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CORRESPONDENCE MEMORANDUM

DATE: February 24, 2011

TO: Employee Trust Funds Board
Teachers Retirement Board
Wisconsin Retirement Board

FROM: Bob Conlin, Deputy Secretary

SUBJECT: Results of Reserve Transfer Loss Study

This memo is for informational purposes only. No Board action is required.

In December 2009, as part of its Three-Year Experience Study, the Employee Trust Funds (ETF) Board's consulting actuary recommended conducting a study to investigate various reserve losses that fall into the "other/unexplained" category in order to better understand and actuarially account for them in future valuations. The following is an excerpt from the recommendation:

> ***Reserve for 'Other Losses'.*** *Over the past several years, the gain/loss report has shown consistent losses that fall into the 'other/unexplained' category. This loss is likely due to either service purchases at retirement or additional compensation at retirement. In order to account for this, we established an adjustment of 1.0% to the calculation of final average earnings in the last experience study. We recommend increasing this adjustment to 2.0% for subsequent valuations. Furthermore, we recommend conducting a study to investigate the cause of these losses.*

Shortly after the December 2009 meeting, the Department engaged the consulting actuary to conduct the recommended study. We received the actuary's report in November 2010. As the chart on page one of the report demonstrates, the study helped to narrow the reserve loss for the "other/unexplained" category significantly for the 2009 valuation. The actuary and the Department will continue to monitor this issue over the coming years.

The actuary identified various issues such as record matching and certain assumptions related to inactive members. The attached report describes the actions being taken by the consulting actuary to address these issues.

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The actuary also made recommendations to the Department in two areas to address reserve transfer losses. The first is in the section on Members Retiring Disabled from Inactive Status. The actuary has recommended "reviewing procedures for coding a disability record to see if any enhancements can be made." The Department will recommend a change to the valuation data to include an indicator on the member record that a disability application is pending. In discussing this with the actuary, it appears that adding this information will not change the valuation results, but will be helpful in the annual gain/loss study.

The second recommendation from the actuary deals with Members with Less than One Year of Service. This problem results from an employer who in 2009 misplaced a decimal and incorrectly reported their employees with 1/100 of their actual service for the year. This error wasn't identified and corrected until 2010, so several hundred records provided to the actuary for valuation contained incorrect service for 2009. This isn't a problem with the actuarial data file, it's a problem with employer reporting and the edits that are applied to employer data. The Department will explore ways to assure that employer reports are not only in balance, but also contain reasonable data.

Attachment: Reserve Transfer Loss Study

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November 16, 2010

Mr. David Stella, Secretary
Wisconsin Department of Employee Trust Funds
P. O. Box 7931
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Re: Reserve Transfer Loss Study

Dear Dave:

In accordance with our November 19, 2009 memorandum, we have conducted a study to determine the cause of actuarial losses attributable to reserve transfers. The chart below shows the gain or (loss) in millions for each of the last 6 years (results for 2009 were calculated after the study).

Year	Reserve Gain/(Loss)	% of Liabilities
2004	$ (167)	-0.51%
2005	(175)	-0.53%
2006	(162)	-0.49%
2007	(211)	-0.57%
2008	(152)	-0.42%
2009	(28)	-0.08%

A reserve gain or (loss) occurs each year when we measure the actual liability of new retirees against the theoretical liability (or reserve) that has been established the prior year as active members. In order to conduct the study, GRS matched the records of recently retired members to the active and inactive (not collecting benefits) data records from the prior year. We identified a list of various members for which we requested detailed benefit calculations from DETF. The detailed results of the analysis for sample members can be found in Appendix 1 and 2. Please note that the difference between the expected reserve transfer and actual reserve transfer tend to be large because we focused our attention on the outliers. The vast majority of members had much smaller differences. Summarized below are the primary reasons for the differences along with our recommendations for improving the estimates.

Record Matching Issues

In order to conduct this study, we needed to match records from the active database to records from the retired database. The retiree database has several records per member based on type of benefit (variable or core), payment form (temporary or life annuity), payments to beneficiaries and multiple annuity starting dates. Additionally, the retiree database is usually created before the end of December creating a lag between when members are removed from active status and when members appear in the retiree database as retired. As a result, there will always be some mismatch between expected and actual reserve transfers. Additionally, due to the complicated nature of WRS, liabilities for certain benefits (such as variable excess, tax-deferred annuities, etc.) are not currently calculated within each data record. Instead, they are summed in total and then added to the sum total of the liabilities. This can create some discrepancies when performing a person by person match. We have made some adjustment for this in our gain/loss analysis and will continue to refine this to the extent possible going forward.

