

NORTH CAROLINA
DEPARTMENT OF STATE TREASURER
INVESTMENT MANAGEMENT DIVISION

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To: Supplemental Retirement Board of Trustees

From: Loren de Mey, Assistant Investment Director

Date: October 28, 2016

Subject: Discussion/Action: 401k and 457b Plans – Recommendation of Replacement Manager for the JP Morgan Core Bond strategy

Recommendation

IMD Staff and Mercer recommend replacing the JP Morgan Core Bond strategy with the TCW Core Plus Bond strategy within the NC Fixed Income Fund. The key reasons supporting this recommendation include:

1. Proven track record
2. Deep and experienced investment team
3. Disciplined investment process
4. Strength and culture of the organization

Due Diligence Search Process

During the first quarter of 2016, Mercer recommended a search be initiated to find a replacement manager for the JP Morgan Core Bond strategy due to recent senior portfolio manager turnover. Mercer worked with IMD to screen the universe of over 120 fixed income managers. Managers were evaluated on a number of factors including Mercer rating, assets under management, performance, and fit with the other investment strategy within the white-label vehicle (i.e., Prudential Core Plus). The initial list was reviewed with IMD and a semi-finalist list of seven managers was selected. After reviewing a detailed search report prepared by Mercer including quantitative and qualitative analysis, three managers were selected as finalists: TCW, DoubleLine, and Baird Advisors. IMD invited the three finalists to Raleigh for in-person meetings to review their fixed income strategies and capabilities.

After discussion between Mercer and IMD, it was determined to focus the search on the two Core Plus candidates in order to complement the existing strategy and manager within the Fixed Income Fund. Adding a Core Plus mandate to the Fixed Income Fund will provide the Fund with the opportunity to add additional value and diversification within the fixed income market. Core Plus strategies typically can allocate up to 20% in high yield securities or other securities outside of the Barclays Capital Aggregate Bond Index.

Staff conducted onsite due diligence meetings with the two finalists. Mercer also attended the meetings by phone. In addition to the onsite meetings, staff reviewed firm materials including ADVs, due diligence questionnaires, manager presentations, consultant reports, and performance

and risk statistics of the strategies. Consistent with the IMD investment manager search policy, external compliance counsel will review placement agent disclosures and conflicts.

TCW was ultimately selected as the final recommended firm given the strength of the organization and depth of resources, not only within investment management, but also within the firm's back office, trading, legal and compliance groups. Additionally, the lead portfolio managers and other senior members of the fixed income team have worked together for more than two decades (albeit at a predecessor firm).

Organization

Trust Company of the West (TCW), founded in 1971, is an investment management firm based in Los Angeles, with total assets under management of \$197.3 billion (as of September 30, 2016). TCW has additional offices in New York, Boston, Chicago, London, Hong Kong and Tokyo. The firm has 598 total employees including 163 investment professionals. In February 2013, TCW's management initiated a management-led buy-out of Societe Generale in partnership with the Carlyle Group. The Carlyle Group, through two affiliated investment funds, owns approximately 60% of TCW, with TCW management and employees owning approximately 40%. The transaction fulfills a management initiative to increase employee ownership. Approximately 150 employees now have ownership in the firm. The firm has a flat, team-oriented culture and was named "Best Places to Work in Money Management" among firms with 500-999 employees by Pension and Investments in 2014 and 2015.

As of September 30, 2016, the firm managed \$173.5 billion in fixed income assets, representing 87.7% of total firm assets. This includes \$121.3 billion in Core and Core Plus strategies. The firm has three mutual fund complexes including the TCW Funds, the MetWest Funds, and the TCW Alternative Funds. The MetWest Total Return Bond Fund was the winner of the 2016 Lipper Fund Award for its 10-year performance among core plus bond funds and was named one of the Kiplinger 25, an annual list of Kiplinger's favorite no-load mutual funds in 2016.

