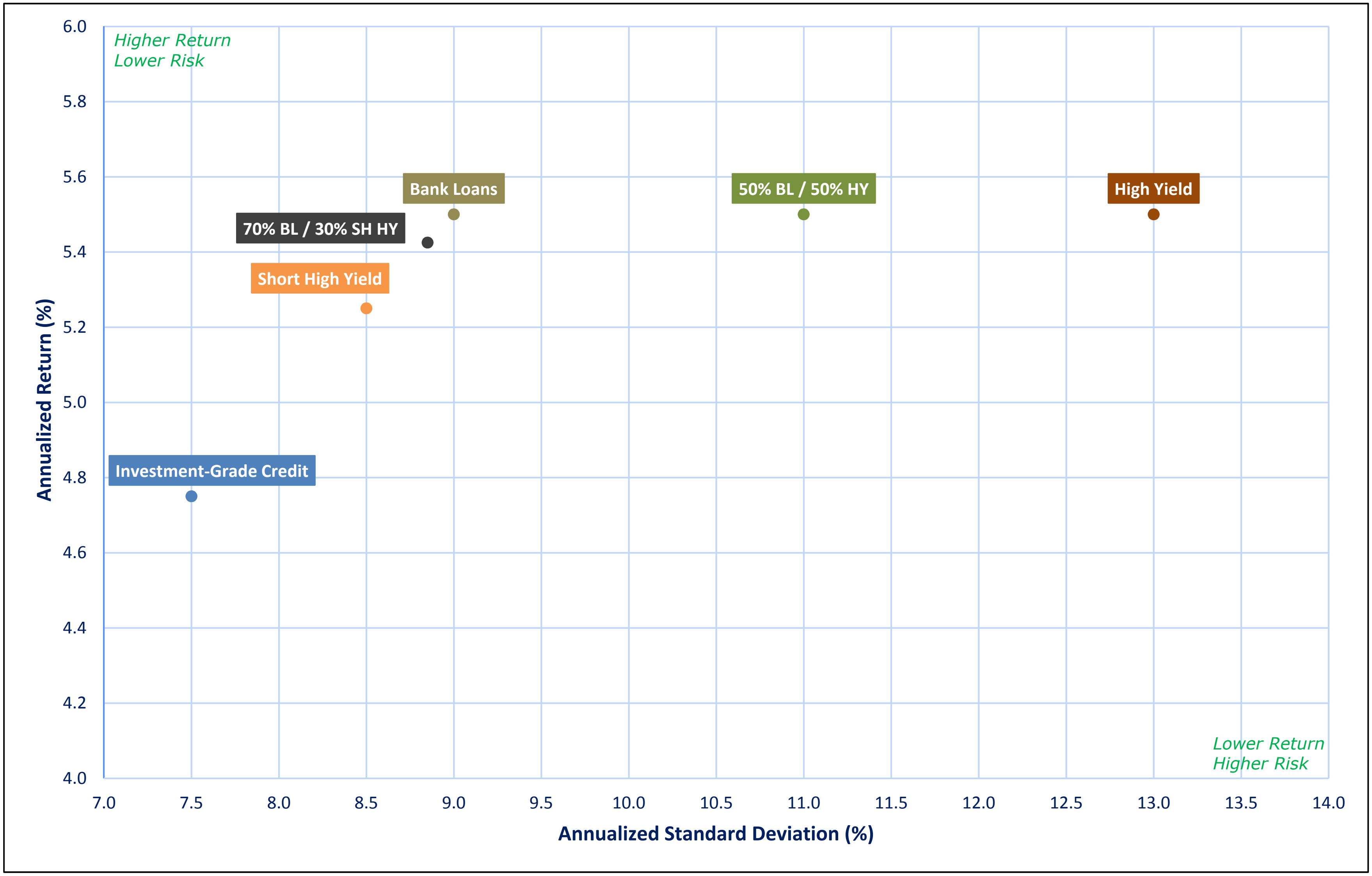
TOTAL PLAN BENCHMARK (5-7 YEAR) RISK/RETURN ASSUMPTIONS



NEPC ASSET-CLASS ASSUMPTIONS (5-7 YEAR)



NEPC ASSET-CLASS ASSUMPTIONS (30 YEAR)



EXISTING MANAGER EVALUATION

NEPC's evaluation included a review of existing account performance and the competitiveness of PIMCO and WAMCO's overall credit offerings

Investment-grade, Bank Loan, High Yield, Multi-sector

Bank Loan Products	3-year	Rank	5-year	Rank	10-year	Rank
PIMCO Bank Loan	**4.05**	**77**	**3.87**	**77**	**4.43**	**96**
WAMCO US Bank Loan	**3.57**	**93**	**3.45**	**93**	**5.71**	**62**
S&P/LSTA Leveraged Loan Index	4.20	66	3.89	75	5.62	64
eVestment US Floating-Rate BL	*4.47*		*4.32*		*5.96*	

