OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM
277 EAST TOWN STREET, COLUMBUS, OH 43215-4642
1-800-222-PERS (7377)
www.opers.org

NOTICE

1. The Health Care Committee will meet on **Tuesday, August 20, 2019 at 9:00 a.m.** in the offices of the Board.

2. The OPERS Board will meet on **Wednesday, August 21, 2019 at 9:00 a.m.** in the offices of the Board.

Informational Designation Explanation

Board Members,

This month's Board materials incorporates the feedback from the Board Governance session of the strategic planning retreat. The power point presentations include a full deck of slides, however it is not our intention to review all the slides during the meeting. All slides which we do not intend to cover in the Board meeting will be marked with an "I" in the upper right hand corner of the slide indicating it is informational only. We look forward to receiving feedback as to whether the new format aligns with your comments from the strategic planning retreat.

Health Care Committee

HEALTH CARE COMMITTEE MEETING AGENDA
AUGUST 20, 2019 – 9:00 A.M.
BOARD ROOM

I. Discussion Items:

A. Health Care packages – Tonya Brown – 3 hours
B. Willis Towers Watson Via Benefits – HRA Migration – Tonya Brown and Gretchen Feldmann – 30 minutes

II. For Your Information:

A. 2020 Retiree Health Care Plan Rate Setting

Health Care Committee I.A. as presented power point

Health Care Packages

August 20, 2019

Tonya Brown, Director Member Operations

OPERS

*As Presented

Agenda

- Review health care preferences from May's Health Care Committee meeting
- Retiree Preference/Feedback – Informal
- Five new health care packages
- Staff package recommendation

Agenda

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- Retiree Preference/Feedback – Informal
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Preferences From Prior Committee Meetings

Retirees Under Age 65

Eligibility

- Not eligible for health care until age 65 with 20 years
- Extend solvency by 5 years 2months and added $3.6B to the health care fund

Allowance

- Freeze base at $600 through 2034*
- Extend solvency by 3 years and added $2.3B to the health care fund

*Periodic consideration by the Board

Preferences From Prior Committee Meetings

Retirees Age 65 and Over

Eligibility

- Age 65 with 20 years
- Extended solvency by 1 years 3 months and added $1.4B to the health care fund

Allowance

- Reduce base to $350 through 2034*
- Extended solvency by 2 years 6 months and added $4.4B to the health care fund

*Periodic consideration by the Board

Agenda

- Review health care preferences from May's Health Care Committee meeting
- Retiree Preference/Feedback – Informal
- Five new health care packages
- Staff package recommendation

Retiree Preferences Feedback

The following preference feedback highlights the informal survey results from annual PERI chapter meetings. These are not formal survey results and should be used for *information only*.

General Program Feedback:

- **98%** feel OPERS should **continue a Health Care Program**
- **73%** prefers offering an **individual plan to under 65** participates verses the group plan
- **Less than 20% feel grandfathering** of allowance and eligibility **should be eliminated**

Retiree Preferences Feedback

When discussing **grandfathering** both allowance and eligibility were considered.

- Less than 2% selected to eliminate all grandfathering and access
- 16% selected to eliminate grandfathering but continue to provide access to the grandfathered group
- 3% selected to maintain grandfathering for non-Medicare population only
- **60% felt grandfathering should be maintained** but agreed with **reducing the allowance amount**
- While 19% selected to maintain current eligibility and allowance grandfathering

Retiree Preferences Feedback

Allowance levels options for both under 65 and over 65 were presented and discussed for consideration.

Over 65 – Medicare Eligible Base Allowance $450

- Only 4% of retirees indicated they would reduce the base allowance to $250
- 47% indicated they prefer to freeze the current base allowance at $450 thru 2034
- While 49% selected to reduce the base to $350 with a freeze

Under 65 – Individual Plan Base Allowance

- 10% of retirees felt no allowance should be provided to under 65
- 42% selected to set the base allowance set at $450 with a freeze
- 47% indicated their preference as setting the base at $600 with a freeze

Retiree Preferences Feedback

Health Care eligibility options for both under 65 and over 65 were presented and discussed for consideration.

65 and Over - Health Care Eligibility

- 58% selected to require retirees to be age 65 with 20 years of service to qualify (provide access only to those with less than 20 years – no funding)
- 42% selected to maintain current conditions with eligibility at age 65 with 20 years (maintain current population with less than 20 years)

Under 65 – Health Care Eligibility

- 40% indicated they prefer health care eligibility be age 65 with 20 years (no under 65 program)
- 27% selected to change eligibility to age 62 with 20 years
- 17% selected to change eligibility to age 60 with 20 years

- 17% indicated they would not change current conditions

Agenda

- Review health care preferences from May's Health Care Committee meeting
- Retiree Preference/Feedback – Informal
- Five new health care packages
- Staff package recommendation

Health Care Package Terms

<u>Eligibility</u> – the age and years of service required to receive health care assistance.

<u>Base Allowance</u> – the dollar amount that health care assistance is based upon, of which retirees receive a percentage using an allowance table.

<u>Disability</u> – current conditions will apply; recipients will have access to health care assistance for 5 years and then must meet health care eligibility requirements.

<u>Low Income Program</u> – the assistance that OPERS may provide to those who meet certain income qualifications.

Health Care Package Terms

Grandfathering – a provision in which an old practice continues to apply to some existing situations while a new practice will apply to future cases.

For purposes of this presentation, the “grandfathered” population includes both:

- Retirees grandfathered prior to 2015 because they had health care before the HCPP 3.0 changes and subsequently did not meet either the age and/or service requirements
- Retirees enrolled and receiving health care in 2015 and after who would not meet the new eligibility requirements

Health Care Package Summary

Packages would be effective 01/01/2022

Package 1	Package 2	Package 3	Package 4	Package 5
No Health Care / Potential Annual Deposit	Under 65, No Coverage or Plan	Health Care for All with min. age 60	Health Care for All, Under 65 w/ Group C Eligibility	Health Care for All, under 65 w/ Group Eligibility

Highest Cost Savings / Highest Member Impact ⟷ Lowest Cost Savings / Lowest Member Impact

Note:

Packages 2,3 & 4 phase out grandfathering

Package 5 retains grandfathering with reductions to the allowance

Package 1 – No HC, Potential Annual Deposit

- Discontinue the OPERS health care plans.
- Allocate the existing HC trust fund to current and future retirees potentially via a deposit in a personal healthcare savings account with additional future deposits based on available funding.
- Access to a vendor for plan selection and reimbursement would be provided to retirees.

Package 1 – Summary of Changes

- Current retirees (including grandfathered) would receive a deposit
- Future qualified retirees would receive a deposit at retirement (must meet health care eligibility)

Medicare eligible retirees currently have an HRA account and receive monthly deposits to it for reimbursement of qualified medical expenses

Pre-Medicare retirees currently have access to the OPERS group plan

Package 1 – Total Impact

No HC, Potential Annual Deposit

Impacted Current Retirees

Under 65: ~29,400

65 & Over: ~132,400

~161,800

Impacted Future Retirees

Under 65 & Over 65: ~61,000 +++

Impact data as of 07/31/2019

Package 2 – Under 65, No Coverage or Plan

- Offer health care to eligible retirees at age 65 or older (Medicare population only)
- **Eligibility** - Must have 20 years of service and be at least age 65
- **Base allowance -** $350
- **Grandfathered Eligibility** - Less than 20 years – health care phased out over a 3 to 5 year period
- **Grandfathering allowance**
  - Pre-Medicare – eliminated as of 01/01/2022
  - Medicare (65+)- retirees subject to 51% allowance floor (current floor is 75%)

Package 2 – Summary of Changes

- Retirees under age 65 no allowance, plan or access
  The current age requirement is 60

- Retirees over age 65, base allowance reduced to $350
  The current base allowance is $450

- Retirees over age 65, grandfathered allowance floor reduced to 51% from 75%

- Grandfathered retirees over age 65, less than 20 years of service, eligible with reduced allowance % until phased out
  The service requirement for retirement effective dates 12/1/2014 and earlier was 10 years, and prior to 7/1/1986 was 5 years

Package 2 – Total Impact

Under 65, No Coverage or Plan

Impacted by New Eligibility Requirements

Under 65: ~29,500 - No longer eligible

65 & Over: ~43,100 - 3 or 5 year phase out

Impacted by Allowance Grandfathering Changes

Under 65: 0

65 & Over: ~49,700 - Reduced allowance

Package 3 – HC for All, Minimum Age 60

- Provide health care to all eligible retirees with a minimum age of 60
- **Eligibility** - Must have 20 years of service
- **Allowance** - Pre-Medicare retirees – base allowance $600/$900   Medicare retirees – base allowance $350
- **Grandfathered Eligibility** - Less than 20 years – health care phased out over a 3 to 5 year period. Eligible for low income subsidy when phase out ends.
- **Grandfathering allowance -** retirees subject to 51% allowance floor. Eligible for low income subsidy.

Package 3 – Summary of Changes

- Retirees under 60, no allowance, plan or access
  Eligibility for an unreduced retirement benefit currently allows for health care younger than age 60

- Retirees over 65, base allowance reduced to $350
  The current base allowance is $450

- Retirees grandfathered floor reduced to 51% from 75%

- Grandfathered retirees with less than 20 years, eligible with reduced allowance % until phased out
  The service requirement for retirement effective dates 12/1/2014 and earlier was 10 years, and prior to 7/1/1986 was 5 years

Package 3 – Total Impact

HC for all, Minimum Age 60

Impacted by New Eligibility Requirements

Under 65: ~13,200 - No longer eligible

65 & Over: ~43,100 - 3 or 5 year phase out

Impacted by Allowance Grandfathering Changes

Under 65: ~8,400

65 & Over: ~49,700

Reduced Allowance

Package 4 – HC for All, Group C Eligibility

- Provide health care to all eligible retirees with a minimum age of 55
- **Eligibility** - 55 to 64 – must have 32 years of service 65 and over – must have 20 years of service
- **Allowance** - Pre-Medicare retirees – base allowance $600/$900 Medicare retirees – base allowance $350
- **Grandfathered Eligibility** – Less than 20 years – health care phased out over a 3 to 5 year period. Eligible for low income subsidy when phase out ends.
- **Grandfathering allowance -** retirees subject to 51% allowance floor. Eligible for low income subsidy.

Package 4 – Summary of Changes

- Retirees under 55, no allowance, plan or access
  Groups A and B eligibility for an unreduced retirement benefit currently allows for health care younger than age 55

- Retirees age 55-64 must have 32 years of service
  The current service requirement is 20 years (at age 60)

- Retirees over 65, base allowance reduced to $350
  The current base allowance is $450

- Retirees grandfathered floor reduced to 51% from 75%

- Grandfathered retirees, with less than 20 years, eligible with reduced allowance % until phased out
  The service requirement for retirement effective dates 12/1/2014 and earlier was 10 years, and prior to 7/1/1986 was 5 years

Package 4 – Total Impact

HC for all, Group C Eligibility

Impacted by New Eligibility Requirements

Under 65: ~26,000 - No longer eligible

65 & Over: ~43,100 - 3 or 5 year phase out

Impacted by Allowance Grandfathering Changes

Under 65: ~0

65 & Over: ~49,700 - Reduced Allowance

Package 5 – HC for All, Group Eligibility

- Provide health care to all eligible retirees
- **Eligibility –** Group eligibility requirements apply for Pre-Medicare (under 65) retirees:

  Group A: 30 years at any age
  Group B: 32 years at any age or 31 years min. age 52
  Group C: 32 years and min. age 55

- **Eligibility** – Medicare (65 and over) – must have 20 years of service with min. age of 65
- **Allowance** - Pre-Medicare retirees – base allowance $600/$900 Medicare retirees – base allowance $350
- **Grandfathered** – Maintain grandfathering for eligibility and allowance – reduce allowance to floor at 51%

Package 5 – Summary of Changes

- Retirees under 65 that don't meet "Group" eligibility requirements are not eligible for health care until age 65 with 20 years of service
  The current age requirement is 60
- Retirees over 65, base allowance reduced to $350
  The current base allowance is $450
- *Grandfathered* retirees, maintain eligibility and allowance - reduce allowance to floor at 51%
  The current floor is 75%

Package 5 – Total Impact

HC for all, Group Eligibility

Impacted by New Eligibility Requirements

Under 65: ~14,400
65 & Over: ~43,100

Maintain Eligibility w/ Reduced Allowance

Impacted by Allowance Grandfathering Changes

Under 65: ~5,800
65 & Over: ~57,500

Reduced Allowance

Other Package Components

Disability – Package 2,3,4 & 5:

- Current conditions will apply; disability recipients will have access to health care assistance for 5 years and then must meet health care eligibility requirements to maintain access.
- If the disability recipient don’t meet health care eligibility after the 5 years but meets low income qualifications they will be eligible for the low income subsidy.
- If disability recipient returns to private sector employment, health care assistance will be eliminated.

Low Income Subsidy – Package 3, 4 & 5:

- Eligible for health care and household income is at 100% poverty level; retirees would receive an extra $100 monthly deposit.
- If retiree is “grandfathered” and household income is at 100% poverty level, the retiree would be eligible for low income allowance assistance

Agenda

- Review health care preferences from May's Health Care Committee meeting
- Retire Preference/Feedback – Informal
- Five new health care packages
- Staff package recommendation

Staff Package Recommendation – Pending Cost

- **Package 5** provides health care to all eligible retirees
- Promotes high service requirements if you wish to retire at an earlier age and receive health care assistance, while maintaining current Medicare eligible requirements of age 65 with 20 years of service
- Maintains grandfathered population eligibility but with reduced allowances verses phasing out those currently on the plan
- All retirees subject to the full structure of the allowance table – allowances range from 51% to 90%

Package 5 – Non Grandfathered Retiree example

Cathy

Retired: 01/01/2009
Service: 32 years
Current age: 70

On Jan. 1, 2022, Cathy will be impacted by the reduction in the **base** allowance which will impact her current allowance amount.

Now: 75% x $450 = $337

2022: 75% x $350 = $262

Package 5 – Grandfathered Retiree Example

Denise

Retired: 1/1/2013
Service: 12 years
Current age: 70

On Jan. 1, 2022, Denise will maintain eligibility but will receive a reduced allowance based on the 51% allowance floor.

Now: 75% x $450 = $337

2022: 51% x $350 = $178 40/320

Package 5 – Pre-Medicare Retiree Example

Joe

Service: 33 years

Current age: 58

On Jan. 1, 2022, Joe will no longer be in the OPERS group plan and will be provided an allowance subsidy to purchase a plan on the individual market.

Now: 76% x $1,306 = $992 (premium reduction)

2022: 76% x $900 = $684

Package 5 – Pre-Medicare Retiree Example

Frank

Service: 25 years

Current age: 57

Frank is a future retiree with an effective date after Jan. 1, 2022. He will retire with a reduced benefit at age 57 with 25 years with no health care coverage. He will age in to health care at age 65.

76% x $350 = $266 @ age 65

Discussion

Health Care Committee I.B.

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MEMORANDUM

DATE: August 12, 2019

TO: OPERS Retirement Board Members

FROM: Tonya Brown, Director of Member Operations
Gretchen Feldmann, Health Care Medicare Programs Manager

RE: **I. Discussion Items:**
B. Willis Towers Watson Via Benefits – HRA Migration

Purpose

This memo provides information on Willis Towers Watson (WTW) Via Benefits' new Health Reimbursement Arrangement (HRA) system and how the OPERS Medicare population will be migrated over to the new platform effective September 3, 2019.

Background

A few years ago, WTW acquired a company (Acclaris) that provided HRA administration services. By incorporating Acclaris' technology into its suite of business offerings, WTW is able to offer an integrated end-to-end delivery model to its enrollees.

OPERS retirees, spouses, and surviving spouses will migrate away from the current PayFlex HRA system to the WTW HRA system. Once the OPERS population has been migrated, WTW will be able to provide a "one-stop shop" experience that includes enrollment, HRA, and advocacy services.

Implementation Effort

The implementation to support the HRA migration was launched June 2018. Over the last 12+ months, OPERS and WTW staff have engaged in meetings and onsite visits to work through the various aspects of migration-related work.

- **Governance.** Detailed file layouts, policies, processes that support the OPERS account have been documented, reviewed, and approved by OPERS staff.

- **Testing.** OPERS staff have used a rigorous testing protocol to ensure that financial and operational reports will be produced accurately.

- **Communications.** All communications received by retirees (66 pieces) were reviewed and adjustments were made so that they are more user-friendly and easy to understand. Several pieces have been customized to the OPERS population and policies.

- **Training.** OPERS staff have also traveled to WTW locations in Utah, Arizona, and Texas to facilitate culture training for all WTW associates that will be handling HRA-related calls. OPERS staff has also worked closely with the OPERS Member Services department to ensure that representatives are equipped to answer questions from retirees.

  The WTW claims processing and customer service teams that will support the OPERS population are seasoned associates as they have supported other WTW clients that have already migrated. Even though these two teams have supported prior migrations, they have recently participated in refresher training specific to the OPERS HRA migration.

- **Staffing.** When considering previous migrations, WTW has estimated that 22% of the OPERS population will call in response to the HRA migration. To support that call volume, WTW has 77 customer service representatives available to answer OPERS calls. Should the volume exceed WTW's estimate, an additional 223 customer service representatives (total of 300 representatives) have been trained so that customer service support can scale as needed.

A WTW associate will be onsite in Columbus, Ohio, from September 4 – September 17 to partner with the OPERS conversion team should any issues arise after the go-live date.

<u>Communication Plan</u>
To ensure that the OPERS population is fully aware of this migration, the following communications have occurred.

- <u>July</u>
  - OPERS Letter - Pre-Announcement
  - OPERS Email Blast - Pre-Announcement
  - WTW Letter - Announcement
  - WTW Website – Messaging Update, Video Posted

- August
  - WTW Letter & Calls to Direct Deposit Population (see Enhancement section)
  - WTW Letter to Forfeiture Population (see Enhancement section)
  - OPERS Facebook Post – Announcement Reminder
  - OPERS Email Blast - Announcement Reminder

Black-Out Period

The OPERS population will experience a 3-week black-out period that spans August 12 – September 3. The first two weeks of the black-out period will be "business as usual" because of the timing when automatic and recurring claims are paid out.

- Any claims that were submitted prior to the black-out period will be processed and paid out.
- Automatic reimbursement claims will be paid out as usual (as of 12/31/18, A/R claims represented 61% of total claims).
- Most recurring claims will be paid out as usual (as of 12/31/18, recurring claims represented 10% of total claims).
- Retirees may start to "feel" something the third week of black-out period as there may be a delay in their out-of-pocket claims being paid out.
- Retirees will not be able to access the funding portion of the website during the entire three weeks of the black-out period.

Enhancements

Upon migrating to the new WTW HRA system, retirees, surviving spouses and OPERS staff will positively be impacted by the following enhancements / process improvements:

- **Communications**
  - **Real-Time Alerts**. Individuals can opt-in to receive electronic communications (email and text) that will provide status updates as their claim is received, claim is processed, claim is approved or denied, and claim is paid.

  - **Explanation of Payments (EOPs)**. These documents are sent to individuals when a reimbursement is processed. The new EOPs are much more aesthetically pleasing, and they provide individuals with clear, easy-to-understand information about their claim.

  - **Deceased Individuals.** Communications that are not relevant or appropriate to the deceased population will be suppressed. The dedicated forfeiture communications (see "Forfeiture" section) will serve as the means in which to communicate with survivors and/or the estate of the deceased individual.

- **Website**. Upon logging into the WTW website, individuals will see a completely new funding section. Individuals will be able to see their total available balance, and easily reconcile their paid claims against what they submitted for reimbursement.

- *NOTE: Throughout the communications and website review and development process, OPERS staff have solicited feedback from retirees to ensure that we accomplish our goal of enhancing the individual HRA experience.*

- **Claims Processing**
  - Upon receiving notice that the same claim has been denied twice, WTW staff will call the individual to help them understand why the claim was denied and provide support as necessary.

  - Retirees who may forget something during the claims submission process will only have to fix the error vs. submitting an entirely new claim. For example, if the reimbursement form is missing a signature, but all the supporting documentation is intact, the retiree will only need to submit a new reimbursement form (no need to send in supporting documentation again).

- **Reporting**
  - All the financial and operational reports that OPERS staff receive have been reviewed for improvements. Several reports have been customized with additional data elements to better align with the needs of OPERS staff.

- **Direct Deposit**
  - Individuals who don't provide bank account information will no longer receive their HRA reimbursement via paper check. This process improvement aligns with the OPERS requirement of mandatory direct deposit for HRA reimbursement and pension payments (PayFlex was not able to suppress paper checks from being distributed to individuals that did not provide bank account information to WTW Via Benefits).

    Because this is a process change, letters will be mailed to any OPERS retiree and surviving spouse that currently does not have bank account information on file with WTW to alert them that their reimbursements will be suspended until they provide the bank account information. *NOTE: The small population of OPERS individuals that have been "approved" to receive paper checks will be exempt from this process improvement.*

- **Forfeiture**
    - o The forfeiture date will be loaded into the customer service system that WTW staff use so that they can provide specific details to the estate of the deceased individual.

    - o WTW will communicate to the estate of the deceased individual with a letter within 30 days of the date of death; a letter 180-days prior to the forfeiture date; an outbound call 180-days prior to the forfeiture date; and a letter 30-days prior to the forfeiture date. All communications will indicate the forfeiture date and available HRA balance and explain the process in which to submit reimbursements.

    - o Authorized representatives that the retiree or surviving spouse establish prior to their death will be honored after the individual passes away. Those representatives will be able to ask questions about the individual's HRAs without needing to submit supporting documentation (e.g. Power of Attorney, Executor of Estate, etc.).

    - o If an authorized representative was not associated with the retiree's HRA prior to death, the surviving spouse will be able to submit a death certificate as proof of relationship so that the spouse can assume ownership.

    - o Retirees and surviving spouses will now have the same forfeiture process. Estates of the deceased individual will have a flat 24-months to submit reimbursements against the available HRA balance. Because this is a process change, letters will be sent to the estate of any deceased individuals alerting them of the change.

Summary

This migration does not impact the following items:

- o WTW Via Benefits phone number dedicated for OPERS population
- o WTW Via Benefits web address dedicated for OPERS population
- o Enrollment services
- o Advocacy support post-enrollment
- o Reimbursement methods (standard, recurring, automatic reimbursement)

Even though several things are changing within the HRA experience, they are all positive enhancements. Communications that have been sent to the OPERS population reinforce that positive message so that any potential concern/fear of the change can be reduced.

OPERS staff will continue working closely with WTW staff on any issues that may arise after the go-live date of September 3, 2019.

Willis Towers Watson Via Benefits HRA Migration

UPDATE

Gretchen Feldmann, MA – Medicare Programs Manager
August 14, 2019

OPERS

Agenda

- Background
- Implementation Effort
- Communication Plan
- Black-Out Period
- Enhancements
- Summary / Questions

Background

- WTW Via Benefits (WTW) acquired HRA Administrator
- WTW will be able to offer an end-to-end delivery model
- OPERS population will migrate to new platform 9/3/19

Implementation Effort

- Launched June 2018
- Implementation areas include the following:
  - Governance documentation
  - Testing
  - Communications
  - Training
  - Staffing
- WTW associate will be onsite 9/4 – 9/17

Communication Plan

- July
  - OPERS Letter - Pre-Announcement
  - OPERS Email Blast - Pre-Announcement
  - WTW Letter - Announcement
  - WTW Website – Messaging Update, Video Posted
- August
  - WTW Letter & Calls to Direct Deposit Population (see Enhancement section)
  - WTW Letter to Forfeiture Population (see Enhancement section)
  - OPERS Facebook Post – Announcement Reminder
  - OPERS Email Blast - Announcement Reminder

Black-Out Period

- 3-week black period will span 8/12 – 9/3
- There will be no access to the funding section of WTW website
- Week 1 & Week 2: Mostly “Business as Usual”
    - Claims submitted prior to black-out will be processed/paid
    - Automatic reimbursement claims will be processed/paid
    - Recurring reimbursement claims will be processed/paid
- Week 3
    - Retirees may start to “feel” a delay in out-of-pocket claims being processed/paid

Enhancements

- Communications
    - Real-Time Alerts
    - Explanation of Payments
    - Deceased Individuals
    - Website
- Claims Processing
- Reporting
- Direct Deposit Process
- Forfeiture Process

Summary

- Migration does not impact the following:
  - OPERS dedicated phone number / website
  - Enrollment services
  - Advocacy support post-enrollment
  - Reimbursement methods
- HRA migration is a positive change!
- OPERS staff will continue working closely with WTW staff once migration goes live 9/3/19

Questions?

Health Care Committee II.A.

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MEMORANDUM

DATE: August 13, 2019

TO: OPERS Retirement Board Members

FROM: Tonya Brown, Director of Member Operations
Greg McLaughlin, Health Care Administration Manager

RE: **II. For Your Information:**
A. 2020 Retiree Health Care Plan Rate Setting

Purpose

The purpose of this memo is to provide the Board the 2020 self-supporting rates and premiums for the Retiree Health Care Program.

Background

Every year after plan design changes are approved, staff and external actuaries finalize Self-Supporting Rates (SSR) for both the self-insured, pre-Medicare and Medicare secondary plans for the coming plan year. The 2020 rates are based on several factors including claims experience, projected medical and prescription drug cost trends, board-approved plan design changes for 2020, prescription drug rebates and plan administration fees.

Expressed as a “per member per month” amount, the SSRs serve as a proxy for premiums for medical and prescription drug costs paid by OPERS and participants. The amount paid by the retiree, their monthly premium, is calculated by multiplying the SSR by the retiree’s allowance percentage and subtracting this allowance amount from the full SSR. The allowance provided by OPERS to offset the full SSR is a percentage based on the retiree’s age when first enrolled in OPERS health care and their years of qualified health care service. The majority of our retiree population receives a 75% allowance.

2020 Pre-Medicare Medical/Prescription Drug Plan Self-Supporting Rates

This population consists of approximately 36,000 retirees and dependents under the age of 65 who are not enrolled in Medicare. For 2020, medical plan trend is estimated at 11% while prescription drug trend is estimated at 9%. Prescription drug rebates for 2018 exceeded $28M lowering our overall SSR by $54.00 per member per month. Board-approved medical and prescription drug plan design changes resulted in a 5.5% and 6.2% reduction in plan rates respectively for 2020. These factors establish the following plan rates for 2020. The below chart provides the 2020 monthly rates and an impact comparison:

Participant Type	2019 SSR	2020 SSR	Percent Change
Adult	$1,305.95	$1,379.59	5.6%
Child	$450.77	$450.77	0.0%

These rates take effect Jan.1, 2020.

At a 75% allowance level, the 2020 monthly premium for the average pre-Medicare retiree will be $344.90, an increase of $67.41 from the current average monthly premium of $277.49. Included in the current monthly premium is the $49.00 premium subsidy which will end in December 2019.

2020 Medicare Secondary Medical/Prescription Drug Plan Self-Supporting Rate

This population is approximately 1,200 re-employed retirees enrolled in Medicare and participants under age 65 with End Stage Renal Disease (ESRD) who are out of their coordination period, the period of time in which Medicare pays primary and OPERS pays secondary. The ESRD population represents less than 9% of the total population.

While this plan has had steady enrollment, the high claims experience of participants with ESRD is impacting the SSR. Medical plan trend for this plan is estimated at 5.5% and prescription drug trend is estimated at 9%. Board-approved medical plan design changes account for a 5.5% reduction in the 2020 SSR. Prescription drug coverage is the same as the pre-Medicare plan so reductions experienced for rebates ($54 pmpm) and board-approved plan design changes (6.2%) are identical to the pre-Medicare plan. The below chart provides the 2020 monthly rates and an impact comparison:

Participant Type	2019 SSR	2020 SSR	Percent Change
Adult	$407.24	$457.30	12.3%

At a 75% allowance level, the 2020 monthly premium for the average Medicare retiree will be $114.33, an increase of $12.52 from the current average monthly premium of $101.81.

2020 Fully-Insured Dental Plan Premiums

Our fully-insured dental plans are available to all retirees and their eligible dependents regardless of their eligibility for our group plans or HRA. We currently have approximately 162,000 participants enrolled in our high and low dental plans. Plan participants pay the full premium through monthly pension deductions.

OPERS did not make any plan design changes to our dental plans for 2020. Staff negotiated a two year rate lock on the dental plan with a 6.6% rate increase for year one and no increase for year two. Rates for 2021 will change if the board approves plan design changes for 2021. The below chart provides the 2020 monthly premiums and an impact comparison:

High Option Dental	2019 Premium	2020 Premium	Percent Change
Adult	$34.32	$36.59	6.6%
Child	$20.39	$21.74	6.6%

Low Option Dental	2019 Premium	2020 Premium	Percent Change
Adult	$20.37	$21.71	6.6%
Child	$12.36	$13.18	6.6%

2020 Fully-Insured Vision Plan Premiums

Like our dental plans, our fully-insured vision plans are available to all retirees. We currently have approximately 160,000 participants enrolled in our high and low vision plans. Plan participants pay the full premium through monthly pension deductions.

OPERS did not make any plan design changes to our vision plans for 2020. Unit cost, utilization trends and federal tax generate a 2% increase on the high plan premium and a 7% increase on the low plan premium. OPERS recently renewed the vision plan contract with Aetna for an additional three years. With this extension, premium rates are locked in for three years unless the plan design changes. The monthly vision plan premiums for 2020 will be the following:

High Option Vision	2019 Premium	2020 Premium	Percent Change
Adult	$6.02	$6.14	2.0%
Child	$4.66	$4.75	2.0%

Low Option Vision	2019 Premium	2020 Premium	Percent Change
Adult	$2.41	$2.58	7.0%
Child	$1.68	$1.80	7.0%

Rates for Incapacitated Children Age 26 and Older

2020 rates for incapacitated children age 26 or older, as approved by the Board during the May Board meeting, will change from the current child rates to adult rates for the pre-Medicare medical/drug plan and other ancillary plans including dental and vision plans. Although federal regulations stipulate that once a child reaches age 26 they are no longer eligible dependents under a parent's health care coverage, this group of less than 70 continues to have access based on Ohio Administrative Code 145-4-09(B).

With an average allowance of 32.4% among the group, the average monthly medical/drug plan premium will change from $304.72 in 2019 to $932.60 beginning Jan. 1, 2020. Dental and vision premiums will change based on plan enrollment. Premium differences are reflected in the chart below:

Dental	**2020 Child Rate**	**2020 Adult Rate**	**Monthly Difference**	**Annual Difference**
High Option	$21.74	$36.59	$14.85	$178.20
Low Option	$13.18	$21.71	$8.53	$102.36
Vision				
High Option	$4.75	$6.14	$1.39	$16.68
Low Option	$1.80	$2.58	$0.78	$9.36

Next Steps

The above SSRs and premium rates will be effective January 2020. OPERS staff will communicate the new rates with retirees during the open enrollment process.

OPERS Board

OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM
277 EAST TOWN STREET, COLUMBUS, OH 43215-4642
1-800-222-PERS (7377)
www.opers.org

Board Meeting | August 21, 2019
9:00 A.M.
OPERS Office

A G E N D A

I. Roll Call — 9:00 – 9:05 a.m.

II. Consent agenda: — 9:05 – 9:10 a.m.
   A. Minutes – May 15, 2019 and July 16-17, 2019
   B. Disability report

III. Committee Report: — 9:10 – 9:15 a.m.
   A. Health Care Committee

IV. Action Item:
   A. Board meeting dates/times September through December – Eric Harrell – 15 minutes — 9:15 – 9:30 a.m.

V. Discussion Items:
   A. Group D – Allen Foster and Deborah McCarthy — 9:30 – 10:30 a.m.
   B. Cost of Living Adjustment (COLA) – Karen Carraher and Allen Foster — 10:30 – 12:00 p.m.
   C. Hedge Fund Policy and Benchmark Review – Paul Greff, John Blue, Suzanne Bernard and Kevin Hrad from Aon Hewitt Investment Consulting — 12:00 – 12:30 p.m.
   Real Estate, Private Equity & Hedge Funds 1st quarter 2019 performance – Paul Greff, Suzanne Bernard, Kevin Hrad, Karen Rode and Rob Kochis from Aon Hewitt Investment Consulting — 12:30 – 1:00 p.m.
   D. Executive Director report – Karen Carraher — 1:00 – 1:05 p.m.
   E. Executive Director evaluation — 1:05 – 2:00 p.m.

VI. For Your Information:
   A. Investment Performance
   B. Legal report
   C. Equal Treatment of Public Servants Act of 2019

Board Meeting II.A.

Minutes of the

OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM

The monthly meeting of the Ohio Public Employees Retirement Board was held in the offices of the Board, Ohio Public Employees Retirement System building, 277 East Town Street, Columbus, Ohio at 10:00 a.m., Wednesday, May 15, 2019.

Members present: Ms. Julie Albers; Mr. Randy Desposito; Mr. Harold Elliott; Ms. Cinthia Sledz; Mr. Tim Steitz; Mr. Jim Tilling; Mr. Steve Toth; Mr. Matt Whatley, representing Mr. Matt Damschroder, Director Department of Administrative Services; and Mr. Ken Thomas.

Members absent: Mr. Chris Mabe and Mr. Lance Osborne.

Also present: Ms. Mindy Bailey, Director Human Resources; Ms. Tonya Brown, Director Member Operations; Ms. Karen Carraher, Executive Director; Mr. Allen Foster, Director Benefits Administration; Mr. Gordon Gatien, Director Government Relations; Mr. Paul Greff, Director Investments; Mr. Eric Harrell, General Counsel; Mr. Chuck Quinlan, Director Information Technology; Ms. Jenny Starr, Chief Financial Officer; Ms. Caroline Stinziano, Director Internal Audit; and Mr. Isaac Molnar, from the Attorney General's Office.

Ms. Sledz moved, Mr. Desposito seconded, to excuse the absence of Mr. Mabe.

The motion passed without dissent.

Mr. Tilling moved, Mr. Desposito seconded, to approve the minutes of the meeting held April 17, 2019 and the disability report (see Appendix to the Minutes for report).

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Tilling, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Thomas, aye.

The motion passed with all ayes.

The Chair asked for the report from the Investment Committee.

The Board reviewed the following report from the Investment Committee meeting:

Investment Committee Minutes
May 14, 2019

The regular monthly meeting of the Ohio Public Employees Retirement Board Investment Committee was held in the offices of the Board, Ohio Public Employees Retirement System building, 277 East Town Street, Columbus, Ohio at 12:25 p.m., Tuesday, May 14, 2019.

Members present: Ms. Julie Albers; Mr. Chris Mabe; Ms. Cinthia Sledz; Mr. Tim Steitz; Mr. Ken Thomas; Mr. Steve Toth; Mr. Matt Whatley, representing Mr. Matthew Damschroder, Director Department of Administrative Services; and Mr. Jim Tilling. (Mr. Randy Desposito entered the meeting later.)

Members absent: Mr. Harold Elliott and Mr. Lance Osborne.

Also present: Ms. Mindy Bailey, Director, Human Resources; Ms. Tonya Brown, Director Member Operations; Ms. Karen Carraher, Executive Director; Mr. Allen Foster, Director Benefits Administration; Mr. Gordon Gatien, Director Government Relations; Mr. Paul Greff, Director Investments; Mr. Eric Harrell, General Counsel; Ms. Jenny Starr, Director Finance; and Ms. Caroline Stinziano, Director Internal Audit.

I. **Action Items:**

A. Mr. Greff and Mr. Prabu Kumaran, Fund Manager, reviewed proposed changes to the Defined Benefit Fund Policy. These changes are being requested to allow staff to begin implementing the recently approved long-term Defined Benefit asset allocation.

(Mr. Desposito entered the meeting during the discussion.)

Ms. Sledz moved, Mr. Toth seconded, to recommend approval to the full Board the Defined Benefit Fund Policy as reviewed and discussed with staff.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Mabe, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Thomas, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Tilling, aye.

The motion passed with all ayes.

B. Mr. Greff, Ms. DeAnne Mannion, Senior Portfolio Manager-External Public Markets and Mr. Ryan Casebolt, Senior Investment Analyst-External Public Markets, reviewed proposed changes to the OPERS Emerging Manager Program. Ms. Mannion provided a historical review of the Emerging Manager Program and Mr. Casebolt reviewed the current performance. Staff is recommending the restructuring of the dedicated Emerging Manager Program rules to more broadly source Ohio Qualified and Minority-Owned firms.

Ms. Albers moved, Mr. Desposito seconded, to recommend approval to the full Board the changes to the Emerging Manager Program as reviewed and discussed with staff.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Mabe, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Thomas, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Tilling, aye.

The motion passed with all ayes.

II. **Discussion Item:**

A. Mr. Craig Svendsen and Ms. Chenae Edwards from NEPC provided a market review and reviewed 1st quarter 2019 investment performance.

Mr. Toth moved, Mr. Mabe seconded, to enter executive session to discuss pending litigation.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Mabe, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Thomas, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Tilling, aye.

The motion passed with all ayes.

By acclimation, the Committee came out of executive session.

Mr. Toth moved, Mr. Mabe seconded, to adjourn the Committee meeting.

The motion passed without dissent.

The Committee meeting was adjourned at 1:40 p.m.

Mr. Tilling moved, Mr. Toth seconded, to approve the Staff's Defined Benefit Fund Policy as recommended in the Investment Committee report.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Tilling, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Thomas, aye.

The motion passed with all ayes.

Mr. Tilling moved, Mr. Desposito seconded, to approve the changes to the Emerging Manager Program as recommended in the Investment Committee report.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Tilling, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Thomas, aye.

The motion passed with all ayes.

The Chair asked for the report from the Health Care Committee.

The Board reviewed the following report from the Health Care Committee meeting:

Health Care Committee Minutes
April 16, 2019

The Ohio Public Employees Retirement Board Health Care Committee met in the offices of the Board, Ohio Public Employees Retirement System building, 277 East Town Street, Columbus, Ohio at 10:55 a.m., Tuesday, April 16, 2019.

Members present: Ms. Julie Albers; Mr. Matthew Damschroder; Mr. Randy Desposito; Mr. Harold Elliott; Mr. Lance Osborne; Ms. Cinthia Sledz; Mr. Ken Thomas; Mr. Jim Tilling; and Mr. Steve Toth.

Members absent: Mr. Tim Steitz and Mr. Chris Mabe.

Also present: Ms. Mindy Bailey, Director Human Resources; Ms. Tonya Brown, Director Member Operations; Ms. Karen Carraher, Executive Director; Mr. Allen Foster, Director Benefits Administration; Mr. Gordon Gatien, Director Government Relations; Mr. Paul Greff, Director Investments; Mr. Eric Harrell, General Counsel; Mr. Chuck Quinlan, Director Information Technology; Ms. Jenny Starr, Chief Financial Officer; and Ms. Caroline Stinziano, Director Internal Audit.

The Committee Vice-Chair called the meeting to order.

Ms. Carraher provided a recap of the progress to date and the tentative timeline for the HCPP 3.1 activities.

Ms. Brown and Mr. Foster provided an overview of the allowance options for the Medicare Plan (over 65) and Pre-Medicare Plan (under 65). Three options for each plan were discussed for consideration. For the Medicare Plan, the Committee's preference was to reduce the current base allowance from $450 to $350. For the Pre-Medicare Plan, the Committee's preference was to set the base allowance rate at $600 provided we move to the individual market.

The Committee recessed at 1:40 p.m. until April 17, 2019.

The Health Care Committee reconvened on Wednesday, April 17, 2019 at 12:35 p.m.

Members present: Ms. Julie Albers; Mr. Matt Whatley representing Mr. Matthew Damschroder, Director Department of Administrative Services; Mr. Randy Desposito; Mr. Harold Elliott; Mr. Lance Osborne; Ms. Cinthia Sledz; Mr. Tim Steitz; Mr. Ken Thomas; Mr. Jim Tilling; Mr. Steve Toth and Mr. Chris Mabe.

Also present: Ms. Mindy Bailey, Director Human Resources; Ms. Tonya Brown, Director Member Operations; Ms. Karen Carraher, Executive Director; Mr. Allen Foster, Director Benefits Administration; Mr. Gordon Gatien, Director Government Relations; Mr. Paul Greff, Director Investments; Mr. Eric Harrell, General Counsel; Mr. Chuck Quinlan, Director Information Technology; Ms.

Jenny Starr, Chief Financial Officer; and Ms. Caroline Stinziano, Director Internal Audit.

Ms. Brown and Mr. Foster provided an overview of the current eligibility guidelines for health care and potential options for the future. For the Medicare Plan (over 65) two options were discussed; the Committee's preference was to maintain the current eligibility standards at age 65 with 20 years of service which will be indexed to future Medicare eligibility age. For the Pre-Medicare Plan (under 65) four options were discussed; the Committee's preference was to change the eligibility to age 65 with 20 years of service. Staff committed to completing a full review of the impacts and present those results in the future.

Mr. Toth moved, Mr. Whatley seconded, to adjourn the committee meeting.

The committee meeting adjourned at 1:50 p.m.

The Chair asked for the report from the Audit Committee.

The Board reviewed the following report from the Audit Committee meeting:

Audit Committee Report
May 15, 2019

The meeting of the Ohio Public Employees Retirement Board Audit Committee was held in the offices of the Board, Ohio Public Employees Retirement System building, 277 East Town Street, Columbus, Ohio at 9:00 a.m., Wednesday, May 15, 2019.

Members present: Mr. Randy Desposito; Mr. Tim Steitz; Mr. Ken Thomas; and Mr. Matt Whatley, representing Mr. Matthew Damschroder, Director Department of Administrative Services.

Member absent: Mr. Chris Mabe.

Also present: Ms. Julie Albers; Mr. Harold Elliott; Ms. Cinthia Sledz; Mr. Jim Tilling; Mr. Steve Toth; Ms. Mindy Bailey, Director Human Resources; Ms. Tonya Brown, Director Member Operations; Ms. Karen Carraher, Executive Director; Mr. Allen Foster, Director Benefits Administration; Mr. Gordon Gatien, Director Government Relations; Mr. Paul Greff, Director

Investments; Mr. Eric Harrell, General Counsel; Ms. Caroline Stinziano, Director Internal Audit; and Ms. Jenny Starr, Chief Financial Officer.

Mr. Thomas called the meeting to order.

Mr. Jason Ostroski from CliftonLarsonAllen reviewed the results of the 2018 financial statement audit. He also discussed required communications, noted there were no management letter comments and there were no issues noted in testing over internal controls.

Ms. Starr made a financial presentation on various financial information contained in the Comprehensive Annual Financial Report (CAFR) for the year ended December 31, 2018.

She provided an overview of the key financial statements and discussed key activities. She outlined the key information and changes in the CAFR.

Ms. Stinziano provided an update on the recent internal Audit related activities and initiatives and status of prior audit recommendations.

Mr. Desposito moved, Mr. Whatley seconded, to adjourn the committee meeting.

The motion passed without dissent.

The meeting adjourned at 9:50 a.m.

Ms. Lai Woo, Senior Financial Analyst, reviewed the letter from Gabriel, Roeder, Smith and Company on the employer and member contribution rates to employers reporting under the local division for the calendar year 2020.

Ms. Sledz moved, Mr. Toth seconded, to certify the contribution rates for local employers (non-law or public safety) employer contribution rates at 14.00%; member rates at 10.00%. Local law enforcement employer rates will be 18.10%; member rates will be 13.00%. Public safety employer rates will be 18.10%; member rates will be 12.00%.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, aye; Ms. Sledz, aye; Mr.

Steitz, aye; Mr. Tilling, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Thomas, aye.

The motion passed with all ayes.

Ms. Brown, Ms. Sarah Durfee, Senior Health Care Advisor and Mr. Greg McLaughlin, Health Care Administration Manager, reviewed recommended changes to the 2020 plan design pre-Medicare medical and prescription plan design and premium subsidies.

After discussion, the following changes are recommended for approval:

Ms. Albers moved, Ms. Sledz seconded, to approve the elimination of the $49 premium subsidy as reviewed and discussed with staff.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Tilling, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Thomas, aye.

The motion passed with all ayes.

Mr. Toth moved, Mr. Desposito seconded, to approve option 1 - medical deductible $2,500 and prescription drug deductible - $200 (generic) $400 (brand), as reviewed and discussed with staff.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Tilling, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Thomas, nay.

The motion passed with eight ayes and one nay.

Ms. Sledz moved, Mr. Whatley seconded, to approve no premium subsidy increase for the adult self-supporting rate for 2020 as reviewed and discussed with staff.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, aye; Ms. Sledz, aye; Mr.

Steitz, aye; Mr. Tilling, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Thomas, aye.

The motion passed with all ayes.

Ms. Brown and Mr. McLaughlin reviewed the recommended changes to the self-insured Medicare secondary (re-employed retiree) medical plan, as well as consideration for the Health Retirement Allowance (HRA) for 2020.

After discussion, Mr. Whatley moved, Mr. Tilling seconded, to adopt the 2020 plan design changes to the Medicare secondary (re-employed retiree) Plan as reviewed and discussed with staff.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Tilling, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Thomas, aye.

The motion passed with all ayes.

Ms. Albers moved, Mr. Toth seconded, to maintain the HRA base allowance at $450 for 2020 as reviewed and discussed with staff.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Tilling, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Thomas, aye.

The motion passed with all ayes.

Ms. Brown and Mr. McLaughlin reviewed a recommendation regarding premium rates for incapacitated children who are age 26 or older. The objective of the discussion was to determine whether adult children deemed incapacitated and enrolled as a dependent or survivor in the OPERS pre-Medicare group plan should be charged the child premium rate or the adult premium rate or should the dependent subsidy be eliminated. They reviewed the current background and statistics of this group in the Plan.

