
DECEMBER 9, 2014

**AGENDA ITEM 7
INFORMATION ITEM**

SCHOLARSHARE INVESTMENT BOARD

Review of 2015 Asset Allocation Recommendation for the ScholarShare Plan

Background

Each year, ScholarShare Investment Board (SIB or Board) and the program manager, TIAA-CREF Tuition Financing, Inc. (TFI) review the asset allocation of the investment portfolios for the ScholarShare Plan (Plan) to determine if any changes are necessary to continue to meet the Plan's investment objectives.

Upon TFI's completion of this year's asset allocation study and recent replacement of the PIMCO Total Return Fund with the TIAA-CREF Bond Plus Fund, TFI has no additional recommendations for change in 2015 to the current allocation strategy for the portfolios in the Plan. The Board's investment consultant, Pension Consulting Alliance, Inc. (PCA), has reviewed and analyzed TFI's recommendation and has provided a memo (Exhibit A) concurring with TFI's recommendation. However, PCA also recommends TFI conduct a search of the Core Fixed Income Universe for three alternative funds in addition to the TIAA-CREF Bond Plus Fund for evaluation to ensure it is the best option for the Plan.

For the Board's reference, TFI has provided its "2015 Asset Allocation Recommendation" presentation (Exhibit B), which highlights their analysis and recommendation for no change to the existing asset allocation.

PCA and SIB staff have reviewed and concur with TFI's recommendation for no changes in 2015 to the existing asset allocation for the Plan, and request that TFI develop a short list of three alternative funds, in addition to the TIAA-CREF Bond Plus Fund, to be evaluated by the Board and PCA pursuant to the ScholarShare Monitoring Procedures and Criteria.

Presenters

Eric White, Principal, Pension Consulting Alliance, Inc.

Jeremy Thiessen, Senior Director, Education Savings, TIAA-CREF Tuition Financing, Inc.

Date: November 10, 2014
To: ScholarShare Investment Board (SIB)
From: Pension Consulting Alliance, Inc. (PCA)
CC: Eric White, CFA – PCA; Kay Ceserani – PCA
RE: Review of TFI Recommendation for 2015 Asset Allocation

Summary

SIB Staff requested that PCA review TIAA-CREF Tuition Financing, Inc.'s (TFI) annual review and recommendation for the 2015 asset allocation for the ScholarShare College Savings Plan (Plan) which highlighted their analysis behind the recommendation for no changes. Overall, PCA concurs with TFI's analysis and believes the current glidepath is well optimized. However, PCA believes a comprehensive manager search should be conducted looking at potential alternatives to the TIAA-CREF Bond Plus fund. ***PCA recommends the SIB accept TFI's recommendation of no changes to the asset allocation but request that TFI conduct a search of the Core Fixed Income Universe to ensure the TIAA-CREF Bond Plus fund is the best option for the Program.***

Background

SIB Staff requested that PCA review TIAA-CREF Tuition Financing, Inc.'s (TFI) annual review and recommendation for the 2015 asset allocation for the ScholarShare College Savings Plan (Plan) which highlighted their analysis behind the recommendation for no changes. TFI believes their current glide paths are sound and that they should meet TFI's expectation for a reasonable rate of expected return and reasonable probability of outperforming tuition inflation while minimizing the potential "shortfalls" between expected returns and tuition inflation over the investment horizons.

TFI provided a detailed summary of their Monte Carlo analysis for both the actively managed and passively managed age-based portfolios. The analysis showed the expected return and standard deviation of the different portfolios as well as the likelihood of the portfolios' return exceeding the rate of tuition inflation.

TFI also provided an analysis of the TIAA-CREF Bond Plus fund which focused on the fund's capital market exposure and historical returns. TFI argues that the fund represents a good replacement to the PIMCO Total Return fund and represents a complementary fund to the other fixed income funds within the Program.

Conclusion

PCA finds TFI's analysis of their glidepaths to be comprehensive and insightful, and uses consistent and reasonable inputs to develop their conclusions. PCA, therefore, concurs with TFI's recommendation for no changes. However, PCA believes it is prudent to conduct a full search

of the Core Fixed Income Universe to insure that the TIAA-CREF Bond Plus fund represents the best fund for the Program. PCA believes the TIAA-CREF Bond Plus fund to be suitable fund for the Program as it has consistently produced above median performance results while providing broad based fixed income exposure in a risk controlled manner. However, prudence dictates that a full assessment of the opportunity set be evaluated to ensure no other fund represents a superior option for the Program. As such, PCA recommends the SIB request that TFI conduct a search of the Core Fixed Income Universe and develop a short list of three alternative funds to be evaluated by the Board. The SIB then can, based on TFI and PCA's analysis of the four candidate funds (TIAA-CREF Bond Plus and three alternative funds), make a determination as to which fund represents the best option for the Program.

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SCHOLARSHARE

CALIFORNIA'S 529 COLLEGE SAVINGS PLAN



2015 Asset Allocation Recommendation

December 2014



Financial Services

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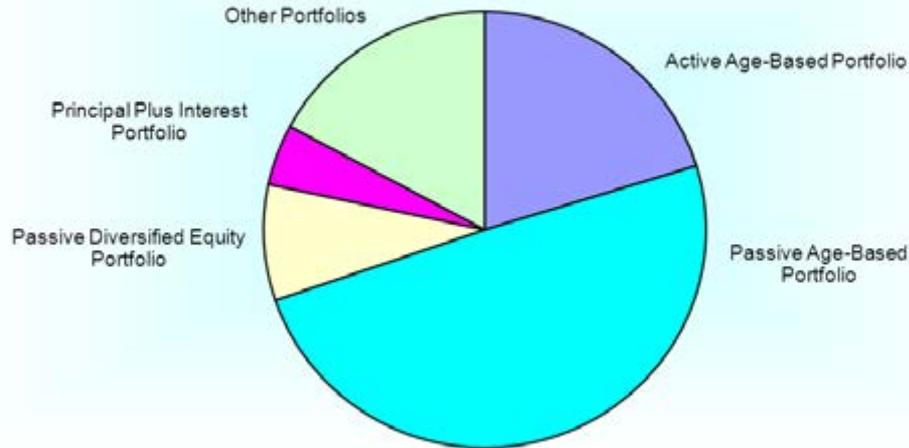


- TFI has completed this year's asset allocation study on a prospective basis to evaluate the overall reasonableness and soundness of the investment strategy for ScholarShare.
- Based on the results of this year's asset allocation study, and with the recent replacement of the PIMCO Total Return Fund with the TIAA-CREF Bond Plus Fund, TFI has no additional recommendations to the current allocation strategy.



ScholarShare Assets by Investment Portfolio

As of 9/30/14
Total Assets: \$5,959 Million



Portfolio Name	% of Assets	\$ Millions	Portfolio Name	% of Assets	\$ Millions
Passive Age-Based Portfolio	49%	\$ 2,949	Principal Plus Interest Portfolio	5%	\$ 269
Active Age-Based Portfolio	20%	\$ 1,208	Other Portfolios (see below)	17%	\$ 1,021
Passive Diversified Equity Portfolio	9%	\$ 512			

Other Portfolios

Index U.S. Equity Portfolio	2.97%	\$ 177	Passive Conservative Portfolio	0.48%	\$ 29
Index U.S. Large Cap Equity Portfolio	2.91%	\$ 173	Active Conservative Portfolio	0.46%	\$ 27
Active Diversified Equity Portfolio	2.51%	\$ 149	Active Moderate Growth Portfolio	0.44%	\$ 26
Social Choice Portfolio	2.01%	\$ 120	Passive Moderate Growth Portfolio	0.28%	\$ 17
Index International Equity Portfolio	1.50%	\$ 89	Active International Equity Portfolio	0.23%	\$ 14
Active Growth Portfolio	1.39%	\$ 83	Active Diversified Fixed Income Portfolio	0.23%	\$ 14
Passive Growth Portfolio	1.05%	\$ 63	Passive Diversified Fixed Income Portfolio	0.09%	\$ 5
Index Bond Portfolio	0.58%	\$ 35			



