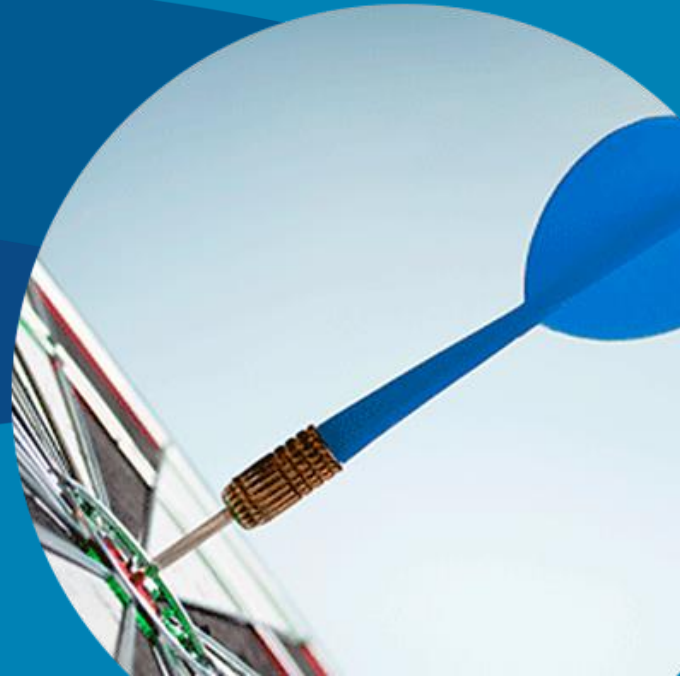




Illinois Municipal Retirement Fund

Experience Study Results for 2017-2019

Updated - December 18, 2020



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Effect on Valuation Results

Introduction

- IMRF Actuary performs Experience Study every 3 years
- IMRF funded status is in upper quartile of all Statewide Systems
 - Strong funding policy – always make the recommended contribution
 - Strong assumption setting process
 - Updated assumptions every 3 years
 - Not overly aggressive in the 1990s – many funds were assuming 8% to 9% returns and took funding holiday
 - IMRF reduced investment return from 7.5% to 7.25% in December of 2018
 - **Strong financial performance**



Experience Study Process

Analysis

- Based upon experience during 2017 - 2019
- Compared trends with prior studies
- Generally, we give confirmed trends more credibility than non-confirmed trends
- Some assumptions were set using “liability weighting” - Instead of counting people to set assumption we counted liabilities

Philosophy

Do not overreact to results from any single experience period

- It is better to make a series of small changes in the right direction, rather than a single large change that could turn out with hindsight to be in the wrong direction

Assumptions

- Demographic assumptions typically recommended by actuary and adopted by Board
- Economic assumptions – actuary recommends range of reasonable economic alternatives and Board adopts based on input from actuary and advisors

Potential Impact of COVID

- All analysis is based on data through December 31, 2019 (Pre-COVID)
- Generally two schools of thought
 - COVID is a one-time shock and things will return to ‘normal’
 - Any impact will result in gains or losses in 2020 and 2021 valuations
 - Future long term trends and assumptions will align with 2017-2019 study
 - COVID will have a long-lasting impact for many years to come
 - Will need several years of data to collect relevant information
 - Could have impact on all actuarial assumptions (not just mortality), but trends will emerge over time
- General recommendation – do not overreact until we have better information (no one really knows)
- The actuarial valuation is ‘self-correcting’ as each year’s valuation takes into account actual experience

Primary Risks/Assumptions

Demographic	Economic
Normal Retirement	Price Inflation
Early Retirement	Wage Inflation
Death-in-Service	Investment Return
Disability	
Withdrawal/Turnover	
Pre and Post Mortality	
Merit and Longevity Pay Increases	

DEMOGRAPHIC ASSUMPTIONS



Mortality for IMRF

Mortality

- Mortality assumption consists of two components
 - Base table – reflects expected mortality rates as of today
 - Projection Scale – reflects anticipated improvements in mortality over each member's future lifetime
- New Public Sector Tables (Pub2010) were recently developed by Society of actuaries (94 different versions)
- Recommended base table is based on IMRF specific data (large enough sample size)
 - Reflects some improvement in mortality since the last study
- Rates for pre-retirement and disability retirees utilize new Pub2010 tables (smaller sample size)

