Board of Curators Meeting November 19, 2020 Public Session

Vision

To advance the opportunities for success and well-being for Missouri, our nation and the world through transformative teaching, research, innovation, engagement and inclusion.

Mission

To achieve excellence in the discovery, dissemination, preservation and application of knowledge. With an unwavering commitment to academic freedom and freedom of expression, the university educates students to become leaders, promotes lifelong learning by Missouri's citizens, fosters meaningful research and creative works, and serves as a catalyst for innovation, thereby advancing the educational, health, cultural, social and economic interests to benefit the people of Missouri, the nation, and the world.

Missouri Compacts for Achieving Excellence

The Missouri Compacts for Achieving Excellence provide unifying principles that inform and guide the four universities and their strategic plans. Learn more about the compacts, below, at http://umurl.us/prespri.

Excellence in Student Success

Excellence in Research and Creative Works

Excellence in Engagement and Outreach

Inclusive Excellence

Excellence in Planning, Operations and Stewardship

Core Values

Our institution collectively embraces a series of core values that serve as the foundation upon which we build new knowledge and provide outstanding programs for students and citizens of our state and beyond.

- Academic freedom
- Access
- Accountability
- Civility
- Collaboration
- Creativity
- Discovery
- Engagement
- Excellence
- Freedom of expression
- Inclusion
- Innovation
- Integrity
- Respect
- Responsibility
- Transparency

Guiding Principles

1. Support courageous and proactive leadership that is articulate, unified and committed to excellence in carrying out our existing core missions of teaching, research, engagement and economic development and in meeting the changing needs of the world and the state.
2. Establish a collaborative environment in which UM System universities work together to achieve collective results that cannot be achieved individually and are committed to each other and our mutual success.
3. Exercise central authority that recognizes and respects institutional distinctiveness, appropriate deference and accountability.
4. Enact informed decisions based on collaboratively developed strategic directions and planning.
5. Identify and promote systemwide core values, including respect for all people, transparency, accountability, stewardship and purposeful self-assessment of performance.

UNIVERSITY OF MISSOURI

BOARD OF CURATORS
MEETING AGENDA

Thursday, November 19, 2020

All public and executive session meetings to originate from remote locations via Zoom webinar and/or conference telephone unless otherwise noted.

Board Committee meetings were held November 10 and 12, 2020 in conjunction with the November 19, 2020 Board meeting.

Originating:
From remote locations via conference telephone and Zoom webinar.

Please click the link below to join the webinar:
https://umsystem.zoom.us/j/99197394966

Or Telephone:
Dial US: +1 301 715 8592
Webinar ID: 991 9739 4966

BOARD OF CURATORS MEETING – PUBLIC SESSION

8:30 A.M. Call to Order

General Business

Information
1. University of Missouri Board Chair's Report
2. University of Missouri System President's Report
3. Student Representative to the Board of Curator's Report – Remington Williams
4. Review Consent Agenda

Consent Agenda

Action
1. Minutes, September 24, 2020 Board of Curators Meeting

2. Minutes, September 15 and 16, 2020 Board of Curators Committee Meetings held in Conjunction with the September 24, 2020 Board of Curators Meeting
3. Remote Ceremony for Honorary Degrees, UM
4. Sole Source - Weighted Bin Inventory Management System – MUHC
5. Naming Opportunity, Missouri S&T
6. Naming Opportunity, Missouri S&T
7. Naming Opportunity, Missouri S&T
8. Naming Opportunity, MU
9. Amendments to Collected Rules and Regulations 200.010 Standard of Conduct

9:15 A.M. **HEALTH AFFAIRS COMMITTEE CHAIR REPORT**
(Curators Graham, Steelman, Wenneker, Williams, Mr. Ashworth and Mr. Phillips)

Health Affairs Committee Chair Graham to provide an overview of information and action items.

Information
1. School of Medicine Medical Student Education Update
2. MU Health Care and School of Medicine Strategic Plan Unification
3. MU Health Clinical Consolidation and Integration Strategies
4. Quarterly Financial Report, MUHC – Written Report Only
5. Quarterly Compliance Report, MUHC – Written Report Only

Action
1. Minutes, September 16, 2020 Health Affairs Committee Meeting

9:30 A.M. **FINANCE COMMITTEE CHAIR REPORT**
(Curators Steelman, Chatman, Hoberock and Williams)

Finance Committee Chair Steelman to provide an overview of the action items.

Action
1. Approval of Collected Rules and Regulations 140.015 Investment Pool Policy, UM
2. Financial Policies and Governance, UM
3. Resource Allocation Principles, UM
4. Project Approval – Children's Hospital Facility, MU Health Care, MU

9:50 A.M. **ACADEMIC, STUDENT AFFAIRS, RESEARCH AND ECONOMIC DEVELOPMENT COMMITTEE CHAIR REPORT**
(Curators Chatman, Hoberock, Layman and Snowden)

Academic, Student Affairs, Research and Economic Development Committee Chair Chatman to provide an overview of the information items.

Information

1. Intercollegiate Athletics Annual Report per Collected Rule and Regulation 270.060

10:05 A.M. GOVERNANCE, COMPENSATION AND HUMAN RESOURCES COMMITTEE
(Curators Williams, Chatman, Layman, Snowden)

Action

1. Resolution, Executive Session of the Governance, Compensation and Human Resources Committee

General Business Continued *(estimated 10:10 A.M.)*

Information

5. University of Missouri – St. Louis Campus Highlights – Chancellor Sobolik

10:25 A.M. Break

10:35 A.M. Reconvene Public Session

Information

6. Strategic Theme Discussion – Council of Chancellors and Administrative Efficiency Reports

Action

1. Election of Board of Curators Chair, 2021
2. Election of Board of Curators Vice Chair, 2021

Information

7. Good and Welfare of the Board

Action

3. Resolution for Executive Session of the Board of Curators Meeting, November 19, 2020

12:30 P.M. **Press Conference with Board of Curators Chair and UM System President** (time is approximate)
https://umsystem.zoom.us/j/92083372916?pwd=SVN3dEJZandqcVdDY252YzdTMXBZZz09

1:15 P.M. ***BOARD OF CURATORS GOVERNANCE, COMPENSATION AND HUMAN RESOURCES COMMITTEE MEETING - EXECUTIVE SESSION*** (time is approximate)
Via Zoom

The Governance, Compensation and Human Resources Committee will hold an executive session of the November 19, 2020 meeting, pursuant to *Section 610.021(1), 610.021(3), 610.021(12) and 610.021(13) RSMo, for consideration of certain confidential or privileged communications with university counsel, contract and personnel items*, as authorized by law and upon approval by resolution of the Governance, Compensation and Human Resources Committee.

2:15 P.M. **BOARD OF CURATORS MEETING-EXECUTIVE SESSION** (time is approximate)
Via Zoom

The Board of Curators will hold an executive session of the November 19, 2020 meeting, pursuant to *Sections 610.021(1), 610.021(2), 610.021(3), 610.021(12), 610.021(13) and 610.021(14) RSMo, for consideration of certain confidential or privileged communications with University Counsel, personnel, property, litigation, contract items, and records protected by law*, all as authorized by law and upon approval by resolution of the Board of Curators.

Upcoming meetings of the Board of Curators:

February 4, 2021	University of Missouri – Columbia
April 22, 2021	Missouri University of Science and Technology
June 24-25, 2021	University of Missouri – Columbia
September 1, 2021	Special Finance Committee Meeting - UMKC
September 2, 2021	University of Missouri – Kansas City
November 18, 2021	University of Missouri – St. Louis

GENERAL BUSINESS

UNIVERSITY OF MISSOURI

BOARD CHAIR REPORT

There are no materials for this information item.

UNIVERSISTY OF MISSOURI SYSTEM

PRESIDENT’S REPORT

There are no materials for this information item.

November 19, 2020

STUDENT REPRESENTATIVE TO THE
BOARD OF CURATORS REPORT

There are no materials for this information item.

REVIEW CONSENT AGENDA

There are no materials for this information item.

CONSENT AGENDA

CONSENT

Recommended Action - Consent Agenda

It was endorsed by President Choi, moved by Curator ___________ and seconded by Curator ___________, that the following items be approved by consent agenda:

CONSENT AGENDA

Action

1. Minutes, September 24, 2020 Board of Curators Meeting
2. Minutes, September 15 and 16, 2020 Board of Curators Committee Meetings held in Conjunction with the September 24, 2020 Board of Curators Meeting
3. Remote Ceremony for Honorary Degrees, UM
4. Sole Source - Weighted Bin Inventory Management System – MUHC
5. Naming Opportunity, Missouri S&T
6. Naming Opportunity, Missouri S&T
7. Naming Opportunity, Missouri S&T
8. Naming Opportunity, MU
9. Amendments to Collected Rules and Regulations 200.010 Standard of Conduct

Roll call vote of the Board:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion __________________.

No. 1

Recommended Action - Minutes, September 24, 2020 Board of Curators Meeting Minutes

It was moved by Curator ________________ and seconded by Curator ________________, that the minutes of the September 24, 2020 Board of Curators meeting be approved as presented.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion __________________.

Consent 2

Recommended Action - Minutes, September 15 and 16, 2020 Board of Curators Committee Meeting Minutes

It was moved by Curator _______________ and seconded by Curator _______________, that the minutes of the September 15 and 16, 2020 Board of Curators committee meetings, held in conjunction with the September 24, 2020 Board of Curators meeting, be approved as presented.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion _________________.

November 19, 2020

Executive Summary
Awarding of Honorary Degrees in Absentia

Background:

Honorary degrees are traditionally awarded during commencement in the fall and/or spring of each academic year. The Honorary Degrees CRR 220.030 says: "Any honorary degree shall not be awarded in absentia or posthumously unless specifically recommended by the faculty and approved by the President and the Board of Curators."

The respective faculty senates/councils of the University of Missouri – Columbia (MU), Missouri University of Science and Technology (S&T), and the University of Missouri – St. Louis (UMSL) have recommended that they have the option of awarding an honorary degree "in absentia" for academic year 2020-2021.

This recommendation was reviewed by each university's faculty senates/councils and approved by President Choi as prescribed in the process outlined in CR&R 220.030. No new recipients will be proposed during Academic Year 2020-2021 and the authority to approve honorary degrees will continue to reside with the Board of Curators.

Faculty Senate/Council Recommendations:

University of Missouri – Columbia

Resolved that the MU faculty council recommends that the UM president and Curator's grant permission for the conferral of honorary degrees at MU during the 2020-2021 academic year "in absentia" for any degree candidates who have already been approved by the curators for degrees or who may be approved during this academic year.

Missouri University of Science and Technology

The Missouri S&T Faculty Senate approved the request and grants permission to the UM President and Board of Curators for the conferral of honorary degrees during the 2020-2021 academic year "in absentia," for any degree candidates who have already been approved by the Board of Curators for degrees or who may be approved during the academic year.

University of Missouri – St. Louis

The Faculty Senate of the University of Missouri - St. Louis recommends that the UM President and Curators grant permission for the conferral of honorary degrees during the 2020-2021 academic year "in absentia," for any degree candidates who have already been approved by the Curators for degrees or who may be approved during this academic year.

No. 3

Recommended Action – Awarding of Honorary Degrees in Absentia, MU/ Missouri S&T/UMSL

It was recommended by the MU, Missouri S&T and UMSL Faculty Senates/Councils, endorsed by UM System President and MU Chancellor Mun Choi, recommended by the Academic, Student Affairs and Research & Economic Development Committee, moved by Curator_________, seconded by Curator_________that the following action be approved:

> that the University of Missouri, Columbia; the Missouri University of Science and Technology; and the University of Missouri, St. Louis be authorized to award honorary degrees *in absentia* for academic year 2020-2021.

Roll call vote of the Committee:	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Layman		
Curator Snowden		

Roll call vote of Board:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion__________________.

Sole Source
Weighted Bin Inventory Management System
MUHC

In accordance with the Collected Rules and Regulations 80.010, MU Health Care (MUHC) requests approval for the sole source purchase of a Weighted Bin Inventory Management System from PAR Excellence Systems, Inc., Cincinnati, Ohio, for an initial estimated total of $1,019,271, of which $799,491 includes one-time fees and $219,780 in support fees for a five-year term. Potential expansion of the system for future supply chain needs is estimated to cost an additional $3M - $3.5M.

PAR Excellence is the only manufacturer of a weight-based par management inventory system. The weight-based inventory management solution uses precision scales to provide continuous inventory awareness, which automates and expedites replenishment of supplies. The system is set up initially with minimum stocking levels and reorder values. It then adjusts as needed for optimal supply, based on real-time intelligence from the point of use through the PAR Excellence dashboard and data analytics.

The Surgical Services department at University Hospital (UH) currently manages inventory in multiple formats; however, they primarily utilize a manual process of counting inventory and entering requisitions to replenish stock. The current method is extremely labor intensive and can create inaccuracies due to human error in counting supplies and determining what to reorder. Implementing the PAR Excellence system would allow for automated tracking for the entire range of OR supplies, including stock and non-stock items, commodity and high-dollar items in every form. Based on the supplies being utilized for the surgical cases, the PAR Excellence system would automatically initiate the replenishment of the supplies via weighted scales in the supply bins and create a requisition within the PeopleSoft system for the reordering of the supplies. The use of the PAR Excellence system would free up personnel time and provide for more accurate inventory management through the automated process.

The implementation of this system in the UH Surgical Services department is especially critical as the pediatric service line will temporarily be moving from Women's and Children's Hospital (WCH) to UH. The UH Surgery Services materials core must move out of their existing space to accommodate the pediatric surgical services. Implementing the PAR Excellence system will enable Surgery Services to better manage their inventory in a consolidated space, especially with bringing the additional pediatric inventory into this location. The PAR Excellence system conforms to all types of storage needs, including large and small stock rooms, clean rooms, and mobile carts, making it ideal for multiple inventory management locations. Potential expansion of the system for future supply chain needs includes surgical services at the Missouri Orthopaedic Institute (MOI) and WCH, as well as within all supply chain/distribution areas.

The initial $1,019,271 expenditure will be paid from MUHC surgical services operating funds.

No. 4

Recommended Action – Sole Source – Weighted Bin Inventory Management System, MUHC

It was recommended and endorsed by UM System President and MU Chancellor Mun Y. Choi, recommended by the Finance Committee, moved by Curator __________________ and seconded by Curator _________________, that the following action be approved:

> that MUHC be authorized to purchase a Weighted Bin Inventory Management System from PAR Excellence Systems Inc., Cincinnati, Ohio, at a total initial estimated cost of $1,019,271 for a five-year term with the option to expand the system for future supply chain needs.
>
> Funding is as follows:
> MUHC Surgical Services Operating Funds H0266-733100

Roll call vote Finance Committee	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Steelman		
Curator Williams		

The motion ___________________.

Roll call vote Full Board:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ___________________.

Sole Source
Weighted Bin Inventory Management System
MUHC

In accordance with the Collected Rules and Regulations 80.010, MU Health Care (MUHC) requests approval for the sole source purchase of a Weighted Bin Inventory Management System from PAR Excellence Systems, Inc., Cincinnati, Ohio, for an initial estimated total of $1,019,271, of which $799,491 includes one-time fees and $219,780 in support fees for a five-year term. Potential expansion of the system for future supply chain needs is estimated to cost an additional $3M - $3.5M.