TIAA-CREF Bond Plus Fund within Fixed Income



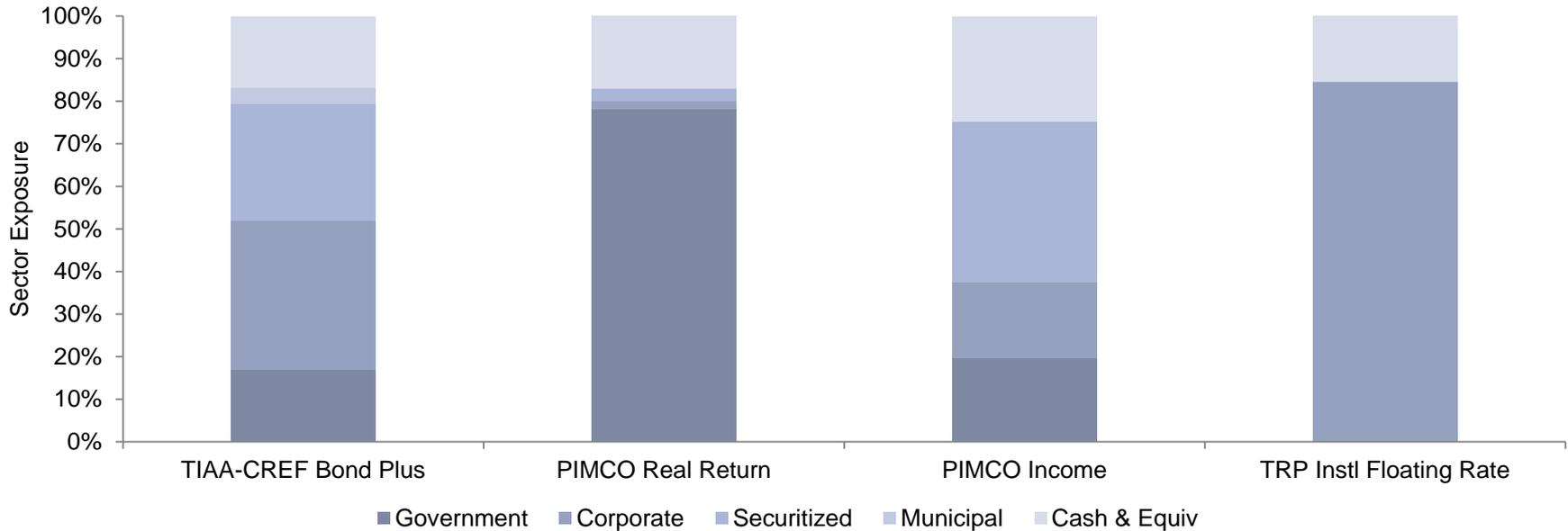
- Bond Plus remains a good addition to the Actively Managed Portfolios
 - The fund provides broad fixed income exposure and can invest up to 30% in non-investment grade “plus” sectors
 - It also maintains a low active correlation relative to the other fixed income funds in the Program, which reduces volatility
 - Other fixed income funds in the Program have more exposure to Governments, Corporates, and Securitized Assets, so Bond Plus brings a complementary strategy
- PIMCO Total Return tends to rely on derivatives to gain exposure to certain fixed income instruments and alter the duration and other characteristics of the portfolio, which can introduce counterparty risk, and has a much higher allocation to the U.S. Treasury market
 - The fund currently faces more liquidity risk in the wake of recent management changes
- As a diverse fund with a wide range of debt investments, Bond Plus is a primary fixed income component of the Actively Managed Portfolios
 - Total fixed income maintains a lower duration than the Barclays U.S. Aggregate Bond Index
 - Bond Plus currently has a similar duration to that of PIMCO Total Return
- Bond Plus has outperformed its benchmark and peer median over all annualized time periods as of 9/30/2014, while PIMCO Total Return lags in more recent periods
- TFI will continue to monitor Bond Plus to ensure that it continues to add value and fulfill the Plan’s investment objectives



TIAA-CREF Bond Plus Fund within Fixed Income



Bond Sector Exposure as of 9/30/2014



Source: Morningstar Direct

- TIAA-CREF Bond Plus Fund provides broad exposure to bond sectors
 - PIMCO Real Return contains primarily Governments (Treasuries/Inflation Protected Securities)
 - PIMCO Income is focused on Securitized (Non-Agency Residential MBS/Asset-Backed)
 - T. Rowe Price Floating Rate's largest allocation is to Corporates (High Yield/Bank Loans)

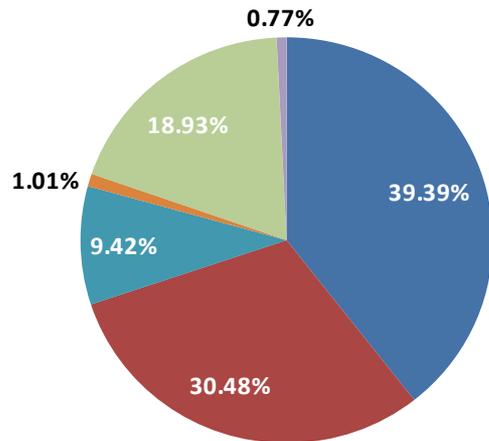


TIAA-CREF Bond Plus Fund within Fixed Income



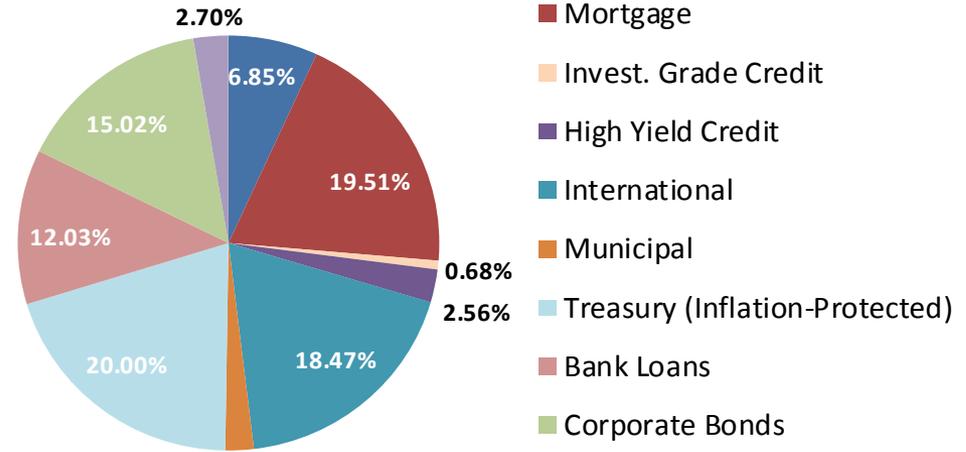
Fixed Income Sector Composition

Barclays Capital U.S. Aggregate Bond Index



Duration: 5.62 Years

Current Fixed Income Allocation



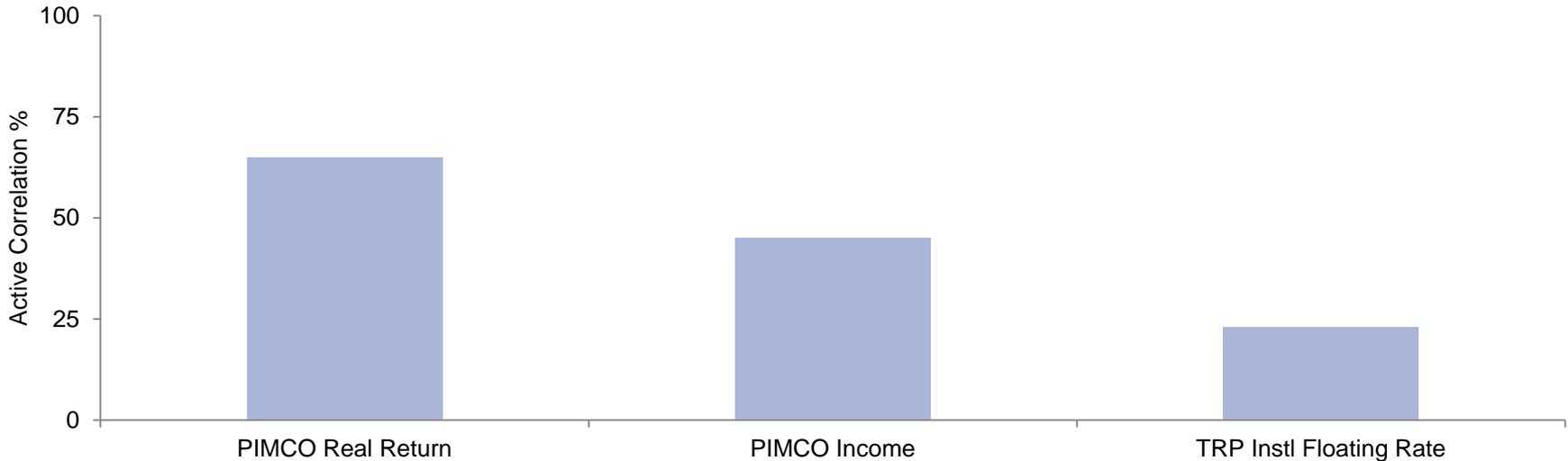
Duration: 4.69 Years

Source: Morningstar Direct

- The current fixed income allocation that includes the TIAA-CREF Bond Plus Fund is broadly diversified versus the Barclays U.S. Aggregate Bond Index.

TIAA-CREF Bond Plus Fund within Fixed Income

Active Return Correlations Between TIAA-CREF Bond Plus and Other ScholarShare Fixed Income Funds (3 Yrs as of 9/30/2014)



Source: Morningstar Direct

- TIAA-CREF Bond Plus Fund has a low active correlation versus other bond funds in the Actively Managed Portfolios
- Relatively low active correlations help to reduce total portfolio volatility
- Indication of low redundancy among funds in the fixed income allocation



TIAA-CREF Bond Plus Fund within Fixed Income



Returns as of 9/30/2014 (%)

Annualized

	YTD	1Y	3Y	5Y	Since Inc.*
TIAA-CREF Bond Plus Fund (Inst'l)	4.5	5.3	4.8	5.7	5.3
Barclays US Agg Bond TR USD	4.1	4.0	2.4	4.1	5.1
Morningstar Rank (Intm Term Bond)	30	23	17	19	41
Number of Funds in Category	1,082	1,068	1,021	943	NA

*Inception Date: 3/31/2006

Source: Morningstar Direct

- As of the most recent quarter-end, the TIAA-CREF Bond Plus Fund has achieved excess returns over its benchmark for the YTD, 1Y, 3Y, 5Y, and Since Inception time periods.