Mortality Experience - Recommendations

Base Table

Current
Mortality
Rates

- Adopt IMRF specific base mortality table for all members (experience for SLEP members not sufficiently different than Regular members)

Projection Scale Table

Future
Mortality
Rates

- Adopt 100% of MP-2020 projection scale

Disability and Pre-retirement mortality based on Pub2010 tables



Retirement Assumption for IMRF

Retirement

- The Retirement assumption consists of two components
 - Normal Retirement – full benefit on or after normal retirement age
 - Early Retirement – reduced benefit prior to normal retirement age
- Although there were fewer retirements than expected (headcount basis), there have been small actuarial losses each of the last 3 years
- Therefore, rates are developed based on a liability-weighted basis
- Updated rates result in slight upward pressure on liabilities in order to minimize future losses

Withdrawal Assumption for IMRF

Withdrawal

- The Withdrawal assumption consists of two components
 - Service related rates – reflects higher turnover during first 8 years of service
 - Age related rates – reflects declining turnover rates based on age for members with more than 8 years of service
- Overall more withdrawals than assumed, resulting in small actuarial gains each of the last 3 years
- Updated rates result in slight downward pressure on liabilities in order to minimize future gains

Summary of Demographic Experience (Regular Employees)

Assumption	Recommendation	Direction of Impact on Employer Contributions	Impact on Employer Contribution Rate
Retirement Rates	Various	Increase	5 basis points
Withdrawal Rates	Various	Decrease	9 basis points
Disability Rates	Lower Rates	Decrease	1 basis point
Merit Increases	No Change	No Change	No Change
Marriage % and Sick Leave	Various	Increase	5 basis points
Mortality Rates	Lower Rates	Decrease	10 basis points
Net Impact	Various	Decrease	10 basis points



Current Economic Assumptions

Price Inflation	2.50%
Wage Inflation	3.25%
Investment Return	7.25%

Total Payroll Growth assumption used for amortizing unfunded liability is currently 2.5% - can differ from wage inflation due to demographics

Inflation for IMRF

Price Inflation

- Long term averages approach 4%, while shorter term averages range between 2% and 3%
- Wilshire inflation assumption is 1.80%
- Investment consulting firm's expectations average 2.1%
- 2020 annual report of the Social Security Trustees uses 2.4% as the intermediate assumption
- Reasonable range is between 2.0% and 2.5%
- Recommend lowering price inflation from 2.5% to 2.25%

Inflation for IMRF

Wage Inflation

- Long term averages result in spread over Price inflation of 0.5% to 1%.
- Results in a Wage Inflation reasonable range of 2.50% to 3.50%.
- Average Salaries for IMRF have increased approximately 3.0% over the last 25 years and 1.7% for last 10 years. Statistic may be distorted by growth in population and other factors.
- Recommend lowering wage inflation assumption by 25 to 50 basis points in conjunction with other economic assumptions (but no change in payroll growth assumption).



Investment Return

Capital Markets

- GRS does not provide investment advice
- GRS maintains a database of capital market assumptions from several different investment consulting firms
- GRS uses the capital market assumptions to estimate the return that each consultant would expect the client's portfolio to produce
 - The intention is to avoid giving undue weight to the expectation of any particular consulting firm



IMRF Asset Allocation

Asset Class	<i>Asset Allocation</i>
U.S. Equity	37.00%
Non-U.S. Equity	18.00%
Alternative Investments	7.00%
Core Fixed Income	28.00%
Real Estate	9.00%
Cash Equivalents	1.00%
Total	100.00%



Forward Looking Geometric Returns for IMRF Portfolio

	Wilshire*	GRS CMAM 2019 Survey	GRS CMAM 2020 Survey	Horizon Survey
10-Years	5.09%	6.32%	5.85%	6.49%
20-Years	5.81%	7.07%	6.71%	7.16%

* 3rd Quarter Performance Report presented on 11/12/2020.