Most of the senior level fixed income investment professionals have worked together since the early 1990's, while they worked for Metropolitan West (MetWest), a fixed income firm based in Los Angeles. TCW purchased MetWest in 2009 to replace the firm's fixed income team that had left to start a new firm. The MetWest mutual funds, including the MetWest Total Return Bond Fund, which is also being recommended in the 403b Program, originated with the fixed income team during their time at MetWest. The MetWest mutual funds continue today under the TCW organization.

Investment Team

The TCW Fixed Income group employs a generalist/specialist team approach to portfolio management, whereby investment activities are overseen by the generalists and specialist portfolio managers. TCW's Chief Investment Officer, Tad Rivelle, leads the generalists and specialists. The generalist portfolio managers are primarily responsible for developing a fundamental economic outlook to determine the overall investment strategy including duration, yield curve and sector decisions. The specialist portfolio managers and research analysts focus their attention on their respective specialties – treasuries, corporates, high yield, asset-backed securities, and mortgages. The specialists are primarily responsible for idea generation within their respective areas as well as implementation in client portfolios.

Investment Philosophy and Process

TCW applies a value-oriented approach and recognizes the mean-reverting nature of fixed income securities. The team believes that significant alpha can be generated by applying fundamental

research to identify the securities whose market prices do not reflect fair value. This alleviates pressure to take undue risk related to macroeconomic forecasts, which TCW believes are more efficiently priced with less alpha opportunities. TCW seeks to take advantage of market volatility given volatility can often lead to attractive values as securities are sold for non-fundamental reasons. In a measured, disciplined fashion, TCW repositions portfolios to capture the opportunities presented by such volatility.

As an active manager, TCW has a strong belief that the U.S. fixed income markets contain structural inefficiencies that a disciplined valuation based approach can exploit to generate long-term alpha. According to TCW, the structural inefficiencies found in the U.S. bond market are a natural result of the following:

- Its large size, diversity and complexity
- Over the counter nature and limited price transparency
- Market segmentation and risk aversion
- Distortions caused by regulators, tax law, and rating agencies

TCW believes that the structural inefficiencies in the bond market will appear most profoundly at the issue and sector levels of the market. Therefore, TCW prefers to add alpha from the bottom up as the distortions observed from fair value pricing will be greatest at the idiosyncratic level of the market where limited research and lower liquidity will amplify market dislocations and sponsorship effects. TCW's philosophy is anchored in a belief that the fixed income markets have a strong mean-reversion tendency. This is due to the fact that interest rates, the slope of the yield curve, credit and mortgage spreads are all key public policy variables. When these variables get to extreme minimums or maximums it is in the public interest for policy makers (Federal Reserve, Congress, SEC, etc.) to institute changes that drive these variables back towards their long-term averages.

The portfolio's duration is determined by the team's fundamental economic outlook. This is accomplished by analyzing long-term economic trends, credit trends, commodity price cycles and the political environment, which may impact interest rates. Duration will then be determined based on the team's assessment of the current stage of the business cycle. The team constrains portfolio duration to within one year of a portfolio's benchmark duration. Additionally, the team will move duration in a gradual disciplined fashion over the business cycle. Over the last 15 years, the strategy's duration has ranged from 3.1 to 5 years, always within one-year of the benchmark's duration. The current duration of the Core Plus strategy is 4.9 years, compared to 5.5 years for the benchmark.

The yield curve positioning is driven by the team's consensus on business cycle conditions and prospective Federal Reserve policy. TCW applies proprietary models to determine the maturities which represent the best risk/return based on their fundamental outlook.

Next, the sector allocation process starts by comparing relative value across all sectors of the bond market, including governments, agencies, corporates, mortgages, and asset-backed securities. TCW's sector rotation decision begins with their economic outlook in order to assess the level of risk is in various sectors versus the yield premia being paid. TCW would take a defensive exposure to corporate bonds as the business cycle ages. For example, although TCW's exposure to high yield securities has ranged from 3%-20% since 2008, TCW's current allocation to high yield is only 5%. The firm's credit research team is robust with 22 investment professionals averaging 14 years of experience. TCW's credit research drives issue selection and traders must receive approval from the credit group prior to purchasing securities.