After discussion, Mr. Tilling moved. Ms. Albers seconded, to transition the incapacitated (adult) children age 26 or over to the Pre-Medicare plan adult premium rate in 2020 as reviewed and discussed with staff.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, abstain; Ms. Sledz, aye; Mr. Steitz, nay; Mr. Tilling, aye; Mr. Toth, nay; Mr. Whatley, aye; Mr. Thomas, aye.

The motion passed with six ayes, two nays and one abstention.

Mr. Tilling moved, Mr. Toth seconded, to approve out-of-state travel for Mr. Ken Thomas to attend the International Foundation of Employee Benefit Plans Evidence, Insight and Strategy for Optimizing Health Benefits in Boston, MA, July 8-12, 2019.

Roll call vote was taken as follows: Ms. Albers, aye; Mr. Desposito, aye; Mr. Elliott, aye; Ms. Sledz, aye; Mr. Steitz, aye; Mr. Tilling, aye; Mr. Toth, aye; Mr. Whatley, aye; Mr. Thomas, aye.

The motion passed with all ayes.

Mr. Mita Drazilov and Mr. Brian Murphy from Gabriel, Roeder, Smith & Company reviewed the 50-year actuarial projections of base retirement benefits beginning January 1, 2019.

The Executive Director report was included in the meeting materials.

Mr. Tilling moved, Mr. Desposito seconded, the meeting be adjourned until the next regular meeting to be held Tuesday, July 16, 2019 at 8:30 a.m. at the OPERS offices.

The motion passed without dissent.

The meeting adjourned at 1:25 p.m.

Minutes of the

OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM

The Ohio Public Employees Retirement Board held a strategic planning meeting at Mohican Lodge, at 8:30 a.m., Tuesday, July 16, 2019.

Members present: Ms. Julie Albers; Mr. Matt Damschroder; Mr. Chris Mabe; Mr. Lance Osborne; Ms. Cinthia Sledz; Mr. Jim Tilling; Mr. Steve Toth; and Mr. Ken Thomas. (Mr. Harold Elliott entered the meeting after roll call.)

Members absent: Mr. Randy Desposito and Mr. Tim Steitz.

Also present: Ms. Mindy Bailey, Human Resources Director; Ms. Tonya Brown, Director Member Operations; Ms. Karen Carraher, Executive Director; Mr. Allen Foster, Director Benefits Administration; Mr. Gordon Gatien, Director Government Relations; Mr. Paul Greff, Director Investments; Mr. Eric Harrell, General Counsel; Mr. Chuck Quinlan, Director Information Technology; Ms. Jenny Starr, Chief Financial Officer; and Ms. Caroline Stinziano, Director Internal Audit.

Mr. Mabe moved, Mr. Toth seconded, to excuse the absence of Mr. Desposito and Mr. Steitz.

The motion passed without dissent.

Staff made presentations to the Board on the strategic planning process and journey, an Investment market outlook, future generational needs, a discussion on Group D and a plan outlook for the traditional, member-directed and combined plans.

(Mr. Thomas left during the discussion at 2:30 p.m.

The Board recessed at 4:40 p.m.

The Board reconvened on Wednesday, July 17, 2019 at 8:15 a.m.

Members present: Ms. Julie Albers; Mr. Matt Damschroder; Mr. Harold Elliott; Mr. Chris Mabe; Mr. Lance Osborne; Ms. Cinthia Sledz; Mr. Jim Tilling; Mr. Steve Toth; and Mr. Ken Thomas.

The Board conducted a session with Mr. Ed Gaydos on Board self-evaluation and a discussion on the Board's Committee structure and any possible changes.

All staff entered the meeting after the Board discussion with Mr. Gaydos.

Staff made a presentation on the funding path going forward.

Ms. Carraher provided a wrap-up on the two-days of discussion with the Board.

Mr. Mabe moved, Mr. Tilling seconded, the meeting be adjourned on Wednesday, July 17, 2019 at 2:05 p.m.

The motion passed without dissent.

Board Meeting IV.A.

OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM
277 EAST TOWN STREET, COLUMBUS, OH 43215-4642
1-800-222-PERS (7377)
www.opers.org

OPERS

MEMORANDUM

DATE: August 12, 2019

TO: OPERS Retirement Board Members

FROM: Eric Harrell, General Counsel

RE: **IV. Action Item:**
A. Board Meeting Dates/Times – September through December 2019

Action requested: ________ moved, ________ seconded to: Authorize the Board Chair to call regular monthly board meetings to begin on the Tuesday immediately before the third Wednesday of the month, at a time to be determined by the Board Chair for the remainder of 2019, at his discretion.

Background –Ohio Administrative Code Section 145-1-01 requires appropriate board resolution to move the meeting date and hour from the regularly scheduled board meeting date and time established in that rule – 9 a.m. on the third Wednesday of each calendar month. Over the past year the Board has discussed changes to the frequency of board meetings and the need to continue or abolish some of the existing committees. These changes will require the Board (rather than some of the committees) to begin meeting on the Tuesday immediately preceding the regular Wednesday board meeting.

In accordance with those discussions, changes will be made to Ohio Administrative Code Section 145-1-01 later this year to implement the changes the board has requested. Until those changes are in effect, it is proposed that the Board grant the Board Chair the authority to call the regular board meeting to begin on either the Tuesday before the regularly scheduled meeting date and/or on the regularly scheduled date, as needed, at a time to be determined by the Board Chair for the remainder of 2019. This will allow for matters that previously would have been presented to committees during Tuesday meetings, to be presented to the entire Board on those Tuesdays, by beginning the board meeting on Tuesday and continuing into Wednesday.

Board Meeting V.A.

OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM
277 EAST TOWN STREET, COLUMBUS, OH 43215-4642
1-800-222-PERS (7377)
www.opers.org

MEMORANDUM

DATE: August 13, 2019

TO: OPERS Retirement Board Members

FROM: Allen Foster, Director – Benefits
Deborah McCarthy, Government Relations Officer/Legal Counsel

RE: **V. Discussion Items:**
A. Group D

Purpose – The purpose of this memorandum is to provide the Board with a detailed outline of the Group D proposal, as it was presented to the Board at the July 2019 Strategic Planning retreat. The memorandum summarizes the rationale for Group D, the plan design components of Group D, and next steps.

Background – At the July 2019 Strategic Planning retreat, the Board heard a presentation from staff on a proposal to establish Group D in the Traditional Pension Plan. This proposal is a result of the ongoing review and analysis performed by the Alternative Plan Design work group—a group of staff committed to reviewing the retirement plans offered by OPERS with several goals in mind: reduce/eliminate subsidization; ensure plan sustainability; evaluate plan appropriateness and attractiveness; ensure plan purpose is achieved in light of changing environment; maintain intergenerational equity; and advance planning to minimize member impact.

At the July retreat, the Board heard several presentations that laid the groundwork for the introduction of Group D. The first presentation was an investment market outlook that included a review of economic growth trends, national debt and deficits, inflation, interest rates, and the international and national financial markets. The second was a presentation on the changing needs of the future generations of our membership—with a focus on the Millennial generation and Generation Z. The final presentation of that morning was a summary of the 2018 historical review presentation, which included an outline of actions taken to date and the current environment in which OPERS is currently operating. Each of these presentations were intended as a prelude to a discussion with the Board about the necessity of establishing a Group D tier in the Traditional Pension Plan.

Issues – **Defining the Problem**. OPERS today is in a very different position than in the first 75 years of our history. We need to think and act differently than we have in the past. The OPERS Traditional Pension Plan is a mature retirement plan whose active to retiree ratio is steadily falling and will be 1:1 in the next fifteen years. The Traditional Pension Plan is cash flow negative—our benefit payments exceed the incoming contributions—and, as such, OPERS is increasingly reliant on investment income in a volatile investment market. Our unfunded actuarial accrued liabilities of $24 billion are the largest they've ever been. We are faced with the reality that, in the next 10 years, approximately 51% of our accrued actuarial liabilities will come due--$55 billion—which is over half of our accrued assets.

We have taken numerous actions in the past to position the Traditional Pension Plan for the future. In 2012, the Ohio legislature enacted S.B. 343 to improve funding, reduce subsidization of benefits, and to maintain intergenerational equity. S.B. 343 introduced the concept of three separate retirement groups (A, B, and C) and a member's group was determined by the date the member attained of retirement eligibility based on the age and service criteria in effect prior to the legislation. A member's group determined which of the benefit changes applied—age and service retirement eligibility, benefit calculation, age and service early retirement reduction factors, final average salary, and many more. Group A members were the least impacted and Group C members were the most impacted. S.B. 343 resulted in a $3.2B reduction in OPERS' unfunded actuarial accrued liabilities.

Despite all of the actions taken to date, several core issues continue to exist:

(1) The needs of future generations of our members are changing;

(2) The Traditional Pension Plan's unfunded actuarial accrued liability (UAAL) is at the highest level it has been ($24B) and needs a significant portion of the employer contribution rate to fund it;

(3) Investment market volatility continues to be a risk to the retirement system due to the system's dependency of investment returns to fund benefits;

(4) The health care fund is in danger of depletion because no contributions are going to fund health care now or in the foreseeable future. (Separate actions are in process related to the health care issues.)

Funding Plan. Our goal is to create a thriving Traditional Pension (defined benefit) plan that provides the benefits members want with the retirement security they have come to expect.

Group D is an opportunity to create a plan design that will thrive in changing conditions. A plan design that has flexibility to address challenging financial conditions and still maintain a strong funded status. A plan design that allows us to continue to fund the UAAL of the Traditional Pension Plan and under current conditions fund its own benefit. A plan that has the ability to flex upward with benefit increases when funding is good without creating a permanent benefit structure should funding decrease.

Group D is an opportunity to create a plan design that is attractive to the future generations of our members. A plan design that meets their need for independence and control over planning for their own needs. A plan design that provides a clear line of sight to their goals. A plan design that is portable to address shorter periods of employment with a particular employer.

Group D is an opportunity to modify the Traditional Pension Plan in a manner that reduces the likelihood of future benefit reductions. A new tier of the plan that will position the Traditional Pension Plan for the future and give the system more flexibility to manage market fluctuations. A new tier that will allow members to share in the times when the markets are good and that will withstand market downturns without seeking benefit reductions.

Group D is an opportunity to address the lack of available funding for health care with a new tier of the Traditional Pension Plan that includes a retiree medical account to fund this group's health care in retirement. A new tier of the plan that will reduce the system's risk of offering health care that our retirees want, but that we cannot guarantee.

Group D Plan Design. Below is a detailed description of the plan design features for the proposed Group D tier of the Traditional Pension Plan.

Group D Component	Description
Contribution Rates (Potentially)	• Members potentially contribute 11% of their earnable salary to OPERS. Of the 11%, 10% would fund the defined benefit plan and 1% to fund their Pension Plus Account. (Contribution rate is contingent upon benefit formula multiplier).
Benefit Eligibility & Final Average Salary	• Unreduced benefit age/service requirements – 62/35, 67/25 or 70/5 • Reduced benefit age/service requirements – 57/30, 62/20 or 65/5 • Final average salary – average of the 10 highest years of salary • Benefit formula multiplier – 2.0% assuming an 11% contribution rate (lower if 10% contribution rate).
Pension Plus Account	• A separate account that allows for 1% of member contributions to be deposited into an investment account. Members would have immediate

	vesting and manage their own investment portfolio.
Gainsharing Account	• Active members share investment earnings in accordance with the policy. Group D members who have accrued 5 years and 1) Investment return is over 7.2% **and** 2) Funded ratio has exceeded the specified target.
Funded ratio threshold	• The funded ratio threshold may range from 90% to 120%.
Retiree Medical Account (RMA)	• A portion of the employer contribution allocated to fund an individual account to reimburse retiree for qualified medical expenses. Initial contribution allocation is 2%.
COLA	• Simple COLA – CPI up to 2.0% starting at age 62 • Any future changes to COLA may include Group D.
Stabilization Fund	• A fund that allows for 0.5% of employer contributions to be used as a reserve for future funding needs.
Discount Rate	• For Group D valuation purposes only, the discount rate would be 7%.
Portability Refunds Service Purchases	Money in • Members can roll money into the plan from other eligible retirement plans. • Service purchases would continue the same as practiced today. In addition, members could purchase a maximum of 5 years of "Air Time" service credit (with no associated public employment) at the full actuarial cost. Money out • Refunds would include member contributions, interest, Pension Plus account and Gainsharing account, if applicable. • After termination of employment, funds could be rolled to another eligible retirement plan.
Proposed Protective Services Division	• An occupational classification truly based on public safety job duties (Correction officers, EMS workers, etc.). • Member contribution rate estimated to be 15% and employer at 16%.
Earnable Salary Survivor Benefits Disability Benefits	• Earnable salary – based on minimum wage instead of current requirement of $660 per month to earn full-time service credit. • Survivor benefits – discontinue current program for Group D and continue to offer life insurance product OPERS implemented in 2018. • Disability – Use "any occupation" standard for initial determination (same as Social Security).

Next Steps -- During our August Board meeting staff will provide highlights of Group D, follow up to questions during the July strategic plan meeting, and member examples that compare Group C to Group D.

Group D

August 21, 2019

Allen Foster, Director of Benefits

Debbie McCarthy, Government Relations Officer/Legal Counsel

OPERS

Possible Path Forward

1. Take steps to address/reduce current UAAL
2. Modify DB plan to provide more flexibility to expand and contract and establish reserves
3. Modify Member Directed and Combined Plans to address plan issues
4. Modify health care plan to require lower portion of employer contribution rate (currently over 5%)

Agenda

- Review of Group D goals
- Highlights of Group D key components
- Highlights of Other system comparisons
- Plan level gainsharing
- Member examples
- Discussion
- Next steps

Note: Above agenda reflects meeting agenda. Presentation includes additional material.

Goals - Group D

- ✓ Retain a Defined Benefit Plan
- ✓ Adapt to changing membership needs
- ✓ Provide the same level or more of funding for the UAAL/Health Care while funding their benefit
- ✓ Provide funding for Health care for the future for this group while beginning to limit the groups to be covered with the existing Health Care trust assets

Goals - Group D

- ✓ Plan provides flexibility to expand benefits in a meaningful way when funding is good, without creating a permanent benefit structure
- ✓ Aligns OPERS interests and member interests with gain sharing
- ✓ Plan provides safeguards for both member and OPERS
- ✓ A plan design that provides flexibility to adjust benefits (upward) without legislation

Goals - Group D

- ✓ Plan provides flexibility to develop a stabilization fund to protect funding level
- ✓ Plans for the future
- ✓ Addresses issues of classification
- ✓ A plan design that provides flexibility to ensure adequate funding for the future generations

Why Group D?

Changing Membership Needs

Changing Membership Needs

The characteristics of the future generations will require OPERS to offer plan design features that appeal to these new members:

- Short-term focus, no longer one career employer
- Clear line of sight towards goals
- Independent
- Distrust that “programs” will be available to them when their time comes (i.e., Social Security, etc.)
- Control over planning for their own needs

Changing Membership Needs

Prior plan design changes (longer working career, later retirement age, etc.) alone don't align with changing demographics, needs, and expectations of future generations.

Shorter stays with employers	**Portability**
Financial security	**More control over their own money**
Collaborating in teams	**Investment-Sharing**
Custom job descriptions/careers	**Plan Flexibility**

Changing Membership Needs

- Future generations of members will have to choose the OPERS retirement plan that best meets their needs
- Each plan should have plan design features that are attractive to these future members
- Need to review all three OPERS retirement plans and make adjustments that maintain the attractiveness of each plan

Who is Group D?

Members hired after Jan. 1, 2022

(changes do not apply to any prior members)

Our Current Groups

As of 6/30/19

Pre-APD	Members retired prior to Jan. 1, 2013.	158,587
Group A	Members eligible to retire before Jan. 7, 2018.	84,264
Group B	Members with 20 years of service credit on Jan. 7, 2013, or eligible to retire after Jan. 7, 2018 but on or before Jan. 7, 2023.	37,570
Group C	Members eligible to retire after Jan. 7, 2023 or members hired on or after Jan. 7, 2013.	224,673
Group D	New members hired January 1, 2022 and after.	0

Group D Plan Design

Group D components

- Contribution rates (potentially)
- Benefit eligibility and calculations including Final Average Salary (FAS)
- Pension plus account
- Gainsharing account
- Funded ratio threshold
- Retiree Medical Account (RMA)
- COLA

Group D components

- Stabilization fund
- Discount rate (Group D only)
- Portability
- “Proposed” Protective services
- Others (Earnable salary, Survivor and Disability benefits)

Terms of the Plan

<u>Contributions</u> – members contribute 11% (potentially) of their earnable salary to OPERS

- 10% fund the defined benefit plan
- 1% fund the Pension Plus Account

<u>Pension Plus Account</u> – members contribute 1% of their earnable salary and earn interest

Terms of the Plan

<u>Gainsharing Account</u> – active members share of investment earnings in accordance of the policy. Group D members who have completed 5 years and

1) the investment return is over 7.2% AND

2) funded ratio has exceeded the specified target

<u>Total Account Value</u> – the sum of member contributions, interest, additional amount (if applicable). In addition, includes the Pension Plus Account and Gainsharing Account.

Terms of the Plan

Retiree Medical Account (RMA) – portion of the employer contribution allocated to fund individual account to reimburse for qualified medical expenses. Initial allocation is 2%.

Stabilization fund – fund that allows for 0.5% of employer contributions to be used as a reserve for future funding needs.

Group D Contribution Rates

	State and Local
Member	**11%**
DB Normal Cost	10%
Pension Plus	1%
Employer	**14%**
Group D – DB Normal Cost	2.06%
DB - UAAL	9.44%
RMA	2.00%
Stabilization Fund	0.5%

Contribution Rates Compared

	Group C	Group D
	State and Local	State and Local
Member	**10%**	**11%**
DB Normal Cost	10%	10%
Member Account	n/a	1%
Employer	**14%**	**14%**
UAAL/DB HC	9.29%	9.44%
RMA (15-yr vesting)	N/A	2%
Stabilization Fund	N/A	0.5%
DB Normal cost	4.71%	2.06%
Total Normal Cost	14.71%	12.06%

Group D Benefit Eligibility

Division	State and Local	
	Age	Service
Unreduced Benefit	62	35
	67	25
	70	5
Reduced Benefit	57	30
	62	20
	65	5

Benefit Eligibility Compared

Division	Group C: State and Local		Group D: State and Local	
	Age	Service	Age	Service
Unreduced Benefit	55	32	62	35
	67	5	67	25
	-	-	70	5
Reduced Benefit	57	25	57	30
	62	5	62	20
	-	-	65	5

Group D Benefit Calculations

State and Local
2.0% x FAS x years of service

Multiplier of 2% assumes an 11% contribution rate. A lower contribution rate would require a lower multiplier.

Benefit Calculations Compared

Group C	Group D
State and Local	State and Local
2.2%* x FAS x yrs of service	2.0% x FAS x yrs of service

*After 35 years, this multiplier increases to 2.5%

Final Average Salary Compared

Group C	Group D
State and Local	**State and Local**
average of your **five** high years of earnable salary	average of your **ten** high years of earnable salary

Groups A and B use a three year Final Average Salary

Pension Plus Account

Pension plus account allows for 1% of member contributions to be deposited into a investment account.

- Members have immediate vesting
- Members can build and manage their own investment portfolio

Gainsharing Sharing

With 5 years of service credit

- Gainsharing will be offered if:
  1) Investment returns are greater than 7.2% AND
  2) The funded ratio exceeds the specified target amount
- The gainshare will be 25% of the excess investment return allocated on the basis of the proportionate share of accumulative contributions
- Target ratio expected to range between 90% - 120%
- Gainsharing is 100% vested once received

Gainsharing (Example)

OPERS investment return of 8.2%, Investment target 7.2%
Excess return is $1M, Funded ratio is 101%; target ratio is 100%

1. Member has more than 5 years of service credit
2. Investment return exceeds target
3. Funded ratio exceeds target
4. Excess return in $ is $1M
5. Members lifetime contributions as a percent of OPERS total is .002% (2/1000 of 1%)
6. .002% x $1M = $2,000

Retirement Example

How does it work?

DB Formula Benefit (2.0*YOS*FAS)

+

Pension plus account = **1%**

+

Investment sharing after 5+ years

=

Total Retirement Benefit

Retiree Medical Account (RMA)

- 2% of employer contribution rate will fund a retiree medical account (RMA)
- This is an individual account for members use upon retirement
- Vesting after 5 years beginning at 10% per year
- Earns interest at the Stable Value Fund rate
- At retirement, can be used in connection with the Connector

COLA

Simple COLA – CPI up to 2.0% starting at age 62

COLA would commence 12 months after effective date of retirement

Note: any changes to COLA would impact Group D

Stabilization Fund

- Group D will contribute to a stabilization fund that provides reserves for years where investment return assumptions are not met
- Stabilization fund will **not be** included when valuing the funded ratio
- Initial funding will be 0.5% of employer contribution rate
- Stabilization Fund rules will developed at a later date

Discount Rate

- For Group D valuation purposes only, the discount rate would be 7%

Portability

The practice of allowing members to move money in and out of the plan.

- ✓ Refunds
- ✓ Purchase of service credit

Portability (Refund)

How does it work?

Member contributions = **10%**

\+

Pension plus account = **1%**

\+

Investment sharing after 5+ years

=

Total account value (Refund)

NOTE: Based on years of service, additional amount may be available. If vested, RMA funds would be available.

Portability In

Service purchases

- Current practice of service purchases will remain (Redeposit, Out of State, USERRA etc...)
- We have made adjustments to portability to appeal to the new realities of "career employment"
- "NEW"- Air Time (Maximum of 5 years may be purchased as long as the member has 5.000 of existing OPERS service credit.)
- Cost of air time will be at full actuarial value

Creating a New Division

Create a true Protective Services occupational classification that is truly based on public safety

- Predominant occupations: Corrections officers, Emergency Medical Services workers, Adjutant General firefighters and criminal bailiffs

- Creating a new definition of protective services that includes the occupational categories listed above makes a clear demarcation between the Law and the protective services divisions

- Member contribution rate is estimated to be 15% and the employer rate is estimated to be 16%

Other Plan Designs

Survivor Benefits

- Continue to offer OPERS life insurance product
- Eliminate survivor benefits provision and provide a death refund only. (OPERS life insurance)

Disability Benefits

- Use "Any Occ" standard for initial determination, same as SSD

Earnable Salary

- Will be based on minimum wage

Group D Plan Design Discussion

Key Discussion Points from Prior Meeting

The key discussion points from the July meeting were around the following aspects:

- ✓ 10-year Final Average Salary (FAS)
- ✓ Vesting period for RMA
- ✓ Comparison of other state plans

Final Average Salary/Normal Cost Compared

FAS	Benefit Multiplier	Pension Vesting	Normal Cost
10 Year	2.0	5 year	12.06%
10 Year	2.0	10 year	12.10%
5 year	1.85	5 year	12.22%

Recommendation

Staff recommends a 10 year Final Average Salary with 2.0 benefit multiplier and 5 year vesting

- Further reduces the risk of spiking
- Allows a higher multiplier to stay in place
- Keeps vesting schedule the same for disability and retirement

Retiree Medical Account (RMA)

- 2% of employer contribution rate will fund a retiree medical account (RMA)
- This is an individual account for members use upon retirement
- Vesting after 5 years beginning at 10% per year
- Earns interest at the Stable Value Fund rate
- At retirement, can be used in connection with the Connector

Vesting Schedules Compared

Current Vesting

Year*	Percentage
1-5	0
6	10%
7	20%
8	30%
9	40%
10	50%
11	60%
12	70%
13	80%
14	90%
15	100%

Proposed 10 yr Vesting

Year*	Percentage
1-2	0
3	30%
4	40%
5	50%
6	60%
7	70%
8	80%
9	90%
10	100%

Proposed 5 yr Vesting

Year*	Percentage
1	20%
2	40%
3	60%
4	80%
5	100%

*Vesting occurs at the end of a completed year.

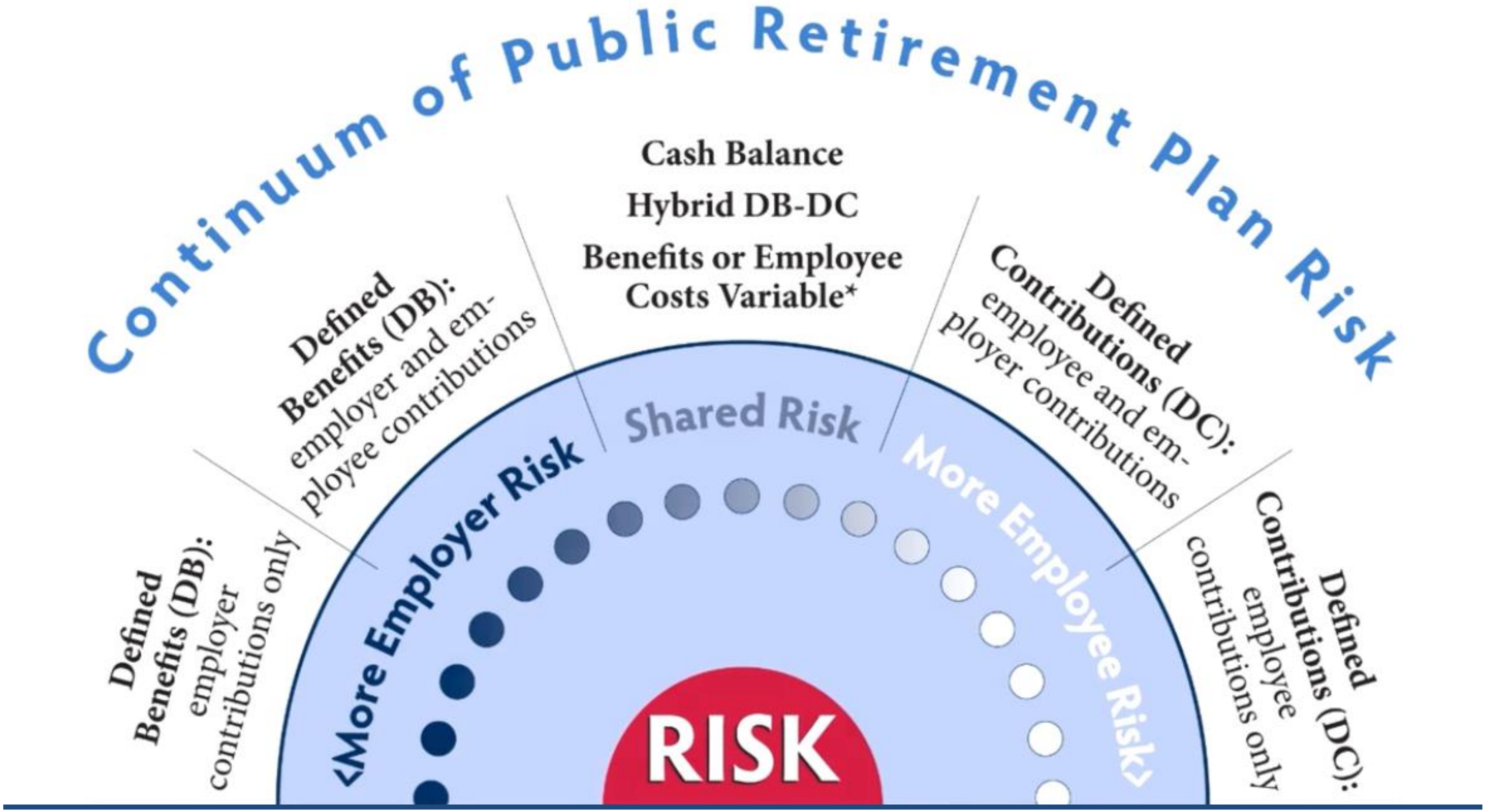
What other states are doing

What Other States Are Doing

A decade of wide spread pension reform to reduce plan risk and address funding issues:

- 40 states have made pension benefit changes
- 30 states have made changes to the COLA benefits
- 10 states have created new hybrid plans

What Other States Are Doing



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What Other States Are Doing

- Pension reform activity tapered off in 2015/2016, but has picked back up in 2018 & 2019
- Participates are being asked to bear more risk – sometimes though formalized risk sharing arrangements (i.e. COLA base on funding level)

Pension Changes

Lower benefits

COLA - Reduced, suspended or elimination

Benefit Structure Changes

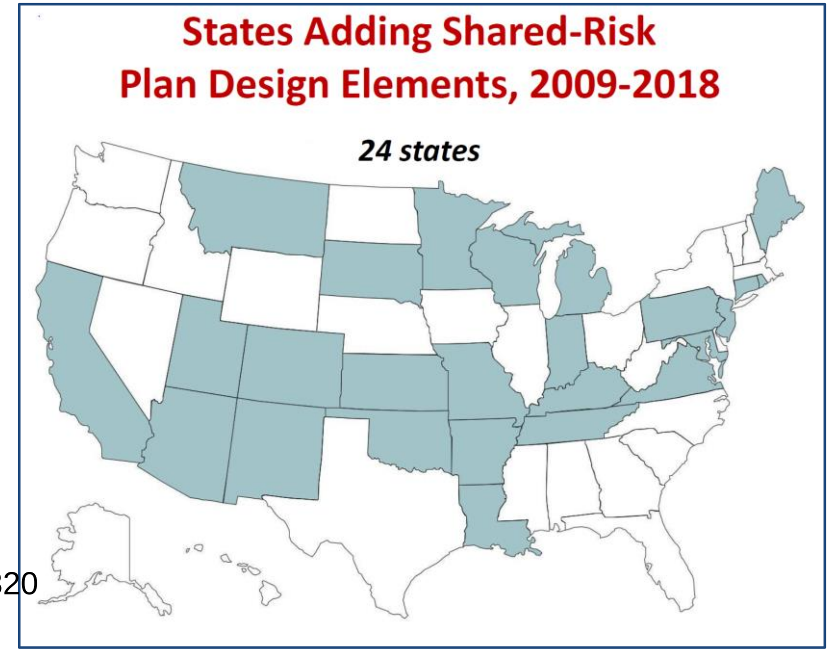
- Lower Multiplier
- Modified FAS – 3, 5, 10 year and lifetime
- Eligibility changes – minimum age and service
- Benefit Vesting – 10 and 15 year
- Elimination/reduction of health care benefits
- Risk sharing models

Key Retirement Plan Risks

- Investment: the risk that investment returns will be less than expected
- Inflation: The risk that inflation will erode the purchasing power of one's retirement benefit
- Mortality: The risk of outliving one's retirement assets

Key Retirement Plan Risks

- Risk is distributed differently, depending on the plan type and plan design.
- In modern public pension plans, the type and degree of risk sharing varies.
- In general, more risk is being shifted from employers to participants.



Risk Sharing Examples

- Hybrid retirement plans
  – DB-DC-Hybrid
  – Cash balance
- Contingent or limited cost-of-living adjustments
- Flexible employee contribution rates
- Adjustable benefit levels

Group D Plan Level Scenarios

Plan Level Examples

- Describe how Group D plan gainsharing could work over a 35 year period beginning in Jan. 1, 2022
- Gainsharing occurs when investment return benchmark and funded ratio target threshold of 100.00% are met
- Example uses 3 different investment benchmark return scenarios (7.20%, 7.70% and 6.70%)
- Examples show the years when plan level gainsharing could be paid out based upon following conditions:
  - Investment return of 7.2% or greater for the year
  - Funded ratio exceeds the target funded ratio (100%)

Gainsharing (GS) – Plan Level

Investment Return: 7.20% Funded Ratio Threshold: 100.00%

Year	Before GS	After GS	GS Allocation	Funded Ratio Before GS	Funded Ratio After GS
2027	$5,163,754,300	$4,996,097,014	$167,657,286	117.4%	113.6%
2029	$7,336,908,613	$7,308,896,218	$28,012,395	100.6%	100.2%
2032	$13,421,257,585	$13,081,700,252	$339,557,333	101.6%	99.1%
2037	$30,304,265,162	$29,630,146,572	$674,118,590	108.6%	106.2%
2038	$34,688,451,046	$34,398,864,943	$289,586,103	109.7%	108.8%
2042	$52,445,634,381	$51,376,476,584	$1,069,157,797	106.8%	104.7%

Gainsharing (GS) – Plan Level

Investment Return: 7.70%   Funded Ratio Threshold: 100.00%

Year	Before GS	After GS	GS Allocation	Funded Ratio Before GS	Funded Ratio After GS
2028	$6,170,563,312	$6,008,984,273	$161,579,039	107.4%	104.5%
2029	$8,227,666,061	$8,066,929,686	$160,736,375	112.8%	110.6%
2031	$11,941,783,312	$11,773,312,675	$168,470,637	108.5%	106.9%
2032	$16,513,543,810	$15,924,593,794	$588,950,016	120.6%	120.4%
2034	$19,628,757,963	$19,508,715,240	$120,042,723	107.2%	106.5%
2037	$29,348,566,205	$28,641,910,310	$706,655,895	105.1%	102.5%
2038	$33,886,453,910	$33,532,519,773	$353,934,137	107.2%	106.1%
2042	$52,134,680,142	$51,065,522,345	$1,069,157,797	106.2%	104.0%
2046	$70,484,982,673	$69,194,978,793	$1,290,003,880	101.0%	99.1%
2051	$101,351,849,564	$99,756,544,067	$1,595,305,498	102.5%	100.9%

Gainsharing (GS) – Plan Level

Investment Return: 6.70% Funded Ratio Threshold: 100.00%

Year	Before GS	After GS	GS Allocation	Funded Ratio Before GS	Funded Ratio After GS
2028	$5,999,935,157	$5,863,681,181	$136,253,976	104.4%	102.0%
2029	$7,929,354,137	$7,804,254,514	$125,099,623	108.7%	107.0%
2031	$11,449,386,370	$11,333,618,022	$115,768,348	104.0%	102.9%
2032	$15,474,272,577	$14,999,424,291	$474,848,286	117.2%	113.6%
2034	$18,346,546,674	$18,313,988,071	$32,558,602	100.2%	100.0%
2038	$31,979,751,498	$31,781,669,631	$198,081,866	101.1%	100.5%

Group D Member Level Scenarios

Benefit Eligibility Compared

Division	Group C: State and Local		Group D: State and Local	
	Age	Service	Age	Service
Unreduced Benefit	55	32	62	35
	67	5	67	25
	-	-	70	5
Reduced Benefit	57	25	57	30
	62	5	62	20
	-	-	65	5

Pension Examples

- Compare a **Group C** member with a hire date of 1/2021 to a **Group D** member with a hire date of 1/2022
- Both have a starting age of 27
- Both have a starting salary of $40,000
- Both receive on average a 3.25% annual pay raise
- Group C has a straight formula benefit
- Group D has a formula benefit along with the Pension Plus and gainsharing account which use 3 different investment return scenarios (7.2%, 7.7% and 6.7%)

“Reduced” Annual Pension Examples

Group C Member Hired: 1/2021 Retired: 1/2052	**Group D Member** Hired: 1/2022 Retired: 1/2052		
Age 58 with 31 YOS 5 YR FAS: $98,045	**Age 57 with 30 YOS** 10 YR FAS: $87,942		
	Return: 7.2%	Return: 7.7%	Return: 6.7%
RMA Balance: **N/A**	RMA Balance: **$59,473**	RMA Balance: **$59,473**	RMA Balance: **$59,473**
Annual Pension: **$53,532**	Annual Pension: $32,715 DB $3,662 ($78,671) PP **$36,377**	Annual Pension: $32,715 DB $4,685 ($100,627) PP **$37,400**	Annual Pension: $32,715 DB $3,220 ($69,178) PP **$35,935**
FAS Replacement: **54.60%**	FAS Replacement: **41.40%**	FAS Replacement: **42.50%**	FAS Replacement: **40.90%**
Payments to Age 85: **$1,445,364**	Payments to Age 85: **$1,018,556**	Payments to Age 85: **$1,047,200**	Payments to Age 85: **$1,006,180**

"Unreduced" Annual Pension Examples

Group C Member Hired: 1/2021 Retired: 1/2053	Group D Member Hired: 1/2022 Retired: 1/2057		
Age 59 with 32 YOS 5 YR FAS: $101,232	**Age 62 with 35 YOS** 10 YR FAS: $103,192		
	Return: 7.2%	Return: 7.7%	Return: 6.7%
RMA Balance: **N/A**	RMA Balance: **$80,932**	RMA Balance: **$80,932**	RMA Balance: **$80,932**
Annual Pension: **$71,267**	Annual Pension: $72,235 DB $5,738 ($111,726) PP **$77,973**	Annual Pension: $72,235 DB $7,890 ($153,619) PP **$80,125**	Annual Pension: $72,235 DB $5,085 ($99,021) PP **$77,320**
FAS Replacement: **70.40%**	FAS Replacement: **75.56%**	FAS Replacement: **77.65%**	FAS Replacement: **74.92%**
Payments to Age 85: **$1,852,942**	Payments to Age 85: **$1,793,379**	Payments to Age 85: **$1,842,875**	Payments to Age 85: **$1,778,360**

Next Steps

Board discussion and approval

Stakeholder engagement

Thank you

Questions?

Board Meeting V.B.

OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM
277 EAST TOWN STREET, COLUMBUS, OH 43215-4642
1-800-222-PERS (7377)
www.opers.org

MEMORANDUM

DATE: August 13, 2019

TO: OPERS Retirement Board Members

FROM: Karen Carraher, Executive Director
Allen Foster, Director of Benefits

RE: **V. Discussion Items:**
B. Cost of Living Adjustment (COLA)

Purpose – The purpose of this memorandum is to reintroduce to the Board the past discussions and actions taken regarding the cost of living adjustment (COLA). Since 2017, when the topic was first introduced to the Board, the financial condition of the retirement system has declined. As such, it is appropriate to review and discuss possible future changes to the COLA.

Background – In 2017, the Board reviewed and approved changes to the COLA for all current and future retirees. Over several months that year, the Board heard presentations on the history of the COLA, the purpose of the COLA in comparison to the Consumer Price Index (CPI) and the relationship of the COLA to actual inflation. In September of 2017, several packages of proposed changes to the COLA were presented and in October, the Board approved a modified version of one of those packages to be drafted into legislation. After introduction of House Bill 413 in November, the bill received three hearings and no further action was taken on the bill by the Ohio legislature.

Since then, the retirement system's funding measures have declined, and staff is reintroducing proposed changes to the COLA for the Board's review and consideration.

Issues-

Declining funding measures - As of the end of 2018, OPERS is 77.5% funded with a 27-year amortization period. When the COLA changes were last presented to the Board, the funded ratio was 80.1% with 19 amortization years (2016). At that time, OPERS had unrealized investment losses of $2.77 billion. The positive investment return of 2017 offset those losses. However, the negative 2018 return puts OPERS in the same situation with unrealized losses. As of the end of 2018, the unrealized investment losses were $2.86 billion.

OPERS' unfunded actuarial accrued liability (UAAL) has increased since COLA changes were last approved by the Board. As of year-end 2016, the UAAL was $19.9 billion. As of the end of 2018, the UAAL is $24.4 billion—the largest in OPERS history.

Due to the unrealized losses of $2.86 billion, if OPERS achieves the 7.2% assumed rate of return over the next three years the amortization period will increase to 31 years and the funded ratio would decrease to 75.7%. Additionally, the impact of a year in which the assumed rate of return of 7.2% is not achieved will further reduce the funded ratio and increase the amortization period outside the 30-year statutory requirement.

Currently the total employer contribution is being used to fund pension with no funding to health care. In 2017, OPERS was using 1% of the employer contribution to fund health care. Since OPERS has a fixed statutory contribution rate, the allocation of the employer contribution between pension and health care is important and can provide a lever to use in down times. However, since none of the employer contribution is currently funding health care there is no lever in the event of down markets.

Finally, the Traditional Pension (TP) Plan is a mature retirement plan whose active to retiree ratio is steadily falling and will be 1:1 in the next fifteen years. The TP Plan is cash flow negative—the benefit payments exceed the incoming contributions—and, as such, OPERS is increasingly reliant on investment income in a volatile investment market. In the next 10 years, approximately 51% of our accrued actuarial liabilities will come due--$55 billion—which is over half of our assets.

In summary, OPERS funding position is weaker than it was the last time the Board considered COLA changes suggesting an even greater need for re-consideration. OPERS has no ability to redirect future employer contributions and will exceed the 30-year statutorily required amortization period if all investment assumptions are met. The risk of a market downturn would further increase the amortization period.

Past actions to improve funding measures - As a reminder, many past actions have been taken to improve the system's long-term solvency. In 2012, the Ohio legislature enacted Senate Bill 343 to improve funding, reduce subsidization of benefits, and to maintain intergenerational equity. Areas changed for active members included:

- Age & service eligibility increased
- Age & service calculation modified
- Five-year FAS
- CPI-based COLA
- Actuarial reduction factors
- FAS spiking (CBBC)
- Minimum earnable salary increased
- Disability program changes
- Liability cost service purchases
- Joint retirement/intersystem transfers
- Survivor benefit eligibility

Active members have already significantly shared in the reduction of the UAAL through these changes, which generated $3.2 billion in savings to the system. Additionally, further changes are being considered for members hired in the future.

Despite past actions taken to improve the system's long-term solvency, OPERS continues to be faced with declining funding measures and increased UAAL. To generate additional savings from the active member population would require OPERS to engage in a complete plan redesign of active members' future benefits, reducing the value of benefits relative to the contributions to those benefits. Such changes increase the possibility of members initiating a plan change. Currently, **246,000** active members are eligible to plan change and all new members are eligible to make an initial plan selection. The impact of significant number of plan changes would be harmful to the TP plan.

Purchasing power and inflation – The purpose of the COLA is to mitigate but not fully offset the erosion of a pension's purchasing power over time. The 2017 analysis of OPERS' COLA compared to CPI-W showed that OPERS members who retired in 1995 or after have received a COLA that exceeded inflation. During long periods of low inflation, a fixed COLA will naturally outpace inflation over the duration of retirement. Coupled with longer life expectancies of the retiree population, the subsidization to the pension above inflation is magnified.

In 2019, the post-legislation period retirees' COLAs are based on the increase in CPI-W, not to exceed 3%. CPI-W is index for Urban Wage Earners & Clerical Workers and is also the basis for Social Security's COLA. This compares with members retiring prior to 2013 in which the COLA is fixed at 3%. For many retirees in that category, their initial COLA was not a fixed 3%, but was increased to the fixed 3% as benefit enhancements were made. Staff is sensitive to the fact that a 3% simple COLA is not compounding and has the potential to decrease purchasing power over time. OPERS COLA has never been compounding and the COLA was never intended to fully offset inflation. The first COLAs were granted a rate significantly lower than overall inflation (1.5% CPI based COLA at a time when the inflation was approximately 9%).

Please refer to August through October 2017 Board materials for additional information.

<u>Options –</u> During the August through October 2017 Board meetings, the Board evaluated various packages. For purposes of beginning this discussion, staff are presenting the final four packages updated with slight modifications and updated savings estimates.

Package 1 (Cap 2.0%) – Savings $4.47 Billion

- CPI-based COLA capped at 2.0%
- 85% purchasing power restored
- First COLA for future retirees delayed to 2nd pension anniversary, new retirees who avoid delayed first COLA will experience one-year freeze

Package 2 (Cap 2.5%) – Savings $3.02 Billion

- CPI-based COLA capped at 2.5%,
- 85% purchasing power restored
- First COLA for future retirees delayed to 2nd pension anniversary, new retirees who avoid delayed first COLA will experience one-year freeze

Package 3 (Freeze 2 years) – Savings $3.44 Billion

- No COLA's granted during calendar 2022-2023 (2-year freeze)
- Following the freeze, future COLA's would return to current conditions*
- 85% purchasing power restored
- First COLA for future retirees delayed to 2nd pension anniversary (all retirees subject to 2-year freeze)

Package 4 (Freeze 3 years) – Savings $4.18 Billion

- No COLA's granted during calendar 2022-2024 (3-year freeze)
- Following the freeze, future COLA's would return to current conditions*
- 85% purchasing power restored
- First COLA for future retirees delayed to 2nd pension anniversary (all retirees subject to 2-year freeze)

**The term "Current Conditions" is defined to mean that retirees receiving a fixed 3% COLA prior to the freeze would return to receiving a 3% COLA following the freeze. Retirees receiving a CPI-based COLA prior to the freeze would return to receiving a CPI-based COLA following the freeze period.*

Next Steps – Board discussion to review proposed package options and determine which options to present for Board action in September.

PERI
Public Employee Retirees, Inc.

August 8, 2019

Ms. Karen Carraher
Executive Director
Ohio Public Employees Retirement System
277 East Town St.
Columbus, Ohio 43215

Dear Director Carraher:

As a follow up to our meeting this morning and after much deliberation on these issues by my Board of Trustees, PERI will support Health Care Package 5 with an effective date of January 1, 2022. In addition, we highly recommend that your proposed (health care) Low Income Program be adopted and made as generous as possible to support the most vulnerable retirees.

PERI recognizes that although health care is a highly appreciated benefit, it is not a benefit protected by statute. Because PERI is committed to supporting OPERS' efforts to provide stability and greater solvency to the Health Care Fund, PERI recognizes that adjustments should be made to health care and pension fund plan design.

To this end, PERI is willing to support COLA Package 3 which provides for a two-year suspension on the payment of the COLA to take effect January 1, 2022 and expire on December 31, 2023. We support Package 3 with the following clarification to the proposal: at the conclusion of the two-year suspension, the COLA will revert back to current conditions.

We also encourage OPERS to adopt additional plan design changes for actives and future public sector employees to further strengthen the pension's funded status and provide stability for years to come.

In summary, PERI supports COLA Package 3 with the stipulation that the COLA revert back to the current conditions and Health Care Package 5.

PERI's support of the elements in this letter is contingent on their adoption by the OPERS Board of Trustees. Material changes that may be adopted by OPERS Board of Trustees that adversely impact retirees beyond those changes presented here, may cause the PERI Board to revoke its approval.

