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***Correspondence Memorandum***

**Date:** September 9, 2015  
**To:** Employee Trust Funds Board  
**From:** Steve Hurley, Director, Office of Policy, Privacy and Compliance  
**Subject:** WRS Investment Risk and Market Volatility

**This memorandum is for discussion purposes. No Board action is required.**

At the Board meeting on June 25, 2015, the Board directed the Department of Employee Trust Funds (ETF) to study the effects of investment performance on the Wisconsin Retirement System (WRS). ETF, the State of Wisconsin Investment Board (SWIB) and the Board's actuary, GRS, have begun discussions on this matter and additional information will be provided at the December Board meetings. This memorandum provides basic information and perspective about the effects of market volatility on the WRS, tradeoffs associated with certain approaches for mitigating effects of volatility, and effects on employers, active employees, and annuitants.

**Investment Risk**

Market volatility is a function of investment risk. Investment risk is one of several risks outlined in the [WRS Funding Policy](#). Investment risk is the possibility that investment performance will not meet actuarial expectations or that volatility of returns will create undesirable variation in contribution rates and in annuity dividends<sup>1</sup>. Market volatility is a normal part of investing, but can become a concern when it causes wide swings in investment returns from year to year.

**EFFECTS OF MARKET VOLATILITY ON THE WRS**

**1. Core Fund and Variable Fund**

Even though the Core Fund is diversified, large swings in market performance can affect Core Fund investment performance. Variable Fund performance is particularly affected by volatility because the Variable Fund is invested solely in equities.

The Core Fund consists of retirement contributions made by and for WRS members. All contributions are invested in the Core Fund unless the member has elected to contribute to

<sup>1</sup> Annuity dividends are annual adjustments made to WRS annuities based on market performance.

Reviewed and approved by Pamela Henning, Assistant Deputy Secretary  
*Pamela Henning*  
Electronically Signed 9/15/15

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the Variable Fund. Because the Variable Fund is invested solely in stocks, it is more exposed to volatility than the Core Fund, which is invested in a variety of assets designed to spread risk.

## **2. Employee and Employer Required Contribution Rates**

Market volatility can cause fluctuations in contribution rates. Investment losses usually result in increases in contribution rates. Smoothing annual investment gains and losses is a strategy to mitigate this risk.

A basic principle for funding a defined benefit pension plan is that contributions plus investment earnings must be sufficient to pay promised pension benefits, plus administrative expenses:

$$\text{CONTRIBUTIONS} + \text{INVESTMENT EARNINGS} = \text{BENEFITS} + \text{EXPENSES}$$

When investment earnings exceed expected returns, contribution rates can be lowered because a larger portion of the benefits can be paid from investment earnings. However, when investment performance is lower than anticipated, contribution rates must be increased to ensure that there will be sufficient funding for promised benefits.

## **3. Retirement Benefits**

Annual market performance directly affects WRS money purchase benefits. WRS formula benefits are not affected by investment returns, unless the member has participated in the Variable Fund.

WRS retirement benefits are pre-funded by employee and employer contributions, plus interest from investment earnings. In the WRS, members receive the higher of a formula benefit or a money purchase benefit.

*Money Purchase Benefits* – The amount of interest credited to members' accounts directly impacts money purchase benefits because accumulated interest influences the amount used in calculating money purchase benefits. This is true whether the member participates only in the Core Fund or is also in the Variable Fund.<sup>2</sup>

*Formula Benefits* – The amount of interest credited to members' accounts has no effect on formula benefits for members who are only in the Core Fund, because the members' account balances are not used in this formula calculation.<sup>3</sup> However, if the member has ever participated in the Variable Fund, the Core and Variable Funds'

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<sup>2</sup> Money purchase benefits are based on the member's account balance, which includes the employee contributions plus matching employer contributions, and accumulated interest at the date of retirement. Negative investment performance decreases the annual interest applied to the account, which decreases the total amount in the member's account.

<sup>3</sup> Basic formula benefits are calculated by multiplying the member's final average monthly earnings times a formula multiplier, times years of creditable service. Depending on the member's age and service at retirement, a reduction for early retirement may be applicable.

effective interest rates affect the excess/deficiency balance that is used to adjust the formula benefit.

#### **4. Dividends (Post-Retirement Annuity Adjustments)**

Each year's investment performance dictates the amount of funds available to provide retirees with annual annuity dividends over their initial "floor" annuities.

Core and Variable annuity adjustments are determined annually, after effective rate interest is credited to the Core and Variable portions of the Annuity Reserve<sup>4</sup>. If, after interest crediting, there is more money in the Annuity Reserve than will be needed to pay the Annuity Reserve's future benefit liabilities, a dividend can be granted. However, if there is less money than will be needed to pay the future benefit liabilities, the prior annuity adjustment must be decreased to make up for the shortfall.