- The following simulation results using the most recent capital market assumptions reaffirm the soundness of the current glide paths for the Active Age-Based Portfolio and Passive Age-Based Portfolio.
- The Active Age-Based Portfolio and Passive Age-Based Portfolio seek to achieve a reasonable rate of expected return and high probability of outperforming tuition inflation while minimizing the potential “shortfalls” between expected returns and tuition inflation over the investment horizons.



Glide Path Simulation Summary

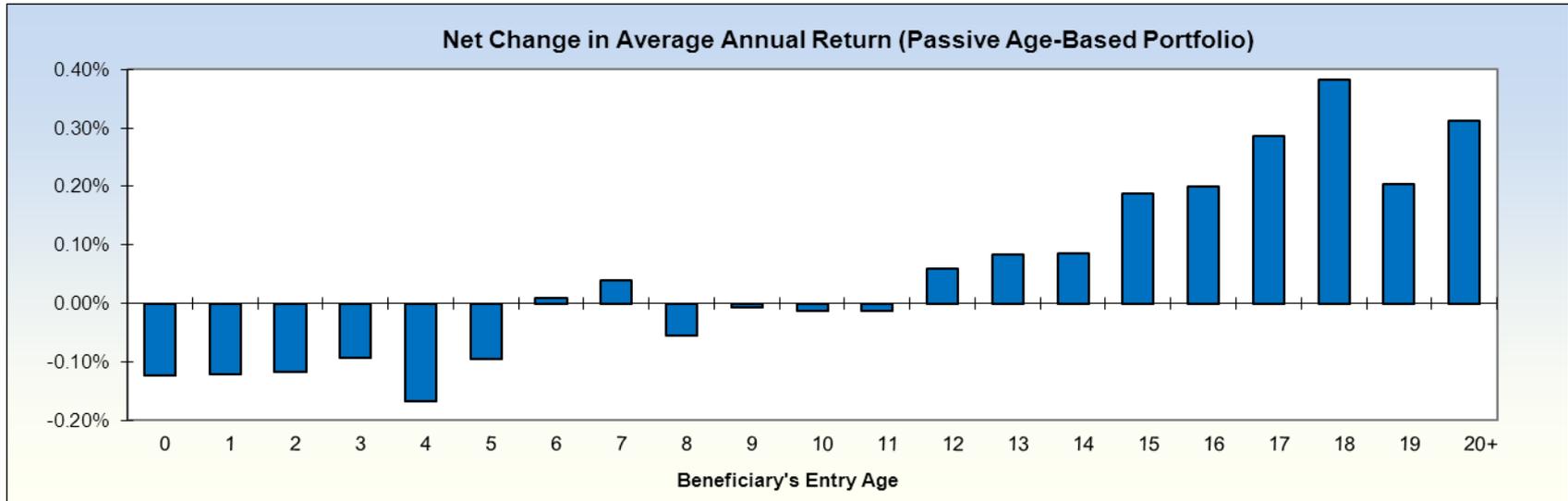
- Average annual return outcomes are modestly lower versus one year ago
- This is due to return expectations being reduced across most asset classes

	Domestic Equity	Int'l Equity	Emerging Markets Equity	REITS	Core Fixed Income	Inflation Linked	High Yield	Funding Agreement
2013	7.89%	7.80%	10.40%	5.95%	3.30%	2.73%	6.61%	2.40%
2014	7.70%	7.52%	9.77%	5.91%	3.12%	2.50%	6.45%	2.22%
Net Change	-0.19%	-0.28%	-0.63%	-0.04%	-0.18%	-0.23%	-0.16%	-0.18%

Source: Ibbotson

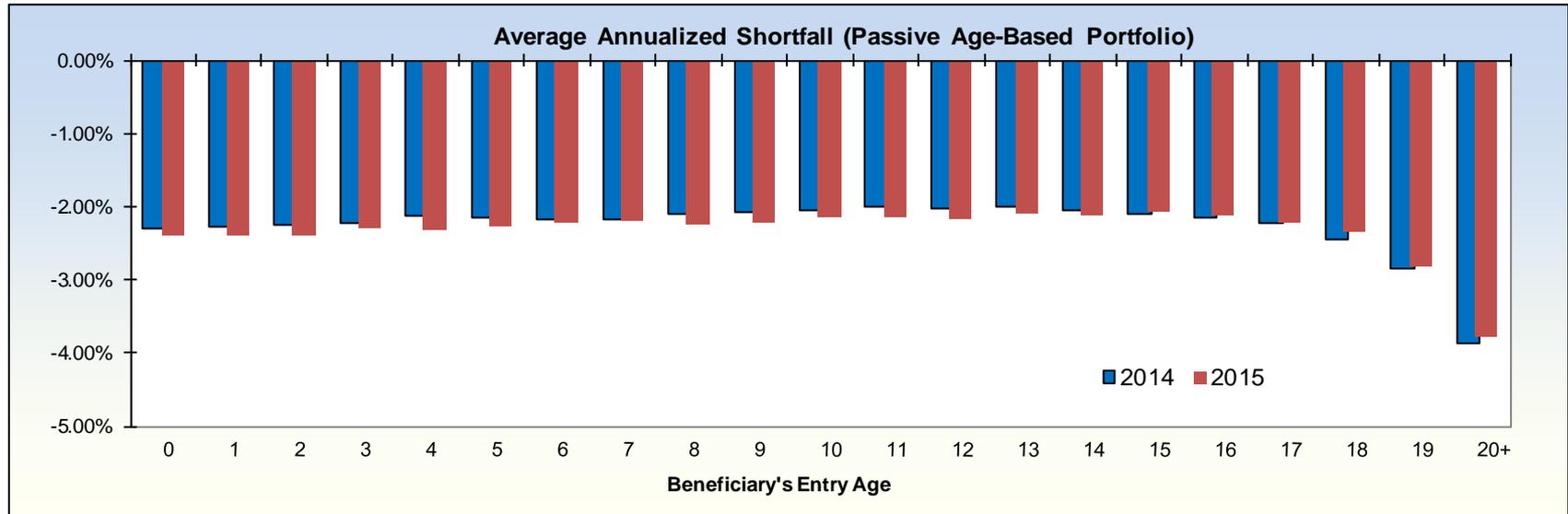
- In addition, expected tuition inflation increased from 4.39% to 4.44%
- TFI views lowered return expectations as a reasonable and conservative approach
- See Appendix for complete return assumptions

Glide Path Simulation Summary



- Lower return expectations result in a change of 10 to 20 basis points for younger age bands, but older age bands improve upon their expected return due to the stability of the funding agreement.

Glide Path Simulation Summary



- Despite lower return expectations and a higher tuition inflation assumption, simulation results showed only minor changes to Average Annualized Shortfall
- Because of this, we do not recommend an asset allocation change in order to increase expected return

