TIAA Traditional Annuity: Adding safety and stability to retirement portfolios

What's inside

This paper explains how TIAA Traditional Annuity works, what makes it uniquely attractive as part of a diversified retirement strategy and examines the composition of the investments held in TIAA's General Account—the source of the earnings, financial strength, and stability that back the guarantees and additional amounts under the TIAA Traditional Annuity.[4]

Overview

Teachers Insurance and Annuity Association of America (TIAA) was established in 1918 as a legal reserve life insurance company under the insurance laws of the State of New York. Launched in 1918, TIAA Traditional Annuity, issued by TIAA, has helped millions of plan participants save for retirement and remains a core holding in many of their retirement portfolios. Considering TIAA Traditional Annuity's features, it's not surprising that more participant dollars remain allocated to it than to any other TIAA product.[1]

Key benefits

- **Guaranteed growth.** The value of your participants' retirement savings is guaranteed to increase every day even in the most volatile markets.[2]
- **Guaranteed lifetime income.** Participants can turn their savings into regular monthly income to help meet everyday living expenses in retirement.[3]
- **Exclusive benefits.**[3] Our "sharing the profits" approach seeks to reward participants with additional growth and income.

TIAA Traditional can help offset the effects of market fluctuations on other assets held in a diversified portfolio, and offers many other benefits.

TIAA Traditional Annuity

This guaranteed fixed annuity is offered to participants in employer-sponsored retirement plans and to eligible individuals in Individual Retirement Accounts (IRAs) through a contract(s) with TIAA. Participants who choose to allocate a portion of their retirement savings to TIAA Traditional Annuity make contributions that purchase a specific guaranteed minimum amount of lifetime income based on the contractual rate schedule in effect at the time the premium is paid.

The participant's principal, plus a specified rate of interest, is guaranteed by TIAA's claims-paying ability. The TIAA Traditional Annuity also provides an opportunity for participants to receive additional amounts, which the TIAA Board of Trustees (the Board) may declare on a year-by-year basis. These additional amounts, when declared, remain in effect for the 12-month "declaration year" that begins each March 1 for accumulating annuities and January 1 for lifetime-payout annuities; they are not guaranteed for future years.

How TIAA Traditional Annuity is offered

TIAA Traditional Annuity is offered through a variety of contracts, including Retirement Annuities (RAs), Group Retirement Annuities (GRAs), Supplemental Retirement Annuities (SRAs), Group Supplemental Retirement Annuities (GSRAs), Retirement Choice (RC) and Retirement Choice Plus (RCP) annuities, IRAs and Keoghs.

The type of contract through which a participant allocates to the TIAA Traditional Annuity determines the applicability of certain account features, such as the guaranteed minimum interest rate, additional amounts paid, the degree of liquidity of the participant's accumulation and the options for receiving income upon retirement.

This paper focuses primarily on RA contracts, although other types of contracts are referenced where appropriate. It summarizes TIAA Traditional Annuity's features, discusses valuation and explains other important information.

Key features of TIAA Traditional Annuity rates of return

There are four primary characteristics of return that are key to understanding and evaluating TIAA Traditional Annuity:

1 Guaranteed Growth

TIAA Traditional Annuity guarantees principal and credits contracts a guaranteed minimum interest rate during the accumulation phase—generally 3%, but between 1% and 3% for some contracts. These guarantees of principal and minimum interest rates ensure that each participant's accumulation is protected from loss and will always increase in value.[3]

2 Opportunity to receive additional amounts

As described earlier, additional amounts above the guaranteed minimum interest rate may be declared at the discretion of the Board on a year-by-year basis. Such additional amounts have been paid on in-plan annuities under one or more contracts every year since 1948. In fact, since 1981 the TIAA Traditional total interest crediting rate under Retirement Annuity and Supplemental Retirement Annuity contracts has outpaced inflation through December 31, 2020. When declared, additional amounts remain in effect for the "declaration year" that begins each March 1, and are not guaranteed for future years. Together, the guaranteed minimum and additional amounts make up the "crediting rate" in the accumulation phase of the account.

