COLLEGE PENSION FUNDS:
A 50+ YEAR COMPARISON OF TIAA AND CREF

Michael E. Benefield
Arkansas Tech University
Corley 226
Russellville, AR 72801-2222
(479) 968-0264
mbenefield@atu.edu

Joseph L. Moore
Arkansas Tech University
Corley 212
Russellville, AR 72801-2222
(479) 968-0668
jmoore@atu.edu

College Pension Funds: A 50+ Year Comparison of TIAA and CREF

Introduction

The Teachers Insurance and Annuity Association (TIAA) and College Retirement Equity Fund (CREF) are well known by most college faculty. These two organizations provide retirement annuities through employer sponsored defined contribution plans. TIAA was founded in 1918 and CREF was established in 1952. TIAA offers traditional annuity, while CREF was the first nonprofit organization to offer a variable annuity. The variable annuity offers the possibility of greater gains depending on the success of the underlying investments. That is, the values of the CREF account will fluctuate with the stock market, while TIAA is a very low risk option.

TIAA-CREF had more than $346 billion dollars worth of assets under management at the end of 2004. This paper is concerned only with the general account of TIAA and the stock account of CREF. These accounts had more than $160 billion and $164 billion, respectively, under management at the end of 2004.[1]

Objectives

The objectives of this paper are fourfold: 1) To compare the long-run performance of the two funds; 2) To question the conclusion of an article by Ralph Gallay that appeared in the Spring 1980 *AACSB Bulletin* entitled *"College Pension Funds: A 27 Year Comparison of TIAA and CREF"*. (One of the conclusions of this earlier article was that over the life of the CREF Pension Fund, with the exception of only a few years, the plan in general has been outperformed by its original co-fund, TIAA); 3) To compare the CREF Fund to the Standard and Poor's 500 Index; and; 4) To compare TIAA to Treasury Bill rates.

Analysis and Discussion

TIAA vs. CREF

The TIAA Fund offers a guaranteed interest rate plus added growth through dividends. This fund primarily invests in bonds, loans, and real estate. The CREF account offers variable returns geared toward the US and foreign stock markets. These two accounts were chosen because they are the oldest annuities and offer a wealth of historical information. Some believe that retirement plans should offer only two asset types: fixed income and equities. It is anticipated that most participants will make an asset allocation decision that will involve some mix of these two asset types. However, for this paper, the returns are analyzed separately.

All rates in the paper utilize the total return. This is consistent with the way financial institutions report their performance results. This rate shows the capital gain or loss component together with the dividend or interest income.

The initial sections of the paper have been researched, organized, and presented in exactly the same way the data was presented in the referenced 1980 article by Ralph Gallay. This study updates the original article to examine the most recent time period. In addition, history will allow a look at a longer time interval, including that covered in the original article. Now, there are many more asset allocation choices ranging from money market and bond funds to global or growth accounts. With the numerous fund choices, there are almost limitless allocation combinations for one's portfolio. For comparability, we limit our study to the same asset choices as Gallay's study.

---

[1] Gallay, Ralph. "College Pension Funds: A 27-Year Comparison of TIAA sand CREF." *AACSB Bulletin v15* (3), American Assembly of Collegiate Schools of Business. Spring 1980.

Gallay's study covered the period 1952-1978 (27 years) or from inception of CREF till publication of the paper. Again, for comparability, we study the most recent 27 year period (1978-2004), as well as the period beginning in 1953 when the original study began, and the period since the market dropped in 1999 (2000-2004). Our expanded version of Gallay's Tables 1 & 2 as well as our Tables 3 & 4 comparing TIAA/CREF to the market are shown at the end of the paper.

Table 1 shows the year-end 2004 value of $1 invested in any given year since 1953. This is comparable to Gallay's Table 1. Table 1A shows the relative values for the three time periods.