Glide Path Simulation Summary – Active Age-Based Portfolio



Bene's Age	Inv Horizon (in years)	Asset Allocations										(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Large Cap Growth	Large Cap Value	Small Cap Equity	Real Estate Securities	Int'l Equities	Emerging Market Equities	Core Fixed Income	Inflation-Linked Bond	Floating Rate	Funding Agreement	Average Annual Return over Investment Horizon	Standard Deviation of Returns over Investment Horizon	Average Annual Tuition Inflation over Investment Horizon	Probability of Exceeding Tuition Inflation	Probability of Achieving 90 cents per Dollar of Future Tuition	Probability of Non-Negative Return	Annualized Shortfall
0	21	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	4.80%	2.56%	4.44%	55.44%	63.62%	96.64%	-2.47%
1	20	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	4.76%	2.54%	4.44%	55.18%	63.62%	96.62%	-2.45%
2	19	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	4.75%	2.51%	4.44%	54.92%	63.24%	97.00%	-2.42%
3	18	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	4.72%	2.54%	4.44%	53.94%	64.30%	96.70%	-2.34%
4	17	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	14.00%	4.00%	2.00%	0.00%	4.68%	2.57%	4.44%	53.18%	63.74%	96.28%	-2.35%
5	16	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	21.00%	6.00%	3.00%	0.00%	4.57%	2.51%	4.44%	51.82%	62.50%	96.88%	-2.37%
6	15	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	21.00%	6.00%	3.00%	0.00%	4.54%	2.53%	4.44%	51.38%	62.98%	96.28%	-2.34%
7	14	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	21.00%	6.00%	3.00%	0.00%	4.48%	2.49%	4.44%	50.30%	62.86%	96.20%	-2.29%
8	13	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	21.00%	6.00%	3.00%	0.00%	4.41%	2.51%	4.44%	49.78%	64.14%	95.90%	-2.27%
9	12	17.01%	17.01%	3.78%	4.20%	14.40%	3.60%	28.00%	8.00%	4.00%	0.00%	4.26%	2.49%	4.44%	46.52%	61.50%	95.96%	-2.28%
10	11	17.01%	17.01%	3.78%	4.20%	14.40%	3.60%	28.00%	8.00%	4.00%	0.00%	4.18%	2.47%	4.44%	45.04%	62.70%	95.58%	-2.22%
11	10	14.18%	14.18%	3.14%	3.50%	12.00%	3.00%	35.00%	10.00%	5.00%	0.00%	4.15%	2.42%	4.44%	44.90%	63.94%	95.24%	-2.18%
12	9	14.18%	14.18%	3.14%	3.50%	12.00%	3.00%	35.00%	10.00%	5.00%	0.00%	4.10%	2.42%	4.44%	43.48%	64.10%	95.42%	-2.19%
13	8	11.34%	11.34%	2.52%	2.80%	9.60%	2.40%	42.00%	12.00%	6.00%	0.00%	3.99%	2.44%	4.44%	42.54%	65.84%	94.76%	-2.18%
14	7	11.34%	11.34%	2.52%	2.80%	9.60%	2.40%	42.00%	12.00%	6.00%	0.00%	3.97%	2.43%	4.44%	41.04%	68.04%	95.00%	-2.14%
15	6	8.51%	8.51%	1.88%	2.10%	7.20%	1.80%	42.00%	12.00%	6.00%	10.00%	3.85%	2.39%	4.44%	39.34%	70.70%	94.80%	-2.14%
16	5	7.09%	7.09%	1.57%	1.75%	6.00%	1.50%	38.50%	11.00%	5.50%	20.00%	3.77%	2.45%	4.44%	37.10%	74.52%	94.12%	-2.16%
17	4	5.67%	5.67%	1.26%	1.40%	4.80%	1.20%	31.50%	9.00%	4.50%	35.00%	3.68%	2.59%	4.44%	36.32%	80.16%	92.56%	-2.23%
18	3	4.25%	4.25%	0.95%	1.05%	3.60%	0.90%	24.50%	7.00%	3.50%	50.00%	3.66%	2.85%	4.44%	36.58%	86.46%	90.44%	-2.40%
19	2	4.25%	4.25%	0.95%	1.05%	3.60%	0.90%	24.50%	7.00%	3.50%	50.00%	3.71%	3.44%	4.44%	39.52%	93.52%	86.18%	-2.78%
20+	1	4.25%	4.25%	0.95%	1.05%	3.60%	0.90%	24.50%	7.00%	3.50%	50.00%	3.78%	4.92%	4.44%	42.54%	98.70%	77.66%	-3.86%

*Annualized Shortfall is the expected annual percentage difference between tuition inflation and returns among all scenarios that fail to exceed tuition inflation.



Glide Path Simulation Summary – Passive Age-Based Portfolio

Bene's Age	Inv Horizon (in years)	Asset Allocations								(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Domestic Equities	Int'l Equities	Emerging Market Equities	Real Estate Securities	Core Fixed Income	Inflation-Linked Bond	High Yield Fund	Funding Agreement	Average Annual Return over Investment Horizon	Standard Deviation of Returns over Investment Horizon	Annual Tuition Inflation over Investment Horizon	Probability of Exceeding Tuition Inflation	Probability of Achieving 90 cents per Dollar of Future Tuition	Probability of Non-Negative Return	Annualized Shortfall
0	21	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	5.01%	2.50%	4.44%	59.08%	66.80%	97.76%	-2.39%
1	20	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	4.94%	2.54%	4.44%	58.12%	66.70%	97.30%	-2.39%
2	19	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	4.88%	2.53%	4.44%	57.16%	65.84%	97.10%	-2.38%
3	18	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	4.86%	2.49%	4.44%	56.48%	66.08%	97.58%	-2.30%
4	17	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	4.76%	2.50%	4.44%	55.46%	65.58%	97.24%	-2.31%
5	16	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%	4.72%	2.51%	4.44%	54.66%	65.72%	96.68%	-2.27%
6	15	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%	4.75%	2.52%	4.44%	54.60%	66.76%	96.70%	-2.22%
7	14	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%	4.69%	2.51%	4.44%	53.62%	66.40%	96.66%	-2.20%
8	13	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%	4.52%	2.50%	4.44%	51.58%	65.02%	96.28%	-2.25%
9	12	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%	4.47%	2.52%	4.44%	49.92%	64.92%	96.00%	-2.22%
10	11	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%	4.40%	2.45%	4.44%	48.78%	66.04%	96.72%	-2.15%
11	10	31.50%	12.00%	3.00%	3.50%	35.00%	10.00%	5.00%	0.00%	4.31%	2.44%	4.44%	46.88%	65.82%	95.96%	-2.13%
12	9	31.50%	12.00%	3.00%	3.50%	35.00%	10.00%	5.00%	0.00%	4.25%	2.48%	4.44%	46.82%	66.66%	95.86%	-2.16%
13	8	25.20%	9.60%	2.40%	2.80%	42.00%	12.00%	6.00%	0.00%	4.16%	2.46%	4.44%	44.70%	67.98%	95.72%	-2.10%
14	7	25.20%	9.60%	2.40%	2.80%	42.00%	12.00%	6.00%	0.00%	4.07%	2.47%	4.44%	43.30%	69.58%	95.22%	-2.12%
15	6	18.90%	7.20%	1.80%	2.10%	42.00%	12.00%	6.00%	10.00%	3.98%	2.38%	4.44%	42.12%	73.94%	95.32%	-2.06%
16	5	15.75%	6.00%	1.50%	1.75%	38.50%	11.00%	5.50%	20.00%	3.91%	2.52%	4.44%	39.28%	76.18%	94.34%	-2.12%
17	4	12.60%	4.80%	1.20%	1.40%	31.50%	9.00%	4.50%	35.00%	3.86%	2.62%	4.44%	39.74%	81.10%	93.02%	-2.21%
18	3	9.45%	3.60%	0.90%	1.05%	24.50%	7.00%	3.50%	50.00%	3.85%	2.87%	4.44%	39.88%	88.02%	91.64%	-2.33%
19	2	9.45%	3.60%	0.90%	1.05%	24.50%	7.00%	3.50%	50.00%	3.75%	3.53%	4.44%	40.50%	93.42%	85.60%	-2.81%
20+	1	9.45%	3.60%	0.90%	1.05%	24.50%	7.00%	3.50%	50.00%	3.98%	5.13%	4.44%	43.04%	98.70%	78.02%	-3.79%

*Annualized Shortfall is the expected annual percentage difference between tuition inflation and returns among all scenarios that fail to exceed tuition inf



ScholarShare

Funds on "Watch" Status

Fund	Primary Reason
PIMCO Income Fund	<p>Recent management changes at PIMCO. Following Bill Gross' departure, Dan Ivascyn, the fund's co-portfolio manager, has been named the firm's Group-CIO, while remaining one of the lead portfolio managers of the fund. This fund was placed on Watch as we continue to become comfortable with this new management structure.</p>
PIMCO Real Return Fund	<p>Recent management changes at PIMCO. Following Bill Gross' departure, Mihir Worah, the fund's portfolio manager, has been named one of the co-portfolio managers of the PIMCO Total Return Fund, while remaining the lead portfolio manager of the PIMCO Real Return Fund. This fund was placed on Watch as we become comfortable with the additional responsibilities taken on by senior members of the firm.</p>



Conclusions

- The TIAA-CREF Bond Plus Fund was an appropriate addition to the Actively Managed Portfolios in ScholarShare. The fund:
 - Brings diversified fixed income exposure across bond sectors for multiple sources of return
 - Exhibits low active correlation with other fixed income funds in the Program to help reduce portfolio volatility
 - Beat its benchmark over all annualized periods since inception as of 9/30/14 and fares very well among Morningstar peers
- PIMCO's two remaining fixed income funds in ScholarShare remain on "Watch" status following the departure of Bill Gross
- Return expectations across all asset classes are lower, and at the same time, the tuition inflation target increased
- However, the annualized shortfall was only minimally affected
- Therefore, TFI recommends no changes to the current asset allocation