The following chart shows TCW's sector management and positioning over time.

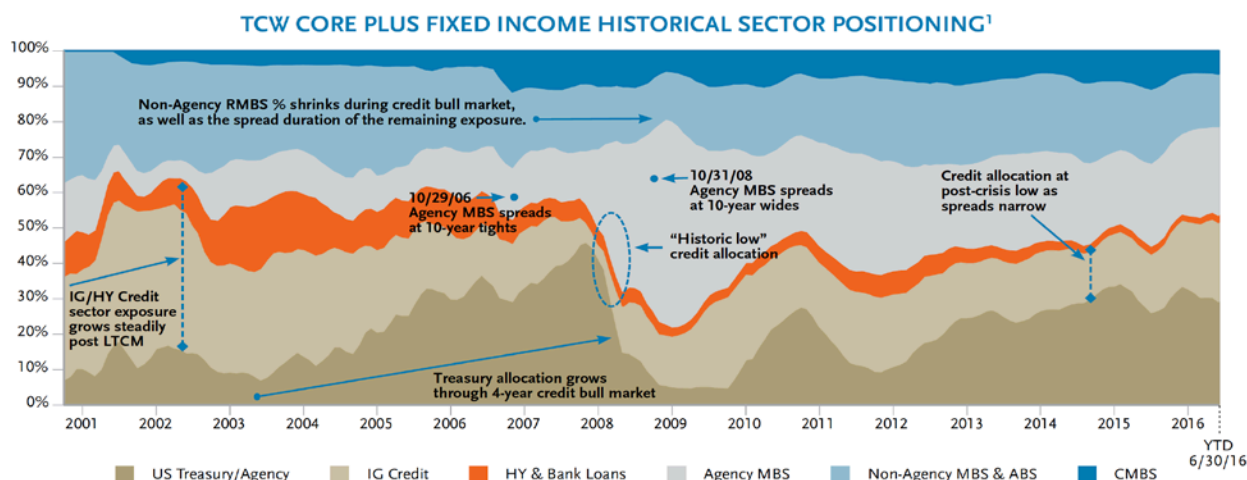
Sector Management and Historical Positioning

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- Overweight most attractive sectors seeking to achieve higher risk-adjusted returns
- Diversify across all allowable investment classes to reduce volatility
- Returns of each sector can be highly divergent in the short-term but revert to the mean in the long-term

"Investors should be greedy when others are fearful and fearful when others are greedy."

– Warren Buffett



Source: TCW

¹ Based upon the representative account's market value of assets, excluding cash & equivalents, interest rate swaps/options, and equities. Portfolio characteristics and holdings are subject to change at any time.

Performance

The TCW Core Plus strategy has outperformed the benchmark in the five, seven and since inception time periods and placed in the 26th and 18th percentile among peers over the 5 and 7-year time periods, respectively. The TCW Core Plus strategy provides solid downside protection relative to the benchmark. Over the most recent 5 years, the strategy has participated in 139% of the return of the Barclays Aggregate in up markets, and only 47% of the benchmark return in down markets. An underweight duration position has contributed to the bulk of the strategy's underperformance year to date.

TCW Core Plus (net performance as of 9/30/16)

	YTD	1 Year	3 Year	5 Years	10 Year	Since Inception
TCW Core Plus	5.29%	4.84%	4.00%	4.73%	6.40%	6.78%
Barclays US Aggregate	5.80%	5.19%	4.03%	3.08%	4.79%	5.63%

Note: the inception date of the Core Plus strategy is August 1996; the track record of the former MetWest team was mapped over to TCW when MetWest was acquired by TCW

Investment Management Fee:

TCW's Core Plus fee schedule:

- 0.275% on the first \$100mm
- 0.20% on remaining assets

TCW has offered a 3-month fee holiday as an on-boarding discount to North Carolina. This would result in an adjusted aggregated annual fee of 0.167% in the first year. However, after the first 3 months, participants will pay the standard fee schedule (0.223% basis points based on the current assets under management of \$327 million).