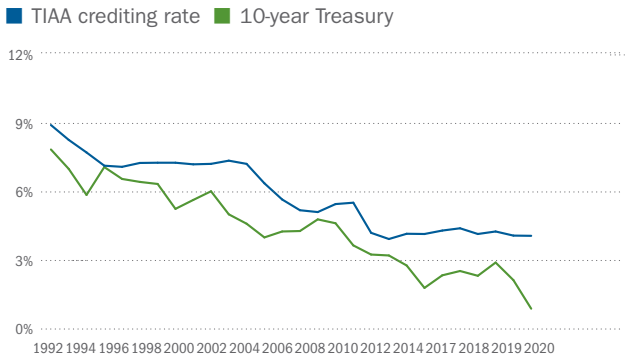
Because the yields available on bonds and other fixed income investments tend to change over time, TIAA groups the premium dollars it receives over defined time periods into interest rate buckets—typically composed of one or more contiguous calendar months—for the purpose of determining the crediting rate for the applicable declaration year during the accumulation phase. The crediting rate for each interest rate bucket is determined, in part, by the net investment earnings rate of the TIAA assets supporting that interest rate bucket. In determining the crediting rates, we also account for targets for plan and participant servicing expenses, product costs (including amounts associated with managing and maintaining the general account collateral portfolio), and amounts set aside intended to cover risks and capital charges (referred to as "contingency reserves").

The net investment earnings rate associated with each interest rate bucket reflects, in part, both the yields at which premiums are invested and the rates at which subsequent cash flows are reinvested. This approach enables TIAA, at its discretion, to distribute excess earnings to participants on a more equitable basis, so that each generation will ultimately receive benefit payments that reflect, in part, the prevailing interest rate environment at the time the crediting rates were applied.[4]

Exhibit 1 shows the crediting rate for RA and GRA contracts for the years 1991 through 2020. Over that period, the crediting rate averaged 5.80% and ranged from a high of 8.93% in 1991 to a low of 3.94% in 2010. The declining rate in more recent years is reflective of general interest rate trends. Due to the minimum guarantee, there have been no years in which the crediting rate fell below 3%.

Exhibit 1

Trends in key rates spanning three decades: TIAA Traditional crediting rates and 10-year U.S. Treasury rates, 1991-2020



The TIAA Traditional Annuity crediting rate represents the average rate applied to all accumulations in force under RA and GRA contracts each year. The 10-year U.S. Treasury rate represents the annual average of each of the 12 monthly spot rates. Sources: TIAA/Bureau of Labor Statistics (as of the end of 12/31/2020).

The graph above is not intended to compare the TIAA Traditional Annuity to 10-year U.S. Treasury securities. Rather, the graph merely shows the TIAA Traditional Annuity's crediting rate alongside general long-term interest rates (for which the 10-year U.S. Treasury yield is a common barometer) during the time period shown. It is important to note, however, that there are significant differences between a guaranteed insurance product and U.S. Treasuries, and each has its place with regard to addressing an individual investor's needs. Therefore, an investor should not decide between the two based on return alone. There are a number of other factors that must be considered, including the following: (1) different charges and expenses applicable to each, including the mortality and expense charges carried by annuities; (2) liquidity issues (Treasuries are fully liquid while TIAA Traditional is generally not); (3) the manner in which each is taxed, including capital gains implications; (4) the manner in which interest accrues, including the impact of the interest rate bucket system on TIAA Traditional returns; and (5) the fact that TIAA Traditional additional amounts are not ensured for future years and may be discontinued, which could significantly diminish the return potential when compared to U.S. Treasuries. The TIAA Traditional guarantee is backed by the claims-paying ability of Teachers Insurance and Annuity Association of America (TIAA), and the U.S. Treasuries are backed by the full faith and credit of the U.S. Treasury. TIAA Traditional is a guaranteed annuity contract.

3 Guaranteed minimum annuity payment rate and potential for additional amounts during the annuitization phase

The third notable feature related to the TIAA Traditional Annuity account's returns is that each participant dollar applied to the accumulation purchases a guaranteed minimum amount of lifetime annuity income, paid to participants who choose to annuitize some or all of their balance. Within TIAA Traditional Annuity contracts, the interest rate used in the calculation to determine the minimum guaranteed annuity payment amount is at least 2%. As in the accumulation phase, the guaranteed minimum amount may be supplemented by additional amounts declared by the Board on a year-by-year basis.

These additional amounts reflect earnings in excess of what is necessary to pay the guaranteed minimum amount, as well as a payout of unneeded contingency reserves. As an insurance company, TIAA is required to maintain contingency reserves to ensure that it will be able to fulfill its contractual obligations to policyholders, even in the face of unexpected adverse circumstances. However, to the extent that these reserves prove to be unneeded, TIAA may gradually distribute these to participants in the form of additional annuity income at the time of retirement and during the period of time the participant is receiving annuity income after retirement. (It is important to note that if TIAA were a typical stock insurance company, unneeded reserves could be used for the benefit of its stockholders rather than its participants.)