Appendix

The Importance of Diversification

It is difficult to predict which types of investments will do best in any given year.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Highest ↑	31.58 Real Estate	34.54 EM Stocks	35.06 Real Estate	39.78 EM Stocks	5.24 Bonds	79.02 EM Stocks	27.95 Real Estate	13.56 TIPS	19.70 Real Estate	38.82 Small Cap
	25.95 EM Stocks	14.02 Intl Stocks	32.59 EM Stocks	11.81 LC Growth	-2.35 TIPS	58.21 HY	26.85 Small Cap	8.28 Real Estate	18.63 EM Stocks	33.55 U.S. Stocks
	20.70 Intl Stocks	12.16 Real Estate	26.86 Intl Stocks	11.64 TIPS	-23.23 HY	52.53 Bank Loan	19.20 EM Stocks	7.84 Bonds	17.93 Intl Stocks	33.48 LC Growth
	18.33 Small Cap	7.05 LC Value	22.25 LC Value	11.63 Intl Stocks	-29.32 Bank Loan	37.21 LC Growth	16.93 U.S. Stocks	4.98 HY	17.51 LC Value	32.53 LC Value
	16.49 LC Value	6.12 U.S. Stocks	18.37 Small Cap	6.97 Bonds	-33.79 Small Cap	32.46 Intl Stocks	16.71 LC Growth	2.64 LC Growth	16.42 U.S. Stocks	32.39 S&P 500
	11.95 U.S. Stocks	5.26 LC Growth	15.79 S&P 500	5.49 S&P 500	36.85 LC Value	28.34 U.S. Stocks	15.51 LC Value	2.11 S&P 500	16.35 Small Cap	23.29 Intl Stocks
	11.13 HY	5.26 Bank Loan	15.72 U.S. Stocks	5.14 U.S. Stocks	-37.00 S&P 500	27.99 Real Estate	15.12 HY	1.50 Bank Loan	16.00 S&P 500	7.44 HY
	10.88 S&P 500	4.91 S&P 500	11.85 HY	2.04 Bank Loan	-37.31 U.S. Stocks	27.17 Small Cap	15.06 S&P 500	1.03 U.S. Stocks	15.81 HY	5.41 Bank Loan
	8.46 TIPS	4.55 Small Cap	9.07 LC Growth	1.87 HY	-37.73 Real Estate	26.46 S&P 500	10.38 Bank Loan	0.39 LC Value	15.26 LC Growth	2.86 Real Estate
	6.30 LC Growth	2.84 TIPS	6.89 Bank Loan	0.17 LC Value	-38.44 LC Growth	19.69 LC Value	8.21 Intl Stocks	-4.18 Small Cap	9.76 Bank Loan	-2.02 Bonds
	5.37 Bank Loan	2.73 HY	4.33 Bonds	-1.57 Small Cap	-43.06 Intl Stocks	11.41 TIPS	6.54 Bonds	-11.73 Intl Stocks	6.98 TIPS	-2.27 EM Stocks
Lowest ↓	4.34 Bonds	2.43 Bonds	0.41 TIPS	-15.69 Real Estate	-53.18 EM Stocks	5.93 Bonds	6.31 TIPS	-18.17 EM Stocks	4.21 Bonds	-8.61 TIPS



Diversification

Notes:

Bonds	uses the Barclays US Aggregate Bond Index, which measures the performance of the U.S. investment-grade, fixed-rate bond market, including government and credit securities, agency mortgage pass through securities, asset-backed securities and commercial mortgage-backed securities.
TIPS	uses the Barclays US Treasury US TIPS Index, which measures the performance of fixed-income securities with fixed-rate coupon payments that adjust for inflation as measured by the Consumer Priced Index for All Urban Consumers.
HY	uses the Bank of America US HY C Pay BB-B Constrained Index, which measures the performance of securities that pay interest in cash and have a credit rating of BB or B.
Real Estate	uses the FTSE NAREIT All Equity REITs Index, which is an unmanaged, market capitalization weighted index of all publicly-traded REITs that invest predominantly in the equity ownership of real estate. The index is designed to reflect the performance of all publicly-traded equity REITs as whole.
Intl Stocks	uses the MSCI EAFE Index, which is a free-float-adjusted market capitalization index designed to measure developed market equity performance, excluding the United States and Canada.
EM Stocks	uses the MSCI Emerging Markets Index, which tracks the performance of the leading stocks in 23 MSCI emerging countries in the following areas: Europe, Asia, Africa, Latin America and the Middle East.
LC Growth	uses the Russell 1000 Growth Index, which measures the performance of Russell 1000 companies with higher price-to-book ratios and higher forecasted growth values.
LC Value	uses the Russell 1000 Value Index, which measures the performance of Russell 1000 companies with lower price-to-book ratios and lower forecasted growth values.
Small Cap	uses the Russell 2000 Index, which consists of the smallest 2000 companies in the Russell 3000 Index, representing approximately 8% of the Russell 3000 total market capitalization.
S&P 500	is an unmanaged, market-cap-weighted index of 500 common stocks selected for their market size, liquidity and industry group representation within the U.S. equity market.
U.S. Stocks	uses Russell 3000 Index, which measures the performance of 3,000 of the largest publicly traded U.S. companies, based on market capitalization, and it measures the performance of about 98% of the total market capitalization of the publicly traded U.S. equity market.
Bank Loan	uses the S&P/LSTA Performing Loan Index, which is a subset of the S&P/LSTA Leveraged Loan Index, and comprises non-investment-grade and non-rated loans. Tracking only performing loans, unlike its parent index, it removes defaulted issues at the price they reach directly following the default.



Actively Managed Portfolios

ScholarShare College Savings Plan Actively Managed Portfolios Current Asset Allocation (No Changes Recommended) Implemented as of 10/10/14

Underlying Fund Fee	0.56%	0.58%	0.48%	0.52%	0.29%	0.63%	0.33%	0.47%	0.45%	0.56%	0.00%	
Active Age-Based Portfolio Age of Beneficiary	T. Rowe Price Instl Large Cap Growth Fund	T. Rowe Price Instl Large Cap Value Fund	TIAA-CREF Small Cap Equity Fund	TIAA-CREF Real Estate Securities Fund	DFA Large Cap International Portfolio	DFA Emerging Markets Core Equity I Portfolio	TIAA-CREF Bond Plus Fund	PIMCO Real Return Instl Fund	PIMCO Income Instl Fund	T. Rowe Price Instl Floating Rate Fund	T-C Life Funding Agreement	Weighted Average Fund Fee
0 - 4	22.68%	22.68%	5.04%	5.60%	19.20%	4.80%	10.00%	4.00%	4.00%	2.00%	0.00%	0.48%
5 - 8	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	15.00%	6.00%	6.00%	3.00%	0.00%	0.47%
9 - 10	17.01%	17.01%	3.78%	4.20%	14.40%	3.60%	20.00%	8.00%	8.00%	4.00%	0.00%	0.46%
11 - 12	14.18%	14.18%	3.14%	3.50%	12.00%	3.00%	25.00%	10.00%	10.00%	5.00%	0.00%	0.45%
13 - 14	11.34%	11.34%	2.52%	2.80%	9.60%	2.40%	30.00%	12.00%	12.00%	6.00%	0.00%	0.44%
15	8.51%	8.51%	1.88%	2.10%	7.20%	1.80%	30.00%	12.00%	12.00%	6.00%	10.00%	0.39%
16	7.09%	7.09%	1.57%	1.75%	6.00%	1.50%	27.50%	11.00%	11.00%	5.50%	20.00%	0.35%
17	5.67%	5.67%	1.26%	1.40%	4.80%	1.20%	22.50%	9.00%	9.00%	4.50%	35.00%	0.28%
18 +	4.25%	4.25%	0.95%	1.05%	3.60%	0.90%	17.50%	7.00%	7.00%	3.50%	50.00%	0.22%

Active Multi-Fund Investment Portfolios

Active Diversified Equity Portfolio	28.35%	28.35%	6.30%	7.00%	24.00%	6.00%						0.50%
Active Growth Portfolio	19.85%	19.85%	4.40%	4.90%	16.80%	4.20%	15.00%	6.00%	6.00%	3.00%		0.47%
Active Moderate Growth Portfolio	11.34%	11.34%	2.52%	2.80%	9.60%	2.40%	30.00%	12.00%	12.00%	6.00%		0.44%
Active Diversified Fixed Income Portfolio							50.00%	20.00%	20.00%	10.00%		0.41%
Active Conservative Portfolio							25.00%	10.00%	10.00%	5.00%	50.00%	0.20%
Active International Equity Portfolio					80.00%	20.00%						0.36%

Active Single Fund Investment Portfolios

Investment Portfolios	Percent Allocation	Underlying Mutual Fund	Fund Fee
Social Choice Portfolio	100.00%	TIAA-CREF Social Choice Equity Fund	0.19%
Principal Plus Interest Portfolio	100.00%	TIAA-CREF Life Co. Funding Agreement	0.00%

Passively Managed Portfolios

ScholarShare College Savings Plan
Passively Managed Portfolios
Current Asset Allocation (No Changes Recommended)
 Implemented as of 11/4/11

Underlying Fund Fee	0.07%	0.07%	0.25%	0.52%	0.12%	0.27%	0.37%	0.00%	
Passive Age-Based Portfolio Age of Beneficiary	TIAA-CREF Equity Index Fund	TIAA-CREF International Equity Index Fund	TIAA-CREF Emerging Markets Equity Index Fund	TIAA-CREF Real Estate Securities Fund	TIAA-CREF Bond Index Fund	TIAA-CREF Inflation- Linked Bond Fund	TIAA-CREF High Yield Fund	T-C Life Funding Agreement	Weighted Average Fund Fee
0 - 4	50.40%	19.20%	4.80%	5.60%	14.00%	4.00%	2.00%	0.00%	0.12%
5 - 8	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%	0.00%	0.13%
9 - 10	37.80%	14.40%	3.60%	4.20%	28.00%	8.00%	4.00%	0.00%	0.14%
11 - 12	31.50%	12.00%	3.00%	3.50%	35.00%	10.00%	5.00%	0.00%	0.14%
13 - 14	25.20%	9.60%	2.40%	2.80%	42.00%	12.00%	6.00%	0.00%	0.15%
15	18.90%	7.20%	1.80%	2.10%	42.00%	12.00%	6.00%	10.00%	0.14%
16	15.75%	6.00%	1.50%	1.75%	38.50%	11.00%	5.50%	20.00%	0.12%
17	12.60%	4.80%	1.20%	1.40%	31.50%	9.00%	4.50%	35.00%	0.10%
18 +	9.45%	3.60%	0.90%	1.05%	24.50%	7.00%	3.50%	50.00%	0.08%