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The implementation of this system in the UH Surgical Services department is especially critical as the pediatric service line will temporarily be moving from Women's and Children's Hospital (WCH) to UH. The UH Surgery Services materials core must move out of their existing space to accommodate the pediatric surgical services. Implementing the PAR Excellence system will enable Surgery Services to better manage their inventory in a consolidated space, especially with bringing the additional pediatric inventory into this location. The PAR Excellence system conforms to all types of storage needs, including large and small stock rooms, clean rooms, and mobile carts, making it ideal for multiple inventory management locations. Potential expansion of the system for future supply chain needs includes surgical services at the Missouri Orthopaedic Institute (MOI) and WCH, as well as within all supply chain/distribution areas.

The initial $1,019,271 expenditure will be paid from MUHC surgical services operating funds.

No. 4

Recommended Action – Sole Source – Weighted Bin Inventory Management System, MUHC

It was recommended and endorsed by UM System President and MU Chancellor Mun Y. Choi, recommended by the Finance Committee, moved by Curator ________________ and seconded by Curator ________________, that the following action be approved:

> that MUHC be authorized to purchase a Weighted Bin Inventory Management System from PAR Excellence Systems Inc., Cincinnati, Ohio, at a total initial estimated cost of $1,019,271 for a five-year term with the option to expand the system for future supply chain needs.

Funding is as follows:

MUHC Surgical Services Operating Funds	H0266-733100

Roll call vote Finance Committee	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Steelman		
Curator Williams		

The motion ________________.

Roll call vote Full Board:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ________________.

Naming Opportunity
Kummer Institute
Missouri S&T

Pursuant to CRR 110.081, naming of academic units requires Board approval. The Missouri University of Science & Technology requests approval to name the June and Fred Kummer Institute for Student Success, Research and Economic Development in recognition of June and Fred Kummer's extraordinary gift of $300 million to the Kummer Foundation, formed for the exclusive benefit of Missouri S&T. Money from the Foundation will be used to fund the Institute.

The June and Fred Kummer Institute for Student Success, Research and Economic Development will transform Missouri S&T and the south-central Missouri region by cultivating leadership and technological innovation; promoting an entrepreneurial mindset; fostering expansion of academic-industry partnerships to address emerging needs of industry; and creating jobs and economic growth for the region. The Institute will establish and operate four research centers to advance knowledge and application in areas critical to our state's and nation's future and in which the university has strong expertise: 1) advanced and resilient infrastructure, 2) resource sustainability, 3) advanced manufacturing, and 4) artificial intelligence and autonomous systems. The Institute and its centers will serve as the university's node for partnerships with industry, public and private research foundations, and governmental research agencies to stimulate business innovation, provide corporate R&D, and develop prototypes for new products.

June and Fred Kummer have been among Missouri S&T's most generous donors over the years. They provided the lead gift for the Kummer Student Design Center, which houses Missouri S&T's 19 student-run design teams. They also supported the expansion in the 1990s of Butler-Carlton Civil Engineering Hall and, in the early 2000s, of Toomey Hall, which houses S&T's mechanical and aerospace engineering programs. In recognition of June's passion for landscaping and gardening, the Kummers provided a gift to name the Fred and June Kummer Garden at Hasselmann Alumni House.

A native of New York City, Fred Kummer's interest in construction and hotel management began early. His father was an engineer with a New York hotel company, and Kummer developed his business savvy in the hotel basement, where he and a high school classmate ran a printing press to create menus for restaurants in other neighborhood hotels. He attended City College of New York before transferring to Missouri S&T. While in college at Rolla, he worked for a St. Louis architectural firm that had a project there. He met a colleague, June, an architect and graduate of Washington University in St. Louis. He left the university in 1952 to join the Army, married June while in the service and returned to Rolla in 1954 to complete his degree.

Fred Kummer is a past member of the Missouri S&T Board of Trustees and the University of Missouri Board of Curators. The Kummers are founding members of the Order of the Golden Shillelagh, an association composed of Missouri S&T's most loyal and generous donors. In 2011, Kummer was named to Missouri S&T's Alumni of Influence inaugural class in recognition of his business success and philanthropic contributions.

UM System President and MU Chancellor Choi and Chancellor Dehghani are in support of this naming.

No. 5

Recommended Action - Naming Opportunity, Kummer Institute, Missouri S&T

It was recommended by UM System President and MU Chancellor Mun Y. Choi and Missouri S&T Chancellor Mohammad Dehghani, moved by Curator __________________ and seconded by Curator _________________, that the following action be approved:

> to name the June and Fred Kummer Institute for Student Success, Research and Economic Development in recognition of June and Fred Kummer's extraordinary contributions to Missouri S&T.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion _____________________.

Naming Opportunity
Kummer Institute
Missouri S&T

Pursuant to CRR 110.081, naming of academic units requires Board approval. The Missouri University of Science & Technology requests approval to name the June and Fred Kummer Institute for Student Success, Research and Economic Development in recognition of June and Fred Kummer's extraordinary gift of $300 million to the Kummer Foundation, formed for the exclusive benefit of Missouri S&T. Money from the Foundation will be used to fund the Institute.

The June and Fred Kummer Institute for Student Success, Research and Economic Development will transform Missouri S&T and the south-central Missouri region by cultivating leadership and technological innovation; promoting an entrepreneurial mindset; fostering expansion of academic-industry partnerships to address emerging needs of industry; and creating jobs and economic growth for the region. The Institute will establish and operate four research centers to advance knowledge and application in areas critical to our state's and nation's future and in which the university has strong expertise: 1) advanced and resilient infrastructure, 2) resource sustainability, 3) advanced manufacturing, and 4) artificial intelligence and autonomous systems. The Institute and its centers will serve as the university's node for partnerships with industry, public and private research foundations, and governmental research agencies to stimulate business innovation, provide corporate R&D, and develop prototypes for new products.

June and Fred Kummer have been among Missouri S&T's most generous donors over the years. They provided the lead gift for the Kummer Student Design Center, which houses Missouri S&T's 19 student-run design teams. They also supported the expansion in the 1990s of Butler-Carlton Civil Engineering Hall and, in the early 2000s, of Toomey Hall, which houses S&T's mechanical and aerospace engineering programs. In recognition of June's passion for landscaping and gardening, the Kummers provided a gift to name the Fred and June Kummer Garden at Hasselmann Alumni House.

A native of New York City, Fred Kummer's interest in construction and hotel management began early. His father was an engineer with a New York hotel company, and Kummer developed his business savvy in the hotel basement, where he and a high school classmate ran a printing press to create menus for restaurants in other neighborhood hotels. He attended City College of New York before transferring to Missouri S&T. While in college at Rolla, he worked for a St. Louis architectural firm that had a project there. He met a colleague, June, an architect and graduate of Washington University in St. Louis. He left the university in 1952 to join the Army, married June while in the service and returned to Rolla in 1954 to complete his degree.

Fred Kummer is a past member of the Missouri S&T Board of Trustees and the University of Missouri Board of Curators. The Kummers are founding members of the Order of the Golden Shillelagh, an association composed of Missouri S&T's most loyal and generous donors. In 2011, Kummer was named to Missouri S&T's Alumni of Influence inaugural class in recognition of his business success and philanthropic contributions.

UM System President and MU Chancellor Choi and Chancellor Dehghani are in support of this naming.

No. 5

Recommended Action - Naming Opportunity, Kummer Institute, Missouri S&T

It was recommended by UM System President and MU Chancellor Mun Y. Choi and Missouri S&T Chancellor Mohammad Dehghani, moved by Curator __________________ and seconded by Curator _________________, that the following action be approved:

to name the June and Fred Kummer Institute for Student Success, Research and Economic Development in recognition of June and Fred Kummer's extraordinary contributions to Missouri S&T.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ____________________.

Naming Opportunity
Kummer School of Innovation, Entrepreneurship and Economic Development
Missouri S&T

Pursuant to CRR 110.081, naming of academic units requires Board approval. The Missouri University of Science & Technology requests approval to name the June and Fred Kummer School of Innovation, Entrepreneurship and Economic Development in recognition of June and Fred Kummer's extraordinary gift of $300 million to the Kummer Foundation, formed for the exclusive benefit of Missouri S&T. Money from the Foundation will be used to fund the School.

The Kummer School of Innovation, Entrepreneurship and Economic Development will be established as a new school within the university that will combine business-related academic programs with new programs related to innovation and entrepreneurship at the bachelor's, master's and Ph.D. levels.

June and Fred Kummer have been among Missouri S&T's most generous donors over the years. They provided the lead gift for the Kummer Student Design Center, which houses Missouri S&T's 19 student-run design teams. They also supported the expansion in the 1990s of Butler-Carlton Civil Engineering Hall and, in the early 2000s, of Toomey Hall, which houses S&T's mechanical and aerospace engineering programs. In recognition of June's passion for landscaping and gardening, the Kummers provided a gift to name the Fred and June Kummer Garden at Hasselmann Alumni House.

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Fred Kummer is a past member of the Missouri S&T Board of Trustees and the University of Missouri Board of Curators. The Kummers are founding members of the Order of the Golden Shillelagh, an association composed of Missouri S&T's most loyal and generous donors. In 2011, Kummer was named to Missouri S&T's Alumni of Influence inaugural class in recognition of his business success and philanthropic contributions.

UM System President and MU Chancellor Mun Y. Choi and Chancellor Dehghani are in support of this naming.

No. 6

Recommended Action - Naming Opportunity, Kummer School of Innovation, Entrepreneurship and Economic Development, Missouri S&T

It was recommended by UM System President and MU Chancellor Mun Y. Choi and Missouri S&T Chancellor Mohammad Dehghani, moved by Curator __________________ and seconded by Curator _________________, that the following action be approved:

> to name the Kummer School of Innovation, Entrepreneurship and Economic Development in recognition of Fred and June Kummer's extraordinary contributions to Missouri S&T.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ____________________.

Naming Opportunity
Kummer School of Innovation, Entrepreneurship and Economic Development
Missouri S&T

Pursuant to CRR 110.081, naming of academic units requires Board approval. The Missouri University of Science & Technology requests approval to name the June and Fred Kummer School of Innovation, Entrepreneurship and Economic Development in recognition of June and Fred Kummer's extraordinary gift of $300 million to the Kummer Foundation, formed for the exclusive benefit of Missouri S&T. Money from the Foundation will be used to fund the School.

The Kummer School of Innovation, Entrepreneurship and Economic Development will be established as a new school within the university that will combine business-related academic programs with new programs related to innovation and entrepreneurship at the bachelor's, master's and Ph.D. levels.

June and Fred Kummer have been among Missouri S&T's most generous donors over the years. They provided the lead gift for the Kummer Student Design Center, which houses Missouri S&T's 19 student-run design teams. They also supported the expansion in the 1990s of Butler-Carlton Civil Engineering Hall and, in the early 2000s, of Toomey Hall, which houses S&T's mechanical and aerospace engineering programs. In recognition of June's passion for landscaping and gardening, the Kummers provided a gift to name the Fred and June Kummer Garden at Hasselmann Alumni House.

A native of New York City, Fred Kummer's interest in construction and hotel management began early. His father was an engineer with a New York hotel company, and Kummer developed his business savvy in the hotel basement, where he and a high school classmate ran a printing press to create menus for restaurants in other neighborhood hotels. He attended City College of New York before transferring to Missouri S&T. While in college at Rolla, he worked for a St. Louis architectural firm that had a project there. He met a colleague, June, an architect and graduate of Washington University in St. Louis. He left the university in 1952 to join the Army, married June while in the service and returned to Rolla in 1954 to complete his degree.

Fred Kummer is a past member of the Missouri S&T Board of Trustees and the University of Missouri Board of Curators. The Kummers are founding members of the Order of the Golden Shillelagh, an association composed of Missouri S&T's most loyal and generous donors. In 2011, Kummer was named to Missouri S&T's Alumni of Influence inaugural class in recognition of his business success and philanthropic contributions.

UM System President and MU Chancellor Mun Y. Choi and Chancellor Dehghani are in support of this naming.

No. 6

Recommended Action - Naming Opportunity, Kummer School of Innovation, Entrepreneurship and Economic Development, Missouri S&T

It was recommended by UM System President and MU Chancellor Mun Y. Choi and Missouri S&T Chancellor Mohammad Dehghani, moved by Curator _________________ and seconded by Curator ________________, that the following action be approved:

> to name the Kummer School of Innovation, Entrepreneurship and Economic Development in recognition of Fred and June Kummer's extraordinary contributions to Missouri S&T.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ___________________.

Naming Opportunity
Linda and Bipin Doshi Department of Chemical and Biochemical Engineering
Missouri S&T

Pursuant to CRR 110.081, naming of academic units requires Board approval. The Missouri University of Science & Technology requests approval to name the Department of Chemical and Biochemical Engineering the Linda and Bipin Doshi Department of Chemical and Biochemical Engineering in in recognition of their generous gift of $10 million to the department of chemical and biochemical engineering.

Linda and Bipin Doshi's gift will establish an endowment, which will name the department and provide funding for an endowed chair to be held by the department chair and two professorships in support of exceptional, mid-career faculty members. The endowment will eventually support additional departmental needs including technology acquisitions and upgrades, fellowships, and seed funding for accelerating research to market.

Bipin Doshi is the retired chairman, president and CEO of Schafer Industries, a group of manufacturing companies based in South Bend, Indiana. He earned his bachelor of science and master of science degrees in chemical engineering from Missouri S&T and also holds a bachelor of science degree in chemistry and physics from the University of Bombay. Doshi launched his career as a research engineer with U.S. Rubber Co., later Uniroyal, and was a vice president when he left the company after 25 years of service to purchase Schafer Gear Works, now Schafer Industries. He sold the company in 2017.

A member of the Missouri S&T Board of Trustees and the Academy of Chemical Engineers, Doshi received an honorary doctorate in engineering and delivered S&T's commencement address in May 2019, and he was honored among the university's Alumni of Influence in 2016. The Doshis have supported a number of initiatives at the university, including capital projects, establishing an endowed scholarship for chemical engineering students, and a $1 million gift naming the Frank Conrad Unit Operations Laboratory in James E. Bertelsmeyer Hall, the home of chemical and biochemical engineering dedicated in 2014.

UM System President and MU Chancellor Mun Y. Choi and Chancellor Dehghani are in support of this naming.

No. 7

Recommended Action - Naming Opportunity, Linda and Bipin Doshi Department of Chemical and Biochemical Engineering, Missouri S&T

It was recommended by UM System President and MU Chancellor Mun Y. Choi and Missouri S&T Chancellor Mohammad Dehghani, moved by Curator ________________ and seconded by Curator _______________, that the following action be approved:

> that the Department of Chemical and Biochemical Engineering be named the Linda and Bipin Doshi Department of Chemical and Biochemical Engineering, in recognition of their extraordinary contributions.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion __________________.

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UM System President and MU Chancellor Mun Y. Choi and Chancellor Dehghani are in support of this naming.

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Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ____________________.

Naming Opportunity
MU

Pursuant to CRR 110.080, naming of buildings and exterior areas requires Board approval. The University of Missouri-Columbia requests approval to name the west entrance to the NextGen Precision Health Facility the Patrick K. Donnelly Family Plaza to recognize Mr. Patrick K. Donnelly, BA PA 1980, for his commitment to the NextGen Precision Health facility.

Mr. Donnelly has been a supporter of the University of Missouri-Columbia since 1986, recently citing his mentorship by famed economics professor, Walter Johnson, as the catalyst to a long and successful career first in the financial sector and then largely in the pharmaceutical services industry. Mr. Donnelly's leadership roles in venture capital firms and healthcare private equity management spurred specific work in pharmaceutical innovation. Anecdotes about time spent working with the Gates Foundation on global malaria studies and 'moving forward' oncology drugs and therapies provide insight into his interest in the NextGen facility and the naming opportunities for the Innovation Tower. Mr. Donnelly has expressed interest in, and commitment to, assisting the University of Missouri during the establishment of the NextGen facility.