*Core Fund Annuity Adjustments* - Because Core annuity adjustments are based on the Core effective rate of interest credited to the annuity reserve, Core annuity adjustments are also "smoothed" over a five-year period. A Core annuity can never be reduced below the original (finalized) amount. An individual annuitant can be granted Core increases that can later be repealed (through an annuity decrease), but the Core annuity can never be decreased below the original amount.

*Variable Fund Annuity Adjustments* - Because Variable annuity adjustments are based on the Variable effective rate of interest credited to the Variable portion of the annuity reserve, there is no "smoothing" of the Variable annuity adjustments. There is no restriction on how much a Variable annuity can be decreased if there would continue to be losses in the Variable Fund. Theoretically, the Variable component of a member's annuity could be reduced to zero.

#### **5. Dividend Reserve**

"Dividend reserve" informally refers to the cumulative amount of all annuity adjustments (Core and Variable) that have been paid. This is the total benefit amount above the guaranteed "floor" annuity for all annuitants. The dividend reserve is more vulnerable to investment risk than in the past. In the several years' of deficits from the large market losses of 2008, many annuities were reduced to their original amounts. Despite recovery and positive dividends in 2014 and 2015, there is a smaller pool of annuities from which reductions may be taken if there is a future shortfall in the Annuity Reserve. In fact, in the years following the 2008-09 market downturn, the dividend reserve decreased by about \$5 billion. Currently, the dividend reserve is about \$6 billion.

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<sup>4</sup> The Annuity Reserve consists of funds transferred from the employee and employer accumulation reserves using an assumed benefit rate of 5%. The Annuity Reserve can only be used to pay annuities and death benefits. The Annuity Reserve is currently valued at approximately \$50 billion and represents about half of the public trust fund.

Theoretically, in a series of down markets, or in a single extreme market decline, this dividend reserve could eventually be reduced to zero, at which point all annuitants would be at their original annuity “floor” amounts. At that point, any additional required negative dividend adjustments would cause a deficit in the Annuity Reserve.

Under the current statutory framework, there is no specific funding mechanism for eliminating this type of deficit. Such a deficit would need to be eliminated by investment gains in ensuing years. However, at its current \$50 billion value, the Annuity Reserve could continue paying annuities for many years even, though technically underfunded.

## **6. Funded Status**

The WRS Funding Policy describes a funding objective of 100%. Variation in annual returns due to normal market volatility can cause fluctuation in annual funding levels, but the objective is to fund the cost of benefits over the long term.

## **EXISTING STRATEGIES THAT CAN MITIGATE VOLATILITY**

### **1. Long-term Investment**

For the WRS, the State of Wisconsin Investment Board (SWIB) takes into account that while there will be gains in some years and losses in others, staying invested over the long term (30 years or more) leverages the market’s historical long-term upward trend. Historically, markets tend to be cyclical and decline after a few years of strong performance. In six of the past 25 years, the Core Fund experienced negative absolute returns typically after three to five years of positive returns.<sup>5</sup> Asset allocation and diversification are key components of long-term investment strategy.

### **2. Asset Allocation and Diversification**

Asset allocation is the process of dividing an investment portfolio among the categories of equities (stocks), fixed income, cash equivalents, and others. WRS funds are divided among broad asset classes, such as stocks, bonds, real estate and other types of investments. Diversification of investments into a wide range of asset classes that are not correlated can reduce overall risk. The idea is that most often, investment returns on different types of assets will not usually move together because the returns on different assets are influenced by different factors.

### **3. Asset Smoothing**

The WRS uses the Market Recognition Account (MRA) for smoothing Core Fund assets. Under the MRA, an assumed 7.2% rate of investment return is recognized as part of the WRS assets at year end. The amount of investment gain or loss above or below the assumed rate is recognized equally over five years. The smoothing of Core Fund investment returns over five years reduces the effects of market changes on contribution rates and benefits. Variable Fund returns are not smoothed and, therefore, negative Variable returns could cause annuities to decrease below the initial base amount.

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<sup>5</sup> [SWIB Information Paper: Strategy Helps Retirement Funds In Market Downturns \(2009\)](#).

#### **4. Experience Amortization Reserve (EAR)**

The EAR is a reserve created in the mid-1980s by ETF Secretary Gary Gates, under authority granted in Wis. Stat. § 40.04(1). The EAR helps reduce the volatility in contribution rates that can result from variation in annual investment returns. It allows an actuarial loss to be absorbed in what would be the unfunded actuarial liability under the entry age actuarial cost method. The resulting liability can then be amortized over an extended period (currently 25 years) to mitigate the effects of short-term negative experience.