Again, we thank you for working with PERI on this matter and we look forward to continuing our partnership with OPERS.

Sincerely,

Geoff Hetrick
President and CEO

659-F Park Meadow Road Westerville, Ohio 43081 614-891-6868 800-247-7374 www.operi.org

Cost of Living Adjustment (COLA)

August 21, 2019

Karen Carraher, Executive Director
Allen Foster, Director of Benefits

OPERS

Agenda

- Review Funding Path Forward
- Summary of pension changes to date and under consideration
- Current unfunded liability
- COLA Options & Packages
- Next steps

Funding Path Forward

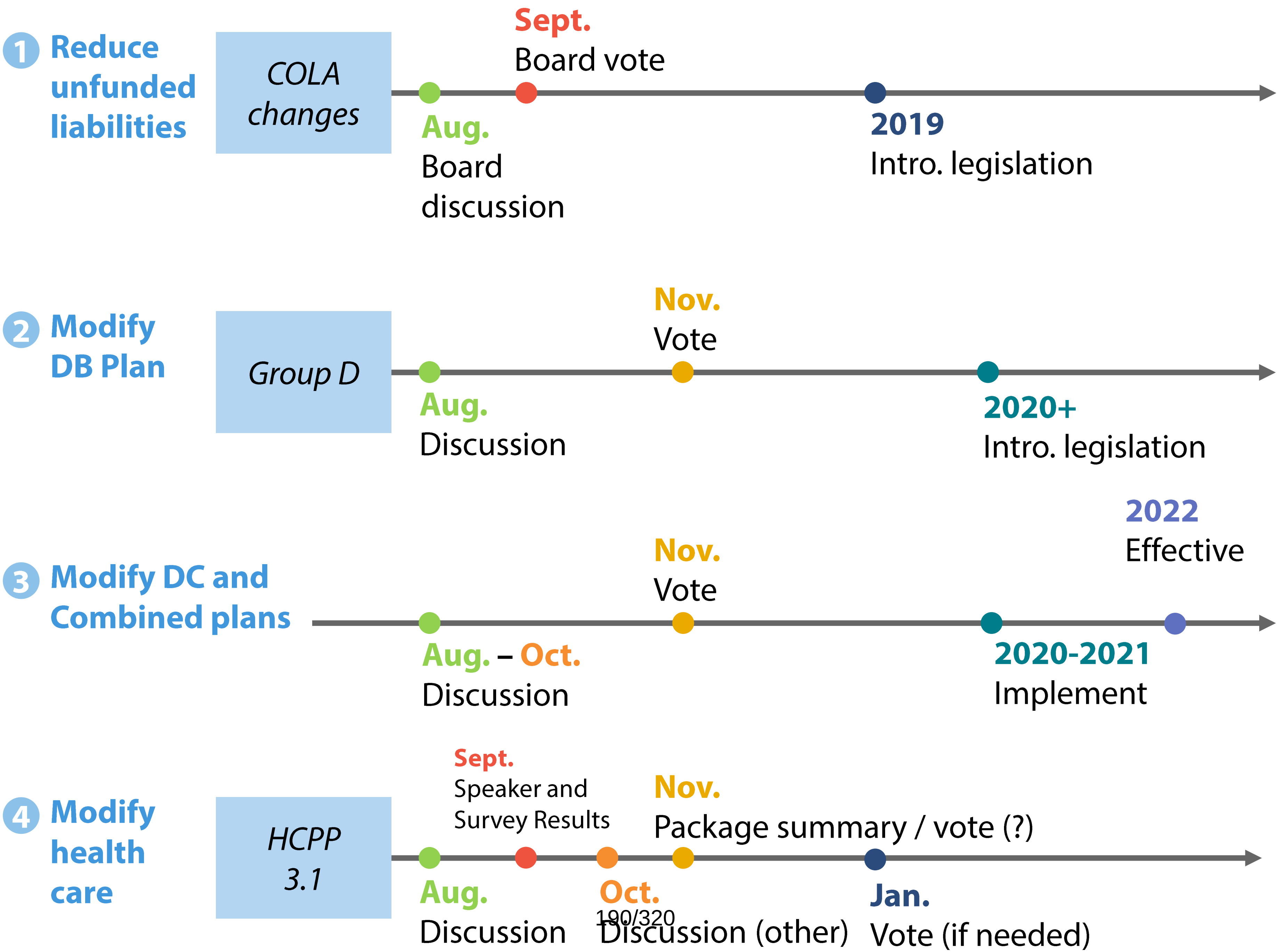
Possible Path Forward

1. Take steps to address/reduce current UAAL

2. Modify DB plan to provide more flexibility to expand and contract and establish reserves

3. Modify Member Directed and Combined Plans to address plan issues

4. Modify health care plan to extend the solvency and require lower portion of employer contribution rate (currently over 5%)



1 Reduce unfunded liabilities
COLA changes
Sept.
Board vote
Aug.
Board discussion
2019
Intro. legislation
2 Modify DB Plan
Group D
Nov.
Vote
Aug.
Discussion
2020+
Intro. legislation
3 Modify DC and Combined plans
2022
Effective
Nov.
Vote
Aug. – Oct.
Discussion
2020-2021
Implement
4 Modify health care
HCPP 3.1
Sept.
Speaker and Survey Results
Nov.
Package summary / vote (?)
Aug.
Discussion
Oct.
Discussion (other)
Jan.
Vote (if needed)

Summary of Changes Made
Active Benefits

Major Components of S.B. 343

Effective January 7, 2013

1. Age & Service Reduction Factors
2. Age & Service Eligibility
3. Benefit Formula
4. Final Average Salary
5. Cost of Living Adjustment

S.B. 343 Transition Plan

- S.B. 343 introduced three separate retirement groups
- Groups are determined by attainment of age and service credit eligibility requirements prior to the legislation *(55/25, 60/5, any age/30)* by the dates stated for each group

Pre-APD Retiree	Group A	Group B	Group C
167,629	51,805	12,951	306,968
Members retired prior to Jan. 1, 2013.	**Members eligible to retire before Jan. 7, 2018.**	**Members with 20 years of service credit on Jan. 7, 2013, or eligible to retire after Jan. 7, 2018 but on or before Jan. 7, 2023.**	**Eligible to retire after Jan. 7, 2023 or members hired on or after Jan. 7, 2013.**

Impact of S.B. 343

OPERS Transition Plan

Group A is subject to new:

1. COLA based on CPI, not to exceed 3%

Group B is subject to new:

1. Age & Service Eligibility requirements
2. Age & Service Reduction Factors
3. COLA based on CPI, not to exceed 3%

Group C is subject to new:

1. Age & Service Eligibility requirements
2. Age & Service Reduction Factors
3. Benefit formula – 2.2% for first 35 years
4. Final Average Salary – 5 years
5. COLA based on CPI, not to exceed 3%

Impact of S.B. 343

Active members (future retirees) are required to:

1) Pay more for their retirement

2) Work longer

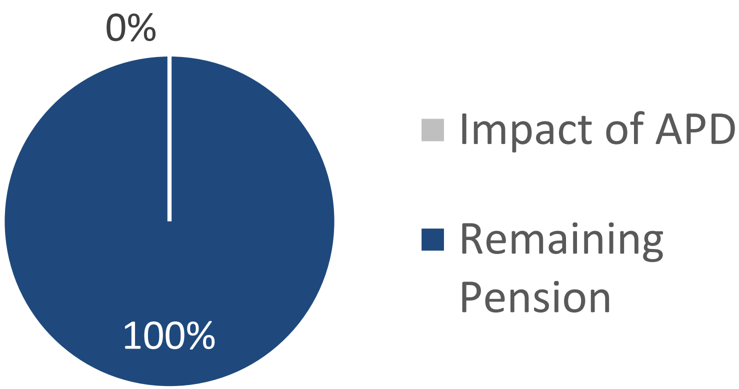
Current Retiree	Future Retiree
DOB: 1/28/60	DOB: 1/25/67
Began Membership: 1993	Began Membership: 2000

Age 57 with 25 Years of Service

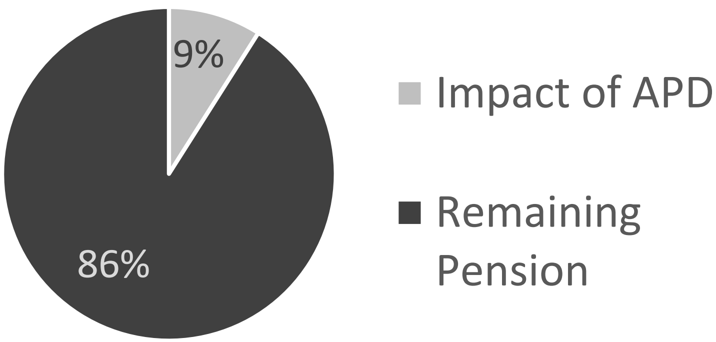
Current Retiree	Future Retiree
Total Contributions: **$101,700**	Total Contributions: **$112,500**
Reduced FAS %: **41.20%**	Reduced FAS %: **25.90%**
Reduced Pension: **$1,545** per month	Reduced Pension: **$971** per month
28 Years of Pension Payments to Age 85: **$519,120**	28 Years of Pension Payments to Age 85: **$326,340**

Impact of Pension Changes – By Group

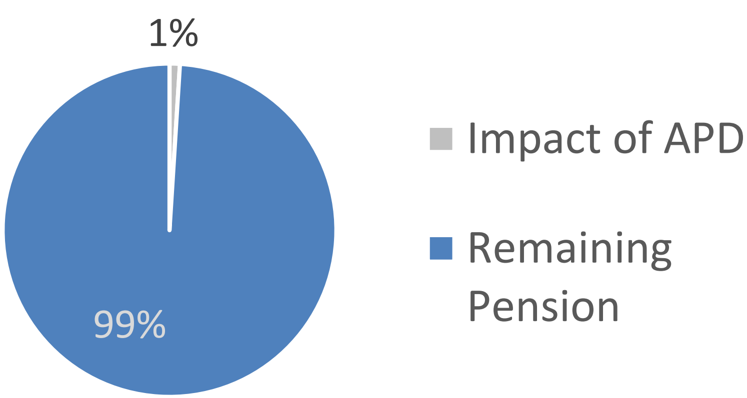
Pre-APD Retirees



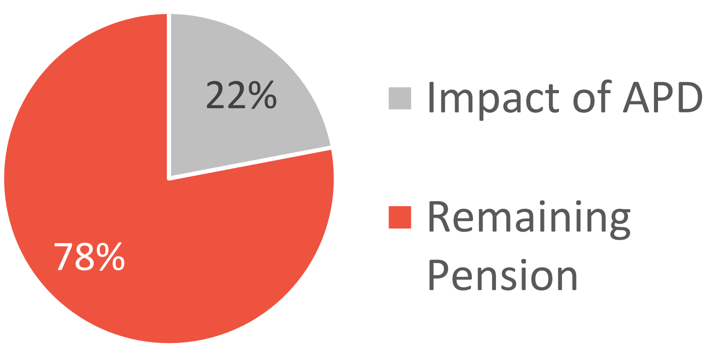
Group B



Group A



Group C



Impact of Pension Changes – To UAAL

40% Reduction in UAAL from Active Member Changes

Savings of
$3.2 B

Reduced Active Member UAAL by
40%

Similar reduction in UAAL for retirees would require savings of $6 billion

Group D under Consideration

Additional Changes to active members (future retirees) are under consideration. These changes referred to as Group D would impact members hired on or after January 1, 2022. These proposed changes include:

- Higher member contribution rates
- Increased years of service for eligibility
- Increased years of service for final average salary
- Lower benefit multiplier
- Lower COLA
- Health care would be provided by funds accumulated in a member's retiree medical account (RMA) anticipated to be funded at 2% of the employer contribution rate

Combined and Member Directed Plan Changes Under Consideration

Changes Being Considered for the Combined and Member Directed Plans for new hires on or after 1/1/2022 include:

Combined Plan Changes:

- Consolidate Combined Plan into Traditional Plan

Member Directed Plan Changes:

- Changes to the Vesting Schedule
- Changes to the Mitigating Rate
- Changes to Annuitization
- Changes to the Retiree Medical Account
- Changes to COLA

Summary

Changes To Date – Intergenerational Equity

- 2012 pension plan changes impacted active members only, saving approximately $4 billion
- Pre-2013 retirees were not impacted by the pension plan changes
- 2013 Health care changes impacted all members – both actives and retirees
- Pre-2013 retirees were grandfathered into health care for eligibility purposes and minimum benefit level

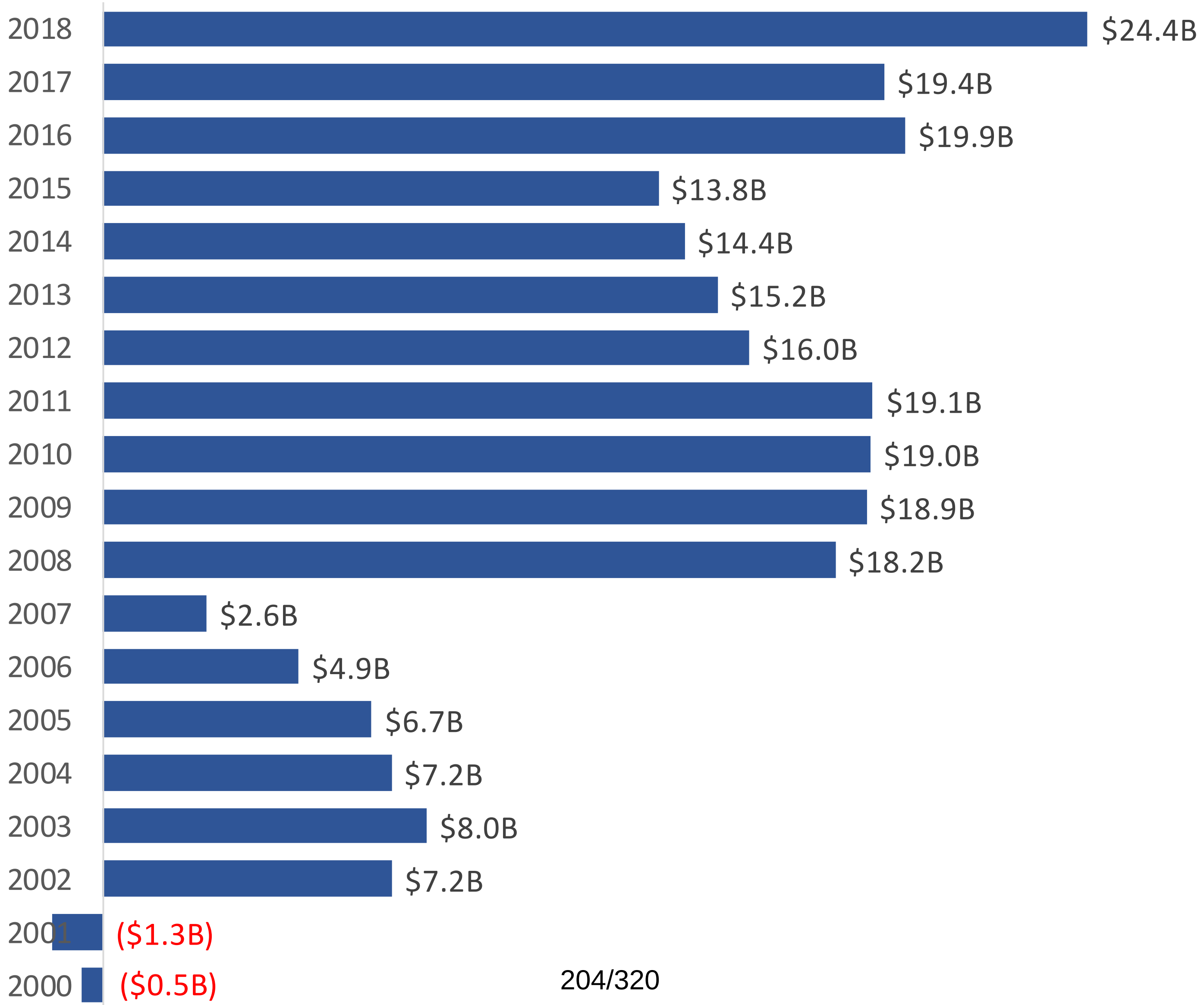
Summary

Changes To Date – Intergenerational Equity

- Additional changes to active members would require another major benefit design overhaul
- Additional reductions to active member benefits may have a destabilizing impact on defined benefit plan (80% of active members eligible to plan change and all new members)
- A new Group D being proposed with increased contribution rate
- Changes also being recommended to Member Directed and Combined Plans

Unfunded Accrued Actuarial Liability (UAAL)

UAAL


2018 $24.4B
2017 $19.4B
2016 $19.9B
2015 $13.8B
2014 $14.4B
2013 $15.2B
2012 $16.0B
2011 $19.1B
2010 $19.0B
2009 $18.9B
2008 $18.2B
2007 $2.6B
2006 $4.9B
2005 $6.7B
2004 $7.2B
2003 $8.0B
2002 $7.2B
2001 ($1.3B)
2000 ($0.5B)

Recap - Why Make Changes Now?

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Amortization Years	Total Defined Benefit Return	Unrealized Gain/(Loss)
2018	$ 108,705	$ 84,287	$ 24,418	78%	27	(2.99%)	$ (2,860)
2017	$ 106,090	$ 83,292	$ 22,798	79%	25	16.82%	$ 3,813
2017	$ 102,656	$ 83,292	$ 19,364	81%	18	16.82%	$ 3,813
2016	$ 100,166	$ 80,280	$ 19,886	80%	19	8.31%	$ (2,766)

- If OPERS realizes the 7.2% assumed rate of return over the next 3 years, the amortization period will increase to 31 years and the funded ratio would decrease to 75.7%.

Goals

Reduce $24 Billion unfunded pension liability
Specific target not set

- Maintain intergenerational equity
- Ability to react to market volatility and life expectancy of retirees
- Continue to be proactive

Potential COLA Packages & Options

Options Grouped Into Packages Based on:

Cap

- CPI-based
- Cap lower than 3%
- Additional features

Freeze

- Period of years with no COLA
- Return to Current Conditions following freeze period
- Additional features

Package 1 (Cap 2.0%)

Savings $4.47 B

- CPI-based COLA capped at 2.0%
- 85% purchasing power restored
- First COLA - delay for future retirees to 2nd pension anniversary 24 months after retirement.

Package 2 (Cap 2.5%)

Savings $3.02 B

- CPI-based COLA capped at 2.5%
- 85% purchasing power restored
- First COLA - delay for future retirees to 2nd pension anniversary 24 months after retirement.

Package 3 (Two-Year Freeze)

Savings $3.44 B

- Freeze COLA for 2 years (no COLAs for 2022 and 2023)
- After freeze, return to current conditions
- 85% purchasing power restored
- First COLA - delay for future retirees to 2nd pension anniversary 24 months after retirement.

"Current Conditions" is defined to mean that retirees receiving a fixed 3% COLA prior to the freeze will receive a 3% COLA following the freeze period. Retirees receiving a COLA subject to a cap will return to receiving a COLA subject to a cap following the freeze period.

Package 4 (Three-Year Freeze)

Savings $4.18 B

- Freeze COLA for 3 years (no COLAs for 2022, 2023 and 2024)
- After freeze, return to current conditions
- 85% purchasing power restored
- First COLA - delay for future retirees to 2nd pension anniversary 24 months after retirement.

"Current Conditions" is defined to mean that retirees receiving a fixed 3% COLA prior to the freeze will receive a 3% COLA following the freeze period. Retirees receiving a COLA subject to a cap will return to receiving a COLA subject to a cap following the freeze period.

Discussion

Thank you

Board Meeting V.C.

OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM
277 EAST TOWN STREET, COLUMBUS, OH 43215-4642
1-800-222-PERS (7377)
www.opers.org

MEMORANDUM

DATE: August 12, 2019

TO: OPERS Retirement Board Members

FROM: John Blue, Lead Portfolio Manager – External Public Markets

RE: **V. Discussion Items:**
C. Hedge Fund Policy and Benchmark Review

Purpose
Review Staff's recommended revisions to the Hedge Funds Policy and Custom Benchmark. Staff will seek approval for these changes at the September meeting.

Background
The Strategic Asset Allocation for the Defined Benefit Plan approved in early 2019 reduced the allocation to Hedge Funds from 8% to 5%. The portfolio will adjust to the new target over the next six months. This change in allocation provides an opportunity to further reduce the equity beta in the Hedge Fund portfolio, providing better diversification to the Total Fund.

Staff is recommending two changes related to Hedge Funds. Due to the advance notice deadlines to redeem from hedge funds, we are asking for approval for these changes in September in order to implement the asset allocation changes at year-end. The changes include:

1) Strategy Targets: Staff recommends revising the strategy targets to eliminate Equity Hedge strategies from the custom benchmark. Equity Hedge strategies tend to have the highest equity beta of the four hedge fund strategies and provide the least amount of diversification. This change will allow Staff to construct a portfolio with greater exposure to funds that are more diversifying in nature.

The current and recommended strategy targets are as follows:

	Current Target	**Recommended Target**	**Recommended Policy Range**
Equity Hedge	20%	0%	0-15%
Event Driven	30%	30%	0-40%
Relative Value	25%	35%	0-50%
Macro / Tactical	25%	35%	0-50%

The new strategy targets would be effective on January 1, 2020 and will be included in the 2020 Annual Investment Plan.

2) Leverage Constraint: The Hedge Funds Policy limits leverage to 6x. With the recommended change in strategy weightings we are reducing exposure to equity hedge strategies. While equity hedge strategies have the highest beta, they also have a relatively low amount of leverage.

   Reducing exposure to equity hedge strategies will increase the average portfolio leverage to a level which is higher than current maximum stated in the Hedge Funds Policy. In order to focus the portfolio on more diversifying funds, we recommend increasing the maximum leverage level from 6x to 9x. This change would be effective October 1, 2019 and would be included in the revised Hedge Funds Policy.

Next Steps
We are requesting the Board approve these recommendations at the September Board meeting. The changes will allow Staff to reduce the Hedge Funds allocation to its new target and improve the portfolio's diversification characteristics.

Ohio Public Employees Retirement System

Hedge Funds Policy
September 2019~~March 2018~~

TABLE OF CONTENTS

Revision History

Hedge Funds Policy Established	**July 21, 2010**
Policy Revised	**December 15, 2010**
Policy Revised	**March 21, 2012**
Policy Revised	**March 20, 2013**
Policy Revised	**February 19, 2014**
Policy Revised	**February 18, 2015**
Policy Revised	**January 20, 2016**
Policy Revised	**February 15, 2017**
Policy Revised	**March 21, 2018**
Policy Revised	**September 18, 2019**

I. SCOPE

This Policy applies to investments in the Hedge Funds sub-asset class by the Ohio Public Employees Retirement System ("OPERS") Defined Benefit Fund ("DB Fund") and Health Care 115 Trust Funds ("HC Fund").

II. PURPOSE

This Policy provides the broad strategic framework for managing the Hedge Funds sub-asset class.

III. INVESTMENT PHILOSOPHY

Hedge fund investments are structured to preserve capital and provide competitive returns with a low correlation to traditional asset classes, offering~~providing~~ diversification and~~,~~ reduced volatility of plan returns. ~~and long-term return enhancement.~~

IV. ALLOCATION

The allocation to the Hedge Funds sub-asset class is specified in the Investment Objectives and Asset Allocation Policy for the DB and HC Funds. Investments within the Hedge Funds sub-asset Class may be made across multiple asset classes. For asset allocation measurement purposes, those exposures are only reflected within the Hedge Funds allocation.

Hedge fund investments may also be used in portfolios other than those within the Hedge Funds sub-asset class in order to achieve portfolio-specific objectives. In these instances, the hedge fund investments shall be incorporated into the Hedge Funds sub-asset class for asset allocation purposes. These investments will be excluded from provisions of the Hedge Funds Policy specific to the Hedge Funds sub-asset class including Section VII and Section VIII.

V. PERMISSIBLE INSTRUMENTS

Investments in hedge funds may include equity hedge, event driven, relative value and macro/tactical, and hedge fund beta/replication strategies.

Investments in each fund will be governed by the hedge fund's legal documents and side letters or investment guidelines in the case of separate accounts.

VI. THIRD-PARTY MARKETING

OPERS expects its general partners to behave legally and ethically. OPERS requires that third-party marketers used by general partners be regulated by appropriate legal authorities and subject to disciplinary actions by them. OPERS will confirm in its side letter, investment management agreement or other contractual arrangement, that a manager being engaged by OPERS has a requirement to provide the details of marketing arrangements, political contributions, or similar payments involving individuals, placement agents, third-party marketers and the like with respect to OPERS investments with the manager.

VII. STRUCTURE

Investments in the Hedge Funds sub-asset class are diversified by manager and strategy in order to reduce the impact from any one strategy being out of favor. Strategy diversification will be monitored by Investment Staff ("Staff") and included on quarterly reports. The market value range for each strategy held within the sub-asset class is as follows:

Strategy	**Range**
Equity Hedge	0-15~~35~~%
Event Driven	0-40%
Relative Value	0-50~~35~~%
Macro/Tactical	0-50~~35~~%

Staff, in conjunction with the Due Diligence Consultant, will classify each hedge fund investment within the Hedge Funds sub-asset class based on the following strategy descriptions:

A. Equity Hedge

Equity hedge strategies maintain positions both long and short in primarily equity and equity derivative securities. A wide variety of investment processes can be employed to arrive at an investment decision, including both quantitative and fundamental techniques; strategies can be broadly diversified or narrowly focused on specific sectors and can range broadly in terms of levels of net exposure, leverage employed, holding period, concentrations of market capitalizations and valuation ranges of typical portfolios.

B. Event Driven

Event driven managers maintain positions in companies currently or prospectively involved in corporate transactions of a wide variety including but not limited to mergers, restructurings, financial distress, tender offers, shareholder buybacks, debt exchanges, security issuance or other capital structure adjustments. Security types can range from most senior in the capital structure to most junior or subordinated, and frequently involve additional derivative securities.

Event driven exposure includes a combination of sensitivities to equity markets, credit markets and idiosyncratic, company specific developments. Investment insights are typically predicated on fundamental characteristics (as opposed to quantitative), with the realization of the thesis predicated on a specific development exogenous to the existing capital structure.

C. Relative Value

Relative value managers maintain positions in which the investment thesis is predicated on the realization of a valuation discrepancy in the relationship between multiple securities. Managers employ a variety of fundamental and quantitative techniques to establish investment insights, and security types range broadly across equity, fixed income, derivative or other security types. Fixed income strategies are typically quantitatively driven to measure the existing relationship between instruments and, in some cases, identify attractive positions in which the risk adjusted spread between these instruments represents an attractive opportunity for the investment manager.

D. Macro/Tactical

Macro/Tactical managers trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency, and commodity markets. Managers employ a variety of techniques, both discretionary and systematic analysis, combinations of top down and bottom up disciplines, quantitative and fundamental approaches, or long and short term holding periods.

VIII. PERFORMANCE OBJECTIVES

The performance objective for the Hedge Funds sub-asset class is a custom benchmark using the HFRI single strategy indices weighted by the target allocations listed in the Annual Investment Plan.

IX. RISK MANAGEMENT

Risk is managed through a combination of quantitative and qualitative measures. Staff shall establish appropriate risk metrics for each hedge fund for risk measurement purposes. Proper risk management requires an adequate level of transparency from hedge funds into the underlying portfolios. Requirements include the following:

- All hedge funds must provide risk parameter and performance reporting on a monthly basis.
- Staff seeks advice from legal counsel, the Due Diligence Consultant and/or the Investment Advisor to determine if audited financial statements are required based on the specific structure of each investment.
- Staff establishes position-level transparency targets for the Hedge Funds sub-asset class.

A. Market Risk

The Hedge Funds sub-asset class is designed to have a low overall level of sensitivity to broad market risk factors such as equity markets, interest rates, and commodity prices. Risk management processes include the monitoring of risk factors at both the individual fund and Hedge Fund sub-asset class level.

B. Manager Risk

Staff may work with a Due Diligence Consultant and/or an Investment Advisor to identify hedge funds using a process approved by the Chief Investment Officer ("CIO"). In addition to the investment due diligence process, each hedge fund will undergo an operational due diligence review prior to funding to evaluate non-investment related risk factors. The allocation to each hedge fund manager in the Hedge Funds sub-asset class is limited as follows:

Fund Limit: 12% of the Hedge Funds sub-asset class market value

C. Liquidity Risk

Liquidity risk includes both the underlying holdings in a hedge fund and the provisions for making redemptions from the hedge fund. Redemption provisions will be evaluated for consistency with underlying security holdings in order to reduce the risk of forced selling of holdings at inopportune times caused by other investors in the hedge fund. Staff will monitor liquidity provisions of each individual hedge fund including lock-ups, gates, and withdrawal restrictions and report characteristics of the Hedge Funds Sub-Asset Class on a quarterly basis.

D. Leverage Risk

The use of leverage and the ability to short securities are intrinsic characteristics of hedge funds. Hedge fund managers may use leverage to implement their strategies and to control risk within the portfolio. Staff establishes an acceptable level for leverage at the Hedge Funds sub-asset class level and monitors leverage at both the individual hedge fund and total sub-asset class levels. Fund of hedge fund managers are not permitted to add leverage (in addition to that of the underlying hedge funds) without written consent from OPERS. The use of derivatives shall comply with OPERS Derivatives Policy.

Leverage can be defined in several ways and the measure will vary widely depending on the strategy and its associated liquidity, and by manager. Using a consistent leverage measurement basis that is considered to be market best practice, Staff expects the sub-asset class leverage to be ~~within a range of 2 to 5 times, with~~ a maximum level of 9~~6~~ times.

Staff monitors sub-asset class and manager leverage monthly and uses other measures of leverage to provide a more complete understanding of the portfolio's sensitivities.

E. Legal Risk

Hedge funds have unique characteristics which require legal expertise including the use of outside counsel. Limitations include:

- Assets may only be invested in structures which limit losses to the amount invested.
- All managers exercising investment discretion must be (i) registered with the United States Securities and Exchange Commission or with a similar regulator if they are domiciled outside of the United States or (ii) a bank regulated by a United States regulatory body.

F. Active Risk

Active Risk or tracking error is a statistical measure of the potential variability of a portfolio's return relative to that of the assigned benchmark. Hedge Funds does not lend itself to traditional quantitative measures of risk such as tracking error due to the use of a peer based index as a benchmark. The aggregate Hedge Funds Asset Class tracking error shall be evaluated over rolling three year periods and can range between 0 and 500 basis points.

X. ROLES AND RESPONSIBILITIES

A. OPERS Retirement Board

The OPERS Retirement Board ("Board") is ~~and its Investment Committee are~~ responsible for reviewing and approving this policy and any changes to it.

~~B. Investment Committee~~

~~The Investment Committee ("Committee") is responsible for reviewing this Policy and recommending changes related to it to the Board for its approval.~~ In addition, the Board~~Committee~~ is responsible for monitoring activities and reviewing reports related to this Policy.

~~C.~~B. Investment Staff

The Board delegates authority to the CIO to implement this Policy. Staff is responsible for monitoring the Policy and recommending changes to the Board.

Staff is also responsible for managing the hedge fund investments within the framework of the Board-approved Policies and within the goals and objectives adopted by the Board in the Annual Investment Plan.

~~D.~~C. Investment Compliance

The Investment Compliance area of Investment Accounting, Compliance & Risk ("IC") is responsible for monitoring compliance with this Policy, including guidelines established pursuant to it. If IC determines that an exception to this Policy has occurred, IC shall notify Staff, the CIO, the Executive Director and the ~~appropriate committee (e.g., Investment, Audit, Enterprise Risk, Corporate Governance) of the OPERS Retirement~~ Board.

~~E.~~D. Due Diligence Consultant

Staff hires a Due Diligence Consultant, who, at Staff's discretion, may assist with the public alternatives manager due diligence process, including identifying potential managers, conducting research on strategies, operational due diligence, and the ongoing monitoring of managers once they are hired. The Due Diligence Consultant serves an advisory role with Staff retaining investment discretion.

~~F.~~E. Investment Advisors

The roles of the Investment Advisors are specified in the Investment Objective and Asset Allocation Policies.

XI. MONITORING AND REPORTING

To ensure monitoring and compliance with this Policy, the following reports will be reviewed with the ~~appropriate committee (e.g., Investment, Audit, Enterprise Risk, Corporate Governance) of the OPERS Retirement~~ Board:

A. Quarterly

Performance reports – Investment Advisors~~,~~ and/ ~~Due Diligence Consultant~~ or Staff

Report on compliance – Investment Compliance Staff

Report on liquidity – Staff

B. Annually

OPERS Annual Investment Plan – Staff

Hedge Fund Policy and Benchmark Review

August 2019

OPERS

Upcoming Changes:

- Reduce Allocation to 5% by Year End
- Reduce Equity Beta in the Portfolio

We are asking for:

- Change in Strategy Targets in Custom Benchmark
- Change in Maximum Leverage

Role of Hedge Funds

From Hedge Fund Policy:

Hedge fund investments are structured to preserve capital and provide competitive returns with a low correlation to traditional asset classes, providing ***diversification***, reduced volatility of returns and long-term ***return enhancement***.

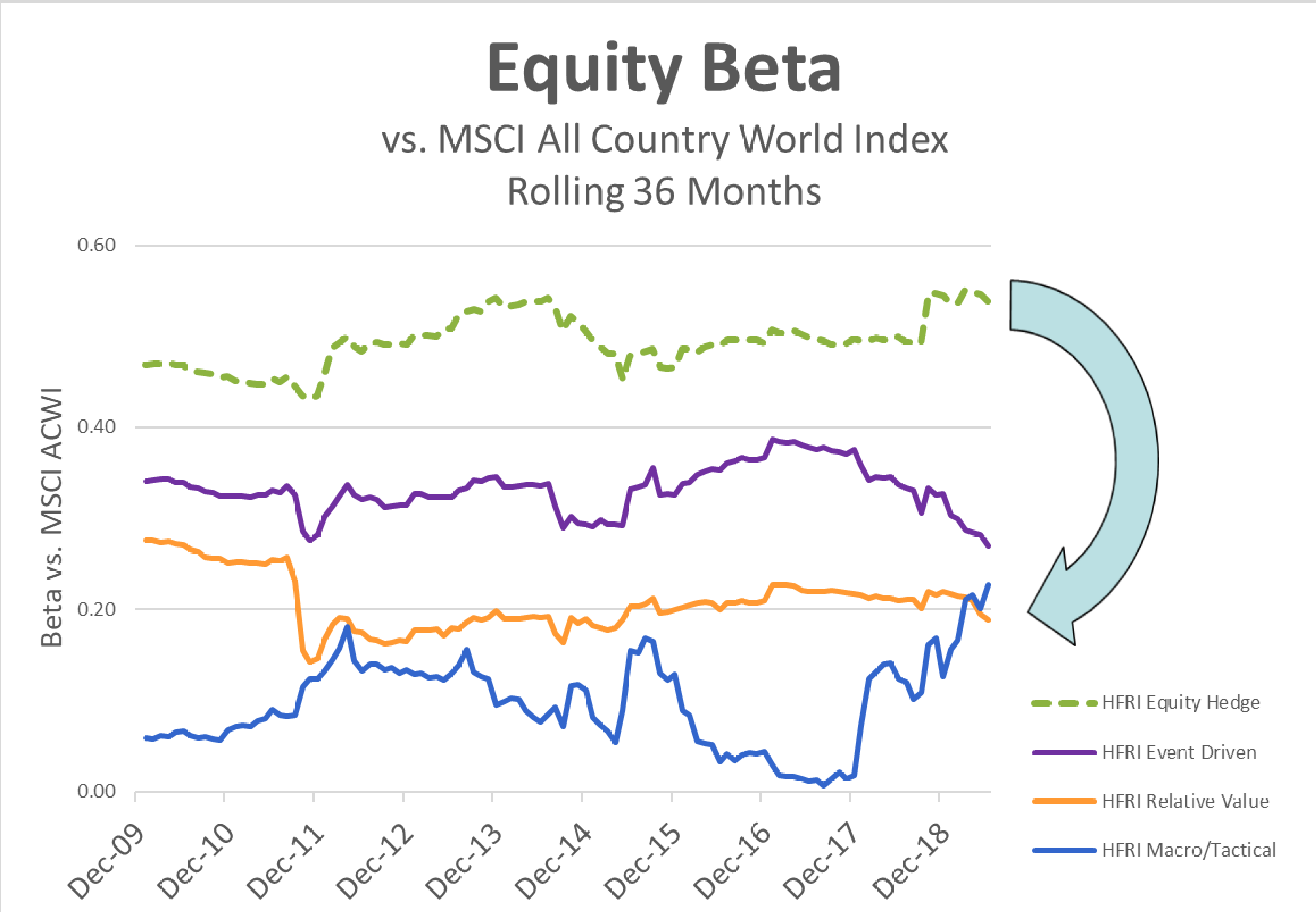
Revise to focus on diversification:

.... offering ~~providing~~ ***diversification*** and reduced volatility of plan returns. ~~and long-term **_return enhancement_**.~~

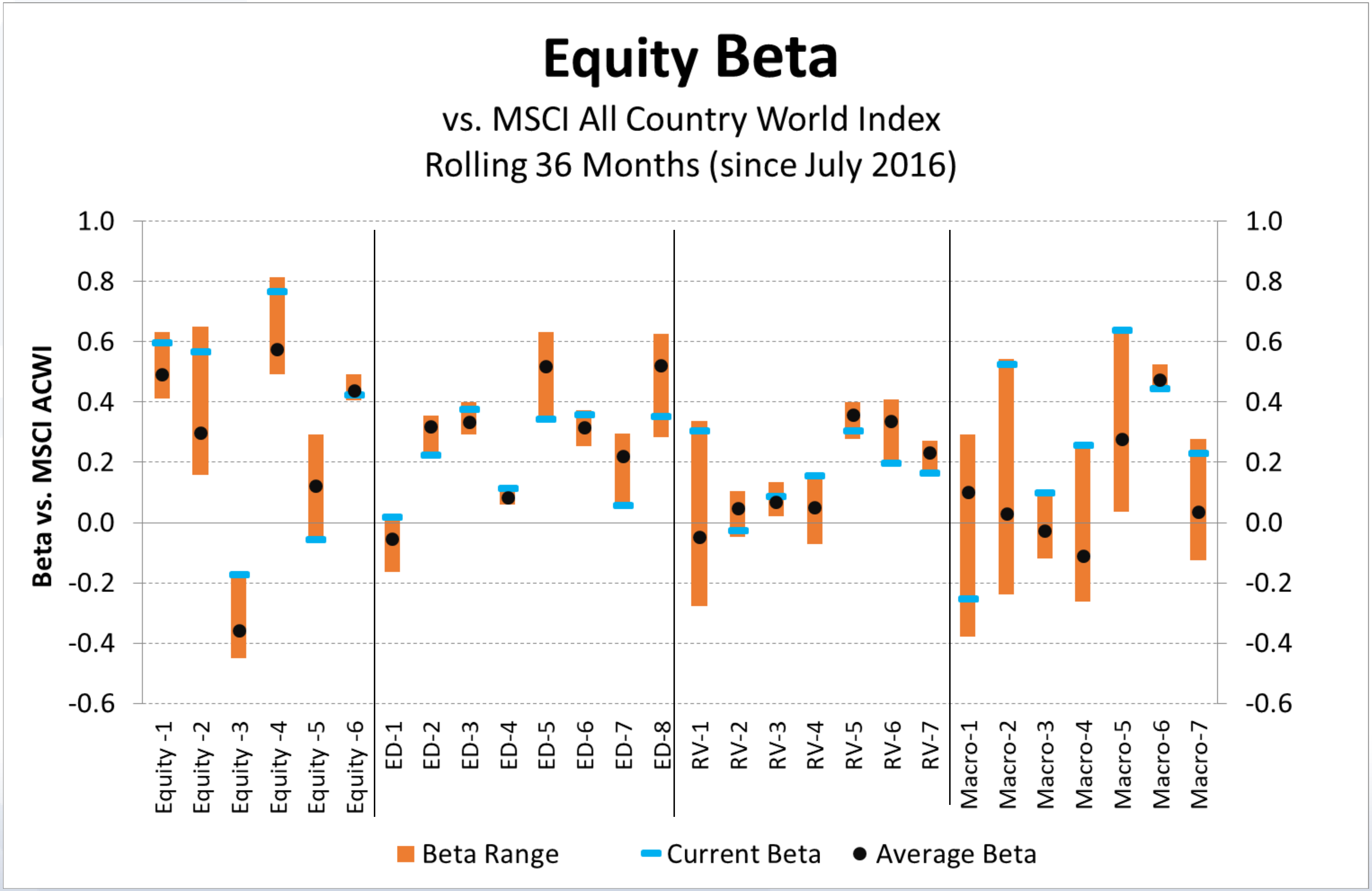
Emphasize Diversification

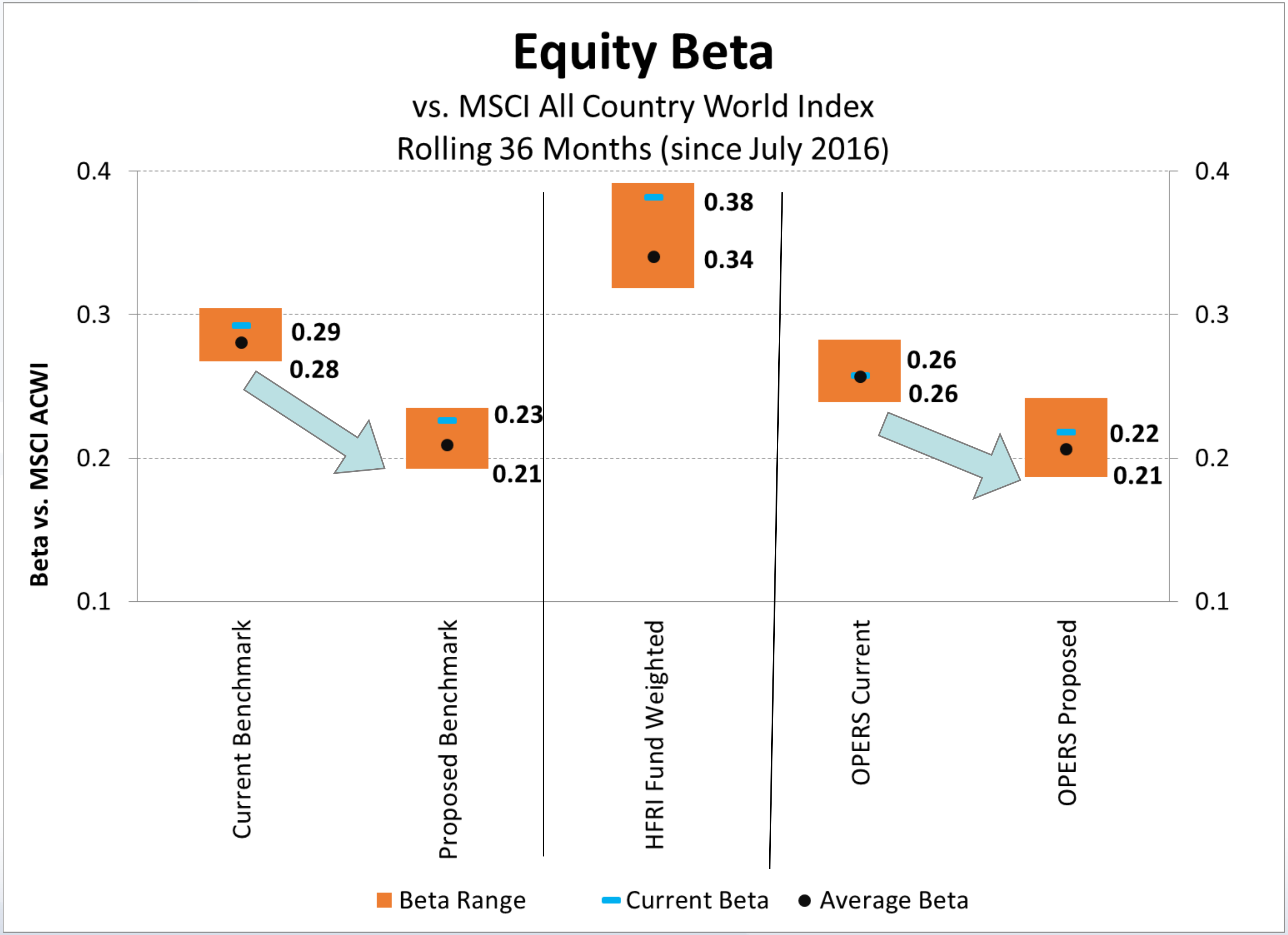
- Reallocate Equity Hedge exposure to Relative Value and Macro

	Current Target	Proposed Target	Proposed Policy Range
Equity Hedge	20%	0%	0-15%
Event Driven	30%	30%	0-40%
Relative Value	25%	35%	0-50%
Macro / Tactical	25%	35%	0-50%