Members Retiring Disabled from Inactive Status

For members who are inactive, we currently assume that they will retire at the normal retirement age for their given employment category and are subject to healthy mortality tables. This is a typical assumption for most retirement systems if no other information is available on their status. We noticed however that some members appear to go from an active status in year 1, followed by inactive/deferred status in year 2, followed by a disabled status in a subsequent year. The effect of this is that a gain to the system occurs in the year of termination followed by a loss in the year of retiring with a disability benefit. As the valuation is an annual self-correcting process, this doesn't necessarily cause a problem. However, this may cause some year to year distortions. Due to the nature of the benefit and the lag time that can occur between applying for and receiving a disability benefit, this is a common situation. If possible, we recommend reviewing the procedures for coding a disability record to see if any enhancements can be made.

Members Retiring Early from Inactive Status

For members who are inactive, we currently assume that they will retire at the normal retirement age for their given employment category. This is a typical assumption for most retirement systems since this group is relatively small compared to the active population. We noticed however that some members are retiring earlier than the normal retirement age with a reduced benefit. While we cannot quantify the magnitude of this loss with such a limited study, we believe it is worthwhile to review with the next experience study to develop an average assumed age of retirement for deferred members.

Members with Service in Multiple Service Groups

For members with service in multiple employer groups, a separate record is created for both the current and prior employer. The current gain/loss analysis appears to have ignored some records used for the purpose of calculating the expected reserve transfer, thus understating the true expected reserve transfer in the gain/loss analysis. The full liability has been fully accounted for in both the active and retired lives valuation. This issue has been corrected in the latest gain/loss analysis report.

Members with Less than One Year of Service

For members with less than one year of service, we noticed a higher than normal expected refund benefit. After investigating further, it appears the data item 'final average earnings' that we were provided is overstated for some cases. For example, one member had calendar year earnings of $50,000, total accrued service of 0.01 years, and final average earnings of $5,000,000. Although members with small amounts of service have small liability in total, this can create a larger than expected refund liability based on service at the end of the year. We were able to adjust this data item in our programs to fix this issue. However, you may wish to review the data creation process on your end as well.

As noted above, the reserve loss for 2009 (after conducting this study) is approximately 0.08% of the total liability. This is a high degree of accuracy by actuarial standards. Although the nature of this study was limited to a relatively small sample size and biased towards only reviewing random outliers, we think it is sufficient at this time. We will continue to monitor this issue and recommend improvements or further study in the future if this issue persists.

Sincerely

Mark Buis, FSA, EA, MAAA

MB:rmn
Enclosure

cc: Bob Willet
Bob Conlin
John Kranz
Brian Murphy
Norman Jones

APPENDIX 1

Members Retiring from Deferred Status

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
1	General	$780,000	$ 55,000

In the test case above, the actual reserve transfer appears to be significantly less than the expected reserve transfer. However, in this case, the actual reserve transfer included only the liability associated with the portion of the benefit paid to the alternate payee of a member who divorced during the year. The matching process in the gain/loss analysis matched the 'new retiree' record (which contained only a portion of the total liability) to the record of the participant in the prior year (which contained the full liability). The liabilities are fully accounted for in the active and retired live valuations, but the individual matching process falls short for this type of situation.

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
2	Executive	$400,000	$ 600,000

In the test case above, the actual reserve transfer is higher than the expected reserve transfer. The difference is primarily attributable to losses associated with the deferred member retiring at age 55 as opposed to the assumed retirement age of 62. For deferred members, the assumed retirement age is the normal retirement age. We recommend consideration be given to reviewing the retirement assumption for deferred members with the next experience study.

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
3	Protective	$360,000	$ 515,000

In the test case above, the actual reserve transfer is higher than the expected reserve transfer. The difference is primarily attributable to the deferred member retiring at age 50 as opposed to the assumed retirement age of 55. For deferred members, the assumed retirement age is the normal retirement age. We recommend consideration be given to reviewing the retirement assumption for deferred members with the next experience study. Additionally, we typically assume a 3 year age difference between the member and the spouse. This member had a spouse 8 years younger and elected a Joint and 100% survivor annuity with 15 years certain. This factor also contributed to the actuarial loss.

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
4	General	$220,000	$ 440,000

In the test case above, the actual reserve transfer is higher than the expected reserve transfer. The difference is primarily attributable to the deferred member retiring earlier than expected with a disability benefit. We would expect most disabled members to go from active status to disabled status. However, if a member is reported as active in year 1, inactive/deferred in year 2 and then disabled in year 3, this can create an actuarial gain in the year of termination followed by an actuarial loss when the member is identified as disabled. Due to the nature of disability cases and the lag between when a member applies for and receives a disability approval, these cases can cause year to year distortions.

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
5	General	$530,000	$ 930,000

In the test case above, the actual reserve transfer is higher than the expected reserve transfer. The difference is primarily attributable to the deferred member retiring earlier than expected with a disability benefit. We would expect most disabled members to go from active status to disabled status. However, if a member is reported as active in year 1, inactive/deferred in year 2 and then disabled in year 3, this can create an actuarial gain in the year of termination followed by an actuarial loss when the member is identified as disabled. Due to the nature of disability cases and the lag between when a member applies for and receives a disability approval, these cases can cause year to year distortions.

