TEACHERS' RETIREMENT SYSTEM
of the State of Kentucky

TRS KENTUCKY

Special Workshop Meeting of the

TRS Board of Trustees

AGENDA

Monday, November 25, 2019

8:30	Continental Breakfast	
9	Introduction	Gary Harbin
9:30	Actuarial Issues	Ed Koebel Cavanaugh Macdonald
10:30	Break	
10:45	Kentucky Ethics Overview	Beau Barnes
11:15	Fiduciary Duty; Washington Update	Tony Roda Williams and Jensen
12	Lunch and discussion of retirement issues	
1	Aon's Insights on Investment Climate	P. J. Kelly Aon Investment Consulting
2	Update on Medical Insurance	Jane Gilbert
2:45	Break	
3	Economic Outlook	Adam Berger Wellington Asset Management
4	Open discussion concerning administrative operations	Gary Harbin

The meeting will take place at the Kentucky History Center
100 West Broadway, Frankfort, Kentucky.

479 Versailles Road • Frankfort, Kentucky 40601-3800
800-618-1687 • https://trs.ky.gov

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Teachers' Retirement System of Kentucky
Board Workshop 2019

2019 Valuation Summary
Cash Flow and Amortization of UAL

Ed Koebel, FCA, EA, MAAA
Chief Executive Officer

Key Findings from Valuation

- TRS received 100% of the Actuarially Determined Employer Contribution for the fiscal year ending June 30, 2019 (97% in 2018 fiscal year)
  - Additional $553.6M received this year from Commonwealth above statutory
  - 2020/2021 Biennium expects more of the same ($538.3M and $551.1M, respectively)
- Net Investment Return on Market Value of 5.56%
  - Trust Fund increased $390 Million due to combination of investment experience and negative cash flow
  - Negative cash flow for 2019 as a percentage of market value of assets is (3.48)%
    - Last year's percentage was (3.63)%

Key Findings from Valuation

- Actuarial Value of Asset Return of 7.07%
  - Compare to 7.50% investment return assumption
  - Smoothing of investment gains and losses over 5-year period
- Increase of 0.70% in State Pension Contribution Requirement from last year
  - Last year was an increase of 0.05%
- Unfunded Accrued Liability (UAL) increased slightly from $14.3B to $14.5B
- Funding Ratio increased from 57.7% to 58.1%

Allocation of Contribution Rate University

Valuation Year	Actuarially Determined Contribution (ADC)			Breakdown of ADC		
	Employer Normal Cost	UAL Payment*	Total*	Statutory Rate*	State Special	Rate Required to meet ADC
2014	4.645%	23.700%	28.345%	11.845%	2.700%	13.800%
2015	4.715%	23.560%	28.275%	11.845%	2.940%	13.490%
2016	3.405%	25.870%	29.275%	11.835%	2.830%	14.610%
2017	3.175%	25.750%	28.925%	11.825%	3.000%	14.100%
2018	3.065%	25.910%	28.975%	11.815%	2.890%	14.270%
2019	3.065%	26.610%	29.675%	11.805%	3.050%	14.820%

* 1% less for Members hired before July 1, 2008

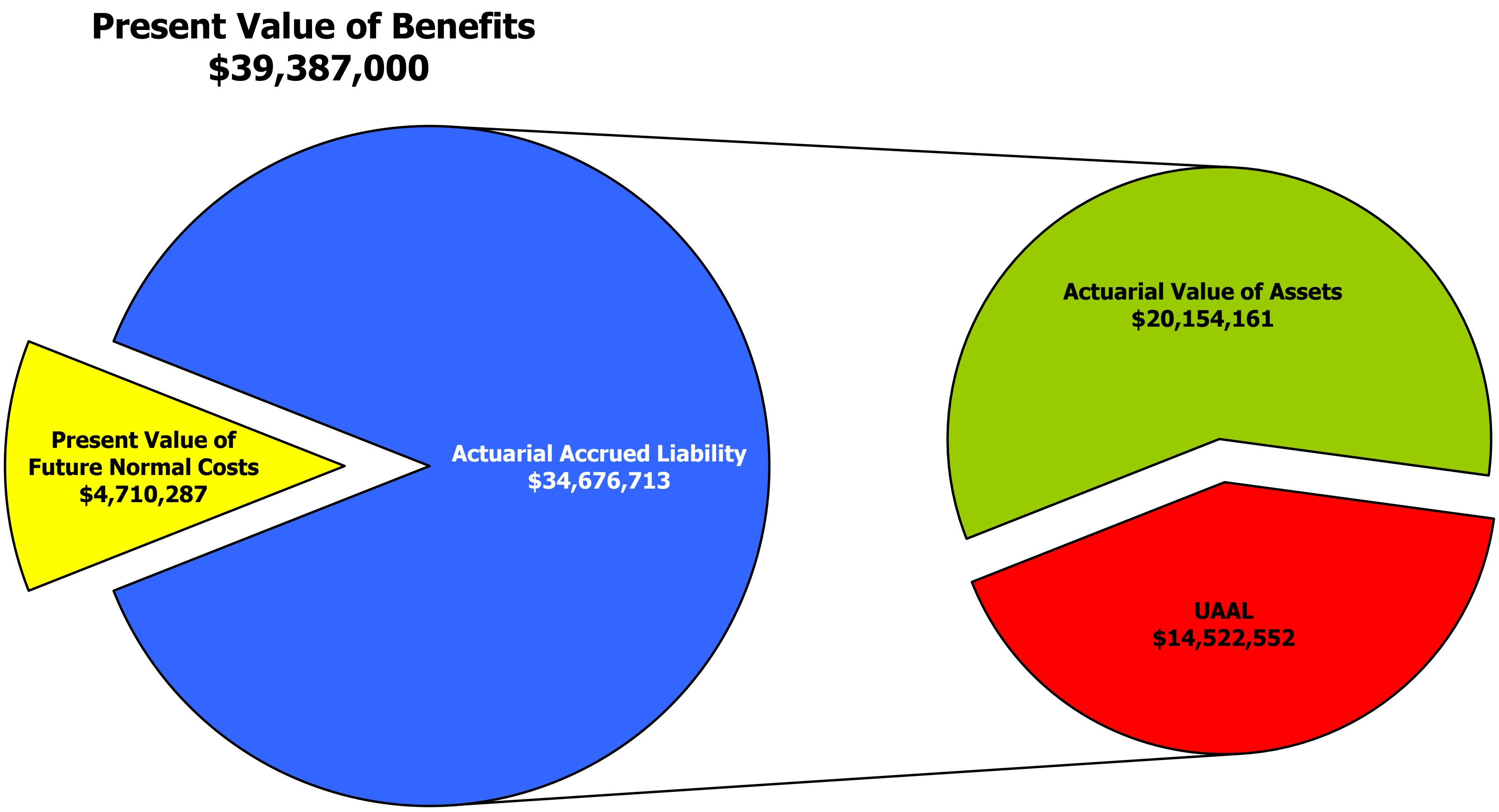
Allocation of Contribution Rate Non-University

Valuation Year	Actuarially Determined Contribution (ADC)			Breakdown of ADC		
	Employer Normal Cost	UAL Payment*	Total*	Statutory Rate*	State Special	Rate Required to meet ADC
2014	7.615%	22.210%	29.825%	13.325%	2.700%	13.800%
2015	7.615%	22.140%	29.755%	13.325%	2.940%	13.490%
2016	5.835%	24.920%	30.755%	13.315%	2.830%	14.610%
2017	5.735%	24.670%	30.405%	13.305%	3.000%	14.100%
2018	5.655%	24.800%	30.455%	13.295%	2.890%	14.270%
2019	5.735%	25.420%	31.155%	13.285%	3.050%	14.820%

* 1% less for Members hired before July 1, 2008

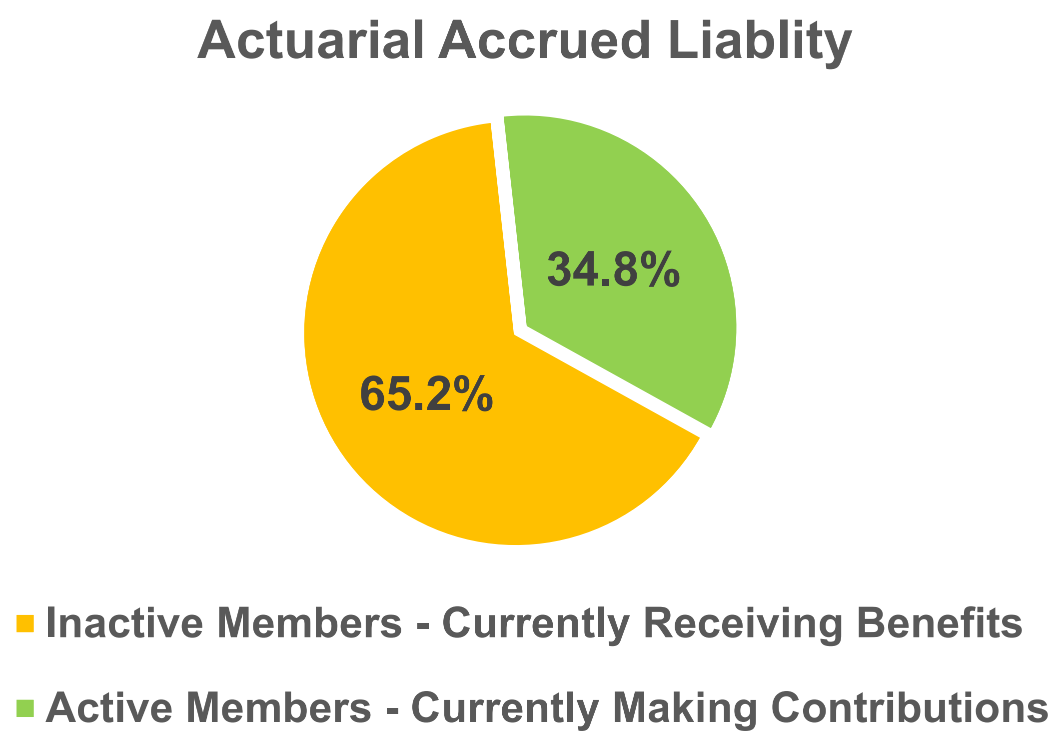
June 30, 2019 TRS
Actuarial Valuation Results

($ in Thousands)



2019 Funded Ratio = Assets/Accrued Liability or 58.1%

Attribution of Accrued Liability



REMEMBER: 2019 Funded Ratio = 58.1%

⚠ **Based on 2019 valuation, Inactive Members' Accrued Liability currently exceeds 100% of Assets**

Funding Equation: C + I = B + E

INFLOW:

Contributions

+

Investment Income

=

OUTFLOW:

Benefit Payments

+

Expenses

Pay as you go funding accomplishes this in each year

Actuarial funding accomplishes this over the life of the plan

Net External Cash Flow

- Total Contributions minus [Benefit Payments + Expenses]
  - Mature plans are expected to exhibit negative external cash flow as advanced funding uses a portion of investment earnings to pay benefit payments in the future
  - Excessive negative external cash flow slows the growth in plan assets and slows improvement in funded ratio

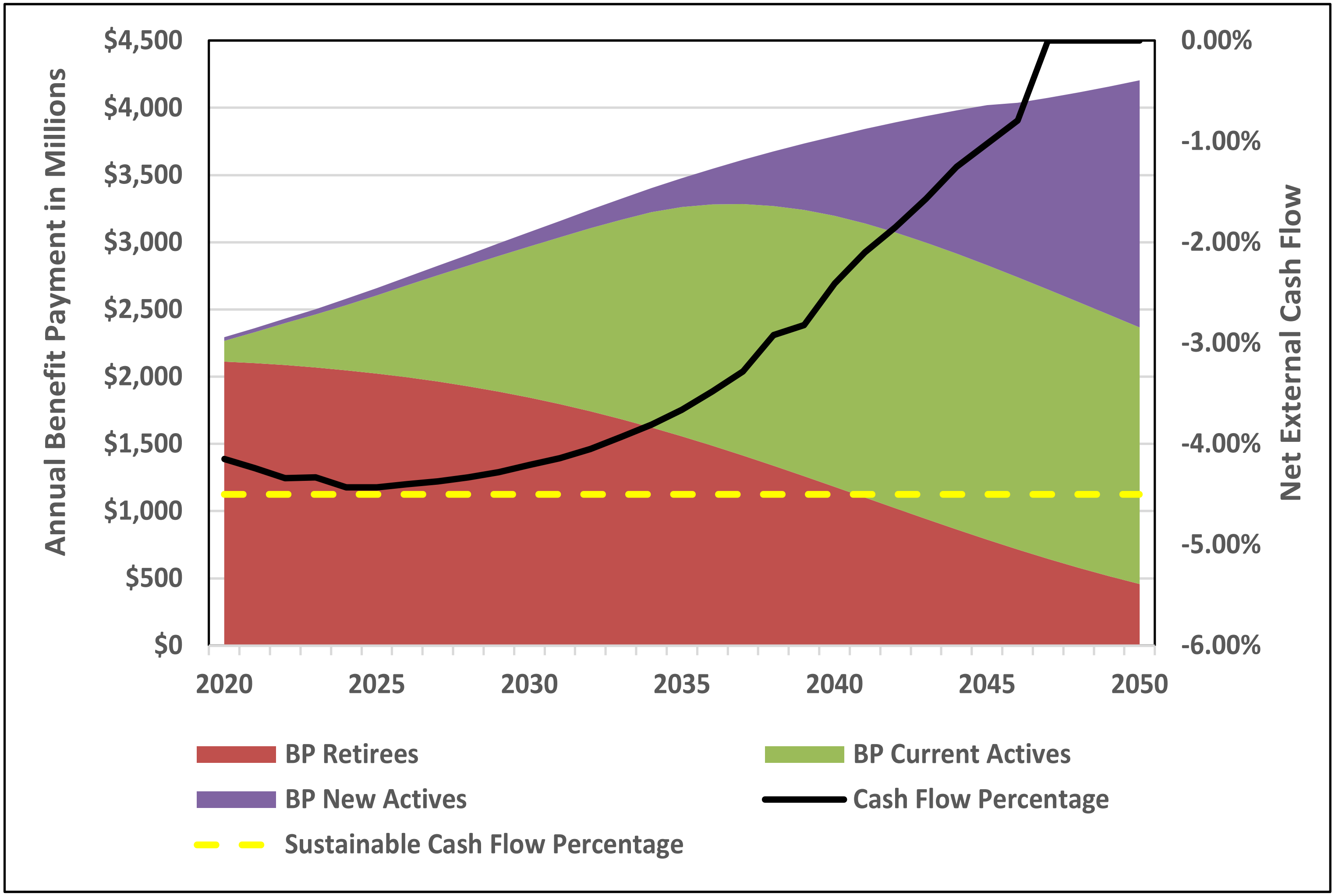
Net External Cash Flow + Investment Income

=

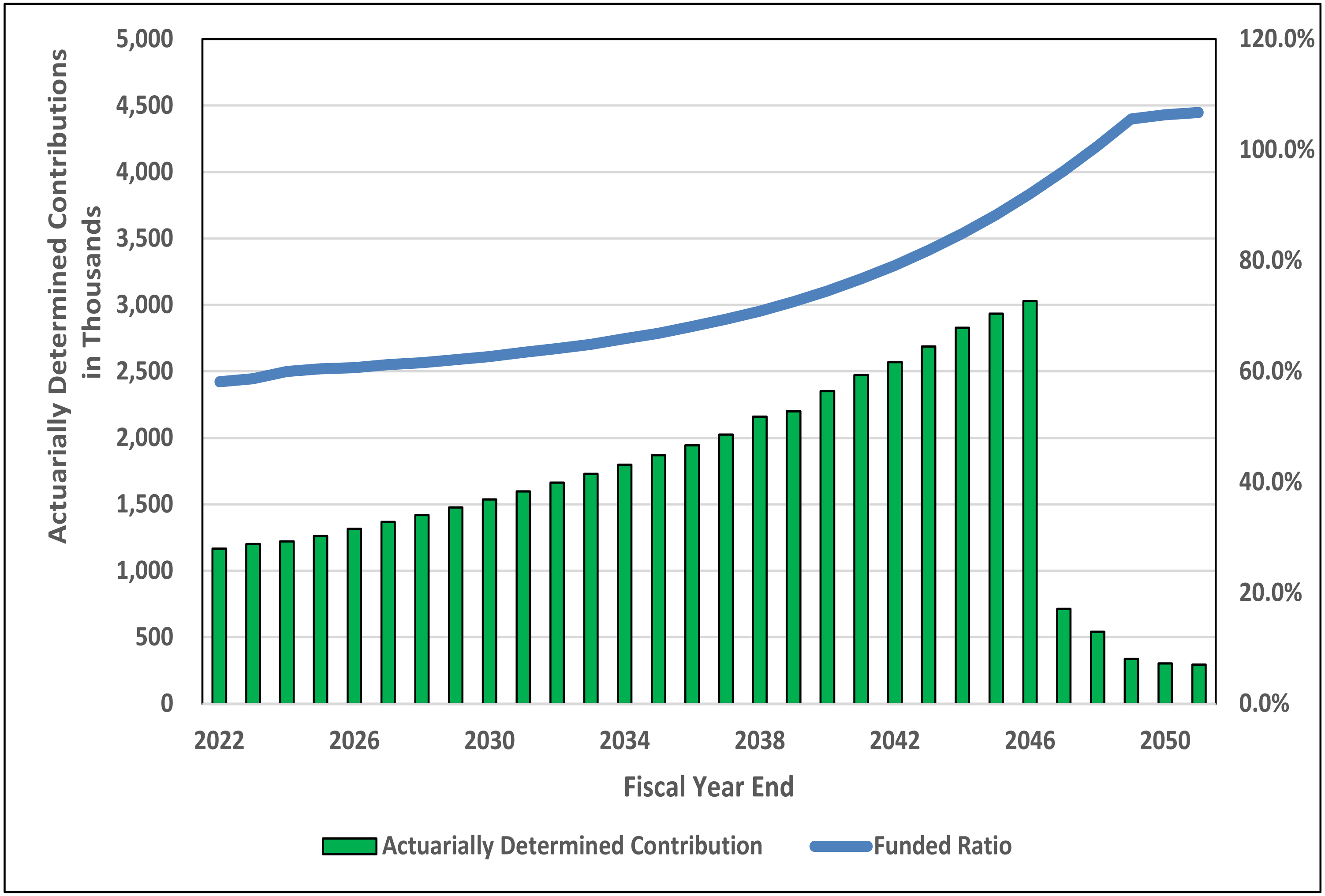
Change in Annual Asset Value

- A good benchmark for a sustainable level of negative cash flow is the investment return less the growth rate in benefit payouts
  - For TRS: 7.50% - 3.00% = 4.50%

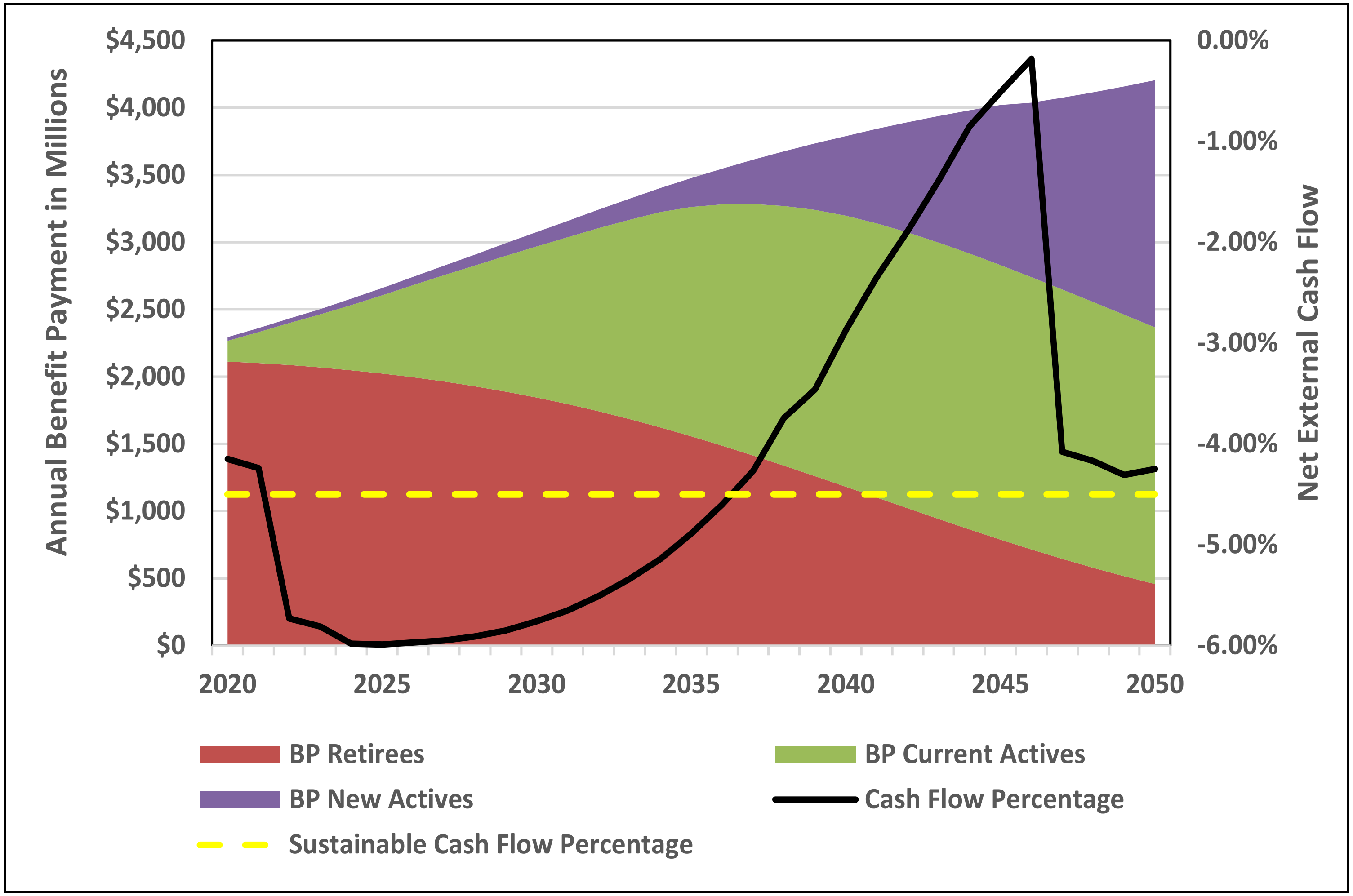
Projection of Net External Cash Flow (Assuming 100% of ADC is made)