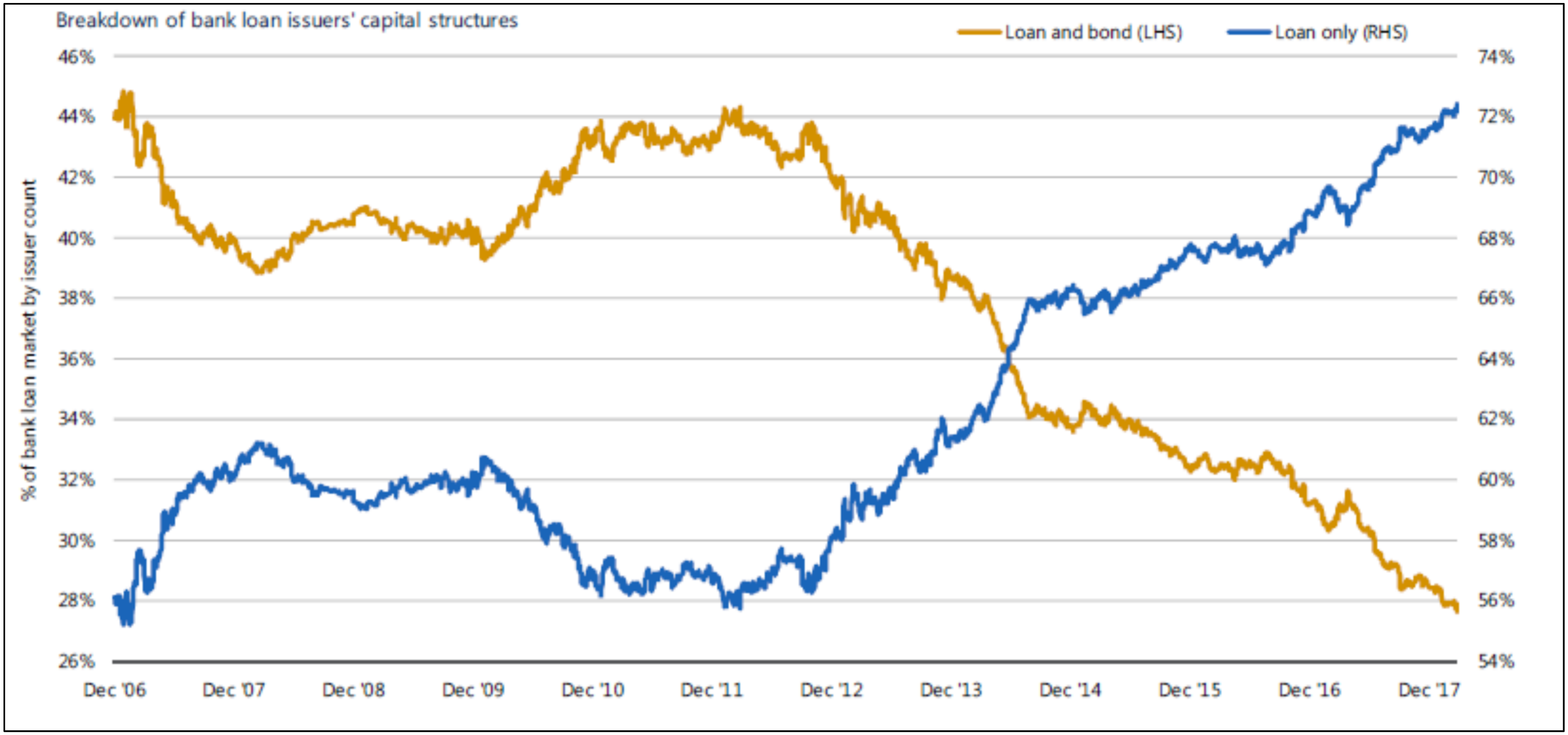
High Yield Products	3-year	Rank	5-year	Rank	10-year	Rank
PIMCO High Yield	**4.97**	**48**	**5.10**	**42**	**7.43**	**67**
WAMCO US High Yield	**4.93**	**51**	**4.66**	**62**	**8.18**	**35**
BB US Corp. High Yield 2% Cap	5.18	40	5.00	48	8.32	28
eVestment US High Yield Fixed	*4.95*		*4.96*		*7.90*	

Investment-Grade Products	3-year	Rank	5-year	Rank	10-year	Rank
PIMCO Investment Grade Corp.	**3.88**	**5**	**4.29**	**9**	**7.49**	**1**
WAMCO US Bank Loan	**2.64**	**53**	**3.44**	**80**	**5.69**	**73**
BB US Credit	2.16	81	2.83	80	5.15	87
eVestment US Corporate Fixed	*2.67*		*3.44*		*6.03*	

Source: eVestment database. Data as of 3/31/18, annualized returns, gross of fees

BANK LOAN ISSUER TREND – CAPITAL STRUCTURE EVOLUTION

Majority of the Bank Loan market does not include High Yield subordination
- Demand for floating-rate debt driving issuance trend



Source: PIMCO, J.P. Morgan. Represents J.P. Morgan Leveraged Loan Index as of 3/31/18