4 Long time horizon to enable competitive returns

The fourth important characteristic related to the TIAA Traditional Annuity's return is related to the level of liquidity provided for under each contract. TIAA has credited more to participants who save in contracts where benefits are paid in installments over time instead of in an immediate lump sum by crediting higher interest rates, typically 0.50% to 0.75% higher. Higher rates will lead to higher account balances and more retirement income for participants. For example, under RA contracts, the fastest way for participants to withdraw their entire accumulation is in 10 annual installments, with the first installment paid immediately so that the "10-year" withdrawal period actually occurs over a period of approximately nine years.

This restricted liquidity provides TIAA with the flexibility to invest its General Account assets, which back up the Traditional Annuity, in a wider range of investments than would be possible with liabilities having a shorter time horizon. This flexibility, combined with deep investment expertise and the economies of scale offered by a large asset base, has helped generate steady returns for the TIAA General Account portfolio—contributing to the portfolio's growth and to the financial strength and stability that back the TIAA Traditional Annuity's guaranteed returns.[4]

Financial strength and liquidity restrictions provide safety and stability

The safety and stability of the TIAA Traditional Annuity is made possible, first and foremost, by TIAA's financial strength—its ability to pay its claims and deliver on the guarantees it makes to its participants.

TIAA has been placed among the highest rated insurance companies in the U.S. by three of four leading insurance company rating agencies.[2] These agencies monitor multiple aspects of life insurance company business, including the quality of the investment portfolio, the soundness and competitiveness of the overall business, and the structure and risks associated with individual products. In addition, each agency monitors capital adequacy using its own capital model or standards.

TIAA's high ratings do not mean that its General Account investments are restricted to securities that carry equally high ratings. Rather, the quality of the investment portfolio is evaluated in relation to the other characteristics of TIAA's business and against TIAA's capital reserves. In effect, the rating process aims to ensure that investment and other risks are balanced by the capital TIAA has available to absorb investment volatility or losses and its ongoing ability to maintain capital at appropriate levels.

Also supporting the safety and stability of the TIAA Traditional Annuity are the liquidity restrictions included in RA and certain other contracts. As described earlier, this helps facilitate TIAA's ability to invest a portion of its General Account portfolio in long-term assets that have the potential to contribute to the General Account's growth and to the financial strength and stability that back the TIAA Traditional Annuity's guaranteed returns.

The TIAA General Account: A sound, diversified portfolio[4]

A look at TIAA's General Account investments sheds light on the strength and stability that back the TIAA Traditional Annuity's guarantees. Although participants in the TIAA Traditional Annuity do not invest in the General Account portfolio, the investment performance of that portfolio supports the contract's minimum guaranteed returns, additional amounts and payout obligations.

As an insurance company, TIAA is governed by New York State insurance regulations that limit the General Account's exposure to higher-risk asset types. In particular, insurance regulations limit the proportion of investments that can be allocated to certain asset classes. Specifically, regulations limit holdings of below-investment-grade bonds to 10% of the portfolio; emerging market debt to 4%; U.S. common stock and other nonpreferred equity securities to 20%; and U.S. real estate to 20%.

Regulations also require TIAA to maintain certain minimum amounts of capital. These capital requirements vary by the amount and type of risk. For instance, emerging market bonds, equities and real estate require significantly higher capital than investment-grade bonds.

In general, regulatory constraints and capital requirements dictate that life insurance company general accounts focus largely on investment-grade fixed-income assets. The challenge is to construct a portfolio that optimizes return within these constraints.

Key advantages

TIAA has three valuable competitive advantages that enable it to meet this challenge:

1. TIAA is a capital-rich insurance company.
2. Although TIAA Traditional Annuity participants do not invest in the TIAA General Account portfolio, the characteristics of the contract help make it possible for the General Account to invest in long-duration and less-liquid alternative assets, including higher-yielding alternatives to the "plain vanilla" corporate bonds that have historically dominated life insurance company portfolios.
3. The TIAA General Account has invested $27.0 billion per year on average since 2000, making TIAA one of the world's largest institutional investors (as of December 31, 2020). The size and constancy of

these investment flows provide TIAA with the asset base and stability to take advantage of investment opportunities in asset classes that might not be available to investors with smaller or less constant flows. In addition, the breadth and stability of TIAA's asset base have allowed it to nurture in-house expertise and accumulate experience in these asset types. And because of its scale, TIAA can execute transactions more efficiently and cost effectively, an advantage that smaller investors do not enjoy.