Table 1A: 2004 Year-End Value of $1 Invested in Any Given Year Since 1953

Period	**TIAA**	**CREF**	**CREF / TIAA**
1953-1999	$29.12	$188.65	6.48
1978-2004	$8.94	$26.18	2.93
2000-2004	$1.34	$0.93	0.69

In Gallay's article, TIAA "outperformed" CREF in 18 years, while CREF values were higher in 8 years. For the entire period, i.e., a dollar invested in 1952 and allowed to grow until the end of 1978, the value of the CREF fund was approximately double TIAA's ($8.14 vs. $4.12 or a ratio of 1.976). Table 1A also shows the ratios for the relative time periods.

The period since Gallay's study shows CREF outperformed TIAA by a ratio of 2.93: 1. The period (1978-2004) has a ratio of 3.26. The lower ratio for the more current period is due mainly to a loss in CREF during the period from 2000-2004. If the entire 1952-2004 period is considered, CREF growth is 6.48 times that of TIAA.

In Gallay's Table 2, he compares TIAA & CREF if $1 were invested each and every year, which he states, "in this perspective, is more realistic than that taken previously." He finds that TIAA had higher value than CREF in all years except 1952, 1953 and 1975 (with a tie for the last year, 1978). The values for the entire period (1952-1978) were $68 and $72.17 for TIAA and CREF, respectively. In other words, a ratio of 1.06.

In our expanded Table 2, CREF outperforms TIAA in every year, with the exception of the years 1996-2000. Table 2A gives our values and ratios for each of the time periods.

Table 2A: Relative Values at the End of 2004 of $1 Invested Each and Every Year in TIAA and CREF			
Period	**TIAA**	**CREF**	**CREF / TIAA**
1953-2004	$580.15	$1713.62	2.96
1978-2004	$92.77	$197.48	2.13
2000-2004	$5.88	$5.75	0.98

As can be seen for the first two time periods, CREF clearly outperforms TIAA in each of those periods of study. On the last period, by 2004, CREF comes close to recovering the losses of 2000, 2001, and 2002.

CREF vs. S&P 500

Even though CREF has beaten TIAA, how have they done relative to the "market"? The management at CREF frequently compares its results against specially constructed benchmarks. While this may be basically consistent with finance theory, it is not what non-finance trained college faculty members understand. Tables 3 and 4 show the value of the S&P and CREF comparable to the definitions in tables 1 and 2 respectively, and Tables 3A and 4A have time period values and ratios. The first part of this study parallels Gallay's comparison of TIAA and CREF. However, TIAA and CREF always use their own 'benchmarks' to gauge performance. It should be informative and interesting to measure performance against an external standard, such as the S&P 500.

To quote TIAA-CREF on measuring performance: *How do you know if your investments are on track? Looking at investment returns in isolation doesn't tell the whole story. A 15 percent return can sometimes be low and a 4 percent loss acceptable, relative to a variety of yardsticks: the rate of inflation; the market in general; competing investments; broad historical trends; and the level of risk you're taking on.*[2]

Table 3A: Comparison of S&P 500 vs. CREF for Various Time Periods if $1 is Invested in the First Year			
Period	**S&P**	**CREF**	**CREF / S&P**
1953-2004	$272.34	$188.65	0.69
1978-2004	$30.16	$26.18	0.87
2000-2004	$0.89	$0.93	1.04

[2]*Principles of Sound Investing*: a Publication of TIAA/CREF, page 35. 1999.

Table 4A: Comparison of S&P 500 vs. CREF for Various Time Periods if $1 is Invested Each & Every Year			
Period	**S&P**	**CREF**	**CREF / S&P**
1953-2004	$2,381.88	$1,713.62	0.72
1978-2004	$225.32	$197.48	0.88
2000-2004	$5.52	$5.75	1.04

As tables 3A and 4A illustrate, when compared to "the market in general", CREF underperforms the S&P 500, with longer investment horizons increasing the divergence. The three top-rated "top-yielding, low-cost mutual funds" (from Ziff-Davis internet investor site: www.zdtv.com/zdtv/moneymachine/investing/jump/0,3668,2295528,00.html) each had a three year return of 29.7%. In other words, it is possible to achieve returns close to that of "the market."