### **APPROACHES FOR REDUCING OR RESPONDING TO VOLATILITY**

The following list is an outline of some hypothetical concepts to illustrate possible strategies and approximate effects. Moving ahead with any of these items would require further analysis, actuarial study, and likely statutory changes.

#### **1. Change the Asset Allocation for the Core Fund**

Because asset classes each have different volatility ratings, it is possible to reduce risk of market volatility by reallocating money into assets with lower associated risk. However, the tradeoff would be lower returns. For example, one could reduce the WRS Core Fund's exposure to stocks and hold the money in a less volatile asset class, or even as cash. While this could limit losses in the event of a significant market downturn, such as 2008-2009, a move out of equities would also limit earnings and annuity dividends.<sup>6</sup> The resulting upward pressure on contribution rates to make up for lower investment returns would affect employers and employees. Lower returns over time would erode the purchasing power of annuitants.

#### **2. Increase the Asset Smoothing Period**

Asset smoothing reduces volatility in contribution rates and in dividend payments by recognizing gains and losses over a determined period (currently five years). If the smoothing period were increased to seven years, for example, negative annuity adjustments would tend to be less frequent and smaller than under five-year smoothing. However, positive annuity adjustments would tend to be less frequent and smaller. Losses would be felt longer and gains would take longer to realize.

#### **3. "Cap and Reserve" Positive Dividends**

Any positive dividends over the annual rate of inflation could be accumulated into a dividend contingency reserve and be pooled to limit negative dividends. One variation on this strategy is to run it on an individual level, where each annuitant could elect to have any "surplus" dividends reinvested to buffer the annuitant's future negative dividends, or the annuitant could opt out entirely and receive full dividends. This individual approach would entail an additional administrative burden. Regardless of whether the approach is pooled or individual, it would limit positive dividends for annuitants.

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<sup>6</sup> From April 8, 2015 SWIB Trustee Meeting Example: Reduce Core Trust Fund [CTF] equity exposure by 30% to prevent a worse than -16% loss resulting in a reduction of CTF return estimate of 1.2% or \$1.1 billion per year and a dividend impact of 0.25%/year.

#### **4. Increase the Core Annuity Reserve Surplus Threshold and Reserve**

Current law requires that surpluses in the Core Annuity Reserve be distributed if the distribution will result in at least a 0.5% increase in the amount of annuities in force. If a higher distribution threshold were legislated, it would make it less likely that dividends will be distributed, and therefore a surplus could accumulate and reserved to offset minor negative dividends. However, this approach would limit positive dividends for annuitants.

#### **5. Invest the Annuity Reserve Separately with a Lower-Risk Investment Strategy**

The discount rate for the Annuity Reserve is currently 5%, but it is pooled and invested at the assumed rate of 7.2%. Investment of the Annuity Reserve with a lower target return could reduce volatility and fluctuation in dividends. However, the lower investment target and resulting lower returns would result in fewer and smaller dividends for annuitants.

#### **6. Approaches Provided by GRS**

These are theoretical strategies outlined by GRS in its *WRS 50-year Actuarial Projection* provided to SWIB in October 2013. These approaches are for responding to a situation in which the dividend reserve is depleted, all annuities have been reduced to their guaranteed floor levels, and there is a deficit in the Annuity Reserve.

*Do Nothing* - This course of action assumes that any deficits induced by market performance are short-term and will be made up by future investment gains. In the case of market losses severe enough to cause the depletion of the current \$6 billion in dividend reserves, this strategy would result in no future dividends being paid until investment gains over 5% eliminated the deficit.

*Run Depletion Through the EAR* – Eliminate any deficit in the Annuity Reserve with a special reserve transfer. The deficit would be transferred to the active reserves and financed over the EAR financing period (currently 25 years). This method transfers the cost of eliminating the deficit to active employees and employers. In this approach, dividends could resume rapidly, perhaps even in the next year.

*Special Amortization* – Set up a five-year amortization of the deficit and charge the deficit with 5% interest. This method allocates the burden of eliminating the deficit onto active employees, employers, and annuitants. The deficit is paid with employee and employer amortization contributions, and with any earnings on the Annuity Reserve above the Annuity Reserve's discount rate of 5%. No dividends would be paid until the deficit is paid off. Overall contribution rates would increase for the time of repayment because the amortization contribution is over and above the required contribution rate.

Staff will be available at the Board meeting to answer any questions.