Based on inflation assumption of 1.80% for Wilshire and 2.25% for Surveys

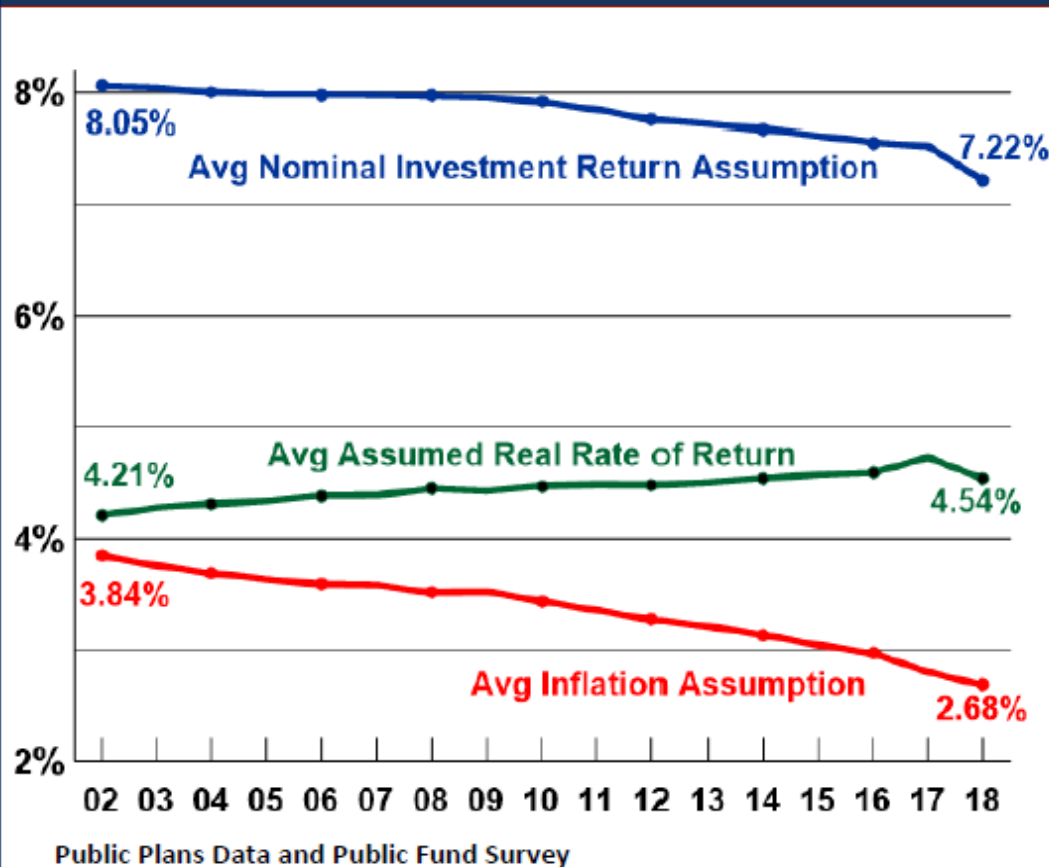


Observations

- Although there are a wide range of opinions, the current assumption of 7.25% is higher than all 10 year forecasts and slightly higher than the 20 year forecasts
- There is no universal method to setting this assumption, but generally based on future forecasts of investment experts (not historical averages)
- There is no universal agreement on time horizon for this assumption, but generally between 10 and 20 years
 - Over half of liability is attributable to benefit payments being made in the next 10 years (what happens in next 10 years matters)
 - Since most 10 year expectations are around 6%, this implies years 11 through 20 would return 8% to 8.5% (puts a lot of pressure on future performance)
- Survey data is not an exact science (requires some judgement)
 - Based on average of averages
 - Does not take into account client specific strategies or knowledge
 - Potential for mapping or model error of 25 to 50 basis points
- Forecasts were generally set pre-COVID (expectations typically have some bounce back after large market downturn)

Investment Return Assumption - National Trends

Figure 2: Average nominal and real rate of return, and average assumed inflation rate, FY 02 – FY 18