In combination, these three advantages have made it possible to build TIAA's General Account portfolio using a variety of asset types.

The role of the TIAA Traditional Annuity in a diversified retirement portfolio

The key attributes of the TIAA General Account—its financial strength, highly diversified portfolio, long-term investment time horizon and economies of scale—make it possible for the TIAA Traditional Annuity to offer important advantages to its contract holders:

- Guaranteed principal and a guaranteed rate of interest, plus additional amounts as may be declared annually by the Board
- A guaranteed minimum payment rate, plus the potential for additional amounts paid from excess earnings and capital reserves, for those who annuitize some or all of their balance

In addition to being a source of safety and stability in its own right, the TIAA Traditional Annuity can help offset the effects of market fluctuations on other assets held in a diversified retirement portfolio. Classified as a "guaranteed" asset, TIAA Traditional Annuity returns historically have had little or no correlation to returns from other types of assets, such as stocks and bonds. (Correlation measures the relationship among returns of different asset classes, showing how similarly or differently they tend to perform.) This low or negative correlation can help minimize volatility and potentially improve overall portfolio returns over time, making the TIAA Traditional Annuity a valuable component of a well-diversified retirement portfolio.

Appendix A—How fair value pricing of the TIAA Traditional Annuity is determined

Financial Accounting Standards Board ("FASB") Codification ("ASC") 962 requires defined contribution plans to report all investments at amounts meaningful to plan participants or at amounts at which they transact with the plan, which is either contract value or fair value, in their financial statements prepared in accordance with generally accepted accounting principles ("GAAP"). TIAA Traditional Annuity is reported at contract value and segregated into non-benefit and fully benefit-responsive categories. ASC 820 provides guidelines for applying the fair value framework outlined in that guidance and related footnote disclosures. Fair value approximates contract value for non-benefit-responsive versions of TIAA Traditional (RA, GRA, RC). As noted in ASC 962, fully benefit-responsive contracts are reported at contract value and non-benefit contracts are recorded at fair value.

The contract value of the TIAA Traditional Annuity equals the accumulated cash contributions, interest credited to the plan's contracts, and transfers in (if any) less any withdrawals and transfers out (if any).

Based on its assumptions and analysis, TIAA has concluded that contract value approximates fair value. To aid plan sponsors in beginning an analysis to determine fair value of the TIAA Traditional Annuity, TIAA offers two approaches. It is important to note that changes in assumptions as well as plan demographics could result in a different conclusion.

The following is a discussion regarding the fair value of the TIAA Traditional Annuity, according to the principles outlined in ASC 820. The conclusion is that the fair value of such contracts does not differ significantly from the contract value. This conclusion is supported by the following two lines of reasoning:

1. Theoretical transfer of an asset owned by a pension plan, and
2. A quantitative model based on assumptions of future interest rates and related discounted cash flows.

Theoretical transfer of an asset owned by a pension plan
According to ASC 820, fair value is generally defined as the exchange price based on an exit (not entry) of the position in its principal market. Because of the nature of the TIAA Traditional Annuity contract during the accumulation stage, there is no principal market where such contracts are traded. Therefore, we considered a theoretical marketplace where the TIAA Traditional Annuity contract's fair value would be considered to be approximately the same value as the contract value based on the following considerations:

- Contributions represent current transactions between willing buyers (the participant) and sellers (TIAA) as prescribed in the relevant GAAP accounting guidance. Participants have the option to allocate their contributions between the TIAA Traditional Annuity and a number of investment choices, such as mutual funds and the CREF Accounts, whose fair values are readily observable. Because participants typically allocate contributions among several choices, including the TIAA Traditional Annuity, and all transactions are at current contract value, the assumption is that each investment purchase is being made at fair value since these purchases are not distressed and are made between willing buyers and sellers in open market conditions where a participant has a variety of investment choices.
- When benefit plan participants in higher education or other similar industries with a pension/employee benefit plan change employers, they often enroll in new plans with very similar fixed annuity options, including the TIAA Traditional Annuity. Because these transactions continue to occur along with continued participant contributions at current stated contract values, the market observable presumption is that the contract value of current funding represents a good approximation of fair value based on the willingness of the participant to continue to contribute. For each contribution, TIAA continues to record a contractual liability for the current contribution and does not consider such liability to have any embedded gain or loss.
- Upon death or any other condition where the contract is settled with the participant, as prescribed within the applicable plan documents, the participant surrenders the future accumulation benefits in exchange for a cash payout based on the contract value. This example demonstrates that the contract value can be monetized when a distributable event occurs.