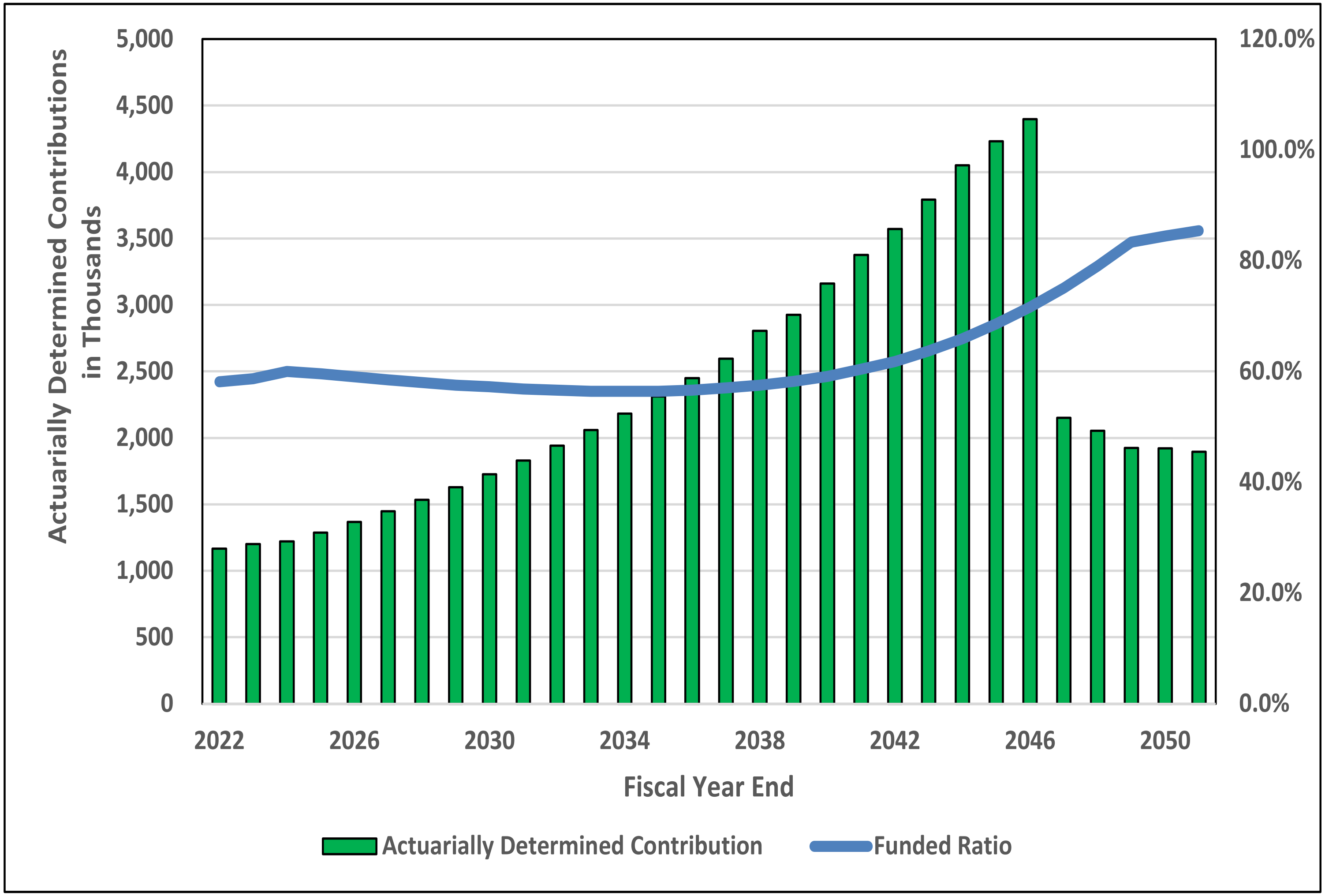
Projection of Funded Ratio (Assuming 100% of ADC is made)



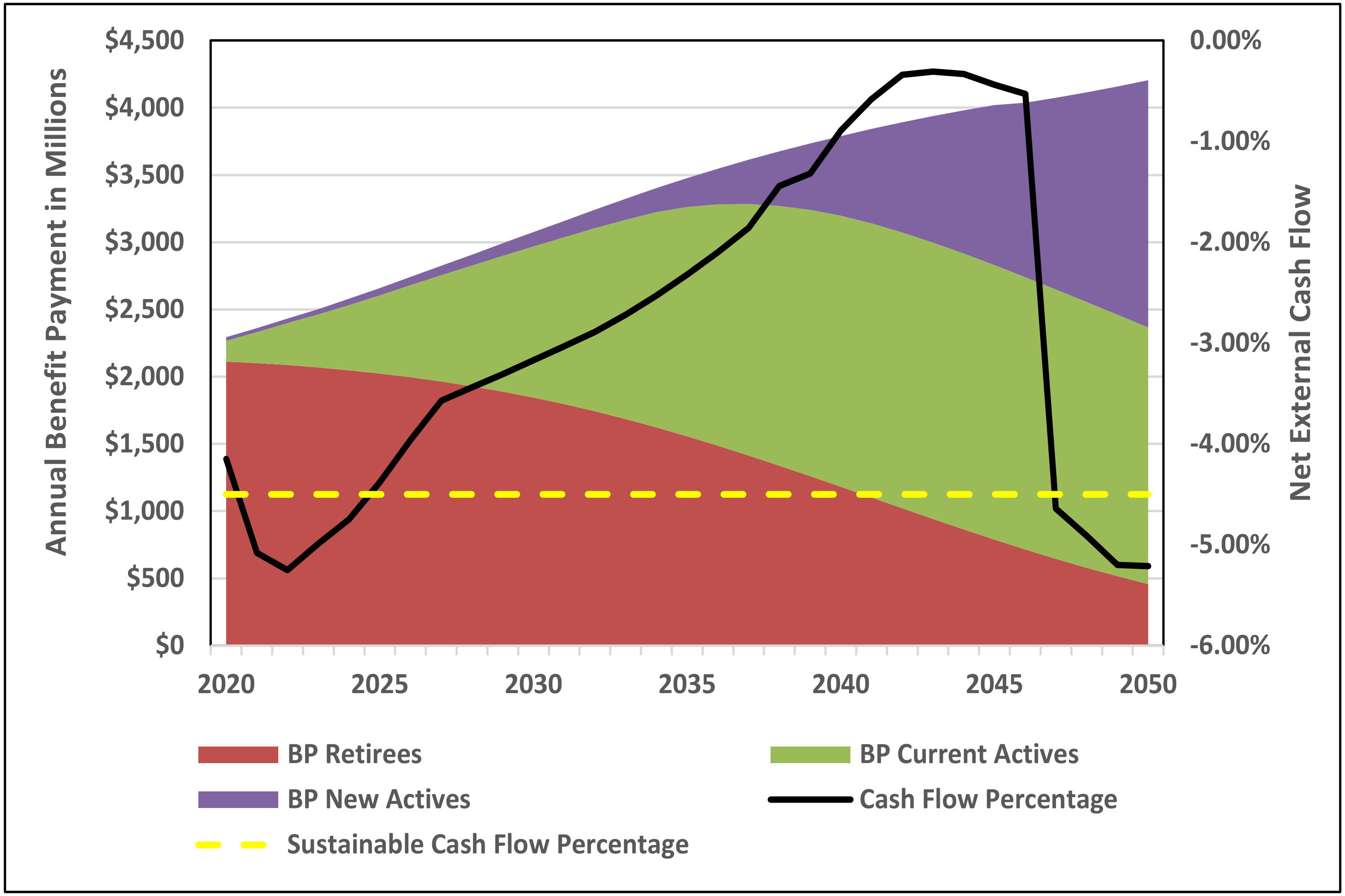
Projection of Net External Cash Flow (Assuming 80% of ADC is made)



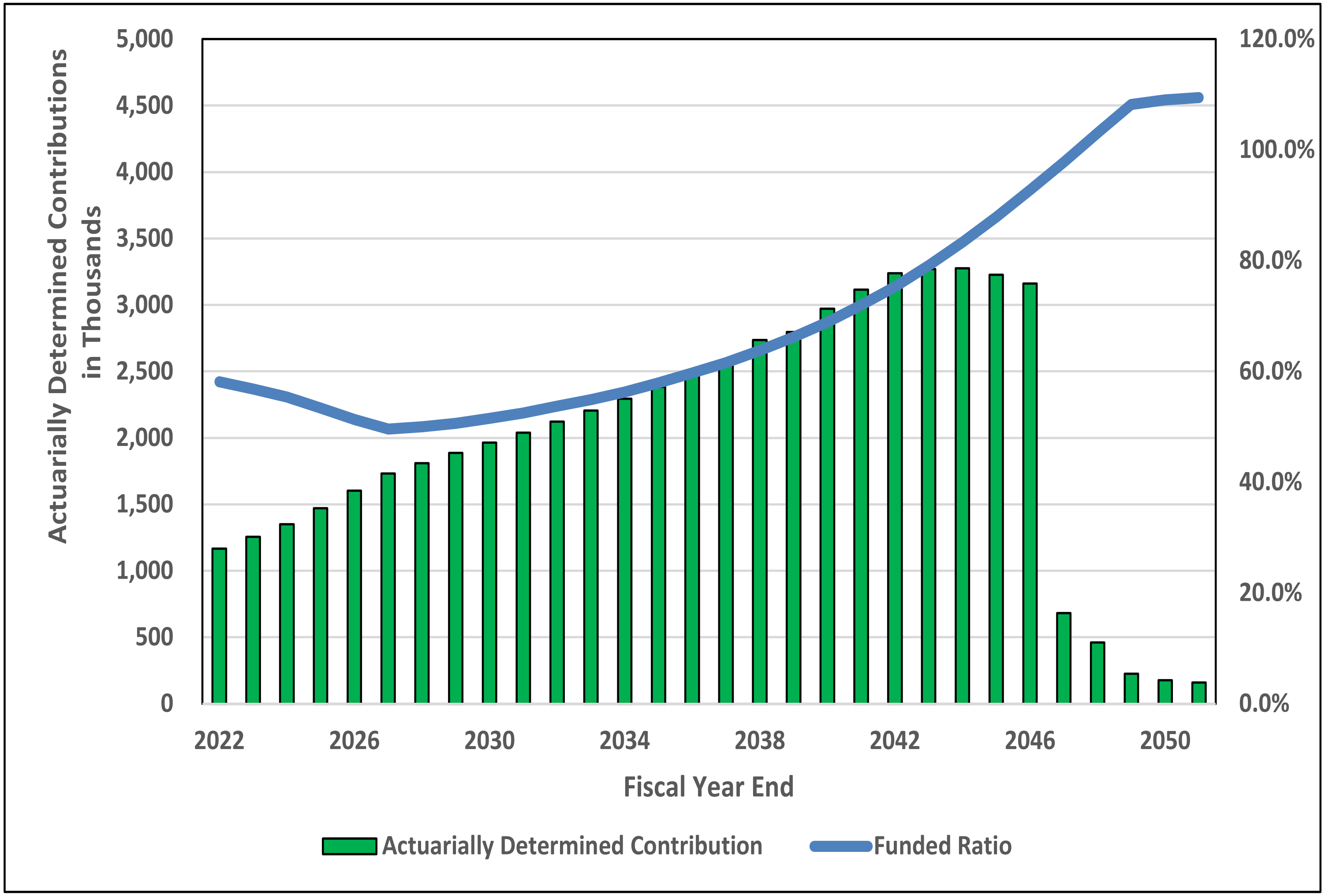
Projection of Funded Ratio (Assuming 80% of ADC is made)



Projection of Net External Cash Flow (Assuming 100% of ADC is made but 2020 Investment Return is Negative 10%)



Projection of Funded Ratio (Assuming 100% of ADC is made but 2020 Investment Return is Negative 10%)



Unfunded Actuarial Liability

- Unfunded actuarial liability is a natural part of retirement system funding

- The existence of an unfunded actuarial liability does not <u>automatically</u> mean the system is "underfunded"

- Comparable to a mortgage on a home
  - Not a debt that must be paid immediately, but should be funded over a reasonable period
  - Affordability of the payments is important

- Must be financed in addition to ongoing cost for actives (e.g., normal cost)

Contributing Factors to Unfunded Actuarial Liability

- Contributing less than the actuarial rate (largest factor of current unfunded actuarial liability)
- Actual versus expected experience

	Experience (Gain) Decreases UAL	Experience Loss Increases UAL
Salary increases	Lower	Higher
Investment return	Higher	Lower
Retirements	Lower	Higher
Retiree deaths	Higher	Lower
Disability	Lower	Higher
Terminations	Higher	Lower

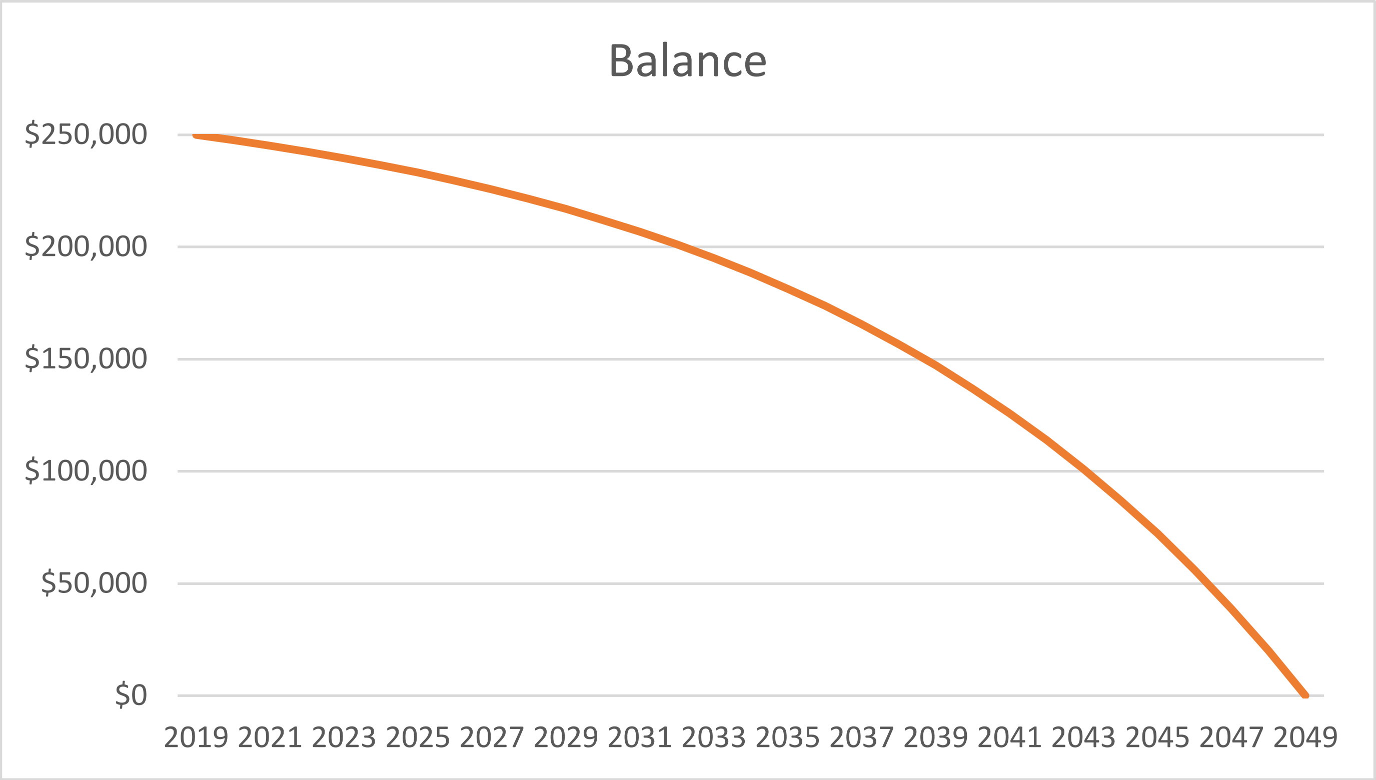
- Changes in actuarial assumptions/methods
- Granting initial benefits or granting benefit increases for service already rendered

Financing the Unfunded Actuarial Liability (UAL)

- The goal of a funding policy is to match the assets and liabilities of the system over time
- If an unfunded actuarial liability exists, it is systematically paid off (or “amortized”)
- Considerations
  - How long to pay it off (40 years was acceptable, but now 20-25 years is recommended)
  - Pattern of payments
    - Level dollar amounts
    - Level percent of payroll (increasing dollar amounts)
    - Other options are possible, but not often used
  - How to adjust each year for the unexpected change in unfunded actuarial liability

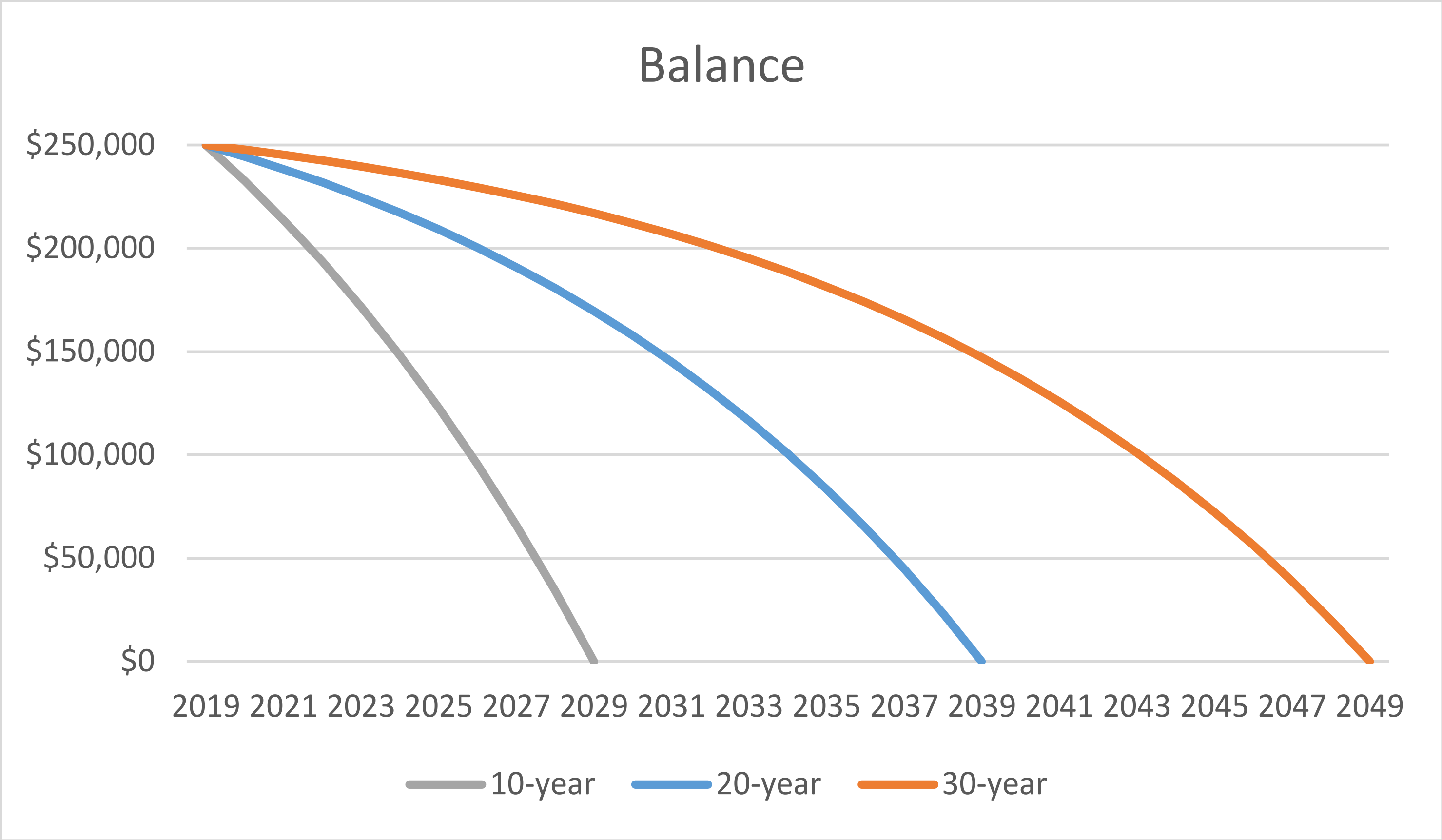
Amortization Basics

- Consider a 30-year mortgage of $250,000
- Payment of $20,125 each January 1 will pay it off (interest of 7.75%)



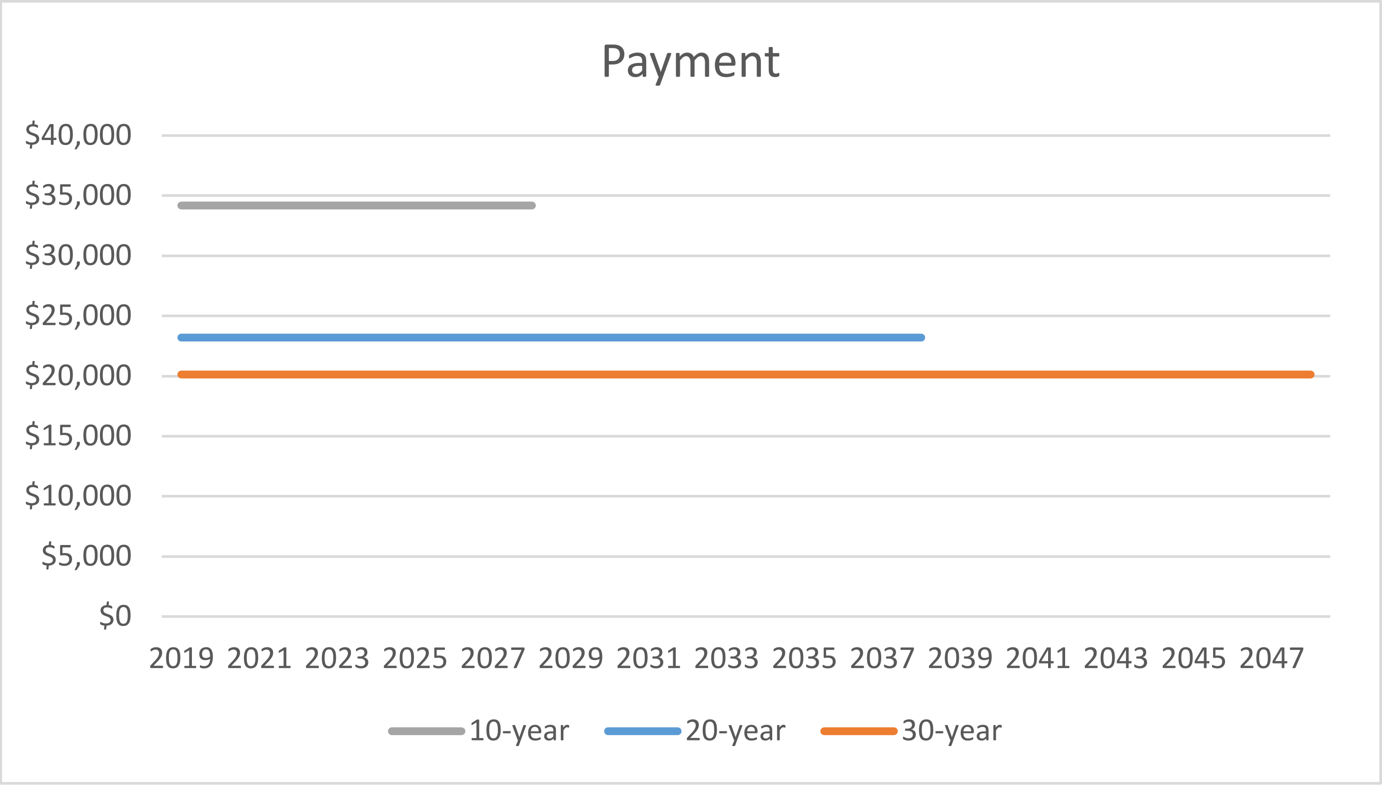
Amortization Period

- Shorter periods result in lower balances….