In interpreting the results, several points should be kept in mind. The first is that the S&P 500 may not be an appropriate benchmark. Secondly, the benchmark has no expenses deducted from its performance, while the CREF account does. (CREF expenses are very low.) Thirdly, the benchmark does not have funds in cash or equivalents for various investment purposes, but CREF does. CREF has recently started offering an indexed account, although it is not indexed to the S&P 500.

TIAA vs. Treasury Bills

Many participants will want to know how TIAA has performed against Treasury Bills. In the opinion of the authors, this is not a suitable benchmark for TIAA. However, due to the importance of the risk-free rate in the literature, it is an intriguing question that will be explored. Table 5 shows the year-end 2004 value of $1 invested in Treasury Bills in any given year since 1953. Table 5A shows the relative values for the three time periods.

Table 5A: Comparison of TIAA vs. Treasury Bills for Various Time Periods if $1 is Invested in the First Year			
Period	**TIAA**	**T-Bills**	**TIAA/T-Bills**
1953-2004	29.12	13.13	2.22
1978-2004	8.94	4.63	1.93
2000-2004	1.34	1.09	1.23

Table 6 compares TIAA against Treasury Bills with $1 invested each and every year. Table 6A gives values and ratios for the three different time periods. All the tables show that, except for the 2000-2004 period, TIAA has produced returns greater than one and one-half times Treasury Bills, and even in the last period, TIAA clearly outperformed Treasury Bills. The TIAA portfolio would be a broader universe with more risk.

Table 6A:Comparison of TIAA vs. Treasury Bills for Various Time Periods if $1 is Invested Each & Every Year			
Period	**TIAA**	**T-Bills**	**TIAA/T-Bills**
1953-2004	580.15	285.80	2.03
1978-2004	92.77	54.60	1.70
2000-2004	5.88	5.21	1.13

Conclusion

This study shows that since 1978, CREF has outperformed its co-fund TIAA. This conclusion is based on the year-end 2004 value of $1 invested in any year since 1979, but also on the cumulative year-end 2004 value of $1 invested each and every year in either TIAA or CREF. These same conclusions can be drawn for the total interval since 1953, which are almost exactly opposite of those drawn in the original article. Over the 50+ year span that this analysis covers, the invested dollar would have grown to a more impressive figure by year-end 2004 if invested in CREF in all but four of those years. This conclusion is a dramatic reversal of the conclusion in the Gallay paper.

Even more dramatic is the overall performance of one plan or another. Table 2 examines this question, again assuming the participant does not change his allocation between the two plans. Beginning with any of the 52 years, a continuous and exclusive investment in CREF would have resulted in a greater net present value of the investment in year-end 2004. The same is true in all but five years since 1953 when the total time interval is considered. The variable annuity linked to the stock market has provided a superior performance than that obtained by the fixed-dollar annuity of TIAA. A vital factor helping to explain the results since 1978 has been an environment of generally declining interest rates. In the original study, the US had experienced high and rising interest rates.

Even though CREF did not match the performance of the S&P 500, it is the better of the two choices given by the original study. "Individuals should not expect their pension funds to provide above average performance over a long period."[3] Current options, such as the "growth fund," do not yet have the long data record for analysis. The average college professor should also familiarize him/herself with the "risk" before attempting to achieve higher returns by other investment choices. Investment time horizon could also influence the asset allocation decision. TIAA/CREF has some strategy suggestions for asset allocation (percentages in different funds) which would be an interesting topic for a future study. Another possible follow-up could use different performance evaluation methods.

Some portfolio considerations are evident when correlation tables are examined for the variables employed in this paper. Tables 7A and 8A shows correlation coefficients. Some of the observations are:

1. The negative correlation between TIAA and CREF points to the risk reducing aspects of a combined portfolio.

2. The correlations between CREF and the S&P 500 are close to perfect positive correlation for the two time periods.

[3] Moses, Ed & Cheney, John. Investments: Analysis, Selection & Management, First Edition, 1989.