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
6	Protective	$280,000	$ 650,000

In the test case above, the actual reserve transfer is higher than the expected reserve transfer. The difference is primarily attributable to the deferred member retiring earlier than expected with a disability benefit. We would expect most disabled members to go from active status to disabled status. However, if a member is reported as active in year 1, inactive/deferred in year 2 and then disabled in year 3, this can create an actuarial gain in the year of termination followed by an actuarial loss when the member is identified as disabled. Due to the nature of disability cases and the lag between when a member applies for and receives a disability approval, these cases can cause year to year distortions.

APPENDIX 2

Members Retiring from Active Status

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
1	General	$ 25,000	$ 155,000

In the test case above, the member had service with multiple employers. Although our gain loss program only estimated the expected reserve transfer at $25,000, there was an additional $130,000 in expected liability from a prior employer, bringing the total expected transfer to $150,000. This liability was fully accounted for in the active lives valuation and the retired lives valuation. The discrepancy is due to limitations in the gain/loss individual matching process when members have service with multiple employers. Effective with the December 31, 2009 Gain/Loss Analysis report, we have corrected this issue in the Gain/Loss Analysis report.

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
2	General	$ 400,000	$ 850,000

In the test case above, the member had service with multiple employers. Although our gain loss program only estimated the expected reserve transfer at $450,000, there was an additional $470,000 in expected liability from a prior employer, bringing the total expected transfer to $900,000. This liability was fully accounted for in the active lives valuation and the retired lives valuation. The discrepancy is due to limitations in the gain/loss individual matching process when members have service with multiple employers. Effective with the December 31, 2009 Gain/Loss Analysis report, we have corrected this problem in the Gain/Loss Analysis report.

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
3	Protective	$ 70,000	$ 230,000

In the test case above, the member had service with multiple employers. Although our gain loss program only estimated the expected reserve transfer at $70,000, there was an additional $130,000 in expected liability from a prior employer, bringing the total expected transfer to $200,000. This liability was fully accounted for in the active lives valuation and the retired lives valuation. The discrepancy is due to limitations in the gain/loss individual matching process members have service with multiple employers. Effective with the December 31, 2009 Gain/Loss Analysis report, we have corrected this problem in the Gain/Loss Analysis report.

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
4	Executive	$ 1,150,000	$ 1,400,000

In the test case above, the member had service with multiple employers. Although our gain loss program only estimated the expected reserve transfer at $1,150,000, there was an additional $240,000 in expected liability from a prior employer, bringing the total expected transfer to $1,390,000. This liability was fully accounted for in the active lives valuation and the retired lives valuation. The discrepancy is due to limitations in the gain/loss individual matching process when members have service with multiple employers. Effective with the December 31, 2009 Gain/Loss Analysis report, we have corrected this problem in the Gain/Loss Analysis report.

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
5	Executive	$ 70,000	$ 700,000

In the test case above, the member had service with multiple employers. Although our gain loss program only estimated the expected reserve transfer at $70,000, there was an additional $550,000 in expected liability from a prior employer, bringing the total expected transfer to $620,000. This liability was fully accounted for in the active lives valuation and the retired lives valuation. The discrepancy is due to limitations in the gain/loss individual matching process when members have service with multiple employers. Effective with the December 31, 2009 Gain/Loss Analysis report, we have corrected this problem in the Gain/Loss Analysis report

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
6	Protective	$ 130,000	$ 410,000

In the test case above, the member had service with multiple employers. Although our gain loss program only estimated the expected reserve transfer at $130,000, there was an additional $270,000 in expected liability from a prior employer, bringing the total expected transfer to $400,000. This liability was fully accounted for in the active lives valuation and the retired lives valuation. The discrepancy is due to limitations in the gain/loss individual matching process when members have service with multiple employers. Effective with the December 31, 2009 Gain/Loss Analysis report, we have corrected this problem in the Gain/Loss Analysis report

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
7	Protective	$ 1,030,000	$ 1,200,000

In the test case above, the actual reserve transfer was greater than the expected reserve transfer. However, the expected reserve transfer does not include about 150,000 in liability attributable to the variable excess benefit. Although this liability is included in the totals, it is does not show up on a person by person basis due to limitations in the record matching process. This is likely not a large number on an aggregate basis, but we will try to make an approximation for this in the future.

Test Case	Employee Type	Expected Reserve Transfer	Actual Reserve Transfer
8	Protective	$ 690,000	$ 800,000

In the test case above, the actual reserve transfer was greater than the expected reserve transfer. This is primarily attributable to the fact that the optional form of payment for protective members is calculated at normal retirement age (55) and this member is age 65, creating a loss. It is unusual for protective members to retire at such late ages, so we don't think this is a widespread issue. However, we can adjust our programs to account for this in the future.