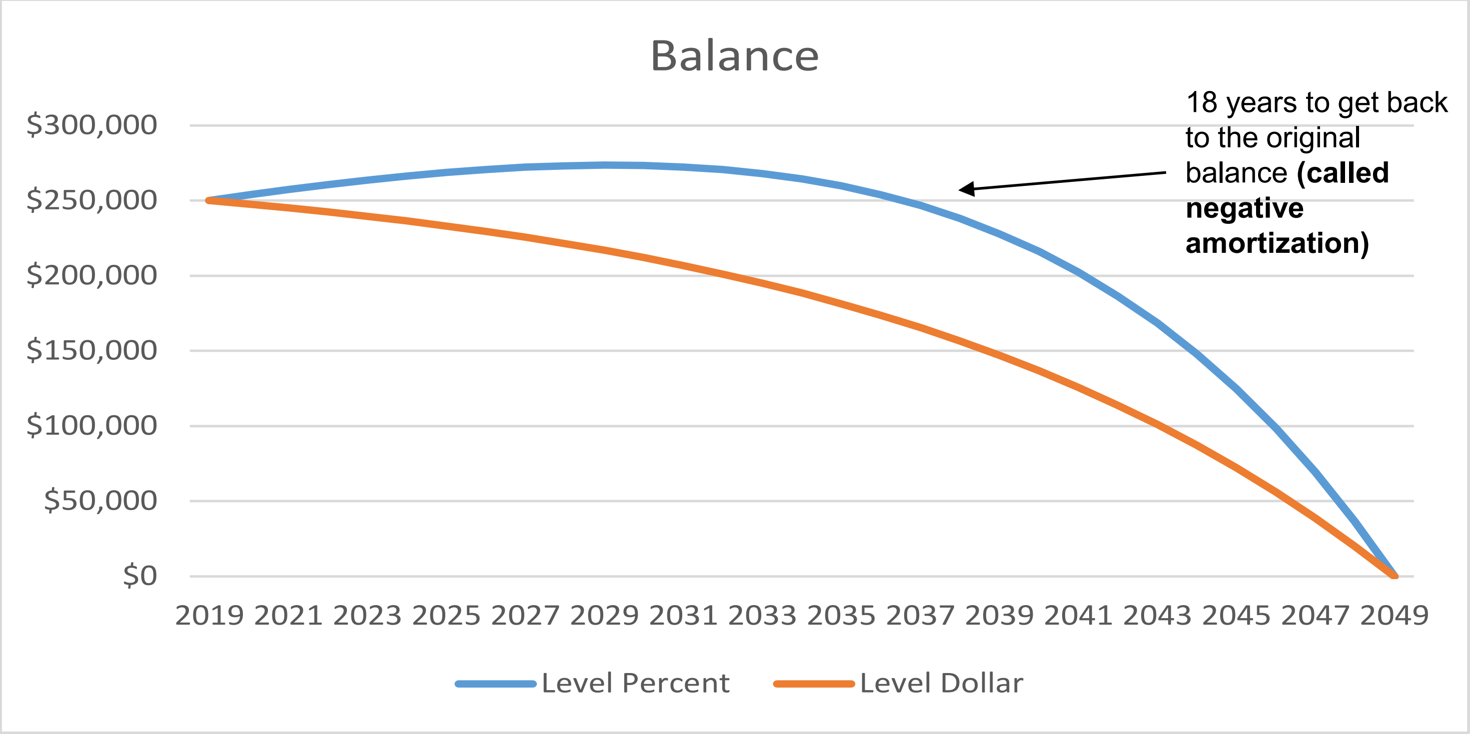
Amortization Period

…… with higher initial payments



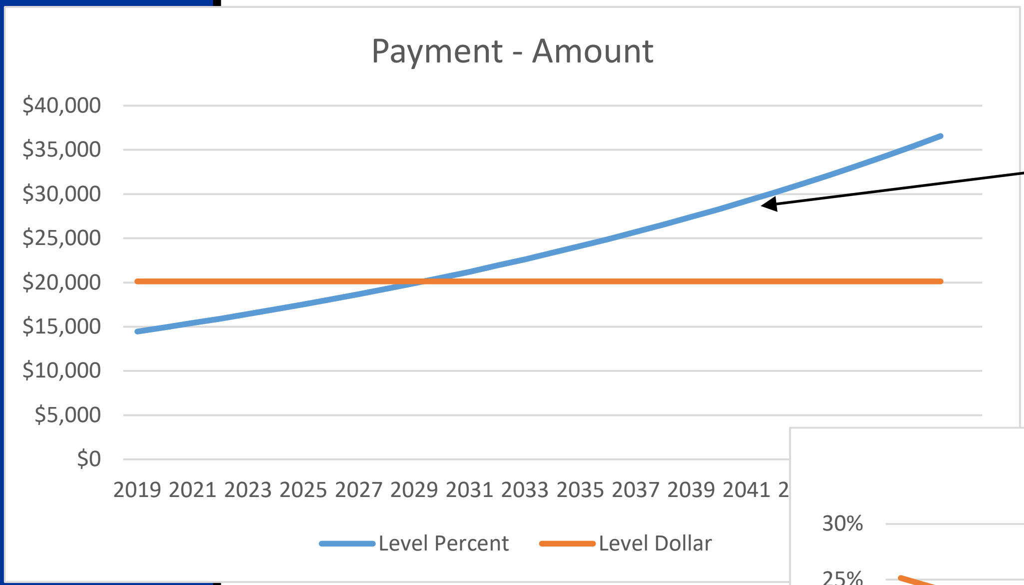
Amortizing with Increasing Dollar Amount of Payments

- A homebuyer may anticipate pay increases that will make it easier to make larger payments in the future, e.g. 3% more each year

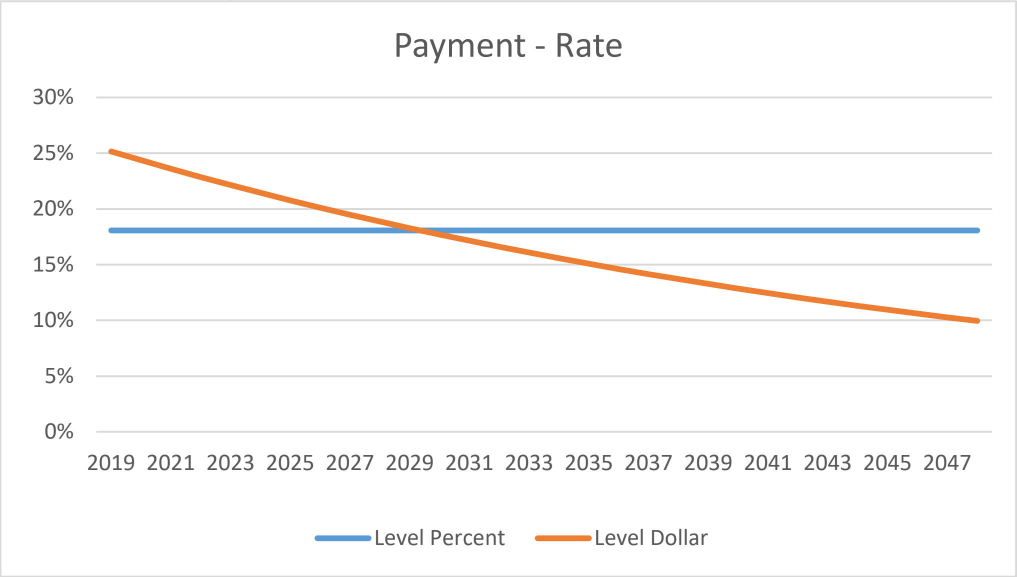


Amortizing with Increasing Dollar Amount of Payments

- Trade-off is the payment pattern



Paying less in the early years means higher contributions in later years.



Implications for Pension Funding

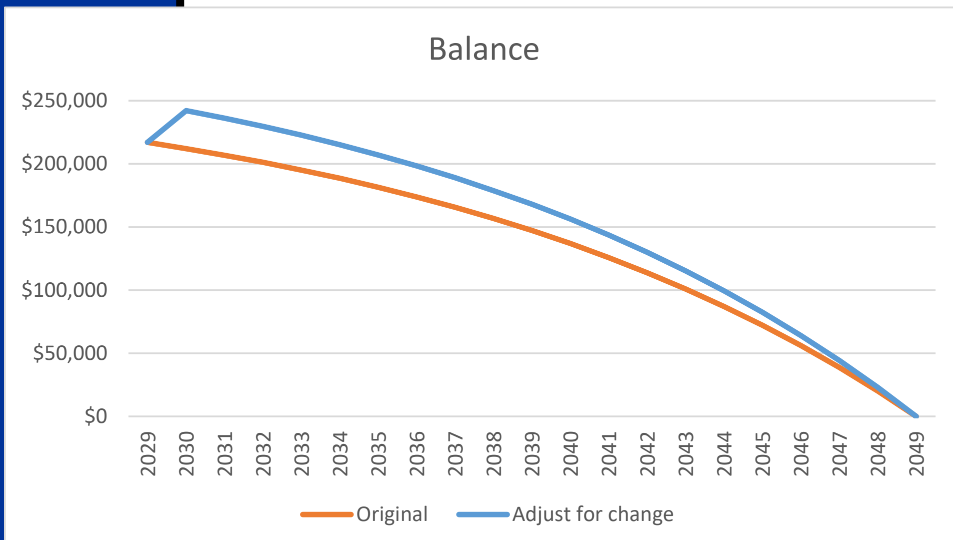
- Reaching a funded ratio of 100% sooner requires higher contributions in the short term – but lower contributions later
- Since contributions to TRS are payroll-based and payroll is expected to increase over time, there is an appeal to using the level percent of payroll approach to amortize
  - Provides a stable contribution <u>rate</u> over longer periods
  - Can result in increasing unfunded actuarial liability (depending on the assumptions and period used)
- Regardless of the option, the present value of the payments is the same (equal to the unfunded actuarial liability)

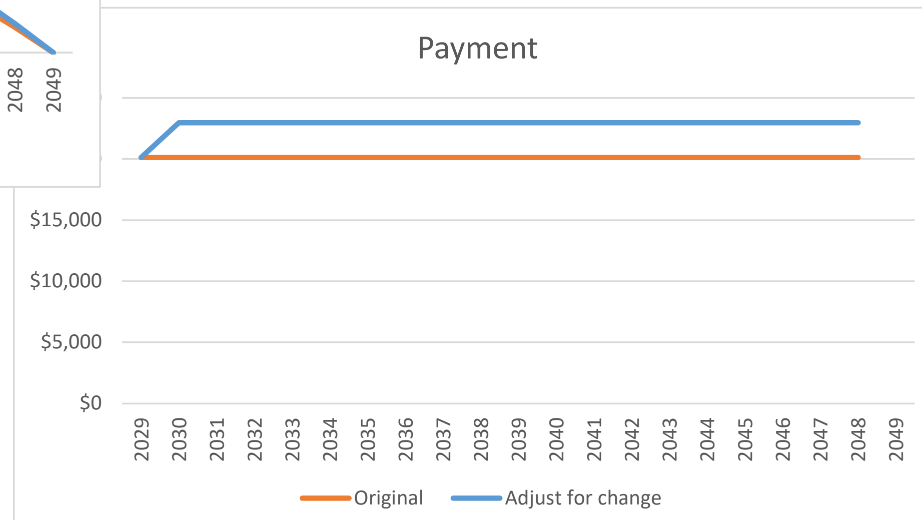
Addressing Changes in the Unfunded Actuarial Liability

- The examples thus far have all assumed that all assumptions are met. In reality, there are gains and losses from:
  - Investment returns differing from the assumption
  - Demographic experience differing from the assumption
  - Actual payroll different than expected
- To ensure the unfunded actuarial liability is fully financed, an adjustment to the payment schedule is necessary
  - Option 1: Adjust the payment proportionately
  - Option 2: Amortize the new piece of unfunded actuarial liability on its own schedule

Changes in Unfunded Actuarial Liability Adjust the Payment

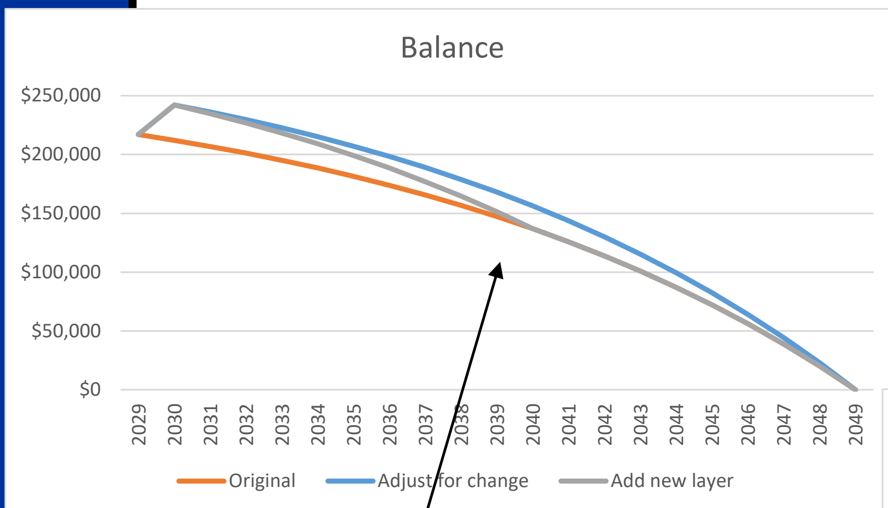
- In year 10, suppose there is an unexpected increase (level dollar amortization example)





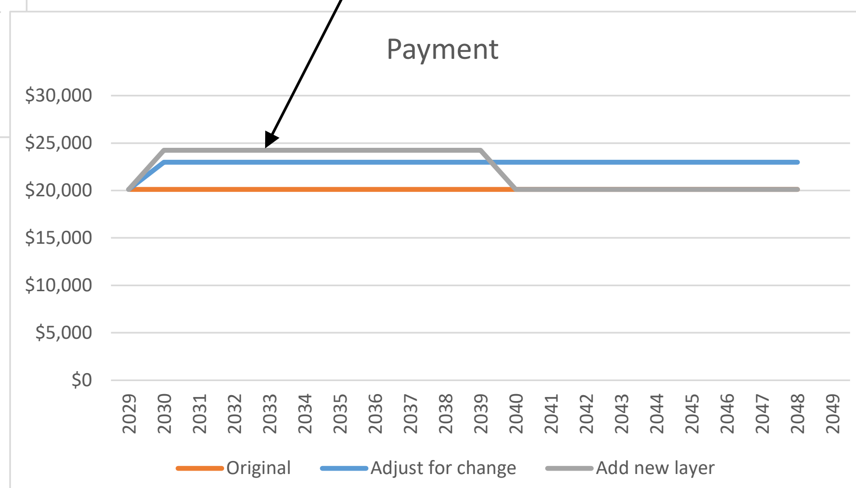
Changes in Unfunded Actuarial Liability
New Amortization Layer

- Pay the new amount off over 10 years



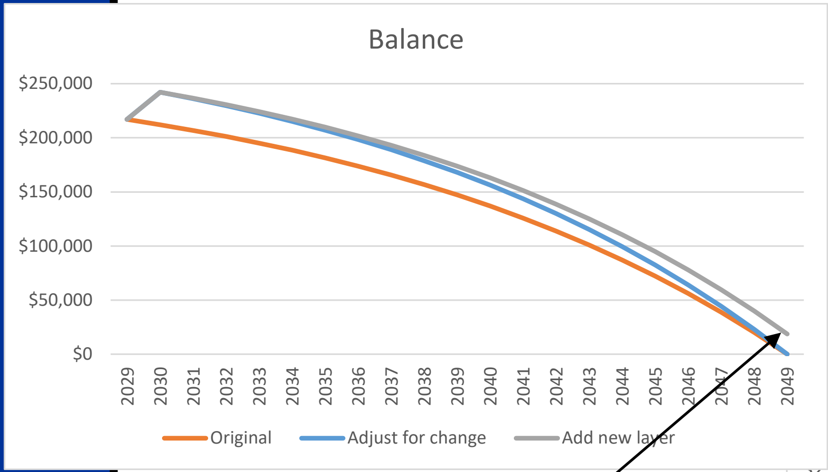
Paying new piece over 10 years requires higher payments, but for a shorter period.

After 10 years of payments, the amount reverts back to original base

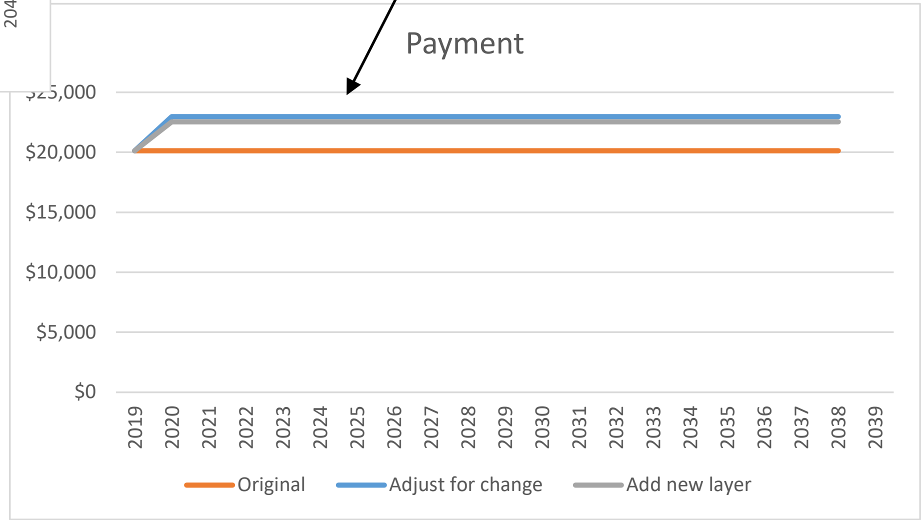


Changes in Unfunded Actuarial Liability New Amortization Layer

➢ Pay the new amount off over 30 years



Paying the new piece over 30 years requires just slightly less initially than paying the increase over 19 years



After 19 years of payments, there is still a balance to pay off

Guidance for Amortization

- Until a few years ago, it was not uncommon for public plans to have long, open amortization methods (like 30 years)
  - This was largely a reflection of accounting standards in place until 2014
- Actuarial Standards of Practice (ASOP) provide only general considerations for amortization
  - ASOP 4 is undergoing revision and is likely to require actuaries to disclose contribution requirements under shorter, closed periods if a system is amortizing over a period that is open or too long

Guidance for Amortization

- The Conference of Consulting Actuaries (CCA) and the Government Finance Officers Association (GFOA) has published guidance that advocates shorter amortization periods
  - GFOA: 25 years
  - CCA: 15-20 years with transition options for current UAL

- Over the past 6-8 years, many systems have gone from open amortization to layered amortization with new pieces of unfunded liability amortized over shorter periods
  - Layered amortization implemented for TRS with the 12/31/2014 valuation

TRS Layered Amortization Method

- Original UAL base established in 2014 with payment period of closed 30 years
  - 25 years remaining at 6/30/2019
  - Funded as a level percent of payroll so negative amortization is occurring
- Starting with the 6/30/15 valuation, layered amortization was implemented
  - “Legacy” base remains on original schedule
  - Actuarial gains and losses, assumption changes, benefit improvements/reductions are amortized over closed 20 years

TRS Layered Amortization Method

- Legacy UAAL in 2014 ($14.0 billion) amortized over closed 30-year period with level percentage of payroll methodology (25 years remaining)
- Incremental (Gains) and Losses set up each year and amortized over its own closed 20-year period

	ORIGINAL UAAL	CURRENT UAAL	REMAINING AMORTIZATION PERIOD (YEARS)	AMORTIZATION PAYMENT
Legacy	$14,010,205	$15,097,125	25	$952,629
New Incremental 6/30/2015	(351,610)	(346,270)	16	(29,421)
New Incremental 6/30/2016	340,766	337,703	17	27,468
New Incremental 6/30/2017	(428,468)	(427,120)	18	(33,370)
New Incremental 6/30/2018	(192,240)	(192,192)	19	(14,465)
New Incremental 6/30/2019	53,306	53,306	20	3,876
Total UAAL		$14,522,552		$906,717
Blended amortization period (years)				25.4

Teachers' Retirement System
of the State of Kentucky

Ethics Overview

Nov. 25, 2019

Gary L. Harbin, CPA
Executive Secretary

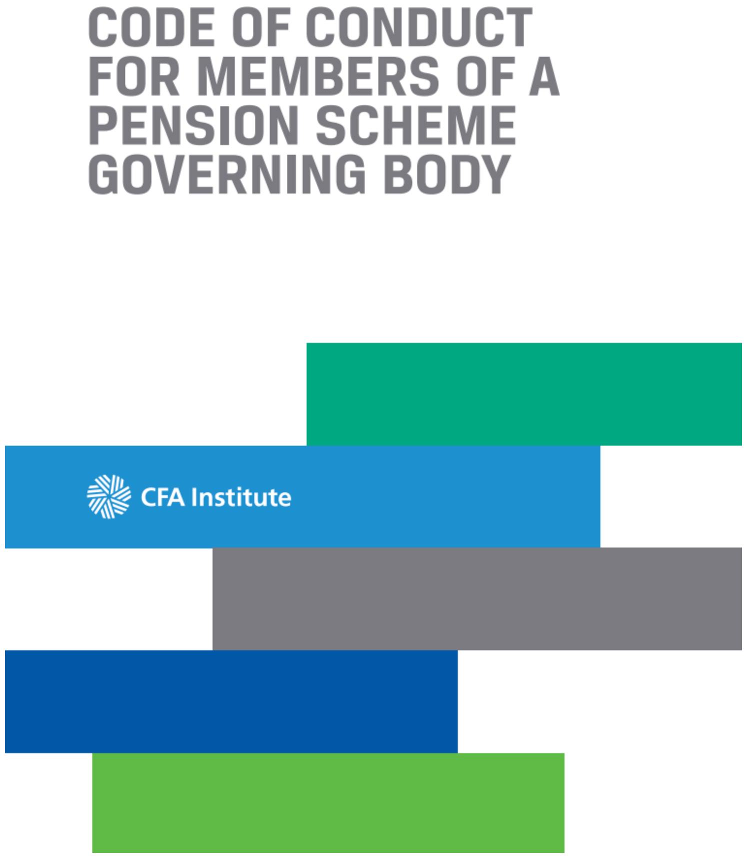
Overview

Ethics training helps trustees understand:

- Duties under Code of Conduct for Members of a Pension Scheme Governing Body
- Kentucky Executive Branch Code of Ethics
- Teachers' Retirement System of the State of Kentucky (TRS) statutes and policies

Overview

Duties Under Code of Conduct for Members of a Pension Scheme Governing Body



Overview

Duties Under Code of Conduct for Members of a Pension Scheme Governing Body

Code of Conduct Pension trustees

1. Act in good faith and in the best interest of the scheme participants and beneficiaries.
2. Act with prudence and reasonable care.
3. Act with skill, competence, and diligence.
4. Maintain independence and objectivity by, among other actions, avoiding conflicts of interest, refraining from self-dealing, and refusing any gift that could reasonably be expected to affect their loyalty.
5. Abide by all applicable laws, rules, and regulations, including the terms of the scheme documents.
6. Deal fairly, objectively, and impartially with all participants and beneficiaries.
7. Take actions that are consistent with the established mission of the scheme and the policies that support that mission.
8. Review on a regular basis the efficiency and effectiveness of the scheme's success in meeting its goals, including assessing the performance and actions of scheme service providers, such as investment managers, consultants, and actuaries.
9. Maintain confidentiality of scheme, participant, and beneficiary information.
10. Communicate with participants, beneficiaries, and supervisory authorities in a timely, accurate, and transparent manner.

Executive Branch Code of Ethics

Statement of Public Policy
Prohibited Conflicts of Interest
When to Abstain
Prohibited Acts
Acceptance of Gifts
Statements of Financial Disclosure

Executive Branch Code of Ethics

Statement of Public Policy

The public policy of the commonwealth requires that:

- A public servant must be independent and impartial;
- Decisions and policies must be made through the established processes of government;
- A public servant should not use public office to obtain private benefits; and
- The public has confidence in the integrity of its government and public servants.

(KRS 11A.050)

Executive Branch Code of Ethics

Prohibited Conflicts of Interest

No public servant, by himself or through others, shall knowingly use or attempt to use his influence:

- In any matter that involves a substantial conflict between a personal/private interest and duties in public interest;
- To obtain financial gain
- To secure or create privileges, exemptions, advantages or treatment for himself or others in derogation of the public interest at large.

(KRS 11A.020)

Executive Branch Code of Ethics

When to Abstain

Some guidelines for determining whether to abstain:

- Does a personal interest creates a substantial threat to independence of judgment;
- Is participation likely to have any significant effect on the disposition;
- Will the decision affect the public servant differently from the public or differently from others in similar positions (i.e., jobs)
- A public servant may request an advisory opinion from the Executive Branch Ethics Commission in accordance with the Commission's rules of procedure.

(KRS 11A.030)

Executive Branch Code of Ethics

Prohibited Acts

Examples:

- Knowingly disclosing or using confidential information gained in duties.
- Knowingly undertaking, bidding on, negotiating, or enjoying any agreement or purchase made or awarded by the agency where the public servant is employed or supervises for himself or a business where he owns at least 5%.
- Knowingly accepting compensation, other than that provided by law, for performance of official duties without the prior commission approval.
- Violating employment restrictions.
- Lobbying and representation restrictions for one year.