3. The correlations between TIAA and T-Bills are much lower than the correlations between CREF and the S&P 500. "Diversification is measured by correlating the returns of the portfolio with the returns of the market index. The coefficient of determination or R^2 is used to denote the degree of diversification."[4]

Table 7A: Correlations of TIAA, CREF, S&P 500, & T-Bills for 1953-1978					
Period		**TIAA**	**CREF**	**S&P 500**	**T-Bills**
1953-1979	**TIAA**	1			
	CREF	-0.28626	1		
	S&P 500	-0.241444	0.973187	1	
	T-Bills	0.778221	-0.28271	-0.24972	1

Table 8A: Correlations of TIAA, CREF, S&P 500, & T-Bills for 1978-2004					
Period		**TIAA**	**CREF**	**S&P 500**	**T-Bills**
1979-2004	**TIAA**	1			
	CREF	0.173811	1		
	S&P 500	0.142171	0.980819	1	
	T-Bills	0.631254	0.253726	0.266929	1

[4] Jones, Charles. Investments: Analysis & Management, Seventh Edition, 2000.

Table 1: Year-End 1999 Value of $1 Invested in any Given Year Since 1953				
Year	**TIAA Net Rate Earned on Total Invested Assets**[5, 6, 7]	**Year-End 2004 Value of $1 Invested in TIAA in Year Shown**	**CREF Total Net Rate of Return on Equity Portfolio**[5, 6,7]	**Year-End 2004 Value of $1 Invested in CREF in Year Shown**
1953	2.8	29.1217	2.54	188.6457
1954	2.8	28.3285	48.83	183.9728
1955	3.0	27.5569	25.48	123.6127
1956	3.0	26.7543	9.50	98.5119
1957	3.1	25.9750	-4.71	89.9652
1958	3.1	25.1940	41.22	94.4120
1959	3.3	24.4365	13.89	66.8546
1960	3.5	23.6559	3.36	58.7010
1961	3.8	22.8559	18.60	56.7928
1962	3.9	22.0192	-14.36	47.8860
1963	4.0	21.1927	18.34	55.9154
1964	4.3	20.3776	12.66	47.2498
1965	4.3	19.5374	17.75	41.9402
1966	4.3	18.7320	-4.66	35.6180
1967	4.5	17.9597	23.42	37.3589
1968	4.5	17.1863	6.12	30.2697
1969	4.8	16.4462	-5.51	28.5241
1970	6.7	15.6930	-3.22	30.1874
1971	7.0	14.7076	20.25	31.1918
1972	7.0	13.7454	17.07	25.9391
1973	7.4	12.8462	-18.14	22.1569
1974	7.5	11.9610	-30.95	27.0668
1975	7.5	11.1265	32.06	39.1989
1976	7.5	10.3503	21.19	29.6826
1977	7.7	9.6282	-6.44	24.4927
1978	7.8	8.9398	8.68	26.1785
1979	8.4	8.2930	15.83	24.0877
1980	9.3	7.6503	26.58	20.7958
1981	11.6	6.9994	-1.46	16.4289
1982	13.7	6.2718	21.86	16.6724
1983	12.5	5.5161	25.09	13.6816
1984	11.6	4.9032	4.69	10.9374
1985	11.7	4.3936	32.68	10.4474
1986	10.3	3.9334	21.82	7.8741
1987	8.7	3.5661	5.12	6.4637
1988	8.9	3.2807	17.46	6.1489
1989	9.2	3.0125	27.98	5.2349
1990	8.6	2.7587	-5.54	4.0904
1991	8.7	2.5403	30.09	4.3303
1992	7.7	2.3370	6.29	3.3287
1993	7.3	2.1699	13.90	3.1317
1994	6.5	2.0222	-0.12	2.7495
1995	7.5	1.8988	30.92	2.7528
1996	6.7	1.7663	19.42	2.1027
1997	7.1	1.6554	26.40	1.7607
1998	8.2	1.5457	22.94	1.3930
1999	6.5	1.4286	21.48	1.1331
2000	7.70	1.3414	-8.4	0.9327
2001	7.00	1.2455	-13.8	1.0183
2002	6.50	1.1640	-20.7	1.1813
2003	5.04	1.0929	31.79	1.4896
2004	4.05	1.0405	13.03	1.1303

[5] As reported in *TIAA/CREF Perspectives on Performance, pgs. 12, 13, 20, & 21, 1997.*

[6] 1997-1999 data as reported in TIAA/CREF 1999 Corporate Annual Report.