Quantitative model based on discounted cash flows
We used 25 years of data (1996-2020), the "measurement period," to determine the blended return on TIAA Traditional Annuity contracts for the participant population and compared that to the standard 10-year risk-free rate derived from the available "on the run" 10-year Treasury yield.

Summary statistics show the following results for the measurement period:

- Correlation of 89% between the 10-year Treasury and TIAA Traditional Annuity average return
- Given a Pearson correlation table, the correlation appears to be statistically significant (one can reject the null hypothesis that the correlation is happenstance). The mean spread over 10-year Treasuries for the observed measurement period is 166 basis points
- Standard deviation of the spread is 72 basis points

Average AAA corporate credit spreads for the same period, derived from Moody's data in all months where such data is provided, is 96 basis points with a 34 basis-point standard deviation and a correlation of 98%.[5] The 166 basis-point TIAA Traditional Annuity spread over 10-year Treasuries seems reasonable given the 96 basis-point AAA corporate spread derived from the Moody's AAA corporate bonds over the same time frame. In other words, TIAA Traditional Annuity, on average, yields about 70 basis points above the typical AAA corporate credit spread. One can interpret the additional spread relative to the AAA corporate bond rate as a premium attributable to the overall illiquidity of the TIAA Traditional Annuity relative to a similarly rated corporate bond.

A 10-year risk-free rate seems appropriate to use as a benchmark for the TIAA Traditional Annuity during the accumulation stage (for purposes of the above spread calculation) given the average participant's age is 55 years, implying that the average participant is 10 plus years away from a typical retirement age. Thus, contracts will not typically be monetized for several years.

The spread is assumed to represent the TIAA credit spread for long-term obligations of a highly rated insurance company. Thus, an anticipated crediting rate is considered to be a fair approximation of the discount rate used for an owner of the contract based on his or her expectation of future cash flows. All expected future cash flows would thus be discounted at TIAA's expected yield, and thus the present value of future accumulations would reasonably approximate current contract values (i.e., valuation is akin to a floating-rate bond, which regularly resets to a "market" crediting rate for a highly rated insurance company with relevant liquidity restrictions). TIAA contract holders are expected to receive accumulating annuity rates based on a risk-free rate plus the TIAA credit spread over the life of an accumulating annuity which, over a long-term cycle of the annuity contract, will revert back to a mean (historically 166 basis points over 10-year Treasuries for the measurement period).

Impact of interest rate fluctuations

The primary assumption is that the long-term rate of the TIAA Traditional Annuity during the accumulating stage will be, on average, 166 basis points above 10-year Treasuries with the spread above Treasuries representing the TIAA credit spread. While there is no guarantee what future crediting rates will be available to plan participants, past returns have been normally distributed over the measurement period relative to other observable risk-free or "low-risk" investments and market inputs.

The observation period was chosen to represent the start of increased transparency within the modern capital markets. Therefore, it represents a period where investors can more readily achieve transparent pricing and lower switching costs than may have existed in earlier periods. This period was represented by such factors as:

- Increased widespread use of the Internet and personal media and thus, increased transparency of financial products and rates available to TIAA participants
- Usage of modern portfolio management techniques, including increased duration matching used by General Account portfolio managers.
- Competitive pressures derived from additional financial services providers and other financial services networks, such as retail brokerage and wealth management/financial counseling, as they became available to core participants

Experience and stability

TIAA is a leading private provider of retirement benefits nationwide with $1.2 trillion in total assets under management for more than 15,000 clients and five million participants.[6]

We pay almost $15 billion in annuity payments and other disbursements per year to participants.

TIAA is ranked as one of Fortune magazine's 100 largest U.S. companies.[7]

Questions?

To learn more about the TIAA Traditional Annuity or TIAA's full menu of products and services, visit **TIAA.org/traditional**.