(KRS 11A.040)

Executive Branch Code of Ethics

Acceptance of Gifts

Generally, Board Governance Manual says gifts should be avoided.

The Executive Branch Code provides:
"No public servant … shall accept any gifts … totaling more than $25 in a calendar year from any person or business that does business with … the agency in which the public servant is employed or which he or she supervises … ."

Not included: Gifts from family, campaign donations or prizes available to public. (KRS 11A.010(5))

BUT: Even if otherwise allowed, gifts are a problem if made quid pro quo.
(KRS 11A.045)

Executive Branch Code of Ethics

Statements of Financial Disclosure

Each officer, each public servant listed in KRS 11A.010(9)(a) to (g), and each candidate shall file a statement of financial disclosure with the commission.

(KRS 11A.050)

TRS Conflict of Interest Statute

No trustee or employee of the board shall:

1. Have any interest, direct or indirect, in the gain or profits of any investment or transaction made by the board;
2. Use any TRS assets except to make payments authorized by the board;
3. Become an endorser, surety, or obligor for moneys loaned to or borrowed from the board;
4. Have a contract with TRS individually or through a business;
5. Use his or her official position with TRS to obtain a financial benefit;
6. Use confidential TRS information to further personal economic interests; or
7. Generally, hold outside employment with any person or business that he or she has involvement as part of TRS position.

(KRS 161.460)

Policy & Form

BOARD GOVERNANCE MANUAL

APPENDIX 7
CONFLICT OF INTEREST AND CONFIDENTIALITY POLICY

INTRODUCTION

1. Adoption of Conflict of Interest and Confidentiality Policy

Pursuant to the provisions of KRS 161.250, the Board of Trustees (board) of the Teachers' Retirement System of the State of Kentucky (TRS) is vested with the responsibility for the general administration and management of the retirement system. The Board may adopt procedures necessary to conduct the business of the retirement system as needed. The law shall control if any inconsistency exists between the law and this policy.

2. Statement of Conflict of Interest and Confidentiality Policy

TRS recognizes the need to maintain the public's confidence and trust in the integrity of TRS and the Commonwealth of Kentucky. Individuals associated with TRS must not engage in activities that have the potential to become a conflict of interest in their association with TRS. Likewise, individuals associated with TRS must not release information about TRS or any of its members that would breach any duty to protect such information. TRS recognizes the need to establish procedures to prevent such conflicts or breaches.

3. Purpose

The purpose of this Conflict of Interest and Confidentiality Policy is to: establish which individuals are subject to TRS's conflict of interest provisions; establish the specific standards of conduct with regard to conflict of interest; establish standards with regard to the confidentiality of information; and establish procedures for obtaining written conflict of interest statements and confidentiality agreements from certain individuals.

4. Procedures Regarding Conflicts of Interest and Confidentiality

A. Application of Policy

1) This policy shall apply to all individuals who have a statutory, contractual or working relationship with TRS.

2) Individuals affected by this policy shall include, but are not limited to:

a) Employees of TRS;

b) The board;

c) Independent contractors of TRS;

d) Vendors of TRS;

e) Employees or Officers of the Commonwealth of Kentucky providing legal or expert advice at the request of TRS; and

f) Any person acting in a fiduciary capacity for TRS.

B. Standards of Conduct Regarding Conflicts of Interest

1) Individuals have an obligation to diligently identify, disclose, avoid and manage conflicts of interest.

2) Potential conflicts of interest exist when an ind… be directly or indirectly financially impacted, … a decision made by TRS in which the individu…

3) Individuals and their family members should n… any agency doing business with TRS for finan… contract, without full disclosure and satisfactor… of interest in accordance with the Executive Br…

4) Individuals should not be involved in the decis… member of their family as defined by the Exec…

5) Individuals should not conduct business or par… agency in which the individual or family mem… employment.

6) Individuals should not accept campaign contri… discounts, services or other compensation und… reasonably be inferred that a major purpose of… in the performance of their duties for TRS.

7) Individuals must avoid all conduct that in any… that the individual is using his or her position… political or private interest.

8) Individuals not covered by the conflict of inter… must not violate any conflict of interest statute… their duties with TRS. These individuals must… financial or other transaction with a trustee or… standards of the Executive Branch Ethics prov… 11A.

C. Standards of Conduct Regarding Confidentiality

1) Individuals associated with TRS may be granted access to confidential information in the course of being a TRS employee, board member or contractor.

2) This information may include, but is not limited to, investment trade data; individual member information, including but not limited to, Social Security numbers, names, addresses, phone numbers, birth dates, beneficiaries, health insurance information, member numbers; documents; records; programs; files; scientific or technical information; and other information made available to individuals for purposes of completing their obligations to TRS.

3) These individuals have a duty to keep confidential the information to which they are granted access as a result of their association with TRS.

4) TRS and these individuals shall also recognize that confidential member information is protected under KRS 161.585.

5. Written Statements of Conflict of Interest and Confidentiality

A. On an annual basis, the Executive Secretary, Deputy Executive Secretaries, Chief Investment Officer, Director of Investment Strategies, Chief Financial Officer, the members of the board, independent contractors, vendors of TRS and other persons identified in Section 2 (2) shall file a written conflict of interest statement on the form(s) provided by TRS and adopted by the Board of Trustees.

B. Upon proposal for contract and continuing on an annual basis, any independent contractors and vendors of TRS shall file a written confidentiality agreement on the form provided by TRS and adopted by the Board of Trustees. This form may be amended to conform to specific needs of the individual vendor or contractor as deemed necessary by general counsel or designee.

C. Other employees of TRS also may be requested to file a written conflict of interest statement as needed or requested by the board.

D. An individual who abstains from involvement in an official decision because of a personal or private interest must disclose that fact in writing to the executive secretary.

6. Ethics and Confidentiality

Individuals as set forth above shall conform to the Executive Branch Code of Ethics with regard to conflicts of interests as set forth in KRS Chapter 11A and this policy. Individuals as set forth above shall conform to the confidentiality requirements of KRS 161.585.

Adopted March 16, 2009; amended September 19, 2016

Conflict of Interest Statement

External Service Provider

TEACHERS' RETIREMENT SYSTEM
OF THE STATE OF KENTUCKY

EXTERNAL SERVICE PROVIDER
CONFLICT OF INTEREST STATEMENT

I, ______________________________, in my role as ____________________
________________________ for the Teachers' Retirement System of the State of Kentucky (TRS), recognize the need to maintain the public's confidence and trust in the integrity of TRS and the Commonwealth of Kentucky.

I understand that I have the obligation to diligently identify, disclose, avoid and manage conflicts of interest that may arise through my relationship with TRS.

I will conduct my activities with TRS so that I do not advance or protect my own interests or the private interests of others with whom I have a relationship, in a way that is detrimental to the interests of TRS.

In every instance in which I am acting on behalf of TRS, I will conduct my activities in a manner to best promote the interests of TRS.

I agree not to attempt to influence TRS in disregard of the public interest at large.

In all matters where an official decision must be made that may favorably or detrimentally impact my own financial interests or the financial interests of other individuals or organizations with whom I have a relationship, I will reveal that relationship and abstain from involvement in the official decision.

When a conflict of interest arises, or when a potential conflict of interest arises, I will disclose that conflict or potential conflict to my contact person at TRS and seek resolution of that issue.

I agree not to violate any conflict of interest statute or principle by the performance of my duties with TRS. I will not engage directly or indirectly in any financial or other transaction with a trustee or employee of TRS that would violate the standards of the Executive Branch Ethics provisions, as set forth in KRS Chapter 11A.

Agreed this the ________ day of __________________, 20__.

____
Signature

____
Name

Title

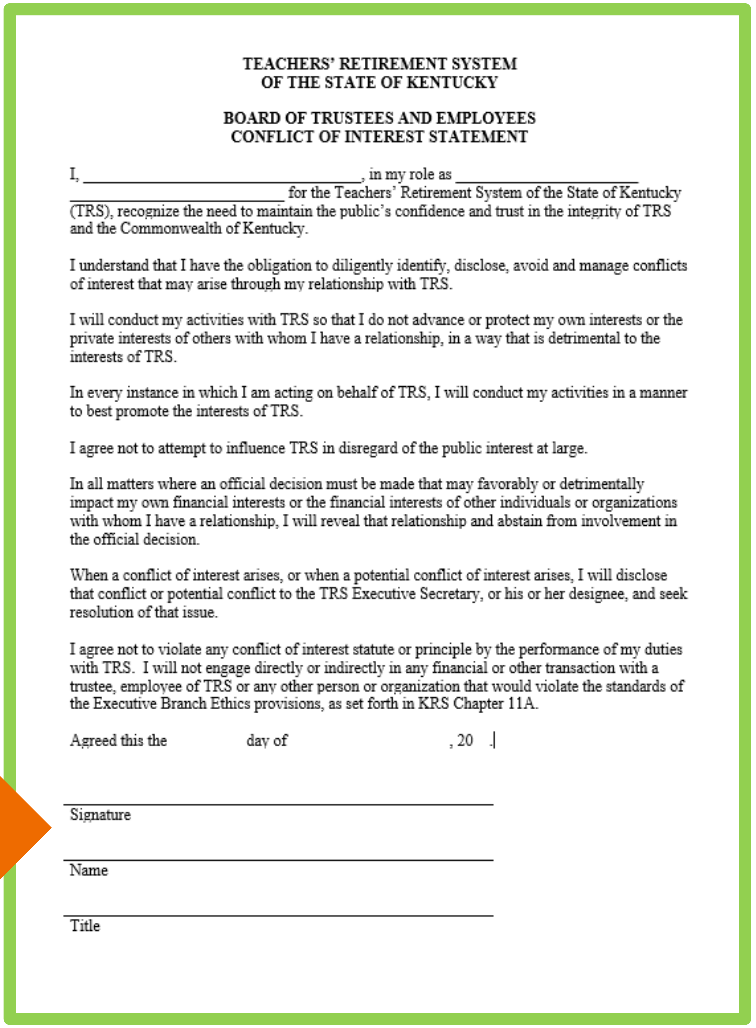
____
Company

Read, sign & return to TRS

Conflict of Interest Statement

Board of Trustees and Employees

Read, sign & return to TRS



TEACHERS' RETIREMENT SYSTEM
OF THE STATE OF KENTUCKY

BOARD OF TRUSTEES AND EMPLOYEES
CONFLICT OF INTEREST STATEMENT

I, ______________________________, in my role as ______________________ ________________________ for the Teachers' Retirement System of the State of Kentucky (TRS), recognize the need to maintain the public's confidence and trust in the integrity of TRS and the Commonwealth of Kentucky.

I understand that I have the obligation to diligently identify, disclose, avoid and manage conflicts of interest that may arise through my relationship with TRS.

I will conduct my activities with TRS so that I do not advance or protect my own interests or the private interests of others with whom I have a relationship, in a way that is detrimental to the interests of TRS.

In every instance in which I am acting on behalf of TRS, I will conduct my activities in a manner to best promote the interests of TRS.

I agree not to attempt to influence TRS in disregard of the public interest at large.

In all matters where an official decision must be made that may favorably or detrimentally impact my own financial interests or the financial interests of other individuals or organizations with whom I have a relationship, I will reveal that relationship and abstain from involvement in the official decision.

When a conflict of interest arises, or when a potential conflict of interest arises, I will disclose that conflict or potential conflict to the TRS Executive Secretary, or his or her designee, and seek resolution of that issue.

I agree not to violate any conflict of interest statute or principle by the performance of my duties with TRS. I will not engage directly or indirectly in any financial or other transaction with a trustee, employee of TRS or any other person or organization that would violate the standards of the Executive Branch Ethics provisions, as set forth in KRS Chapter 11A.

Agreed this the day of , 20 .

____
Signature

____
Name

____
Title

Summary

The provisions of the Executive Branch Code of Ethics and the TRS Conflict of Interest statute provide base guidelines for conduct. As always, it is important to be mindful that TRS needs to avoid not only any actual impropriety, but also even the appearance of impropriety. Just because the code or statute may not prohibit something does not mean that it is OK.

TEACHERS' Retirement System

TRS

KENTUCKY

Our Members Come First!

800-618-1687

8 a.m. – 5 p.m. ET
Monday – Friday

info@trs.ky.gov
https://trs.ky.gov

Protecting & Preserving Teachers' Retirement Benefits

Managing Fiduciary Duty

Tony Roda
Principal
Williams & Jensen PLLC

Minimizing Risk

- Develop written policies, procedures, and follow them (Paper the process!)
  - Ethics and conflicts of interest
  - Investments
  - Governance
  - Social Media

Sources of Law

Federal	State Law	Common Law
• Internal Revenue Code • ERISA (does not directly apply but is instructive) • Case law	• Constitution • Statutes/regulations • Case law	• Restatement of Trusts • Uniform Management of Public Employees Retirement System Act (UMPERSA)

Three Fundamental Duties

- Loyalty
- Prudence
- Care

→ Interwoven throughout…

What is a Fiduciary?

- Exercises discretionary authority/control over management of plan or assets
- Has discretionary authority/responsibility in the administration of the plan
- Renders investment advice for a fee with respect to plan monies or property of plan or has authority/responsibility to do so

Who is a Fiduciary?

- Fiduciaries are:
  - Trustees
  - Plan administrators
  - Investment managers
  - Those exercising discretion in administering the plan
  - Those designated by plan documents
- Who is not a fiduciary?
  - In general, attorneys, accountants, and actuaries acting solely in their professional capacities
  - Those performing ministerial tasks such as secretaries

Prudent Person

- Under ERISA, a fiduciary must act with the "care, skill, prudence, and diligence" that a prudent man acting in a like capacity and familiar with such matters would use
  - This standard applies to all non-investment decisions a fiduciary will make
- Fiduciaries also have a duty to follow and operate in accordance with plan documents

Foundation in Tax Law

- Exclusive Benefit Rule – The plan must be operated for the exclusive benefit of plan beneficiaries (IRC § 401(a)(2))
- §457 and §403(b) plans are covered as well
- This is an IRC requirement for plan qualification

Importance of Plan Qualification

- Employer contributions are not taxable to plan participants (income or employment)
- Earnings are not taxed at trust or participant level

…until distribution

Exclusive Benefit Rule

- No diversion of corpus or income of trust other than for EBR purposes until satisfaction of all trust liabilities

- IRS has ruled that a transaction will not violate the EBR if its primary purpose is to benefit employees or beneficiaries

- Kentucky Law, K.R.S. §161.430(2)

Delegation

- Where fiduciaries lack necessary experience or expertise, they may hire an expert
- Ensure clear documentation for the process of delegating authority, including specific duties and responsibilities
- Fiduciaries are responsible for overseeing the delegation; delegation must be consistent with approved plan; monitor; reasonable fees

Investments

- IRS Does not limit the type of investments that may be made as long as it is permitted by the plan documents and otherwise legal under local law (26 CFR 1.401-1(b)(5))

- IRS guidance provides that investments are consistent with EBR if safeguards and diversity that “Prudent Investor” would adhere to are present, Revenue Rulings 69-494 and 73-380

Prudent Investor

- Must invest as a prudent investor would invest his/her own assets – in context of purposes of plan
- Positive obligation to diversify investments
- Take all factors into account, such as:
  - General economic conditions
  - Effects of inflation or deflation
  - Expected return and appreciation of capital
  - Role of each investment in the portfolio
  - Liquidity
  - Adequacy of plan funding

U.S. Supreme Court

- Tibble v. Edison International, 575 U.S. ___, 135 S. Ct. 1823, 191 L. Ed. 2d 795 (May 18, 2015)
- Under trust law, a trustee has a continuing duty to monitor trust investments and remove imprudent ones (DC plan context)

Environmental, Social, and Governance

- ERISA does not permit fiduciaries to sacrifice the economic interests of the plan in order to promote collateral goals (Department of Labor)

- Fiduciaries should consider ESG factors as they relate to risk and return. Here, ESG factors would not be merely collateral

- Fiduciaries can use collateral goals as “tie-breakers” when choosing between otherwise equal investment alternatives

Investing in Municipal Bonds

- Investment of plan assets in bonds or other obligations of plan sponsors
- Not prohibited *per se*, but close scrutiny

Employer Obligations
Rev. Rul. 69-494

- Cost not to exceed FMV
- Fair return against prevailing rate
- Sufficient liquidity for distributions
- Prudent Investor standard

Plus, must not be a prohibited transaction

Prohibited Transactions

- IRC § 401(a) plans subject to §503(a)
- Violations may result in loss of tax-exempt status; significant impact on trust and participants
- For governmental plans, issues have arisen largely in context of trust acquisition of employer obligations

Prohibited Transactions

- IRC §503 = Arm's length transactions
- Substantial diversion of trust corpus or income to creator of or substantial contributor to trust or corporation controlled by either
- There are specific prohibitions

Specific Prohibitions

- Loan without adequate security or reasonable rate of interest
- Purchase of securities $\neq$ adequate consideration
- Sale of securities or other property $\neq$ adequate consideration

Self-Dealing and Conflicts

- Fiduciaries must not deal with plan assets in their own interest
- Fiduciaries may not act on behalf of a party whose interests are adverse to the interests of the plan/beneficiaries
- Fiduciaries may not receive anything of value in connection with a transaction involving the assets of the plan

Federal Legislative Overview

Retirement Issues

- SECURE Act, H.R. 1994
- Multiemployer pension bill, H.R. 397
- Infrastructure bank (Rep. John Yarmuth, D-KY)
- Windfall elimination provision
- Financial transactions tax

Federal Legislative Overview

Health Care

- Drug pricing
- ACA
- Trump Administration initiatives
- Medicare expansion
- HELPS enhancements, IRC §402(l)

Contact Information

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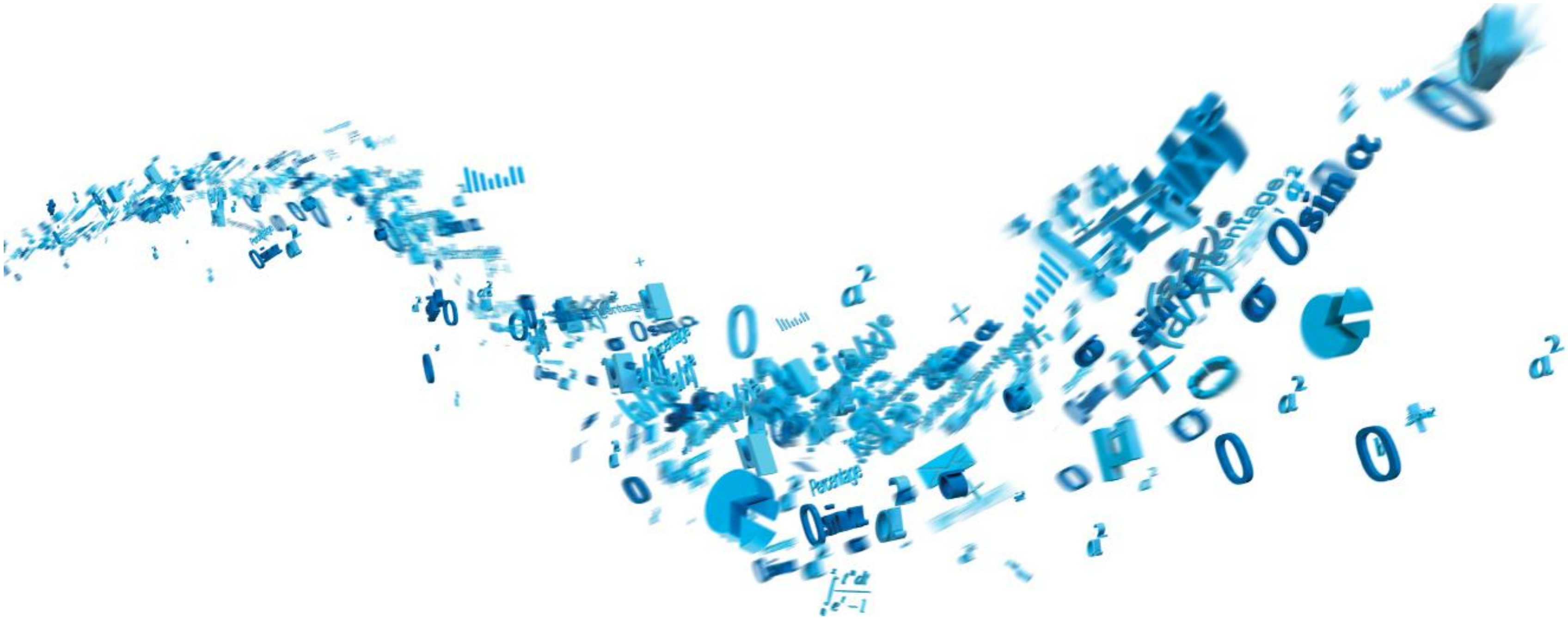


Public Funds Can Compete: An Examination of Public Fund Performance Versus Endowments and Foundations

Teachers' Retirement System of the State of Kentucky

Trustee Training Workshop

November 2019

Public Funds Can Still Compete: Key Findings

- In past findings, public funds struggled to outperform endowments and foundations (E&Fs), as reported in our paper titled "Can Public Funds Compete?" dated Winter 2003/2004.[1]
- In a study conducted in 2011, we confirmed that public funds can compete with returns above E&Fs.[2]
- An update on this study through 2018 concluded that public funds have continued to outperform E&Fs on average by 100 basis points over the last seven years ending December 31, 2018.
- Public funds had larger allocations to public equities—namely U.S. equities versus E&Fs, which has contributed to outperformance.
- Public funds' preference for private equity versus hedge fund exposure helped boost relative returns.
- Public funds typically have a cost advantage given their size (economies of scale).

[1]Richard M. Ennis, "Can Public Funds Compete?," *The Journal of Investment Consulting* (Vol. 6, No. 2, Winter 2003/2004)

[2]Sudhakar Attaluri and Mike Sebastian, "Research Note: Public Funds Can Compete," June 2012. We excluded corporate funds from this discussion as their framework for investing has changed significantly with the passage of the Pension Protection Act of 2006 (PPA).