University of Missouri President and MU Chancellor Mun Choi, Vice Chancellor of University Advancement Jacqueline Lewis, and Provost Latha Ramchand are all in support of this naming.

No. 8

Recommended Action - Naming Opportunity, MU

It was recommended and endorsed by UM System President and MU Chancellor Mun Y. Choi, moved by Curator __________________ and seconded by Curator _________________, that the following action be approved:

> that the west entrance to the NextGen Precision Health Facility be named the Patrick K. Donnelly Family Plaza in recognition of the extraordinary contributions of the Donnelly Family.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ____________________.

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Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ____________________.

HEALTH AFFAIRS

HEALTH AFFAIRS COMMITTEE

Maurice B. Graham, Chair

Ronald G. Ashworth (non-curator member)

John R. Phillips (non-curator member)

David L. Steelman

Robin R. Wenneker

Michael A. Williams

The Health Affairs Committee ("Committee") assists the Board of Curators in overseeing the clinical health care operations of the University and in coordinating those operations in furtherance of the University's teaching, research, and clinical missions.

I. Scope

The Committee provides oversight for the University's clinical health care operations in the areas of:

- Mission, vision, and strategy;
- Governance and operational oversight;
- Quality of care and patient safety;
- Regulatory compliance;
- Financial planning and performance; and
- Coordination of the clinical, teaching, and research missions.

II. Executive Liaison

The Executive Vice Chancellor for Health Affairs of the University of Missouri-Columbia or some other person(s) designated by the President of the University, with the concurrence of the Board Chair and the Committee Chair, shall be the executive liaison to the Committee and responsible for transmitting Committee recommendations.

III. Responsibilities

In addition to the overall responsibilities of the Committee described above and in carrying out its responsibilities regarding clinical health care operations, the charge of the Committee shall include:

1. Reviewing and making recommendations to the Board regarding:
    1. actions that are appropriate or necessary to assist the Board in overseeing clinical health care operations or coordinating the teaching, research, and clinical missions;
    2. significant actions related to health care which should require advance notice or approval by the Committee or Board; and
    3. other matters referred to it by the Board and University officers.
2. Requesting, receiving, and reviewing reports and other information from University officers and advisors regarding health care operations, coordination of the teaching, research, and clinical missions, and related matters, including meeting at least quarterly and receiving regular reports from appropriate officers of University of Missouri Health Care, the MU School of Medicine, and the MU Health Chief Compliance Officer.

3. Additional matters customarily addressed by the health affairs committee of a governing board for an institution of higher education.

IV. Committee Membership and Quorum Requirements

The Committee's membership may include non-Curator members in addition to Curator members. Subject to approval of the Board, the Board Chair shall determine the number of Curator and non-Curator members to appoint to the Committee and shall select individuals to serve as members of the Committee; provided that, the number of non-Curator members on the Committee shall not exceed the number of Curator members on the Committee, unless the Committee temporarily has more non-Curator members than Curator members because a Curator member of the Committee has resigned from the Board or the Committee. Non-Curator members may resign their Committee membership by providing written notice to the Board Chair. Non-Curator members of the Committee serve at the pleasure of the Board and may be removed by the Board Chair at any time, subject to approval of the Board.

A quorum for the transaction of any and all business of the Committee shall exist when:

1. Both a majority of all Curator members of the Committee and a majority of all members of the Committee are participating for Committee meetings which are held in conjunction with meetings of the Board; or
2. Both all Curator members of the Committee and a majority of all members of the Committee are participating for Committee meetings which are not held in conjunction with meetings of the Board; or
3. Both a majority of all Curator members of the Committee and a majority of all members of the Committee are participating for Committee meetings which are held solely for the purpose of reviewing and overseeing compliance matters.

Approved by the Board of Curators: April 9, 2020

University of Missouri

Board of Curators

Health Affairs Committee Meeting

Thursday, November 12, 2020
1:00 P.M.

This Committee Meeting is being held in conjunction with the November 19, 2020 Board of Curators Meeting.

Originating:
From remote locations via conference telephone and Zoom webinar.

Please click the link below to join the webinar:
https://umsystem.zoom.us/j/92081758249

Or Telephone:
Dial US: +1 646 876 9923
Webinar ID: 92081758249

AGENDA

PUBLIC SESSION – 1:00 P.M.

Call to Order – Chair Graham

Roll Call of the Committee

Information
1. School of Medicine Medical Student Education Update (Steve Zweig)
2. MU Health Care and School of Medicine Strategic Plan Unification (Richard Barohn)
3. MU Health Clinical Consolidation and Integration Strategies (Jonathan Curtright)
4. Quarterly Financial Report, MUHC – Written Report Only
5. Quarterly Compliance Report, MUHC – Written Report Only

Action
1. Minutes, September 16, 2020 Health Affairs Committee Meeting

Recess

School of Medicine For Missouri

Steven Zweig, MD, MSPH, Dean

MU School of Medicine

Mizzou Med
TO YOU

Graduates of the MU School of Medicine

- Number of physician graduates currently practicing in our state: 1,614
- Ranking compared with other schools: #1
- MU SOM grad is 38 times more likely to practice in Missouri than average grad of all other national medical schools.
- Number of counties with our graduates: 89 counties
- Only 5% of physicians nationally practice in rural communities

Mizzou Med
TO YOU

Rural Track Pipeline Program

- Began in 1995
  - 2020 is the 25th anniversary of the program
- Graduates – 616 Total
  - 137 Bryant Scholars (students from rural backgrounds)
    - 59% practicing in rural areas
    - 49% practicing in rural Missouri
  - 479 graduates who participated in any RT program (Summer, Clerkship, or Elective)
    - 45% practicing in rural areas
    - 27% practicing in rural Missouri

Rural Track Pipeline Program Sites

- St. Joseph – Mosaic Life Care
- Sedalia – Bothwell Regional Health Center & Katy Trails Community Health
- Hannibal – Hannibal Regional Healthcare System & Hannibal Clinic
- Osage Beach – Lake Regional Health System
- Cape Girardeau – St. Francis Medical Center
- Farmington – Parkland Health Center
- Sikeston – Missouri Delta Medical Center
- West Plains – Ozarks Medical Center
- Branson – Cox Medical Center Branson

Rural Health Funding

Kathleen Quinn, PhD

The MU School of Medicine received a **$2.8 million** grant from the Health Resources and Services Administration (HRSA).

This award is in addition to grants totaling nearly **$5 million** issued by HRSA last year, which was the largest award for rural medicine in the school's history.

These funds will enable us to increase the number of doctors in Missouri and address the physician shortages in rural parts of the state.

David Haustein, MD –
Associate Dean Springfield Clinical Campus

- Was Associate Professor at University of Louisville
- Medical school and residency in PMR at MU
- Experienced in medical education
  - Director of Problem-Based Learning
  - Residency placement is major focus of interest

Springfield Clinical Campus

- First class expansion (8) 2015; now 32 students each class (1/3 increase over baseline)
- Collaborations include:
  - Leadership and physicians at Cox Health and Mercy, Compass, Jordan Valley Community Health Center
  - MUSOM part-time associate clerkship directors and campus staff
  - Hundreds of volunteer faculty physicians

Outcomes:

- Successful USMLE Step 2 performance
- Student assessment of: patient-centered care, knowledge valuable to practice, effective communication

Patient-Centered Care Learning Center

PCCLC – Patient Centered Care Learning Center – "the pickle"

- Built in 2016
- Allowed us to increase class size from 96 to 128
- Accommodated our nationally recognized patient-based learning curriculum – each student room has room for 8 students, their study carrels, and shared meeting table
- Now have three SIM labs – PCCLC, Clinical Support and Education, and Springfield office

Family and Community Medicine

- 50 years of residency training program
- 484 Family Medicine graduates
- 239 practice in Missouri
- 91 (or 38% of) graduates practice in rural Missouri
- Ranked by *US News and World Report* in top 10 departments nationally for 24 of the last 25 years
- Two National Academy of Medicine members
  - Michael LeFevre, MD, MSPH (class of 1979) – Chair
  - Jack Colwill, MD – Former Chair

New rural residency programs

- Family Medicine residency program at Capital Region Medical Center became part of MU Health Care system last year
- HRSA funding to start new Rural Training Track Family Medicine residency at Bothwell Regional Health Center
  - 2 residents per year will spend majority of R1 year training In Columbia. First recruitment class will enter residency in 2022.
  - R2 and R3 years will be in Sedalia, MO, population 21,000
  - Continuity clinic experience for 3 years in Sedalia
- Team includes

--MU FCM leadership and site leadership of Dr. Robert Frederickson, Rural Program Director, and

--Dr. Misty Todd, Associate Rural Program Director in Sedalia

Unique faculty led services at MU Health Care

- Subspecialized critical care: adult, neuro, cardiac, pediatric, surgical, neonatal
- Children's Health Services: 25 pediatric medical, anesthesia, emergency medicine, and surgical specialties
- Thompson Center for Autism and Neurodevelopmental Disorders
- Neurosciences: epilepsy, ALS, Duchenne's, stroke centers
- Cardiac: level 1 STEMI center
- Trauma: level 1 Trauma center
- Orthopaedics: Mizzou Biojoint
- Bariatric Surgery: nationally accredited Comprehensive Center

MU Health
Health Affairs Committee
Richard J. Barohn, MD
Executive Vice Chancellor for Health Affairs

What's New with NextGen Precision Health

- Updated branding and renaming: NextGen Precision Health
- Faculty Research Leads (FRLs) have developed occupancy document
  and had first meeting with initial NextGen building occupants
- Developing plans for Clinical Translational Science Unit (CTSU)
- Continued efforts to raise philanthropic dollars
  - $36.5M so far
- Coming Soon: NextGen PH Discovery Education Seminar Series

MU Health Retreat Oct. 13, 2020

1. We agreed on one Mission, Vision, Values statement for MU Health-inclusive of MUHC and SOM

2. We consolidated the strategic plans for MUHC and SOM

3. Now: One strategic plan

4. And two tactical/operational plans will be implemented

MU Health Mission, Vision and Values

MISSION

To save and improve lives –
through exemplary education, research, and patient care.

VISION

We will be the premier and transformational
integrated academic health system for Missouri.

VALUES

Diversity, Inclusion & Equity • Respect • Service
Discovery • Responsibility • Excellence

MU Health Strategic Plan 2021-2025

Make A Distinct Impact

Advance the quality of health care through education, discovery and innovation and increase prominence in precision and rural health.

- Fuel **translation from basic science to clinical investigation** to patient care to achieve **clinical and academic excellence** and impact the health of the public.
- Cultivate **interdisciplinary collaborations** in the **NextGen Precision Health initiative,** and other research across the system to increase the speed and effect of discovery.
- Advance the **education model** to develop providers and researchers who are prepared to meet the **health care needs of the future**.
- Create an **inclusive, equitable and bias-aware environment** where **all** people want to deliver and receive care, learn and discover.
- Amplify **industry and strategic partnerships** to enrich and broaden the impact of our training, research and **rural and precision health**.
- Increase **philanthropic support** to create new and diversified revenue sources.

Grow Our Ability to Serve

Leverage MU Health's strengths and align strategies to expand the health system's ability to serve the health and wellness needs of Missourians.

- Achieve the **scale** needed to attain clinical and academic excellence, broaden our **rural impact** and advance **precision health**.
- Establish and cultivate **community partnerships** that will increase access to affordable, quality health care for **rural Missourians.**
- Attract, educate, develop, inspire, and promote **exceptional and diverse talent,** and foster their health and well-being.
- Innovate to achieve the highest standards for **quality and safety** and enhance MU Health's performance.
- Place our customers – patients and their families, learners and referring providers – at the center of everything we do to attain the highest level of **service excellence**.
- Evolve the structure to provide the **discipline, scalable core resources and efficiency** needed to promote a sustainable and integrated academic health system.

Measures of Success

- Research expenditures
- Publications, citations and impact of research
- State health indicators

- Inclusive and bias-aware environment
- Enhanced training and workforce
- Distinction in rural & precision health
- Increased philanthropic revenue

- Clinical services and growth
- Net patient revenues
- Operating margin
- Innovative services and training

- Diverse, engaged and healthy faculty, staff and learners
- Vizient top performer
- Magnet status
- Exceptional patient experience

Why Clinical Integration Now?

1. **Decision to move pediatrics/women's services off central campus occurred over the last 20 years**
   - May have been the right decision then, but not for 2020 and the future

2. **COVID-19 accelerated discussions already in play to integrate WCH on main campus**

3. **There is a strong case based on:**
   - Improvement of various clinical service lines
   - Eliminate duplication of services / FTEs
   - Infrastructure needs of WCH building
   - Once-in-a-generation opportunity to create a women's and children's health care facility for the next generation: The Women's and Children's Hospital at MU

MU Health Care

Columbia Scale and Integration Strategy

Jonathan Curtright

Chief Executive Officer

Health Care

Columbia Scale and Integration Strategy

Agenda:

- University Campus Vision & Alignment with MU Health Strategic Plan
- Recommendation
  - Phased consolidation
  - Space programming
  - Efficiencies gained
  - Project timeline
- Financing
- Next steps

The Why: Building Clinical Scale and Enhancing Rural Health Care

- Continues **building renewal** necessary for a thriving health system
- Improves **Association of American Universities** (AAU) standing
- Accelerates and grow **NextGen Precision Health**
- Creates significantly **more financial resources** for University of Missouri and School of Medicine research
- Increases margins enabling UM System to **make key investments**

MU Health Strategic Plan 2021-2025

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Master Facilities Space Plan

Past 1995 to 2020

- Critical Care Tower
- CSE Faculty Bldg
- MOI Phase I
- Patient Care Tower
- Primary Care
- S. Providence MOB
- MOI Phase II
- PCCLC SOM Bldg.