Once the account reaches \$400 million, TCW's large account fee schedule will apply.

TCW Core Plus large account fee schedule:

- 0.18% on the first \$500mm
- 0.10% on remaining assets

The current fee schedule for the JP Morgan Core fixed income separate account:

0.20% on the first \$100 million

0.18% on assets above \$100 million

Based upon current assets under management, the fee is 0.186% basis points

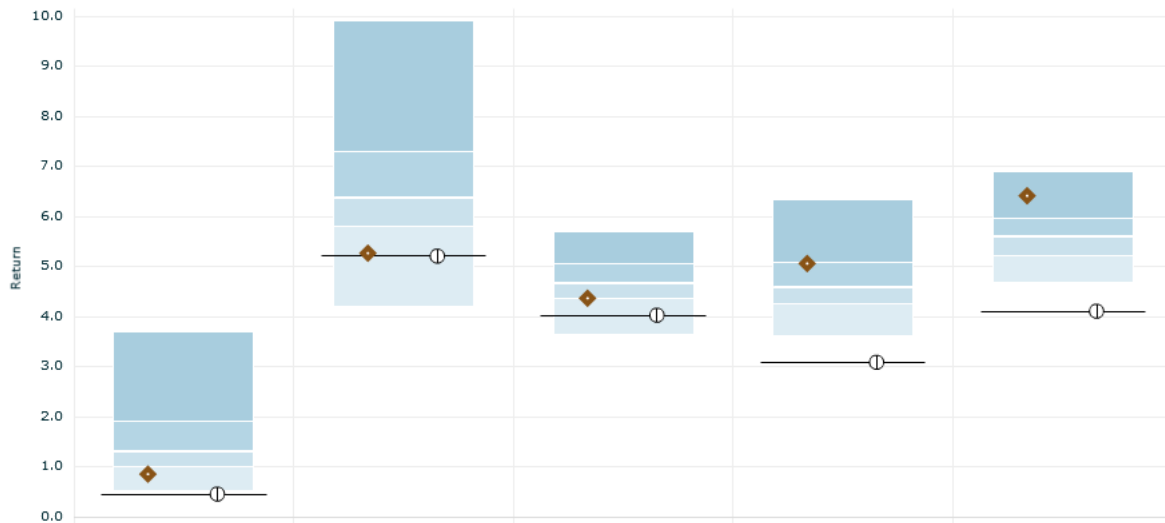
According to Mercer's database, the median expense for a Core Plus account of this size is 0.25% and the median for Core is 0.22%.

Performance Charts

Below are peer universe charts from Mercer (performance charts are shown gross of fees)

Return in \$US (before fees) over 3 mths, 1 yr, 3 yrs, 5 yrs, 7 yrs ending September-16

Comparison with the US Fixed Core Opportunistic universe (Percentile Ranking)



	3 mths (%)	1 yr (%)	3 yrs (%pa)	5 yrs (%pa)	7 yrs (%pa)
TCW	0.9 (88)	5.3 (89)	4.4 (74)	5.1 (26)	6.4 (18)
BCUSAG	0.5 (99)	5.2 (89)	4.0 (87)	3.1 (96)	4.1 (98)
5th Percentile	3.7	9.9	5.7	6.3	6.9
Upper Quartile	1.9	7.3	5.1	5.1	6.0
Median	1.3	6.4	4.7	4.6	5.6
Lower Quartile	1.0	5.8	4.4	4.3	5.2
95th Percentile	0.5	4.2	3.6	3.6	4.7
Number	83	81	71	62	53