Performance Summary

- In a prior research study[1], we confirmed that Public Funds had outperformed E&Fs during the 2003 to 2011 period
- This research study updates the prior study and concludes that Public Funds have continued to outperform E&Fs by an annualized 1.00% (gross of fees) from 2012 to 2018
  - Additionally, Public Funds have achieved that outperformance at a lower level of volatility
- The annualized total return for Public Funds also exceeded the current average public fund actuarial assumed rate of return of 7.2%[3]

Annualized Return (Gross of Fees)[2]	2012-2018 (7 Years)
Teachers' Retirement System of Kentucky	**8.63%**
Public Funds	**7.43%**
E&Fs	**6.43%**
Difference (Public Funds Minus E&Fs)	**+1.00%**

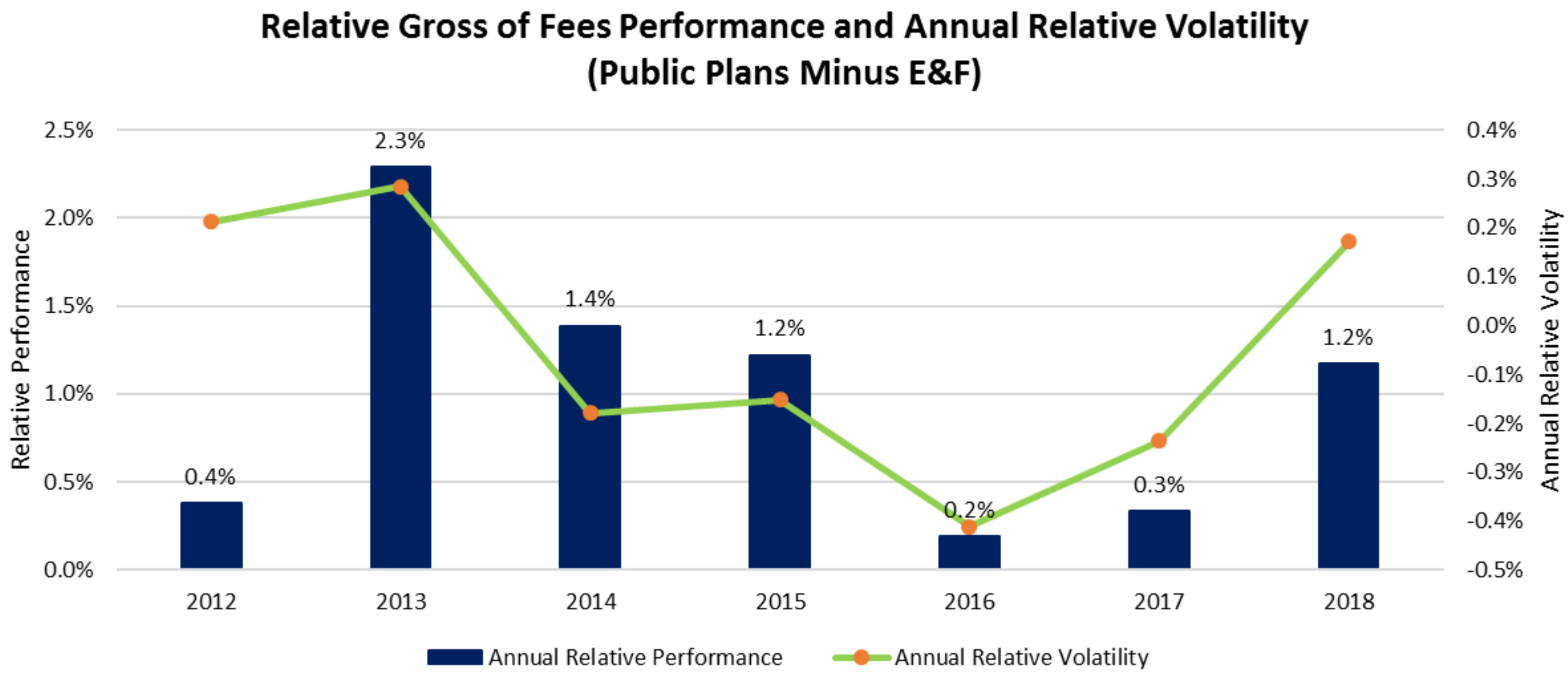
Past performance is no guarantee of future results

- While this data reflects gross of fee returns, we see no reason to believe that the cost advantage that existed in prior studies for public funds over E&Fs has changed. Historically, the average fees for public funds were approximately 31 basis points less than E&Fs (45 bps average for public funds vs. 76 bps for E&Fs)[4]

[1] Sudhakar Attaluri and Mike Sebastian, "Research Note: Public Funds Can Compete," June 2012.
[2] Source: Aon Hewitt/PARis, a performance reporting program and universe generator from Investment Metrics representing approximately 500 Public Funds and 1,000 E&Fs.
[3]Source: NASRA Issue Brief Public Pension Plan Investment Return Assumptions Updated October 2019
[4] Greenwich Associates

Performance Summary (cont.)

- Public funds have not only outperformed E&Fs, but have achieved that outperformance at a lower level of volatility
- While public funds have relied heavily on higher volatility public equities, public funds have also consistently held a higher allocation to lower-risk fixed income than E&Fs, which has helped dampen volatility

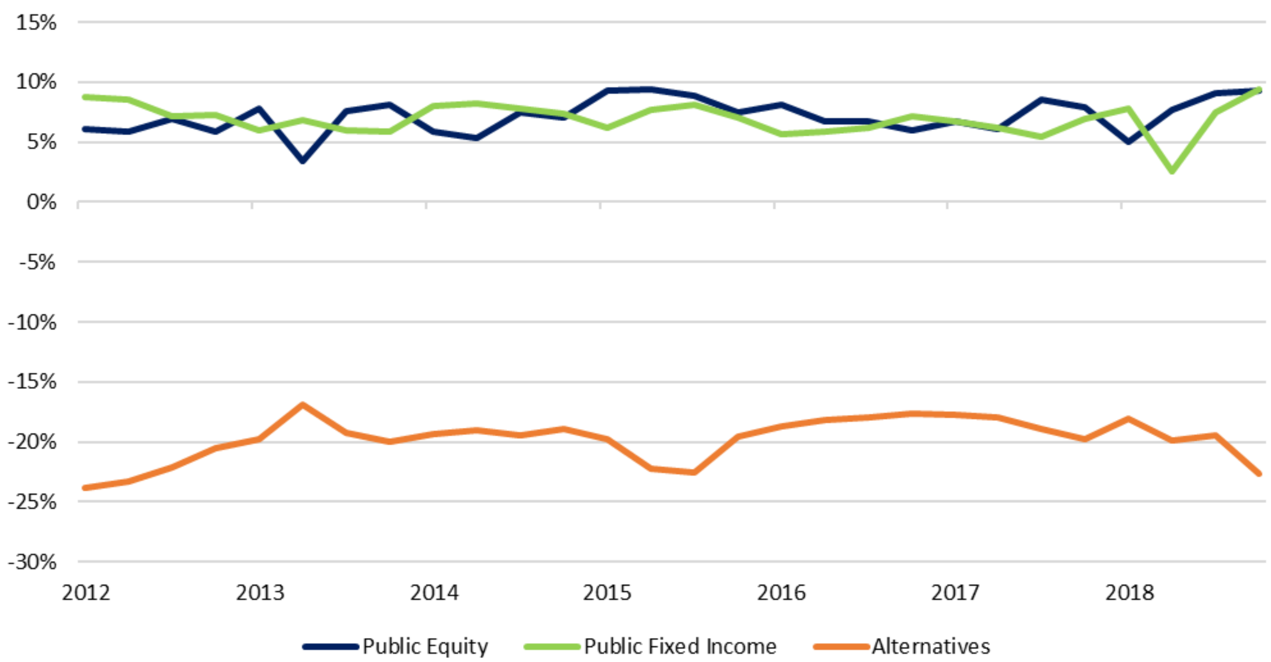


Past performance is no guarantee of future results

Recent Drivers of Relative Performance: Asset Allocation

- Allocations have varied greatly between Public Funds and E&Fs
  - Public Funds have preferred public equities and fixed income whereas E&Fs have preferred more alternatives
  - This has benefited public fund performance over the past five years given the strong returns in public equities during this period

Percentage Point Differences in Asset Allocation (Public Fund Allocations Minus E&Fs)[1]

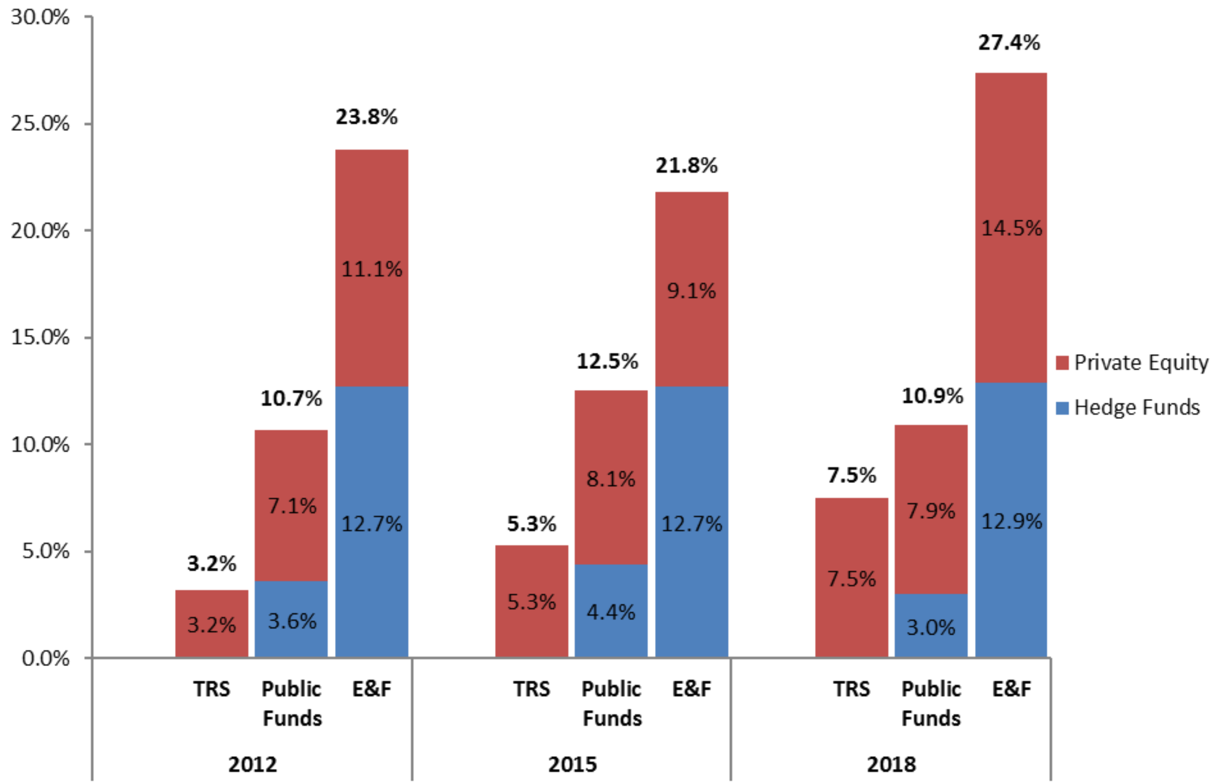


[1] Source: Aon Hewitt/ PARis, a performance reporting program and universe generator from Investment Metrics representing approximately 500 Public Funds and 1,000 E&Fs.

Recent Drivers of Relative Performance: Asset Class Structure

- Public funds have allocated less to hedge funds and private equity than E&Fs
- Within these allocations, public funds have relied more heavily on private equity than hedge funds
- Outperformance of private equity over hedge funds has benefited public funds over the past seven years

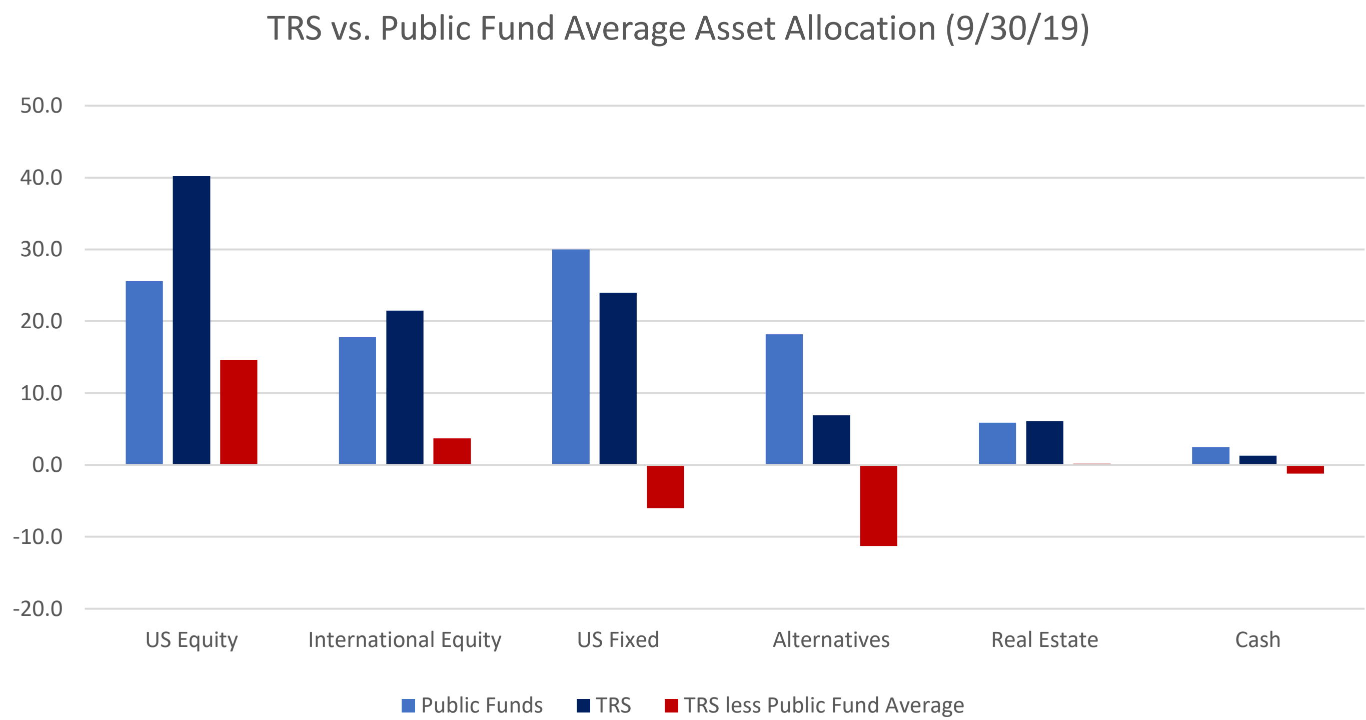
Private Equity & Hedge Fund Allocations for TRS vs. Public Funds vs. E&Fs[1]



[1] Source: Greenwich Market Trends 2012, 2015, 2018

TRS Asset Allocation Relative to the Public Fund Average

- TRS returned 9.2% annualized for the ten-year period ending 9/30/2019 versus the public fund average of 8.4%.
- This return ranked in the top 6th percentile in the public fund universe.
- TRS' emphasis of U.S. equities relative to other public funds has helped relative performance over this period



Looking Forward: Tools for Navigating the Current Market

Diversification

Ensure diversification across risk premiums, investment strategies, lock-up structures, and vehicles

Active Risk

Carefully consider optimal places to take active risk. Active risk should be taken when risk tolerance exists and where there is a strong probability for earning alpha

Market Dislocations

Take advantage of short-term market dislocations (recent examples: TARP, PIMCO BRAVO, energy)

Medium Term Views

Medium term views (1–3 year views of capital markets) can impact rebalancing activity, investing contributions, tilting the portfolio, etc.

Illiquidity

Determine the fund's tolerance for illiquidity given liabilities and cash flow positioning

Looking to the Future: Identifying Competitive Advantages

Governance Structure

- Board delegation of investment decisions to the Fund's Staff increases the ability to be nimble and opportunistic

Investment Team Expertise

- Access to internal and external resources and expertise
- Ability to hire specific asset class/ strategy expertise

Board/Committee Expertise

- Stakeholders may have specific expertise that can be an advantage
- Education may be required in a particular area

Fund Size

- Larger funds have more access but maybe less nimble
- Niche strategy funds may be too small for larger funds
- Small funds can be more nimble but may miss out on the best managers

Time Horizon

- Long time horizons allow for higher levels of illiquidity and more risk
- Shorter time horizons (low funded status & high negative net cash flow), limit ability to take risk & illiquidity

Bottom Line

Public funds **can** compete.

And they will **continue** to compete with other institutional investment programs like endowments and foundations.

Public funds have unique, competitive advantages that enable them to use different tools for navigating a difficult, complex, and challenging future market environment.

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Public Funds Can Still Compete

July 2017

Key Points

- In past findings, public funds struggled to outperform endowments and foundations (E&Fs), as reported in our paper titled "Can Public Funds Compete?" dated Winter 2003/2004[1].
- In a study conducted in 2011, we confirmed that public funds can compete with returns above E&Fs[2].
- An update on this study through 2016 concluded that public funds have continued to outperform E&Fs on average by 100 basis points over the last five years ending December 31, 2016.
- Public funds had larger allocations to public equities—namely U.S. equities versus E&Fs, which has contributed to outperformance.
- Public funds' preference for private equity versus hedge fund exposure helped boost relative returns.
- Public funds typically have a cost advantage given their size (economies of scale).

Past Studies

Our original 2003 research[1] indicated that public funds underperformed E&Fs. In an update with data through 2011[2], a reversal occurred where public funds outperformed E&Fs, as shown below. We compared public funds to E&Fs given that, while they are very different in many areas, they are very similar in their total return approach to investing.

Exhibit 1

	Annualized Return (Net of Fees)[3]		
Fund Type	**1987–2002[4] (16 Years)**	**1995–2002[4] (8 Years)**	**2003–2011[5] (9 Years)**
Public Funds	8.63%	8.38%	6.55%
E&Fs	9.17%	8.91%	6.38%
Difference (Public Funds Minus E&Fs)	–0.54%	–0.53%	0.17%

Past Performance is no guarantee of future results.

During the 2003–2011 time period, performance of both investor types can be separated into public fund underperformance from 2003 through 2007, representing a relatively calm market environment, and outperformance during the more volatile period from 2008 through 2011. The conclusions from these studies indicated that relative performance was driven by three factors: asset allocation, asset class structure, and investment expenses. Similar factors also influenced relative performance for public funds versus E&Fs for the period from January 1, 2012, through December 31, 2016, which we evaluate in the following section.

[1] Richard M. Ennis, "Can Public Funds Compete?," *The Journal of Investment Consulting* (Vol. 6, No. 2, Winter 2003/2004)
[2] Sudhakar Attaluri and Mike Sebastian, "Research Note: Public Funds Can Compete," June 2012. We excluded corporate funds from this discussion as their framework for investing has changed significantly with the passage of the Pension Protection Act of 2006 (PPA).
[3] Net of investment management fees – does not include investment advisor fees
[4] Russell/Mellon Analytical Services
[5] Source: The Bank of New York Mellon (Performance & Risk Analytics Trust Universe); Net Returns used in the analysis are net of average fees reported by Greenwich Associates for the respective fund types

2012–2016 Update

We updated the prior studies with data through December 31, 2016. For this most recent analysis, we used a larger universe of data from PARis, a robust third party performance reporting program and universe generator from Investment Metrics that provides access to approximately 400 public funds and 300 E&Fs. We also conducted this most recent update gross of fees, instead of our preferred net-of-fees approach, as there is no longer a data source that provides total plan fees for a universe of public funds or E&Fs. However, we see no reason to believe that the cost advantage that existed in prior studies for public funds over E&Fs has changed.

The updated results in Exhibit 2 show the continued annualized outperformance of public funds versus E&Fs with public funds outperforming over the trailing five-year period ending December 31, 2016, by 1.00%, gross of fees. It is also worth noting that this return, albeit only over a five-year period, has outperformed the current average public fund actuarial assumed rate of return of 7.5%.[6] As was the case in the prior study, relative performance was driven by two factors: a) asset allocation (i.e., greater public market versus alternative strategy exposure), and b) asset class structure (higher private equity versus hedge fund exposure). While this data reflects gross of fee returns, we also believe public funds' investment expenses remain lower.

Exhibit 2[7]

Annualized Return (Gross of Fees)	**2012–2016 (5 Years)**
Public Funds	8.47%
E&Fs	7.47%
Difference (Public Funds Minus E&Fs)	+1.00%

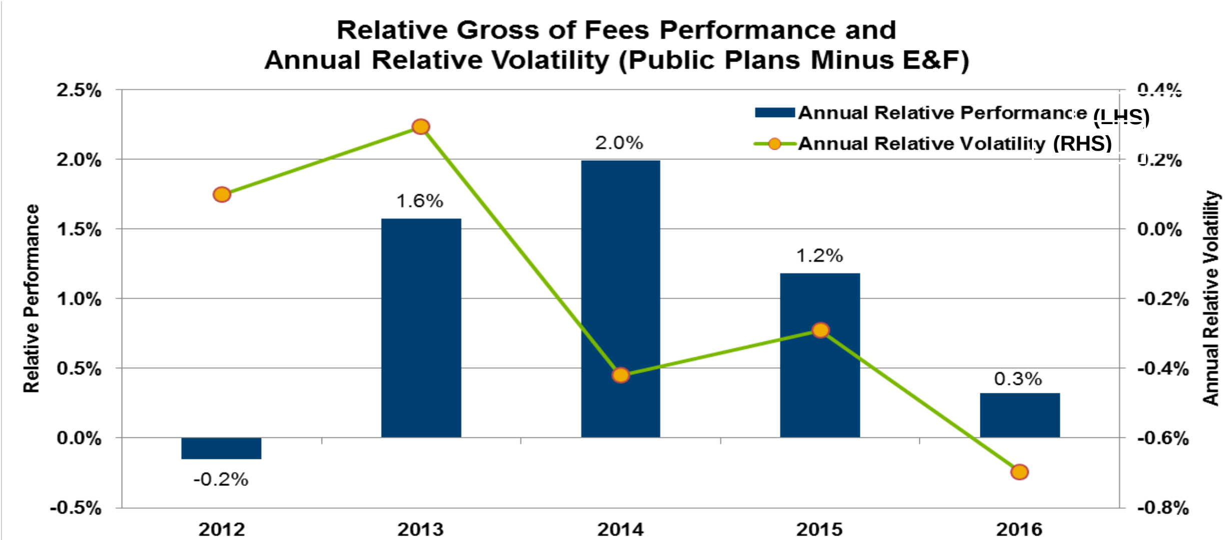
Past Performance is no guarantee of future results.

Public funds have not only outperformed E&Fs, but have achieved that outperformance at a lower level of volatility. The standard deviation over this period for the average public fund was 5.9%, and the standard deviation of the average E&F was 6.1%. This is surprising given public funds' general reliance on public equities; however, public funds have also consistently held a higher allocation to lower-risk fixed income than E&Fs, which has helped dampen volatility.

Exhibit 3 provides calendar-year comparisons of returns and risk for public funds versus E&Fs. Public funds have outperformed E&Fs for four out of the last five years with lower volatility in 2014, 2015, and 2016.

[6] Source: NASRA Issue Brief: Public Pension Plan Investment Return Assumptions Updated February 2017
[7] Source: Aon Hewitt/PARis, a performance reporting program and universe generator from Investment Metrics representing approximately 400 public funds and 300 E&Fs.

Exhibit 3: Relative Gross Performance and Annual Relative Volatility (Public Funds Minus E&Fs)[4]

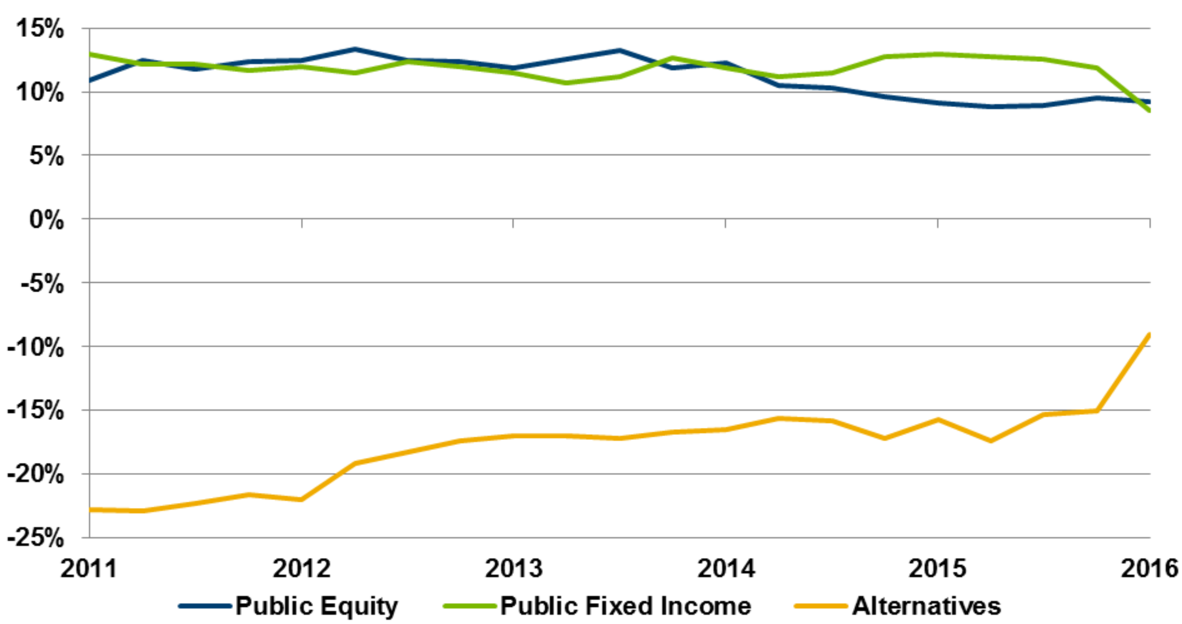


Past Performance is no guarantee of future results.