[7] 2000-2004 data as reported in TIAA/CREF 2004 Corporate Annual Report.

Table 2: Cumulative Year-End 2004 Value of $1 Invested Each and Every Year in TIAA or CREF Since Year Shown		
YEAR	**TIAA**	**CREF**
1953	580.1549	1713.6237
1954	551.0332	1524.9779
1955	522.7047	1341.9779
1956	495.1478	1217.3924
1957	468.3935	1118.8804
1958	442.4185	1028.9152
1959	417.2244	934.5032
1960	392.7879	867.6487
1961	369.1321	808.9477
1962	346.2762	752.1549
1963	324.2570	704.2689
1964	303.0644	648.3535
1965	282.6868	601.1037
1966	263.1494	559.1634
1967	244.4174	523.5455
1968	226.4577	486.1866
1969	209.2714	455.9169
1970	192.8252	427.3928
1971	177.1322	397.2054
1972	162.4246	366.0137
1973	148.6792	340.0745
1974	135.8331	317.9176
1975	123.8720	290.8508
1976	112.7455	251.6519
1977	102.3952	221.9693
1978	92.7671	197.4766
1979	83.8273	171.2981
1980	75.5343	147.2103
1981	67.8840	126.4146
1982	60.8846	109.9856
1983	54.6127	93.3132
1984	49.0966	79.6317
1985	44.1934	68.6943
1986	39.7998	58.2469
1987	35.8664	50.3727
1988	32.3004	43.9090
1989	29.0197	37.7601
1990	26.0072	32.5252
1991	23.2484	28.4348
1992	20.7082	24.1045
1993	18.3712	20.7758
1994	16.2013	17.6440
1995	14.1791	14.8945
1996	12.2803	12.1417
1997	10.5139	10.0390
1998	8.8585	8.2782
1999	7.3128	6.8852
2000	5.8842	5.7522
2001	4.5429	4.8194
2002	3.2974	3.8012
2003	2.1334	2.6199
2004	1.0405	1.1303

Table 3: Year-End 2004 Value of $1 Invested in any Given Year in S&P 500 or CREF Since Year 1953		
YEAR	**Year-End 2004 Value of $1 Invested in S&P in Year Shown**	**Year-End 2004 Value of $1 Invested in CREF in Year Shown**
1953	272.3375	188.6457
1954	275.0884	183.9728
1955	180.2676	123.6127
1956	136.9815	98.5119
1957	128.5004	89.9652
1958	144.0588	94.4120
1959	100.4594	66.8546
1960	89.6959	58.7010
1961	89.2496	56.7928
1962	70.3307	47.8860
1963	77.0325	55.9154
1964	62.7301	47.2198
1965	53.8455	41.9402
1966	47.8457	35.6180
1967	53.2210	37.3589
1968	42.9202	30.2697
1969	38.6320	28.5241
1970	42.2208	30.1874
1971	40.5969	31.1918
1972	35.5179	25.9391
1973	29.8469	22.1569
1974	34.9906	27.0668
1975	47.5415	39.1989
1976	34.6512	29.6826
1977	27.9897	24.4927
1978	30.1613	26.1785
1979	28.2939	24.0877
1980	23.8969	20.7958
1981	18.0490	16.4289
1982	18.9790	16.6724
1983	15.6334	13.6816
1984	12.7620	10.9374
1985	12.0056	10.4474
1986	9.0814	7.8741
1987	7.6636	6.4637
1988	7.2848	6.1489
1989	6.2370	5.2349
1990	4.7430	4.0904
1991	4.8998	4.3303
1992	3.7517	3.3287
1993	3.4835	3.1317
1994	3.1668	2.7495
1995	3.1262	2.7528
1996	2.2752	2.1027
1997	1.8483	1.7607
1998	1.3855	1.3930
1999	1.0774	1.1331
2000	0.8904	0.9327
2001	0.9795	1.0183
2002	1.1119	1.1813
2003	1.4273	1.4896
2004	1.1090	1.1303