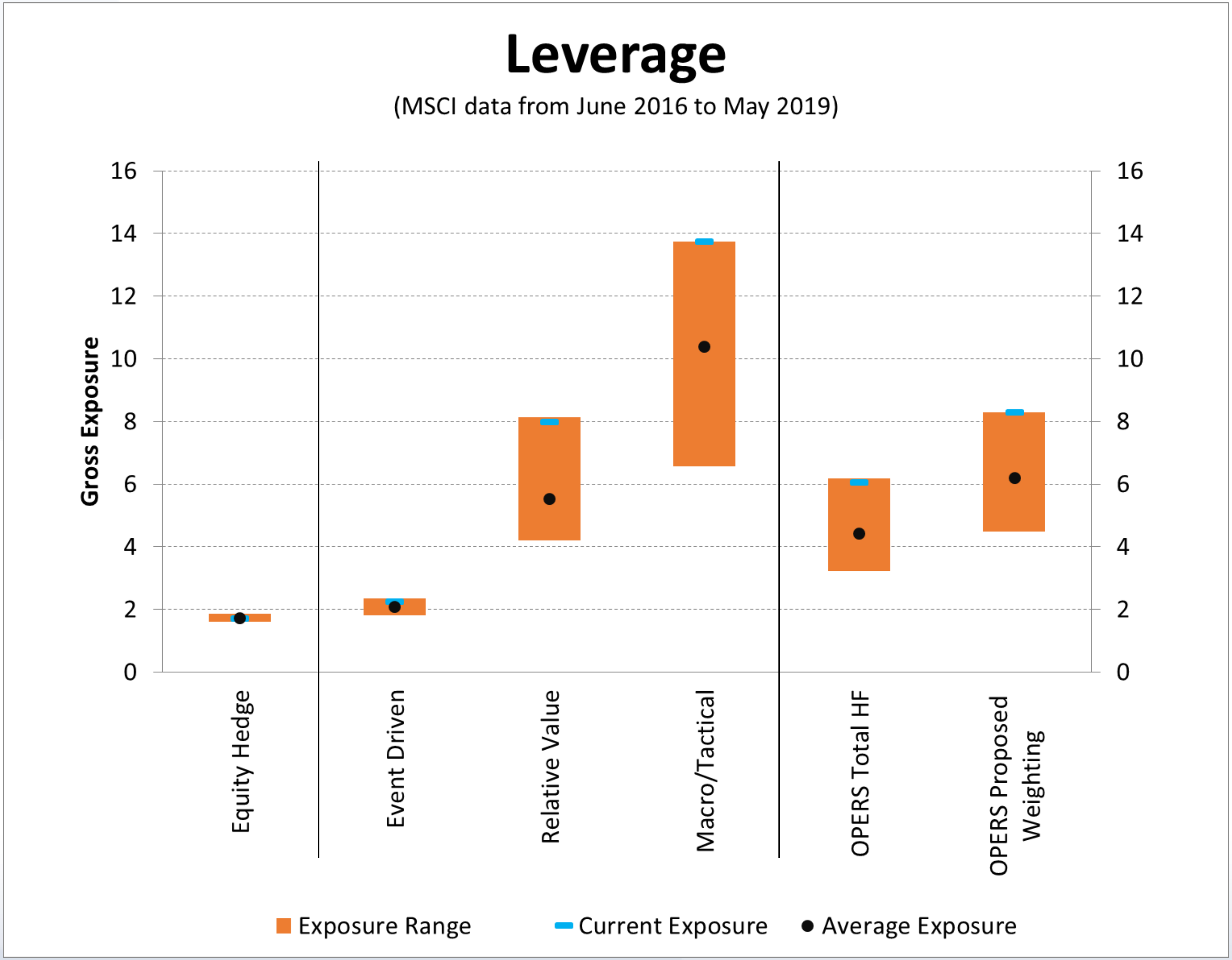


Equity Beta
vs. MSCI All Country World Index
Rolling 36 Months
Beta vs. MSCI ACWI
0.60
0.40
0.20
0.00
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
HFRI Equity Hedge
HFRI Event Driven
HFRI Relative Value
HFRI Macro/Tactical


Equity Beta
vs. MSCI All Country World Index
Rolling 36 Months (since July 2016)
Beta vs. MSCI ACWI
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
Equity -1
Equity -2
Equity -3
Equity -4
Equity -5
Equity -6
ED-1
ED-2
ED-3
ED-4
ED-5
ED-6
ED-7
ED-8
RV-1
RV-2
RV-3
RV-4
RV-5
RV-6
RV-7
Macro-1
Macro-2
Macro-3
Macro-4
Macro-5
Macro-6
Macro-7
Beta Range
Current Beta
Average Beta



Removing Equity Hedge from custom benchmark reduces equity beta from an average of 0.28 to 0.21



Leverage is higher for more diversifying strategies

- It's currently at the high end of range across all strategies

Impact of Changes

Equity Beta in OPERS Benchmark declines to approximately 0.21

Leverage increases from 6x to 8x - ***Need to adjust limit in Policy***

- Assuming equal weights; actual change will be less
- Total exposure to more highly levered funds not increasing

No change in portfolio liquidity

Fees decline marginally

- Average management fee 2bps lower at 1.02%
- Average incentive fee falls from 15.6% to 15.5%

Next Steps

Change Custom Benchmark Strategy Targets

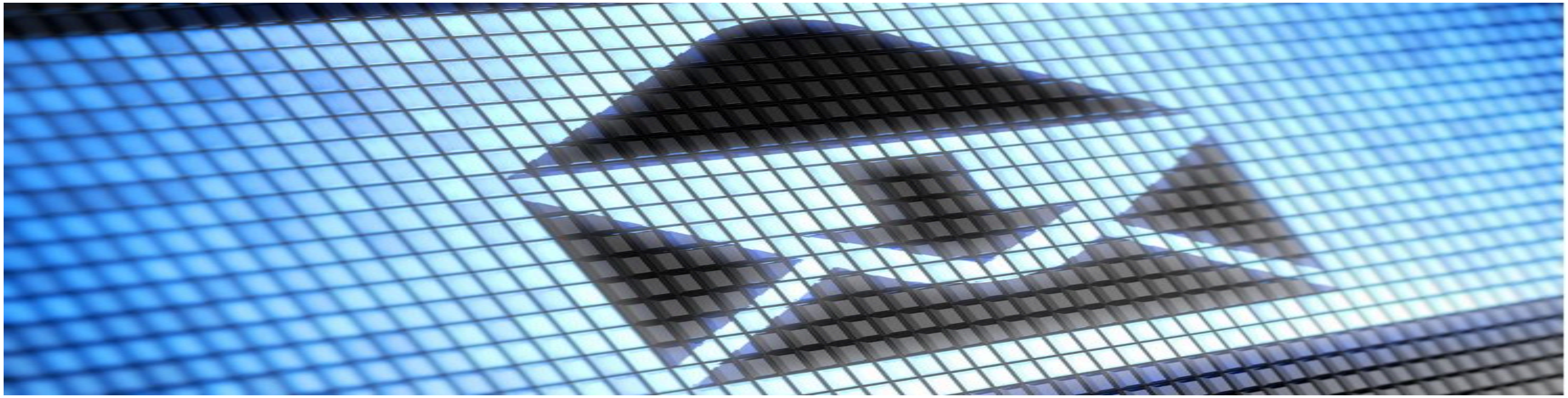
- 30% Event Driven; 35% Relative Value; 35% Macro/Tactical
- Approve in September; Effective 1/1/2020

Change Leverage Limit in Hedge Fund Policy

- Change Maximum Exposure from 6x to 9x
- Approve in September; Effective 10/1/2019

Adjust Portfolio to New Allocation & Strategy Targets

- Next 6 months

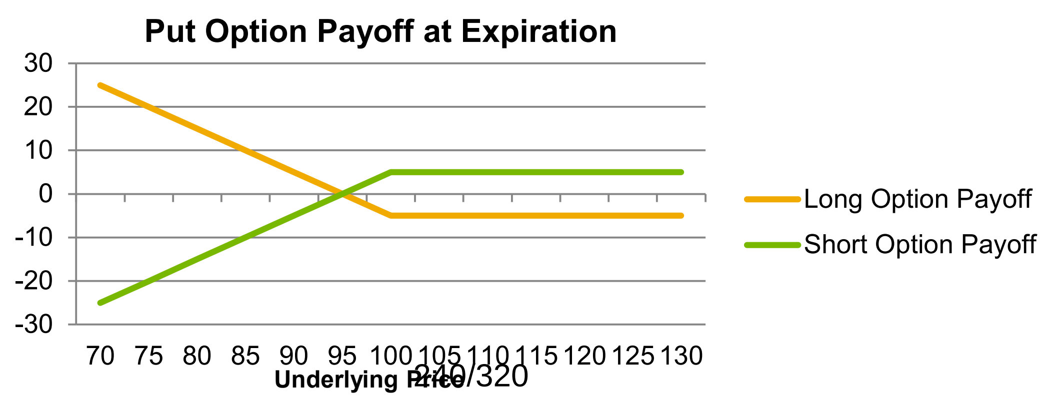


OPERS Hedge Fund Portfolio

Leverage Discussion

Understanding Leverage

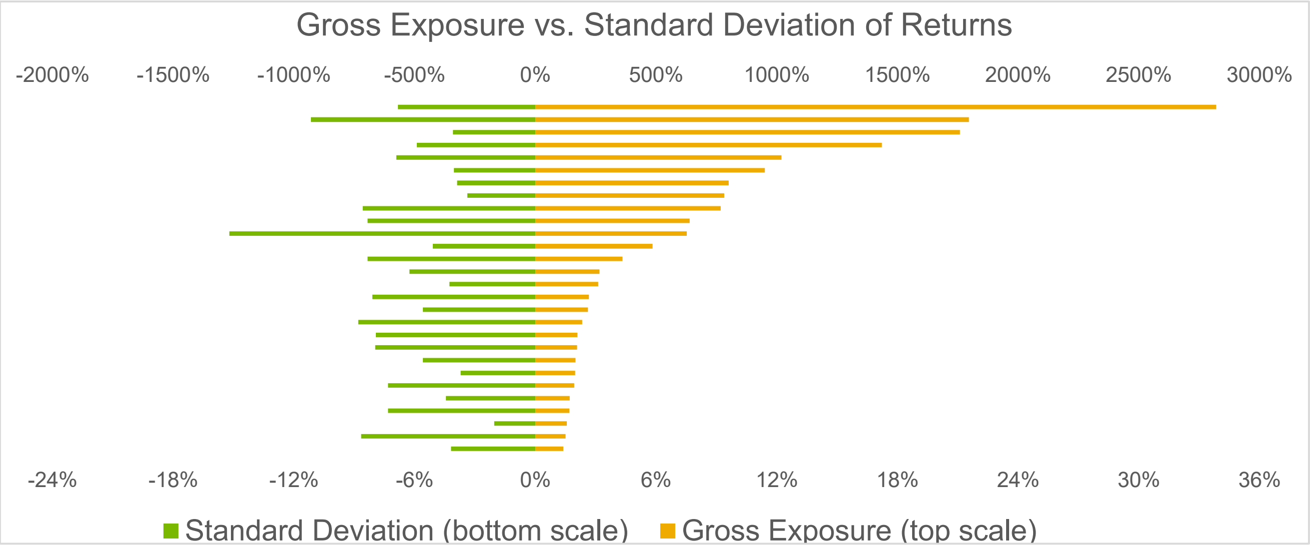
- There are two types of leverage:
  1. Financing leverage
     - Borrowing from prime brokers
  2. Embedded leverage
     - Obtaining notional exposure through derivatives
- Most funds make limited use of financial leverage or borrowing, generally less than 1x
- Some strategies utilize derivatives with significant embedded leverage
  - Efficient way to hedge unwanted risks, construct spread trades, customize exposure, create asymmetric payoffs
  - Some markets are accessed more efficiently via derivatives
    - Currencies, commodities, interest rates
- For example, an equity put option requires little upfront capital to create larger upside economic exposure, which is captured by and accounted for in the holdings-based analysis

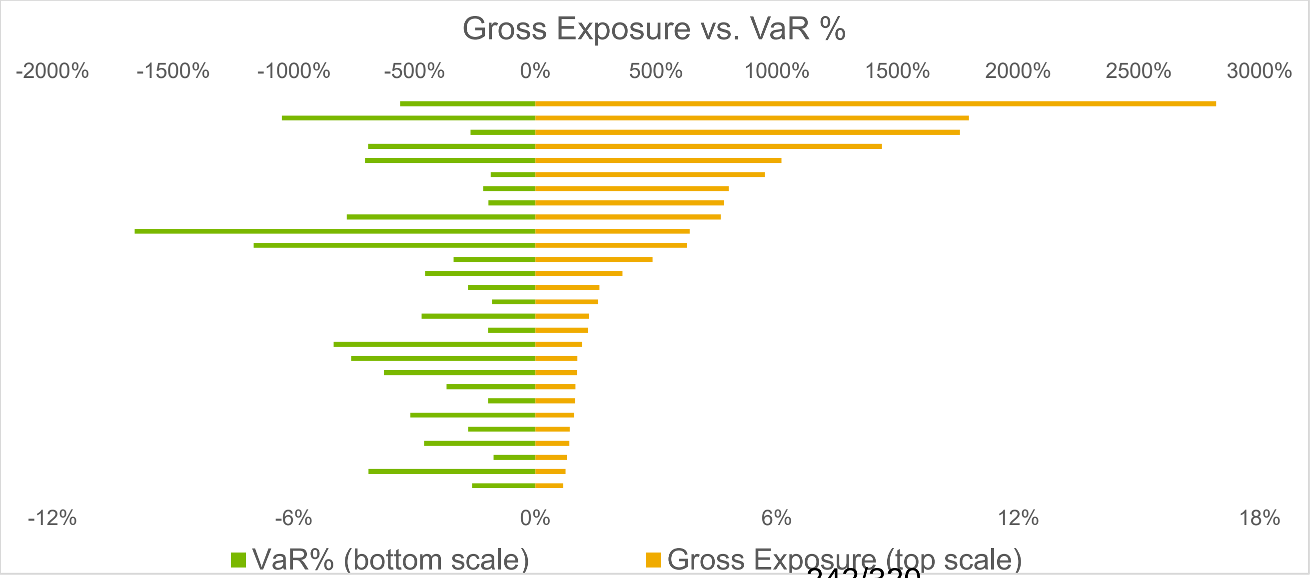


Leverage Versus Risk

- Leverage is not a risk in and of itself
  - A portfolio of trades such as long Ford and short GM could have 200% notional exposure (100% long, 100% short) but little risk
- Managers use leverage to both increase and decrease risk (hedge)
- Leverage is just one of many portfolio characteristics that need to be monitored
  - Exposures – long, short, gross (leverage) and net
  - Holdings – instrument types and markets
  - Return Characteristics – volatility, correlations, drawdowns
  - Stress Tests – Value at Risk and scenario analysis

Gross Exposure vs. Standard Deviation and VaR: Fund Level





- As illustrated, there is no relationship between leverage and either:

1. The standard deviation of actual monthly returns (top), or
2. Estimates of Value at Risk (VaR) based on an analysis of fund holdings (bottom)

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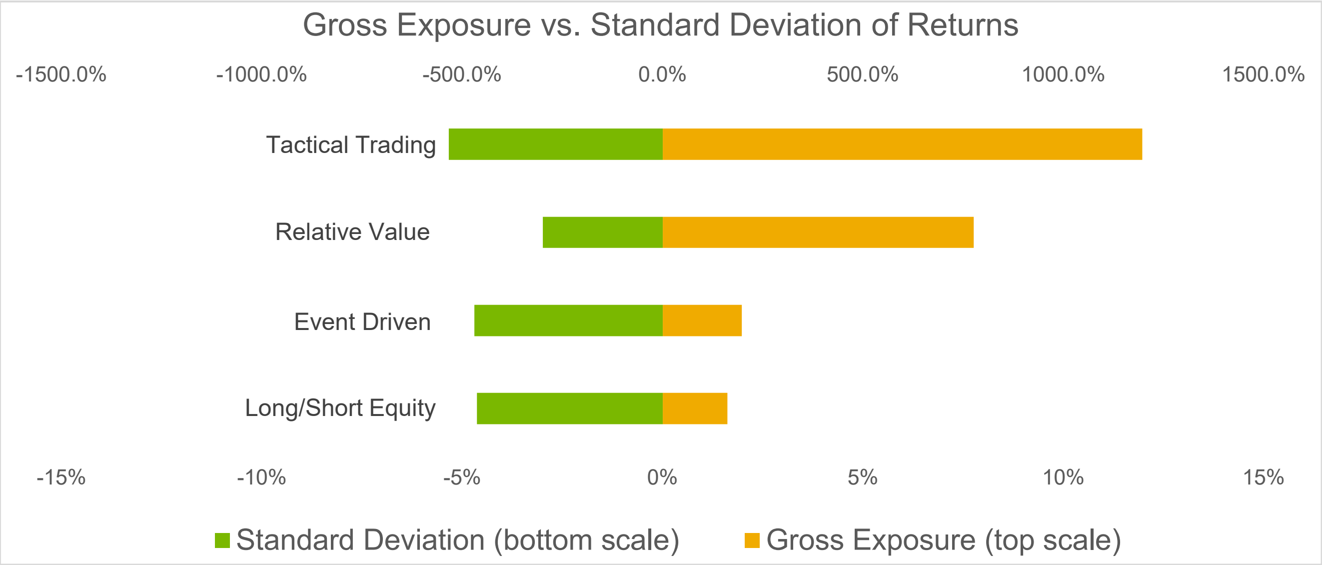
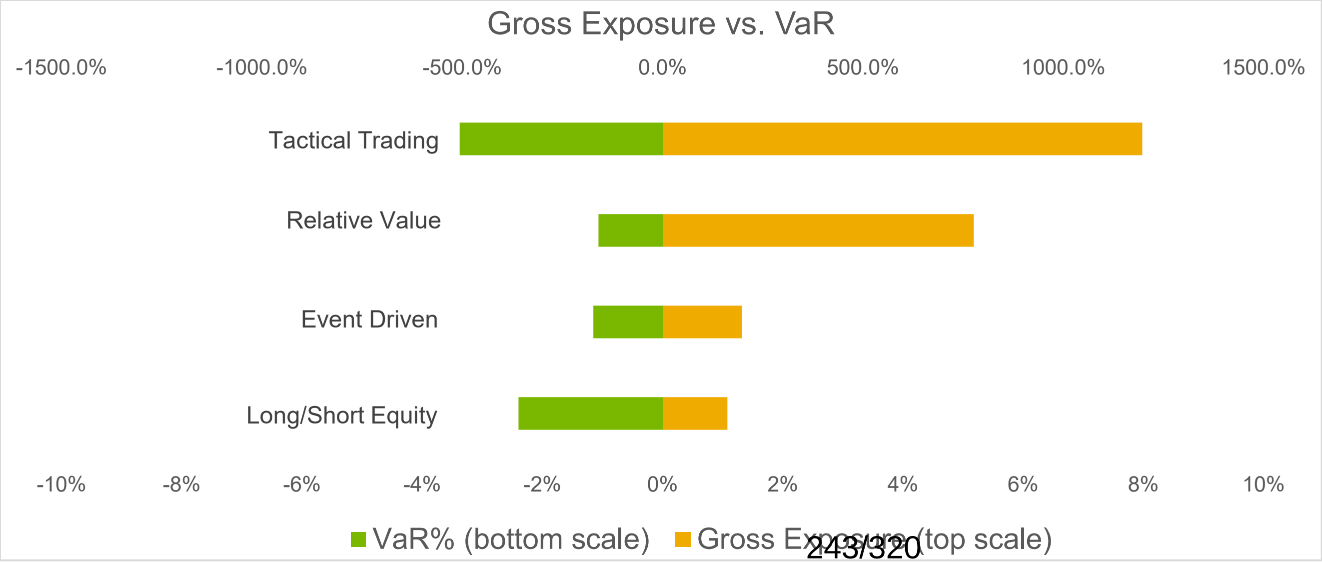
Gross Exposure vs. Standard Deviation and VaR: Strategy Level





- Similarly, we draw the same conclusion at the Strategy level: there is no relationship between leverage and either:

1. The standard deviation of actual monthly returns (top), or
2. Estimates of Value at Risk (VaR) based on an analysis of fund holdings (bottom)

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Board Meeting V.D.

Private Market Real Estate Performance 2Q19

3/31/19 market values, cash flow adjusted to 6/30/19

Private Market Real Estate Performance							
	Cash Flow Adjusted Total Market Value	Total Return					
		2Q 2019	YTD	1-year	3-year	5-year	10-year
Portfolio[1]	$8,416,631,585	1.9%	3.1%	7.2%	7.4%	11.0%	9.6%
Benchmark[2]		1.4%	3.2%	7.4%	7.9%	10.0%	9.2%
Difference (vs benchmark)		**0.5%**	**-0.1%**	**-0.2%**	**-0.5%**	**1.0%**	**0.4%**

[1]Total Market Value and Returns as reported by BNY Mellon. Values rounded to the first decimal place.

[2] Benchmark is NCREIF Fund Index, Net Open End Diversified Core Equity ("Net ODCE") plus 85 basis points since 1Q 2013, prior benchmark was gross NPI

Private Equity Performance 2Q19

3/31/19 market values, cash flow adjusted to 6/30/19

Private Equity Performance							
	Cash Flow Adjusted Total Market Value	**Total Return**					
		2Q 2019	**YTD**	**1-year**	**3-year**	**5-year**	**10-year**
Portfolio[1]	$9,568,231,951	2.4%	2.3%	11.2%	13.8%	11.4%	14.9%
Benchmark[2]		4.5%	3.5%	10.9%	13.5%	10.3%	17.1%
Difference (vs benchmark)		**-2.1%**	**-1.1%**	**0.4%**	**0.3%**	**1.1%**	**-2.2%**

[1]Total Market Value and Returns as reported by BNY Mellon. Values rounded to the first decimal place.

[2]The Custom Benchmark represents market values for SSPEI as of December 31, 2018, due to the lagged reporting methodology. The Custom Benchmark represents the State Street Private Equity Index (SSPEI) beginning 10/1/14. From 10/1/12 to 9/30/14 it represented the sum of 60% of the return of the Russell 3000 and 40% of the return of the MSCI ACWI Index ex. US IMI plus 300bps. Prior to 9/30/12 it represents the Russell 3000 plus 300bps.

Ohio Public Employees Retirement System

Alternatives Market Updates
August 2019

Empower Results®

Table of Contents

Real Estate 1Q2019 Market Update and Outlook

Investor Demand for Real Estate Remains High

Real Estate Closed-End Fund Dry Powder
($ Billions)

- While pricing may be considered challenging, there continues to be substantial capital committed and available for investment into real estate
- In the event there is some valuation softness, dry powder sitting on the sidelines should provide a soft landing and add additional liquidity to the real estate market
- The US OECF (open-end commingled fund) universe continues to see net deposit queues, indicating demand for assets stretches across risk profiles
- In the current environment, pockets of outsized growth are being priced aggressively and warrant diligent underwriting standards

Source: Preqin

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KEY INVESTMENT THEMES

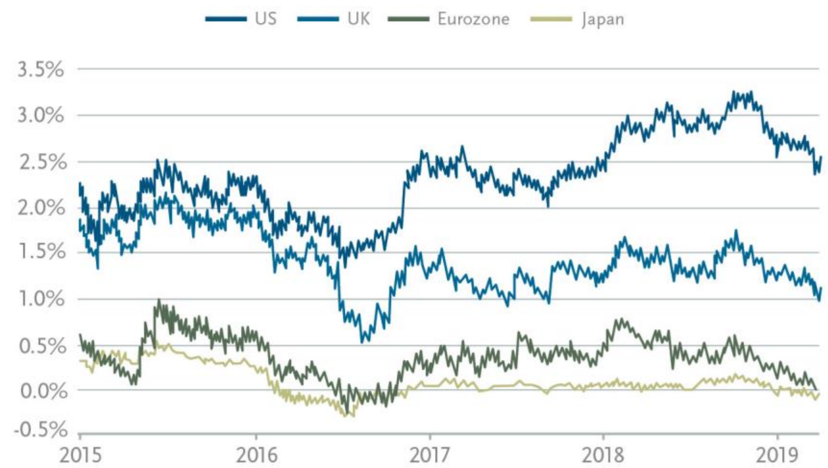
1. LOW INTEREST RATES OFFERING ACCRETIVE RETURNS
2. EVOLVING DEMOGRAPHICS AND MIGRATORY TRENDS RE-SHAPING HOUSING PREFERENCES
3. CHANGING CONSUMER BEHAVIOR DISRUPTING AND CREATING OPPORTUNITIES
4. PREFERENCES FOR MODERN, COLLABORATIVE WORKPLACES DRIVING TENANT DEMAND

INVESTMENT THEME 1

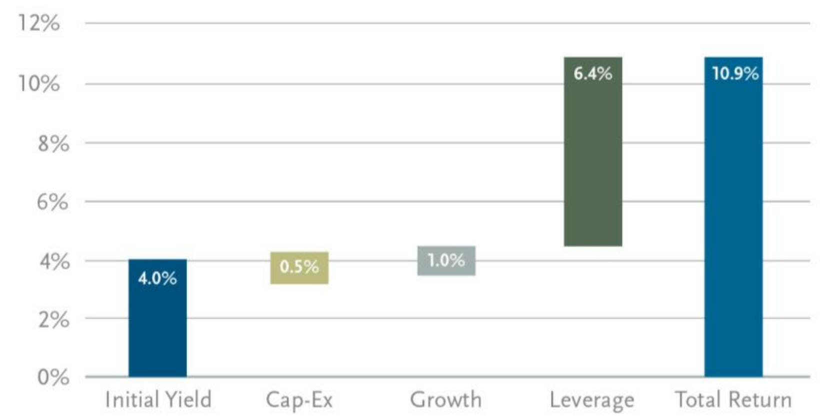
LOW INTEREST RATES OFFERING ACCRETIVE RETURNS

- Growth concerns have shifted monetary policy in multiple large developed economies
  - The European Central Bank reversed course and restarted the QE (Quantitative Easing) program after just a 2 month pause
  - The US Federal Reserve has put rate hikes on hold
- For now, investor concerns of cap rate expansion due to rising interest rate environments have decreased
- Regions like continental Europe and Japan, where interest rates are very low, offer very accretive leverage to the cash flow generated by good-quality real estate investments
- Low cost of debt also provides attractive levered value-add investment opportunities, especially in markets like the US and Australia that are experiencing higher growth on a relative basis
- Investors need to be mindful of an increase in development activity triggered by the low cost of financing

Interest Rates Remain Low 10-Year Govt Bond Yields



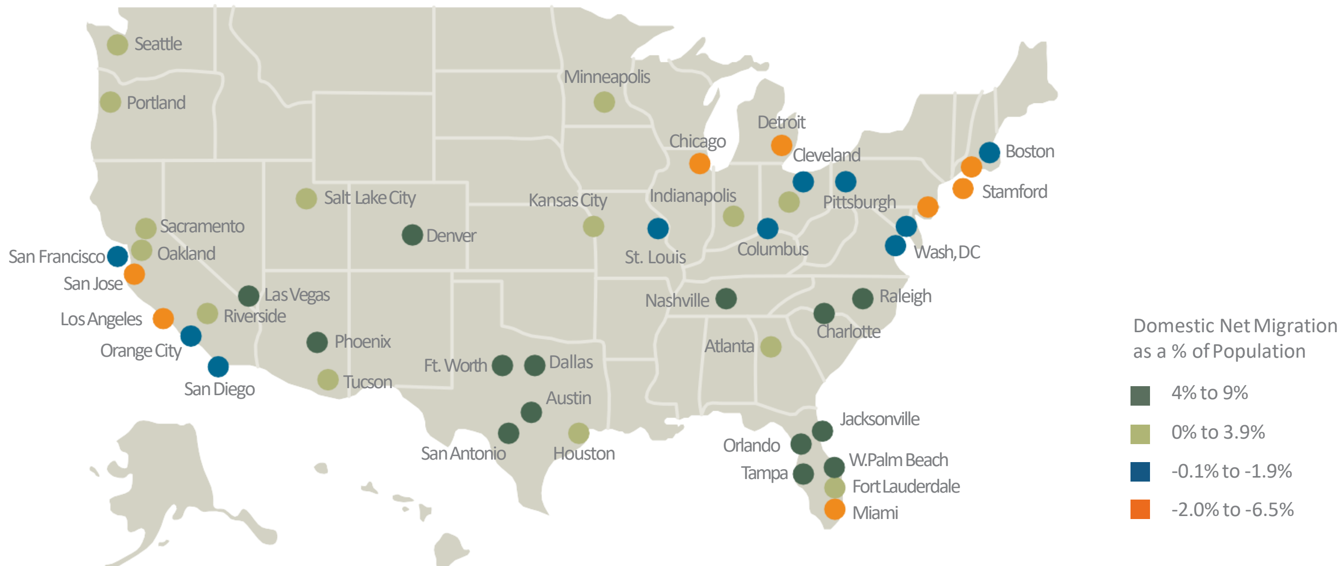
Return Profile of Levered Core European Property (65% LTV)



Source: Bloomberg, CBRE, The Townsend Group

INVESTMENT THEME 2

US Population Moving South and West
2013-2017 Domestic Net Migration by Market



EVOLVING DEMOGRAPHICS AND MIGRATORY TRENDS RESHAPING HOUSING PREFERENCES

- Millennials entering their early to mid-30s are shifting their preferences towards suburban apartments to start families and/or settle down
  - Purchasing a house remains out of reach, as a result of pricing and a greater burden of student debt than previous generations
- Migration continues to favor and benefit the warmer, low-tax “smile" states
- Lower cost of capital from REITs and core funds are funding significant development in the apartment sector; while growing demand justifies development, we are still cautious in market/ submarket selection

Source: Bloomberg, US Census Bureau, Clarion

INVESTMENT THEME 2 (con't.)

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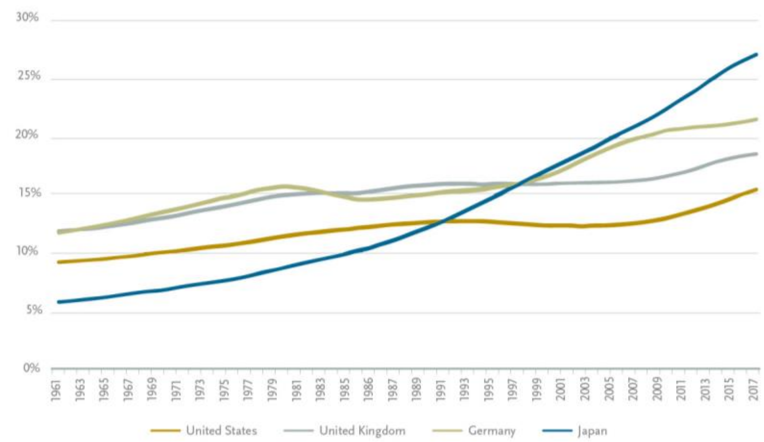
EVOLVING DEMOGRAPHICS RE-SHAPING HOUSING PREFERENCES

- Globally, an aging population is creating demand for purpose-built senior housing, although demand is just beginning to accelerate
- Medical office space also stands to benefit from outsized demand placed on the health care system by an aging generation of baby boomers
- In addition, long-term demographic trends should support lower growth rates and interest rates
- Pockets of overbuilding have weighed on near-term fundamentals, but overall senior housing supply is nowhere close to meeting long-term demand
- While the population of people over 65 is growing at a high rate, growth in this demographic does not directly translate to demand in the short-term and investors need to be mindful of the fact that senior housing is typically not utilized for at least another decade after turning 65

Aging Populations to Drive Demand For Senior Housing
% of Population Over 65



Senior Housing Supply and Demand
(Independent + Assisted Living)

Source: Bloomberg, US Census Bureau, Clarion, World Bank

INVESTMENT THEME 3

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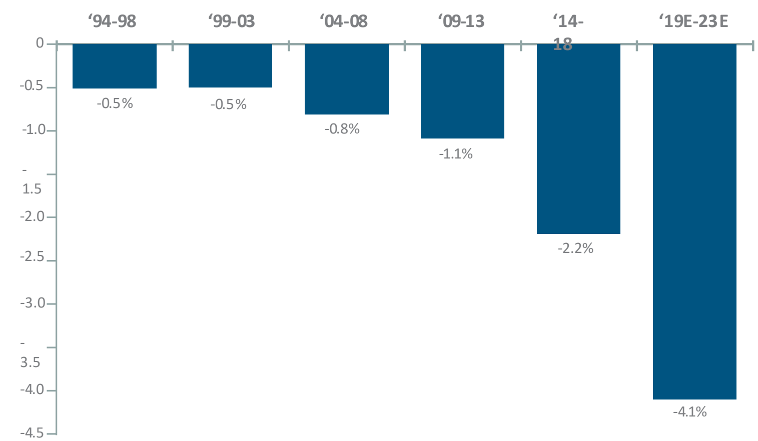
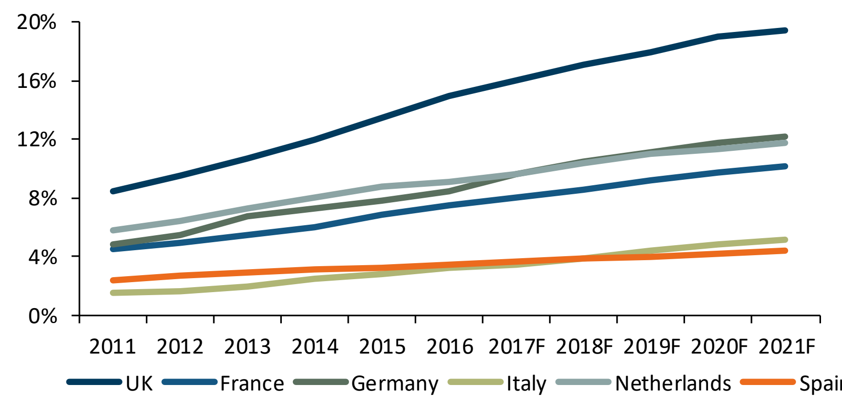
CHANGING CONSUMER BEHAVIORS DISRUPTING AND CREATING OPPORTUNITIES

- The secular trend of shift in preference towards e-commerce continues
- While Amazon has been the undisputed leader in e-commerce, many other retailers continue to follow suit in developing their own logistics networks and e-commerce capabilities
- The next big industry focus is to build one-day and same-day distribution infrastructure, by focusing on infill distribution nodes in proximity to population dense areas
- Additionally, given rental costs are such a small portion of the supply chain, paying a premium rental rate to reduce transportation costs is economically rational
- In Europe, e-commerce as a percentage of retail sales is projected to pick up across the continent and continue to increase demand for industrial warehouses. Relative to the US, Europe's e-commerce infrastructure and adoption rate remains in its early development stages
- On the other side, retail fundamentals continue to deteriorate

Estimated Brick and Mortar Sales Growth Loss Due to E-Commerce (% YoY)



Share of Online Sales in Total Sales



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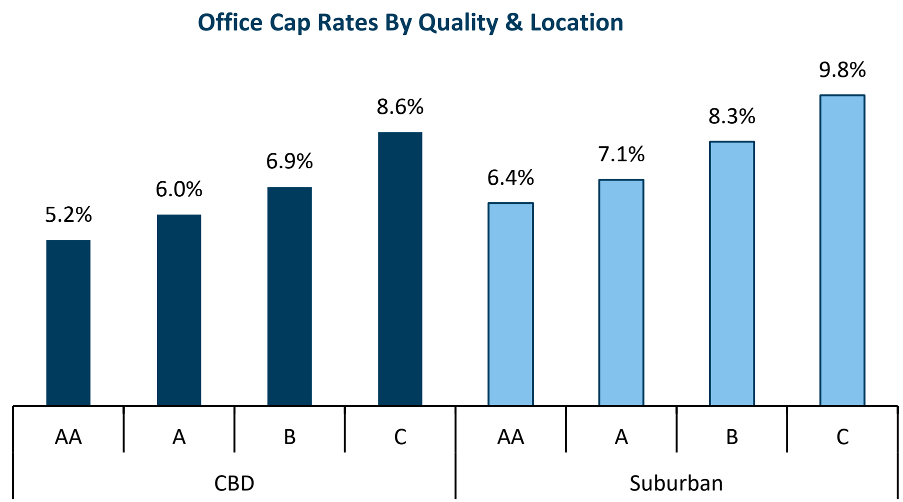
Source: Bloomberg, REIS, CBRE, Green Street, US E-commerce Department Retail Trade Report

INVESTMENT THEME 4

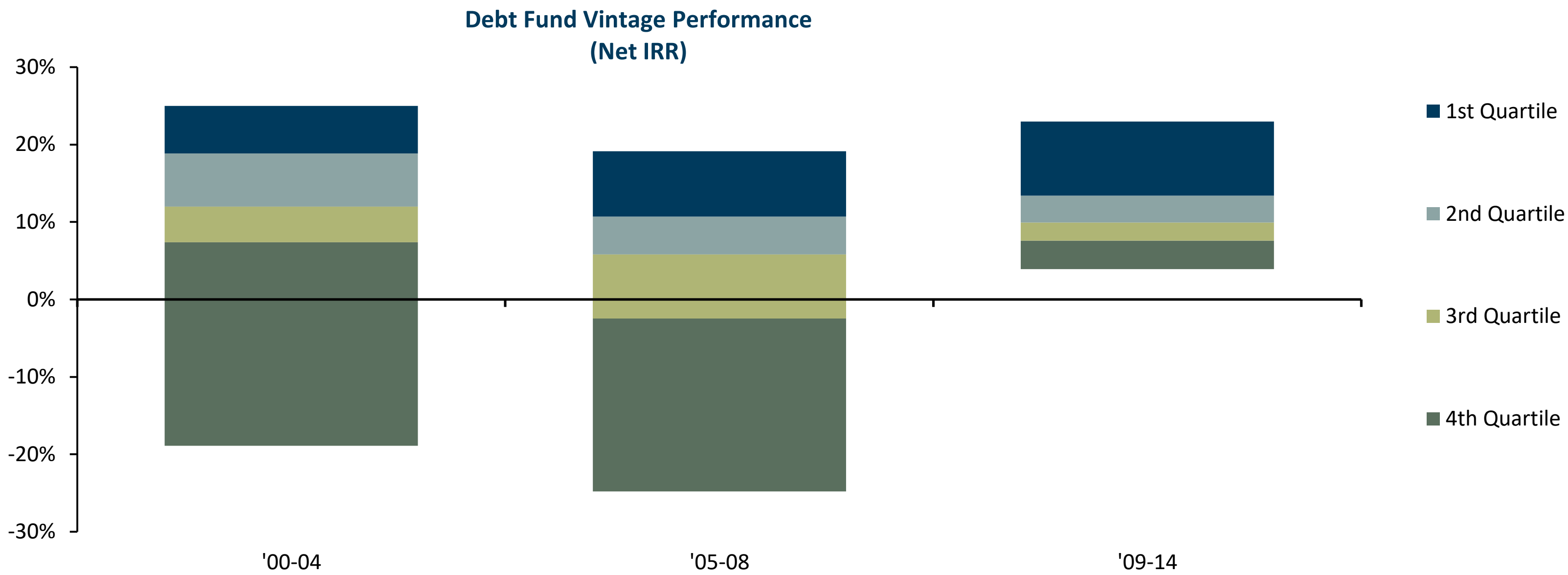


PREFERENCES FOR MODERN, COLLABORATIVE WORKPLACES DRIVING TENANT DEMAND

- Growing tenant demand for creative space, open office concepts, and overall consolidation of space per worker is driving the evolution of new office products
- Employment generation, which has been led by high tech services, is creating tenant demand for office space, while falling vacancies and rising rents are producing a strong fundamental basis for investing
- Select office markets are in cyclical upswing, providing strong growth prospects, given limited supply in the foreseeable future and strong economic growth. For example, migratory trends towards markets in the south like Austin, Nashville and Charlotte driven by desire to work in cities with better standard of living, weather, or taxes will fuel long-term demand
- New York City presents an interesting case where recent effective rent growth has been low, but reversionary rent growth in specific assets has seen quite accretive returns (attractive releasing spreads when taking lease rollover risk)

Source: Colliers, Bloomberg, REIS

Hybrid Strategies Offers Attractive Risk Return Tradeoff

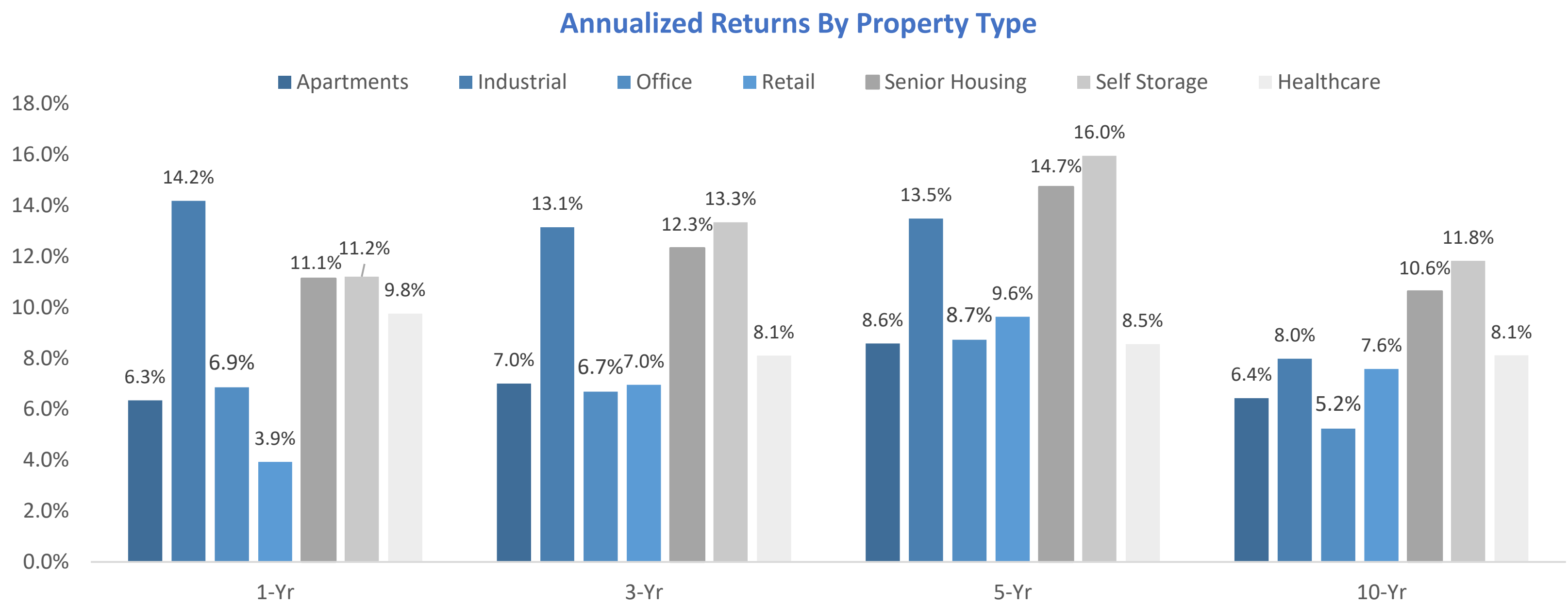


- Opportunistic debt strategies can have a wide range of outcomes and execution options are very limited. While returns on the upside are attractive, these strategies provided little to no protection on the downside during the GFC
- In a low interest rate environment, real estate debt offers attractive alternatives with reasonable risk
- Debt for transitional assets offers attractive returns given that CMBS (commercial mortgage backed securities) issuance is scaling back amid very high levels of expiries and banks are unwilling or unable to increase real estate exposure; however, poor asset selection could result in downside in the event of an unexpected slowdown
- Senior debt for development also offers attractive returns as banks are not that active, but caution is needed to avoid good assets in poor locations with elevated leasing risk
- Preferred equity with kickers is a good way to enhance returns without full equity risk, but such options are typically only possible on transitional assets or assets that require major renovations

Source: Townsend Opportunistic fund database as of March 31st 2018. Range shown is 95th to 5th percentile.

Townsend's views are as of the date of this publication and may be changed or modified at any time and without notice. Past performance is not indicative of future results.

Alternative Sector Themes



- Alternative property sectors provided strong returns throughout this last cycle and have benefited from economically insulated demand drivers
- The senior population growth rate in the US will continue to remain elevated for the coming years, providing a very attractive demand tailwind for senior housing and medical office
- Medical office can provide higher yields and longer weighted average lease expiries, but will be valued in a more bond like fashion than traditional real estate sectors
- Self Storage continues to face supply headwinds in select markets. Townsend's preference has shifted to outside of the US, investing in less developed self-storage markets with strong demand growth and limited supply, such as Singapore, Japan, and Australia

Source: NCREIF

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Global Economic Outlook and Real Estate Investment Opportunities

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Macro Factors	US	Europe	China	Japan
GDP ('19)	2.7%	1.6% (U.K. 1.5%, DE 1.6%, FR 1.6%)	6.2%	0.9%
Unemployment ('19)	3.6%	7.9% (U.K. 4.0%, DE 4.9%, FR 8.8%)	4.0%	2.4%
Key Real Estate Themes	Fundamentals diverge significantly across sectors and submarkets Core offers good income and protection against a potential slowdown Non-Core selectively mispriced	Levered income returns typically higher than in the U.S., but lower growth potential Repositioning opportunities attractive	Slowing growth raising oversupply risks, but continued urbanization trends Leverage preferred equity/mezz structure to lower risk	Low growth despite easing Existing stock old, provides attractive repositioning opportunities Low debt cost offers good leverage, without adding much risk
Office	Select markets offer good rent growth; southern markets witnessing net migration likely to benefit Repositioning and high income-producing investments likely to outperform low cap rate opportunities	Recovery in continental Europe providing modest rent tailwind; attractive income generation potential In the U.K., Brexit-related uncertainty continues to place drag on demand	High supply, credit risk, and slowing economy could lead to pockets of oversupply Prefer assets with repositioning opportunities at attractive basis	Modestly rising rent growth outlook Old stock in good locations in Tokyo/ Osaka offers attractive upgrading opportunities
Industrial	E-commerce and imports driving demand at record high level Supply rising in hotbeds, requiring focus on quality and infill assets	Strong demand from logistic players and e-commerce Yields continue to offer attractive cash returns boosted by low-cost debt	Strong demand for industrial properties conforming to modern standards Limited deal flow due to delay in land availability	Strong demand for modern logistics assets driven by 3PLs Supply building in town peripheries that is likely to limit rent growth
Retail	E-commerce reshaping landscape and forcing consolidation of retailers' space Neighborhood retail presents interesting side play	E-commerce driven reshaping will put retail at risk. E-commerce usage remains muted on the continent but projected to increase	Shift to consumer economy leading to strong demand for productive sites Oversupply in central locations, but Non-Core locations still undersupplied	Select repositioning opportunities appear attractive given poor existing asset quality E-commerce likely to be a headwind
Residential	Rent affordability remains stretched in higher-end apartments; supply glut is being worked through Suburban product offers higher yield and stands to benefits from aging millennials	Most large cities undersupplied with dwellings, but still limited opportunities Select condo conversion and repositioning plays attractive	Urbanization trend driving strong demand albeit very volatile Favor preferred equity/mezz structures to limit risk	Attractive residential development opportunities in high-growth cities like Tokyo and Osaka Secular demand growth for aged care

Actively Pursuing　Neutral　Selectively Pursuing

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Source: The Townsend Group, Consensus Estimates: Bloomberg (December 2018)

Townsend's views are as of the date of this publication and may be changed or modified at any time and without notice. Past performance is not indicative of future results.