TIAA Traditional Annuity crediting rates

The following example uses discounted cash flow to determine the crediting rate:

- $1,000 TIAA Traditional Annuity balance earning an average annual rate of 4.08% during 2020 (average crediting rate for the year ending December 31, 2020).
- In one year, the value would be $1,041.
- If the $1,041 amount is discounted back at 4.08%, the original value of the accumulation at the beginning of the year would be $1,000.
- The discount rate is reasonable because, over the measurement period, the TIAA Traditional Annuity has, on average, yielded 166 basis points over 10-year Treasuries (standard deviation of 72 basis points) and the 2020 Treasury yield averaged 0.89%.
- Thus, for 2020, the average TIAA Traditional Annuity was accumulating at 10-year Treasury plus 319 basis points; just over 2 standard deviations away from the mean. Note that the TIAA Traditional crediting rate resets annually each March 1 and average crediting rates are expected to decrease by about 0.60% effective March 1, 2021. At the time of preparing this document in mid-February 2021, the 10-year Treasury yields have risen approximately 0.30% from their 2020 average. Given the increase in 10-year Treasury yields and decrease in TIAA Traditional average crediting rate, the spread between average TIAA Traditional crediting rate and the 10-year Treasury yield will return to about one standard deviation above the mean.
- This hypothesis can be continuously back-tested to see if correlations and spreads can be maintained over long periods of time.

Appendix B—Expanded ASC 820 disclosure

Accounting Standards Codification (ASC) 820 requires quantitative and qualitative disclosures related to the fair valuation of assets. The level in which an asset falls is not indicative of its quality but simply an indication of the source of valuation inputs with each investment categorized in the fair value leveling hierarchy (Levels 1-3).

Plan management is responsible for the value at which plan assets are reported, preparation of the plan's financial statements, including required disclosure, and the establishment of related internal controls. See the *Plan Advisory, Valuing and Reporting Plan Investments* issued by the Employee Benefit Plan Audit Quality Center of the American Institute of Certified Public Accountants for more information.

Risk-adjusted discount rate

The following table includes the risk-adjusted discount rates that were applied in determining the fair value of TIAA Traditional Investments at December 31, 2020:

Type	Valuation technique	Significant unobservable inputs	Range
TIAA Traditional Annuity	Discounted cash flow Theoretical transfer (exit value)	Risk-adjusted discount rate applied*	RA: 3.00% to 4.45% SRA: 3.00% to 3.70% GRA: 3.00% to 4.45% GSRA: 3.00% to 3.70% RC: 2.50% to 4.40% RCP: 1.75% to 3.65%

TIAA Traditional Annuity account balances are reported at contract value. Contract value is the aggregation of contributions, plus interest, less withdrawals, if any. Crediting rates are a combination of a guaranteed rate and an annually established discretionary rate. Additionally, the discretionary rate applied to contributions received during a reporting period may vary from the discretionary rate applied to account balances at the end of the prior reporting period.

Contract value approximates a discounted cash flow value calculated using an appropriate risk-adjusted market discount rate which correlates closely with TIAA Traditional Annuity's historical crediting rates.

*Unobservable inputs include discount rate applied.

Appendix C—Additional crediting rate considerations

As stated on page 6 of this White Paper, TIAA has concluded that contract value of TIAA Traditional Annuity approximates fair value. Given the nature of TIAA Traditional Annuity, the contract value equals the accumulated cash contributions, credited interest, and transfers in (if any) less withdrawals and transfers out (if any). Hence the guaranteed interest and additional amounts credited to the contracts is a key portion of fair value.

On the right-hand side of page 2 of this White Paper, there is some information on the crediting rate process utilized by TIAA. At a high level, TIAA's crediting rate process has two distinct segments:

- For funds that are already invested in the TIAA Traditional Annuity, credited rates are declared annually and are in effect from March 1 of one year until the end of February of the following year during the accumulation phase; and
- For new contributions coming into TIAA Traditional Annuity in the accumulation phase, crediting rates are set monthly throughout the year and are in effect until the end of February of the following year, at which point the crediting rates are reset as described in the first bullet above.

Additionally, as described on page 2, because the yields on bonds and other fixed income investments tend to vary over time, TIAA tracks the timing of receipt of all contributions invested in TIAA Traditional Annuity. In this way TIAA can set crediting rates that reflect, among other factors, the economic environment at the time contributions are received.