Table 4: Cumulative Year-End 2004 Value of $1 Invested Each and Every Year in S&P 500 or CREF Since Year Shown		
YEAR	**Year-End 2004 Value of $1 Invested in Each and Every Year in S&P in Year Shown**	**Year-End 2004 Value of $1 Invested in Each and Every Year in CREF in Year Shown**
1953	2381.8758	1713.6237
1954	2109.5384	1524.9779
1955	1834.4500	1341.0051
1956	1654.1824	1217.3924
1957	1517.2009	1118.8804
1958	1388.7005	1028.9152
1959	1244.6417	934.5032
1960	1144.1823	867.6487
1961	1054.4864	808.9477
1962	965.2368	752.1549
1963	894.9061	704.2689
1964	817.8736	648.3535
1965	755.1435	601.1037
1966	701.2980	559.1634
1967	653.4523	523.5455
1968	600.2313	486.1866
1969	557.3111	455.9169
1970	518.6791	427.3928
1971	476.4583	397.2054
1972	435.8613	366.0137
1973	400.3435	340.0745
1974	370.4965	317.9176
1975	335.5060	290.8508
1976	287.9645	251.6519
1977	253.3132	221.9693
1978	225.3235	197.4766
1979	195.1622	171.2981
1980	166.8683	147.2103
1981	142.9714	126.4146
1982	124.9224	109.9856
1983	105.9434	93.3132
1984	90.3100	79.6317
1985	77.5480	68.6943
1986	65.5424	58.2469
1987	56.4610	50.3727
1988	48.7973	43.9090
1989	41.5125	37.7601
1990	35.2755	32.5252
1991	30.5325	28.4348
1992	25.6328	24.1045
1993	21.8810	20.7758
1994	18.3975	17.6440
1995	15.2307	14.8945
1996	12.1045	12.1417
1997	9.8293	10.0390
1998	7.9810	8.2782
1999	6.5955	6.8852
2000	5.5181	5.7522
2001	4.6277	4.8194
2002	3.6481	3.8012
2003	2.5363	2.6199
2004	1.1090	1.1303

Table 5: Year-End 2004 Value of $1 Invested in any Given Year Since 1953			
Year	**TIAA Net Rate Earned on Total Invested Assets** [8, 9, 10]	**Year-End 2004 Value of $1 Invested in TIAA in Year Shown**	**Year-End 2004 Value of $1 Invested in T-Bills in Year Shown**
1953	2.8	29.1217	13.1292
1954	2.8	28.3285	13.0069
1955	3.0	27.5569	12.7870
1956	3.0	26.7543	12.4605
1957	3.1	25.9750	12.0718
1958	3.1	25.1940	11.8618
1959	3.3	24.4362	11.4067
1960	3.5	23.6559	11.0885
1961	3.8	22.8559	10.8445
1962	3.9	22.0192	10.5522
1963	4.0	21.1927	10.2289
1964	4.3	20.3776	9.8783
1965	4.3	19.5374	9.5029
1966	4.3	18.7320	9.0625
1967	4.5	17.9597	8.6897
1968	4.5	17.1863	8.2492
1969	4.8	16.4462	7.7334
1970	6.7	15.6930	7.2689
1971	7.0	14.7076	6.9672
1972	7.0	13.7454	6.6954
1973	7.4	12.8462	6.2550
1974	7.5	11.9610	5.7997
1975	7.5	11.1265	5.4823
1976	7.5	10.3503	5.2222
1977	7.7	9.6282	4.9613
1978	7.8	8.9398	4.6289
1979	8.4	8.2930	4.2841
1980	9.3	7.6503	3.8430
1981	11.6	6.9994	3.3725
1982	13.7	6.2718	3.0493
1983	12.5	5.5161	2.8073
1984	11.6	4.9032	2.5628
1985	11.7	4.3936	2.3847
1986	10.3	3.9334	2.2503
1987	8.7	3.5661	2.1274
1988	8.9	3.2807	1.9943
1989	9.2	3.0125	1.8447
1990	8.6	2.7587	1.7160
1991	8.7	2.5403	1.6284
1992	7.7	2.3370	1.5744
1993	7.3	2.1699	1.5286
1994	6.5	2.0222	1.4662
1995	7.5	1.8988	1.3899
1996	6.7	1.7663	1.3236
1997	7.1	1.6554	1.2599
1998	8.2	1.5457	1.2024
1999	6.5	1.4286	1.1491
2000	7.70	1.3414	1.0859
2001	7.00	1.2455	1.0502
2002	6.50	1.1640	1.0335
2003	5.04	1.0929	1.0232
2004	4.05	1.0405	1.013078910