Private Equity 1Q2019 Market Update and Outlook

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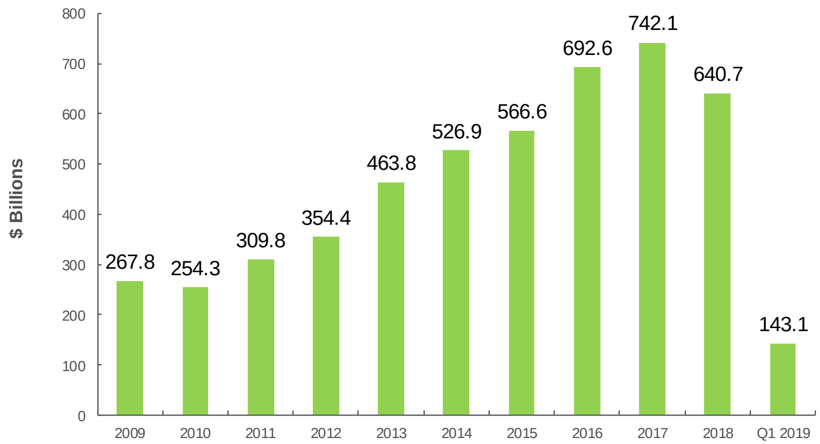
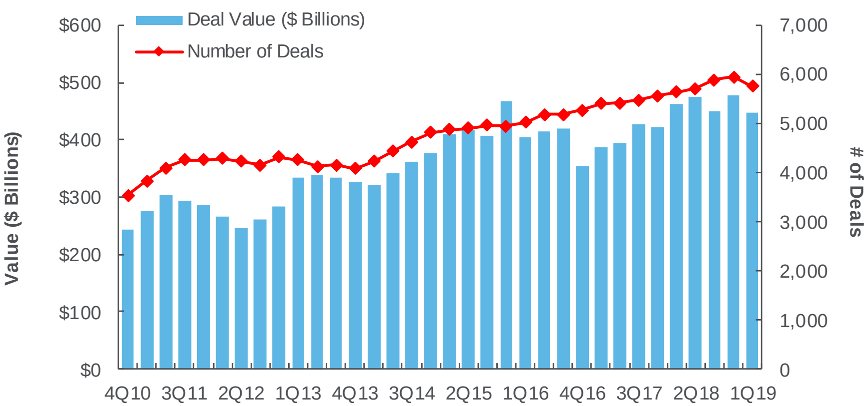
Private Equity Overview

Total Funds Raised



Source: Preqin

LTM Global Private Equity-Backed Buyout Deal Volume



Source: Preqin

Fundraising

- In 1Q 2019, $143.1 billion was raised by 319 funds, which was a decrease of 8.9% on a capital basis and a decrease of 35.3% by number of funds from the prior quarter.[1]
  - 1Q 2019 fundraising was 9.7% lower than the five-year quarterly average.
  - Relative to the five-year quarterly average, the number of funds raised decreased by 38.9%, strengthening the observation that larger amounts of capital are being raised by fewer funds.
  - The majority of 1Q 2019 capital was raised by funds with target geographies in North America, comprising 63.2% of the quarterly total. Capital targeted for Europe made up 21.5% of the total funds raised during the quarter, while the remainder was attributable to managers targeting Asia and other parts of the world.
- Dry powder stood at nearly $2.0 trillion at the end of the quarter, an increase of 5.7% compared to the previous quarter.[1]

Activity

- In 1Q 2019, 1,206 deals were completed for an aggregate deal value of $102.2 billion as compared to 1,486 transactions totaling $112.3 billion in 4Q 2018.[1]
  - This was 3.2% lower than the five-year quarterly average deal volume of $105.5 billion.
- European LBO transaction volume totaled €13.1 billion in 1Q 2019, representing roughly 19.0% of 2018's total LBO loan volume.[3]
- At the end of 1Q 2019, the average purchase price multiple for all US LBOs was 10.3x EBITDA, down slightly from year-end 2018 (10.6x) and up from the five-year average (10.2x). Large corporate purchase price multiples stood at 10.3x, down from with the 10.6x observed at year-end 2018.[3]
  - For all US LBOs, this quarter was 0.1x and 0.9x turns (multiple of EBITDA) above the five and ten-year average levels, respectively.
- European multiples decreased by 0.4x for transactions greater than €1.0 billion, averaging 11.3x in the first quarter. Transactions greater than €500.0 million also saw a decrease of 0.4x in purchase multiples and ended the quarter at 10.9x. [3]
- Debt remained broadly available in the US
  - US average leverage levels in 1Q 2019 were 5.7x compared to the five and ten-year averages of 5.7x and 5.2x, respectively.[3]
  - The amount of debt issued supporting new transactions increased compared to year-end 2018 from 68.2% to 80.4%, which is also higher than the 61.7% average level over the prior five years.[3]
- In Europe, average senior debt/EBITDA in 1Q 2019 was 5.5x, up from the 4.7x observed year-end 2018. This was also up over the five-year average of 5.2x and ten-year average level of 4.9x.

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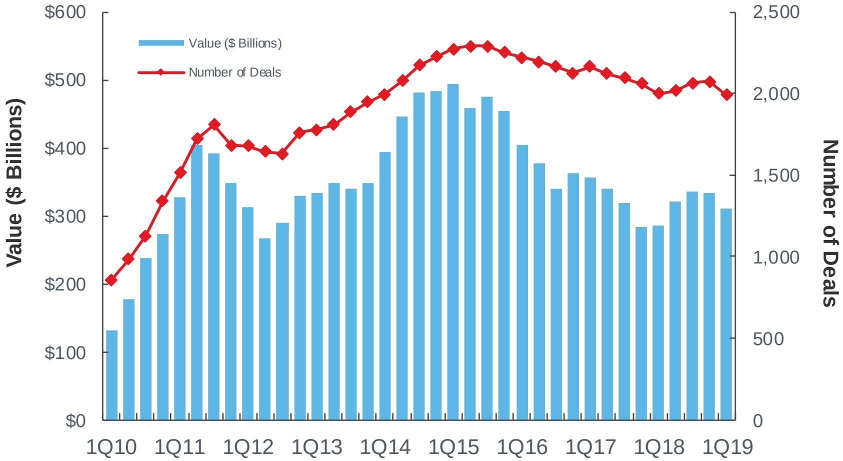
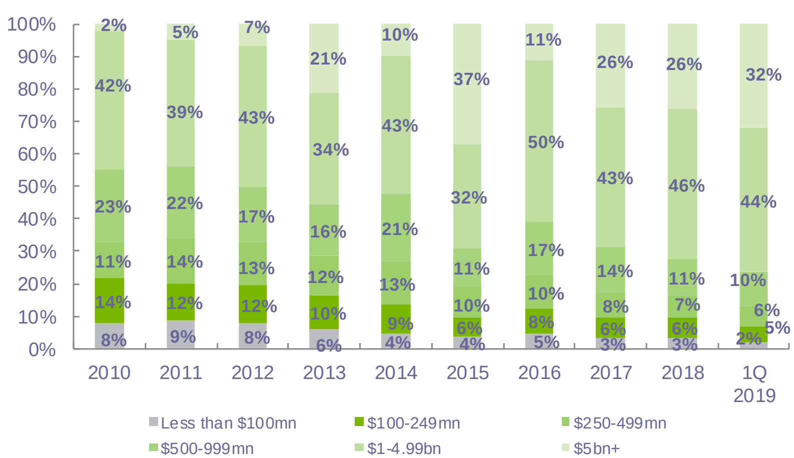
Buyouts / Corporate Finance

LTM PE Exit Volume and Value



Source: Preqin

M&A Deal Value by Deal Size



Source: Preqin

Fundraising

- $86.4 billion was closed on by 96 buyout and growth funds in 1Q 2019, compared to $67.5 billion raised by 113 funds in 1Q 2018.[1]
  - This was higher than the five-year quarterly average of $78.2 billion.
  - Thoma Bravo XIII was the largest fund raised, closing on $12.6 billion.[1] This was below the record-breaking total from Apollo Investment Fund IX, which raised $24.7 billion in 2017.[12]
- Buyout and growth equity dry powder was estimated at $930.5 billion, which surpassed the record level of $905.4 billion observed at the end of 2018. This was substantially higher than the five-year average level of $677.1 billion.[1]
  - Aside from small funds, which decreased 43.5% quarter-over-quarter, buyout dry powder increased across all fund size categories in 1Q 2019. Mega fund dry powder exhibited the largest increase during the quarter (17.9%), setting a new record mark of $343.7 billion. Large and mid market buyout dry powder finished the quarter up 13.1% and 9.7%, respectively, from 4Q 2018.[1]
  - An estimated 57.6% of buyout dry powder was targeted for North America, while European dry powder comprised 26.7% of the total.[1]

Activity

- Global private equity-backed buyout deals totaled $102.2 billion in 1Q 2019, which was a decrease of 9.0% and 3.2% from 4Q 2018 and the five-year quarterly average, respectively.[1]
  - 1,206 deals were completed during Q1 2019, which was down 18.8% from 4Q 2018 and down 9.6% compared to the five-year quarterly average.
  - In 1Q 2019, deals valued at $5.0 billion or greater accounted for an estimated 32.2% of total deal value during the year compared to 26.3% in 2018 and 25.7% in 2017.[1]
- Entry multiples for all transaction sizes in 1Q 2019 stood at 10.3x EBITDA, down from 2018's level (10.6x).[3]
  - Large corporate purchase price multiples stood at 10.3x, down from the 10.6x observed at year-end 2018.[3]
  - The weighted average purchase price multiple across all European transaction sizes averaged 10.9x EBITDA through Q1 2019, down from the 11.3x seen at year-end 2018. Purchase prices for transactions of €1.0 billion or more decreased from 11.7x to 11.3x quarter-over-quarter.
  - Transactions between €250.0 million and €500.0 million were up 0.5x from 4Q 2018, and stood at 9.1x.[3]
  - The portion of average purchase prices financed by equity for all deals was 40.8% in 1Q 2019, up from 40.1% in 2018. This remained above the five and ten-year average levels of 39.9% and 39.8%, respectively.[3]
- Globally, exit value totaled $38.0 billion from 382 deals in 1Q 2019 compared to $65.5 billion for 464 deals in 1Q 2018.[1]

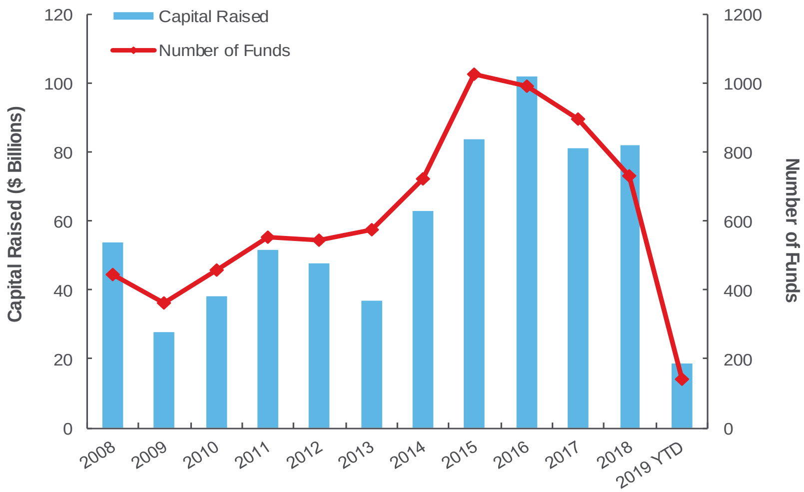
Opportunity

- Operationally focused managers targeting the middle and large markets with expertise in multiple sectors

Empower Results®

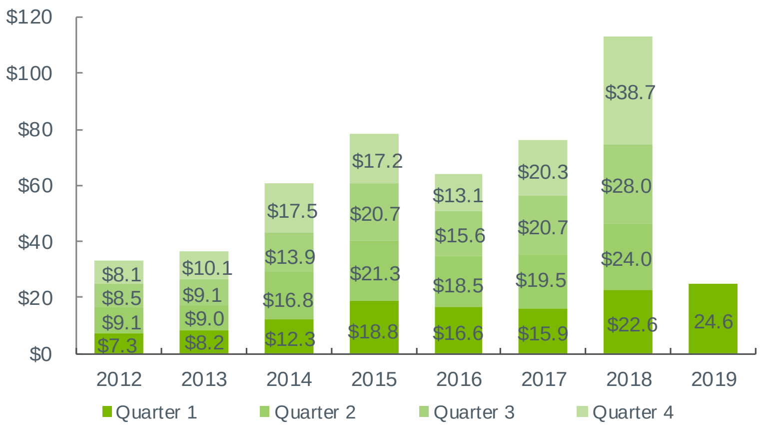
Venture Capital

Venture Capital Fundraising



Source: Preqin

US Venture Capital Investments by Quarter ($B)



Source: PwC/CB Insights Report

Fundraising

- $20.1 billion of capital closed in 1Q 2019, down from the prior quarter total of $26.2 billion but up from the Q1 2018 total of $15.1 billion.[1]
  - 163 funds closed during the quarter, down 32.1% and 30.5% from the prior quarter and five year quarterly average, respectively.[1]
  - Technology Crossover Ventures X was the largest fund raised during the quarter, closing on $3.0 billion.[16]
- The average fund size raised during the quarter was approximately $154.0 million, which was less than both the prior quarter of $155.0 million but higher than the five year quarterly average of $116.1 million. The majority of funds in market are seeking commitments of $100.0 million or less.[1]
- Dry powder was estimated at $239.9 billion at the end of 1Q 2019, which was up from 4Q 2018's total of $229.7 billion. This was 44.8% higher than the five year average. An estimated 48.0% of dry powder was targeted for North America, followed by approximately 35.4% earmarked for Asia.[1]

Activity

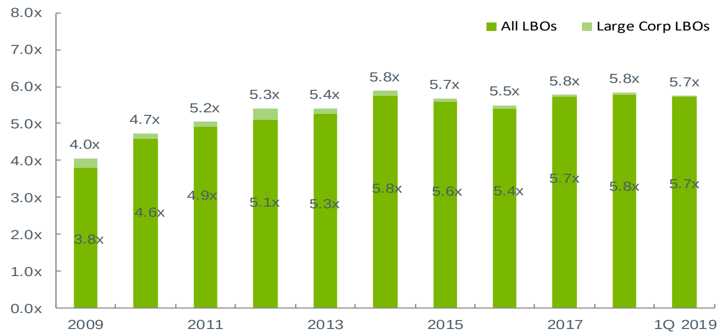
- During the first quarter, 1,279 US venture backed transactions totaling $24.6 billion were completed, down from 4Q 2018's total value of $38.7 billion from 1,328 transactions. This was the third strongest quarter on a capital investment basis since Q2 2017 and marks the seventh consecutive quarter of $20.0 billion or more invested into venture-backed companies.[7]
  - The number of unicorns in the US, or companies with valuations of $1.0 billion or more, increased by ten in 1Q 2019.[7]
- Median pre-money valuations decreased across all deal stages during Q1. Seed, Series A, and Series B decreased by 5.9%, 16.7%, and 14.7%, respectively, to valuations of $8.0 million, $20.0 million, and $64.0 million, respectively. Series C pre-money valuations decreased slightly by 1.8% quarter-over-quarter, ending at $160.0 million. Series D+ deal valuations were also down slightly by 4.0% quarter-over-quarter and are currently valued at $600.0.[9]
- Total US venture backed exit activity totaled $46.7 billion across 137 completed transactions in 1Q 2019, up on a capital basis from $39.8 billion in 4Q 2018.[8]
  - There were 12 venture-backed initial public offerings during the quarter, which was lower than the 17 completed in 4Q 2018.[8]
  - The number of M&A transactions totaled 154 deals in 1Q 2019, representing a decrease of 6.7% from 1Q 2018.[7]

Opportunity

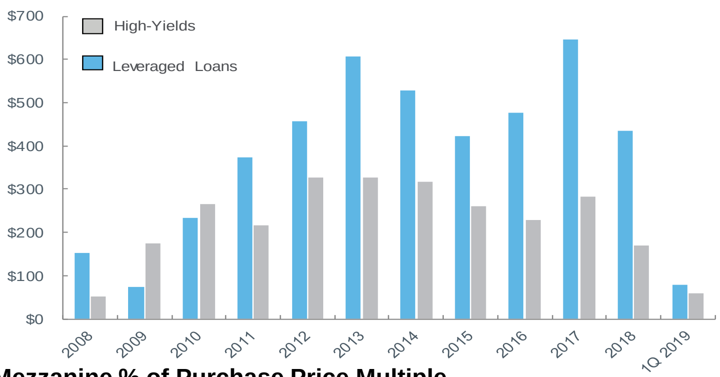
- Early stage continues to be attractive, although we are monitoring valuation increases
- Smaller end of growth equity
- Technology sector

Leveraged Loans & Mezzanine

Average Leverage by Deal Size



Debt Issuance ($ Billions)



Mezzanine % of Purchase Price Multiple

Sources from top to bottom: S&P, UBS, & S&P

Leveraged Loans

Fundraising

- New CLO issuance totaled $29.1 billion through 1Q 2019, up 10.2% from 1Q 2018.[2]
- High-yield debt issuance totaled $60.5 billion in 1Q 2019, down from $62.8 billion issues in 1Q 2018.[2]
- Leveraged loan mutual fund net flows ended 1Q 2019 with a net outflow of $10.1 billion, compared to a net inflow of $2.9 billion through 1Q 2018.[2]

Activity

- Leverage for all LBO transactions ended the quarter at 5.7x, down slightly from 2018's level of 5.8x. Leverage continues to be comprised almost entirely of senior debt. The average leverage level for large cap LBOs was 5.7x during the year, down 0.1x from year-end 2018.[3]
- YTD institutional new leveraged loan issuances totaled $77.9 billion in 1Q 2019, down significantly from the $129.9 billion issued during the same period in 2018.[2]
- 80.4% of new leveraged loans were used to support M&A and growth activity in 1Q 2019, up from 68.2% in 2018. This was also above the prior five-year average of 61.7%.[3]
- European leveraged loan issuance decreased by 34.9% year-over-year to €15.1 billion during the first quarter.[3]
  - This equates to roughly 19.7% of 2018's total sponsored loan volume. [3]
- Year to date, yields for BB, B, and CCC indices tightened by 140 bps, 158 bps, and 200 bps, respecitvely.[2]

Opportunity

- Funds with the ability to source deals directly and the capacity to scale for large transactions
- Funds with an extensive track record and experience through prior credit cycles

Mezzanine

Fundraising

- Three funds closed on $1.0 billion during the first quarter. This was a significant decrease from the prior quarter's total of $8.0 billion raised by 14 funds and represented a decrease of 81.0% from the five-year quarterly average of $5.3 billion.[1]
- Estimated dry powder was $58.8 billion at the end of 1Q 2019, up from the $53.5 billion seen at the end of 2017.[1]
- Fundraising activity held steady with an estimated 66 funds in market targeting $23.7 billion of commitments, compared to 67 funds in market at the end of 2018 targeting $25.0 billion of commitments. HPS Mezzanine Partners 2019 is the largest fund in market, targeting commitments of $8.0 billion.[1]

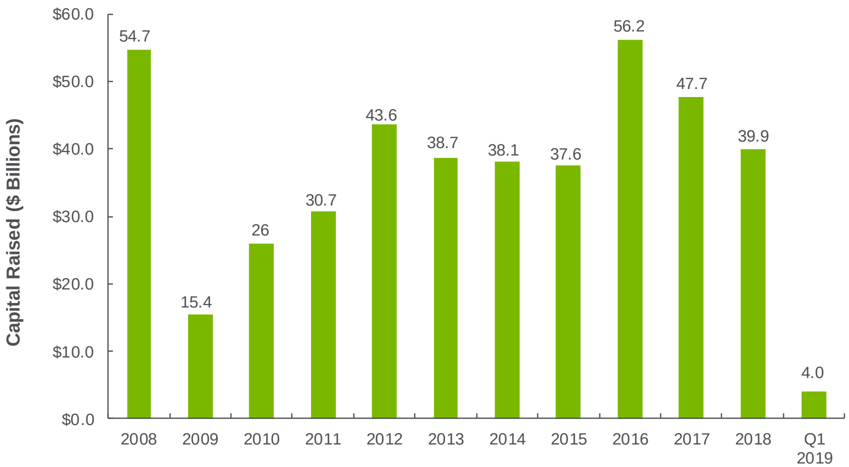
Opportunity

- Funds with the capacity to scale for large sponsored deals

Empower Results®

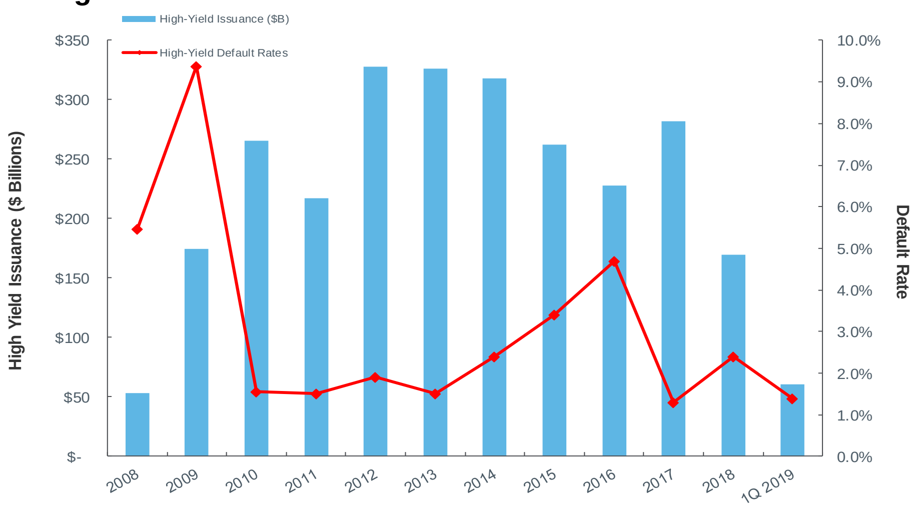
Distressed Private Markets

Distressed Debt, Turnaround, & Special Situations Fundraising



Source: Thomson Reuters

High-Yield Bond Volume vs Default Rates



Source: UBS & Fitch Ratings

Fundraising

- During the quarter, $4.0 billion was raised by 11 funds compared to $8.7 billion raised by 17 funds in 1Q 2018.[1]
  - 1Q 2019 fundraising was 63.6% lower than the five-year quarterly average of $11.0 billion.
  - Bain Capital Special Situations Europe was the largest partnership raised during the quarter, closing on €1.2 billion.
- Dry powder was estimated at $118.0 billion at the end of 1Q 2019, up slightly from the $117.6 billion seen at year-end 2018. This was up compared to year-end 2017 ($110.2 billion). This remained above the five-year average level of $103.3 billion.[1]
- Roughly 114 funds were in the market at the end of 1Q 2019, seeking $59.8 billion in capital commitments.[1]
  - Distressed debt managers were targeting the most capital, seeking an aggregate $36.2 billion.
  - Fortress Credit Opportunities Fund V and GSO Energy Select Opportunities Fund II were the largest funds in market with target fund sizes of $5.0 billion each.

Activity

- The LTM US high-yield default rate was 1.4% as of March 2019, which was down from December 2018's LTM rate of 2.4%.[6]
- Interest rates declined over the period as signs of weakness in economic growth persisted. The yield curve continued to flatten and inverted across certain maturities for a short period during the quarter—a leading indicator of recessionary pressures. By the end of the quarter, investors had returned to their risk-on sentiment and corporate spreads tightened.[4]
- High purchase prices and continued elevated levels of leverage may result in an increase in distressed opportunities looking out over the next two to three years, or sooner if there is a stall in the economy.

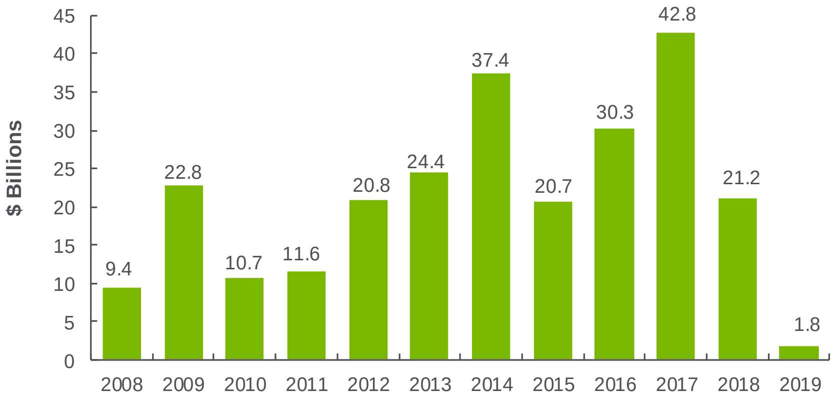
Opportunity

- Funds capable of performing operational turnarounds
- Funds with the flexibility to invest globally

Empower Results®

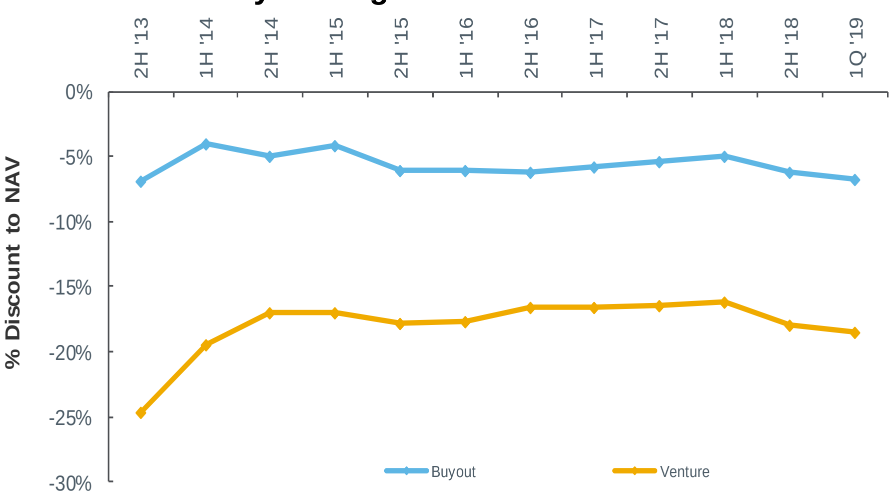
Secondaries

Secondary Fundraising



Source: Preqin

Secondary Pricing



Source: UBS

Fundraising

- Eight funds raised $1.8 billion during the first quarter, down significantly from $8.2 billion raised by seven funds in 4Q 2018 and lower than the $5.9 billion raised in 1Q 2018.[1]
  - 1Q 2019's aggregate capital raised represents 8.5% of 2018's full year total.
  - Verdane Capital X was the largest fund raised during the quarter, closing on $663.7 million.[1]
- At the beginning of 2019, dry powder was estimated at $68.0 billion, which was 27.4% lower than 3Q 2017's record level of 93.7 billion.[2] The top 15 secondary buyers are estimated to command more than 74.0% of the market's capital reserves. This marks a increase from the 66.0% of capital previously controlled by this group.[2]
- At the end of 1Q 2019, there were an estimated 60 secondary and direct secondary funds in market, targeting approximately $79.4 billion. Ardian Secondaries Fund VIII was the largest fund in the market targeting $18.0 billion.[1]
  - The majority of secondary funds are targeting North American investments. Two funds, Ardian Secondaries Fund VIII and Lexington Capital Partners IX ($12.0 billion target), represent 37.8% of all capital being raised.[1]

Activity

- Roughly 87% of buyers report that their deal pipelines are as strong or stronger than in 2018.[2]
  - Buyers have increasingly turned to leverage in their transactions in order to support attractive pricing and transaction execution. The spreads between committed capital and drawn capital by secondary purchasers has increased over the last quarter (and year).[2]
- The average discount rate for all private equity sectors finished Q1 2019 at 9.5%, up from 8.0% at the end of 2018. The average buyout pricing discount ended at 6.8%, while venture ended at a discount of 18.5%.[2] The average buyout pricing discount for Q1 was up from year-end 2018's 4.7% discount, while the venture discount was up from 16.0%.
- Pricing, while having gotten slightly more favorable for buyers over the last quarter, is expected to remain attractive for sellers given the continued high levels of dry powder and competition for secondary transactions. Pricing dipped in Q1 due to greater public market volatility and a slight decline in secondary fundraising.[2]
- For buyout pricing, tail-end vintages were being traded at larger discounts, while top performing funds continued to obtain premiums for their assets. While there is support and interest in pre-2010 vintage funds, there is significant volume and competition for younger vintages where premiums are often being commanded.[2]

Opportunity

- Funds that are able to execute complex and structured transactions at scale
- Funds that are able to leverage their long-standing relationships and networks in the secondaries marketplace
- Niche strategies

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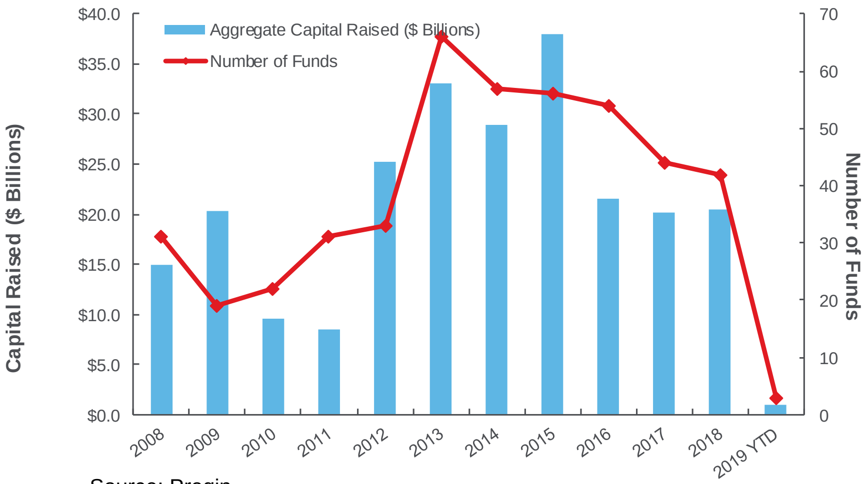
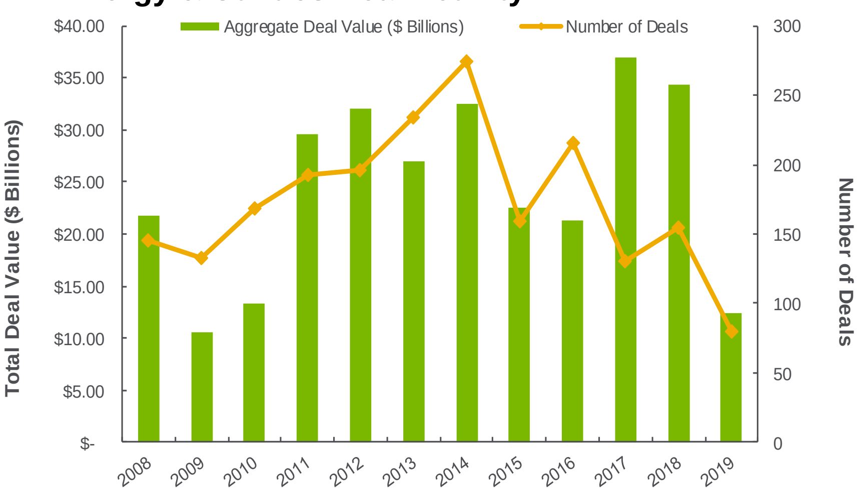
Natural Resources

Natural Resources Fundraising



Source: Preqin

Energy & Utilities Deal Activity



Source: Preqin

Fundraising

- During 1Q 2019, four funds closed on $1.3 billion compared to 11 funds totaling $1.8 billion in 4Q 2018.[1]
  - Merit Energy Partners K was the largest fund to close during the period with a final close of $904.0 million.
- At the end of 1Q 2019, there were roughly 94 funds in the market targeting an estimated $36.1 billion in capital, compared to 93 funds seeking an estimated $35.8 billion in 4Q 2018.[1]
  - NGP Natural Resources XII was seeking the most capital with a target fund size of $5.3 billion.
- Dry powder was estimated at $53.9 billion at the end of 1Q 2019, which was down 2.9% from 4Q 2018's level, and remains below the record level of $72.5 billion observed in 4Q 2016.[1]

Activity

- Energy and utilities industry managers completed 80 deals totaling a reported $12.4 billion in 1Q 2019, representing 51.6% and 36.0% of 2018's total deal activity and total deal value, respectively.[1]
- Crude oil prices increased during the quarter.
  - WTI crude oil prices increased 17.1% during the quarter to $58.15/bbl.[11]
  - Brent crude oil prices ended the quarter at $66.14/bbl, up 15.3% from year end 2018.[11]
- Natural gas prices (Henry Hub) decreased significantly by 27.0% during the first quarter, ending at $2.95 per MMBtu.[11]
- A total of 1,013 crude oil and natural gas rotary rigs were in operation in the US at the end of 1Q 2019, down 6.4% from the prior quarter. Crude oil rigs represented 80.9% of the total rigs in operation, while gas rigs represented 19.1% of the total rigs in operation.[15]
- The price of iron ore (Tianjin Port) ended the first quarter at $86.47 per dry metric ton, up by 25.0% quarter-over-quarter.[12]

Opportunity

- Acquire and exploit existing oil and gas strategies preferred over early stage exploration in core US and Canadian basins
- Select midstream opportunities

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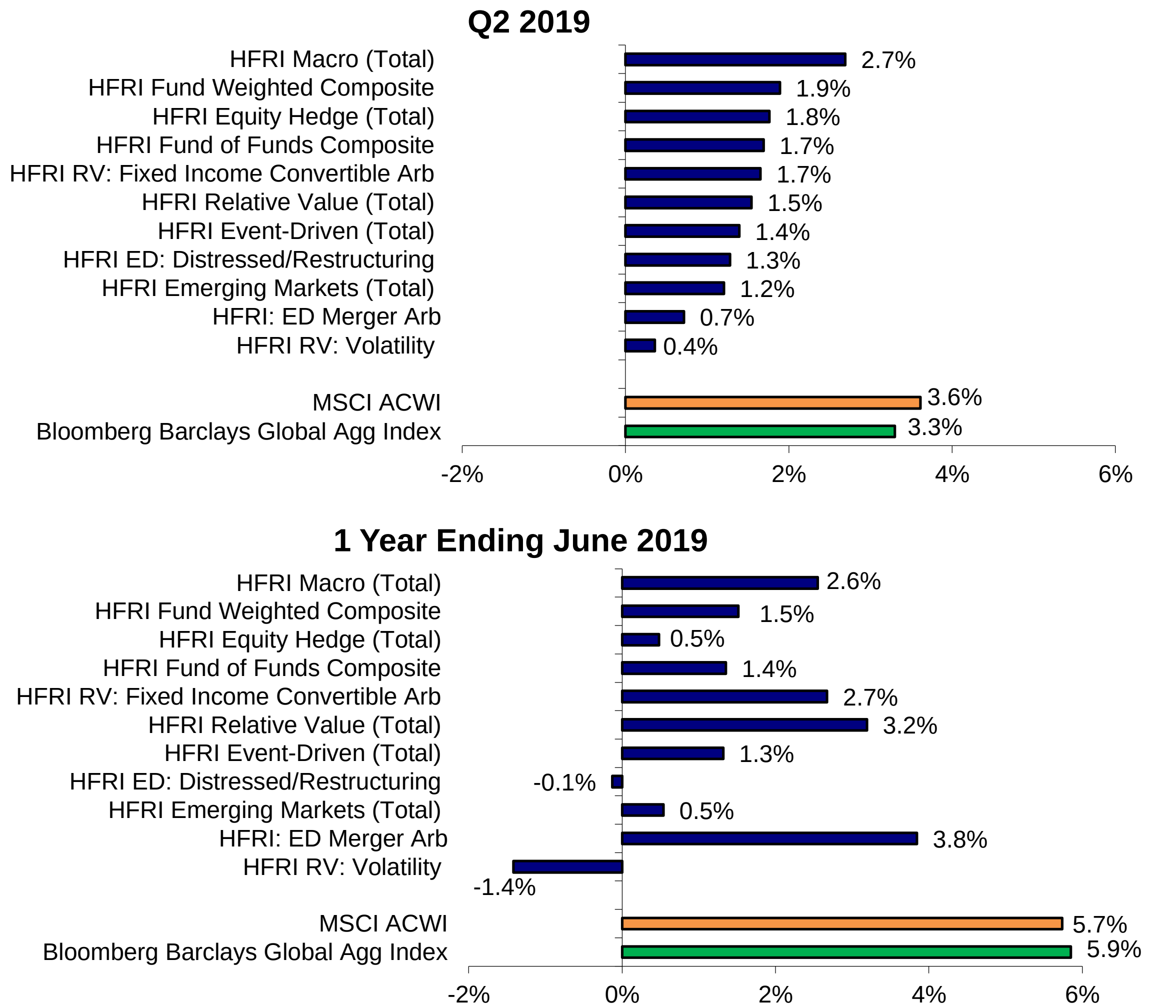
Notes

1. Preqin
2. UBS
3. Standard & Poor's
4. Aon Hewitt Investment Consulting
5. Moody's
6. Fitch Ratings
7. PriceWaterhouseCoopers/National Venture Capital Association MoneyTree Report
8. PitchBook/National Venture Capital Association Venture Monitor
9. Cooley Venture Financing Report
10. Federal Reserve
11. US Energy Information Administration
12. Bloomberg
13. Setter Capital Volume Report: Secondary Market FY 2018
14. KPMG and CB Insights
15. Baker Hughes
16. Dow Jones Venture Capital Report

Notes:
FY: Fiscal year ended 12/31
YTD: Year to date
YE: Year end
LTM: Last twelve months (aka trailing twelve months or TTM)
PPM: Purchase Price Multiples: Total Purchase Price / EBITDA
/bbl: Price per barrel
MMBtu: Price per million British thermal units

Hedge Fund 2Q Market Update and Outlook

Hedge Fund strategies all positive in Q2 – best 1st half returns since 2009

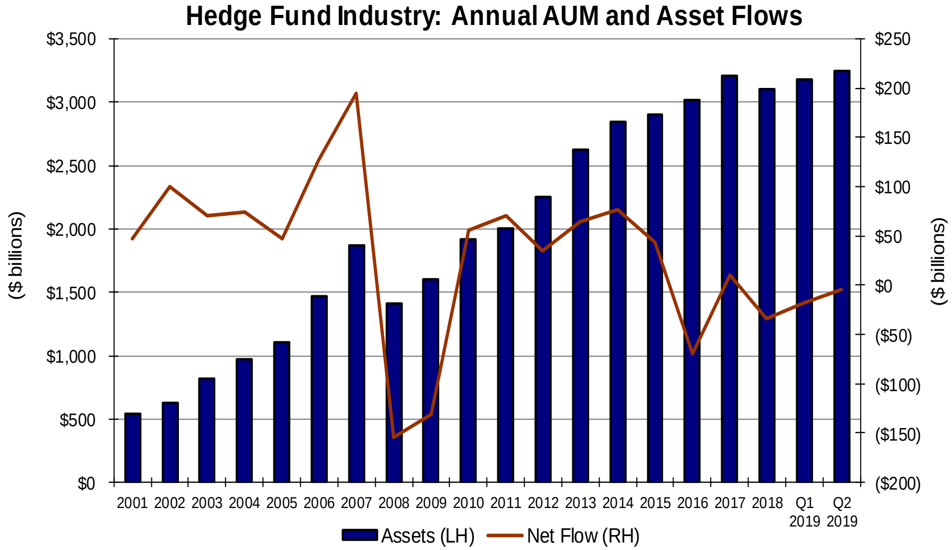


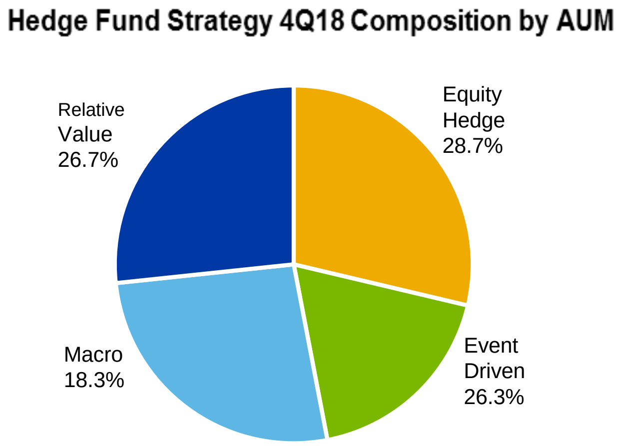
Source: Hedge Fund Research, Inc.

Past performance is no guarantee of future results. Indices cannot be invested in directly. Unmanaged index returns assume reinvestment of any and all distributions and do not reflect our fees or expenses. US dollar results. Information and commentary contained herein is for informational purposes only and should not be considered investment advice

Hedge Fund Industry Update

- According to HFR, total hedge fund assets under management increased to \$3.25 trillion, a marginal new record; all major strategies and regions increased for the second consecutive quarter, owing to performance-based gains, with the best 1st half since 2009 for the HFRI Fund Weighted Composite Index (+7.4%)
- Total HF assets increased by \$63.7 billion in 2Q, bringing YTD AUM growth to \$142.5 billion despite -\$22.6 of net redemptions; Event Driven strategies led net inflows with \$5.3 billion, while Equity Hedge strategies led net outflows with -\$5.5 billion
- **Notable Trends**
  - Discussions have continued around HF implementation of ESG principles, led by interest from European investors; while HFs are not always suitable for ESG, equity strategies are more applicable and we have seen more dedicated products in this area
  - Key talent retention remains an area of focus, especially among macro and multi-strategy funds with multiple underlying PMs; one method has been to launch carve-out strategies where individual PMs can achieve greater scale without leaving the organization





Source: Hedge Fund Research, Inc.

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Types of Hedge Fund Strategies

Multi-Strategy

- Allocates to several individual hedge fund strategies within a single portfolio
- Typically rotate allocations to underlying sub-strategies according to the best investment opportunities
- Offer immediate diversified exposure to investors across geographies, strategies, and investment philosophies

Equity Long/Short

- Attempts to add value through stock selection like long-only managers, but differs through the shorting of individual stocks and adjustments of market exposure
- Gross exposures (long + short exposures) vary widely depending on the manager; some may be market neutral while others have a systematic long or short bias
- Can deploy a fundamental or quantitative approach, and be generalist or sector/geographically focused

Event Driven

- Develops trades that are expected to benefit from company transactions: restructurings, takeovers, mergers, liquidations, refinancing, bankruptcies, etc.
- Distressed investments involve purchases of deeply discounted debt in companies expected to avoid bankruptcy
- Distressed Restructuring investments involved debt purchases in companies expected to soon enter a restructuring or bankruptcy

Global Macro

- Involves trading across a broad opportunity set of major markets, long and short – 2 types
- 1. **Discretionary Global Macro** - Managers aim to profit by capturing macroeconomic trends (interest rates, inflation, economic cycles, political changes). Strategies are applied to a variety of global markets, asset classes (stocks, bonds, currencies, credit, commodities) and financial instruments (cash, derivatives).
- 2. **Systematic Global Macro** - Also known as CTAs or Managed Futures

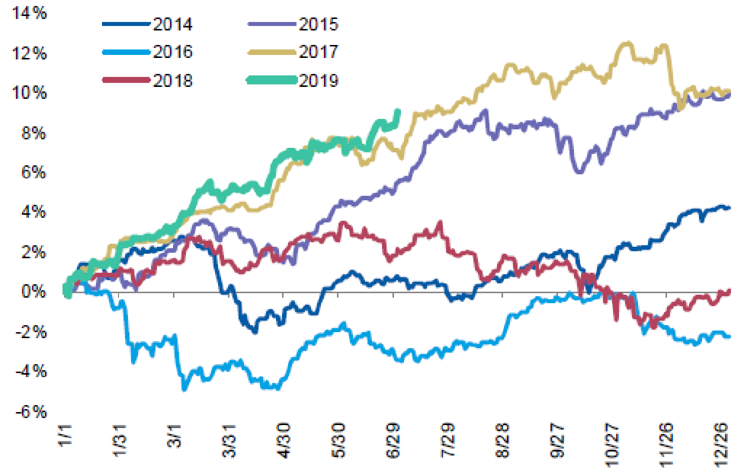
Relative Value

- Seek to profit by capitalizing on the mispricing of related securities or financial instruments
- Take positions when they believe the value of a security has departed from their perception of fair value on a relative basis to other, similar securities

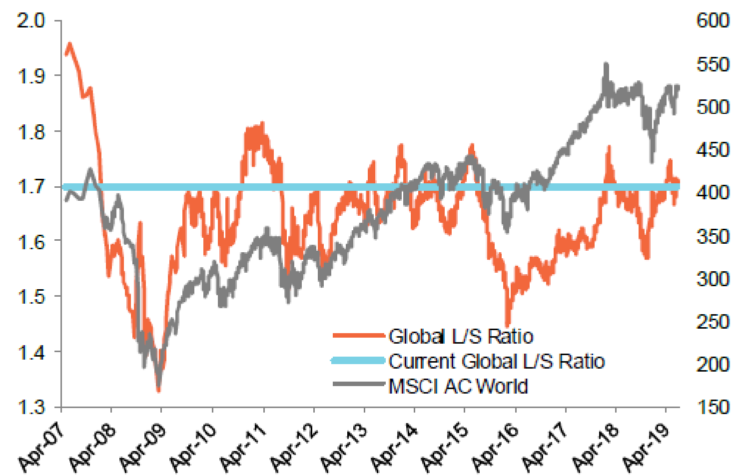
Long/Short equity funds positive in volatile second quarter

- *HFRI Equity Hedge (Total) Index: Q2'19: +1.8%, YTD: +9.5%*
- Long/short equity funds gained +1.8% during the second quarter, lagging the S&P 500 (+4.3%) and MSCI ACWI (+3.6%). Equity markets recovered strongly in June following 5%+ losses in May, as the Fed signaled potential interest rate cuts and trade tensions between the US and China eased. There was a significant range of dispersion amid this choppy, macro-driven environment.
- As shown by the top chart, the first half of 2019 has seen the strongest alpha generation by long/short equity managers in the past six years, surpassing 2017. It is worth highlighting however, that in previous years which have begun strongly, alpha has proven harder to come by in the second half.
- Gross (long+short) and net (long-short) exposures continued to trend up during the period, with a notable pick up late in the quarter as macro fears were assuaged by the Fed's actions. As shown by the bottom chart, the global long/short ratio (long exposure/short exposure) remains at elevated levels relative to history, suggesting that managers are for the most part bullish about the environment for equities.
- According to various prime broker estimates, long/short equity funds remain overweight growth and defensive sectors ("barbelled"), although cyclicals saw an increase in June as the market assumed more of a risk-on stance.