Asset Allocation

As in the prior study, public funds continued to have a relatively higher allocation to public equities and a corresponding lower allocation to alternatives (private equity and hedge funds). This has benefited public fund performance over the past five years given the strong returns in public equities during this period.

Exhibit 4: Percentage Point Differences in Asset Allocation (Public Fund Allocations Minus E&Fs)[8]



[8] Source: Aon Hewitt/PARis, a performance reporting program and universe generator from Investment Metrics representing approximately 400 public funds and 300 E&Fs.

Within their public equity allocations, public funds also have had a bias toward U.S. equities over the last five years. The typical E&F portfolio, based on the universe described above, had 28% allocated to U.S. equities versus public funds at 44%. This has contributed to the outperformance of public funds over the last five years and over the last eight years. U.S. equities exhibited strong relative outperformance versus all major asset categories as shown in Exhibit 5. U.S. equities have returned 17.8% since the end of the credit crisis, while international equities 10.0%, and U.S. fixed income 4.2%.

Exhibit 5: Annualized Performance of Market Indices

Index	Description	2012 Through 2016	Since End of Financial Crisis (3/2009 – 12/2016)
S&P 500 Index	U.S. Large Cap Equity	14.7%	17.8%
MSCI EAFE Index (Net)	Developed International Equities	6.5%	10.0%
MSCI ACWI ex USA Index (Net)	Developed & Emerging International Equities	5.0%	9.9%
Bloomberg Barclays U.S. Aggregate	U.S. Core Fixed Income	2.2%	4.2%
HFRI Fund Weighted Composite	Hedge Funds	4.5%	6.0%
Citigroup World Government Bond Index (WGBI)	Global Bonds	–1.0%	2.1%
NCREIF ODCE Index (Net)	Core Real Estate	11.2%	7.2%

Past Performance is no guarantee of future results. Unmanaged index returns assume reinvestment of any and all distributions and do not reflect any fees or expenses. Investors cannot directly invest in an index. Please see the Appendix for the list of benchmarks and their definitions.

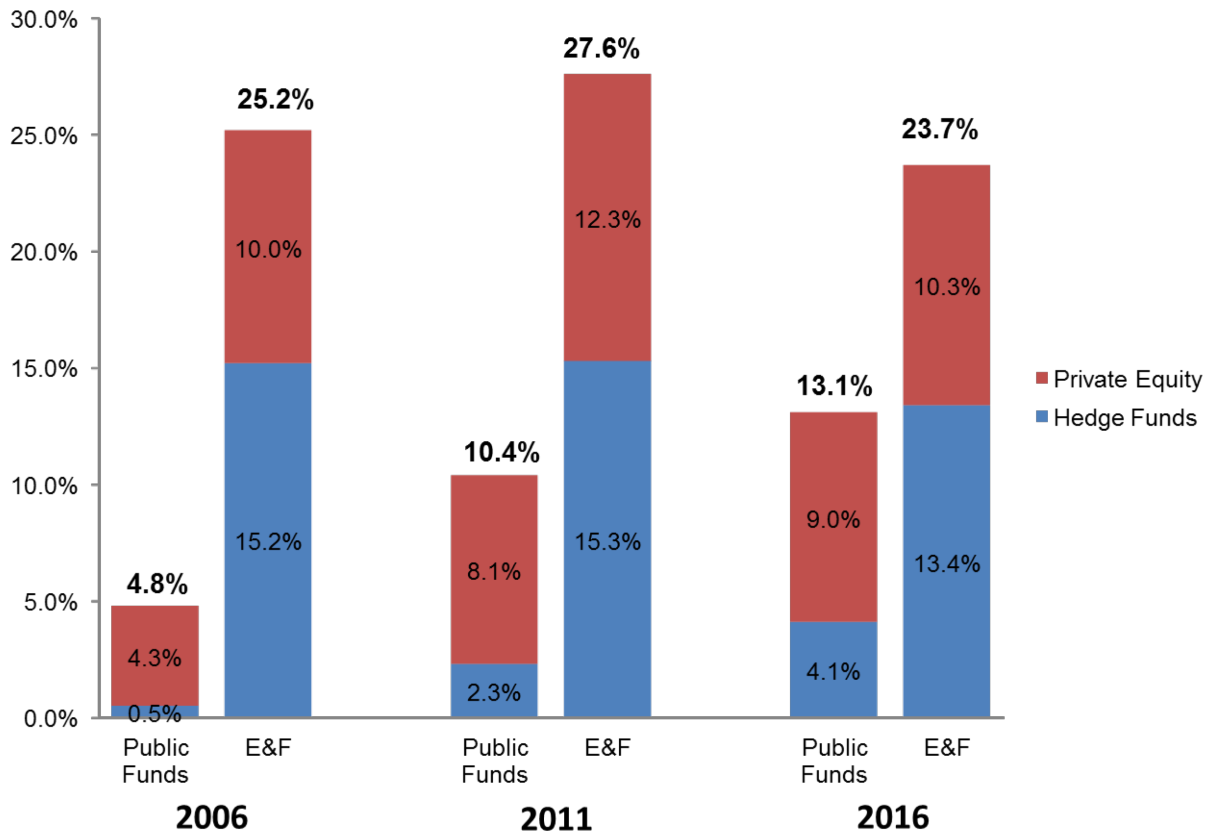
Asset Class Structure

As noted previously, E&Fs historically have had a substantial portion of their investment programs allocated to alternatives, and this allocation differs significantly from public funds. Another source for survey data, Greenwich Associates[9], indicates that while public funds have experienced an increase in allocations to hedge funds and private equity over the past 10 years, the overall allocations are still significantly lower than those of E&Fs. The aggregate allocation to hedge funds and private equity for public funds was 4.8% in 2006, 10.4% in 2011, and 13.1% in 2016. The survey indicates E&Fs' allocation to these two alternative asset categories was 25.2% in 2006, 27.6% in 2011, and 23.7% in 2016.

Exhibit 6 provides additional insight into the structure of the alternatives allocations for public funds and E&Fs. The survey indicates that public funds favor private equity versus hedge funds, whereas E&Fs allocate a greater percentage of their total alternatives allocation to hedge funds. The outperformance of private equity versus hedge funds has continued, with the Burgiss Global Private Equity Index outperforming the HFRI Fund Weighted Composite Index by an annualized 7.7% from September 30, 2011, through September 30, 2016.

[9] Greenwich Associates is a global provider of market intelligence and survey data. Each year they produce a survey report entitled "Greenwich Market Trends – Market Trends" that provides survey information across a range of categories and market segments within the institutional investment market. When we reference Greenwich Associates in this paper, the annual Market Trends survey is where we have sourced our data.

Exhibit 6[10]



We recognize that the next five years may not look the same as the last five years with U.S. equity and private equity dominating investment returns. In fact, we may enter a period where non-U.S. equity enjoys stronger returns and hedge funds produce more alpha than other active strategies. We still believe that public funds will be able to compete even if the future market environment looks different. It is worth noting that public funds continue to assess their public equity allocations in light of market valuations and areas for future growth, and are rigorously evaluating their allocations to hedge funds, real estate, private equity and other areas of the private market to ensure they are positioned for future success.

Investment Expenses

We see no reason to believe that the cost advantage that existed in prior studies for public funds over E&Fs has changed. Historically the average fees for public funds were approximately 31 basis points less than E&Fs (45 bps average for public funds vs. 76 bps for E&Fs)[11]. Due to the relatively larger size of public funds versus E&F, this public fund cost advantage will continue to exist and public funds will continue to aggressively negotiate fees.

---

[10] Source: Greenwich Market Trends 2006, 2011, 2016
[11] Greenwich Associates

Looking to the Future

Looking in the rearview mirror is important, but we would be remiss if we did not think about how public funds can remain competitive in the future. In general, institutional investment programs have a number of investment tools that allow them to invest their assets successfully in challenging markets to continue to generate strong returns at reasonable levels of risk. As a group, public funds are not missing out. Given their size, investment expertise, time horizon, and governance structure, many of these tools will be appropriate to pursue to remain competitive. However, this is not one size fits all, and it is imperative that public funds critically evaluate and identify their unique competitive advantages given their individual circumstances when determining which tools to use.

While many of these competitive advantages and investment tools are also available, and used by other institutional investors such as E&Fs, there are a few areas where we have seen public funds make significant progress. The first relates to governance structure. Many public funds in recent years have specifically evaluated and made changes to their governance structure to ensure that investment teams have levels of delegation that allow the funds to be more nimble and opportunistic. Along similar lines, we have seen public funds create broader asset classes or add opportunity allocations that allow the funds to take advantage of short-term market dislocations or invest in strategies that may not have historically fit into a traditional asset allocation.

Below we identify and define five tools that public funds can, and are using to navigate the current market:

- **Careful and thoughtful allocation of the active risk budget.** Public funds should take active risk only when risk tolerance exists among key stakeholders, and risk should be taken only in investment strategies and asset classes where there is high conviction of being able to earn alpha.
- **Diversification.** Diversification is a long-held tenet of investing. However, in today's environment, we expand the definition to mean not just asset class diversification, but also diversification across risk premiums, individual investment strategies (in one asset class or an opportunistic bucket), vehicle structures, and lockup time frames.
- **Short-term market dislocations.** Taking advantage of short-term market dislocations requires a public fund to be able to move quickly, to have an asset allocation that allows the inclusion of investment strategies that may not fit nicely into traditional asset class buckets, and to have the required level of expertise to identify opportunities.
- **Medium-term views.** Have one- to three-year views of capital markets and use these views when rebalancing, generating cash to pay contributions, investing contributions, or in some cases, tilting the portfolio.
- **Illiquidity premium.** There are strong returns available to long-term investors like public funds who can afford to act as providers of liquidity rather than demanders.

A critical guide for public funds to select the **right** tools for their circumstances is to focus on the fund's competitive advantages. There are five key areas where competitive advantages tend to exist for public funds:

- **Governance structure.** This component speaks to the level of delegation the board has given to the investment team to make investment decisions. In general, the more delegation to the investment team, the higher the speed of execution and implementation, and the greater the ability to be more opportunistic.

- **Investment team resources and expertise.** We have observed that many funds have unique internal expertise in a particular investment function or area, or the ability to hire specific asset class or strategy expertise. Funds should maximize their use of this internal expertise. However, there is also an abundance of external resources, and a public fund should assess where that gives them an additional advantage in terms of new asset classes, access to compelling private market strategies, and specialized expertise.
- **Board or committee expertise.** While we certainly recognize that public fund board members have varying levels of investment expertise, some boards do have individuals with specialized investment expertise. In addition, some boards have a separate investment committee or a sub-set of the board that is comprised solely of investment experts. Having investment expertise or access to a particular area of the capital markets can create a unique investment advantage. Public funds should evaluate and take advantage of this edge, if it exists.
- **Fund size.** There are competitive advantages for both small and large funds. Larger funds have the ability to build strategic partnerships with asset managers, which brings a breadth of expertise and investment ideas to the fund. Larger funds also easily meet minimums for alternative investment strategies and are typically able to gain access to the top funds in each universe, thereby increasing alpha potential. Smaller funds have the ability to access niche funds that may be more opportunistic and nimble in a particular market with a higher potential for alpha.
- **Time horizon.** Public funds typically have long time horizons, which allows for higher levels of active risk and the ability to take illiquidity risk. This is a distinct advantage in this market environment where the best returns are typically accessed through markets and vehicles that offer lower liquidity. While most public funds have long time horizons, it is critically important, when evaluating the appropriate level of liquidity, to consider current and projected funded status and net cash flow, the fund's expected contributions, demographic projections, and key stakeholder tolerance for illiquidity.

Once a public fund identifies its unique competitive advantages, these findings then inform the investment tools that are most appropriate to consider. The following table provides a guide for connecting a fund's competitive advantages with the right tools:

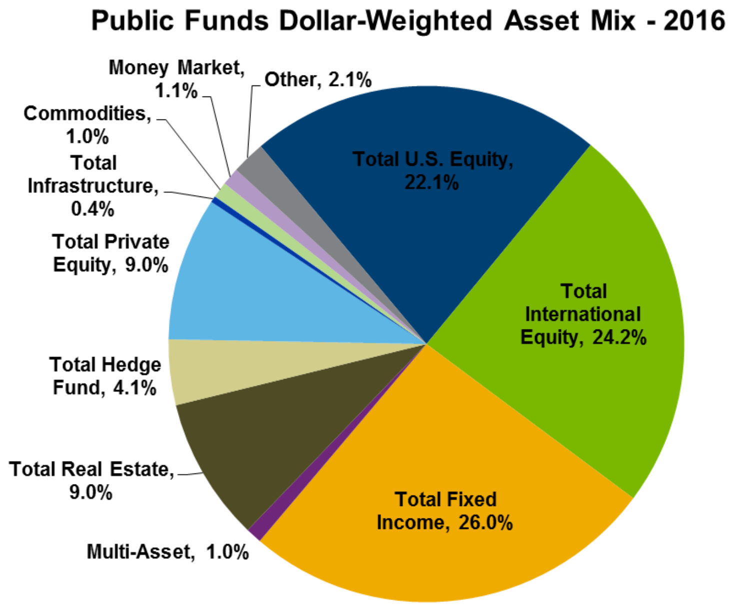
Competitive Advantage	Description	Corresponding Investment Tools
Governance structure	Higher level of board delegation increases speed of execution and ability to be opportunistic	Diversification, short-term market dislocations, medium-term views
Investment team resources and expertise	Special expertise in a particular asset class or strategy – informs where to look for alpha or when/how to take advantage of short-term opportunities	Informs where to take active risk, diversification, short-term market dislocations, medium-term views
Board or committee expertise	Take advantage when board or committee member has expertise or special access – allocate active risk to this area	Informs where to take active risk
Fund size	Large: strategic partnerships, access Small: access to niche, nimble, smaller sized opportunities	Large: Diversification, illiquidity premium Small: Informs where to take active risk, illiquidity premium
Time horizon	Longer time horizons allow for more active risk taking and illiquidity	Illiquidity premium

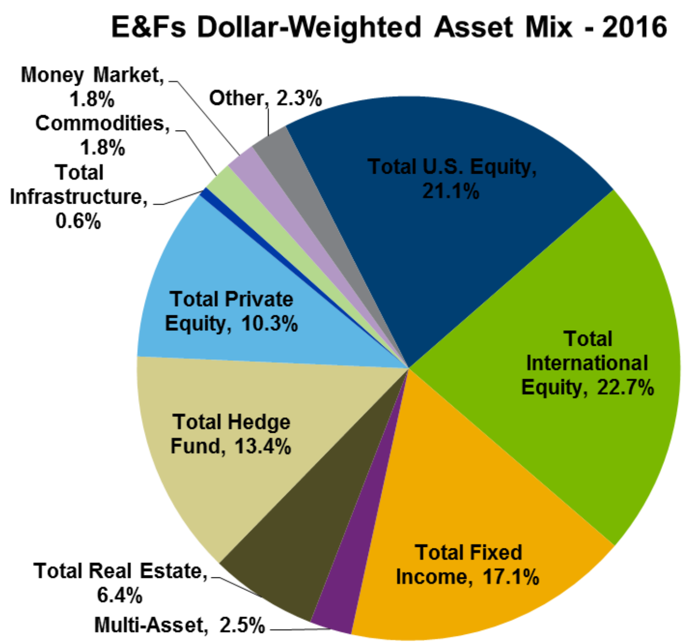
Conclusion

Public funds **can** compete. And they will **continue** to compete with other institutional investment programs like endowments and foundations. Public funds have unique, competitive advantages that enable them to use different tools for navigating a difficult, complex, and challenging future market environment.

Appendix – Asset Allocation Comparison

As of December 31, 2016[12]





[12] Greenwich Market Trends 2016

Appendix – Benchmark Definitions

S&P 500 Stock Index – A capitalization weighted index representing stocks chosen by Standard & Poor's, Inc. for their size, liquidity, stability and industry group representation. The companies in the S&P 500 Index are generally among the largest in their industries.

MSCI EAFE Index – A capitalization-weighted index of stocks representing 22 developed countries in Europe, Australia, Asia, and the Far East.

MSCI ACWI (All Country World) ex-U.S. Index – A capitalization-weighted index consisting of 23 developed and 21 emerging countries, but excluding the U.S.

Bloomberg Barclays Capital Aggregate Bond Index – This index is the broadest representation of the investment grade U.S. bond market. It includes allocations to U.S. Government bonds, investment grade corporate bonds and mortgage- and asset-backed securities.

HFRI Fund Weighted Composite Index – The HFRI Fund Weighted Composite Index is a global, equal-weighted index of over 2,000 single-manager funds that report to HFR Database. Constituent funds report monthly net of all fees performance in US Dollar and have a minimum of $50 Million under management or a twelve (12) month track record of active performance. The HFRI Fund Weighted Composite Index does not include Funds of Hedge Funds.

Citigroup WGBI – A market capitalization weighted bond index consisting of the government bond markets of the multiple countries. The index includes all fixed-rate bonds with remaining maturity of one year or longer and with amounts outstanding of at least $25 million.

NCREIF ODCE Index – A capitalization-weighted index of investment-grade income-producing properties.

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Teachers' Retirement System
of the State of Kentucky

TRS
Insurance

2019-2020

Gary L. Harbin, CPA
Executive Secretary

Two Plans for TRS Health Benefits

MEHP **Medicare Eligible Health Plan**	• Medicare-eligible or 65 & over • Exclusively TRS members • One Plan
KEHP **Kentucky Employees' Health Plan**	• Under 65 and not Medicare-eligible • Same fund as active teachers and state employees • Coverage options

Health Insurance Details Subject to Change

Kentucky law guarantees retired teachers access to group coverage, but the details of that coverage – including costs, subsidy and level of coverage – can change.

Shared Responsibility

A shared solution that provides permanent funding for retiree health care.

10 RS HB 540/EN

GENERAL ASSEMBLY
COMMONWEALTH OF KENTUCKY

2010 REGULAR SESSION

HOUSE BILL NO. 540

AS ENACTED

THURSDAY, APRIL 1, 2010

RECEIVED AND FILED
DATE April 13, 2010
10:24 pm
TREY GRAYSON
SECRETARY OF STATE
COMMONWEALTH OF KENTUCKY
BY K. Adler

Shared Responsibility Results

Prefunds Benefits

In 2010, board spearheaded Shared Responsibility passage to fund retiree health insurance, lowering state's cost from $170 million in 2010 to $70 million in 2020.

With implementation of Shared Responsibility and federal subsidy solutions, the state's $6.2 billion share of unfunded liability fell to $1.2 billion.

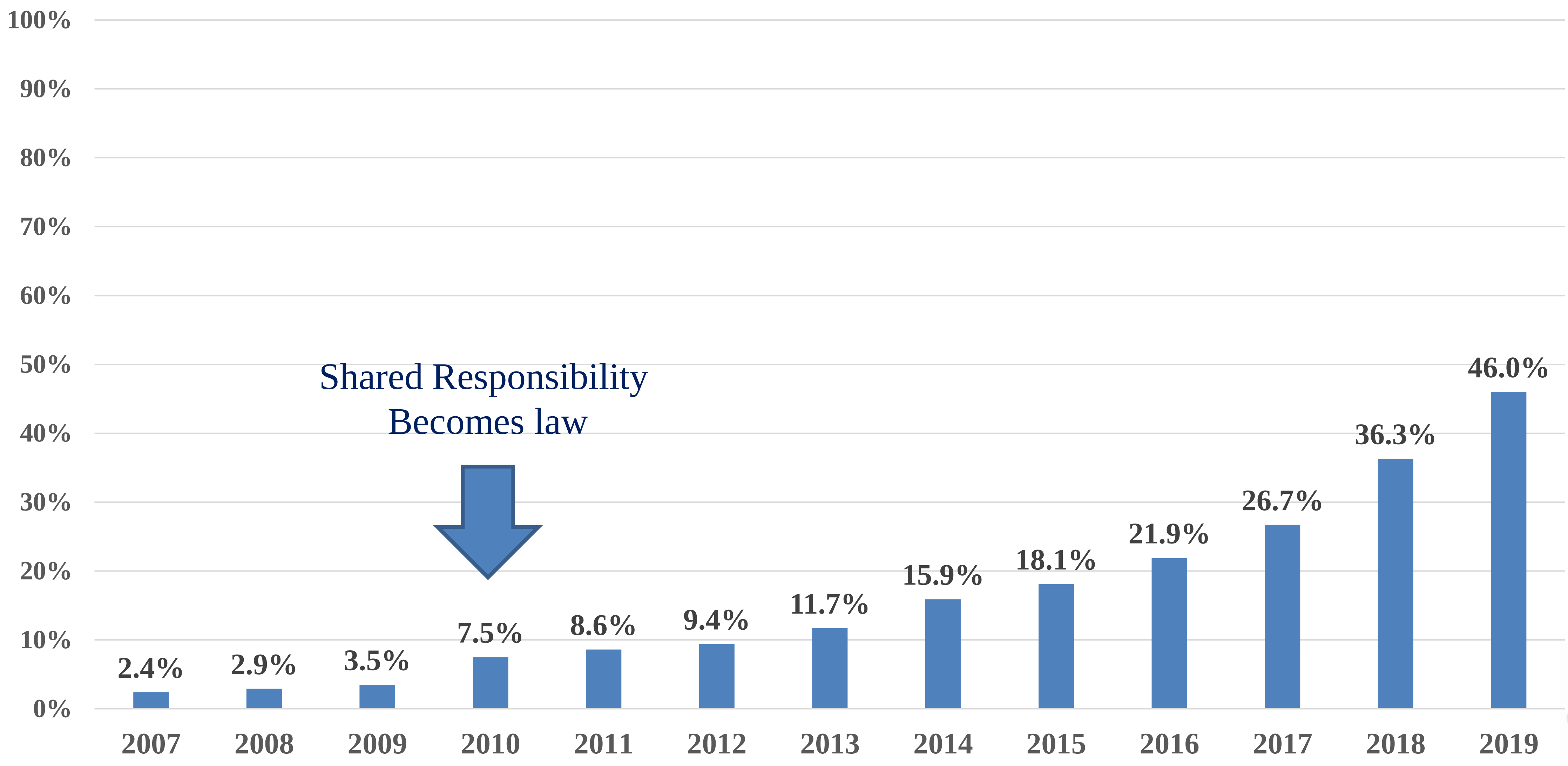
Shared Responsibility Retiree Cost

2020 Monthly Cost	KEHP	MEHP
	$144.60	$144.60
	Paid to Medical Insurance Fund	Paid to Medicare

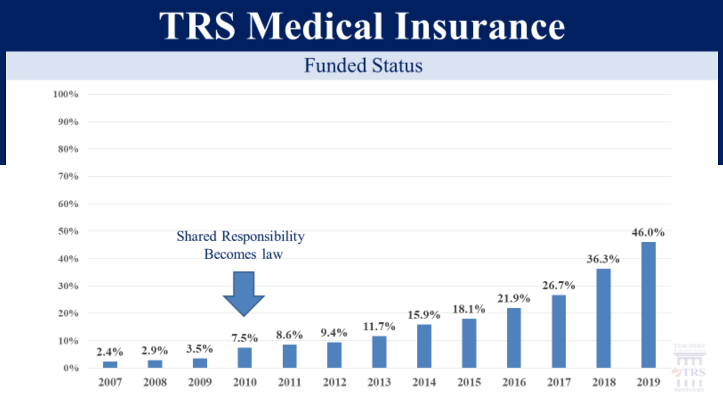
Retirees under 65 covered in the KEHP contribute the amount of the standard Medicare Part B premium that is paid by retirees 65 and over.