Present 2021 to 2024

- NextGen Precision Health
- University Campus Space Optimization (UH, MOI, UPMB, Faculty)
- Children's Hospital

Future 2025 to 2035

- Children's Hospital Shelled Space
- Ambulatory Services MOB
- 1956 Building Replacement

Recommendation to Health Affairs Committee

Phased Consolidation to University Campus

Phase I: (September 2020-September 2021)

- **Expand Existing University Campus (87 incremental beds)** to support short and long term phased integrations (Room conversions, expanded ED)
- **Planning and construction on Children's Hospital** (2020 to Summer 2024)
- Move **Pediatric Services** (inpatient, Emergency Department, surgical services, and ambulatory services) to expanded University Campus
- Creates **operational savings of $25M** from 2021 to 2024

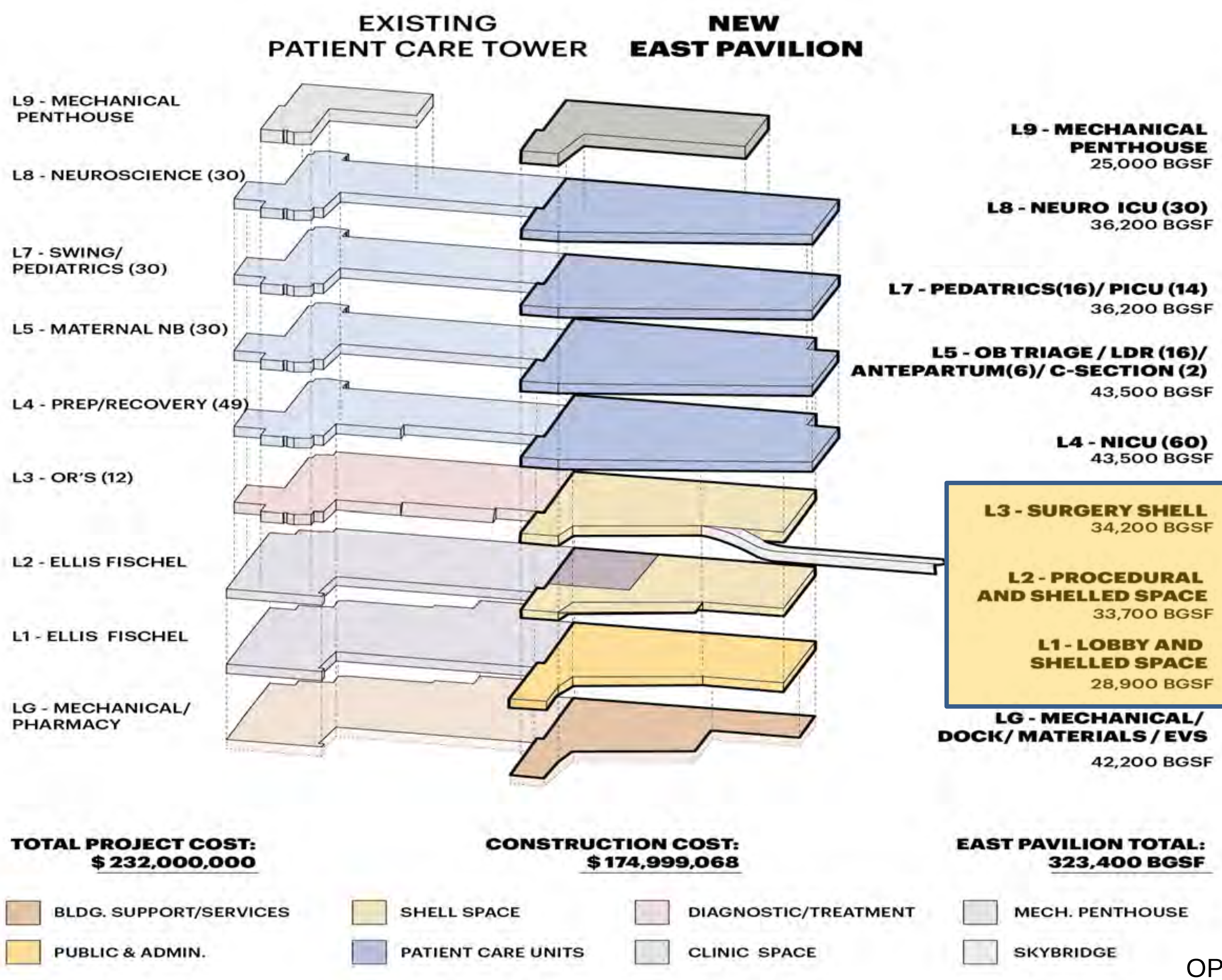
Phase II: (December 2023-July 2024)

- **Complete construction** by Summer 2024
- Transition remaining WCH services (obstetrics, neonatal intensive care) once **Children's Hospital is completed in summer 2024**

University Campus

Children's Hospital

Children's Hospital Space Programming

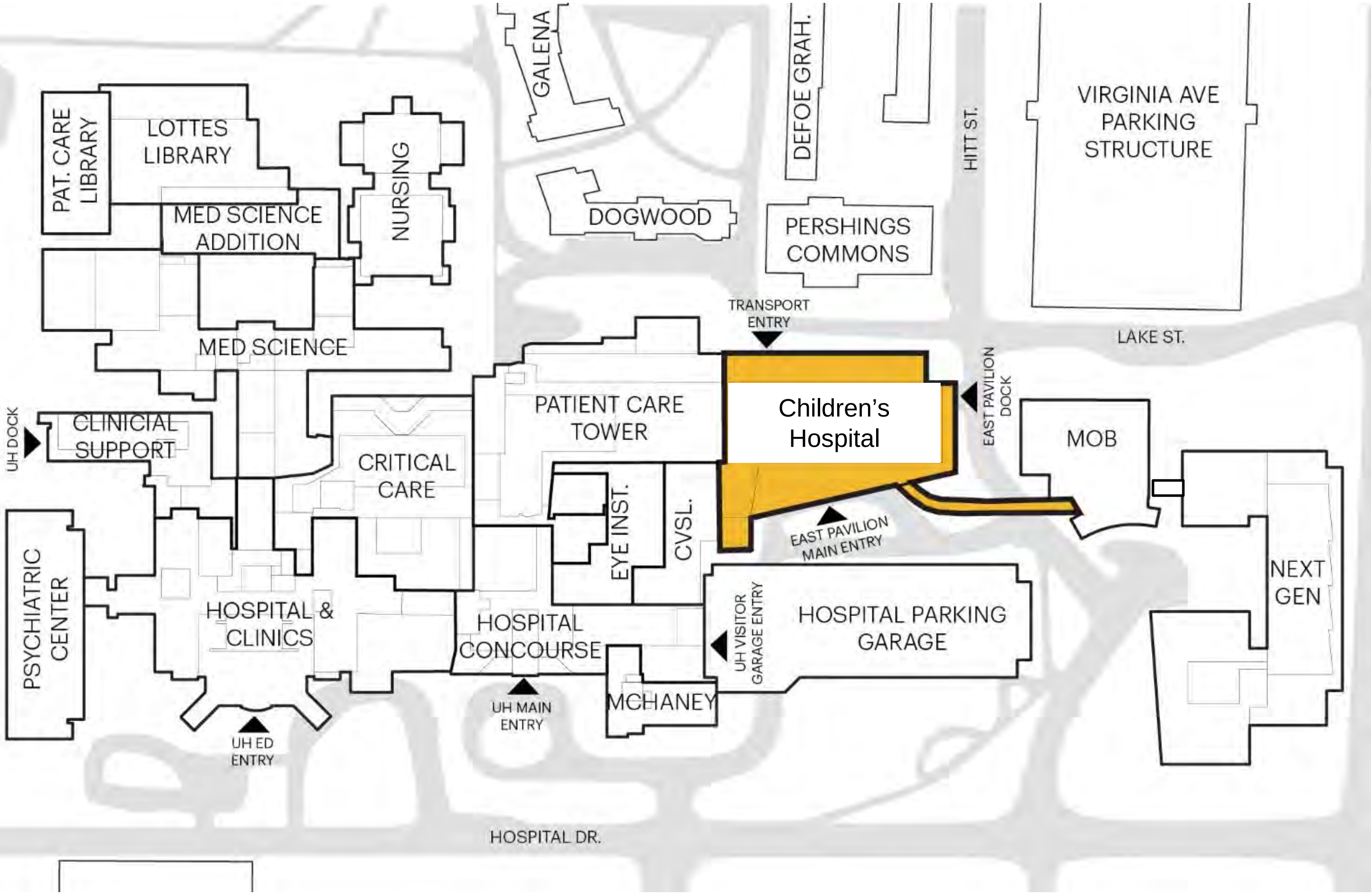


<u>Shelled Space</u>

- 96,800 Sqft.
- 30% of Total Building

DRAFT

Building Efficiency and Project Schedule



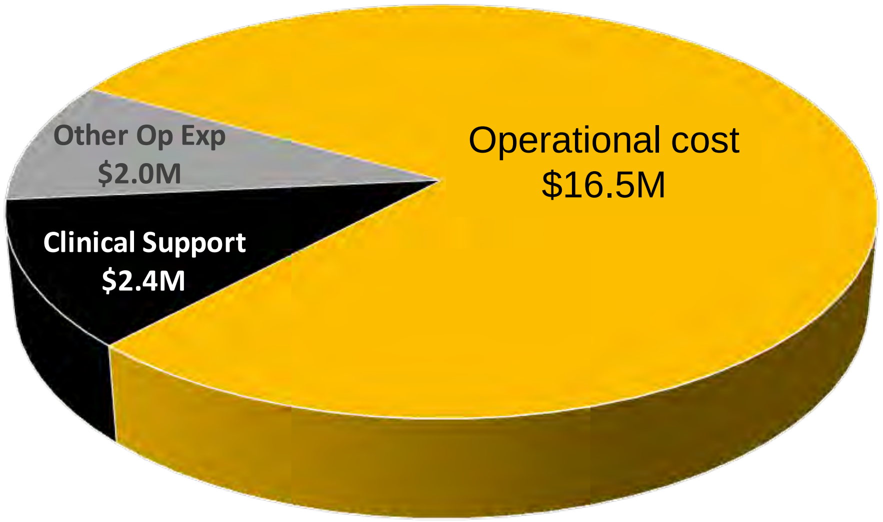
	Total Sq. Ft.	Percentage
Gross Sq. Ft.	323,400 sq. ft.	100%
Clinical Sq. Ft.	242,550 sq. ft.	75%

- *Benchmark against our peers: TBD, in progress from BMcD*

Timeline	
Construction Documents (CD) – Bid Packages	Spring-Fall 2021
Construction Start	May 2021
Go-Live	June 2024

Children's Hospital Operational and Capital Efficiencies

Operational Savings



- ***Annual Savings $20M+ after full consolidation***

Capital Reallocation

Capital Equipment:	**$7M**
Envelop Project:	**$26M**
Infrastructure:	**$18M**
	$51M

MU Health Care Debt Affordability

Debt Capacity up to $200M for Building Renewal

Financing Clinical Integration-University Campus

MU Health Care Bond History

Bond Year	Bond Description	Paid Off - Month/Year	Bond Amount (in millions)	Current Bond Value (in millions)	Annual Debt Service (in millions)
2009	Missouri Orthopedic Institute & UH Surgery	Oct-39	$118.3	$93.8	$7.0
2010	University Hospital Patient Care Tower	Oct-41	81.2	65.7	4.6
2012	Refinance 2006 Bonds	Oct-28	134.7	78.0	12.3
2015	Missouri Orthopedic Institute Phase II	Nov-45	30.0	27.0	1.9
	Subtotal		**$364.20**	**$264.50**	**$25.8**
2021	***Children's Hospital -- Proposed Bonds***	***Dec-40***	***200.0***	***200.0***	***15.2***
	Grand Total		**$564.2**	**$464.5**	**$41.0**

Capital Investments & Financial Strength

- Past capital investments have **ensured strong financial performance**
- Investment is required for continued financial success and **critical building renewal**
- Since the last bond issuance, MUHC **reduced debt by $80.5M**
- Since the last bond issuance, MUHC **grew total revenue by 38%** ($0.8B to $1.1B)
- **Debt to equity ratio** has favorably decreased from **56% in FY2015 to 37%** in FY2020
- Debt ratios **favorable to "Moody's A Rated"** with the $200M bond issuance

Financial Ratios and Benchmarks	Desired Direction	2015	2016	2017	2018	2019	2020	2021 - Q1	2022 Plan (Debt)	FY21 Moody's A Rated
Operating Margin	↑	6.4%	7.2%	9.1%	9.0%	8.3%	5.0%	7.4%	5.4%	2.7%
Cash to Total Debt	↑	117.3%	128.9%	148.8%	167.5%	191.1%	156.8%	162.4%	131.9%	137.9%
Debt to Capitalization	↓	36.1%	33.6%	30.5%	27.6%	25.1%	27.0%	26.1%	30.5%	30.9%
Debt to Equity	↓	56.4%	50.7%	44.0%	38.1%	33.4%	36.9%	35.2%	43.8%	NA

Total Project Budget –Children's Hospital

• Construction:	$175M
• Contingency	$10M
• Design/Architecture	$15M
• Equipment	$22M
• Other	$10M
• ***Total Project Budget***	***$232M***

Total Projected Funding –Children's Hospital

• Operations (over the next 4 years):	$25M
• Philanthropy ($5M already secured):	$25M
• Long-term debt financing:	<u>$200M</u>
• **Total Projected Funding**	**<u>$250M</u>**

Clinical Scale Strategies Key Takeaways:

- **Building renewal** is necessary for replacement of health care facilities due to age, technology and anticipated growth

- **Financial gains are strong** for a consolidated campus – operations, capital and debt capacity

- MU Health ***unwavering commitment to Women's & Children's services***

- **UH/MOI campus expanded by 80+** over next 12-18 months.

- Continued strong and growing **support for research at Mizzou and NextGen**

Asks of the Health Affairs Committee

- *<u>Recommendation to Finance Committee and Board of Curators</u>: Endorse the Columbia clinical scale and integration strategy to consolidate Women's and Children's services onto the University campus.*

- *<u>Recommendation to the Finance Committee</u>: Issue $200M of debt financing to build the Children's Hospital on the University Campus.*

University of Missouri Health Care
Health Affairs Committee

Financial Report
Fiscal Year 2021, September Year-to-Date

Consolidated Financial Results ($000's)	Actual	Plan	Prior Year
Net Revenues	$ 292,372	$ 241,848	$ 272,543
Operating Expenses	(268,018)	(246,163)	(251,792)
Operating Income	24,354	(4,316)	20,751
Non-operating Revenues, Net	2,711	(6,620)	(6,540)
Change in Net Assets/Net Income	$ 27,065	$ (10,936)	$ 14,211

Overview

Year-to-date financial performance for Net Income is favorable to plan by $36.2M. The focus on aligning operating expenses in relation to patient revenue and volume is reflected in favorable operating performance. Net revenues per adjusted patient day are 11.3% higher than prior year, offsetting the 10.5% increase over prior year in operating expenses per adjusted patient day. COVID-19 continues to impact day-to-day operations for the organization. MUHC leadership continues to work with the State of Missouri, hospital advocates and supply chain providers to ensure resources are available. To date $21.8M in contributions have been received to offset operating expenses for COVID-19 initiatives.

Performance Updates

- Outpatient revenues reflect 50.2% of Total Patient Revenues in September and 49.2% FYTD
- Average Daily Census is 12.0% higher than plan and 6.1% lower than prior year
- OR Cases are 20.2% higher than plan and 4.4% higher than prior year
- Clinic visits are 19.6% higher than plan and 0.9% higher than prior year

Ratios and Benchmarks

The impacts of the re-emergence and continued response to COVID-19 are reflected in the financial ratios and benchmarks below. Operating Margin, Annualized Return on Total Assets, Cash to Total Debt, Debt to Capitalization, Maximum Annual Debt Service Coverage and Net Days Revenue in AR are favorable to Moody's A rated medians, while Days Cash on Hand is unfavorable to Moody's A rated medians.

Financial Ratios and Benchmarks	Actual	Plan	Prior Year	Moody's A-Rated
Operating Margin	7.4%	-2.2%	6.5%	2.7%
Annualized Return on Total Assets	7.9%	3.3%	4.4%	4.4%
Cash to Total Debt	162.4%	203.9%	194.1%	137.9%
Debt to Capitalization	26.1%	23.8%	24.5%	30.9%
Maximum Annual Debt Service Coverage	6.64	3.30	4.40	4.70
Days Cash on Hand	193.38	210.8	207.2	215.1
Net Days Revenue in AR	47.3	56.8	52.2	46.2

Memo

To: Board of Curators – Health Affairs Committee
University of Missouri System

From: Jennifer May
MU Health Chief Compliance Officer

Date: November 12, 2020

Re: Quarterly Compliance Update

I. Corporate Integrity Agreement Update
   A. Reporting Period 5 runs from July 1, 2020 through June 30, 2021.
   B. The Department of Health and Human Services (DHSS) Office of Inspector General (OIG) Monitor verified receipt of the Annual Report for Reporting Period 4 on September 30, 2020. Comments on the report contents have not yet been received.
   C. MU Health repaid all identified overpayments from the Claims Review. Reporting Period 5 Claims Review facility selection will occur in Spring 2020.