Global YTD Total Alpha (Long Appreciation - Short Appreciation)



Source: Bloomberg, Morgan Stanley Prime Brokerage, data as of Jul 2, 2019



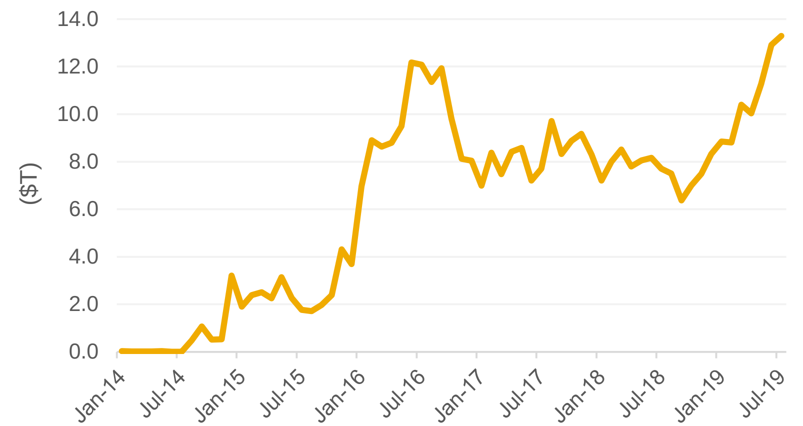
Source: Bloomberg, Morgan Stanley Prime Brokerage, data as of Jun 28, 2019

The ongoing low cost of debt helps fuel a boom in M&A activity

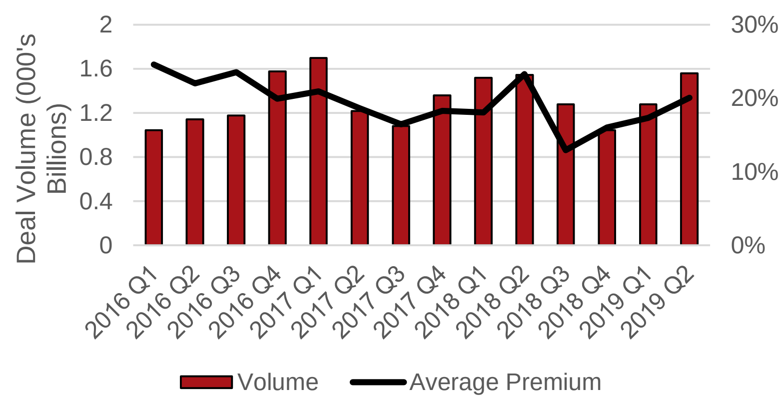
HFRI Event Driven (Total) Index: Q219: 1.4%, YTD: 5.6%

- Softening economic releases and global trade tensions contributed to changing expectations in global monetary policies. Central banks hinted at more stimulus, depressing yields so significantly that even some European HY bonds traded at negative marks. The global supply of negative yielding debt reached a record high of $13 trillion in June.
- Dovish pivots by both the Fed and ECB drove positive performance in leveraged credit markets, particularly within HY. The Barclays High Yield Index delivered 2.5% led by chemicals and autos at +4.0% and +3.8%, respectively.
- M&A activity picked up in Q2 with an 18% increase in average deal size and a 29% increase in deal volume. 'Mega-deal' activity continued with Chanel reportedly having interest from a potential buyer in what would be a $113 billion acquisition, which follows the announced Raytheon / United Technologies deal valued at $90 billion and Allergan / AbbVie at $84 billion.
- Managers broadly generated positive performance, with gains across distressed debt, merger arb, and special situations equity. Several multi-event funds benefited in Q2 from the counter-bid for Anadarko from Occidental, while bonds of gas and utility company PG&E contributed to a number of distressed funds. For credit long/short funds, positive returns were driven by further yield tightening while the short book provided a hedge during the short lived sell-off in May.

Bloomberg Barclays Global Agg Negative Yielding Debt Market Value



Deal Volume versus Average Annualised Premium Paid



Source: Bloomberg (both figures)

Structured credit grinds higher amongst tariff talks and shifting Fed policy

HFRI: Fixed-Income Asset Backed: Q2'19: +1.4%, YTD: +3.0%

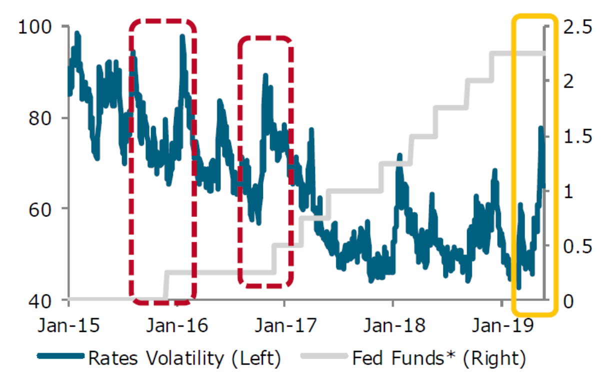
- Along with gains in equity and credit markets, all structured credit sectors experienced gains in Q2 with subordinated CMBS tranches, CLO, ABS, and RMBS all trading higher. Most gains were attributable to the sharp move lower in rates.
- CLO's generated strong returns in Q2 thanks to central banks' guidance for lower rates. High cashflow distributions and default rates lower than the long-term average for the leveraged loans continue to help drive performance.
- MBS performance was positive for Q2 with strong fundamentals in the U.S to support price rises in commercial and residential real estate. Home price appreciation has been slowing, but still positive, and the Fed's desire to keep interest rates low should continue to support residential real estate values.
- ABS spreads continued to grind tighter as defaults remain low and demand for consumer ABS continues to be strong. Recent vintages of auto ABS with stronger underwriting and shorter dated credit card ABS performed well during the quarter amongst heightened volatility and tariff uncertainty.
- Agency MBS performance, particularly inverse IO's and spec pools, were positive as rate cut expectations priced in during Q1 came to fruition. Prepay speeds continue to come in slower than expected but could change as rates creep lower.
- Legacy RMBS exposure continues to contribute positive carry and borrower credit performance continues to improve.
- CMBS continues to see price appreciation grow at a slower rate, but delinquency and loss rates remain notably low.

Index Returns and Excess Return over Rate Movements

	2019Q2		YTD 2019		
Select Indices	Total Return	Excess Return	Total Return	Excess Return	Est. Sharpe Ratio
ABS	1.6	0.1	3.1	0.5	2.2
Agy CMBS Sr.	3.1	0.2	5.9	1.0	2.1
NA CMBS AAA	3.0	0.3	6.2	1.5	2.3
NA CMBS BBB	4.4	1.6	9.3	4.5	2.9
Agency RMBS	1.9	-0.4	4.0	-0.1	-0.3
Conv'l 30yr 3s	2.4	-0.5	5.2	0.0	0.1
Conv'l 30yr 3.5s	2.0	-0.4	4.3	-0.2	-0.5
Conv'l 30yr 4s	1.7	-0.4	3.6	-0.2	-0.5
Conv'l 30yr 4.5s	1.5	-0.4	3.4	-0.2	-0.4
CLO AAA	1.2	0.6	2.4	1.2	12.3
CLO BBB	2.2	1.5	6.1	4.8	7.8
Corp - Ind'l	3.8	0.3	9.3	3.2	2.1
Corp - Utility	3.8	-0.3	8.4	1.3	1.6
Corp - Fin'l	3.3	0.5	7.9	3.0	2.3
HY Corp	2.1	0.1	9.3	5.8	1.7
EM USD Agg	3.2	0.2	8.6	3.6	1.6

Source: Wells Fargo

Rate Volatility Has Increased as the Fed Shifts its Policy



Source: Wells Fargo

275/320

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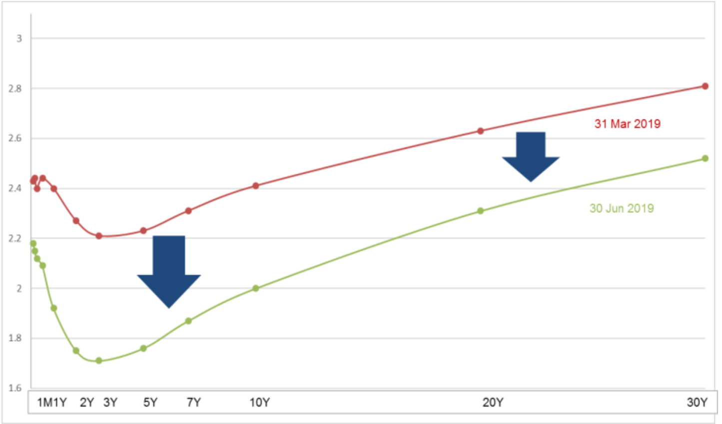
Macro managers benefitted from ongoing central bank dovishness

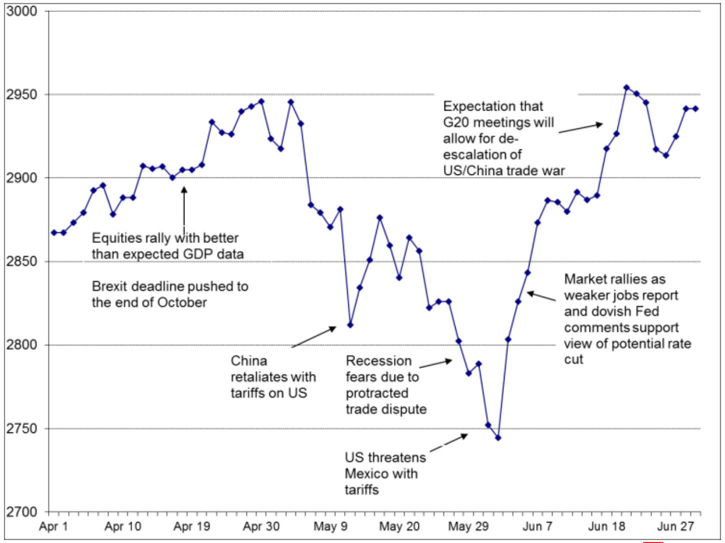
*HFRI Macro (Total) Index**:** Q2'19: +2.7%, YTD +5.0%*
*HFRI Macro: Disc. Thematic Index**:** Q2'19: +2.1%, YTD +4.2%*
HFRI Macro: Systematic Div. Index: Q2'19 +3.7%, YTD +5.8%

- Q2 was a positive quarter for global macro strategies, with gains registered across both discretionary and systematic strategies.
- Interest Rate trading was the primary driver for macro managers during the quarter, as traders were well positioned on the expectation that both US and European central banks would signal interest rate cuts in response to fears of a global recession, muted inflation, and ongoing trade tensions between the US and China.
- While most managers have been more focused on interest rate opportunities, gains were also made in FX trading during the quarter through short USD and long gold positions given the expectation of cuts from the Fed.
- Ongoing Brexit concerns have been temporarily been pushed out to October, when a final agreement will need to be made. Most managers have limited any directional exposure related to views on Brexit.
- Despite weakness in May, systematic strategies were positive for the quarter led by long equity and fixed income positioning and slightly offset by some losses in currency trading as a result of long USD exposure; despite some choppiness in the energy space, most markets trending strongly during the quarte, allowing trend-followers to reap gains without much whipsaw.

US Treasury yield curve change in Q2 (%)



US S&P Q2



Source: Bloomberg

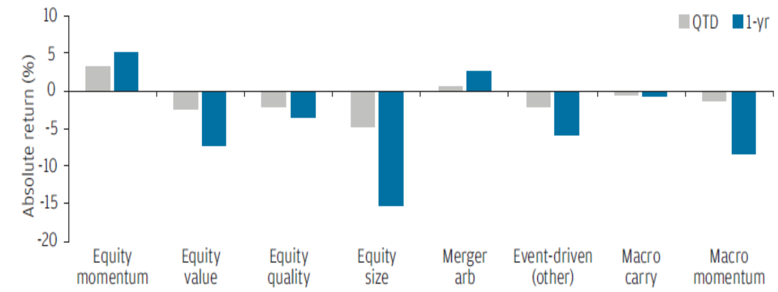
Relative Value strategies grind ahead in tighter second quarter trading

HFRI Relative Value (Total) Index: Q2'19: +1.5%, YTD: +5.4%
SG Multi Alternative Risk Premia Index: Q2'19: -0.5%, YTD:+2.7%

- After a strong start to the year, alternative risk premia strategies experienced a mild setback during the second quarter as small cap premium was significantly negative and value strategies continued to be challenged. Meanwhile, momentum factors and carry strategies (such merger arb and volatility) were generally positive contributors (top chart)
- Volatility-oriented strategies faced a less compelling environment than the first quarter, as implied volatility tumbled lower across most markets outside of a brief jump during May; however, volatility in precious metals and rates markets jumped toward the end of the quarter as anxiety over the next round(s) of central bank action kicked in
- For funds that trade VIX futures looking to capitalize on a structural decline of futures toward spot, the curve inverted during May when equity markets fell mid-high single digits, but quickly normalized into a steep contango structure that enticed VIX futures sellers back into the market (bottom chart)
- Option premium strategies were faced a choppier market as some put options contributing negatively during May, and VIX was below average for most of the quarter; however, premiums have been richer compared to previous grinds higher, and some active managers have benefited from tactical positioning.

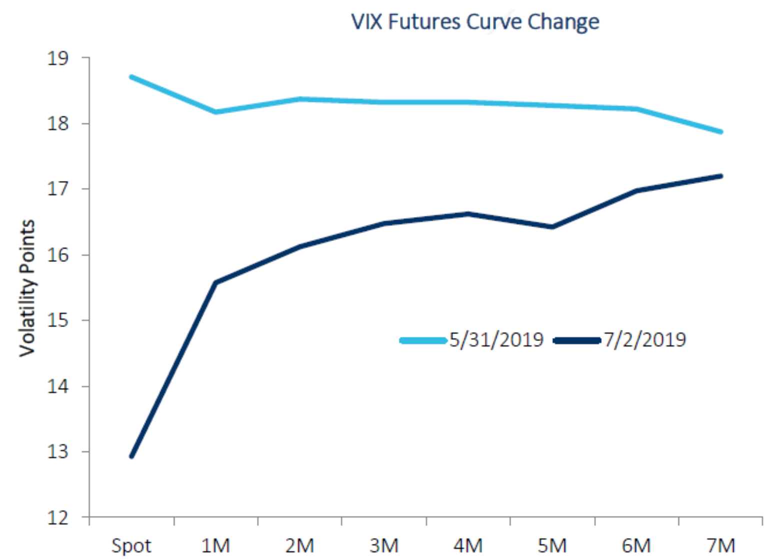
Factors generally suffered over the quarter, with the exception of equity momentum

QUANTITATIVE BETA STRATEGIES LONG/SHORT FACTOR RETURNS



Source: J.P. Morgan Asset Management; data as of June 30, 2019. Note: Factors presented are long/short in nature. Equity factors represented as 100% long notional exposure, macro factors as aggregation of 5% vol subcomponents. Valuation spread is a z-score between the median P/E ratio of top-quartile stocks and bottom-quartile stocks as ranked by the value factor.

Source: J.P. Morgan



Source: Capstone (Bloomberg)

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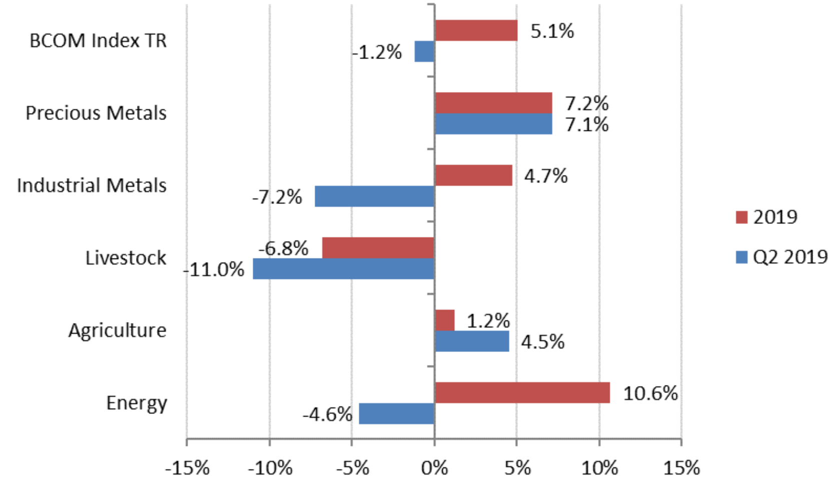
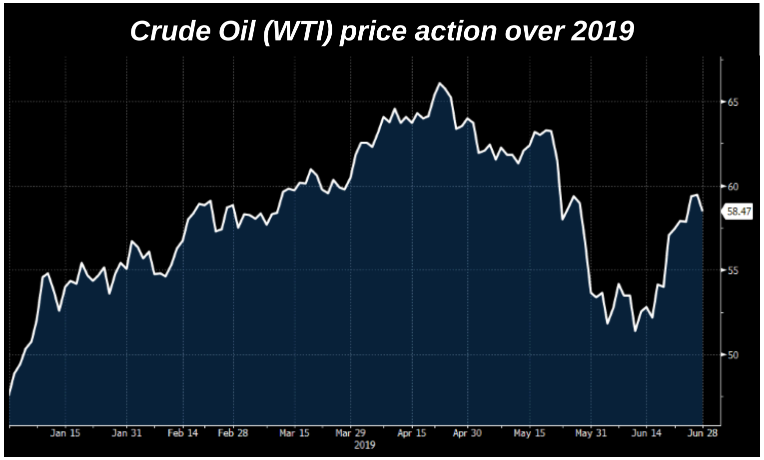
Energy and base metals led the BCOM lower for the quarter

Bloomberg Commodity Index: Q2 ’19: -1.2%, YTD: +5.1%

- The Bloomberg Commodity Index (“BCOM”) closed the second quarter marginally lower as weakness in energy, base metals and livestock prices was only partly offset by gains in the agriculture and precious metals sectors.
- After a strong start to the quarter, oil prices saw a dramatic correction in May on global growth concerns, before recouping most of the losses in June, and closing the quarter broadly unchanged. The performance of natural gas, on the other hand, was negative throughout the quarter (-16.2%) due to mild weather and strong inventory data.
- Industrial metals (-7.2%) were down across the board in Q2, with the US-China trade dispute continuing to weigh on prices. Precious metals were positive (+7.1%), as heightened geopolitical tensions and the more accommodative stance taken by central banks across the globe led to a rally in the price of gold (+9%).
- In the agriculture sector (-4.5%), we saw surprises to the upside in grains, with disruptions to supply leading prices of wheat (+14%) and corn (+14.9%) up.
- Livestock closed the quarter down -11%, as the apparent containment of the swine fever that affected the sector in China led to a repricing of demand expectations.





Source: Bloomberg

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Strategy Outlook Summary

	Market Environment		
	Favorable	Neutral	Unfavorable
Hedged Equity		**X**	
Fundamental Long/Short		X	
Quantitative Market Neutral		X	
Activist		X	
Event-Driven	**X**		
Merger Arbitrage	X		
Long/Short Credit	X		
Distressed Credit		X	
Multi-strategy: Equity & Credit	X		
Structured Credit: Corporate-Backed	X		
Structured Credit: Mortgage-Backed		X	
Global Macro	**X**		
Discretionary	X		
Systematic/CTA		X	
Relative Value		**X**	
Alternative Risk Premia		X	
Volatility Arbitrage		X	
Commodities		**X**	
Long-Only		X	
Long/Short		X	

Appendix: Glossary of Terms

Glossary of Terms– Hedge Funds

- **Ability to Benchmark** – The ability to measure risk adjusted performance against an appropriate opportunity set usually represented by an index.
- **Acquirer** – A company purchasing all of the outstanding stock of a target company.
- **Acquisition Target** – A company being targeted for purchase by another.
- **Alpha** – The amount by which an investment outperforms its benchmark on a risk adjusted basis.
- **Alpha Transport Strategy** – A strategy which attempts to earn higher risk-adjusted returns by investing in non-correlated securities.
- **Arbitrage** – Investment in highly correlated assets that are not priced consistently, usually betting the cheaper will rise in value and the more expensive will fall in value.
- **Asset Class Exposure** – The degree to which an investment is exposed to a particular asset class and the associated risks and rewards.
- **Benchmark** – A collection of assets representing the opportunity set available to a particular investment strategy.
- **Beta Exposure** – A measure of the risk arising from exposure to pervasive risks such as the equity or fixed income markets.
- **Beta Consistency** – The extent to which an investment has consistent rather than tactical market risk exposures.
- **Concentrated Position** – The extent to which a strategy is exposed to a small number of securities or risk exposures.
- **Convertible Security** – A preferred stock or debt security which can be converted into common stock at the option of the investor.

Glossary of Terms–Hedge Funds (cont'd)

- **Core Asset Classes** – Conventional asset classes, including equity, bonds, and cash.
- **Correlation** – The extent to which the return patterns of two assets are similar.
- **Derivatives** – A financial instrument which derives its value from the price of underlying assets such as stocks, bonds, oil prices, or pork bellies.
- **Distressed Company** – A company in or near bankruptcy. Investors in such a company expect to profit from restructuring or liquidation of the troubled company.
- **Expected Inflation** – The market's expectations regarding the rate at which prices will increase or, alternatively, currency will decline in value.
- **Event Risk** – The risk associated with an unexpected event, typically an unusual investment return, fraud, or misrepresentation by an investment manager.
- **Fundamentals** – The basic factors used to value an asset, such as sales growth, profit margins, dividends, competitive landscape, etc.
- **Fund of Hedge Funds** – A fund that invests in underlying hedge fund products.
- **Global Tactical Asset Allocation (GTAA)** – An investment strategy designed to capitalize on relative value opportunities across asset classes and currencies.
- **Hedge Fund** – A legal structure under which some investment funds are established which allows them to engage in non-traditional techniques such as shorting securities, leveraging their positions, or using derivatives extensively.
- **Inflation Sensitivity** – The degree to which a security's value is impacted by changes in inflation expectations.

Glossary of Terms–Hedge Funds (cont’d)

- **Institutional Client Focus** – Business focus on serving the informational, disclosure and other requirements of institutional investors.
- **Investment Risk** – The potential for loss of principal in an investment arising from market movement or unsuccessful active management decisions.
- **Leverage** – Taking investment positions with borrowed money or derivative positions such that the total investment exposures (long plus short) exceed the fund’s total assets.
- **Liquidity** – The extent to which a security can be purchased or sold quickly at a fair price.
- **Liquid Alternatives** – The group of investment strategies outside of traditional equity and fixed income mandates and excluding illiquid assets such as private equity, real estate, and infrastructure. Liquid Alternatives include hedge funds, commodities, currencies, and other strategies that are predominantly focused on publicly traded securities.
- **Lockup** – The amount of time before an investment manager can be terminated and the assets withdrawn from the manager’s portfolio.
- **Long Position** – An investment in an asset expected to increase in value.
- **Merger** – The combining of two or more companies into a single company to benefit from a pooling of resources, a decline in competition, or other factors.
- **Momentum** – A trend in asset prices. Some managers invest in trending assets in expectation that they continue doing so.
- **Operational Risk** – Risk associated with failed internal processes, people and systems, or external events. Includes fraud and misrepresentation.

Glossary of Terms–Hedge Funds (cont'd)

- **Price Discrepancy** – The difference between the market price and perceived value of a security.
- **Real Asset** – A tangible asset such as gold, oil, real estate or timberland.
- **Registered Investment Advisor** – An Investment Advisor registered with the US Securities and Exchange Commission.
- **Reorganization** – The restructuring of a firm's capital structure, business processes, organizational structure, and/or management team to make it more efficient or effective.
- **Return Expectation** – The return expected in an average future period.
- **Sector Specific** – Focusing on a particular sector of the economy such as technology or energy.
- **Short Position** – Selling a borrowed security in anticipation of a decrease in value. A profit is made if the security is later bought at a lower price.
- **Spin-Off** – The establishment of a company's division or subsidiary as a separate company by distributing shares to existing shareholders.
- **Systematic Risk** – Risks arising from equity or bond markets, economic conditions, or other pervasive exposures that cannot be eliminated by diversification.
- **Takeover** – When one company acquires another's assets for or against the wishes of the target company's management.
- **Transparency** – The extent to which information on investment processes, risks, and positions are shared with clients.
- **Unconstrained** – The ability of a manager to use shorting, leverage, concentrated positions, or other nontraditional investment techniques.
- **Unexpected Inflation** – Inflation not anticipated by the securities markets.
- **Volatility** – The standard deviation or variability of security returns. The most common measure of risk in investment portfolios.

Glossary of Terms–Real Estate

- **Cap Rate** - Capitalization Rate: Valuation measure real estate taking the current year NOI for a property divided by the gross market value
- **Core** - Conservative investing style; stabilized assets with low-to-moderate leverage, occupancy usually 80% or higher
- **NOI** – Net Operating Income: Real estate investment industry's version of income, ignores non-cash items like depreciation and also does not include interest payments related to debt
- **Non-Core** - More aggressive style of investing; non-stabilized assets (<80% occupancy) or asset with leverage in excess of 60%; includes a variety of risks present such as leasing, repositioning, development
- **NPI** - NCREIF Property Index: An unleveraged, gross of fees, property level total return series
- **NFI-ODCE** - NCREIF Fund Index-Open ended Diversified Core Equity : A capitalization-weighted, gross of fees, time-weighted return index with an inception date of 1/1/1978. Published reports may also contain equal-weighted and net of fees information. Open-end funds are generally defined as infinite-life vehicles consisting of multiple investors who have the ability to enter or exit the fund on a periodic basis, subject to contribution and/or redemption requests, thereby providing a degree of potential investment liquidity. The term Diversified Core Equity style typically reflects lower risk investment strategies utilizing low leverage and generally represented by equity ownership positions in stable US operating properties (as defined herein). The NFI-ODCE is a quasi-managed index based on the periodic review by the Index Policy Committee ("IPC") of the index's criteria thresholds.
- **The S&P 500 Index** is an unmanaged market capitalization weighted index of 500 common stocks chosen for market size, liquidity, and industry group representation to represent US equity performance.
- **The Barclays US Aggregate Bond Index** is a broad-based benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, MBS (agency fixed-rate and hybrid ARM pass-throughs), ABS and CMBS (agency and non-agency).

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Glossary of Terms–Real Estate (cont'd)

- **Opportunistic** - Funds of preponderantly non-core investments that are expected to derive most of their returns from appreciation and/or which may exhibit significant volatility in returns. This may be due to a variety of characteristics such as exposure to development, significant leasing risk, high leverage, or a combination of risk factors.
- **Pre-Specified Deals** –Investments that are purchased for a fund before its final close. The assets are typically warehoused on a line of credit
- **Promote (Carried Interest)** -The performance fee a manager receives once the investors have received their return of capital and the preferred return (return promised by the manager)
- **Time-Weighted Return** -A method of measuring the performance of a portfolio over a particular period of time. Effectively, it is the return of one dollar invested in the portfolio at the beginning of the measurement period. This is a better return measure when the manager does not control when the dollars must be invested
- **Value-Added** - Funds that generally include a mix of core investments and others that will have less reliable income streams. The portfolio as a whole is likely to have moderate lease exposure and moderate leverage. As a result, such portfolios should achieve a significant portion of the return from appreciation and are expected to exhibit moderate volatility
- **Vintage Year** -The year in which a fund has its final closing. Typically coincides with the year a fund begins to draw capital for actual investments

Glossary of Terms–Private Equity

- **Private Equity:** Private equity is broadly defined as investments in privately negotiated securities that typically do not trade in a capital market. Investments are typically illiquid and long-term in nature, thereby introducing greater risk into a portfolio, which is generally rewarded by higher returns than traditional asset classes. Aon Hewitt classifies its private equity investments into the following categories: venture capital, buyouts, mezzanine, distressed debt, infrastructure, special situations, fund-of-funds, and co/ direct investments.
- **Vintage year**: The year of the first drawdown of capital.
- **Commitment**: A limited partner's obligation to provide a certain amount of capital to a fund.
- **Capital contribution**: The amount of capital drawn down by the general partner. Also known as the paid-in capital.
- **Distribution**: Cash or the value of stock disbursed to the limited partners of a fund.
- **Market value**: The carrying value of the remaining investments.
- **Internal rate of return (IRR):** The discount rate that equates the net present value (NPV) of an investment's cash inflows with its cash outflows.
- **Pooled IRR**: A method of calculating an aggregate IRR by summing cash flows together to create a portfolio cash flow and calculate IRR on portfolio cash flow. IRR is used in calculating returns of private equity funds because cash flows are determined by the manager as opposed to investors.
- **J Curve**: The curve realized by plotting the returns generated by a private equity fund against time (from inception to termination)

Glossary of Terms–Private Equity (cont'd)

- **Fund Classifications by Strategy**
- **Venture Capital**
  - Seed – An entrepreneur has a new idea or product, but no established organization or structure. Investors tend to provide a few hundred thousand dollars and perhaps some office space to an entrepreneur who needs to develop a business plan.
  - Early-stage – The organization has been formed and has employees, and products are in the developmental stage. Early-stage investors back companies when they have a completed business plan, at least part of a management team in place, and perhaps a working prototype.
  - Later Stage – An established infrastructure is in place, and the company has a viable product that is market-ready and generating revenues. Later-stage investors typically provide financing for expansion of a company that is producing, shipping, and increasing its sales volume.
- **Corporate Finance/Buyouts -** A fund investment strategy involving the acquisition of a product or business, from either a public or private company, utilizing a significant amount of debt and some equity.
- **Mezzanine-** A fund investment strategy involving subordinated debt (the level of financing senior to equity and below senior debt).
- **Distressed Debt-** A fund investment strategy involving investment in equity or debt of companies that are unable to service existing debt, often including companies in, or preparing to enter bankruptcy.
- **Infrastructure -** A fund investment strategy involving investment in equity and debt securities in transportation, communication, sewage, water, and electric systems. These systems tend to be high-cost investments however they are needed for a country to be efficient and productive.

Glossary of Terms–Private Equity (cont'd)

Fund Classifications by Strategy (cont'd)

- **Fund-of-Funds**
  - A fund set up to distribute investments among a selection of private equity fund managers, who in turn invest the capital directly. Fund-of-funds are specialist private equity investors and have existing relationships with firms. They may be able to provide investors with a route to investing in particular funds that would otherwise be closed to them.
- **Co-Investments**
  - The syndication of a private equity financing round or an investment by a general partner alongside a private equity fund, in a financing round.
- **Fund Classifications by Fund Size**
  - Small — $0-500 million
  - Medium — $500 million – 1B
  - Large — $1B – 5B
  - Mega — > $5B
- **Fund Classifications by Portfolio Company Enterprise Value**
  - Small — <$100 million total equity value (TEV)
  - Medium — $100 million – $1B TEV
  - Large — $1B – $3B TEV
  - Mega — > $3B TEV

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Disclosures

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Board Meeting V.E.

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MEMORANDUM

DATE: August 19, 2019

TO: OPERS Retirement Board Members

FROM: Karen Carraher, Executive Director

RE: **V. Discussion Items:**
E. Executive Director Report - July

Below is my Executive Director report for July 2019.

General

- Just a reminder, the **tri-annual Ohio Retirement Systems and Ohio Deferred Compensation Joint-Trustee Training Program** will be held on November 4, 2019. The program will be at OPERS beginning at 9:00 a.m. (with breakfast starting at 8:30) and end around 3:00 p.m. Presentation topics will include fiduciary/governance matters, current actuarial issues, real estate investments, ethics and legislative outlook. Official invitations will be coming in the next few weeks.

Finance

- The **external audit** of the financial statements was finalized with the receipt of the audit opinion dated June 14, 2019, the opinion included in the 2018 Comprehensive Annual Financial Report (CAFR). Financial Reporting also received the audit opinions for the individual plan statements and the GASB 68 and GASB 75 reports for employers. Refer to the attached memo for additional information on the opinions and required communications from the auditors. The CAFR, GASB 68 and GASB 75 reports for employers and the Popular Annual Financial Report (PAFR) were released in June.

- The Treasurer's office has begun the **Custody RFP and Custody RFI** process and provided drafts of the documents for review to OPERS and the other state systems at the end of June. Staff are currently reviewing the drafts and will be providing feedback in August. Custody services are slated to be designated in March 2020 with the new contracts beginning in July 2020.

Health Care

- **HRA Conversion activities have continued.** Effective September 3, 2019, PayFlex will no longer serve as Willis Towers Watson's (Via Benefits) subcontracted HRA administrator (originally communicated via Board memo in March 2019). Staff have been partnering with Willis Towers Watson to work though the various tasks supporting this implementation. Once the transition is complete, Willis Towers Watson will manage the retiree's entire experience. They will have a one-stop shop to get answers for their HRA-related requests, have their reimbursement requests processed, and address any enrollment-related needs they may have. Retirees will start to receive communications from both OPERS and Willis Towers Watson mid-July, and both customer service teams are prepared to answer any questions retirees may have. A full update on the transition will be provided during the August Board meeting.

- Health Care has completed the plan design and rate setting process in preparation for **2020 open enrollment** plan year. Monthly Self-Supporting Rates for each of our group plans, pre-Medicare and re-employed Medicare, as well as rates for our fully-insured dental and vision plans have been set. The finalization of plan design and rates for 2020 allows us to prepare for the 2020 Open Enrollment season which will include internal staff training, various retiree communications including our retiree newsletter in August, individualized open enrollment packets mailing to retirees in late September and the official kickoff of open enrollment October 15th extending through December 7th. A memo outlining the 2020 retiree health care rates is included in the August Board materials.

- The **health care survey** is being distributed to members. OPERS has worked with the consulting firm of Fahlgren Mortine to develop the survey. The survey takes approximately 10-15 minutes to complete and there is a corresponding video that provides background and explanation. The survey will be initially sent to a random sample of 8,000 participants, both active members and retirees. A paper version of the survey is being sent to selected elderly retiree participants.This group will be used to provide the statistically valid sample. Additionally, the survey will be posted to the website which will allow any member that wants to participate to do so. The survey will be distributed beginning August 12th and will be open until August 30th. The survey results will be presented to the Board at the September meeting.

Government Relations

Federal

- Staff are collaborating with the Ohio House of Representatives **on a resolution that would mirror HCR 23**, which was formerly sponsored by Representative Dorothy Pelanda in 2018 –… *to encourage equitable and diverse gender representation on the boards and in senior management of Ohio companies and institutions*. Representatives Thomas West (D-Canton) has agreed to be the primary sponsor of the resolution and has secured a co-sponsor in Representative Sara Carruthers (R-Hamilton). Ideally the resolution would be introduced early enough for the sponsoring legislators to be part of the 2019 Corporate Governance Forum. The forum will be held October 15, 2019 in the Neil Toth Auditorium and will center on the topic of Board Diversity.

- The U.S. House of Representatives **voted to repeal the Affordable Care Act's "Cadillac Tax"** on high cost health plans. This is an effort on which OPERS has been actively advocating since the tax's inception because of the potential cost impact it would have on our pre-Medicare health plan. We belong to a national coalition that opposes the excise tax. To date, the efforts have been successful; however, the success has been limited to simply "kicking the can down the road." Twice, the tax has been postponed.

- U.S. Representative Kevin Brady (R-TX), the ranking member of the U.S. House Ways and Means Committee, **recently introduced H.R. 3934, the "Equal Treatment of Public Servants Act of 2019."** The Windfall Elimination Provision issue is one on which staff have been advocating since its inception. Staff have worked with Rep. Brady's staff for several years, leading to the latest legislation, which incorporates some of OPERS' feedback. (*see FYI memo in August meeting materials for details*)

State

- Several **new legislators** have been appointed to fill vacancies:

  - Gil Blair was appointed to the 63rd District seat to replace former Rep. Glenn Holmes.
  - Douglas Swearingen has been appointed to fill the 89th House District seat vacated by former Rep. Steven Arndt.
  - A familiar face to the House, Diane Grendell was appointed to fill the 76th House District seat vacated by former Rep. Sarah LaTourette. Rep. Grendell previously served in the House from 1992-2000.
  - Senator Joe Uecker (R-Loveland) resigned to join the leadership team at the Ohio Department of Transportation, effective August 31, 2019. Two state representatives (John Becker, R-Union TWP.; Doug Green, R-Mt. Orab) and a former state representative (Terry Johnson) have expressed interest in the appointment to represent Adams, Brown, Clermont, and Scioto counties, and a portion of Lawrence County.

If you have any questions, please let me know.

Board Meeting VI.A.

OPERS Monthly Performance Report - Net Of Fees

July 31, 2019

BNY Mellon Account Number	Account Name	Market Value	% of Assets	Month to Date	Quarter to Date	Year to Date	One Year
Defined Benefit							
OHJFDBEQ0102	U.S. Equity (DB)	18,125,425,709	20.6%	1.48	1.48	20.38	7.07
OHJGBM000100	Custom Russell 3000			1.49	1.49	20.48	7.05
	Excess Return			*(0.01)*	*(0.01)*	*(0.09)*	*0.02*
OHJFDBEQ0202	Non-U.S. Equity (DB)	16,499,233,072	18.8%	(1.00)	(1.00)	13.03	(1.77)
OHJGBM000200	MSCI WlxUS+EM+WlxUS Sml+EM Sml			(1.15)	(1.15)	11.60	(2.93)
	Excess Return			*0.15*	*0.15*	*1.43*	*1.16*
OHJFDBFI0102	Core Fixed (DB)	8,698,157,469	9.9%	0.25	0.25	6.40	8.17
OHJGBM004200	Bloomberg Barclays Cap U.S. Agg Bd			0.22	0.22	6.35	8.08
	Excess Return			*0.03*	*0.03*	*0.06*	*0.09*
OHJFDBFI0202	High Yield (DB)	1,639,434,283	1.9%	0.62	0.62	10.80	7.22
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92
	Excess Return			*0.05*	*0.05*	*0.24*	*0.30*
OHJFDBAL0902	Emerging Market Debt (DB)	5,342,902,613	6.1%	1.11	1.11	11.23	8.40
OHJGBM000300	Custom 50/50 JPM EMB and Govt			1.04	1.04	10.82	9.20
	Excess Return			*0.07*	*0.07*	*0.41*	*(0.80)*
OHJFDBAL1002	Securitized Debt (DB)	934,219,476	1.1%	0.22	0.22	8.29	10.82
OHJGBM005900	Custom Sec Debt Blend			0.23	0.23	8.71	11.07
	Excess Return			*(0.01)*	*(0.01)*	*(0.42)*	*(0.24)*
OHJFDBAL1202	Global High Yield (DB)	7,123	0.0%	(11.06)	(11.06)	156.60	488.40
IX1F00300908	Bloomberg Barclays Global High Yield			0.43	0.43	9.95	6.46
	Excess Return			*(11.49)*	*(11.49)*	*146.65*	*481.94*
OHJFDBAL1302	Floating Rate Debt (DB)	17,537,875	0.0%	5.12	5.12	16.70	20.39
IX1F0001346C	Credit Suisse Leveraged Loan Index			0.78	0.78	6.24	4.10
	Excess Return			*4.33*	*4.33*	*10.45*	*16.29*
OHJFDBAL1502	Commodities (DB)	800,028,364	0.9%	(0.22)	(0.22)	12.84	(8.55)
IX1F00084398	S&P Goldman Sachs Commodity Index (SPGSCITR)			(0.21)	(0.21)	13.10	(8.45)
	Excess Return			*(0.00)*	*(0.00)*	*(0.25)*	*(0.10)*
OHJFDBTR0102	US Treasury (DB)	1,713,602,471	1.9%	(0.12)	(0.12)	5.04	7.53
IX1F00003248	Bloomberg Barclays US Treasury Total Return			(0.12)	(0.12)	5.06	7.57
	Excess Return			*0.00*	*0.00*	*(0.02)*	*(0.04)*
OHJFDBAL1402	TIPS (DB)	1,799,597,383	2.0%	0.36	0.36	6.52	5.72
IX1F0000244C	Bloomberg Barclays U.S. Treasury: US TIPS Index			0.36	0.36	6.53	5.72
	Excess Return			*0.01*	*0.01*	*(0.01)*	*0.00*
OHJGPE000200	Private Equity (DB)	9,645,060,287	11.0%	0.09	0.09	2.42	11.09
OHJGBM001000	Custom Private Equity			0.00	0.00	3.48	10.87
	Excess Return			*0.09*	*0.09*	*(1.06)*	*0.23*
OHJGDBREST00	Real Estate (DB)	8,372,907,493	9.5%	0.82	0.82	3.94	7.47
OHJGBM000600	Custom Real Estate			0.07	0.07	3.26	7.40
	Excess Return			*0.75*	*0.75*	*0.68*	*0.07*
OHJFDBAL0402	Hedge Fund (DB)	6,555,842,548	7.5%	0.89	0.89	6.57	2.69
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17
	Excess Return			*0.20*	*0.20*	*(0.25)*	*0.53*
OHJFDBAL1602	Risk Parity (DB)	4,637,087,132	5.3%	1.15	1.15	24.53	13.85
OHJGBM005800	Custom Risk Parity Blend			1.33	1.33	24.58	13.80
	Excess Return			*(0.17)*	*(0.17)*	*(0.04)*	*0.05*
OHJFDBAL1702	GTAA (DB)	0	0.0%	17.65	17.65	29.32	17.68
OHJGBM003500	Custom GTAA			0.29	0.29	12.46	5.19
	Excess Return			*17.36*	*17.36*	*16.86*	*12.49*
OHJFST910002	Cash (DB)	511,582,188	0.6%	0.22	0.22	1.56	2.59
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34
	Excess Return			*0.04*	*0.04*	*0.13*	*0.25*
OHJGADDANN00	DB Additional Annuity	17,187,029	0.0%	0.22	0.22	1.48	2.52
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34
	Excess Return			*0.03*	*0.03*	*0.05*	*0.18*
OHJG0PENA000	Other Pension Assets (DB)	46,163	0.0%				
IX1F0000572C	ML 3 Month Treasury Bills index						
	Excess Return						
OHJFIS618502	DB Rebalancing	2,581,958,966	2.9%	(1.42)	(1.42)	9.07	3.05
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34
	Excess Return			*(1.60)*	*(1.60)*	*7.65*	*0.71*
OHJGPL00DB00	**Total Defined Benefit**	87,891,817,645	**100.0%**	0.31	0.31	10.92	5.75
OHJGBM002000	**Custom Defined Benefit BM**			0.30	0.30	11.25	5.75
	Excess Return			*0.01*	*0.01*	*(0.32)*	*0.00*
OHJGPLALL000	**TOTAL DB/HC/HC115 PLAN**	100,331,223,901	**100.0%**	0.41	0.41	11.26	5.77
OHJGBM002200	**Custom DB/HC Total Plan BM**			0.32	0.32	11.47	5.69
	Excess Return			*0.09*	*0.09*	*(0.21)*	*0.07*