[8] As reported in *TIAA/CREF Perspective on Performance*, pgs. 12, 13, 20 & 21, 1997.

[9] 1997-1999 data as reported in TIAA/CREF 1999 Corporate Annual Report.

[10] 2000-2004 data as reported in TIAA/CREF 2004 Corporate Annual Report.

Table 6: Cumulative Year-End 2004 Value of $1 Invested Each and Every Year in TIAA or T-Bills Since Year Shown		
YEAR	**TIAA**	**T-Bills**
1953	580.1549	285.8024
1954	551.0332	272.6733
1955	522.7407	259.6663
1956	495.1478	246.8794
1957	468.3935	234.4189
1958	442.4185	222.3471
1959	417.2244	210.4852
1960	392.7879	199.0785
1961	369.1321	187.9900
1962	346.2762	177.1456
1963	324.2570	166.5934
1964	303.0644	156.3644
1965	282.6868	146.4862
1966	263.1494	136.9833
1967	244.4171	127.9208
1968	226.4577	119.2311
1969	209.2714	110.9819
1970	192.8252	103.2486
1971	177.1322	95.9797
1972	162.4246	89.0125
1973	148.6792	82.3171
1974	135.8331	76.0621
1975	123.8720	70.2624
1976	112.7455	64.7801
1977	102.3952	59.5579
1978	92.7671	54.5966
1979	83.8273	49.9677
1980	75.5343	45.6836
1981	67.8840	41.8376
1982	60.8846	38.4651
1983	54.6127	35.4158
1984	49.0966	32.6086
1985	44.1934	30.0458
1986	39.7998	27.6611
1987	35.8664	25.4108
1988	32.3004	23.2834
1989	29.0197	21.2891
1990	26.0072	19.4444
1991	23.2484	17.7283
1992	20.7082	16.0999
1993	18.3712	14.5255
1994	16.2013	12.9970
1995	14.1791	11.5307
1996	12.2803	10.1408
1997	10.5139	8.8172
1998	8.8585	7.5573
1999	7.3128	6.3549
2000	5.8842	5.2058
2001	4.5429	4.1199
2002	3.2974	3.0698
2003	2.1334	2.0362
2004	1.0405	1.0130

Bibliography

1. Gallay, Ralph. "College Pension Funds: A 27-Year Comparison of TIAA sand CREF." *AACSB Bulletin v15* (3), American Assembly of Collegiate Schools of Business. Spring 1980.

2. A Guide to the TIAA-CREF Accounts, TIAA/CREF, 1997.

3. Jones, Charles. Investments: Analysis & Management, Seventh Edition, 2000.

4. Moses, Ed. & Cheney, John. Investments: Analysis, Selection, and Management. First Edition, 1989.

5. Perspectives on Performance, TIAA/CREF, 1997.

6. *Principles of Sound Investing*: a Publication of TIAA/CREF, page 35, 1999.

7. TIAA-CREF 1999 Corporate Annual Report.

8. TIAA-CREF 2004 Corporate Annual Report.

9. www.stls.frb.org

10. www.zdtv.com/zdtv/moneymachine/investing/jump/0,3668,2295528,00.html