II. Data Security Task Force
   A. In response to the recent breach incidents, MU Health established a Data Security Task Force to review the information security posture and recommend tools to ensure an efficient and secure environment for protected health information (PHI) within MU Health (clinical practice, research, and education). The Data Security Task Force was created under the leadership of EVC Dr. Barohn, and he has asked Jonathan Curtright, MU Health Care CEO, and Steven Zweig, Dean of the MU School of Medicine to lead this effort.
   B. The work of the Task Force is scheduled for completion by November 15, 2020 and will include recommendations with plans for execution. These recommendations and plans will be presented to Dr. Barohn, who will then provide those to Dr. Choi, President of the University of Missouri System and Chancellor of the University of Missouri – Columbia campus. In order to ensure continued progress toward this deadline, weekly updates are provided to the EVC.
   C. The Task Force is divided into five Work Teams. The Work Teams and the charge of each are as follows:
      i. Organizational Structure (Beth Alpers and Lisa March, co-Chairs): review the roles and responsibilities of the team charged with data security for MU Health; review staff and resources, leadership and reporting relationships
      ii. Technology (Vic Arnold, Chair): review tools and software to create optimal data security, including current state and proposed future state capacity, risks and adequacy
      iii. Workflows (Stephanie Cordray and Amy Trueblood, co-Chairs): identify current workflows that require or leverage email for communicating and/or storage of ePHI in the email system; identify options, in coordination with the Technology Work Team, to share ePHI outside of the email system

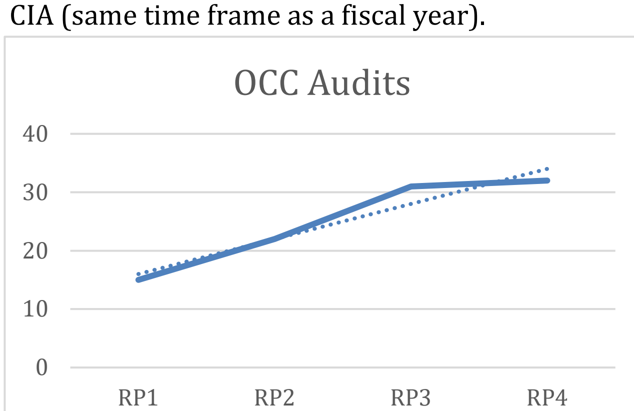
iv. Policy (Kay Davis and Dr. Mark Wakefield, co-Chairs): review current policies and procedures addressing the appropriate use of email to communicate ePHI; consider the creation of new or modification of current policies and procedures to support and enforce the appropriate use, communication and storage of ePHI
v. Communications (Teresa Snow, Chair): assess communication needs to inform and train relevant staff on the appropriate use of ePHI; create and execute communication plans for new or enhanced secure methods of communicating and utilizing ePHI at MU Health

III. Compliance Program Update Summary

A. The MU Health Compliance Program is focused on the following goals for FY21:
   i. Implementation, Education and Review of Data Security and Integrity Enhancements
   ii. Continued Development of Reporting and Monitoring Tools for all areas of the Program
   iii. Align Program Priorities in support of the MU Health Strategic Plan

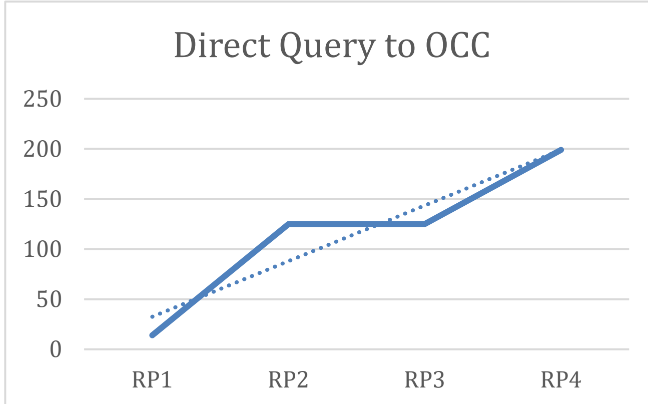
B. Programmatic changes due to ongoing COVID response require continued flexibility
   i. Establishing compliant structures to support patient care and business continuity needs, including lab and drive-thru testing set-up and billing, virtual care and telehealth policy and processes, work-from-home expectations and processes, and coding and billing requirements for services conducted during the public health emergency
   ii. Adjusting work plans to provide oversight, including monthly virtual care target audits, monitoring of waivers, quarterly testing of lab billing, medical record access audits on COVID-positive inpatients
   iii. Providing direct staffing support to other units for COVID regulatory reporting responsibilities
   iv. Building timely and applicable education for staff and practitioners on working securely in remote environments

C. Risk review and oversight activities continue to increase
   i. Reviews, audits, and inquiries are trending up year over year.
   ii. Below are charts showing increased activities as a function of how information is received by the compliance staff:
      1. Office of Corporate Compliance (OCC) Audits: This chart shows the number of audits conducted during each Reporting Period under the CIA (same time frame as a fiscal year).

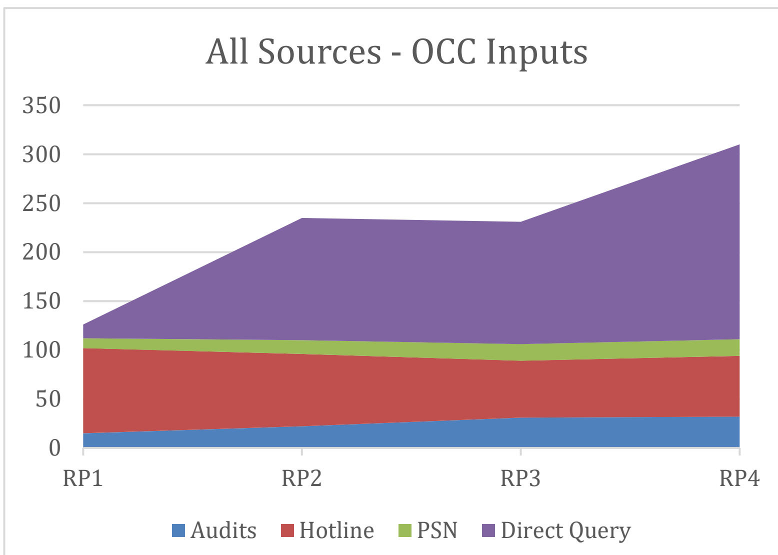


      2. Direct Query to OCC: This chart shows the number of inquiries from faculty

and/or staff made directly to the OCC staff during each Reporting Period.



3. All Sources – OCC Inputs: This chart combines all the methods by which the OCC receives information for review and consideration. In addition to the audits and direct inquiries shown in the charts above, the OCC also receives notice of potential risk areas through the Patient Safety Network (internal reporting software system) and the Integrity and Accountability Hotline (UM System-hosted anonymous reporting hotline).



iii. Conclusions: The increased activity in the audit space is directly related to the increased communication the OCC team receives from our staff. Items reviewed range from simple validation of compliance with a particular rule or policy to investigative inquires on complex topics. The increase year over year in inputs, particularly direct queries, suggests that MU Health staff are comfortable communicating with the OCC for questions, concerns and opportunities for collaboration on strategic needs. This in turn allows for heightened visibility into potential risk areas and presents opportunities to appropriately educate and mitigate risk enhancing the likelihood of strategic goal success.

No. 1

Recommended Action - Minutes, September 16, 2020 Health Affairs Committee Meeting

It was moved by _______________ and seconded by _______________, that the minutes of the September 16, 2020 Health Affairs Committee meeting, held in conjunction with the September 24, 2020 Board of Curators Meeting, be approved as presented.

Roll call vote of Committee:	YES	NO
Mr. Ashworth		
Curator Graham		
Mr. Phillips		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ________________.

FINANCE COMMITTEE

FINANCE COMMITTEE

David L. Steelman, Chair

Darryl M. Chatman

Greg E. Hoberock

Michael A. Williams

The Finance Committee ("Committee") oversees the fiscal stability and long-term economic health of the University. The Committee will review and recommend policies to enhance quality and effectiveness of the finance functions of the University.

I. Scope

In carrying out its responsibilities, the Committee monitors the University's financial operations, fundraising performance, debt level, capital priorities and investment performance; requires the maintenance of accurate and complete financial records; and maintains open lines of communication with the Board about the University's financial condition.

II. Executive Liaison

The Vice President for Finance of the University or some other person(s) designated by the President of the University, with the concurrence of the Board Chair and the Committee Chair, shall be the executive liaison to the Committee and responsible for transmitting committee recommendations.

III. Responsibilities

In addition to the overall responsibilities of the Committee described above and in carrying out its responsibilities, the charge of the Committee shall include

1. Reviewing and making recommendations to the Board on the following matters:
    1. University operating budget and financial plan;
    2. University capital budget and master facility plans;
    3. capital projects;
    4. tuition, fees and housing rates;
    5. state appropriation requests;
    6. pursuant to applicable Collected Rules and Regulations, contracts and reports;
    7. insurance brokers and self-insurance programs;
    8. pursuant to applicable Collected Rules and Regulations, real estate sales, purchases, leases, easements and right-of-way agreements;
    9. the issuance of debt;
    10. asset allocation guidelines and other policies related to the University's investment management function; and
    11. additional matters customarily addressed by the finance committee of a governing board for an institution of higher education.
2. Providing governance oversight to:

    1. long-range financial planning strategies;
    2. fundraising and development strategies;
    3. total indebtedness and debt capacity of the University;

    4. the investment portfolio performance; and
    5. the financial condition of the pension fund.
3. Reviewing periodic reports including:

    1. quarterly and year-end financial reports that measure the University's fiscal condition;
    2. annual purchasing reports on bids and equipment leases;
    3. quarterly debt-management reports;
    4. quarterly and year-end investment performance reports;
    5. semi-annual reports on development and fundraising activities; and
    6. other financial reports as requested by the Committee.

Approved by the Board of Curators: April 9, 2020

University of Missouri

Board of Curators

Finance Committee Meeting

Tuesday, November 10, 2020
1:00 P.M.

This Committee Meeting is being held in conjunction with the November 19, 2020 Board of Curators Meeting.

Originating:
From remote locations via conference telephone and Zoom webinar.

Please click the link below to join the webinar:
https://umsystem.zoom.us/j/92081758249
Or Telephone:

Dial US: +1 646 876 9923

Webinar ID: 92081758249

AGENDA

PUBLIC SESSION – 1:00 P.M.

Call to Order – Chair Steelman

Roll Call of the Committee

Action

1. Approval of Collected Rules and Regulations 140.015 Investment Pool Policy, UM
2. Financial Policies and Governance, UM
3. Resource Allocation Principles, UM
4. Project Approval – Children's Hospital Facility, MU Health Care, MU

Recess

Approval of Collected Rules & Regulation 140.015 Investment Pool Policy
UM

Management is presenting for Board approval investment policy changes resulting from an asset allocation study for the Retirement Plan. An asset allocation study for the Endowment Pool will be presented at the February Board of Curators meeting.

In light of recent actions taken by the Federal Reserve to push cash rates back down to near zero, this latest asset allocation study acknowledges that investment returns will likely be even lower going forward. With almost all asset classes considered "expensive" based on valuations, rather than reach for unrealistically high returns through excessive risk taking, our focus will continue to be on better risk management through more meaningfully diversified portfolios better suited to meet the underlying structural needs of the Retirement Plan. The proposed changes to policy targets represent a refinement to these objectives first implemented in 2015 and later strengthened by the Board in 2017. These recommendations were developed through extensive collaboration with the University's general investment consultant, Verus, and in consultation with the Investment Advisory Committee on both October 20, 2020 and October 30, 2020.

The following investment objective for the Retirement Plan was adopted by the Board of Curators in September 2017 and remains unchanged:

> *Retirement Plan investments should be managed in a manner that maximizes returns while attempting to minimize losses during adverse economic and market events, with an overall appetite for risk governed by the Plan's liability structure and the need to make promised benefit payments to members over time. This will be accomplished through a more 'risk-balanced' portfolio that seeks meaningful diversification of assets, which necessarily means less equity risk and more long-term bond exposure relative to peers. To offset potentially lower returns from a more risk-balanced portfolio, a key component of this strategy includes a less common, yet prudent, program of return enhancement commonly referred to in the investment industry as portable alpha. These investment objectives seek to prioritize the long-term structural needs of the Retirement Plan over short-term performance comparisons of the investment portfolio relative to peers.*

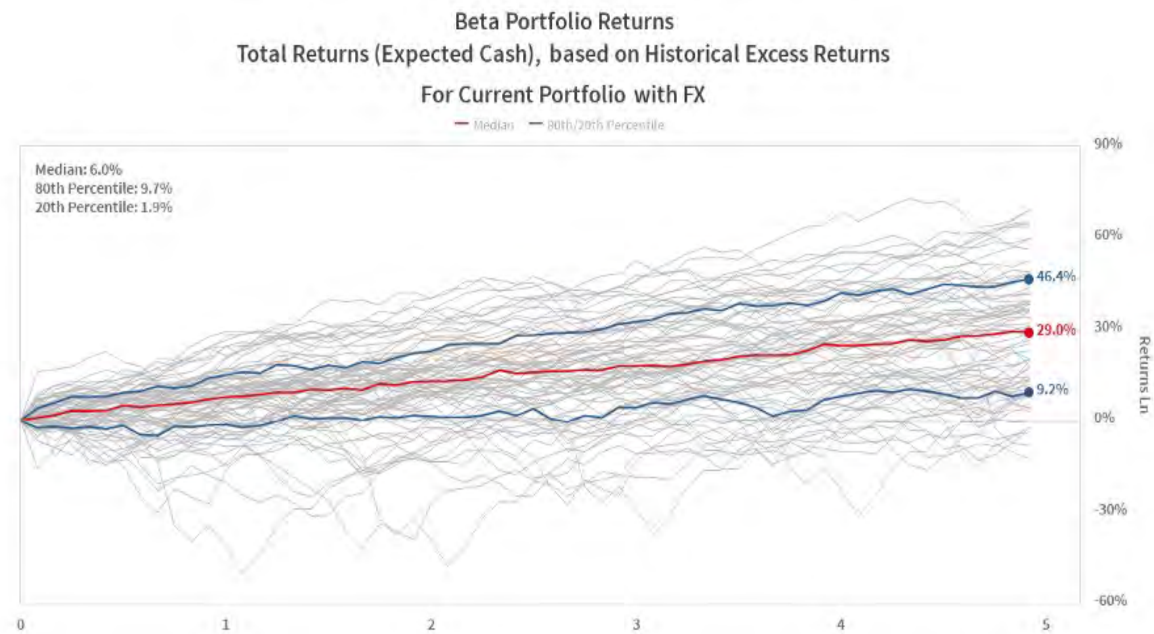
The recommended portfolio changes noted on the following page reflect rather significant changes in market conditions since the last asset allocation study. The expected low returns for sovereign and inflation-linked bonds of 0.7% and 1.3%, respectively, had to be weighed carefully against their diversifying characteristics. A decision was made to recommend a 12% reduction in such bonds (while maintaining a combined 20% allocation), with capital reallocated diversifying private assets, public equities and risk balanced strategies.