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BNY Mellon Account Number	Account Name	Market Value	% of Assets	Month to Date	Quarter to Date	Year to Date	One Year
Health Care 115							
OHJFH2EQ0102	U.S. Equity (HC115)	2,816,871,481	22.6%	1.48	1.48	20.38	7.07
OHJGBM000100	Custom Russell 3000			1.49	1.49	20.48	7.05
	Excess Return			*(0.01)*	*(0.01)*	*(0.09)*	*0.02*
OHJFH2EQ0202	Non-U.S. Equity (HC115)	2,421,630,108	19.5%	(1.00)	(1.00)	13.03	(1.77)
OHJGBM000200	MSCI WlxUS+EM+WlxUS Sml+EM Sml			(1.15)	(1.15)	11.60	(2.93)
	Excess Return			*0.15*	*0.15*	*1.43*	*1.16*
OHJFH2FI0102	Core Fixed (HC115)	2,028,579,213	16.3%	0.25	0.25	6.40	8.17
OHJGBM004200	Bloomberg Barclays Cap U.S. Agg Bd			0.22	0.22	6.35	8.08
	Excess Return			*0.03*	*0.03*	*0.06*	*0.09*
OHJFH2FI0202	High Yield (HC115)	231,072,021	1.9%	0.62	0.62	10.80	7.22
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92
	Excess Return			*0.05*	*0.05*	*0.24*	*0.30*
OHJFH2AL0902	Emerging Market Debt (HC115)	763,819,127	6.1%	1.11	1.11	11.23	8.40
OHJGBM000300	Custom 50/50 JPM EMB and Govt			1.04	1.04	10.82	9.20
	Excess Return			*0.07*	*0.07*	*0.41*	*(0.80)*
OHJFH2AL1002	Securitized Debt (HC115)	134,330,531	1.1%	0.22	0.22	8.29	10.82
OHJGBM005900	Custom Sec Debt Blend			0.23	0.23	8.71	11.07
	Excess Return			*(0.01)*	*(0.01)*	*(0.42)*	*(0.24)*
OHJFH2AL1202	Global High Yield (HC115)	23,983	0.0%	(11.06)	(11.06)	156.60	488.40
IX1F00300908	Bloomberg Barclays Global High Yield			0.43	0.43	9.95	6.46
	Excess Return			*(11.49)*	*(11.49)*	*146.65*	*481.94*
OHJFH2AL1302	Floating Rate Debt (HC115)	1,755,808	0.0%	5.12	5.12	16.70	20.39
IX1F0001346C	Credit Suisse Leveraged Loan Index			0.78	0.78	6.24	4.10
	Excess Return			*4.33*	*4.33*	*10.45*	*16.29*
OHJFH2AL1402	TIPS (HC115)	769,571,512	6.2%	0.36	0.36	6.52	5.72
IX1F0000244C	Bloomberg Barclays U.S. Treasury: US TIPS Index			0.36	0.36	6.53	5.72
	Excess Return			*0.01*	*0.01*	*(0.01)*	*0.00*
OHJFH2TR0102	US Treasury (HC115)	124,837,261	1.0%	(0.12)	(0.12)	5.04	7.53
IX1F00003248	Bloomberg Barclays US Treasury Total Return Unhedged USD			(0.12)	(0.12)	5.06	7.57
	Excess Return			*0.00*	*0.00*	*(0.02)*	*(0.04)*
OHJFH2AL1502	Commodities (HC115)	243,376,412	2.0%	(0.22)	(0.22)	12.84	(8.55)
IX1F00084398	S&P Goldman Sachs Commodity Index (SPGSCITR)			(0.21)	(0.21)	13.10	(8.45)
	Excess Return			*(0.00)*	*(0.00)*	*(0.25)*	*(0.10)*
OHJFH2AL8002	REIT's (HC115)	733,477,639	5.9%	1.60	1.60	18.63	11.09
OHJGBM000900	Custom DJ Wilshire RESI (Free)			1.60	1.60	18.54	10.89
	Excess Return			*0.00*	*0.00*	*0.10*	*0.20*
OHJFH2AL0402	Hedge Fund (HC115)	688,557,344	5.5%	0.89	0.89	6.57	2.69
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17
	Excess Return			*0.20*	*0.20*	*(0.25)*	*0.53*
OHJFH2AL1602	Risk Parity (HC115)	642,835,705	5.2%	1.15	1.15	24.53	13.85
OHJGBM005800	Custom Risk Parity Blend			1.33	1.33	24.58	13.80
	Excess Return			*(0.17)*	*(0.17)*	*(0.04)*	*0.05*
OHJFH2AL1702	GTAA (HC115)	264,573,407	2.1%	17.65	17.65	29.32	17.68
OHJGBM003500	Custom GTAA			0.29	0.29	12.46	5.19
	Excess Return			*17.36*	*17.36*	*16.86*	*12.49*
OHJFHC975002	Cash (HC115)	12,914,761	0.1%	0.22	0.22	1.57	2.61
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34
	Excess Return			*0.04*	*0.04*	*0.14*	*0.27*
OHJFIS619602	Rebalancing (HC115)	561,179,943	4.5%	(0.96)	(0.96)	7.49	2.26
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34
	Excess Return			*(1.14)*	*(1.14)*	*6.07*	*(0.08)*
OHJGPL00H200	**Total Health Care (HC115)**	12,439,406,256	**100.0%**	1.08	1.08	13.70	5.90
OHJGBM002110	**Custom Health Care Benchmark**			0.43	0.43	13.10	5.33
	Excess Return			*0.65*	*0.65*	*0.60*	*0.57*
OHJGPLHCH200	**Total HC & HC115 Combined**	12,439,406,256	**100.0%**	1.08	1.08	13.70	5.90
OHJGBM002120	**Custom Health Care Benchmark**			0.43	0.43	13.10	5.33
	Excess Return			*0.65*	*0.65*	*0.60*	*0.57*

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BNY Mellon Account Number	Account Name	Market Value	% of Assets	Month to Date	Quarter to Date	Year to Date	One Year	Three Years	Five Years
U.S. Equity									
OHJGEQ000100	U.S. Equity	20,942,297,195	20.9%	1.48	1.48	20.38	7.07	13.07	10.75
OHJGBM000100	Custom Russell 3000			1.49	1.49	20.48	7.05	13.11	10.96
	Excess Return			*(0.01)*	*(0.01)*	*(0.09)*	*0.02*	*(0.03)*	*(0.21)*
OHJGEQ004400	Total US Equity sans transition account	19,052,018,867	19.0%	1.48	1.48	20.47	7.07	13.10	
OHJGBM005700	BM Tot US Eq X Tran Act Blend			1.49	1.49	20.48	7.05	13.11	
	Excess Return			*(0.00)*	*(0.00)*	*(0.01)*	*0.02*	*(0.01)*	
OHJGEQ004500	Internal Index	11,904,823,755	11.9%	1.58	1.58	19.88	8.19	14.01	
OHJGBM004500	BM Internal Index			1.58	1.58	19.87	8.20	14.02	
	Excess Return			*0.00*	*0.00*	*0.01*	*(0.01)*	*(0.00)*	
OHJGEQ004600	Active US Equity	6,674,735,219	6.7%	1.28	1.28	21.44	5.69	11.93	
OHJGBM004600	BM Active US Equity			1.35	1.35	21.63	5.71	11.98	
	Excess Return			*(0.06)*	*(0.06)*	*(0.18)*	*(0.03)*	*(0.04)*	
OHJGEQ004700	US Equity Internal Active	3,471,960,176	3.5%	1.42	1.42	21.47	6.29	12.05	
OHJGBM004700	BM US Eq Int Active			1.39	1.39	21.56	6.66	12.18	
	Excess Return			*0.03*	*0.03*	*(0.08)*	*(0.37)*	*(0.13)*	
OHJGEQ004800	US Equity External Active	3,202,775,044	3.2%	1.14	1.14	21.46	4.87	11.77	
OHJGBM004800	BM US Eq Ext Active			1.30	1.30	21.77	4.37	11.71	
	Excess Return			*(0.16)*	*(0.16)*	*(0.31)*	*0.50*	*0.06*	
OHJGEQ004900	US Equity External Mid Cap	1,877,676,277	1.9%	1.11	1.11	22.74	6.27	12.10	8.33
OHJGBM004900	BM US Eq Ext Mid Cap			1.64	1.64	24.37	8.41	11.98	10.13
	Excess Return			*(0.53)*	*(0.53)*	*(1.63)*	*(2.15)*	*0.13*	*(1.80)*
OHJGEQ005000	US Equity External Small Cap	804,589,866	0.8%	1.02	1.02	21.68	5.01	12.55	9.71
OHJGBM005000	BM US Eq Small Cap			0.52	0.52	17.38	(4.66)	10.24	8.44
	Excess Return			*0.51*	*0.51*	*4.29*	*9.67*	*2.31*	*1.27*
OHJGEQ002300	Emerging Manager Program	520,508,900	0.5%	1.41	1.41	17.17	0.17	9.47	7.85
OHJGBM004000	Custom Emerging Mgr Program			1.29	1.29	19.83	4.88	12.54	10.11
	Excess Return			*0.12*	*0.12*	*(2.66)*	*(4.71)*	*(3.07)*	*(2.25)*
OHJGEQPOIDMF	Internal Domestic Multifactor	472,459,893	0.5%	1.67	1.67	18.33			
OHJGBM006000	Internal Domestic MF Blend			1.67	1.67	18.28			
	Excess Return			*(0.00)*	*(0.00)*	*0.04*			
Non-U.S. Equity									
OHJGEQ000900	Non-U.S. Equity	18,920,863,197	18.9%	(1.00)	(1.00)	13.03	(1.77)	8.06	3.58
OHJGBM000200	MSCI WIxUS+EM+WIxUS Sml+EM Sml			(1.15)	(1.15)	11.60	(2.93)	7.20	2.25
	Excess Return			*0.15*	*0.15*	*1.43*	*1.16*	*0.86*	*1.33*
OHJGEQ005100	Total Non-US Equity sans transition account	18,912,853,998	18.9%	(1.00)	(1.00)	13.03	(1.77)	8.07	
OHJGBM005200	BM Total Non-US Eq EX Tran Acct			(1.16)	(1.16)	11.43	(3.04)	7.16	
	Excess Return			*0.16*	*0.16*	*1.60*	*1.27*	*0.91*	
OHJGEQ005200	Non-US Equity External	14,990,023,019	14.9%	(0.98)	(0.98)	13.41	(1.18)	8.38	
OHJGBM005300	BM Non-US Eq External			(1.19)	(1.19)	11.43	(2.72)	7.30	
	Excess Return			*0.21*	*0.21*	*1.98*	*1.54*	*1.08*	
OHJGEQ005300	Non-US Equity Internal	3,922,830,979	3.9%	(1.09)	(1.09)	11.66	(3.84)	6.98	
OHJGBM005400	BM Non-US Eq Internal			(1.06)	(1.06)	11.42	(4.16)	6.67	
	Excess Return			*(0.03)*	*(0.03)*	*0.24*	*0.32*	*0.31*	
OHJGEQ005400	Non-US Tilts	1,600,761,989	1.6%	(1.12)	(1.12)	11.88	(3.88)	6.76	
OHJGBM005500	BM Non-US Tilts			(1.13)	(1.13)	11.55	(4.29)	6.36	
	Excess Return			*0.01*	*0.01*	*0.34*	*0.42*	*0.40*	
OHJGEQ005500	Non-US Index	2,322,068,990	2.3%	(1.07)	(1.07)	11.53	(3.80)	7.05	
OHJGBM005600	BM Non-US Index			(1.01)	(1.01)	11.34	(4.06)	6.87	
	Excess Return			*(0.06)*	*(0.06)*	*0.18*	*0.27*	*0.19*	
OHJGEQ005600	External Emerging Markets Small Cap	537,099,572	0.5%	(2.05)	(2.05)	8.14	(3.95)	4.95	
IX1F00079547	MSCI Emerging Markets Small Cap Net Index			(1.49)	(1.49)	5.11	(7.65)	3.48	
	Excess Return			*(0.57)*	*(0.57)*	*3.03*	*3.71*	*1.47*	
OHJGEQ005700	External Emerging Markets Large Cap	2,986,943,996	3.0%	(0.52)	(0.52)	13.16	1.46	9.61	
IX1F00274888	MSCI Emerging Markets Net Dividend Index			(1.22)	(1.22)	9.23	(2.18)	8.42	
	Excess Return			*0.70*	*0.70*	*3.93*	*3.64*	*1.19*	
OHJGEQ005800	External MSCI EAFE	3,004,414,874	3.0%	(1.25)	(1.25)	12.08	(2.18)	7.41	
IX1F00052708	MSCI EAFE Net Dividend Index			(1.27)	(1.27)	12.58	(2.60)	6.87	
	Excess Return			*0.02*	*0.02*	*(0.49)*	*0.42*	*0.54*	
OHJGEQ005900	External MSCI ACWIxUS	7,529,264,901	7.5%	(1.02)	(1.02)	14.48	(0.85)	8.70	
IX1F00269138	MSCI All Country World Ex United States Net Index			(1.21)	(1.21)	12.22	(2.27)	7.20	
	Excess Return			*0.19*	*0.19*	*2.25*	*1.42*	*1.49*	
OHJGEQ006000	External DM Small Cap	932,299,675	0.9%	(0.58)	(0.58)	11.98	(9.45)	4.80	
IX1F00273028	MSCI World Ex US Small Cap Net Index			(0.45)	(0.45)	12.38	(7.12)	6.15	
	Excess Return			*(0.14)*	*(0.14)*	*(0.40)*	*(2.33)*	*(1.35)*	
Minority									
OHJGEQ003400	External Minority Managers	1,187,730,465	1.2%	0.25	0.25	16.82	(0.46)	9.25	
OHJGBM005100	BM Ext Minority Mgr Comp			0.24	0.24	19.58	3.61	10.82	
	Excess Return			*0.02*	*0.02*	*(2.75)*	*(4.07)*	*(1.57)*	
Core Fixed									
OHJGFI000200	Internal Core Bond	10,619,842,362	10.6%	0.25	0.25	6.41	8.17	2.30	3.18
OHJGBM002600	Custom Internal Core Bond			0.22	0.22	6.35	8.08	2.17	3.03
	Excess Return			*0.03*	*0.03*	*0.06*	*0.09*	*0.13*	*0.15*
OHJGFI001000	Core Fixed	10,726,736,532	10.7%	0.25	0.25	6.40	8.17	2.30	3.18
OHJGBM004200	Bloomberg Barclays Cap U.S. Agg Bd			0.22	0.22	6.35	8.08	2.17	3.04
	Excess Return			*0.03*	*0.03*	*0.06*	*0.09*	*0.13*	*0.13*
OHJGFI001200	Internal Core Bond Sans Transition	10,619,842,362	10.6%	0.25	0.25	6.41	8.17	2.30	3.19
OHJGBM003000	Custom Core Fixed Sans Trans			0.22	0.22	6.35	8.08	2.17	3.03
	Excess Return			*0.03*	*0.03*	*0.06*	*0.09*	*0.13*	*0.16*
OHJGFI000500	External Core Bond	106,894,169	0.1%	(0.06)	(0.06)	5.96	8.13	2.17	2.96
OHJGBM004300	Bloomberg Barclays Cap U.S. Agg Bd			0.22	0.22	6.35	8.08	2.17	2.90
	Excess Return			*(0.28)*	*(0.28)*	*(0.39)*	*0.05*	*(0.00)*	*0.06*
OHJGFI001700	Legacy Internal Core Bond	10,619,842,362	10.6%	0.25	0.25	6.41	8.17	2.30	3.20
OHJGBM002800	Custom Legacy Intrnl Core Bond			0.22	0.22	6.35	8.08	2.17	3.05
	Excess Return			*0.03*	*0.03*	*0.06*	*0.09*	*0.13*	*0.15*
OHJGFI002000	Legacy Internal Core Bond Sans Trans	10,619,842,362	10.6%	0.25	0.25	6.41	8.17	2.30	3.20
IX1F00003848	Bloomberg Barclays U.S. Aggregate Bond Index			0.22	0.22	6.35	8.08	2.17	3.05
	Excess Return			*0.03*	*0.03*	*0.06*	*0.09*	*0.13*	*0.16*

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BNY Mellon Account Number	Account Name	Market Value	% of Assets	Month to Date	Quarter to Date	Year to Date	One Year	Three Years	Five Years
US Treasury									
OHJGUSTRE000	US Treasury	1,838,439,738	1.8%	(0.12)	(0.12)	5.04	7.53	1.17	
IX1F00003248	Bloomberg Barclays Treasury Bond Index			(0.12)	(0.12)	5.06	7.57	1.16	
	Excess Return			*0.00*	*0.00*	*(0.02)*	*(0.04)*	*0.00*	
Floating Rate Debt									
OHJGFI001600	Floating Rate Debt	19,293,683	0.0%	5.12	5.12	16.70	20.39	11.82	7.79
OHJGBM003300	CS Leveraged Loan Index (as of 7/10/12)			0.78	0.78	6.24	4.10	5.21	4.02
	Excess Return			*4.33*	*4.33*	*10.45*	*16.29*	*6.62*	*3.76*
TIPS									
OHJGFI000100	OPERS TIPS	2,569,168,876	2.6%	0.36	0.36	6.52	5.72	1.87	1.80
IX1F0000244C	Bloomberg Barclays U.S. Treasury: US TIPS Index			0.36	0.36	6.53	5.72	1.91	1.82
	Excess Return			*0.01*	*0.01*	*(0.01)*	*0.00*	*(0.04)*	*(0.02)*
High Yield									
OHJGFI000300	High Yield	1,870,506,278	1.9%	0.62	0.62	10.80	7.22	6.28	4.73
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92	6.77	5.10
	Excess Return			*0.05*	*0.05*	*0.24*	*0.30*	*(0.48)*	*(0.37)*
OHJGEXTHIGHY	External High Yield	1,312,499,482	1.3%	0.63	0.63	10.24	6.32	6.11	4.62
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92	6.77	5.10
	Excess Return			*0.07*	*0.07*	*(0.32)*	*(0.59)*	*(0.66)*	*(0.48)*
OHJGINTHIGHY	Internal High Yield	558,006,796	0.6%	0.57	0.57	12.04	9.22		
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92		
	Excess Return			*0.01*	*0.01*	*1.48*	*2.30*		
Global High Yield									
OHJGFI001500	Global High Yield	31,106	0.0%	(11.06)	(11.06)	156.60	488.40	45.86	25.55
IX1F00300908	Bloomberg Barclays Global High Yield			0.43	0.43	9.95	6.46	6.09	4.35
	Excess Return			*(11.49)*	*(11.49)*	*146.65*	*481.94*	*39.78*	*21.19*
Emerging Mkt Debt									
OHJGFI000400	Emerging Markets Debt	6,106,721,751	6.1%	1.11	1.11	11.23	8.40	5.10	2.25
OHJGBM000300	Custom 50/50 JPM EMB and Govt			1.04	1.04	10.82	9.20	4.49	2.36
	Excess Return			*0.07*	*0.07*	*0.41*	*(0.80)*	*0.61*	*(0.11)*
GTAA									
OHJGGTAA0000	GTAA	264,573,408	0.3%	17.65	17.65	29.32	17.68	11.68	8.03
OHJGBM003500	Custom GTAA			0.29	0.29	12.46	5.19	7.07	5.14
	Excess Return			*17.36*	*17.36*	*16.86*	*12.49*	*4.62*	*2.89*
Securitized Debt									
OHJGFI000900	Securitized Debt	1,068,549,997	1.1%	0.22	0.22	8.29	10.82	5.89	5.47
OHJGBM005900	Custom Sec Debt Blend			0.23	0.23	8.71	11.07	4.84	5.62
	Excess Return			*(0.01)*	*(0.01)*	*(0.42)*	*(0.24)*	*1.05*	*(0.15)*
Hedge Funds									
OHJGAL000900	Hedge Fund Of Funds	760,940	0.0%	(1.04)	(1.04)	4.83	10.64	4.79	2.60
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*(1.73)*	*(1.73)*	*(1.99)*	*8.48*	*0.26*	*(0.34)*
OHJGAL001000	Direct Hedge Funds	7,243,639,198	7.2%	0.89	0.89	6.57	2.69	5.20	3.23
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*0.20*	*0.20*	*(0.25)*	*0.53*	*0.67*	*0.29*
OHJGAL000300	Total Hedge Funds	7,244,400,138	7.2%	0.89	0.89	6.57	2.69	5.16	3.19
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*0.20*	*0.20*	*(0.25)*	*0.53*	*0.64*	*0.25*
Risk Parity									
OHJGAL001100	Risk Parity	5,279,922,944	5.3%	1.15	1.15	24.53	13.85	9.17	5.74
OHJGBM005800	Custom Risk Parity Blend			1.33	1.33	24.58	13.80	8.15	7.27
	Excess Return			*(0.17)*	*(0.17)*	*(0.04)*	*0.05*	*1.01*	*(1.53)*
Hedge Funds & Opportunistic									
OHJGAL000500	Combined Hedge Fund & Opportunistic	7,244,400,138	7.2%	0.89	0.89	6.57	2.77	5.11	3.18
OHJGBM001300	OPERS Custom Hedge Fund			0.58	0.58	4.01	7.00	7.00	7.00
	Excess Return			*0.32*	*0.32*	*2.56*	*(4.23)*	*(1.89)*	*(3.82)*
Commodities									
OHJGAL000400	Commodities	1,043,404,769	1.0%	(0.22)	(0.22)	12.84	(8.55)	5.21	(11.95)
IX1F00084398	S&P Goldman Sachs Commodity Index (SPGSCITR)			(0.21)	(0.21)	13.10	(8.45)	4.94	(12.41)
	Excess Return			*(0.00)*	*(0.00)*	*(0.25)*	*(0.10)*	*0.27*	*0.47*
Real Estate									
OHJGRE000100	Real Estate	8,372,907,493	8.3%	0.82	0.82	3.94	7.47	7.22	10.94
OHJGBM000600	Custom Real Estate			0.07	0.07	3.26	7.40	7.86	10.03
	Excess Return			*0.75*	*0.75*	*0.68*	*0.07*	*(0.64)*	*0.91*
OHJGAL000100	REITS	733,477,637	0.7%	1.60	1.60	18.63	11.09	2.92	7.94
OHJGBM000900	Dow Jones U.S. Select Real Estate Securities TR Index			1.60	1.60	18.54	10.89	2.80	7.89
	Excess Return			*0.00*	*0.00*	*0.10*	*0.20*	*0.11*	*0.05*
Private Equity									
OHJGPE000100	Private Equity	9,645,060,287	9.6%	0.09	0.09	2.42	11.09	13.67	11.36
OHJGBM001000	Custom Private Equity			0.00	0.00	3.48	10.87	13.46	10.13
	Excess Return			*0.09*	*0.09*	*(1.06)*	*0.23*	*0.21*	*1.23*
Cash/Other Assets									
OHJG0PENA000	Other Pension Assets	46,163	0.0%						
OHJGOT000100	Defined Benefit Cash	511,582,188	0.5%	0.22	0.22	1.56	2.59	1.75	1.21
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34	1.44	0.91
	Excess Return			*0.04*	*0.04*	*0.13*	*0.25*	*0.32*	*0.31*
OHJGOT011500	Cash (HC115)	12,914,761	0.0%	0.22	0.22	1.57	2.61	1.76	
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34	1.44	
	Excess Return			*0.04*	*0.04*	*0.14*	*0.27*	*0.33*	
OHJGADDANN00	DB Additional Annuity	17,187,029	0.0%	0.22	0.22	1.48	2.52	2.20	1.99
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34	1.44	0.91
	Excess Return			*0.03*	*0.03*	*0.05*	*0.18*	*0.76*	*1.08*
OHJFIS618502	DB Rebalancing	2,581,958,966	2.6%	(1.42)	(1.42)	9.07	3.05	5.50	3.39
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34	1.44	0.91
	Excess Return			*(1.60)*	*(1.60)*	*7.65*	*0.71*	*4.07*	*2.48*
OHJFIS619602	Rebalancing (HC115)	561,179,943	0.6%	(0.96)	(0.96)	7.49	2.26	5.81	
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34	1.44	
	Excess Return			*(1.14)*	*(1.14)*	*6.07*	*(0.08)*	*4.38*	

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BNY Mellon Account Number	Account Name	Market Value	% of Assets	Month to Date	Quarter to Date	Year to Date	One Year	Three Years	Five Years
Total Defined Benefit									
OHJGPL00DB00	Total Defined Benefit	87,891,817,645	87.6%	0.31	0.31	10.92	5.75	8.54	6.64
OHJGBM002000	Custom Defined Benefit BM			0.30	0.30	11.25	5.75	8.25	6.26
	Excess Return			*0.01*	*0.01*	*(0.32)*	*0.00*	*0.30*	*0.38*
Total Health Care									
OHJGPL00H200	Total Health Care (HC115)	12,439,406,256	12.4%	1.08	1.08	13.70	5.90	7.35	
OHJGBM002110	Custom Health Care Benchmark			0.43	0.43	13.10	5.33	6.87	
	Excess Return			*0.65*	*0.65*	*0.60*	*0.57*	*0.48*	
OHJGPLHCH200	Total HC & HC115 Combined	12,439,406,256	12.4%	1.08	1.08	13.70	5.90	7.35	5.29
OHJGBM002120	Custom Health Care Benchmark			0.43	0.43	13.10	5.33	6.87	5.05
	Excess Return			*0.65*	*0.65*	*0.60*	*0.57*	*0.48*	*0.25*
Total DB/HC PLAN									
OHJGPLALL000	TOTAL DB/HC/HC115 PLAN	100,331,223,901	100.0%	0.41	0.41	11.26	5.77	8.38	6.46
OHJGBM002200	Custom DB/HC Total Plan BM			0.32	0.32	11.47	5.69	8.06	6.10
	Excess Return			*0.09*	*0.09*	*(0.21)*	*0.07*	*0.32*	*0.36*
OHJGFI000700	Opers Total Fixed Income	24,199,447,960	24.1%	0.48	0.48	8.03	8.02	3.90	3.25
OHJGBM003600	Custom Total Fixed Income			0.42	0.42	7.95	8.03	3.65	3.26
	Excess Return			*0.06*	*0.06*	*0.08*	*(0.02)*	*0.25*	*(0.00)*
OHJG0PBLMRKT	Opers Public Market	75,757,413,572	75.5%	0.36	0.36	13.82	5.16	8.12	5.57
OHJGBM002050	OPERS Public Market BM			0.38	0.38	13.12	4.86	7.53	5.12
	Excess Return			*(0.02)*	*(0.02)*	*0.71*	*0.30*	*0.58*	*0.45*
OHJG0PVTMRKT	Opers Private Market	25,262,367,919	25.2%	0.56	0.56	4.10	7.35	9.00	8.82
OHJGBMPVTMKT	Opers Private Market BM			0.22	0.22	4.35	7.06	8.94	7.98
	Excess Return			*0.34*	*0.34*	*(0.25)*	*0.29*	*0.06*	*0.84*
OHJGDBPVTMKT	Opers Private Market (DB)	24,573,810,329	24.5%	0.55	0.55	4.03	7.49	9.12	9.00
OHJGBMDBPVMT	Opers Private Market DB BM			0.21	0.21	4.28	7.22	9.08	8.14
	Excess Return			*0.34*	*0.34*	*(0.25)*	*0.28*	*0.04*	*0.86*
OHJGDBPBLMKT	Opers Public Market (DB)	63,318,007,316	63.1%	0.22	0.22	13.85	5.01	8.29	5.63
OHJGBM002010	Opers Public Market DB BM			0.36	0.36	13.25	4.82	7.73	5.26
	Excess Return			*(0.14)*	*(0.14)*	*0.60*	*0.19*	*0.56*	*0.37*

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BNY Mellon Account Number	Account Name	Market Value	% of Assets	Month to Date	Quarter to Date	Year to Date	One Year	Three Years	Five Years
U.S. Equity									
OHJFEQ201002	R1000 Intern Active	918,628,070	0.9%	1.54	1.54	20.47	7.69	13.16	11.03
IX1F00003868	Russell 1000 Index			1.55	1.55	20.69	8.00	13.32	11.15
	Excess Return			(0.01)	(0.01)	(0.21)	(0.31)	(0.15)	(0.12)
OHJFEQ201502	Russell 2000 Index	97,615,610	0.1%	0.61	0.61	17.80	(4.30)	10.60	8.97
IX1F00003878	Russell 2000 Index			0.58	0.58	17.66	(4.42)	10.37	8.53
	Excess Return			0.04	0.04	0.14	0.12	0.23	0.44
OHJFEQ202502	Russell 2000 Quant	279,622,977	0.3%	0.73	0.73	17.75	(4.80)	10.51	9.11
IX1F00003878	Russell 2000 Index			0.58	0.58	17.66	(4.42)	10.37	8.53
	Excess Return			0.16	0.16	0.10	(0.39)	0.15	0.58
OHJFEQ202602	Internal US Small Co Tilt	94,826,682	0.1%	1.33	1.33	17.26	(4.09)	9.13	8.04
IX1F0005635C	Russell Fundamental U.S. Small Company			1.33	1.33	17.26	(4.12)	9.08	8.00
	Excess Return			0.00	0.00	0.00	0.03	0.04	0.04
OHJFEQ203502	Russell 800 Index	418,126,838	0.4%	1.43	1.43	23.07	6.72	11.02	9.60
IX1F00027618	Russell Midcap Index			1.43	1.43	23.08	6.71	11.02	9.60
	Excess Return			(0.00)	(0.00)	(0.01)	0.01	(0.00)	0.01
OHJFEQ204502	R800 Intern Active	1,704,580,389	1.7%	1.43	1.43	22.90	6.42	10.89	9.59
IX1F00027618	Russell Midcap Index			1.43	1.43	23.08	6.71	11.02	9.60
	Excess Return			(0.00)	(0.00)	(0.18)	(0.29)	(0.13)	(0.01)
OHJFEQ214002	Russell 800 Quant	569,128,739	0.6%	1.55	1.55	22.88	5.83	10.80	9.69
IX1F00027618	Russell Midcap Index			1.43	1.43	23.08	6.71	11.02	9.60
	Excess Return			0.12	0.12	(0.20)	(0.88)	(0.22)	0.10
OHJFEQ203002	Russell 200 Index	11,294,254,626	11.3%	1.60	1.60	19.80	8.50	14.22	11.78
IX1F00032648	Russell Top 200 Index			1.60	1.60	19.80	8.51	14.23	11.78
	Excess Return			0.00	0.00	0.00	(0.01)	(0.01)	0.00
OHJFEQ220402	Matarin Capital	74,391,878	0.1%	0.71	0.71	12.44	(10.25)	7.10	
IX1F00003878	Russell 2000 Index			0.58	0.58	17.66	(4.42)	10.37	
	Excess Return			0.13	0.13	(5.22)	(5.84)	(3.26)	
OHJFEQ200502	U.S. Eq. Internal Transition	1,890,278,293	1.9%	1.42	1.42	19.47	7.79	13.24	11.84
OHJGBME20050	Custom U.S. Eq. Transition			1.49	1.49	20.48	7.05	13.11	10.96
	Excess Return			(0.07)	(0.07)	(1.01)	0.74	0.13	0.88
OHJFEQ215502	Geneva Capital Mgmt Ltd.	323,472,681	0.3%	0.98	0.98	25.37	10.26	14.17	12.05
IX1F00056628	Russell Midcap Growth Index			2.33	2.33	29.03	14.15	15.51	12.30
	Excess Return			(1.35)	(1.35)	(3.66)	(3.89)	(1.34)	(0.25)
OHJFEQ216502	Disciplined Growth Investors	361,161,554	0.4%	1.08	1.08	20.31	5.32	13.97	12.19
IX1F00056628	Russell Midcap Growth Index			2.33	2.33	29.03	14.15	15.51	12.30
	Excess Return			(1.26)	(1.26)	(8.71)	(8.83)	(1.54)	(0.11)
OHJFEQ212002	Wasatch Advisors Inc	161,958,914	0.2%	1.74	1.74	34.93	20.28	20.02	14.56
IX1F00039058	Russell 2000 Growth Index			0.98	0.98	21.54	(1.22)	12.66	10.21
	Excess Return			0.76	0.76	13.39	21.50	7.36	4.35
OHJFEQ213002	New South	128,842,586	0.1%	0.07	0.07	17.02	4.48	9.55	7.33
IX1F00039298	Russell 2000 Value Index			0.16	0.16	13.65	(7.71)	7.96	6.74
	Excess Return			(0.09)	(0.09)	3.37	12.19	1.59	0.59
OHJFEQ217102	New South Midcap	393,527,338	0.4%	1.19	1.19	20.70	9.16	11.01	
IX1F00056638	Russell Midcap Value Index			0.83	0.83	19.00	1.78	7.75	
	Excess Return			0.36	0.36	1.70	7.38	3.26	
OHJFEQ220102	Grace Capital	7,330	0.0%	0.19	0.19	(85.14)	(86.91)	(46.36)	
IX1F00003868	Russell 1000 Index			1.55	1.55	20.69	8.00	13.32	
	Excess Return			(1.36)	(1.36)	(105.83)	(94.91)	(59.68)	
OHJFEQ220202	Oberweis Asset Mgt, Inc	108,544,571	0.1%	0.47	0.47	16.76	(2.78)	10.62	8.19
IX1F0001178C	Russell 2000 Growth Index			0.98	0.98	21.54	(1.22)	12.66	10.21
	Excess Return			(0.51)	(0.51)	(4.78)	(1.56)	(2.04)	(2.01)
OHJFEQ220302	Decatur Capital Management	81,423,231	0.1%	2.56	2.56	25.60	10.73	15.51	12.63
IX1F00004118	Russell 1000 Growth Index			2.26	2.26	24.23	10.82	17.13	14.25
	Excess Return			0.31	0.31	1.36	(0.09)	(1.62)	(1.62)
OHJFEQ220602	Bowling Portfolio Management	49,981,950	0.0%	(0.61)	(0.61)	14.24	(11.58)		
IX1F00003878	Russell 2000 Index			0.58	0.58	17.66	(4.42)		
	Excess Return			(1.19)	(1.19)	(3.42)	(7.16)		
OHJFEQ212502	Penn Capital Management Co Inc	59,172	0.0%	0.19	0.19	(54.69)	(64.26)	(21.02)	(13.12)
IX1F00003878	Russell 2000 Index			0.58	0.58	17.66	(4.42)	10.37	8.53
	Excess Return			(0.38)	(0.38)	(72.35)	(59.84)	(31.38)	(21.66)
OHJFEQ213502	Atlanta Capital Management Co	160,596,485	0.2%	3.69	3.69	22.50	10.88	14.89	13.93
IX1F00003878	Russell 2000 Index			0.58	0.58	17.66	(4.42)	10.37	8.53
	Excess Return			3.12	3.12	4.84	15.30	4.53	5.39
OHJFEQ417502	Nicholas Investment Partners	231,720,544	0.2%	3.82	3.82	28.83	10.05	15.48	9.29
OHJGBME41750	Russell Midcap Growth Index			2.33	2.33	29.03	14.15	15.51	12.30
	Excess Return			1.48	1.48	(0.19)	(4.10)	(0.03)	(3.01)
OHJFEQ413002	Redwood Large Cap Growth	91,978,604	0.1%	1.62	1.62	19.82	2.04	11.41	9.19
OHJGBME41300	Russell 1000 Index			1.55	1.55	20.69	8.00	13.32	11.15
	Excess Return			0.06	0.06	(0.87)	(5.96)	(1.91)	(1.96)
OHJFEQ217502	Affinity Investment Advisors	77,280,585	0.1%	1.62	1.62	17.07	(0.46)	9.04	7.18
IX1F00003868	Russell 1000 Index			1.55	1.55	20.69	8.00	13.32	11.15
	Excess Return			0.07	0.07	(3.62)	(8.46)	(4.27)	(3.97)
OHJFEQ219002	First Feduciary Investment	45,699	0.0%	0.19	0.19	(23.28)	(28.95)	(4.59)	0.04
IX1F00003868	Russell 1000 Index			1.55	1.55	20.69	8.00	13.32	11.15
	Excess Return			(1.36)	(1.36)	(43.97)	(36.95)	(17.90)	(11.12)
OHJFEQ220002	Winslow Asset Management, Inc.	59,523,638	0.1%	2.93	2.93	18.54	(1.47)	10.09	6.81
IX1F00003858	Russell 3000 Index			1.49	1.49	20.48	7.05	13.11	10.96
	Excess Return			1.45	1.45	(1.94)	(8.52)	(3.02)	(4.14)

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BNY Mellon Account Number	Account Name	Market Value	% of Assets	Month to Date	Quarter to Date	Year to Date	One Year	Three Years	Five Years
OHJFEQ218002	Dean Investment Associates	85,875,985	0.1%	0.70	0.70	14.71	4.33	10.17	8.76
IX1F0001212C	Russell 3000 Value Index			0.78	0.78	16.96	4.23	9.36	7.93
	Excess Return			*(0.08)*	*(0.08)*	*(2.25)*	*0.10*	*0.80*	*0.83*
OHJFEQ219502	Hahn Capital Management, LLC	312,934,559	0.3%	(0.40)	(0.40)	25.94	5.48	11.18	8.19
IX1F00056638	Russell Midcap Value Index			0.83	0.83	19.00	1.78	7.75	7.53
	Excess Return			*(1.24)*	*(1.24)*	*6.93*	*3.70*	*3.43*	*0.66*
OHJFEQ220702	QMA Midcap	254,859,602	0.3%	0.70	0.70	17.25	(3.69)		
IX1F00027618	Russell Midcap Index			1.43	1.43	23.08	6.71		
	Excess Return			*(0.73)*	*(0.73)*	*(5.83)*	*(10.40)*		
OHJFEQ205102	Russell US Multifactor	242,156,582	0.2%	1.76	1.76	19.90			
IX1F00378697	OPERS Russell 1000 Multi-Factor Index			1.76	1.76	19.88			
	Excess Return			*(0.00)*	*(0.00)*	*0.02*			
OHJFEQ205002	MSCI US Multifactor	230,303,311	0.2%	1.58	1.58	16.71			
IX1F00380997	MSCI USA All Cap Top 1000 Custom Multi Factor Index~			1.58	1.58	16.65			
	Excess Return			*(0.00)*	*(0.00)*	*0.06*			
OHJFEQ220802	Westwood Small Cap Value	128,635,729	0.1%	(0.87)	(0.87)	2.76			
IX1F00039298	Russell 2000 Value Index			0.16	0.16	(1.39)			
	Excess Return			*(1.03)*	*(1.03)*	*4.15*			
OHJFEQ220902	Jacobs Levy Small Cap Value	115,952,410	0.1%	0.17	0.17	1.74			
IX1F00039298	Russell 2000 Value Index			0.16	0.16	1.54			
	Excess Return			*0.01*	*0.01*	*0.20*			
OHJFEQ200002	Russell 3000 - Internal	35	0.0%	0.00	0.00	1117.54	1117.54	152.00	136.94
Non-U.S. Equity									
OHJFIE315002	Blackrock Enh ACWI xU.S.	2,104,598,851	2.1%	(1.44)	(1.44)	13.12	(1.76)	8.51	3.33
IX1F00269138	MSCI All Country World Ex United States Net Index			(1.21)	(1.21)	12.22	(2.27)	7.20	2.12
	Excess Return			*(0.23)*	*(0.23)*	*0.89*	*0.51*	*1.31*	*1.21*
OHJFIE337502	JP Morgan Non-U.S. EAFE+	879,072,077	0.9%	(0.69)	(0.69)	19.13	2.69	8.91	3.75
IX1F00269138	MSCI All Country World Ex United States Net Index			(1.21)	(1.21)	12.22	(2.27)	7.20	2.12
	Excess Return			*0.52*	*0.52*	*6.90*	*4.96*	*1.70*	*1.63*
OHJFIE314002	Acadian Non-U.S. ACWI x U.S.	671,942,315	0.7%	(0.35)	(0.35)	11.63	(4.82)	9.99	5.09
IX1F00269138	MSCI All Country World Ex United States Net Index			(1.21)	(1.21)	12.22	(2.27)	7.20	2.12
	Excess Return			*0.87*	*0.87*	*(0.59)*	*(2.55)*	*2.78*	*2.97*
OHJFIE316502	Fisher Investments	830,784,941	0.8%	(1.36)	(1.36)	16.82	(0.46)	8.38	4.28
IX1F00269138	MSCI All Country World Ex United States Net Index			(1.21)	(1.21)	12.22	(2.27)	7.20	2.12
	Excess Return			*(0.15)*	*(0.15)*	*4.59*	*1.82*	*1.18*	*2.16*
OHJFIE317502	Arrowstreet	1,416,348,023	1.4%	(1.49)	(1.49)	11.59	(2.01)	8.29	4.01
IX1F00269138	MSCI All Country World Ex United States Net Index			(1.21)	(1.21)	12.22	(2.27)	7.20	2.12
	Excess Return			*(0.28)*	*(0.28)*	*(0.64)*	*0.27*	*1.09*	*1.89*
OHJFIE318002	JO Hambro	860,540,988	0.9%	(0.19)	(0.19)	18.07	2.48	9.65	5.13
IX1F00269138	MSCI All Country World Ex United States Net Index			(1.21)	(1.21)	12.22	(2.27)	7.20	2.12
	Excess Return			*1.02*	*1.02*	*5.85*	*4.75*	*2.45*	*3.01*
OHJFIE319002	Schroders	765,581,719	0.8%	(0.54)	(0.54)	14.80	(0.49)	9.14	4.29
IX1F00269138	MSCI All Country World Ex United States Net Index			(1.21)	(1.21)	12.22	(2.27)	7.20	2.12
	Excess Return			*0.67*	*0.67*	*2.57*	*1.78*	*1.93*	*2.17*
OHJFIE319502	Manning and Napier	395,987	0.0%	(1.89)	(1.89)	(1.67)	(2.44)	(3.74)	(4.15)
IX1F00269138	MSCI All Country World Ex United States Net Index			(1.21)	(1.21)	12.22	(2.27)	7.20	2.12
	Excess Return			*(0.68)*	*(0.68)*	*(13.90)*	*(0.17)*	*(10.94)*	*(6.27)*
OHJFIE372502	Walter Scott Non-U.S. Core	1,283,464,633	1.3%	(0.60)	(0.60)	16.80	6.19	10.11	7.20
IX1F00052708	MSCI EAFE Net Dividend Index			(1.27)	(1.27)	12.58	(2.60)	6.87	2.39
	Excess Return			*0.67*	*0.67*	*4.22*	*8.79*	*3.25*	*4.80*
OHJFIE330002	LSV Non-U.S. Value	1,140,049,598	1.1%	(1.71)	(1.71)	8.61	(8.58)	5.68	1.69
IX1F00052708	MSCI EAFE Net Dividend Index			(1.27)	(1.27)	12.58	(2.60)	6.87	2.39
	Excess Return			*(0.44)*	*(0.44)*	*(3.97)*	*(5.98)*	*(1.19)*	*(0.70)*
OHJFIE340002	Lazard Emg Mkts Closed End	497,073,530	0.5%	(0.30)	(0.30)	14.24	2.53	8.83	3.49
IX1F00274888	MSCI Emerging Markets Net Dividend Index			(1.22)	(1.22)	9.23	(2.18)	8.42	1.84
	Excess Return			*0.92*	*0.92*	*5.01*	*4.71*	*0.41*	*1.65*
OHJFIE322502	T-Rowe Price Emerging Mkts EQ	684,045,598	0.7%	0.31	0.31	16.47	2.03	10.99	5.85
IX1F00274888	MSCI Emerging Markets Net Dividend Index			(1.22)	(1.22)	9.23	(2.18)	8.42	1.84
	Excess Return			*1.53*	*1.53*	*7.24*	*4.21*	*2.57*	*4.01*
OHJFIE313002	Acadian Emg Mkts EQ	511,830,475	0.5%	(1.72)	(1.72)	7.07	(5.96)	8.07	2.47
IX1F00274888	MSCI Emerging Markets Net Dividend Index			(1.22)	(1.22)	9.23	(2.18)	8.42	1.84
	Excess Return			*(0.49)*	*(0.49)*	*(2.16)*	*(3.78)*	*(0.35)*	*0.63*
OHJFIE315502	Oldfield	264,624,202	0.3%	(2.55)	(2.55)	0.91	0.49	5.90	4.05
IX1F00274888	MSCI Emerging Markets Net Dividend Index			(1.22)	(1.22)	9.23	(2.18)	8.42	1.84
	Excess Return			*(1.32)*	*(1.32)*	*(8.32)*	*2.67*	*(2.52)*	*2.21*
OHJFIE316002	Vontobel	463,784,150	0.5%	0.02	0.02	14.94	4.91	7.36	3.84
IX1F00274888	MSCI Emerging Markets Net Dividend Index			(1.22)	(1.22)	9.23	(2.18)	8.42	1.84
	Excess Return			*1.24*	*1.24*	*5.71*	*7.09*	*(1.05)*	*2.00*
OHJFIE317002	Ballie Gifford	565,586,040	0.6%	(0.10)	(0.10)	19.46	4.92	14.22	5.49
IX1F00274888	MSCI Emerging Markets Net Dividend Index			(1.22)	(1.22)	9.23	(2.18)	8.42	1.84
	Excess Return			*1.12*	*1.12*	*10.23*	*7.10*	*5.81*	*3.64*
OHJFIE321502	MSCI Emerging Markets	535,174,537	0.5%	(1.49)	(1.49)	9.27	(2.09)	8.30	1.96
IX1F00274888	MSCI Emerging Markets Net Dividend Index			(1.22)	(1.22)	9.23	(2.18)	8.42	1.84
	Excess Return			*(0.26)*	*(0.26)*	*0.04*	*0.09*	*(0.12)*	*0.12*
OHJFIE312502	Acadian Non-U.S. Small Cap	258,179,593	0.3%	0.55	0.55	13.75	(7.41)	7.00	3.61
IX1F00273028	MSCI World Ex U.S. Small Cap Net Index			(0.45)	(0.45)	12.38	(7.12)	6.15	3.85
	Excess Return			*1.00*	*1.00*	*1.37*	*(0.30)*	*0.85*	*(0.24)*
OHJFIE320502	MSCI EAFE & Canada	920,110,652	0.9%	(1.19)	(1.19)	13.53	(1.92)	7.27	2.57
IX1F00100188	MSCI EAFE + Canada Net			(1.21)	(1.21)	13.25	(2.33)	6.85	2.16
	Excess Return			*0.01*	*0.01*	*0.27*	*0.42*	*0.42*	*0.41*
OHJFIE321002	MSCI EAFE & Can Sm	689,291,653	0.7%	(0.45)	(0.45)	12.55	(6.88)	6.42	4.13
IX1F00272708	MSCI EAFE + Canada Small Cap Net Index			(0.45)	(0.45)	12.38	(7.12)	6.15	3.85
	Excess Return			*(0.00)*	*(0.00)*	*0.17*	*0.24*	*0.27*	*0.28*
OHJFIE322002	MSCI EM Small Cap	177,492,147	0.2%	(1.53)	(1.53)	5.29	(7.52)	3.94	0.28
IX1F00079547	MSCI Emerging Markets Small Cap Net Index			(1.49)	(1.49)	5.11	(7.65)	3.48	0.09
	Excess Return			*(0.04)*	*(0.04)*	*0.18*	*0.13*	*0.45*	*0.20*
OHJFIE322102	MSCI Emerging Markets SC Tilt	101,570,026	0.1%	(1.17)	(1.17)	8.38	(3.90)	7.48	
IX1F00333167	MSCI Emerging Markets Small Cap Value Wtd Net index			(1.21)	(1.21)	7.98	(4.36)	6.86	
	Excess Return			*0.04*	*0.04*	*0.39*	*0.47*	*0.62*	