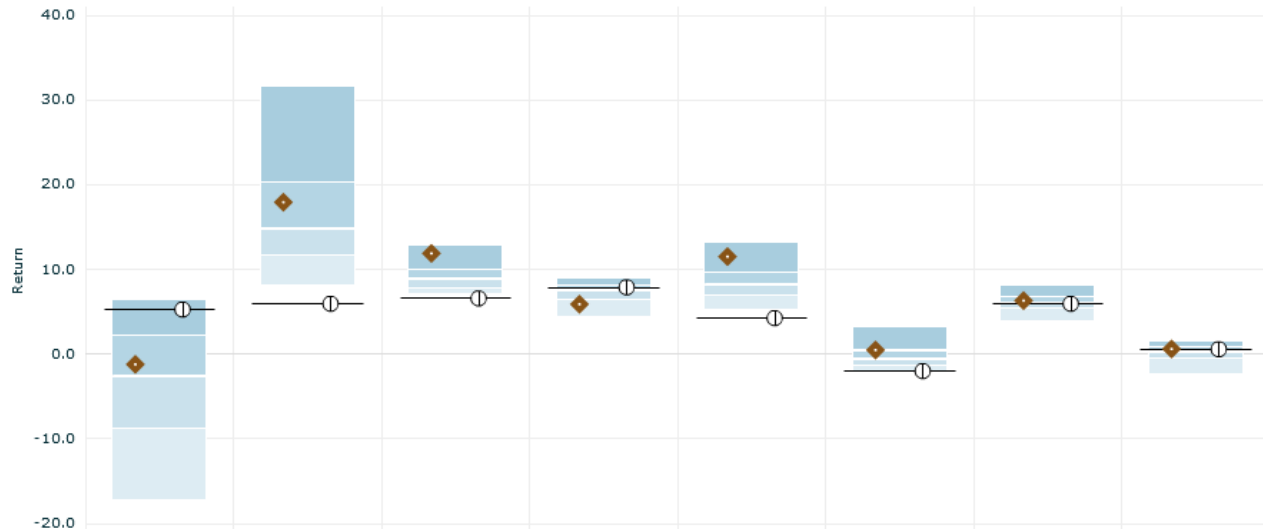
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TCW Core Plus

Return in \$US (before fees) over last 8 calendar years ending December-15

Comparison with the US Fixed Core Opportunistic universe (Percentile Ranking)



	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)
◆ TCW	-1.2(43)	17.9(37)	11.9(7)	5.9(87)	11.5(11)	0.5(23)	6.3(41)	0.6(34)
○ BCUSAG	5.2(10)	5.9(97)	6.6(99)	7.9(39)	4.2(98)	-2.0(91)	6.0(55)	0.6(35)
5th Percentile	6.5	31.6	12.9	9.1	13.2	3.3	8.1	1.6
Upper Quartile	2.2	20.3	10.0	8.1	9.6	0.5	6.8	0.8
Median	-2.6	14.9	9.0	7.5	8.2	-0.5	6.1	0.3
Lower Quartile	-8.8	11.7	7.8	6.5	7.0	-1.3	5.5	-0.5
95th Percentile	-17.1	8.1	7.1	4.4	5.3	-2.2	3.9	-2.3
Number	101	99	99	96	106	104	107	107

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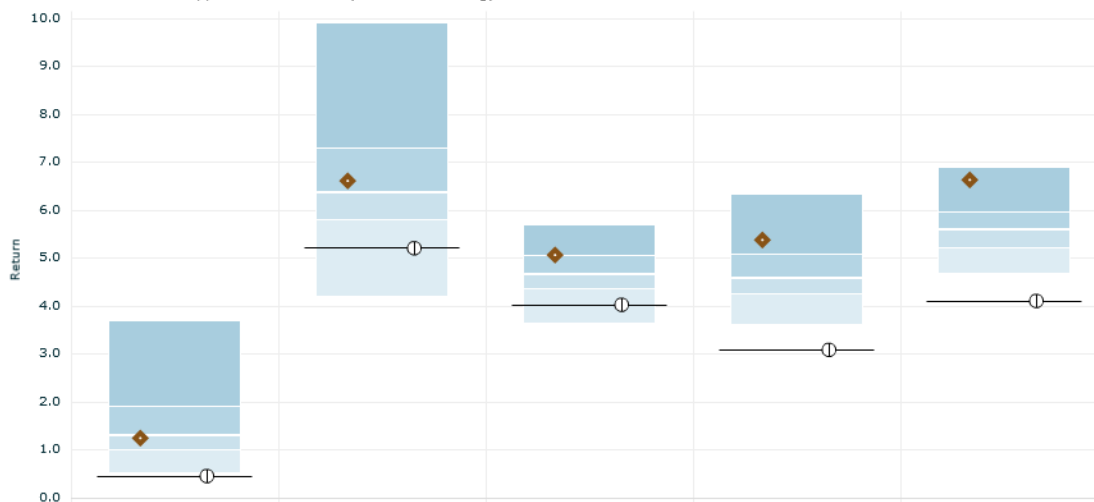