Summary of Proposed Portfolio Changes

	Existing Retirement	Proposed Retirement	Peer Median Retirement
Global equity	32%	35%	
Private equity	10%	12%	
Private debt	3%	6%	
Sovereign bonds	15%	10%	
Inflation-linked bonds	17%	10%	
Real estate	8%	10%	
Risk balanced	10%	12%	
Commodities	5%	5%	
Subtotal – Before Portable Alpha	100%	100%	100%
Mean Expected Return	5.43%	6.15%	5.96%
Standard Deviation	9.4%	10.7%	11.6%
Sharpe Ratio	0.56	0.56	0.50
Portable Alpha Program	20%	22%	0%
Mean Expected Return	**6.00%**	**6.77%**	**5.96%**
Standard Deviation	**10.0%**	**11.3%**	**11.6%**
Sharpe Ratio	**0.58**	**0.58**	**0.50**
Portable Alpha Additional Return	*0.57%*	*0.62%*	*0.00%*

Based on current capital market return expectations, the proposed recommendations offer a 77bp (0.77%) increase in mean expected return over the current portfolio mix with a consistent level of risk-adjusted return as measured by Sharpe Ratio. As compared to peer public defined benefit plans over $1 billion, we are able to maintain a higher return expectation at a lower level of risk, resulting in superior risk-adjusted returns.

It is important to note that the expected returns shown above represent the mean, or average, of a wide range of possible outcomes, both positive and negative. The following graph illustrates the range of outcomes over a five year period based on how the proposed retirement portfolio would have performed over rolling five year intervals from 1940 through 2020. Note that these historical portfolio intervals do not include a portable alpha program.



Source: Bridgewater Risk Budget Tool

Retirement Plan Investment Return Actuarial Assumption

The current expected return assumption for the Retirement Plan is 7.20%. Given the forward-looking return expectations for the Retirement Plan, the expected return assumption will need to be revisited. Finance and Human Resources staff are currently working with Segal, the University's actuary, to assess assumptions and projected costs. This will be presented to the Board of Curators for approval in the spring of 2021.

Highlights of Significant Proposed Changes

<u>Public Equities</u>
Despite the proposed 3% increase, our allocation to public equities remains 12% below the public defined benefit plan median. Even though projected public equity returns are modest, this increase will help boost portfolio returns without significantly increasing the portfolio's equity risk.

<u>Private Equity</u>
The 2% increase reflects a growing conviction for this asset class as increasing numbers of companies remain private (with numbers of publicly listed companies continuing to decrease year over year).

<u>Private Debt</u>
As capital is redeployed away from nominal and inflation-linked bonds, we see private debt continuing to offer diversifying characteristics. On a relative basis, the 2% increase to private debt allows us to increase portfolio returns overall without a commensurate increase in equity risk.

Sovereign Bonds
We propose a 5% reduction to the U.S. Treasuries allocation in light of a 0.7% return expectation as well as increasingly asymmetric risks to holding nominal bonds with duration. Given the low starting yields today, U.S. Treasuries no longer offer the same level of portfolio protection to the downside as rates have little room left to fall.

Inflation-Linked Bonds
We are also proposing a 7% reduction to inflation-linked bonds in light of a 1.3% return expectation as well as market disbelief that inflation will increase going forward, despite the Federal Reserve's continuing signals that somewhat higher inflation is desirable. Inflation risk will be monitored closely going forward.

Real Estate
As capital is redeployed away from nominal and inflation-linked bonds, we see real estate continuing to offer diversifying characteristics. The 2% increase allows us to increase portfolio returns overall without a commensurate increase in equity risk. Further, we believe there will be opportunities for new real estate investment as global markets adjust to a post-COVID world.

Risk Balanced
We are proposing a 2% increase in this allocation as we continue to see risk balanced strategies as effective and efficient ways to obtain market exposure with attractive risk-adjusted returns. As a reminder, Risk Balanced is a self-contained approach to investing, building a risk-balanced portfolio diversified across market risks in a manner that should outperform a traditional portfolio over longer time horizons.

Commodities
We are maintaining the current 5% allocation, but plan to dedicate half of the intended exposure to gold which will bring additional diversification to the portfolio. As a reminder, a commodities allocation brings a relatively uncorrelated return stream to the portfolio while adding diversification and tends to perform particularly well in periods of rising inflation.

Portable Alpha
We are recommending a slight increase to our existing portable alpha program from a soft target of 20% of capital (with 25% upper limit) to a soft target of 22% of capital (with a 27% upper limit). Given the strategic repositioning of the alpha portfolio, we feel that we can reasonably allocate the additional capital to high conviction alpha managers.

As background, synthetic market exposures across many asset classes may be obtained through derivative instruments commonly accepted by other institutional investors, such as futures, swaps, options, forward contracts and reverse repurchase agreements. When synthetic market exposures are obtained through derivative instruments, a portion of the resulting cash and cash equivalent balances may be invested by active alpha managers seeking to add returns over the respective asset class benchmarks. These alpha managers possess broadly diverse strategies/styles and, in the aggregate, are expected to produce returns that show little or no relationship to the economic environment being experienced at any given time. Furthermore, this portfolio of managers has been constructed with a goal of low correlations to the synthetic market exposures obtained through the derivative instruments.

Derivative instruments used to gain synthetic market exposures as part of the portable alpha program are currently managed by NISA, a nationally respected investment management firm based in St. Louis, with appropriate expertise, experience and depth of resources.

Risk - Management of liquidity risk is a critical component of the portable alpha program. If not managed appropriately, there is a risk that synthetic market exposures may need to be unwound at undesirable points in time in order to meet margin calls during volatile markets. To help mitigate this risk, prudent balances of cash and cash equivalents shall be maintained as part of the program and monitored daily.

Risk – In times of severe market stress, it is possible that correlations among asset classes and alpha manager strategies could converge causing combined losses to be higher than what would otherwise be expected. This was experienced most recently in March 2020 during the global liquidity crisis sparked by the COVID pandemic as well as a concurrent oil price war between Russia and Saudi Arabia.

Transition Plan

The transition to new policy targets should be done in a prudent, methodical manner over a reasonable period of time as determined by investment staff. The policy benchmark will be adjusted as transitions to new targets take place, with such changes communicated to the Board on a quarterly basis.

Proposed Investment Policy Changes

Investment Policy for Retirement, Disability and Death Plan (CRR 140.015) - new asset allocation targets as discussed above. Clean and redline versions of proposed changes to the Collected Rules and Regulations are attached.

No. 1

Recommended Action - Approval of Collected Rules and Regulations 140.015 Investment Pool Policy, UM

It was recommended by Vice President Rapp, endorsed by UM System President and MU Chancellor Mun Y. Choi, recommended by the Finance Committee, moved by Curator _______________ and seconded by Curator _______________, that the:

> Existing investment policy of Collected Rules and Regulations, Section 140.015, be amended, as noted in the attached documents. Further, the asset allocation changes noted in Section 140.015 should occur in a methodical manner over a reasonable period of time as determined by investment staff:

Roll call vote of the Committee:	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Steelman		
Curator Williams		

The motion ___________________.

Roll call vote of Board of Curators:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion _________________.

November 19, 2020

140.015 Investment Policy for Retirement, Disability and Death Benefit Plan

Bd. Min. 6-26-12, Revised Bd. Min. 6-14-13, Revised Bd. Min. 9-12-13, Revised 6-25-15, Revised 2-4-16; Revised 4-14-16; Amended Bd. Min. 9-28-17.

A. **Introduction** -- The University's Retirement, Disability and Death Benefit Plan ("Plan") was established to provide retirement income and other stipulated benefits to qualified employees in amounts and under the conditions described in the plan. A Trust was established in 1958 and is being funded to provide the financial security of those benefits.

B. **Responsibilities and Authorities –** See CRR 140.010 "*Policy for Management and Oversight of Selected University Investment Pools*."

C. **Investment objectives** -- The primary objective to be achieved in the active management of Trust assets is to provide for the full and timely payment of retirement, disability and death benefits to qualified employees. In order to fulfill this objective the University must maintain a prudent actuarially sound funding of the Plan's liabilities. This funding requirement is derived from three principal sources; the total investment return on Trust assets and the amount of University and employee contributions.

   Trust assets should be managed in a manner that maximizes returns while attempting to minimize losses during adverse economic and market events, with an overall appetite for risk governed by the Plan's liability structure and the need to make promised benefit payments to members over time. This will be accomplished through a more 'risk-balanced' portfolio that seeks meaningful diversification of assets, which necessarily means less equity risk and more long-term bond exposure relative to peers. To offset potentially lower returns from a more risk-balanced portfolio, a key component of this strategy includes a less common, yet prudent, program of return enhancement commonly referred to in the investment industry as portable alpha. These investment objectives seek to prioritize the long-term structural needs of our Retirement Plan over short-term performance comparisons of the investment portfolio relative to peers.

D. **Authorized Investments –** The Plan shall be invested in externally managed funds, consistent with the guidelines established in CRR 140.011, "*Policy for Investment Manager Selection, Monitoring and Retention*" and CRR 140.017, "*Allowable Investments*," in the following asset classes:

Asset Class	Economic Environment	Risk Factor(s)	Sub-Class Target	Asset Class Target	Range
Public Equity	*Rising Growth* *Falling Inflation*	*Equity* *Currency*		**3~~2~~5%**	**2~~2~~5%-4~~2~~5%**
Private Equity	*Rising Growth* *Falling Inflation*	*Equity* *Currency* *liquidity*		**1~~0~~2%**	**~~5~~7%-1~~5~~7%**
Public Debt				**~~3~~20%**	**10~~22~~%-30~~42~~%**
Sovereign Bonds	*Falling Growth* *Falling Inflation*	*Interest Rates* *Currency*	*1~~5~~0%*		
Inflation-Linked Bonds	*Falling Growth* *Rising Inflation*	*Inflation* *Interest Rates* *Currency*	*1~~7~~0%*		
Opportunistic	*Rising Growth* *Falling Inflation*	*Interest Rates* *Credit Spreads*	*0%*		
Private Debt	*Rising Growth* *Falling Inflation*	*Credit Spreads* *Liquidity*		**~~3~~6%**	**~~0~~3%-~~7~~11%**
Diversifiers				**2~~3~~7%**	**1~~8~~7-~~28~~37%**
Risk Balanced	*Rising Growth* *Falling Growth* *Rising Inflation* *Falling Inflation*	*Diversified*	*1~~0~~2%*		
Commodities	*Rising Growth* *Rising Inflation*	*Inflation*	*5%*		
Real Estate/ Infrastructure	*Rising Growth* *Rising Inflation*	*Equity* *Credit Spreads* *Inflation* *Liquidity*	*~~8~~10%*		
Opportunistic	*Rising Growth* *Rising Inflation*	*Equity* *Interest Rates*	*0%*		
Total Portfolio				**100%**	

E. **Portfolio Rebalancing**

Asset allocations shall be monitored on an ongoing basis as changes in market behavior may cause variations from the target asset mix. Rebalancing of the portfolio shall be considered at least quarterly, and more often if necessary to maintain allocations within the allowable ranges. The need to rebalance shall take into account any logistical issues associated with fully funding a particular asset sector, as well as any tactical decisions to overweight or underweight a particular asset sector based on current market conditions. The University may utilize external managers to rebalance portfolio exposures consistent with targets and allowable ranges established by this policy. In those instances, conventional derivative instruments commonly accepted by other institutional investors, such as futures, swaps, options, forward contracts and reverse repurchase agreements may be utilized.

Actual asset classes allocations shall not fall outside of the allowable ranges, with the exception of violations caused solely by periods of extreme market distress, when it may not be possible or advisable to immediately bring such allocations back to within the allowable ranges.

F. **Currency Risk Management**

In the context of a global investment portfolio, currency risk exists to the extent that investments contain exposures to foreign currencies. The desirability of this currency exposure is not necessarily aligned dollar for dollar with the desired exposure to assets denominated in foreign currencies. As such, external managers in any asset class may implement currency strategies to alter the currency exposure of the portfolio when deemed prudent to do so in the context of the particular investment mandate. In addition, the University may utilize external managers to implement currency strategies to alter exposures in an active or passive manner as part of a portfolio or asset class overlay when deemed prudent to do so.

G. **Portable Alpha Program**

Synthetic market exposures across asset classes including equities, sovereign bonds, inflation-linked bonds and commodities may be obtained through derivative instruments commonly accepted by other institutional investors, such as futures, swaps, options, forward contracts and reverse repurchase agreements. These derivative instruments shall be managed by external investment firms with appropriate expertise, experience and depth of resources.

When synthetic market exposures are obtained through derivative instruments, a portion of the resulting cash and cash equivalent balances may be invested by active alpha managers seeking to add returns over the benchmark. These alpha managers will possess broadly diverse strategies/styles and, in the aggregate, are expected to produce returns that show little or no relationship to the economic environment being experienced at any given time. Furthermore, this portfolio of managers will be constructed with a goal of low/no correlation to the synthetic market exposures obtained through the derivative instruments. The risk drivers within the portable alpha portfolio should generally be well-known, empirically-tested, sources of return that can be systematically harvested through dynamic long/short strategies. They can be thought of either as returns that underlie “classic” hedge fund strategies (hedge fund risk premia), such as arbitrage and macro or the returns from “classic” styles (style premia), such as value, momentum, carry, defensive and low volatility.

Legal account structures will be in the form of one or a combination of separate accounts, institutional commingled funds and/or limited partnerships or other similar forms.

The allowable range of the portable alpha portfolio shall be 0-2~~5~~**7**% of the total Retirement Plan.

Management of liquidity risk is a critical component of the portable alpha program. If not managed appropriately, there is a risk that synthetic market exposures may need to be unwound at undesirable points in time in order to meet margin calls during volatile markets. To help mitigate this risk, prudent balances of cash and cash equivalents shall be maintained as part of the program and monitored daily.

The following table outlines the minimum cash requirements with associated replenishing guidelines:

	Cash Margin*	Replenishing Guidelines
Target	30%	n/a
Range 1	29.9% to 20%	Develop action plan to replenish to Target within 12 months
Range 2	19.9% to 10%	Develop action plan to replenish to Range 1 within 60 days, with subsequent plan to replenish to Target within 12 months
Range 3	9.9% or less	Take immediate action to replenish to Range 2 as quickly as possible. Follow with plan to replenish to Range 1 within 60 days, and subsequent plan to replenish to Target within 12 months

**Cash Margin is defined as Portable Alpha Program cash and cash equivalents divided by the total of synthetic market exposures outstanding across all asset classes with the program.*

H. **Other** – The Board of Curators delegates to the President of the University the following responsibilities with respect to the Plan:

1. Recommend contributions to the Plan.
2. Recommend annuity, mortality and other tables as may be useful in actuarial determination.
3. Recommend actuarial valuations made by experts retained for that purpose.
4. Maintain data necessary for actuarial valuations of the assets of the Plan.
5. Maintain accurate records for the Plan.

140.015 Investment Policy for Retirement, Disability and Death Benefit Plan

Bd. Min. 6-26-12, Revised Bd. Min. 6-14-13, Revised Bd. Min. 9-12-13, Revised 6-25-15, Revised 2-4-16; Revised 4-14-16; Amended Bd. Min. 9-28-17.

A. **Introduction** -- The University's Retirement, Disability and Death Benefit Plan ("Plan") was established to provide retirement income and other stipulated benefits to qualified employees in amounts and under the conditions described in the plan. A Trust was established in 1958 and is being funded to provide the financial security of those benefits.

B. **Responsibilities and Authorities –** See CRR 140.010 "*Policy for Management and Oversight of Selected University Investment Pools*."

C. **Investment objectives** -- The primary objective to be achieved in the active management of Trust assets is to provide for the full and timely payment of retirement, disability and death benefits to qualified employees. In order to fulfill this objective the University must maintain a prudent actuarially sound funding of the Plan's liabilities. This funding requirement is derived from three principal sources; the total investment return on Trust assets and the amount of University and employee contributions.