TRS Medical Insurance

Funded Status



Funded Status Details



MEHP

- 74.7% funded
- Projected to be fully funded in three years

KEHP

- Prefunding will start when over-65 coverage is fully funded
- State's $70 million for FY 2020 funded through surplus

KEHP What $70 Million Means

- Full funding for single coverage in 2018-20 biennium
- Does not provide funding for non-single subsidy

2020-2022 Budget

- Continued Full Funding for Pension
  - 2016-18 budget provided nearly full funding
  - 2018-20 budget provided full funding

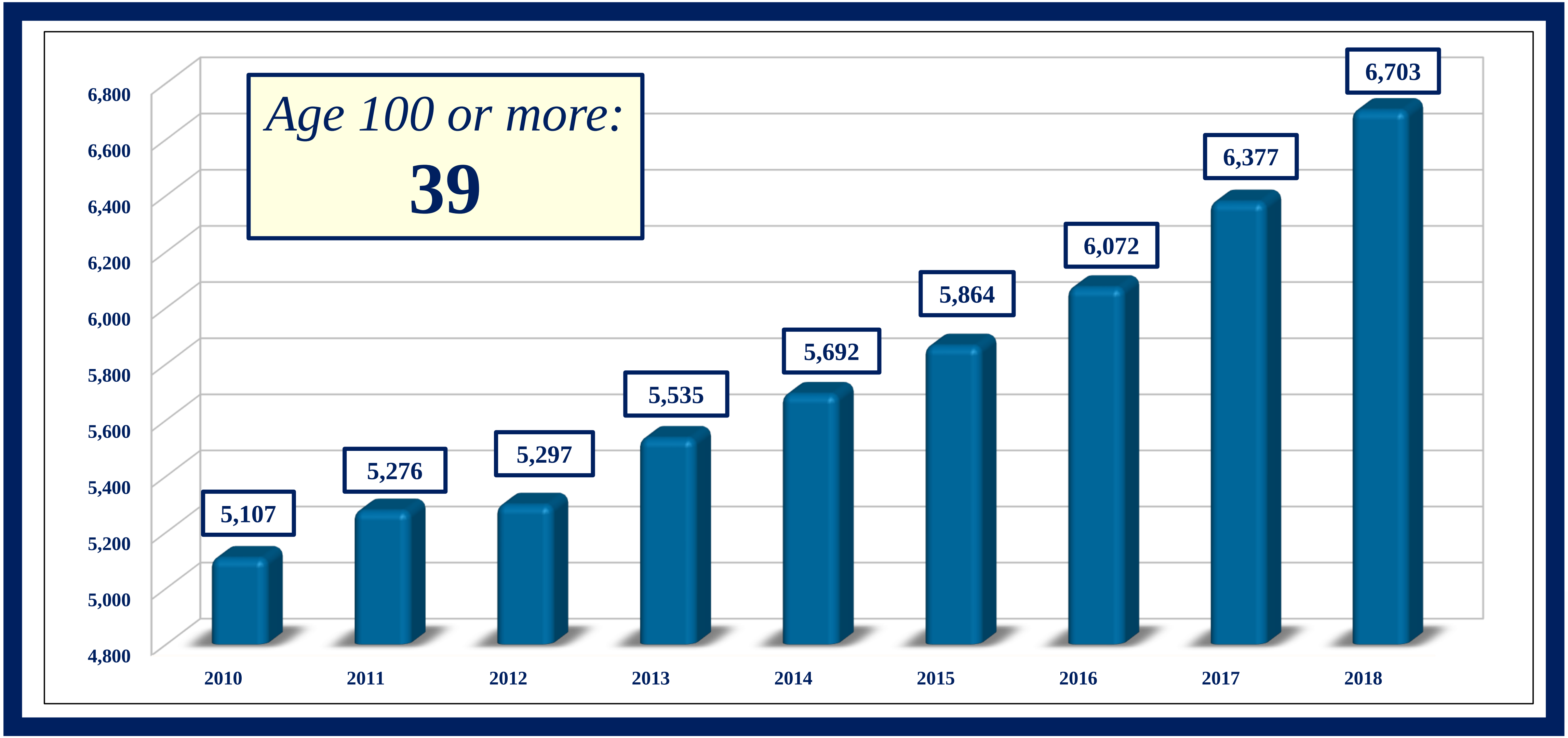
- Full Funding for State's Retiree Medical Share
  - Provided in second year of current biennium through surplus funds

MEHP Premiums

Premiums Held Almost Constant For 20 Years

Longevity for TRS Retirees

Retirees over 80 as of Dec. 31



MEHP Consists of:

UnitedHealthcare

EXPRESS SCRIPTS

Coriell Life SCIENCES

KNOW YOUR Rx COALITION

HEALTHWAYS SilverSneakers® FITNESS

MEHP Personalized Medicine

Genetic testing wellness program receives national attention

TRS Retiree Health Care Director Jane Gilbert speaks about Personalized Medicine during November conference at Harvard Medical School.

MEHP Personalized Medicine

Nationally

50%

Percentage of medications taken by patients that are ineffective

4th

Where adverse drug reactions ranks as a leading cause of death

Source: Coriell Life Sciences

What TRS Data Shows

15

Average number of prescriptions

One-year survey in 2017

MEHP Personalized Medicine

TRS Solution: Personalized Medicine Partnership

You
Your Doctor
Your Pharmacist

A GOVERNMENTAL PURCHASING COLLABORATIVE

How it Can Help

Your DNA matters

Using DNA to see what drugs will be safe and effective — Pharmacogenomics

Steps

Collect genetic information

Empower pharmacists

Communicate the Medication Action Plan

Early Results — Data

28% resulted in medication change recommendation due to DNA test

In first year …

11% *reduction* in spending for those involved

3.5% *increase* in spending for control group not involved

Source: Coriell Life Sciences

Early Results — Real Story

- TRS member treated at emergency room for heart attack
- At release, member was prescribed a blood thinner
- The member contacted a Know Your Rx pharmacist to review DNA test results
- The Know Your Rx pharmacist identified the drug wouldn’t work
- That led to a change in the drug prescribed

KEHP MEHP

Free counseling with live pharmacists

Know Your Rx Coalition *Pharm-Assist*

Hours: Monday to Friday, 8 a.m. to 6 p.m. ET

Phone: 855-218-5979

Email: KYRx@uky.edu

Website: www.KYRx.org

MEHP Additional Features

Register at www.UHCRetiree.com/trs to see these features available to you, or call 844-518-5877 for more information.

UnitedHealthcare

- Routine hearing exam
- HouseCalls in-home assessment
- Hearing aids discount
- Diabetes support program

Renew Rewards

Gift cards for completing certain activities

Real Appeal

Weight loss program

Mom's Meals NourishCare

Post-hospitalization meals delivered

Doctor On Demand / amwell

Virtual visits with doctor

Healthways SilverSneakers Fitness

Fitness program

MEHP Copay Change for 2020

Issue: 44% of emergency room visits could have been handled by visiting urgent care, seeing a doctor in office or a virtual visit.

Purpose of change: To protect retiree coverage and keep $1,200 annual out-of-pocket maximum for medical expenses.

TRS MEHP in 2019 has the same medical copays it had in 2003 – 16 years ago

MEHP Copay Change for 2020

The increase:

Emergency room copayments to $120 from $50

What the increases allow:

Urgent care copayments will drop to $25 from $35

Maximum out-of-pocket medical cost remains $1,200

The $1,200 maximum medical is a safety net to avoid health care expenses from depleting your money, property and other assets.

TRS
KENTUCKY

KEHP Consists of:

2020

2019

Formerly VitalsSmartShopper

KEHP LivingWell Promise

By July 1 each year, you must complete the LivingWell Promise. Complete either:

1. **Health Assessment** or 2. **Biometric screening**

If you do not complete the promise,	You will not be eligible for discounted insurance premiums in 2020 and will pay an additional $40 per month for coverage.

Instructions on fulfilling the promise can be found at LivingWell.ky.gov.

KEHP Additional Features

New Wellness Program begins Jan. 1, 2020

go365 by Humana → STAYWELL

Use or lose your go365 bucks by Nov. 30, 2019!

- Rewards
- Gym discounts

- Diabetes prevention
- Mental health and stress management
- Rethink – support for care of kids with learning or behavior challenges
- NurseLine
- Quitting tobacco
- Weight management

LiveHealth ONLINE

Video chat with doctors and therapists

SmartShopper®

Formerly VitalsSmartShopper

Cash for using cost-effective options for certain procedures.

More information can be found at LivingWell.ky.gov

KEHP

Enrolled in a CDHP Plan?

WageWorks Healthcare Reimbursement Arrangement (HRA) helps reduce costs

Pay for eligible healthcare expenses such as:

- Medical and pharmacy
- Certain dental and vision fees
- Deductibles
- Copayments and coinsurance
- Some over-the-counter products

If you are on a CDHP plan and do not have a WageWorks card, or to determine eligible expenses, call 877-430-5519 or visit wageworks.com.

Before moving from KEHP to Medicare …

KEHP → MEHP

go365

Ends Nov. 30, 2019

STAYWELL

Begins Jan. 1, 2020

WageWorks everyone benefits

Use or lose your bucks before KEHP coverage ends!

Funds in Consumer Driven Health Plan (CDHP) HRA must be used before moving to MEHP

TRS News & Information

https://trs.ky.gov

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Retirement System
TRS
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Monday – Friday

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Protecting & Preserving Teachers' Retirement Benefits

Kentucky Teachers
Retirement System

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The World Today: Six Themes

25 November 2019

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The World Today: Six Themes

1. International diversification isn't working
2. Value isn't working either
3. It seems like we are late in the business cycle
4. Will fixed income work when I need it?
5. I'm curious about Emerging Markets
6. I'm concerned about long-term returns

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1. International diversification isn't working

The case against international diversification

- US stocks > non-US stocks over multiple time horizons
- US companies are more innovative
- US has lower taxes, less regulation, more buybacks
- US economy is growing faster
- US has better demographics
- US dollar has many possible positive drivers

Performance comparison, periods ended 31 May 2019 (%)[1]

	1 yr	3 yr	5 yr	10 yr	20 yr	30 yr	Since inception[2]
US	3.7	11.8	9.6	14.0	5.7	9.2	7.9
EAFE	-5.3	6.3	1.7	6.6	4.3	4.6	7.5
US – EAFE	**9.0**	**5.5**	**7.9**	**7.3**	**1.4**	**4.6**	**0.4**

[1]Total returns. Performance for periods greater than one year are annualized. | [2]Inception date is December 1969 | Sources: US = MSCI US Equity Index; EAFE = MSCI EAFE Equity Index | Views expressed are those of the presenter(s). Views are as of date indicated, are based on available information, and are subject to change without notice. Individual portfolio management teams may hold different views and may make different investment decisions for different clients. This material is not intended to constitute investment advice or an offer to sell, or the solicitation of an offer to purchase shares or other securities.

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1. International diversification isn't working

The case for international diversification

Capital market assumptions

Benefits of diversification

Defense against the worst case

There is evidence of a cycle

...We appear to be fairly well into the current one

A lot of the good news on the US may already be in the price

We've heard this story before

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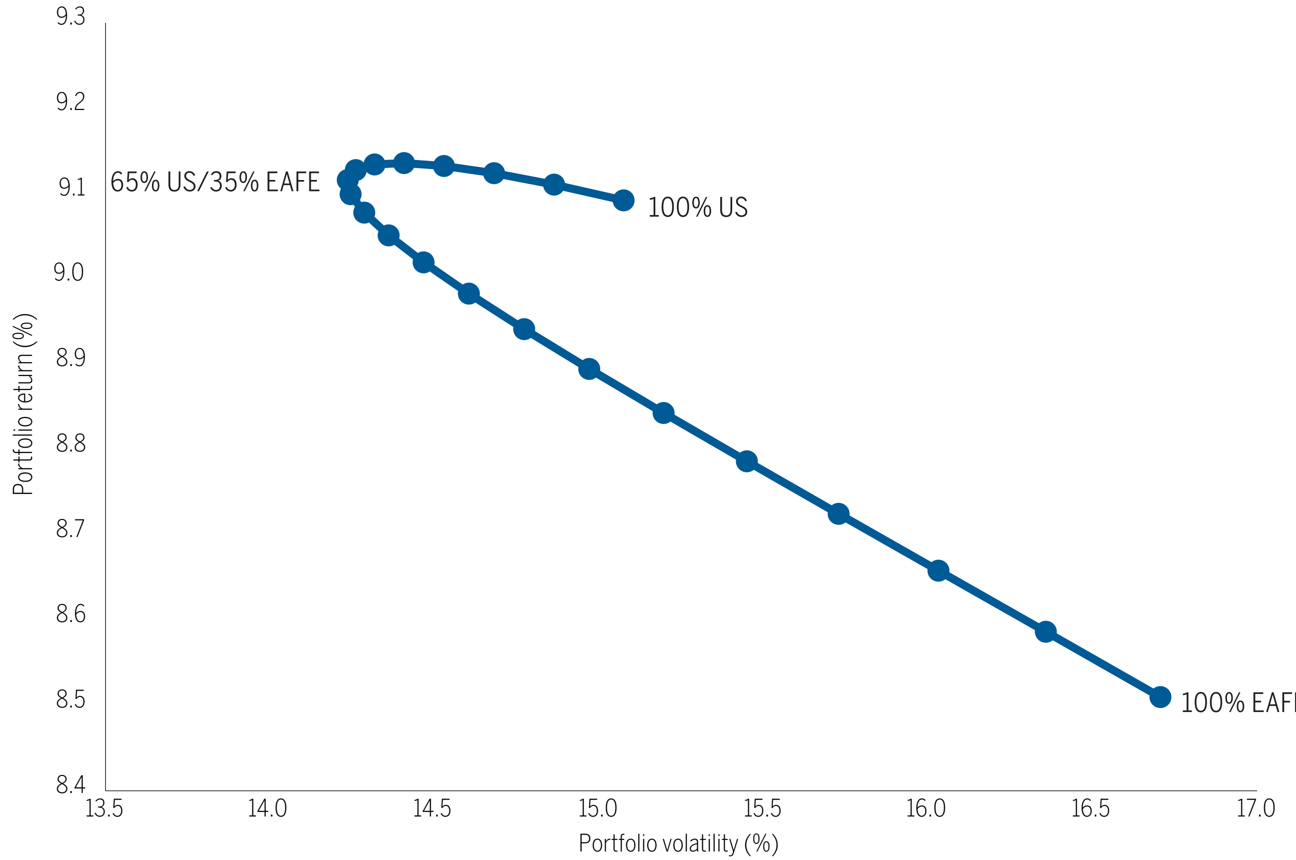
1. International diversification isn't working

Benefits of diversification

Efficient frontier, December 1969 – May 2019



Sources: An efficient frontier of mixes between 0% and 100% MSCI EAFE (with balance being MSCI USA)

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2. Value isn't working either

The case against value

Growth > Value over multiple horizons, including very long history

"Reversion to the mean" is an outdated concept

Technology stocks have a huge runway for growth

"Old economy" companies face endemic challenges

"New economy" companies create enduring moats

Performance comparison, periods ended 31 May 2019 (%)[1]

	1 yr	3 yr	5 yr	10 yr	20 yr	30 yr	Since inception[2]
Russell 1000 Growth (%)	5.4	15.3	12.3	15.6	5.6	9.8	11.2
Russell 1000 Value (%)	1.4	8.0	6.5	12.3	6.1	9.5	11.6
R1000G – R1000V (%)	**3.9**	**7.3**	**5.8**	**3.3**	**-0.5**	**0.3**	**-0.4**

[1]Total returns. Performance for periods greater than one year are annualized | [2]inception date of January 1979 is earliest available via Bloomberg | Sources: R1000V = Russell 1000 Value Index; R1000G = Russell 1000 Growth Index | Views expressed are those of the presenter(s). Views are as of date indicated, are based on available information, and are subject to change without notice. | Individual portfolio management teams may hold different views and may make different investment decisions for differen clients.

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2. Value isn't working either

The case for value

Ultimately, investment returns come from positive cash flow

"Trees don't grow to the sky"

There is evidence of a cycle

...We appear to be fairly well into the current one

Recent performance may be a function of easy monetary policy

"Over-patient capital"

We've seen this movie before

Views expressed are those of the presenter(s). Views are as of date indicated, are based on available information, and are subject to change without notice. Individual portfolio management teams may hold different views and may make different investment decisions for different clients.

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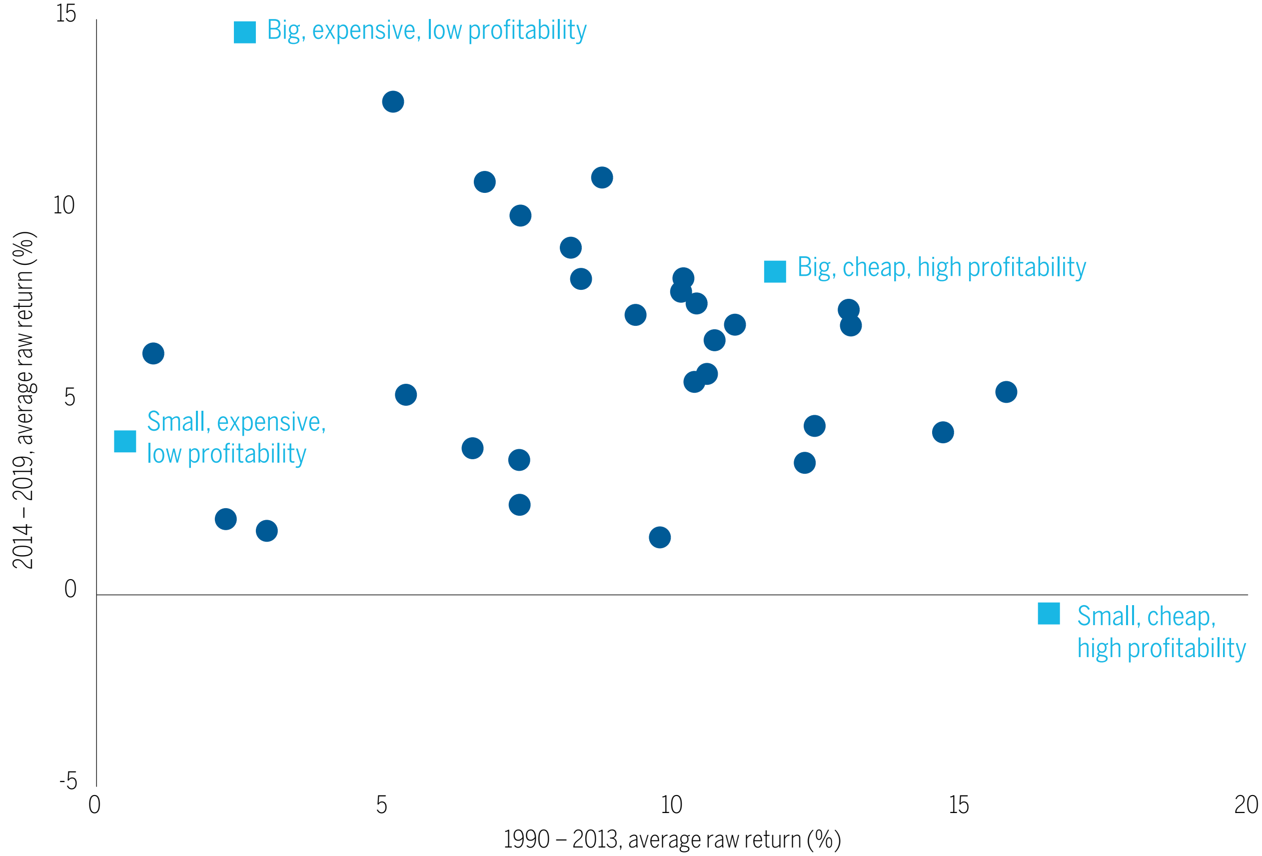
2. Value isn't working either

Recent performance in context

Global stock performance, 1990 – 2013 and 2014 – 2019
Sorted on size, value and operating profitability



Sources: Data from Prof. Ken French's website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/th_2_portfolios_size_btm_profitability_developed.html, Wellington Management

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What's not working as expected?

S&P 500 & 60/40

S&P 500 annualized performance

	10 years ended 31 March 2019 (%)	Percentile (since 1900)
Excess return[1]	15.5	5
Volatility	12.7	79
Sharpe ratio	1.2	4

60/40 annualized performance

	10 years ended 31 March 2019 (%)	Percentile (since 1926)
Excess return[1]	10.8	1
Volatility	7.6	88
Sharpe ratio	1.4	2

[1]Over cash. As of 31 March 2019. Source: Global financial data. For illustrative purposes only. Investments cannot be made directly into an index. | [2]60/40 portfolio refers to 60% S&P 500/40% Bloomberg Barclays US Aggregate index. Source: Global financial data. 31 December 1925 – 31 March 2019 | **PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS AND AN INVESTMENT CAN LOSE VALUE.**

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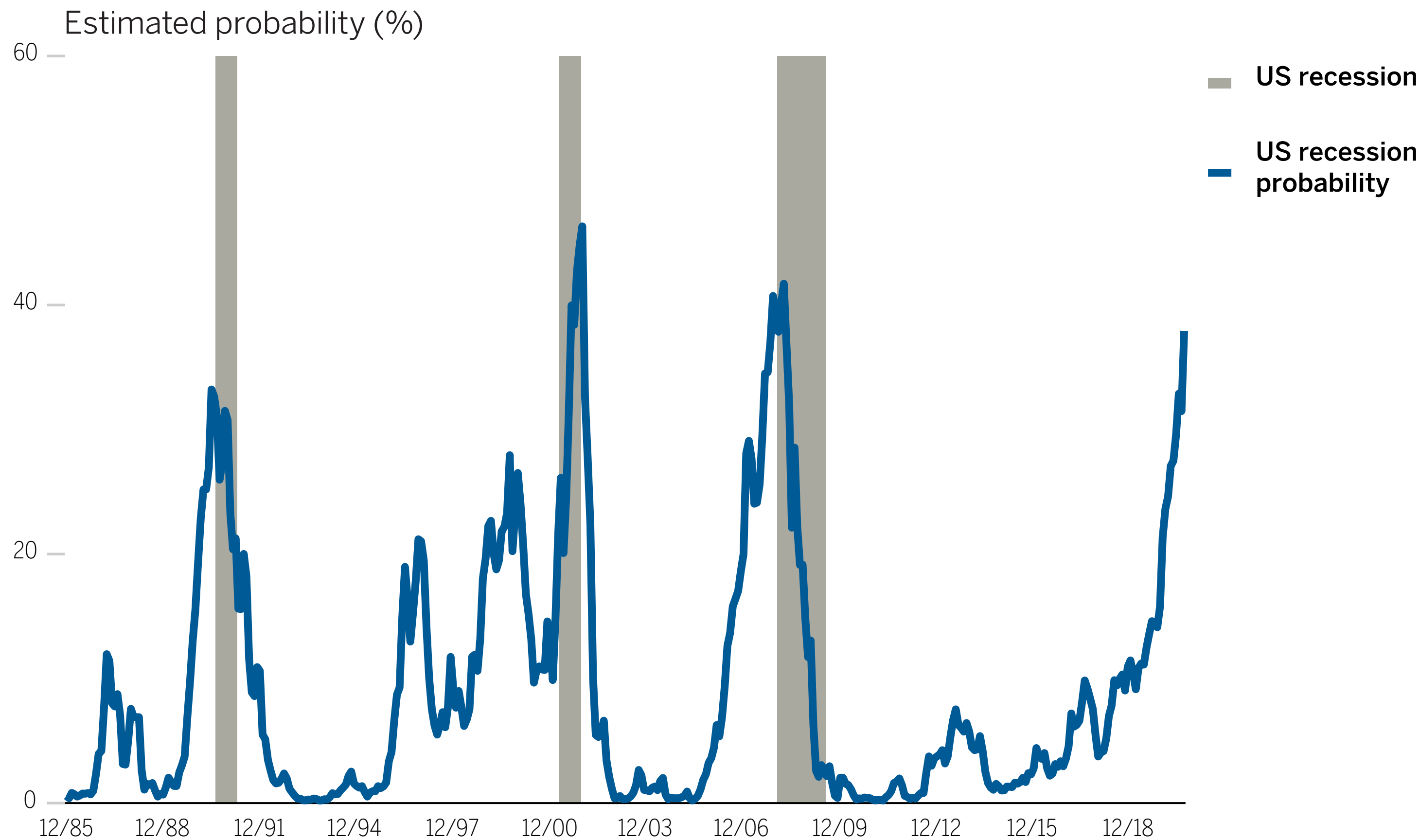
3. It seems like we are late in the business cycle

How should I think about the risk of a recession in the US?