TCW Core Plus/Prudential Core Plus Composite Performance

The following performance charts from Mercer show the historical returns of a 50/50 Composite of the TCW Core Plus and the Prudential Core Plus strategy. The composite shows top quartile performance for the three, five, and seven year time periods.

Return in \$US (before fees) over 3 mths, 1 yr, 3 yrs, 5 yrs, 7 yrs ending September-16

Comparison with the US Fixed Core Opportunistic universe (Percentile Ranking)



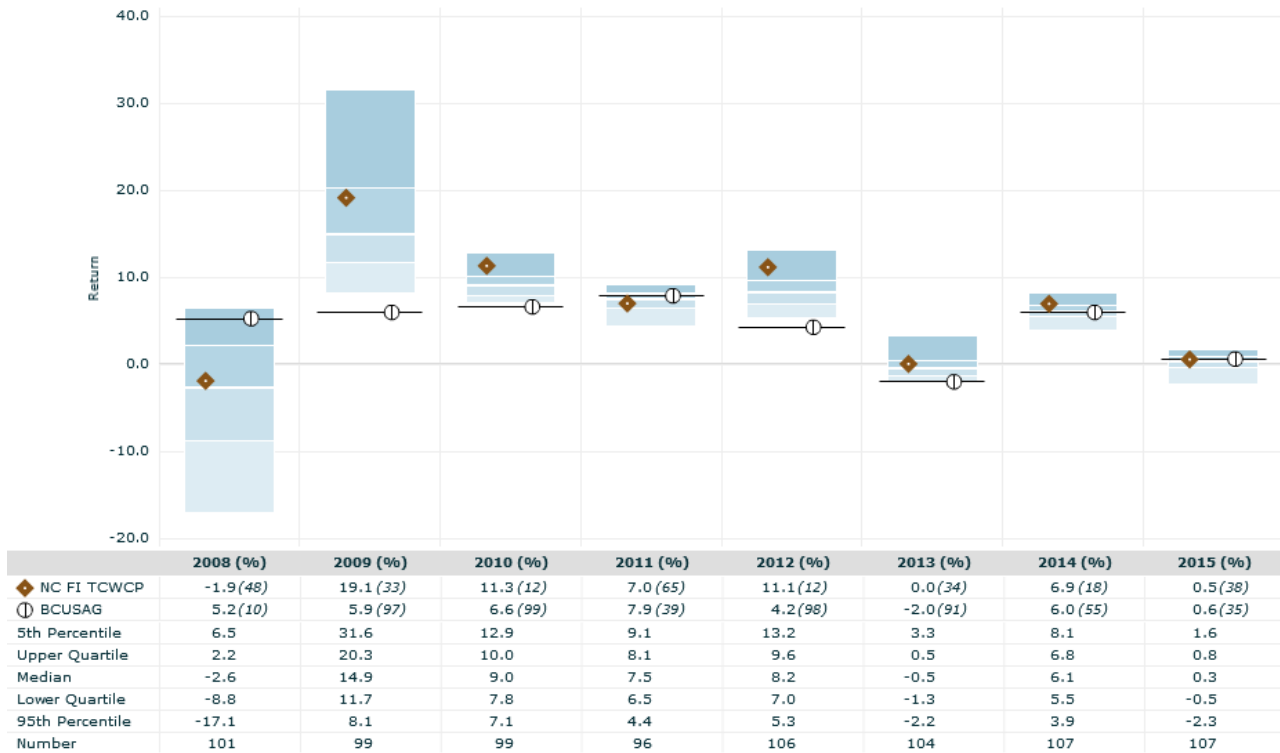
	3 mths (%)	1 yr (%)	3 yrs (%opa)	5 yrs (%opa)	7 yrs (%opa)
◆ NC FI TCWCP	1.2(58)	6.6(45)	5.1(24)	5.4(16)	6.6(9)
○ BCUSAG	0.5(99)	5.2(89)	4.0(87)	3.1(96)	4.1(98)
5th Percentile	3.7	9.9	5.7	6.3	6.9
Upper Quartile	1.9	7.3	5.1	5.1	6.0
Median	1.3	6.4	4.7	4.6	5.6
Lower Quartile	1.0	5.8	4.4	4.3	5.2
95th Percentile	0.5	4.2	3.6	3.6	4.7
Number	83	81	71	62	53