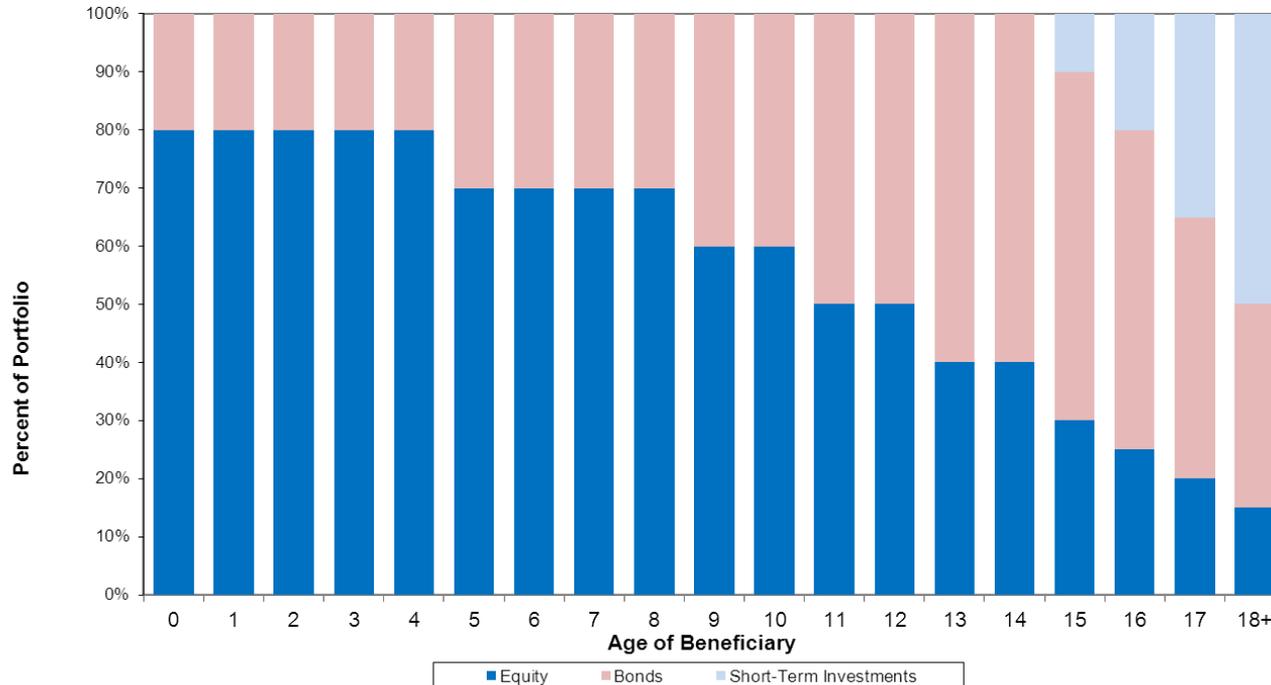
Passive Multi-Fund Investment Portfolios

Passive Diversified Equity Portfolio	63.00%	24.00%	6.00%	7.00%					0.11%
Passive Growth Portfolio	44.10%	16.80%	4.20%	4.90%	21.00%	6.00%	3.00%		0.13%
Passive Moderate Growth Portfolio	25.20%	9.60%	2.40%	2.80%	42.00%	12.00%	6.00%		0.15%
Passive Diversified Fixed Income Portfolio					70.00%	20.00%	10.00%		0.18%
Passive Conservative Portfolio					35.00%	10.00%	5.00%	50.00%	0.09%
Index International Equity Portfolio		80.00%	20.00%						0.11%

Passive Single Fund Investment Portfolios

Investment Portfolios	Percent Allocation	Underlying Mutual Fund	Fund Fee
Index Bond Portfolio	100.00%	TIAA-CREF Bond Index Fund	0.12%
Index U.S. Large Cap Equity Portfolio	100.00%	TIAA-CREF S&P 500 Index Fund	0.07%
Index U.S. Equity Portfolio	100.00%	TIAA-CREF Equity Index Fund	0.07%

Glide Path Investment Allocations



Capital Appreciation



Capital Preservation

The beginning of the glide path invests in primarily global equities and real estate stocks to take advantage of higher expected returns in these markets for beneficiaries with longer investment horizons.

The middle of the glide path invests in primarily a mix of global equities and real estate stocks and fixed income investments, balancing the more volatile asset classes with less risky bonds for stability.

The end of the glide path invests in a large portion of short-term investments through the TC Life Funding Agreement for increased stability and liquidity just prior to college matriculation.



Underlying Investment Funds in ScholarShare

U.S. Equities	International and Emerging Markets Equities	Alternative Assets	Fixed Income and Cash Equivalents
Active Funds			
<p>T-C Small Cap Equity Fund T-C Social Choice Equity Fund <i>T. Rowe Price Large Cap Growth Fund</i> <i>T. Rowe Price Large Cap Value Fund</i></p>	<p><i>DFA Large Cap International I Portfolio</i> <i>DFA Emerging Markets Core Equity I Portfolio</i></p>	<p>T-C Real Estate Securities Fund</p>	<p>T-C Bond Plus Fund T-C High Yield Fund T-C Inflation-Linked Bond Fund T-C Life Funding Agreement <i>T. Rowe Price Floating Rate Fund</i> <i>PIMCO Real Return Fund</i> <i>PIMCO Income Fund</i></p>
Index Funds			
<p>T-C Equity Index Fund T-C S&P 500 Index Fund</p>	<p>T-C International Equity Index Fund T-C Emerging Markets Equity Index Fund</p>	<p>T-C Bond Index Fund</p>	

Note: Colored italics represent non-proprietary funds.

ScholarShare – Additional Asset Class Analysis



- TFI evaluated ScholarShare’s fixed income composition and concluded it is well-positioned
 - Core bond funds comprise the bulk of the fixed income investments for broad exposure to the various sectors of the debt markets
 - Additional allocations to high yield bonds and floating rate notes add diversification and lower duration for a potential rising interest rate environment in a post Quantitative Easing world
- The TC Life Funding Agreement continues to offer:
 - Liquidity, principal protection, and stability
 - A guaranteed crediting rate that is still significantly higher than money markets
 - A low cost solution for conservative investors
- TFI reviewed the international equity exposure and recommend no changes to the current allocations
 - The allocation of 30% (80% Developed Markets/20% Emerging Markets) of the total equity exposure continues to be supported by quantitative analysis and qualitative considerations as a potentially optimal solution to achieve diversification benefits

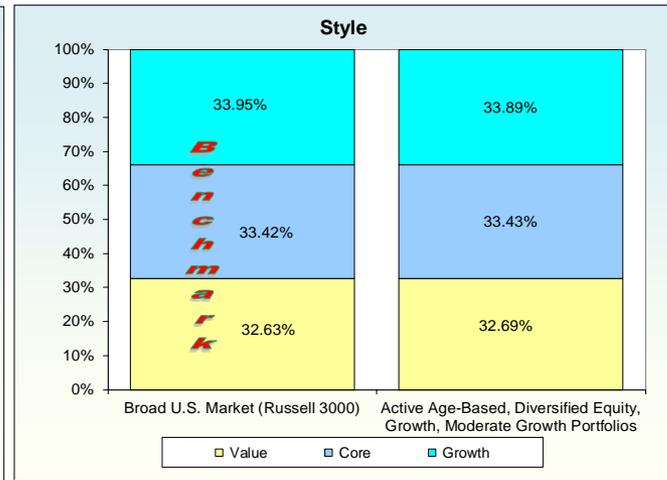
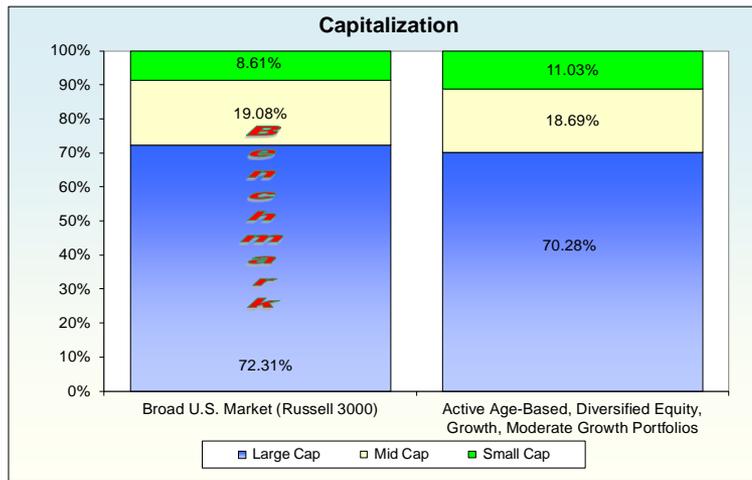


- TFI reviewed the current domestic equity allocation in the Active Age-Based, Active Diversified Equity, Active Growth, and Active Moderate Growth Portfolios compared to each of the Morningstar 9 Style categories in relation to the broad domestic equity index (Russell 3000 Index).
- TFI's philosophy in developing a domestic equity strategy is to maintain a neutral and balanced position in both style (growth vs. value) and capitalization (large cap, mid cap and small cap) to the Russell 3000 Index.
- The style and capitalization weightings for all these portfolios are in line with those of the Russell 3000 Index.