Trust assets should be managed in a manner that maximizes returns while attempting to minimize losses during adverse economic and market events, with an overall appetite for risk governed by the Plan's liability structure and the need to make promised benefit payments to members over time. This will be accomplished through a more 'risk-balanced' portfolio that seeks meaningful diversification of assets, which necessarily means less equity risk and more long-term bond exposure relative to peers. To offset potentially lower returns from a more risk-balanced portfolio, a key component of this strategy includes a less common, yet prudent, program of return enhancement commonly referred to in the investment industry as portable alpha. These investment objectives seek to prioritize the long-term structural needs of our Retirement Plan over short-term performance comparisons of the investment portfolio relative to peers.

D. **Authorized Investments –** The Plan shall be invested in externally managed funds, consistent with the guidelines established in CRR 140.011, "*Policy for Investment Manager Selection, Monitoring and Retention*" and CRR 140.017, "*Allowable Investments*," in the following asset classes:

Asset Class	Economic Environment	Risk Factor(s)	Sub-Class Target	Asset Class Target	Range
Public Equity	*Rising Growth Falling Inflation*	*Equity Currency*		**35%**	**25%-45%**
Private Equity	*Rising Growth Falling Inflation*	*Equity Currency Liquidity*		**12%**	**7%-17%**
Public Debt				**20%**	**10%-30%**
Sovereign Bonds	*Falling Growth Falling Inflation*	*Interest Rates Currency*	*10%*		
Inflation-Linked Bonds	*Falling Growth Rising Inflation*	*Inflation Interest Rates Currency*	*10%*		
Opportunistic	*Rising Growth Falling Inflation*	*Interest Rates Credit Spreads*	*0%*		
Private Debt	*Rising Growth Falling Inflation*	*Credit Spreads Liquidity*		**6%**	**3%-11%**
Diversifiers				**27%**	**17%-37%**
Risk Balanced	*Rising Growth Falling Growth Rising Inflation Falling Inflation*	*Diversified*	*12%*		
Commodities	*Rising Growth Rising Inflation*	*Inflation*	*5%*		
Real Estate/ Infrastructure	*Rising Growth Rising Inflation*	*Equity Credit Spreads Inflation Liquidity*	*10%*		
Opportunistic	*Rising Growth Rising Inflation*	*Equity Interest Rates*	*0%*		
Total Portfolio				**100%**	

E. **Portfolio Rebalancing**

Asset allocations shall be monitored on an ongoing basis as changes in market behavior may cause variations from the target asset mix. Rebalancing of the portfolio shall be considered at least quarterly, and more often if necessary to maintain allocations within the allowable ranges. The need to rebalance shall take into account any logistical issues associated with fully funding a particular asset sector, as well as any tactical decisions to overweight or underweight a particular asset sector based on current market conditions. The University may utilize external managers to rebalance portfolio exposures consistent with targets and allowable ranges established by this policy. In those instances, conventional derivative instruments commonly accepted by other institutional investors, such as

futures, swaps, options, forward contracts and reverse repurchase agreements may be utilized.
Actual asset classes allocations shall not fall outside of the allowable ranges, with the exception of violations caused solely by periods of extreme market distress, when it may not be possible or advisable to immediately bring such allocations back to within the allowable ranges.

F. **Currency Risk Management**
In the context of a global investment portfolio, currency risk exists to the extent that investments contain exposures to foreign currencies. The desirability of this currency exposure is not necessarily aligned dollar for dollar with the desired exposure to assets denominated in foreign currencies. As such, external managers in any asset class may implement currency strategies to alter the currency exposure of the portfolio when deemed prudent to do so in the context of the particular investment mandate. In addition, the University may utilize external managers to implement currency strategies to alter exposures in an active or passive manner as part of a portfolio or asset class overlay when deemed prudent to do so.

G. **Portable Alpha Program**
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Verus

PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

OCTOBER 2020

University of Missouri

2020 Asset-Liability Study (Revised)

Table of contents

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I. Introduction & historical risk premium

Introduction

— Verus and the University have collaborated on several asset allocation options for the Retirement Fund.

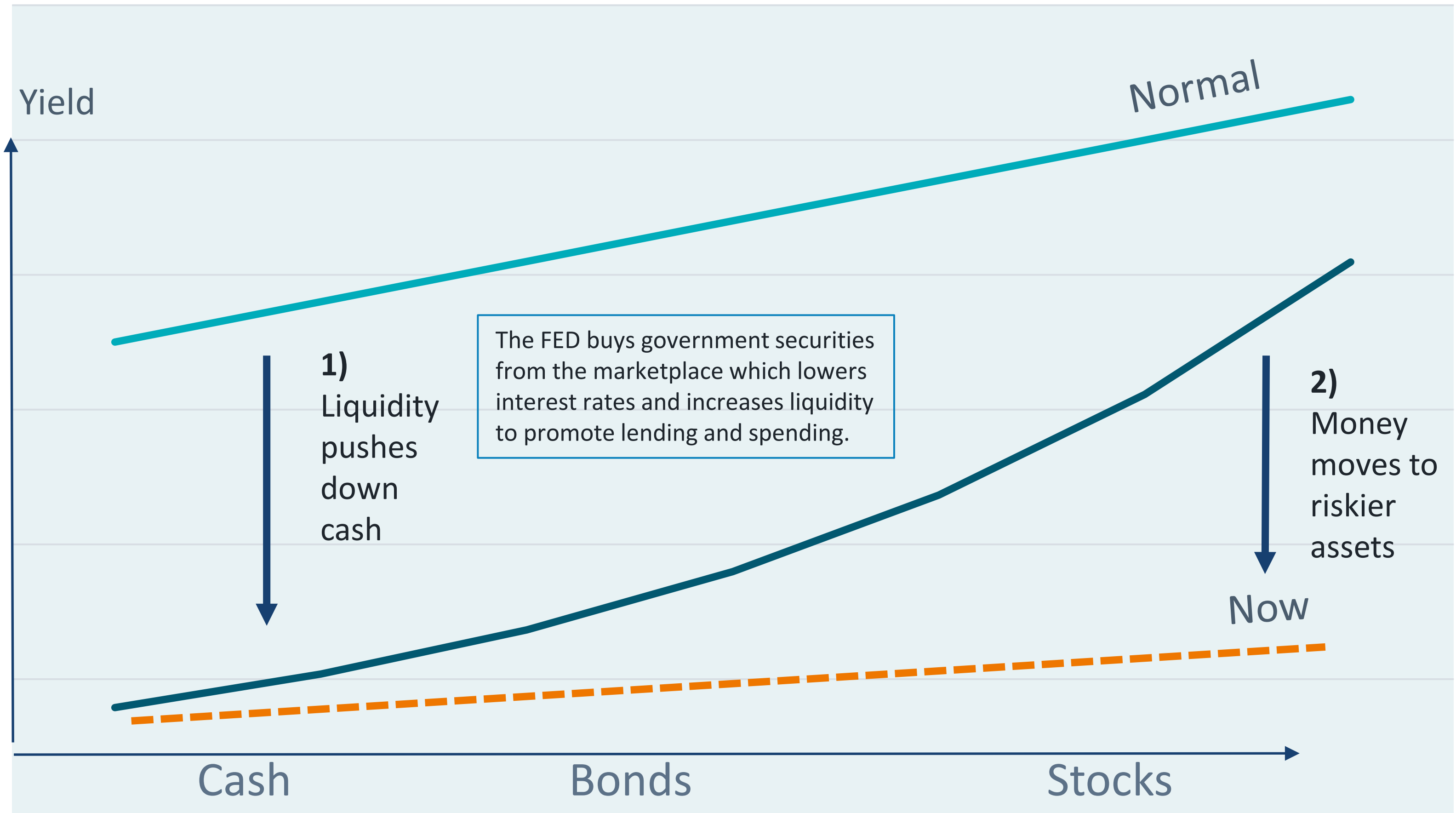
— The purpose of this discussion is to seek approval for what we believe is the best option available to the University in light of lower expected returns, peer risk, and considerations of a likely lower discount rate.

— The Retirement Fund has traditionally been managed to maximize balance and diversification to limit drawdown risk. This creates tracking error to peers. The recommended asset allocation option will continue this policy.

— Lowering the Retirement Fund's discount rate from 7.2% will increase the cost. The expectation is that University leadership will formulate a specific plan and work with the Curators after evaluating all the ramifications associated with making a change.

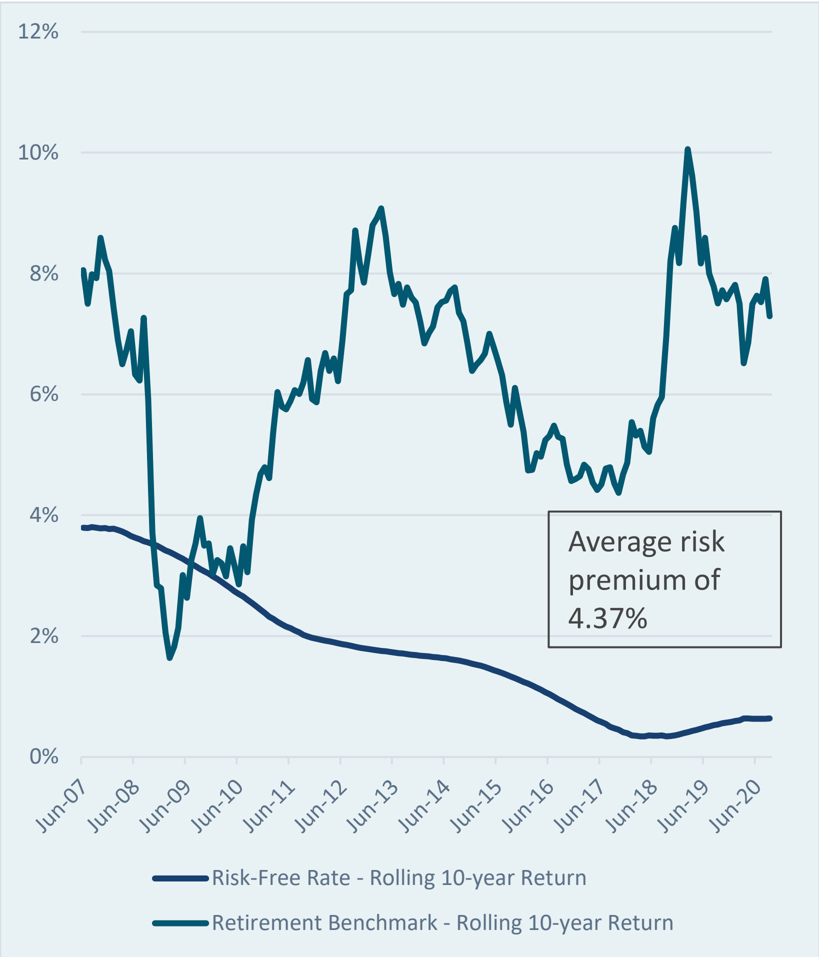
Liquidity and low interest rates

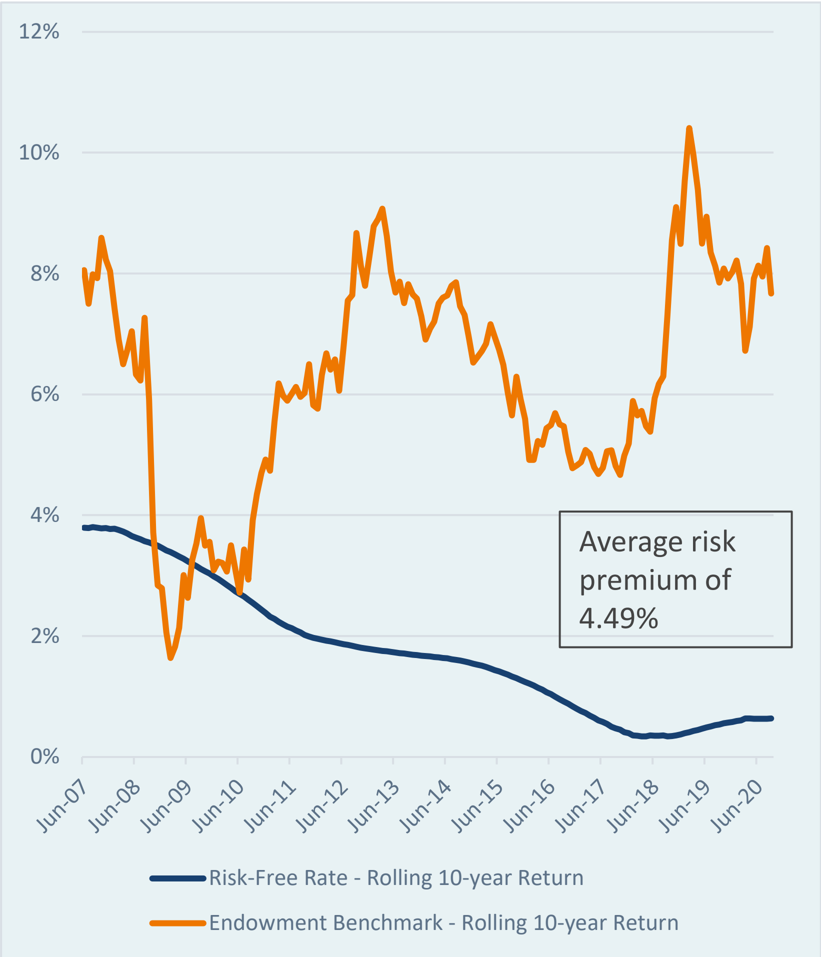
THE CAPITAL MARKETS LINE IS ARTIFICIALLY LOW