TIAA's management and Board approve the crediting rates for the existing balances prior to the rates going into effect on March 1. Additionally, management and the Board approve ranges for the crediting rates for new contributions for the upcoming year. Furthermore, to the extent the economic environment or other circumstances significantly change subsequent to the Board approval date, the Board may be asked to expand the crediting rate range for new contributions.

In determining crediting rates for both existing balances and new contributions, TIAA considers a variety of factors, such as:

- The net investment earnings rate associated with each grouping of contributions received;
- Financial strength of TIAA and its current capital and surplus level;
- The competitive environment, i.e., rates that other companies are crediting on similar products; and
- Amounts to retain as a risk provision to ensure that contract guarantees will be met; primary risks in TIAA Traditional Annuity include the interest guarantee and the mortality guarantee when annuities eventually enter the payout phase.

TIAA's experience suggests that participants' contribution patterns are not materially impacted by changes in crediting rates. Several factors contribute to this, as follows:

- The portion of retirement plan contributions that are allocated to TIAA Traditional Annuity are typically the result of participant level risk-based asset allocation decisions, where the TIAA Traditional Annuity portion represents a more static and risk-averse guaranteed option relative to other plan investments which have greater levels of investment risk and whose principal balances are not guaranteed. The guarantee is the primary driver of the allocation decision to TIAA Traditional Annuity; crediting rate expectations are less relevant to TIAA Traditional Annuity participants.
- Since TIAA sets its crediting rates, in part, based on the economic conditions when contributions are made, credited rates on new contributions tend to keep pace with other available fixed-income investments that are similar in nature.
- In times of equity declines, TIAA has experienced greater contributions into TIAA Traditional Annuity as participants seek safe havens for their retirement contributions. This was the case in the last economic downturn even though interest rates also declined at that time.

Furthermore, when considering the approximation of fair value for TIAA Traditional Annuity, the process described above considers certain variables which may be used in a contract owner's estimation process and reflect TIAA's competitive position. Such variables considered when setting crediting rates may include:

- Portfolio earned rates: Given the nature of the fixed-income portfolio of TIAA's General Account (which backs the guarantees and returns of TIAA Traditional Annuity), investment income (including capital gains and losses) is projected each year based on portfolio characteristics and the following year's projected investment program. Portfolio earnings projections are considered in the crediting rates determined by management and approved by the Board and enable TIAA Traditional Annuity to maintain supportable annuity crediting rates.
- Financial strength: Crediting rates are established to maintain and further TIAA's financial strength. TIAA is one of only three insurance groups in the United States to currently hold the highest possible rating from three of the four leading insurance company rating agencies for its stability, claims-paying ability and overall financial strength[2], and insurance annuities are further supported by state guaranty funds. The creditworthiness of TIAA and presence of the guaranty funds further minimize any participant impact in the highly unlikely event of TIAA's nonperformance.
- Rate guarantee: As noted herein, principal balances are credited at a guaranteed minimum interest rate, generally 3%. TIAA's long duration assets and liabilities, as well as the aforementioned financial strength, enables TIAA to credit annuity contracts in excess of minimum guarantees (as noted herein, average crediting rates in 2020 were 4.08%). Even in the current interest rate environment, TIAA has continued to maintain average crediting rates above the 3% minimum guarantee and further its capital base and financial strength.

TIAA Traditional Annuity is designed as a retirement product and thus its fair value is not subject to short-term market volatility associated with other financial instruments. As noted herein, TIAA Traditional Annuity has yielded a return in excess of the typical AAA corporate spread to account for the product's illiquidity, a feature which is inherent in its design and suitability as a retirement product. Furthermore, continued participant behavior indicates that the contract value of TIAA Traditional Annuity approximates its fair value. Benefit plan participants continue to contribute to TIAA Traditional Annuity as part of their contribution allocation together with other non-annuity financial products such as mutual funds.

Furthermore, this White Paper uses a 10-year risk-free rate as a benchmark return given the broad observability of 10-year on-the-run U.S. Treasury securities. As shown in the following table, the relationship between TIAA Traditional crediting rates and 10-year U.S. Treasury yields has been relatively stable over the prior 15, 20 and 25 years.

TIAA Traditional Annuity crediting rates and 10-year Treasury yields

Type	2006 to 2020	2001 to 2020	1996 to 2020
TIAA Traditional Annuity Average	4.45%	4.93%	5.39%
10-Year Treasury Average	2.75%	3.17%	3.73%
Average Difference	1.69%	1.75%	1.66%
Standard Deviation Difference	0.77%	0.75%	0.72%

Giving consideration to the impact of the variables noted above and the observed participant and plan sponsor actions in a variety of market environments over several years, TIAA has concluded that TIAA Traditional Annuity's contract value reasonably approximates fair value.