Current Investment Assumption for Other Illinois Retirement Systems

- Illinois SERS – 7.0%
- Illinois Teachers – 7.0%
- Illinois SURS – 6.75%
- Chicago Municipal – 7.0%
- Chicago Teachers – 6.75%
- Chicago Police – 6.75%

Summary of Results

(Hypothetical Results as of December 31, 2020)

Using MP-2020 and 7% market value return for 2020

	12/31/2019	OPTION 1	OPTION 2	OPTION 3	OPTION 4	OPTION 5	OPTION 6**
		Hypothetical Results as of December 31, 2020*					
		Actual Results	Demographic Changes Only	Potential Economic Assumptions			
Demographic Assumptions	Current	New: -10 bp	New: -10 bp	New: -10 bp	New: -10 bp	Current	New: -10 bp
Price Inflation	2.50%	2.50%	2.25%	2.25%	2.25%	2.50%	2.25%
Wage Inflation	3.25%	3.25%	2.75%	2.75%	2.75%	3.25%	2.75%
Investment Return	7.25%	7.25%	7.15%	7.00%	6.75%	7.25%	7.25%
Regular Employers							
- Contribution Rate	10.6%	10.0%	9.8%	10.6%	12.1%	10.1%	9.2%
SLEP Employers							
- Contribution Rate	23.7%	22.4%	22.2%	23.9%	27.1%	22.8%	21.2%
Total Plan							
- Funded Status	90.7%	91.1%	91.0%	90.2%	88.2%	91.4%	92.4%

* Adjusted for the effect of increased Tier 2 participation. Results for individual employers will be different. New assumptions would first be used in the December 31, 2020 valuation which would first impact rates in 2022 and will also be affected by 2020 investment performance and other effects.

** Scenario requested by a Board member – not recommended or endorsed by GRS. Actuarial standards may require GRS to issue a qualified report.



Potential Board Actions

- Options for Actuarial Assumptions – needed for January valuations
 - Option 1 – Adopt demographic changes only; Continue present economic package and review again in 2021 when effect of the current pandemic will be more clear – results in illustrated average contribution of 10.0% for Regular employers
 - Option 2 – Adopt demographic changes; Adopt 2.25/2.75/7.15 economic package and review again in 2021 when effect of current pandemic will be more clear – results in illustrated average contribution of 9.8% for Regular employers
 - Option 3 – Adopt demographic changes; Adopt 2.25/2.75/7.00 economic package and review again in 2021 when effect of current pandemic will be more clear – results in illustrated average contribution of 10.6% for Regular employers
 - Option 4 – Adopt demographic changes; Adopt 2.25/2.75/6.75 economic package and review again in 2021 when effect of current pandemic will be more clear – results in illustrated average contribution of 12.1% for Regular employers

Potential Board Actions

- Options for Actuarial Assumptions – needed for January valuations
 - Option 5 – Adopt no changes at the present time, but establish Board Subcommittee to study issue – results in illustrated average contribution of 10.1% for Regular employers
 - Option 6 – Adopt demographic changes; Adopt 2.25/2.75/7.25 economic package and review again in 2021 when effect of current pandemic will be more clear – results in illustrated average contribution of 9.2% for Regular employers
- Potential Funding/Pandemic Relief – can be made at a later date
 - Board can grant employers an option for funding relief
 - Several ways to accomplish this:
 - 70% to 80% of computed actuarial rate for a period of years
 - Lower of last year's rate or current rate
 - Various combinations of above
 - Similar relief was adopted in 2010 following the economic meltdown
 - This decision is not needed now, but could be adopted after preliminary 2020 results are available

Timeline for Decision

- Assumptions for valuation are needed by the end of December in order to complete Retiree Valuation in January of 2021
- If further study on interest rate assumption (or COVID issues) delays this decision past December, recommend waiting a year and adopting all new assumptions (demographic and economic) at the same time for the December 31, 2021 valuation – Option 5 approach
- Any changes in interest rate and/or mortality will impact actuarial factors used for benefit calculations – October 1 of year in which the new assumptions are adopted

Disclaimers

- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- Readers are cautioned to examine original source materials and to consult with subject matter experts before making decisions related to the subject matter of this presentation.
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