Domestic Equity Style and Market Capitalization Analysis

Benchmarks	Asset Allocation	Capitalization Analysis				Style Analysis			
	Active Age-Based, Diversified Equity, Growth, Moderate Growth Portfolios	Large Cap	Mid Cap	Small Cap	Total	Value	Core	Growth	Total
Russell 1000 Value Index	45.00%	77.57%	19.99%	2.44%	100.00%	55.98%	34.94%	9.08%	100.00%
Russell 1000 Growth Index	45.00%	78.60%	20.37%	1.03%	100.00%	10.03%	31.96%	58.01%	100.00%
Russell Mid Cap Value Index	0.00%	25.59%	66.32%	8.09%	100.00%	49.25%	36.58%	14.17%	100.00%
Russell Mid Cap Growth Index	0.00%	31.29%	65.42%	3.29%	100.00%	8.73%	32.19%	59.08%	100.00%
Russell 2000 Index	10.00%	0.00%	5.32%	94.68%	100.00%	29.89%	33.22%	36.89%	100.00%
S&P 500 Index	0.00%	87.91%	12.09%	0.00%	100.00%	34.43%	33.02%	32.55%	100.00%
Russell 3000 Index	0.00%	72.31%	19.08%	8.61%	100.00%	32.63%	33.42%	33.95%	100.00%
Total Blended Portfolio	100.00%								
Broad U.S. Market (Russell 3000)		72.31%	19.08%	8.61%	100.00%	32.63%	33.42%	33.95%	100.00%
Active Age-Based, Diversified Equity, Growth, Moderate Growth Portfolios		70.28%	18.69%	11.03%	100.00%	32.69%	33.43%	33.89%	100.00%



Domestic Equity Style and Market Capitalization Analysis

Benchmarks	Asset Allocation	Morningstar 9 Style Categories									
	Active Age-Based, Diversified Equity, Growth, Moderate Growth Portfolios	Large Value	Large Core	Large Growth	Mid Value	Mid Core	Mid Growth	Small Value	Small Core	Small Growth	Total
Russell 1000 Value Index	45.00%	43.53%	27.60%	6.44%	11.08%	6.50%	2.41%	1.37%	0.84%	0.23%	100.00%
Russell 1000 Growth Index	45.00%	7.46%	24.74%	46.40%	2.40%	6.89%	11.09%	0.17%	0.34%	0.51%	100.00%
Russell Mid Cap Value Index	0.00%	7.94%	12.24%	5.41%	36.75%	21.57%	8.00%	4.56%	2.77%	0.76%	100.00%
Russell Mid Cap Growth Index	0.00%	0.48%	8.98%	21.83%	7.69%	22.12%	35.61%	0.56%	1.09%	1.64%	100.00%
Russell 2000 Index	10.00%	0.00%	0.00%	0.00%	1.06%	1.39%	2.87%	28.83%	31.83%	34.02%	100.00%
S&P 500 Index	0.00%	29.38%	29.06%	29.48%	5.05%	3.95%	3.08%	0.00%	0.00%	0.00%	100.00%
Russell 3000 Index	0.00%	23.50%	24.22%	24.60%	6.29%	6.30%	6.49%	2.85%	2.90%	2.85%	100.00%
Total Blended Portfolio	100.00%										

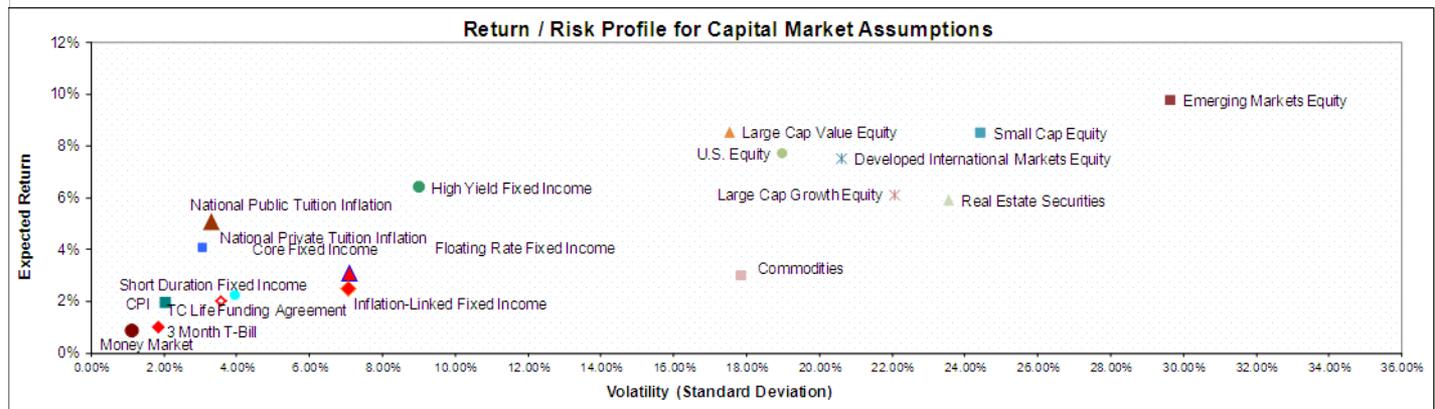
Broad Market (Russell 3000)	23.50%	24.22%	24.60%	6.29%	6.30%	6.49%	2.85%	2.90%	2.85%	100.00%
Active Age-Based, Diversified Equity, Growth, Moderate Growth Portfolios	22.95%	23.55%	23.78%	6.17%	6.16%	6.36%	3.58%	3.71%	3.74%	100.00%

Difference in Portfolios vs. Broad Market			
Active Age-Based, Diversified Equity, Growth, Moderate Growth Portfolios	Value	Core	Growth
Large Cap	-0.55%	-0.67%	-0.82%
Mid Cap	-0.12%	-0.14%	-0.13%
Small Cap	0.73%	0.81%	0.89%



2014 Asset Allocation Study Assumptions

Variables	Benchmarks	Long-Term Capital Market Assumptions (source: Ibbotson Associates)	
		Returns (Mean)	Volatility (Standard Deviation)
U.S. Equity	Russell 3000 Index	7.70%	19.00%
Large Cap Growth Equity	Russell 1000 Growth Index	6.13%	22.06%
Large Cap Value Equity	Russell 1000 Value Index	8.55%	17.52%
Small Cap Equity	Russell 2000 Index	8.50%	24.44%
Developed International Markets Equity	MSCI EAFE Index	7.52%	20.62%
Emerging Markets Equity	MSCI Emerging Markets Index	9.77%	29.65%
Core Fixed Income	Barclays Capital U.S. Aggregate Bond Index	3.12%	7.08%
High Yield Fixed Income	BofAML US HY BB/B Cash Pay Index	6.45%	9.00%
Inflation-Linked Fixed Income	Barclays Capital U.S. Treasury Inflation-Protected Securities Index	2.50%	7.06%
Short-Term Inflation-Linked Fixed Income	Barclays Capital U.S. 0-5 Year TIPS Index	1.60%	3.50%
Short Duration Fixed Income	Barclays Capital U.S. 1-3 Year Government/Credit Bond Index	2.02%	3.59%
Commodities	Bloomberg Commodity Index	2.99%	17.86%
Real Estate Securities	FTSE NAREIT All Equity REITs Index	5.91%	23.55%
CPI	Consumer Price Index - All Urban Consumers	1.98%	2.03%
3 Month T-Bill	BofAML US Treasury Bill 3 Mon Index	1.00%	1.85%
Money Market	iMoneyNet Money Fund Report Averages All Taxable	0.86%	1.14%
Additional Variables			
TC Life Funding Agreement		2.22%	3.95%
National Private Tuition Inflation		4.09%	3.05%
National Public Tuition Inflation		5.09%	3.30%



Tuition Inflation Forecasting

Tuition Inflation Forecasting

Tuition data are sourced from the 2014 College Board Trends in Tuition Pricing.

Private 4-year Tuition Inflation:

$$T(t) = 0.025879 + i(t) + 0.010486 * S(t-1) + 0.164030 * B(t) + 0.239918 * R(t-1) - 0.19621 * GDP + e1(t)$$

Expected Value = 4.09%

Public Tuition Inflation:

$$T(t) = 0.052491 + i(t) - 0.001344 * S(t-1) + 0.25487 * B(t) + 0.06133 * R(t-1) - 0.94593 * GDP + e2(t)$$

Expected Value = 5.09%

where $T(t)$ is the tuition inflation rate in year t ,

$i(t)$ is the CPI inflation rate in year t ,

$S(t)$ is the real stock total return (Russell 3000 Index) in year t ,

$B(t)$ is the real core fixed income total return (Barclays Capital U.S. Aggregate Bond Index) in year t ,

$R(t)$ is the 3 Month T-Bill real return in year t ,

GDP is the expected real GDP percent change (2.5%) for the next 10 years (source: Federal Reserve Bank of Philadelphia),

$e1(t)$ is the random error term following a logistic distribution (0%, 1.18%) with a zero mean and standard deviation of 2.10%,

$e2(t)$ is the random error term following a gamma distribution (6.0, 0.87) with a zero mean and standard deviation of 2.29%

Regression is based on data from 1977-2013.