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BNY Mellon Account Number	Account Name	Market Value	% of Assets	Month to Date	Quarter to Date	Year to Date	One Year	Three Years	Five Years
OHJFIE322202	MSCI EAFE & Canada SC Tilt	428,300,772	0.4%	(0.90)	(0.90)	8.16	(10.50)	5.03	2.22
IX1F00313437	MSCI EAFE + Canada Small Cap Value Weighted Index			(0.90)	(0.90)	7.74	(10.91)	4.62	1.72
	Excess Return			*(0.00)*	*(0.00)*	*0.42*	*0.41*	*0.41*	*0.50*
OHJFIE322302	MSCI EAFE & Can Fct	1,070,891,192	1.1%	(1.20)	(1.20)	13.64	(1.25)	7.32	
IX1F00335867	MSCI OPERS ON WORLD ex USA Net Index			(1.22)	(1.22)	13.35	(1.65)	6.95	
	Excess Return			*0.02*	*0.02*	*0.28*	*0.40*	*0.37*	
OHJFIE373002	Strategic Global Advisors, LLC	580,900,643	0.6%	(1.77)	(1.77)	9.22	(5.88)	5.03	2.83
IX1F00052708	MSCI EAFE Net Dividend Index			(1.27)	(1.27)	12.58	(2.60)	6.87	2.39
	Excess Return			*(0.50)*	*(0.50)*	*(3.36)*	*(3.28)*	*(1.84)*	*0.44*
OHJFIE373502	Wasatch EMSC	132,591,882	0.1%	(0.59)	(0.59)	13.31	(1.80)	3.66	1.68
IX1F00079547	MSCI Emerging Markets Small Cap Net Index			(1.49)	(1.49)	5.11	(7.65)	3.48	0.09
	Excess Return			*0.90*	*0.90*	*8.20*	*5.86*	*0.18*	*1.59*
OHJFIE374002	LSV EMSC	139,412,261	0.1%	(2.69)	(2.69)	6.10	(3.59)	7.16	1.90
IX1F00079547	MSCI Emerging Markets Small Cap Net Index			(1.49)	(1.49)	5.11	(7.65)	3.48	0.09
	Excess Return			*(1.20)*	*(1.20)*	*0.99*	*4.06*	*3.68*	*1.81*
OHJFIE374502	Dimensional	265,095,429	0.3%	(2.44)	(2.44)	6.80	(5.38)	4.63	2.32
IX1F00079547	MSCI Emerging Markets Small Cap Net Index			(1.49)	(1.49)	5.11	(7.65)	3.48	0.09
	Excess Return			*(0.95)*	*(0.95)*	*1.69*	*2.28*	*1.15*	*2.23*
OHJFIE375102	AQR Capital Mgmt DMSC	345,998,936	0.3%	(0.48)	(0.48)	8.97	(12.15)	2.80	2.42
IX1F00273028	MSCI World Ex U.S. Small Cap Net Index			(0.45)	(0.45)	12.38	(7.12)	6.15	3.85
	Excess Return			*(0.04)*	*(0.04)*	*(3.41)*	*(5.03)*	*(3.35)*	*(1.43)*
OHJFIE376002	Copper Rock DMSC	328,121,147	0.3%	(1.56)	(1.56)	14.52	(7.94)	3.15	3.01
IX1F00273028	MSCI World Ex U.S. Small Cap Net Index			(0.45)	(0.45)	12.38	(7.12)	6.15	3.85
	Excess Return			*(1.12)*	*(1.12)*	*2.14*	*(0.83)*	*(3.00)*	*(0.84)*
OHJFIE905502	Non-U.S. Equity Transition	8,009,198	0.0%	(1.40)	(1.40)	17.47	3.36	9.44	0.30
OHJGBM000220	MSCI ACWI ex US IMI Net			(1.15)	(1.15)	11.60	(2.93)	7.20	2.54
	Excess Return			*(0.26)*	*(0.26)*	*5.87*	*6.28*	*2.23*	*(2.24)*
Core Fixed									
OHJFFI102502	Core FNMA	1,391,789,894	1.4%	0.43	0.43	5.02	7.31	2.31	3.13
IX1F00003848	Bloomberg Barclays U.S. Aggregate Bond Index			0.22	0.22	6.35	8.08	2.17	3.05
	Excess Return			*0.21*	*0.21*	*(1.32)*	*(0.77)*	*0.13*	*0.08*
OHJFFI102002	Core FHLMC GNMA and TBA	1,291,353,162	1.3%	0.53	0.53	5.56	8.33	2.59	3.22
IX1F00003848	Bloomberg Barclays U.S. Aggregate Bond Index			0.22	0.22	6.35	8.08	2.17	3.05
	Excess Return			*0.31*	*0.31*	*(0.79)*	*0.25*	*0.41*	*0.18*
OHJFFI104002	Core Corporates	3,055,952,885	3.0%	0.62	0.62	10.23	10.56	3.75	4.64
IX1F00003848	Bloomberg Barclays U.S. Aggregate Bond Index			0.22	0.22	6.35	8.08	2.17	3.05
	Excess Return			*0.40*	*0.40*	*3.88*	*2.48*	*1.57*	*1.60*
OHJFFI100002	Core Fixed Govt Bonds and Cash	4,880,746,421	4.9%	(0.09)	(0.09)	4.80	6.97	1.40	2.45
IX1F00003848	Bloomberg Barclays U.S. Aggregate Bond Index			0.22	0.22	6.35	8.08	2.17	3.05
	Excess Return			*(0.31)*	*(0.31)*	*(1.54)*	*(1.11)*	*(0.77)*	*(0.60)*
OHJFFI800002	AFL-CIO Open End Mortgage Fund	106,894,169	0.1%	(0.06)	(0.06)	5.96	8.13	2.17	2.96
IX1F00003848	Bloomberg Barclays U.S. Aggregate Bond Index			0.22	0.22	6.35	8.08	2.17	3.05
	Excess Return			*(0.28)*	*(0.28)*	*(0.39)*	*0.05*	*(0.00)*	*(0.08)*
US Treasury									
OHJFFI120102	US Treasury	1,838,439,738	1.8%	(0.12)	(0.12)	5.04	7.53	1.17	
IX1F00003248	Bloomberg Barclays US Treasury Total Return Unhedged USD			(0.12)	(0.12)	5.06	7.57	1.16	
	Excess Return			*0.00*	*0.00*	*(0.02)*	*(0.04)*	*0.00*	
Floating Rate Debt									
OHJFFI160002	Floating Rate Debt	19,293,683	0.0%	5.12	5.12	16.70	20.39	11.82	7.79
IX1F0001346C	Credit Suisse Leveraged Loan Index			0.78	0.78	6.24	4.10	5.21	4.02
	Excess Return			*4.33*	*4.33*	*10.45*	*16.29*	*6.62*	*3.76*
TIPS									
OHJGFI000100	TIPS	2,569,168,876	2.6%	0.36	0.36	6.52	5.72	1.87	1.80
IX1F0000244C	Bloomberg Barclays U.S. Treasury: US TIPS Index			0.36	0.36	6.53	5.72	1.91	1.82
	Excess Return			*0.01*	*0.01*	*(0.01)*	*0.00*	*(0.04)*	*(0.02)*
OHJFHC190002	TIPS	2,569,168,876	2.6%	0.36	0.36	6.52	5.72	1.91	1.83
IX1F0000244C	Bloomberg Barclays U.S. Treasury: US TIPS Index			0.36	0.36	6.53	5.72	1.91	1.82
	Excess Return			*0.01*	*0.01*	*(0.01)*	*0.00*	*(0.00)*	*0.00*
High Yield									
OHJFFI150002	Fort Washington	335,721,314	0.3%	0.47	0.47	11.60	8.29	6.51	4.54
OHJGBMFI1500	Custom U.S. Corp. High Yield Benchmark			0.56	0.56	10.56	6.92	6.77	5.10
	Excess Return			*(0.09)*	*(0.09)*	*1.04*	*1.37*	*(0.26)*	*(0.55)*
OHJFFI152502	Post High Yield	343,117,182	0.3%	0.86	0.86	10.65	7.81	6.21	5.44
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92	6.77	5.10
	Excess Return			*0.29*	*0.29*	*0.09*	*0.89*	*(0.55)*	*0.34*
OHJFFI157002	Wellington Core High Yield	17,308	0.0%	1.17	1.17	9.30	6.79	30.72	18.34
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92	6.77	5.10
	Excess Return			*0.61*	*0.61*	*(1.26)*	*(0.13)*	*23.95*	*13.25*
OHJFFI156502	Neuberger Berman High Yield	209,143,356	0.2%	0.51	0.51	9.92	6.71	5.78	4.43
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92	6.77	5.10
	Excess Return			*(0.05)*	*(0.05)*	*(0.64)*	*(0.21)*	*(0.99)*	*(0.67)*
OHJFFI153002	Nomura High Yield	423,980,219	0.4%	0.63	0.63	8.93	3.45	6.50	
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92	6.77	
	Excess Return			*0.07*	*0.07*	*(1.63)*	*(3.47)*	*(0.27)*	
OHJFFI156002	Logan Circle High Yield	520,104	0.0%	4.00	4.00	225.00	25.24	(0.84)	(0.69)
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92	6.77	5.10
	Excess Return			*3.44*	*3.44*	*214.44*	*18.32*	*(7.61)*	*(5.79)*
OHJFFI151502	US High Yield Transition	1,005,656	0.0%	(0.14)	(0.14)	9.80	6.03		
IX1F00078318	Bloomberg Barclays U.S. Corporate High Yield			0.56	0.56	10.56	6.92		
	Excess Return			*(0.71)*	*(0.71)*	*(0.76)*	*(0.88)*		
OHJFFI151602	Internal US High Yield	557,001,141	0.6%	0.57	0.57	12.04	9.86		
IX1F00366737	Bloomberg Barclays US High Yield BB Very Liquid Index~			0.47	0.47	11.59	9.45		
	Excess Return			*0.10*	*0.10*	*0.45*	*0.40*		

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BNY Mellon Account Number	Account Name	Market Value	% of Assets	Month to Date	Quarter to Date	Year to Date	One Year	Three Years	Five Years
Global High Yield									
OHJFFI158502	Stone Harbor Global High Yield	31,072	0.0%	(11.07)	(11.07)	(4.03)	31.23	(19.97)	(12.75)
IX1F0004458C	Bloomberg Barclays Global High Yield			0.43	0.43	9.95	6.46	6.09	4.35
	Excess Return			*(11.50)*	*(11.50)*	*(13.98)*	*24.77*	*(26.06)*	*(17.10)*
OHJFFI159002	Wellington Global High Yield	7	0.0%	0.00	0.00	52129.06	26960501.77	934.09	307.26
IX1F0004458C	Bloomberg Barclays Global High Yield			0.43	0.43	9.95	6.46	6.09	4.35
	Excess Return			*(0.43)*	*(0.43)*	*52119.10*	*26960495.31*	*928.00*	*302.91*
OHJFFI159502	MacKay Shields Global High Yield	27	0.0%	0.04	0.04	1079.40	1079.52		
IX1F0004458C	Bloomberg Barclays Global High Yield			0.43	0.43	9.95	6.46		
	Excess Return			*(0.39)*	*(0.39)*	*1069.45*	*1073.06*		
Emerging Mkt Debt									
OHJFFI105002	Cap Guardian Emg Market Debt	1,121,034,949	1.1%	1.27	1.27	11.88	10.01	5.69	2.91
OHJGBM001900	Custom External EMD - Capital Guardian			1.04	1.04	10.82	9.20	4.49	2.36
	Excess Return			*0.23*	*0.23*	*1.06*	*0.81*	*1.20*	*0.55*
OHJFFI110002	Stone Harbor Emerging Mkt Debt	949,646,695	0.9%	1.06	1.06	11.74	6.08	3.50	1.16
OHJGBM000400	Custom External EMD - Stone Harbor			1.04	1.04	10.82	9.20	4.49	2.36
	Excess Return			*0.02*	*0.02*	*0.92*	*(3.12)*	*(0.99)*	*(1.19)*
OHJFFI110502	Lazard EMD Blend	866,952,731	0.9%	0.63	0.63	10.84	7.30	3.73	1.07
OHJGBM000300	Custom 50/50 JPM EMB and Govt			1.04	1.04	10.82	9.20	4.49	2.36
	Excess Return			*(0.41)*	*(0.41)*	*0.02*	*(1.90)*	*(0.76)*	*(1.28)*
OHJFFI111002	Franklin Templeton Emerging	1,080,595,460	1.1%	1.37	1.37	10.62	9.11	7.69	4.81
OHJGBM000300	Custom 50/50 JPM EMB and Govt			1.04	1.04	10.82	9.20	4.49	2.36
	Excess Return			*0.33*	*0.33*	*(0.20)*	*(0.09)*	*3.20*	*2.45*
OHJFFI110702	Aberdeen EMD Plus	925,821,903	0.9%	1.49	1.49	12.31	8.80	4.84	2.26
OHJGBM000300	Custom 50/50 JPM EMB and Govt			1.04	1.04	10.82	9.20	4.49	2.36
	Excess Return			*0.45*	*0.45*	*1.49*	*(0.40)*	*0.36*	*(0.10)*
OHJFFI110802	Ashmore EMD	1,162,670,012	1.2%	0.81	0.81	10.16	8.91		
OHJGBM000300	Custom 50/50 JPM EMB and Govt			1.04	1.04	10.82	9.20		
	Excess Return			*(0.22)*	*(0.22)*	*(0.66)*	*(0.29)*		
GTAA									
OHJFOT798402	AQR GTAA Strategy	129,287,646	0.1%	3.80	3.80	11.84	0.98	4.41	6.13
OHJGBMOT7984	60% MSCI World Net/40% BC G7 GTH			0.57	0.57	12.95	5.78	7.34	4.99
	Excess Return			*3.23*	*3.23*	*(1.11)*	*(4.80)*	*(2.93)*	*1.14*
OHJFOT799202	Bridgewater GTAA	117,656,669	0.1%	0.89	0.89	11.09	5.65	9.29	6.33
OHJGBMOT7992	30% S&P/ 30% EAFE Net/ 40% WGBI			(0.14)	(0.14)	11.81	4.09	6.42	4.64
	Excess Return			*1.03*	*1.03*	*(0.72)*	*1.56*	*2.87*	*1.70*
OHJFOT798902	Wellington GTAA	17,629,092	0.0%	0.00	0.00	9.82	(0.54)	5.27	3.46
OHJGBMOT7987	65% MSCI ACWI / 35% Bloomberg Barclays US Agg Bond			0.27	0.27	13.07	5.06	7.47	5.44
	Excess Return			*(0.27)*	*(0.27)*	*(3.26)*	*(5.59)*	*(2.20)*	*(1.98)*
OHJFOT799402	Schroders GTAA	0	0.0%	0.00	0.00	11.57	2.78	5.87	4.98
OHJGBMOT7994	60% MSCI ACWIH / 40% BC G7 GTH			0.86	0.86	12.91	6.50	7.84	5.81
	Excess Return			*(0.86)*	*(0.86)*	*(1.34)*	*(3.72)*	*(1.97)*	*(0.83)*
OHJFOT799302	Putnam GTAA	0	0.0%	0.00	0.00	10.26	(4.01)	5.73	
OHJGBMOT7995	Global 60/40 Index			(0.24)	(0.24)	11.54	4.41	6.25	
	Excess Return			*0.24*	*0.24*	*(1.28)*	*(8.42)*	*(0.52)*	
Securitized Debt									
OHJFFI107502	Securitized Debt	1,068,549,997	1.1%	0.22	0.22	8.29	10.82	5.89	5.47
OHJGBM005900	Custom Sec Debt Blend			0.23	0.23	8.71	11.07	4.84	5.62
	Excess Return			*(0.01)*	*(0.01)*	*(0.42)*	*(0.24)*	*1.05*	*(0.15)*
Hedge Funds									
OHJFOT798502	K2	163,142	0.0%	0.00	0.00	38.27	38.27	15.67	9.79
OHJGBMOT7980	LIBOR + 5% (non lagged)			0.60	0.60	4.37	7.54	8.26	7.11
	Excess Return			*(0.60)*	*(0.60)*	*33.89*	*30.73*	*7.41*	*2.68*
OHJFOT798002	Prisma	597,799	0.0%	(1.32)	(1.32)	(7.26)	0.71	1.48	0.27
OHJGBMOT7980	LIBOR + 5% (non lagged)			0.60	0.60	4.37	7.54	8.26	7.11
	Excess Return			*(1.92)*	*(1.92)*	*(11.63)*	*(6.83)*	*(6.78)*	*(6.84)*
OHJFOT801002	York Capital Management	322,345,044	0.3%	(0.01)	(0.01)	9.17	0.17	9.88	1.00
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*(0.70)*	*(0.70)*	*2.35*	*(2.00)*	*5.36*	*(1.95)*
OHJFOT801202	Canyon Value Realization Fund	341,174,168	0.3%	0.00	0.00	9.11	3.01	7.85	5.37
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*(0.69)*	*(0.69)*	*2.30*	*0.85*	*3.32*	*2.42*
OHJFOT802002	Taconic Opportunity	378,651,537	0.4%	0.11	0.11	4.04	5.02	7.94	4.32
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*(0.58)*	*(0.58)*	*(2.77)*	*2.86*	*3.41*	*1.38*
OHJFOT801502	Och Ziff Master Fund	314,275,396	0.3%	(0.59)	(0.59)	12.06	6.02	9.64	6.05
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*(1.28)*	*(1.28)*	*5.24*	*3.86*	*5.11*	*3.11*
OHJFOT801702	Graham Global Investment Fund	196,194,323	0.2%	0.00	0.00	3.16	1.20	1.36	2.09
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*(0.69)*	*(0.69)*	*(3.66)*	*(0.97)*	*(3.17)*	*(0.85)*
OHJFOT801802	Brigade Capital	355,985,344	0.4%	(0.16)	(0.16)	7.22	1.53	7.59	4.40
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*(0.85)*	*(0.85)*	*0.40*	*(0.63)*	*3.07*	*1.46*
OHJFOT800202	Davidson Kemper	233,535,995	0.2%	0.00	0.00	4.31	3.90	5.40	3.95
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*(0.69)*	*(0.69)*	*(2.50)*	*1.73*	*0.87*	*1.01*
OHJFOT800402	KLS Diversified Fund LP	343,383,845	0.3%	(0.08)	(0.08)	1.86	(2.52)	5.18	3.09
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			*(0.77)*	*(0.77)*	*(4.96)*	*(4.69)*	*0.65*	*0.15*

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OHJFOT800802	Bridgewater Pure Alpha	358,445,555	0.4%	3.43	3.43	(6.07)	0.06	4.33	2.72
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			2.74	2.74	(12.89)	(2.11)	(0.20)	(0.22)
OHJFOT802102	Winton Futures Fund Ltd.	439,474,766	0.4%	2.62	2.62	2.51	1.97	2.02	4.61
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			1.93	1.93	(4.31)	(0.19)	(2.50)	1.67
OHJFOT800602	Scopia PX, LLC	187,889,452	0.2%	3.50	3.50	12.35	0.35	4.19	2.05
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			2.81	2.81	5.53	(1.81)	(0.34)	(0.89)
OHJFOT800702	Visium Balanced Fund	434,029	0.0%	0.00	0.00	0.00	0.00	(10.20)	(7.16)
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			(0.69)	(0.69)	(6.82)	(2.17)	(14.73)	(10.10)
OHJFOT802202	Arrowgrass Partnership LP	252,244,289	0.3%	0.20	0.20	(1.19)	(1.05)	2.44	2.97
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			(0.49)	(0.49)	(8.00)	(3.22)	(2.09)	0.03
OHJFOT802702	Kynikos Opportunity Fund	72,547,199	0.1%	0.66	0.66	0.40	3.33	(6.01)	(3.98)
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			(0.03)	(0.03)	(6.41)	1.16	(10.54)	(6.92)
OHJFOT801902	Highline Capital Partners QP	182,715,603	0.2%	(0.10)	(0.10)	5.19	(8.25)	(0.56)	0.41
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			(0.79)	(0.79)	(1.62)	(10.41)	(5.08)	(2.53)
OHJFOT803102	Beach Point Fund II, LP	323,621,685	0.3%	0.00	0.00	6.75	2.63	5.56	3.71
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			(0.69)	(0.69)	(0.07)	0.46	1.03	0.77
OHJFOT803002	CQS Diversified Fund	256,253,864	0.3%	1.06	1.06	6.43	4.37	7.47	5.15
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			0.37	0.37	(0.38)	2.20	2.94	2.21
OHJFOT803302	Lakewood Capital Partners, LP	185,935,240	0.2%	2.21	2.21	17.35	0.66	5.73	5.14
OHJGBM003900	OPERS Custom Hedge Funds			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			1.52	1.52	10.54	(1.50)	1.21	2.20
OHJFOT803502	Egerton Capital Ltd	229,550,621	0.2%	1.97	1.97	17.12	8.71	11.80	9.23
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	2.94
	Excess Return			1.28	1.28	10.31	6.55	7.27	6.29
OHJFOT803602	Aristeia Capital	243,155,186	0.2%	(0.33)	(0.33)	3.10	5.92	7.40	
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	
	Excess Return			(1.02)	(1.02)	(3.71)	3.75	2.87	
OHJFOT803802	AQR Multi-Strategy	265,599,435	0.3%	1.12	1.12	(3.23)	(9.94)	(3.91)	
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	
	Excess Return			0.43	0.43	(10.04)	(12.10)	(8.44)	
OHJFOT804202	Oceanwood	208,235,646	0.2%	0.17	0.17	3.35	(1.49)	7.51	
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	
	Excess Return			(0.53)	(0.53)	(3.47)	(3.66)	2.98	
OHJFOT804402	Wellington HAO	296,844,628	0.3%	0.00	0.00	11.93	7.26		
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17		
	Excess Return			(0.69)	(0.69)	5.12	5.09		
OHJFOT804502	Lynx Bermuda LTD	283,137,201	0.3%	4.71	4.71	19.63	23.89		
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17		
	Excess Return			4.02	4.02	12.82	21.72		
OHJFOT804102	The Obsidian Fund	130,466,503	0.1%	0.50	0.50	10.53	2.51	5.86	
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	
	Excess Return			(0.19)	(0.19)	3.72	0.34	1.33	
OHJFOT804002	Arrowgrass MA Fund	57,805,843	0.1%	1.56	1.56	3.46	4.08	4.99	
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	
	Excess Return			0.87	0.87	(3.36)	1.92	0.46	
OHJFOT803702	Kepos Alpha Fund	227,371,849	0.2%	0.00	0.00	22.46	19.03	0.98	
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17	4.53	
	Excess Return			(0.69)	(0.69)	15.65	16.87	(3.55)	
OHJFOT804602	BlackRock Style Advantage	311,335,919	0.3%	2.89	2.89	6.08	5.70		
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82	2.17		
	Excess Return			2.20	2.20	(0.74)	3.54		
OHJFOT804702	CFM ISTrends Fund	245,029,033	0.2%	0.00	0.00	9.64			
OHJGBM003900	OPERS Custom Hedge Fund			0.69	0.69	6.82			
	Excess Return			(0.69)	(0.69)	2.83			
Risk Parity									
OHJFOT798202	BlackRock - Risk Parity 15v	1,089,249,653	1.1%	1.87	1.87	28.41	17.35	12.55	9.17
OHJGBM005800	Custom Risk Parity Blend			1.33	1.33	24.58	13.80	8.15	7.27
	Excess Return			0.55	0.55	3.84	3.54	4.40	1.90
OHJFOT797302	Panagora Risk Parity	1,050,022,300	1.0%	0.00	0.00	23.36	14.83	6.12	7.49
OHJGBM005800	Custom Risk Parity Blend			1.33	1.33	24.58	13.80	8.15	7.27
	Excess Return			(1.33)	(1.33)	(1.22)	1.02	(2.04)	0.22
OHJFOT799102	First Quadrant 15v	1,074,169,696	1.1%	1.38	1.38	26.85	12.73	9.90	5.27
OHJGBM005800	Custom Risk Parity Blend			1.33	1.33	24.58	13.80	8.15	7.27
	Excess Return			0.05	0.05	2.28	(1.08)	1.75	(2.00)
OHJFOT797902	Bridgewater All Weather 15v	1,009,087,171	1.0%	1.51	1.51	19.56	10.76	8.33	5.46
OHJGBM005800	Custom Risk Parity Blend			1.33	1.33	24.58	13.80	8.15	7.27
	Excess Return			0.18	0.18	(5.02)	(3.04)	0.17	(1.81)
OHJFOT798302	AQR Risk Parity - 15 Vol	1,057,394,124	1.1%	1.00	1.00	24.61	13.56	9.45	4.07
OHJGBM005800	Custom Risk Parity Blend			1.33	1.33	24.58	13.80	8.15	7.27
	Excess Return			(0.33)	(0.33)	0.03	(0.24)	1.30	(3.20)

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Commodities									
OHJFIS612502	GSCI Commodities	1,043,404,769	1.0%	(0.22)	(0.22)	12.84	(8.55)	5.21	(11.95)
IX1F00084398	S&P Goldman Sachs Commodity Index (SPGSCITR)			(0.21)	(0.21)	13.10	(8.45)	4.94	(12.41)
	Excess Return			*(0.00)*	*(0.00)*	*(0.25)*	*(0.10)*	*0.27*	*0.47*
Private Equity									
OHJGPE000100	Private Equity	9,645,060,287	9.6%	0.09	0.09	2.42	11.09	13.67	11.36
OHJGBM001000	Custom Private Equity			0.00	0.00	3.48	10.87	13.46	10.13
	Excess Return			*0.09*	*0.09*	*(1.06)*	*0.23*	*0.21*	*1.23*
REAL ESTATE									
OHJGAL000100	Reits	733,477,637	0.7%	1.60	1.60	18.63	11.09	2.92	7.94
OHJGBM000900	Dow Jones U.S. Select Real Estate Securities TR Index			1.60	1.60	18.54	10.89	2.80	7.89
	Excess Return			*0.00*	*0.00*	*0.10*	*0.20*	*0.11*	*0.05*
OHJGRE000100	Real Estate	8,372,907,493	8.3%	0.82	0.82	3.94	7.47	7.22	10.94
OHJGBM000600	Custom Real Estate			0.07	0.07	3.26	7.40	7.86	10.03
	Excess Return			*0.75*	*0.75*	*0.68*	*0.07*	*(0.64)*	*0.91*
Cash/Other Assets									
OHJFIS618502	DB Rebalancing	2,581,958,966	2.6%	(1.42)	(1.42)	9.07	3.05	5.50	3.39
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34	1.44	0.91
	Excess Return			*(1.60)*	*(1.60)*	*7.65*	*0.71*	*4.07*	*2.48*
OHJFMM940002	Key Sec Lending Collateral	1,374,412,118	1.4%	0.24	0.24	1.65	2.73	1.89	1.32
OHJGBMMM0000	Custom Sec Lending Benchmark			0.20	0.20	1.39	2.30	1.46	0.95
	Excess Return			*0.04*	*0.04*	*0.26*	*0.43*	*0.43*	*0.37*
OHJFMM950002	OPERS MMKT	6,890,126,884	6.9%	0.22	0.22	1.57	2.61	1.76	1.22
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34	1.44	0.91
	Excess Return			*0.04*	*0.04*	*0.14*	*0.27*	*0.32*	*0.31*
OHJFMM985002	E-SEC Collateral	7,292,684,034	7.3%	0.23	0.23	1.61	2.65	1.82	1.27
OHJGBMMM0000	Custom Sec Lending Benchmark			0.20	0.20	1.39	2.30	1.46	0.95
	Excess Return			*0.04*	*0.04*	*0.21*	*0.34*	*0.37*	*0.32*
Additional Annuity									
OHJFOT140102	OPERS Additional Annuity	17,187,029	0.0%	0.22	0.22	1.48	2.52	2.20	1.99
IX1F0000572C	ML 3 Month Treasury Bills index			0.18	0.18	1.43	2.34	1.44	0.91
	Excess Return			*0.03*	*0.03*	*0.05*	*0.18*	*0.76*	*1.08*

OPERS Total Plan Attribution - Defined Benefit Plan

July 31, 2019

Asset Class	Policy Benchmark	Portolio		Policy		Net Management Effect	
		Weight	Return	Weight	Return	Allocation	Selection
One Month Performance							
Total Defined Benefit Plan	**Custom Defined Benefit Benchmark**	**100.0**	**0.31**	**100.0**	**0.30**	**-0.06**	**0.08**
U.S. Equity	Russell 3000	20.4	1.48	21.0	1.49	-0.01	0.00
Non-U.S. Equity	MSCI WIxUS+EM+WIxUS Sml Net	19.1	-1.00	21.0	-1.15	0.03	0.03
Core Fixed	Custom Core Fixed TFA	9.9	0.25	10.9	0.22	0.00	0.00
High Yield	BB US Corp High Yield	1.9	0.62	2.0	0.56	0.00	0.00
Emerging Mkt Debt	JPM EM SOV50 Net LM50 Bond Idx~	6.0	1.11	6.0	1.04	0.00	0.00
Securitized Debt	Securitized Debt Policy	1.1	0.22	1.0	0.23	0.00	0.00
Global High Yield	BC Capital Global High Yield	0.0	-11.06	0.0	0.00	0.00	0.00
US Treasury	BB US Treasury TR Unhedged USD	2.0	-0.12	2.0	-0.12	0.00	0.00
Floating Rate Debt	CS Leveraged Loan Index	0.0	5.12	0.1	0.78	0.00	0.00
TIPS	BB US Treasury US TIPS	2.0	0.36	2.0	0.36	0.00	0.00
Liquidity	ML 3 Month Treasury TIPS Index	0.0	0.00	0.0	0.00	0.00	0.00
Private Equity	Private Equity Policy	11.0	0.09	10.0	0.00	0.00	0.01
Real Estate	Custom Real Estate	9.6	0.82	10.0	0.07	0.00	0.07
Hedge Funds	OPERS Custom Hedge Fund	7.5	0.89	8.0	0.69	0.00	0.02
GTAA		0.1	-63.59	0.0	0.00	-0.08	0.00
Risk Parity	Custom Risk Parity	5.2	1.15	5.0	1.33	0.00	-0.01
Commodities	S&P Goldman Sachs Commodity	0.9	-0.09	1.0	-0.21	0.00	0.00
DB Cash	ML 3 Month US T Bill	0.2	0.22	0.0	0.18	0.00	0.00
Additional Annuity	ML 3 Month US T Bill	0.0	0.22	0.0	0.18	0.00	0.00
Other Pension Assets	ML 3 Month US T Bill	0.0	0.00	0.0	0.00	0.00	0.00
DB TAA	ML 3 Month US T Bill	0.0	0.00	0.0	0.18	0.00	0.00
DB Rebalancing	ML 3 Month US T Bill	3.0	-1.42	0.0	0.18	0.00	-0.05
Year to Date Performance							
Total Defined Benefit Plan	**Custom Defined Benefit Benchmark**	**100.0**	**10.92**	**100.0**	**11.25**	**-0.73**	**0.41**
U.S. Equity	Russell 3000	20.2	20.43	21.0	20.48	-0.15	-0.01
Non-U.S. Equity	MSCI WIxUS+EM+WIxUS Sml Net	17.9	13.04	20.1	11.60	-0.05	0.25
Core Fixed	Custom Core Fixed TFA	9.9	6.40	10.9	6.35	0.02	0.01
High Yield	BB US Corp High Yield	1.9	10.82	2.0	10.56	0.00	0.01
Emerging Mkt Debt	JPM EM SOV50 Net LM50 Bond Idx~	6.0	11.23	6.0	10.82	-0.01	0.03
Securitzed Debt	Securitized Debt Policy	1.1	8.29	1.0	8.71	0.00	0.00
Global High Yield	BC Capital Global High Yield	0.0	158.45	0.0	0.00	0.00	0.00
US Treasury	BB US Treasury TR Unhedged USD	1.2	5.04	1.1	5.06	-0.01	0.00
Floating Rate Debt	CS Leveraged Loan Index	0.0	16.70	0.1	6.24	0.00	0.00
TIPS	BB US Treasury US TIPS	2.1	6.52	2.0	6.53	-0.01	0.00
Liquidity	ML 3 Month Treasury Bills Index	0.0	0.00	0.0	0.00	0.00	0.00
Private Equity	Private Equity Policy	11.2	2.42	10.0	3.48	-0.14	-0.13
Real Estate	Custom Real Estate	9.7	3.94	10.0	3.26	0.00	0.07
Hedge Funds	OPERS Custom Hedge Fund	7.6	6.57	8.0	6.82	0.01	-0.02
GTAA		1.8	-59.98	1.7	0.00	-0.09	-0.05
Risk Parity	Custom Risk Parity	5.2	24.57	5.0	24.58	0.01	0.00
Commodities	S&P Goldman Sachs Commodity	0.9	12.56	1.0	13.10	-0.01	0.00
DB Cash	ML 3 Month US T Bill	0.3	1.56	0.0	1.43	-0.03	0.00
Additional Annuity	ML 3 Month US T Bill	0.0	1.48	0.0	1.43	0.00	0.00
Other Pension Assets	ML 3 Month US T Bill	0.0	0.00	0.0	0.00	0.03	0.00
DB TAA	ML 3 Month US T Bill	0.0	0.00	0.0	1.43	0.00	0.00
DB Rebalancing	ML 3 Month US T Bill	3.1	9.07	0.0	1.43	-0.32	0.25

OPERS Total Plan Attribution - Health Care 115 Plan

July 31, 2019

Asset Class	Policy Benchmark	Portolio Weight	Portolio Return	Policy Weight	Policy Return	Net Management Effect Allocation	Net Management Effect Selection
One Month Performance							
Total Health Care Plan	**Custom Health Care Benchmark**	**100.0**	**0.73**	**100.0**	**0.43**	**0.02**	**0.28**
U.S. Equity	Russell 3000	22.6	1.48	23.0	1.49	-0.01	0.00
Non-U.S. Equity	MSCI WIxUS+EM+WIxUS Sml Net	19.9	-1.00	22.0	-1.15	0.03	0.03
Core Fixed	Custom Core Fixed TFA	16.3	0.25	17.9	0.22	0.00	0.01
TIPS	BB US Treasury US TIPS	6.3	0.36	6.0	0.36	0.00	0.00
High Yield	BB US Corp High Yield	1.9	0.62	2.0	0.56	0.00	0.00
Emerging Mkt Debt	JPM EM SOV50 Net LM50 Bond Idx~	6.1	1.11	6.0	1.04	0.00	0.00
REITs	Custom DJ US Select Sec TR	5.9	1.60	6.0	1.60	0.00	0.00
Hedge Funds	OPERS Custom Hedge Fund	5.6	0.89	6.0	0.69	0.00	0.01
GTAA	Custom GTAA	1.7	17.65	2.0	0.29	0.00	0.29
Risk Parity	Custom Risk Parity	5.2	1.14	5.0	1.33	0.00	-0.01
Commodities	S&P Goldman Sachs Commodity	1.9	-0.09	2.0	-0.21	0.00	0.00
Cash	ML 3 Month US T Bill	0.1	0.22	0.0	0.18	0.00	0.00
Rebalancing	ML 3 Month US T Bill	4.6	-0.96	0.0	0.18	-0.01	-0.05
Year to Date Performance							
Total Health Care Plan	**Custom Health Care Benchmark**	**100.0**	**13.31**	**100.0**	**13.10**	**-0.65**	**0.86**
U.S. Equity	Russell 3000	22.6	20.42	23.0	20.48	-0.09	-0.01
Non-U.S. Equity	MSCI WIxUS+EM+WIxUS Sml Net	19.6	13.05	22.0	11.60	0.00	0.28
Core Fixed	Custom Core Fixed TFA	16.0	6.40	17.9	6.35	0.07	0.01
TIPS	BB US Treasury US TIPS	6.3	6.52	6.0	6.53	-0.04	0.00
High Yield	BB US Corp High Yield	1.9	10.82	2.0	10.56	0.00	0.01
Emerging Mkt Debt	JPM EM SOV50 Net LM50 Bond Idx~	6.1	11.21	6.0	10.82	-0.01	0.03
REITs	Custom DJ US Select Sec TR	6.0	18.62	6.0	18.54	-0.02	0.01
Hedge Funds	OPERS Custom Hedge Fund	5.7	6.59	6.0	6.82	0.01	-0.01
GTAA	Custom GTAA	2.0	29.31	2.0	12.46	0.00	0.28
Risk Parity	Custom Risk Parity	5.1	24.41	5.0	24.58	0.01	-0.01
Commodities	S&P Goldman Sachs Commodity	1.9	12.74	2.0	13.10	-0.01	-0.01
Cash	ML 3 Month US T Bill	0.2	1.57	0.0	1.43	-0.02	0.00

Board Meeting VI.C.

MEMORANDUM

DATE:	**August 12, 2019**
TO:	**OPERS Board of Trustees**
FROM:	**Anthony Tedesco, Government Relations Officer** **Gordon Gatien, Director, External Relations**
RE:	**VI. For Your Information:** **C. Equal Treatment of Public Servants Act of 2019**

OVERVIEW

On July 24, US Representative Kevin Brady (R-TX) introduced HR 3934, the *Equal Treatment of Public Servants Act of 2019*. This legislation would replace the current Windfall Elimination Provision (WEP) with a new "proportional" formula that takes non-Social Security-covered employment into account when calculating an individual's Social Security benefit. The bill also provides an additional monthly amount ($100) as recompense for individuals who have already been impacted by the WEP.

ISSUE

HR 3934 is the fourth iteration of the *Equal Treatment of Public Servants Act*. Unlike its predecessor (HR 6933) in the 115th Congress, HR 3934 does not have the support of US Representative Richard Neal (D-MA), who is now the Chairman of the House Committee on Ways and Means and who intends to introduce his own bill addressing the WEP. With competing bills, it remains to be seen whether Mr. Brady and Mr. Neal can agree on a compromise approach that has a chance of being enacted into law.

SUMMARY

By way of background, the WEP is an offset within the Social Security Act that reduces the Social Security benefits of individuals who have vested in the right to receive a pension based on earnings that were not subject to Social Security taxes. The reasoning underlying the WEP is sound: Social Security is set up to provide proportionately greater benefits to lower income workers (as determined by the contributions received by Social Security throughout an individual's career) and workers with non-covered employment can appear as if they have very low earnings, thus entitling them to a larger Social Security benefit than they would otherwise receive if their non-covered employment had been taken into consideration. In practice however, the WEP reduction is based on an arbitrary formula that does not account for individual circumstances.

The *Equal Treatment of Public Servants Act* was meant to address this issue by replacing the WEP with a new "proportional" formula that takes *all* of an individual's past earnings (including those from non-covered employment) into account when determining their Social Security benefit. Ideally, this new formula should produce a benefit that matches the replacement rate applicable for a worker with the same career earnings, but whose earnings had all been covered by Social Security.[1]

In the latest evolution of the *Equal Treatment of Public Servants Act* (HR 3934), the "proportional" formula would apply to individuals who will be eligible to receive Social Security benefits in 2061 or later (age 20 and younger in 2019). Individuals who will become eligible to receive Social Security benefits between 2021 and 2060 (ages 21 to 59 in 2019) will have their Social Security benefit calculated under both the current law and the new "proportional" formula and will receive the higher of the two. This is a significant difference from HR 6933, which applied the "proportional" formula to individuals who would be eligible to receive Social Security benefits in 2025 or later (age 56 and younger in 2019).

Each version of the *Equal Treatment of Public Servants Act* has included some relief for those individuals who have already been impacted by the WEP. HR 3934 provides a $100 monthly rebate (spouses and children would receive $50 per month) to individuals who will be eligible to receive Social Security benefits before the end of 2021 (age 60 and older in 2019). This is slightly different from the rebate provision in HR 6933, which provided the same amounts to individuals who were first eligible to receive Social Security benefits before the end of 2024 (age 57 and older in 2019). In both HR 6933 and HR 3934, the $100 monthly rebate increases with Social Security's annual cost-of-living adjustments.

Both HR 6933 and HR 3934 require Social Security to include non-covered earnings in Social Security Statements so that individuals can verify that the amounts are correct. However, HR 3934 specifies that this information must be available to members by the beginning of 2020, though the process by which the Social Security Administration will gather that data from employers in non-covered states is unclear.

Finally, both bills require Social Security to establish partnerships with a diverse group of State and local pension systems in non-covered states for the purpose of improving "the collection and sharing of information relating to State and local non-covered pensions."[2] In past discussions regarding this section, Subcommittee staff have emphasized that this section is voluntary, and State or local pension systems should not feel obligated to participate. Unfortunately, staff have been skeptical of the idea that any system of information gathering between a State or local plan and Social Security might flow both ways. OPERS staff had suggested that it might be helpful for Social Security to share information about our members' covered employment, but federal restrictions regarding the confidentiality of Social Security accounts apparently prohibit this exchange.

CONCLUSION

As noted above, Mr. Brady's legislation will, for the first time, have to share the spotlight with a forthcoming bill from the Chairman of the House Committee on Ways & Means. We believe this is cause for concern, for several reasons. First, as noted above, HR 3934 offers the higher of benefits calculated under current law and the new "proportional" formula to workers as young as 21 (in 2019). This change from HR 6933 follows a considerable amount of analysis, discussion, and advocacy on OPERS' part. Specifically, OPERS actuarial and government relations staff had asked that workers who had oriented their careers around the current Social Security benefit structure (e.g., those who

[1] Leigh Snell, NCTR FYI: July 30, 2019, "WEP Reform Advances," July 30, 2019.
[2] HR 3934, 116th Cong. Section 6 (2019).

were older or had longer periods of covered service) be given the opportunity to continue their careers under current law if that improved their retirement security. While we cannot be sure the language of HR 3934 was written in response to our concerns, it does address our request in significant part.

Second, with two bills vying for our support, we cannot rush to support Mr. Brady's bill, without first considering whether we could also support Chairman Neal's proposal. It should be noted that, as of this writing, we have not seen the text of Chairman Neal's bill. We have heard that Chairman Neal's bill is more generous to younger workers – extending the 'higher of' provision into perpetuity, with no set switchover to a proportional-style formula. If this is the case, such a bill could negatively impact Social Security's solvency over the long-term. Consider that Social Security's Office of the Chief Actuary has already determined that the impact of HR 3934 on Social Security's 75-year actuarial balance would be "negligible," with short-terms costs being largely offset by long-term gains to the System.[3] If the impact of Chairman Neal's proposal on Social Security's long-term solvency is more than "negligible," and if OPERS chooses to support HR 3934, we could find ourselves in a situation where we may feel pressured to support a bill that negatively impacts Social Security to the benefit of our members.

Finally, the *Equal Treatment of Public Servants Act* has never received unequivocal support from a majority of the stakeholder community. Despite significant interest in addressing the WEP, many stakeholders have been unwilling to consider anything other than full repeal of the WEP (and GPO). Others have taken issue with the fact that the bill, in each of its forms, has created 'winners and losers.' For example, prior to the introduction of HR 3934, OPERS staff's greatest concern with HR 6933 was the effect of the bill on our inactive, non-vested members who are currently not impacted by the WEP, but would be impacted (sometimes positively, sometimes negatively) by the "proportional" formula. This concern has been largely addressed by HR 3934's 'higher of' provision for younger workers, but the fact remains that under Mr. Brady's proposal, there will be a time when individuals (e.g., our future inactive, non-vested members) who would not otherwise be impacted by the WEP will be subject to the "proportional" formula. If there is a competing proposal, and it is more generous for future generations of workers, it could divide support within the stakeholder community and dampen interest in crafting a compromise bill that could find traction in the Senate and be enacted into law.

Mr. Brady and Subcommittee staff should be commended for their commitment to addressing the WEP. Their *Equal Treatment of Public Servants Act* represents an innovative solution to a decades-old problem: how to provide meaningful and affordable WEP relief. To their credit, they have been responsive to our concerns, and have continually refined their measure in an effort to gain stakeholder support and achieve consensus. The latest version of their bill is perhaps the best possible solution for public retirement systems like OPERS that have active, inactive, and retired members who have been impacted by the WEP.

As we have in the past, OPERS staff will be analyzing HR 3934, as well as any WEP-reform legislation introduced by Chairman Neal, for the purpose of determining impact on our membership. Following that process, we will continue to engage with both offices with a goal of encouraging the development of a compromise approach that not only benefits our members but has the greatest chance of being enacted into law.

[3] Letter from Stephen C. Goss, Social Security Office of the Chief Actuary, to Congressman Kevin Brady (July 24, 2019), regarding the financial effects on the Social Security Trust Funds of the "Equal Treatment of Public Servants Act of 2019."