Recession is represented by data from 31 December 1985 – 31 August 2019. | This model uses the difference between 10-year and 3-month Treasury rates to calculate the probability of a recession in the United States twelve months ahead. | Source: New York Fed | **PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS NOT REPRESENTATIVE OF AN ACTUAL ACCOUNT OR INVESTMENT**

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3. It seems like we are late in the business cycle

How should I think about the risk of a recession in the US?

The usual drivers

- Purchasing Managers Index
- Consumer confidence
- Jobs
- Yield curve
- Money supply
- Financial conditions

Unique signals today

- Trade
- China
- Gold

On the whole, recession risk is elevated but imminent recession (next 6 – 18 months) is not our base case

 | Source: Wellington Management

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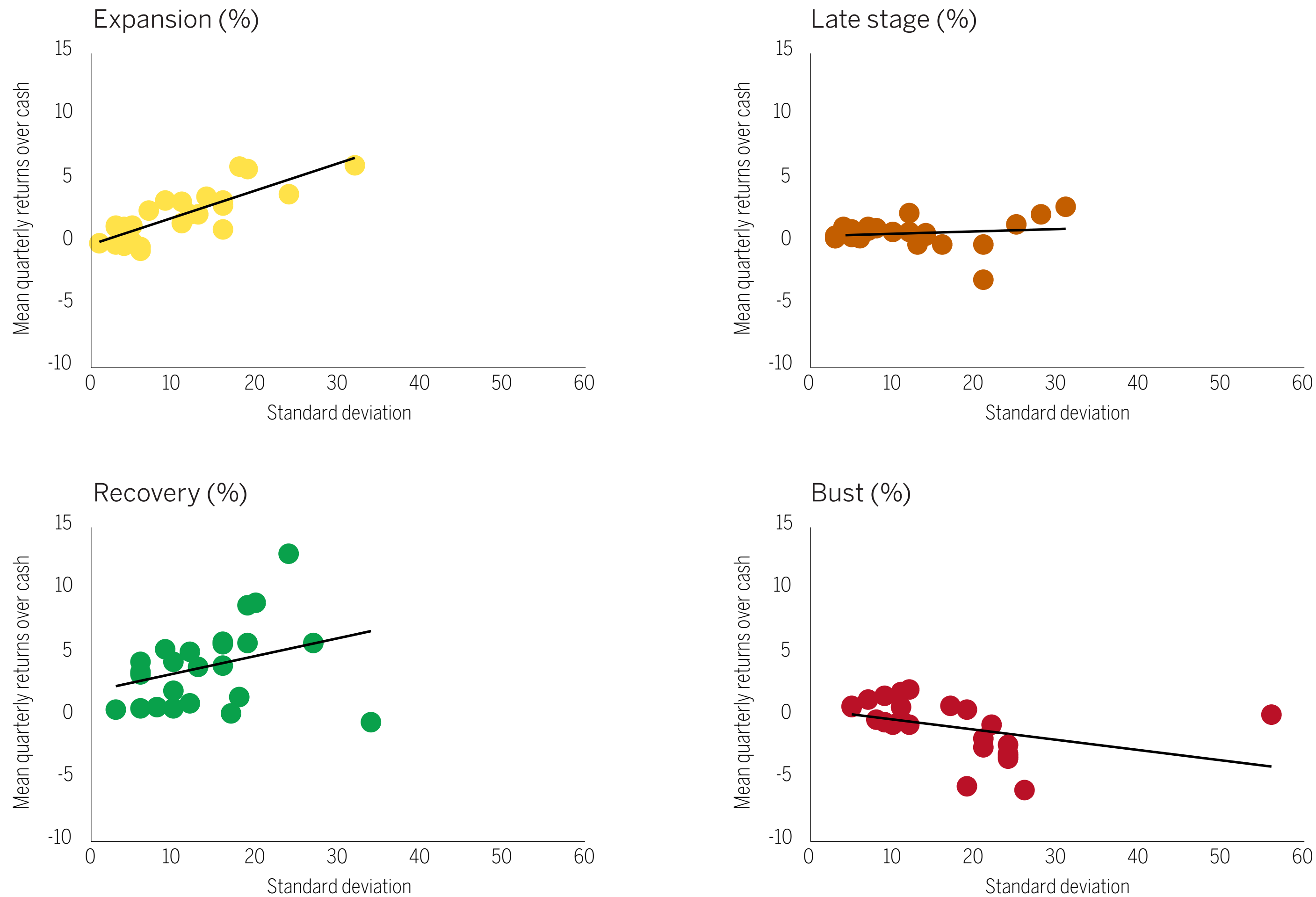
3. It seems like we are late in the business cycle

Risk is not rewarded in late stage and bust



Sources: Haver, Datastream, Wellington Management | Each dot represents one of the major assets listed in the appendix

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3. It seems like we are late in the business cycle

Investment strategy recommendations

Late stage investing	Cycle phase can be sticky Timing is tricky
Late stage is not the time to make big tactical bets	More nuanced than simply reducing beta Focus on intra-asset tilts and lean into most reliable late stage asset classes
Seek more reliable asset classes	Tilt exposures toward defensive equities, defensive hedge funds, long duration, and non-core fixed income

 | Source: Wellington Management

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4. Will fixed income work when I need it?

Some open questions

Do low rates limit the impact of fixed income to diversify?

Do low rates change anything else about my fixed income investment?

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4. Will fixed income work when I need it?

The case for defense

Long Treasuries when the MSCI World is down more than 5% (rolling 3 month observations)

	Correlation (to MSCI World)	Average return (%)	Average starting yield (%)	# of observations
1973 – 2009	-0.23	2.0	7.5	68
2010 – Present	-0.63	7.0	3.1	14

	Correlation (to MSCI World)	Average return (%)	Average starting yield (%)	Average change in yield (%)	# of observations
1987 – 2009	-0.24	3.5	6.1	0.2	42
2010 – Present	-0.63	7.0	3.1	0.4	14

Conclusion

Fixed income can still protect if rates are low

Long Treasuries are represented by the Bloomberg Barclays US Long Treasury Index and equities are represented by the MSCI World Index | The table represents characteristics of Long Treasuries from periods when the MSCI World Index was down greater than 5% on a total return basis | **PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS NOT REPRESENTATIVE OF AN ACTUAL ACCOUNT OR INVESTMENT** | Chart data: 1 January 1973 – 31 August 2019

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4. Will fixed income work when I need it?

Other ways to play defense

Fixed Income alternatives

Defensive equities

Alternative investments more broadly

Real assets

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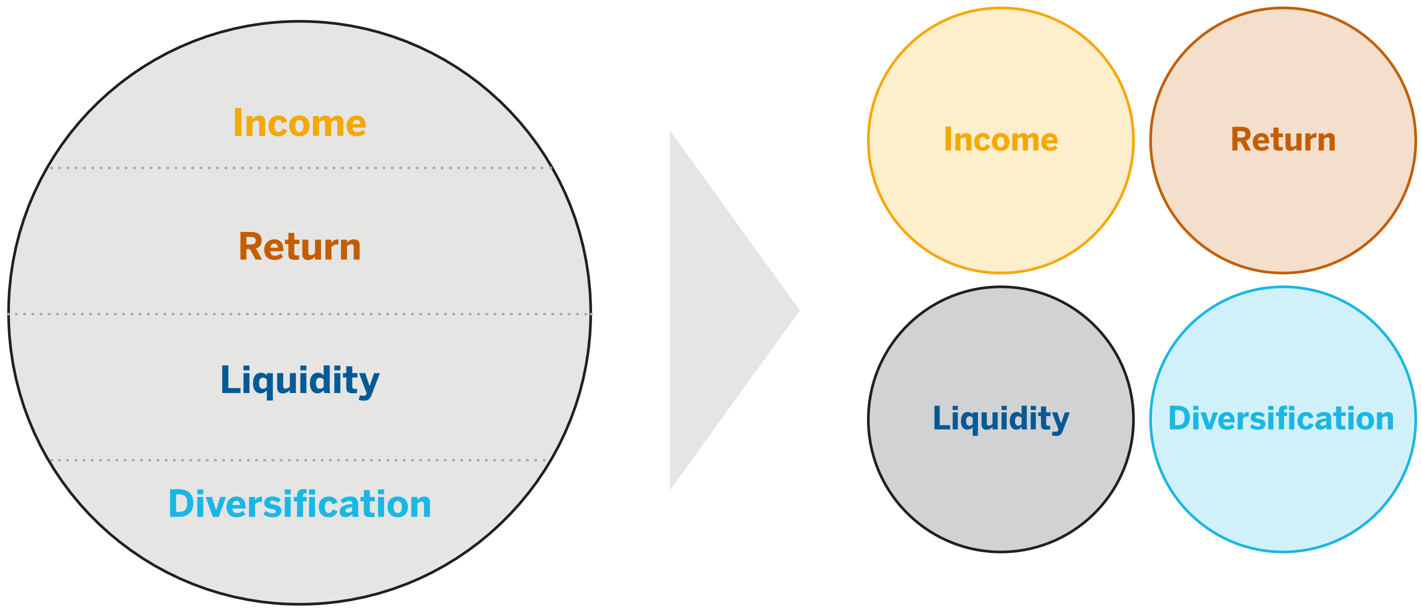
4. Will fixed income work when I need it?

A new way to structure portfolios?

Two ways of constructing a fixed income allocation

Out with the old...

...and in with the new



Traditional bond portfolios met multiple objectives

We believe bond portfolios should be structured differently to achieve these objectives going forward

Source: Wellington Management, "Building a better fixed income allocation" by Anand Dharan, CFA and Amar Reganti | For illustrative purposes only

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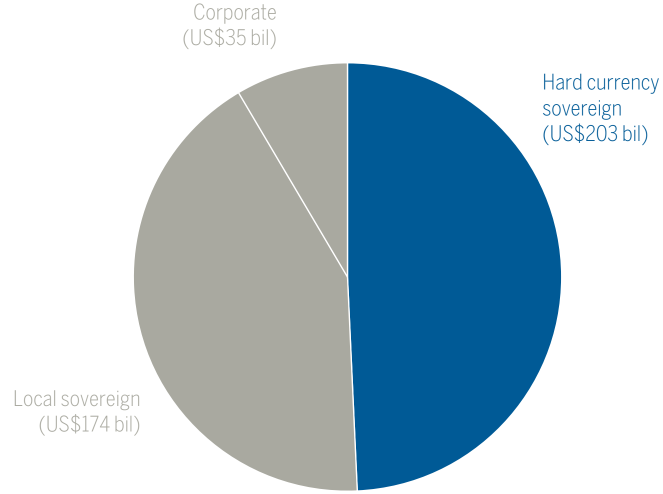
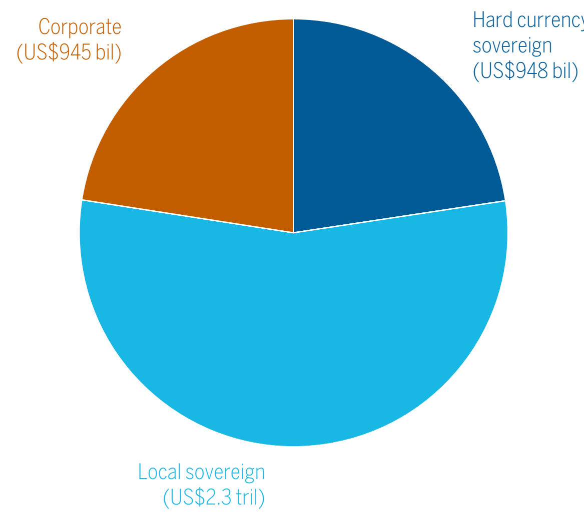
5. I'm curious about Emerging Markets

Big shift in debt market composition

EM debt market
December 2002[1]



EM debt market
December 2018[2]



[1]As of 31 December 2002. Sources: Hard currency sovereign: JPMorgan EMBI Global; Local sovereign: JPMorgan GBI-EM Broad Index; Corporate: JPMorgan CEMBI Broad Index | [2]As of 31 December 2018. Sources: Hard currency sovereign: JPMorgan EMBI Global and JPMorgan EURO EMBI Global; Local sovereign: JPMorgan GBI-EM Broad Index; Corporate: JPMorgan CEMBI Broad Index

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5. I'm curious about Emerging Markets

An evolution in EM equity investing

EM 1.0 Passive	EM 2.0 Core active	EM 3.0 Differentiated active
Follows cap-weighted benchmark	Seeks to take advantage of inefficiencies in EM	Non-core (niche-ier) active exposure
	Broad and diversified	May be more concentrated; higher active share
	Adds value via top-down (country, sector selection) or bottom-up (security selection)	May focus on a particular region, sector, style
	Tracking risk tends to be low	Tracking risk likely to be higher

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5. I'm curious about Emerging Markets

Why invest in EM 3.0 (differentiated)?

Niche-ier approach to EM investing

Less reference to cap-weighted benchmarks

Potentially greater equity diversification

Regional

Focus on a specific country or region

Deep local expertise

Small-cap

Focus on small companies

Early exposure to company lifecycle

Low-volatility

Focus on companies with less volatility

Seek to exploit "low volatility" anomaly

Frontier

Focus on companies in least developed EM

Greater risk premium and potential for faster development

High tracking risk

Greater deviation relative to the benchmark

May be driven by concentration/"best ideas" or avoid areas in secular decline

Other approaches

Style (growth/value)

Sector

ESG (environmental, social, governance)

For illustrative purposes only

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5. I'm curious about Emerging Markets

Comparing the three approaches

Annualized results by category, 10 years ended December 2018[1]

	EM 1.0 Passive	EM 2.0 Core	EM 3.0 Differentiated
Category characteristics			
Total return (%)[2]	8.1	9.8	11.0
Excess return (%)[3]	0.1	1.8	3.0
Volatility (%)[2]	18.9	18.8	17.3
Sharpe ratio[2]	0.4	0.5	0.6
Median manager characteristics			
Median manager excess return (%)[4]	-0.1	1.3	2.0
Median manager tracking risk (%)[4]	0.4	3.8	5.7

[1]Category characteristics were calculated using MSCI EM-ND, whereas median manager characteristics were calculated using manager-preferred benchmarks as noted in eVestment | [2]Historical returns, volatility, and Sharpe ratios for each category were calculated by averaging monthly returns of the managers in each EM category, then calculating the 10-year annualized geometric return | [3]Historical excess returns for each category were calculated by averaging monthly returns of the managers in each EM category, then calculating the 10-year annualized geometric return, and subtracting the 10-year annualized geometric return of the benchmark | [4]Median manager excess return and tracking risk were calculated by taking the median of eVestment 10-year annualized excess return and tracking risk, respectively | All data is shown gross of fee in US dollars | We developed the categories shown by utilizing strategies within the eVestment database as of 31 December 2018. The EM 1.0 Passive, EM 2.0 Core, and EM 3.0 Differentiated categories are presented for illustrative purposes only. | There is no guarantee that any specific strategy will possess these characteristics | **PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS AND AN INVESTMENT CAN LOSE VALUE.** Gross performance results are net of commissions and other direct expenses, but before (gross of) advisory fees, custody charges, withholding taxes, and other indirect expenses and include reinvestment of dividends and other earnings | Sources: Wellington Management, eVestment database

5. I'm curious about Emerging Markets

Potential diversification from China A-shares

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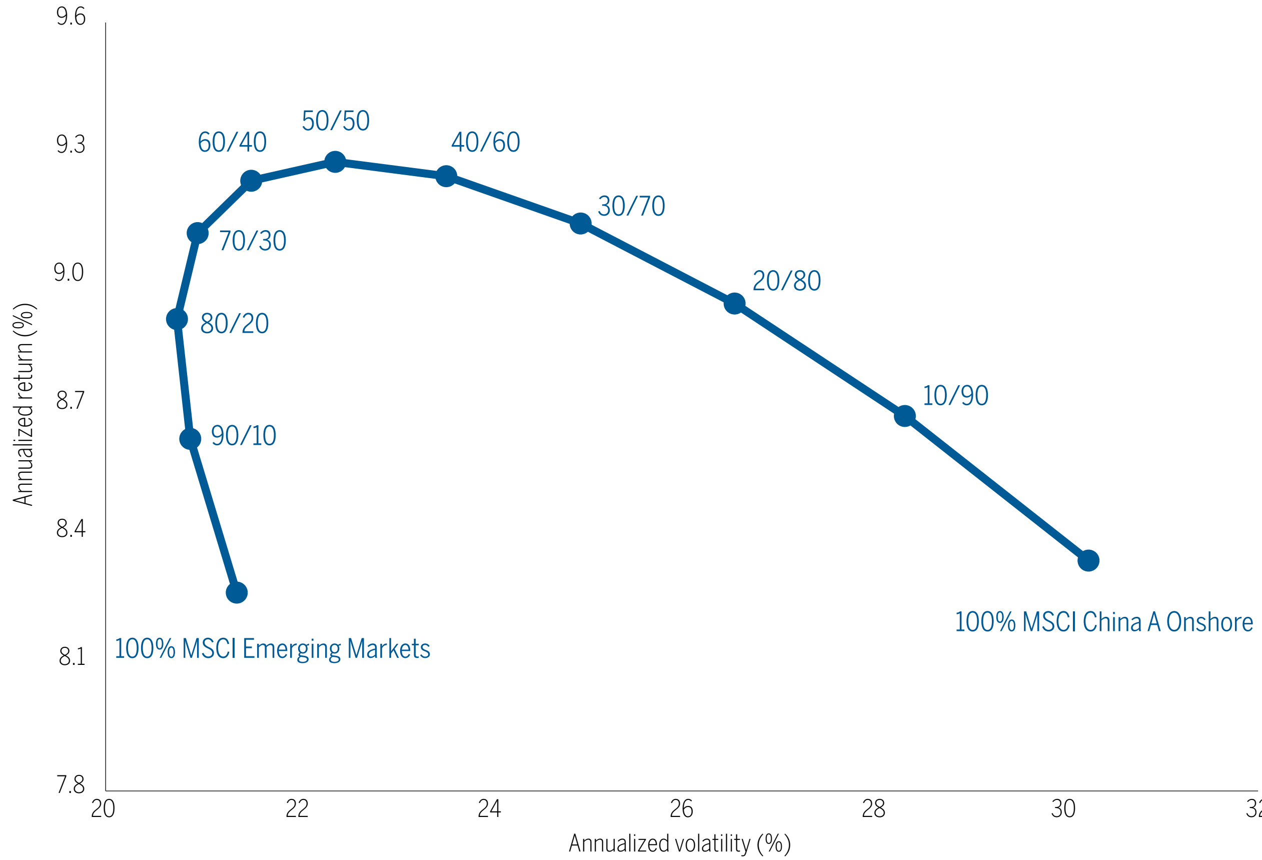
Efficient frontier, 31 December 2004 – 31 December 2018



For illustrative purposes only. **PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS AND AN INVESTMENT CAN LOSE VALUE.** | Sources: MSCI, Wellington Management

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6. I'm concerned about long-term returns

"Can you get there from here?"

Capital market expectations are low

	Return expectations (%)	
	Median	Wellington
Global equities	6.7	6.8
Core fixed income	3.6	3.3
Implied 60/40 portfolio	**5.5**	**5.4**
Private equity	8.6	9.3
High yield	4.8	4.4
Emerging market debt	5.2	5.3
Implied 60/40 "plus" portfolio	**5.9**	**5.9**

Median return expectations were sourced from a survey of consultants and asset managers conducted by Horizon Actuarial Services and reflect 10-year return expectations as of August 2018. Wellington's return expectations reflect Wellington Management's Investment Strategy group's strategic capital market assumptions as of June 2019. Wellington's strategic assumptions reflect a longer-term time period of 30 – 40 years. 60/40 portfolio: 60% global equities/40% core fixed income. 60/40 "plus" portfolio: 45% global equities/15% private equity/30% core fixed income/5% emerging market debt/5% high yield bond. This is for illustrative purposes only. These return assumptions are forward-looking, hypothetical and are not representative of any actual portfolio, or the results that an actual portfolio may achieve. Actual results may vary significantly. Please refer to the additional Wellington capital market assumptions disclosures located at the end of the document. | Sources: Horizon Actuarial Services, Wellington Management

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6. I'm concerned about long-term returns

Stepping stones: A different approach

Investors seeking a "bridge" from capital market expectations to return targets

- Maybe the gap can't be bridged

We propose "stepping stones" – a series of incremental steps in the right direction

- Fragmentary – no simple path
- Rocky – not smooth or clean
- Slippery – not riskless
- Haphazard – no single route

For plans that are struggling to achieve their target return, the "stepping stones" presented within this section represent possible portfolio ideas that may help improve performance. There is no guarantee or assurance that the steps will improve performance. This is not to be construed as investment advice or a recommendation to buy or sell any security.

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6. I'm concerned about long-term returns

Ten stepping stones

Ten potential stepping stones

1. Get (more) active in equities
2. Find cash flow compounders
3. Seek upside by limiting downside
4. Invest thematically
5. Optimize fixed income exposures
6. Enhance alternatives with portable alpha
7. Seek "illiquidity premium" opportunities
8. Dial up infrastructure allocation
9. Find ways to be more contrarian
10. Consider "core alternatives"

For plans that are struggling to achieve their target return, these "stepping stones" represent possible portfolio ideas that may help improve performance. There is no guarantee or assurance that the steps will improve performance. This is not to be construed as investment advice or a recommendation to buy or sell any security.

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Conclusion: What should you do now?

1 Develop your late cycle playbook – but pay attention to the costs of hedging

2 Don't let the rear-view mirror drive policy shifts in international, value, hedge funds, etc.

3 Re-visit your EM exposure and consider the role of China

4 Don't abandon duration, but optimize the structure of fixed income

5 Identify "stepping stones" that may improve expected returns without drastic shifts in risk posture

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Important disclosures
Capital market assumptions

Equities

General – Assumed market returns are based on Wellington Management's Investment Strategy group's expectations for future dividend yield, earnings growth, and valuation change. Assumed volatility and correlations are based on historical analysis of the representative indices.

Indices used are as follows:

US large cap equities	S&P 500
US small cap equities	Russell 2000
Non-US equities	MSCI EAFE
Developed market (DM) equities	MSCI World
Emerging market (EM) equities	MSCI Emerging Markets

Bonds

General – Assumed volatility and correlations based on historical analysis of the representative indices.

High quality, sovereign bonds – Return assumptions are based on starting yields and the expectation that yields move towards our estimate of a terminal interest rate over the time period. Using these inputs and the duration of the respective bill, note, or bond, we then calculate the income and capital gains/losses associated with these changes. We assume zero downward adjustment for downgrades and defaults for high quality, sovereign bonds.

Credit risk premia – For non-sovereign and corporate bonds, excess return assumptions are estimated .The excess return assumption is a function of excess spread, a downward adjustment for downgrades and losses and reversion to median spread levels. The excess spread is readily observable in market pricing. The downward adjustment for downgrades and defaults is based on our proprietary research and the long-term historical experience.

Indices used are as follows:

Core bonds	Bloomberg Barclays US Aggregate Bond
US long bonds	Bloomberg Barclays US Long Government/Credit Bond
US high yield bonds	Bloomberg Barclays US Corporate High Yield
Non-US bonds (hedged)	Bloomberg Barclays Global Aggregate ex-USD Bond (hedged)
Emerging market (EM) debt	JPMorgan EMBI Global (i.e., USD denominated)

Currencies

Return assumptions are shown for unhedged currency exposure, unless stated otherwise.

Unhedged – Unhedged currency return assumptions are formulated based on forward looking estimates of real carry returns, normalization of real exchange rates, and an adjustment for productivity growth.

Hedged – Hedged currency return assumptions are based on current and forward-looking estimates for interest-rate differentials.

General

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