For 2013-2014 school year, average tuition and fees were: \$6,923 for all in-state public colleges and \$30,094 for private 4-year colleges; based on most recent data 70% enrolled in public colleges and 30% enrolled in private colleges. The enrollment-weighted average tuition and fees for all colleges were \$13,874.30 = \$6,923 * 70% + \$30,094 * 30%. The forecasted enrollment-weighted average tuition and fees for year 1 are \$14,490 = \$6,923 * (1+5.09%) * 70% + \$30,094 * (1 + 4.09%) * 30%. Therefore, the public / private enrollment weighted tuition inflation rate for year 1 is: 4.44% = \$14,490.00 / \$13,874.30 - 1



Glide Path Simulation Summary



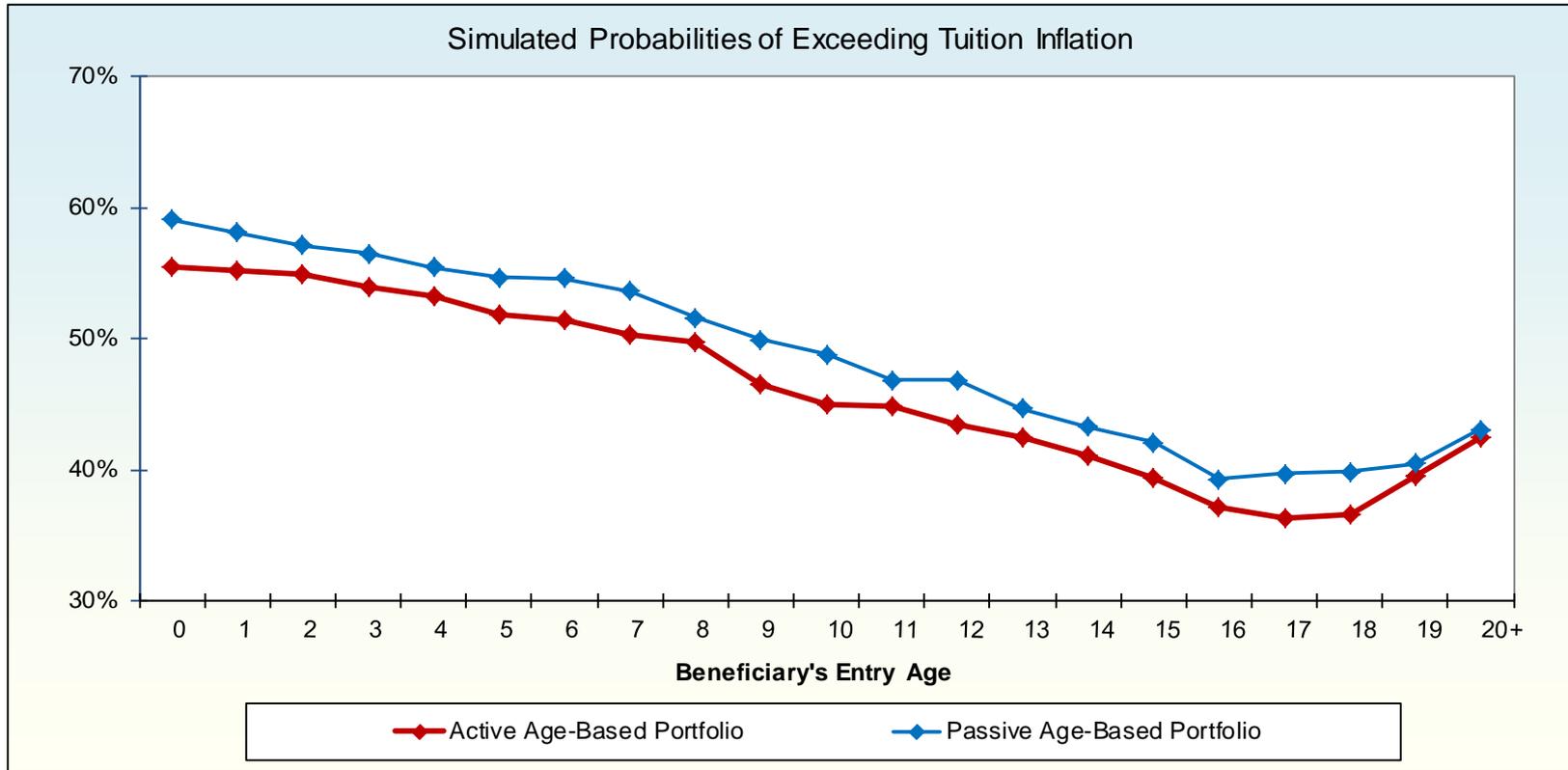
Correlation Matrix (Expected Relationship Among Asset Classes)

	TC Life Funding Agreement	BofAML U.S. 3-Month Treasury Bill / iMoneyNet	Citigroup World Gov't Bond Index	Barclays Cap. U.S. Aggregate Bond Index	Barclays Cap. U.S. TIPS Securities Index	Barclays Cap. U.S. 1-3 Year Gov't / Credit Bond Id	BofAML US HY BB/B Cash Pay Index	Credit Suisse Leveraged Loan Index	FTSE NAREIT All Equity REITs Index	Russell 3000 Index	Russell 1000 Value Index	Russell 1000 Growth Index	Russell 2000 Index	MSCI EAFE Index	MSCI Emerging Markets Index
TC Life Funding Agreement	1.00														
BofAML U.S. 3-Month Treasury Bill / iMoneyNet	0.26	1.00													
Citigroup World Gov't Bond Index	0.13	0.13	1.00												
Barclays Cap. U.S. Aggregate Bond Index	0.97	0.28	0.48	1.00											
Barclays Cap. U.S. TIPS Securities Index	0.81	0.27	0.40	0.82	1.00										
Barclays Cap. U.S. 1-3 Year Gov't / Credit Bond Id	0.86	0.57	0.64	0.89	0.79	1.00									
BofAML US HY BB/B Cash Pay Index	0.57	0.01	0.22	0.45	0.47	0.37	1.00								
Credit Suisse Leveraged Loan Index	-0.21	-0.21	-0.06	0.00	0.31	0.37	0.66	1.00							
FTSE NAREIT All Equity REITs Index	0.38	-0.02	-0.13	0.19	0.20	0.12	0.61	0.59	1.00						
Russell 3000 Index	0.36	0.00	0.03	0.16	0.18	0.11	0.62	0.45	0.65	1.00					
Russell 1000 Value Index	0.40	0.03	-0.11	0.20	0.20	0.14	0.65	0.58	0.75	0.95	1.00				
Russell 1000 Growth Index	0.30	-0.01	-0.05	0.12	0.15	0.05	0.57	0.58	0.51	0.97	0.84	1.00			
Russell 2000 Index	0.28	-0.02	-0.03	0.10	0.15	0.04	0.58	0.45	0.73	0.92	0.90	0.84	1.00		
MSCI EAFE Index	0.29	-0.01	-0.02	0.13	0.17	0.09	0.54	0.62	0.57	0.75	0.74	0.71	0.69	1.00	
MSCI Emerging Markets Index	-0.01	-0.12	-0.15	-0.15	0.03	-0.15	0.44	0.70	0.42	0.59	0.57	0.58	0.60	0.66	1.00



- **1) Expected Return.** The average of a distribution of possible annualized investment returns over an investment horizon of n years generated by Monte Carlo simulation. The returns are based on the assumption that each year money will be invested according to the asset class allocation assigned to the beneficiary's age as the beneficiary ages the asset allocation will move to a more conservative allocation.
- **(2) Standard Deviation of Returns.** A statistic used as a measure of the dispersion or variation in the distribution of annualized investment returns over an investment horizon of n years generated by Monte Carlo simulation, equal to the square root of the arithmetic mean of the squares of the deviations from the expected return. A higher standard deviation indicates a higher volatility.
- **(3) Average Annual Tuition Inflation.** The average of a distribution of possible annualized tuition inflation rates over an investment horizon of n years generated Monte Carlo simulation.
- **(4) Probability of Exceeding Tuition Inflation.** The likelihood that the annualized investment return exceeds average tuition inflation rate over an investment horizon of n years, out of all the possible trials simulated by Monte Carlo simulation.
- **(5) Probability of Achieving 90 Cents per Dollar of Future Tuition.** The likelihood that each dollar of investment today will grow to cover at least 90% of future tuition based on one dollar of today's tuition rising with tuition inflation over an investment horizon of n years.
- **(6) Probability of Non-negative Return.** The likelihood that the investment will achieve at least 0% of annualized return (preserving principal) over an investment horizon of n years.
- **(7) Annualized Shortfall.** The average of a distribution of the differences (shortfalls) between annualized investment returns and annualized tuition inflation rates over an investment horizon of n years among those scenarios that have annualized investment return failing to keep pace with tuition inflation.

Results of Monte Carlo Simulations



Given the expected returns, volatilities, and correlations among underlying investments, forecasts for the probability of exceeding tuition inflation are in line with expectations and historical norms.