Appendix D—Additional considerations on the average TIAA Traditional Annuity crediting rate as a fair value discount rate

Short-term changes in crediting rate spreads

On page 7 of this White Paper, the quantitative model proposes the average TIAA Traditional Annuity crediting rate as an appropriate discount rate for future benefits, and therefore contract value reasonably approximates fair value. To support the average crediting rate as the discount rate, page 7 demonstrates, over the past 25 years, the average spread of crediting rates over 10-year U.S. Treasury yields approximated the average spread of AAA corporate bonds plus an illiquidity premium.

The spread on TIAA Traditional crediting rates changes over time. To determine whether current market conditions continue to support discounting at the average crediting rate, it may be helpful to look at the number of standard deviations between the current spread and its long-term average. Deviations from the average are to be expected, but very large deviations may suggest a review of the past experience used to justify future discount rates.

The chart below shows the probability that a normally distributed random variable is at least a certain number of standard deviations away from its mean. As described on page 8, during 2020, the actual spread was 2.1 standard deviations above its long-term average. Since there's a 3.5% chance of at least a 2.1 standard deviation difference due to random fluctuations, such a difference does not provide sufficient evidence to conclude that the long-term average no longer applies.

Note that the TIAA Traditional crediting rate resets annually each March 1 and average crediting rates are expected to decrease by about 0.60% effective March 1, 2021. At the time of preparing this document in mid-February 2021, the 10-year Treasury yields have risen approximately 0.30% from their 2020 average. Given the increase in 10-year Treasury yields and decrease in TIAA Traditional average crediting rate, the spread between average TIAA Traditional crediting rate and the 10-year Treasury yield will return to about one standard deviation above the mean.

Different crediting rates by interest rate bucket

TIAA Traditional accumulations are divided into different interest rate buckets, each of which contains deposits made during a specific time frame. Since assets purchased with deposits at different times generally earn different returns, crediting rates vary by interest rate bucket as illustrated by the range of rates on page 9.

Although different interest rate buckets have different crediting rates, discounting benefits from all interest rate buckets at the average crediting rate is appropriate for two reasons. First, since supporting assets generate investment income and maturity proceeds to be reinvested at the same new money rate regardless of interest rate bucket, the crediting rates of all in-force interest rate buckets will become closer and closer to the average over time. Second, since plans have accumulations across many interest rate buckets, applying an average rate to the total plan accumulation will be similar to applying interest rate bucket specific rates to each interest rate bucket.

Standard deviations	0.5	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00
Probability	61.7%	45.3%	31.7%	21.1%	13.4%	8.0%	4.6%	2.4%	1.2%	0.6%	0.3%

[1] Assets held in the TIAA General Account, which backs TIAA Traditional across all retirement plans and accounts, totaled $284 billion as of December 31, 2020.

[2] For its stability, claims-paying ability and overall financial strength, Teachers Insurance and Annuity Association of America (TIAA) is a member of one of only three insurance groups in the United States to currently hold the highest rating available to U.S. insurers from three of the four leading insurance company rating agencies: **A.M. Best (A++ rating affirmed as of July 16, 2020), Fitch (AAA rating affirmed as of November 12, 2020) and Standard & Poor's (AA+ rating affirmed as of August, 18, 2020)** and the second highest possible rating from **Moody's Investors Service (Aa1 rating affirmed as of September 14, 2020)**. There is no guarantee that current ratings will be maintained. The financial strength ratings represent a company's ability to meet policyholders' obligations and do not apply to variable annuities or any other product or service not fully backed by TIAA's claims-paying ability. The ratings also do not apply to the safety or the performance of the variable accounts, which will fluctuate in value.

[3] All guarantees are based upon TIAA's claims-paying ability.

[4] Participants do not invest in the TIAA General Account portfolio, which supports the minimum guaranteed returns, additional amounts, and payout obligations under the TIAA Traditional Annuity.

[5] The example is based on a 30-year Treasury and "AAA" corporate rate using bonds of 20–30 years until maturity. Source: **research.stlouisfed.org/fred2**.

[6] As of 09/30/2020

[7] *Fortune* 02/2021

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