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Return in \$US (before fees) over last 8 calendar years ending December-15

Comparison with the US Fixed Core Opportunistic universe (Percentile Ranking)



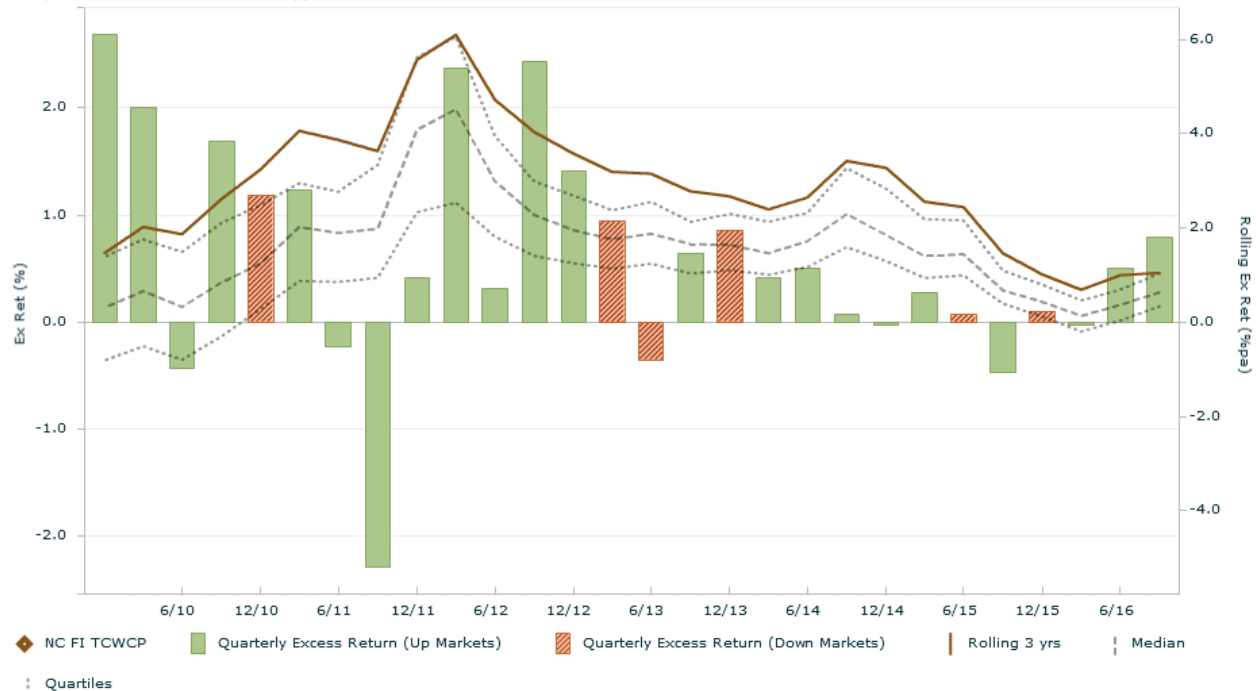
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NC FI TCWCP

Quarterly Excess Return vs. Barclays US Aggregate with rolling 3 yr line in \$US (before fees) over 7 yrs ending September-16

Comparison with the US Fixed Core Opportunistic universe



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