Historical policy return & risk-free rate

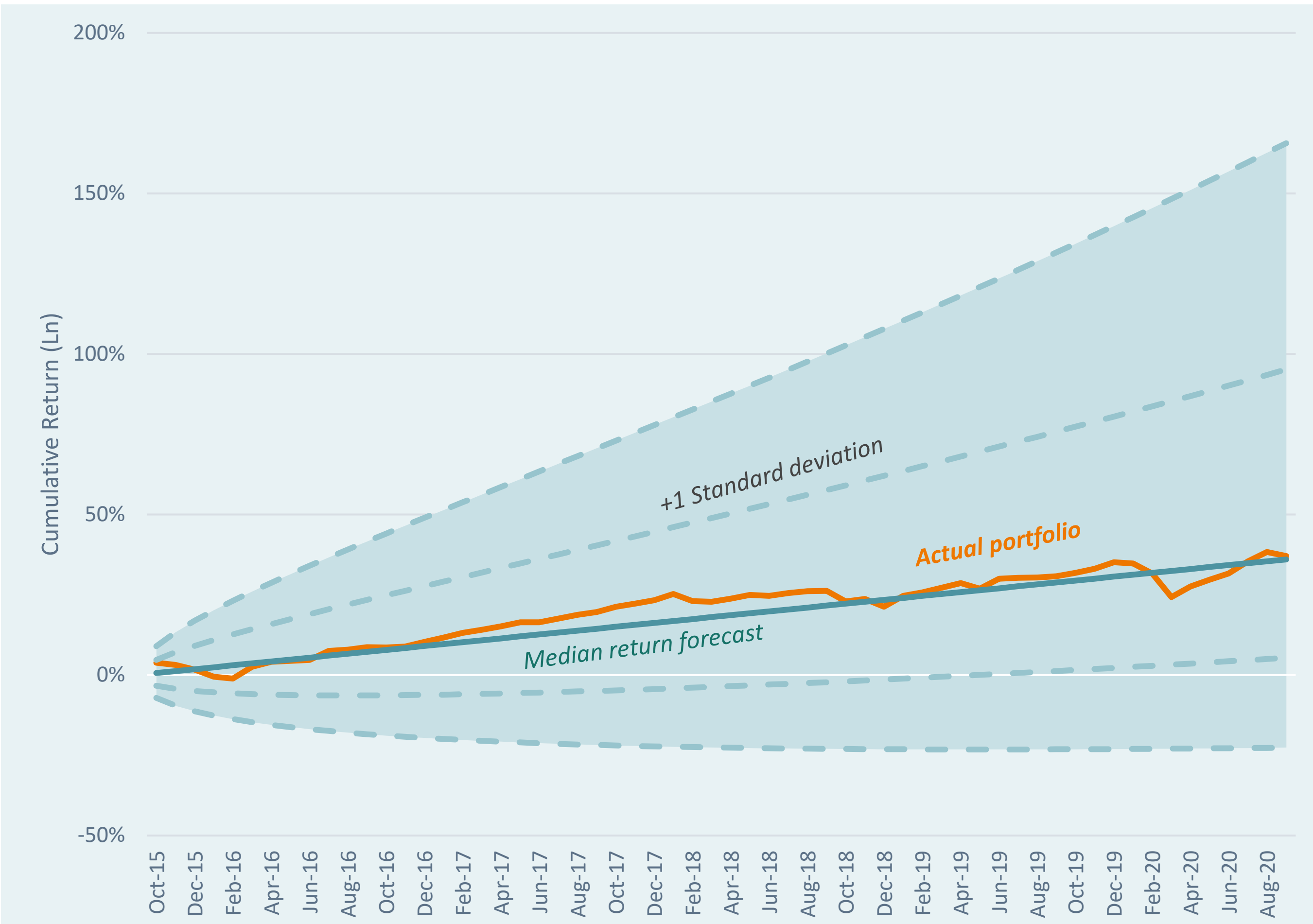
RETIREMENT





Retirement realized performance since 2015

REALIZED PERFORMANCE VS. 2015 AL STUDY PROJECTIONS

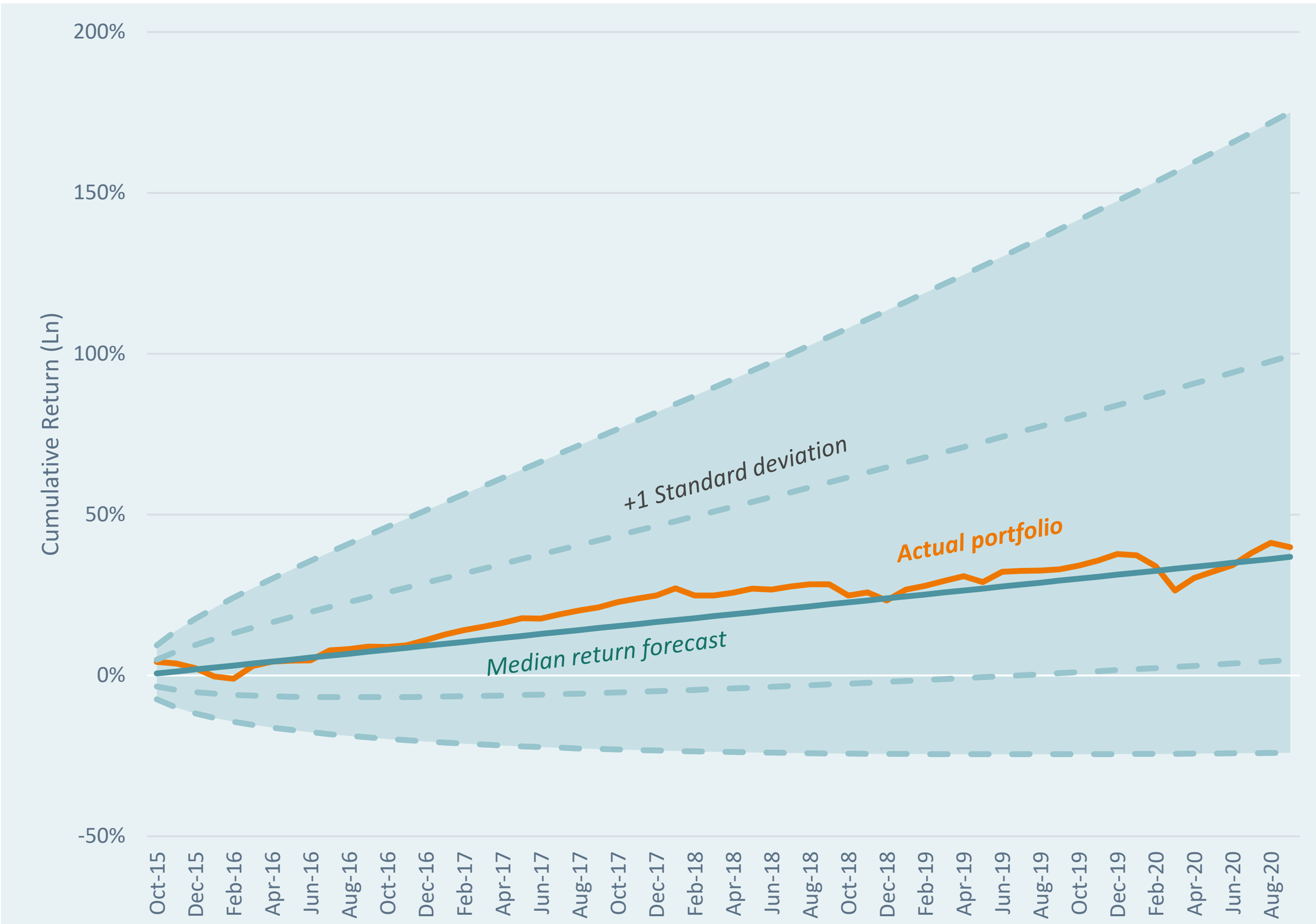


2015 AL Study Projection:
7.47% return
13.79% standard deviation
0.43 Sharpe Ratio

Actual since 9/30/2015:
7.69% return
6.52% standard deviation
1.07 Sharpe Ratio

Endowment realized performance since 2015

REALIZED PERFORMANCE VS. 2015 AL STUDY PROJECTIONS



2015 AL Study Projection:
7.64% return
14.39% standard deviation
0.43 Sharpe Ratio

Actual since 9/30/2015:
8.29% return
6.87% standard deviation
1.11 Sharpe Ratio

II. Capital market assumptions

Methodology to capital market assumptions

— Every Fall, Verus formulates and publishes annual capital market assumptions. The 2021 assumptions are scheduled to be approved by Verus' Investment Committee in November.

— Ten-year return forecasts are created with a systematic "building-block" method, which is detailed in Appendix X.

— Due to the extraordinary events of 2020, a mid-year update was used using the same methodology except for the estimated return on cash.

— Given extraordinary central bank intervention, the historical connection between cash and real yields became difficult to justify.

— The revised methodology provides a better estimate for the relationship between cash and the 10-year Treasury.

— The result is a lower projected estimate for cash and risk parity.

Capital Market Assumptions
Methodology

Asset	Return Methodology	Volatility Methodology*
Inflation	25% weight to the University of Michigan Survey 5-10 year ahead inflation expectation and the Survey of Professional Forecasters (Fed Survey), and the remaining 50% to the market's expectation for inflation as observed through the 10-year TIPS breakeven rate	-
Cash	~~Real yield estimate + inflation forecast~~ 75% weight to the effective Fed Funds Rate, 25% weight to the 10-year Treasury yield	Long-term volatility
Bonds	Nominal bonds: current yield; Real bonds: real yield + inflation forecast	Long-term volatility
International Bonds	Current yield	Long-term volatility
Credit	Current option-adjusted spread + U.S. 10-year Treasury – effective default rate	Long-term volatility
International Credit	Current option-adjusted spread + foreign 10-year Treasury – effective default rate	Long-term volatility
Private Credit	Bank loan forecast + 1.75% private credit premium**	Long-term volatility
Equity	Current yield + real earnings growth (historical average) + inflation on earnings (inflation forecast) + expected P/E change	Long-term volatility
Intl Developed Equity	Current yield + real earnings growth (historical average) + inflation on earnings (intl. inflation forecast) + expected P/E change	Long-term volatility
Private Equity	US large cap domestic equity forecast * 1.85 beta adjustment	1.2 * Long-term volatility of U.S. small cap
Commodities	Collateral return (cash) + spot return (inflation forecast) + roll return (assumed to be zero)	Long-term volatility
Gold	Inflation forecast	Long-term volatility
Hedge Funds	Return coming from traditional betas + 15-year historical idiosyncratic return, adjusted for lower volatility of UM portfolio	Long-term volatility (70% Macro, 30% Relative Value)
Core Real Estate	Cap rate + real income growth – capex + inflation forecast	65% of REIT volatility
REITs	Core real estate	Long-term volatility
Value-Add Real Estate	Core real estate + 2%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Opportunistic Real Estate	Core real estate + 4%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Infrastructure	Current yield + real income growth + inflation on earnings (inflation forecast)	Long-term volatility
Risk Parity	Expected Sharpe Ratio * target volatility + cash rate	Target volatility

Updated 10-year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast (g)	Standard Deviation Forecast	Sharpe Ratio Forecast (g)	10-Year Historical Sharpe Ratio (g)
Equities					
U.S. Large	S&P 500	5.9%	15.4%	0.37	1.01
U.S. Small	Russell 2000	5.6%	21.1%	0.26	0.62
International Developed	MSCI EAFE	6.3%	17.5%	0.35	0.30
International Small	MSCI EAFE Small Cap	5.7%	21.8%	0.25	0.46
Emerging Markets	MSCI EM	6.8%	25.6%	0.26	0.17
Global Equity	MSCI ACWI	6.3%	16.8%	0.36	0.59
Private Equity*	Cambridge Private Equity	9.5%	25.3%	0.36	-
Fixed Income					
Cash	30 Day T-Bills	0.2%	1.2%	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5-10	1.3%	5.4%	0.20	0.65
U.S. Treasury	BBgBarc Treasury 7-10 Year	0.7%	6.7%	0.07	0.68
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	0.2%	9.7%	0.00	0.10
Global Aggregate	BBgBarc Global Aggregate	0.9%	6.2%	0.20	0.39
Core Fixed Income	BBgBarc U.S. Aggregate Bond	1.6%	6.3%	0.22	1.08
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	2.5%	8.3%	0.28	1.21
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1-3 Year	0.8%	3.6%	0.17	1.16
Short-Term Credit	BBgBarc Credit 1-3 Year	1.9%	3.6%	0.47	1.76
Long-Term Credit	BBgBarc Long U.S. Corporate	2.4%	9.4%	0.23	0.93
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	5.1%	11.3%	0.43	1.25
Bank Loans	S&P/LSTA Leveraged Loan	3.5%	10.0%	0.33	1.47
Global Credit	BBgBarc Global Credit	1.4%	7.4%	0.15	0.77
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	5.9%	12.4%	0.46	1.03
Emerging Markets Debt (Local)	JPM GBI-EM Global Diversified	4.5%	12.0%	0.35	0.17
Private Credit	Bank Loans + 175bps	5.3%	10.0%	0.50	-
Other					
Commodities	Bloomberg Commodity	3.4%	15.4%	0.21	-0.36
Gold	S&P GSCI Spot Gold	1.9%	24.4%	0.07	-
Hedge Funds (UM)*	HFRI Fund Weighted Composite	4.4%	7.7%	0.53	0.55
Real Estate Debt	BBgBarc CMBS IG	4.0%	7.6%	0.48	1.55
Core Real Estate	NCREIF Property	6.3%	12.4%	0.49	1.84
Value-Add Real Estate	NCREIF Property + 200bps	8.3%	17.7%	0.46	-
Opportunistic Real Estate	NCREIF Property + 400bps	10.3%	23.0%	0.45	-
REITs	Wilshire REIT	6.3%	19.1%	0.32	0.80
Global Infrastructure	S&P Global Infrastructure	7.2%	17.8%	0.39	0.52
Risk Parity	Risk Parity	6.1%	12.0%	0.49	-
Currency Beta	MSCI Currency Factor Index	1.8%	3.6%	0.43	0.19
Inflation		1.9%	-	-	-

Correlation assumptions

	Cash	US Large	US Small	Intl Large	Intl Small	EM	Global Equity	PE	US TIPS	US Treasury	Global Sovereign	US Core	Core Plus	Short-Term Gov't/ Credit	Short-Term Credit	Long-Term Credit	US HY	Bank Loans	Global Credit	EMD USD	EMD Local	Commodities	Gold	Hedge Funds (UM)	Real Estate	REITs	Infrastructure	Risk Parity	Currency Beta
Cash	1.0																												
US Large	0.0	1.0																											
US Small	-0.1	0.9	1.0																										
Intl Large	0.0	0.9	0.7	1.0																									
Intl Small	-0.1	0.8	0.7	1.0	1.0																								
EM	0.0	0.7	0.6	0.8	0.8	1.0																							
Global Equity	0.0	1.0	0.8	1.0	0.9	0.9	1.0																						
PE	-0.2	0.6	0.6	0.6	0.6	0.5	0.6	1.0																					
US TIPS	0.0	0.0	-0.1	0.1	0.1	0.2	0.1	0.0	1.0																				
US Treasury	0.1	-0.4	-0.5	-0.3	-0.3	-0.2	-0.4	-0.2	0.7	1.0																			
Global Sovereign	0.1	0.2	0.0	0.3	0.3	0.4	0.3	0.0	0.5	0.4	1.0																		
US Core	0.1	-0.2	-0.3	-0.1	-0.1	0.0	-0.1	-0.1	0.8	0.9	0.5	1.0																	
Core Plus	0.1	0.1	0.0	0.2	0.2	0.3	0.2	0.0	0.8	0.7	0.6	0.9	1.0																
Short-Term Gov't/Credit	0.3	-0.1	-0.2	0.0	0.0	0.1	0.0	-0.1	0.7	0.7	0.6	0.8	0.7	1.0															
Short-Term Credit	0.2	0.2	0.1	0.4	0.3	0.4	0.3	0.0	0.6	0.4	0.6	0.6	0.8	0.8	1.0														
Long-Term Credit	0.1	0.0	-0.1	0.1	0.1	0.2	0.1	-0.1	0.7	0.7	0.5	0.8	1.0	0.6	0.6	1.0													
US HY	0.0	0.7	0.7	0.8	0.8	0.8	0.8	0.4	0.3	-0.2	0.3	0.1	0.5	0.2	0.6	0.4	1.0												
Bank Loans	-0.1	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.1	-0.3	0.0	-0.1	0.2	-0.1	0.3	0.1	0.8	1.0											
Global Credit	0.1	0.5	0.3	0.7	0.7	0.7	0.6	0.2	0.5	0.2	0.8	0.5	0.7	0.5	0.8	0.6	0.7	0.4	1.0										
EMD USD	0.0	0.4	0.3	0.6	0.5	0.7	0.6	0.2	0.5	0.3	0.6	0.5	0.7	0.4	0.6	0.6	0.7	0.3	0.8	1.0									
EMD Local	0.1	0.5	0.4	0.7	0.6	0.8	0.6	0.2	0.4	0.1	0.6	0.2	0.5	0.3	0.5	0.4	0.6	0.4	0.8	0.8	1.0								
Commodities	0.0	0.5	0.5	0.6	0.6	0.6	0.6	0.3	0.1	-0.3	0.4	-0.1	0.1	0.1	0.3	0.0	0.6	0.4	0.5	0.4	0.6	1.0							
Gold	0.1	0.1		0.1		0.3		-0.1	0.5	0.3												0.4	1.0						
Hedge Funds (UM)	0.0	0.5		0.5		0.5		0.2	0.4	0.1												0.4	0.3	1.0					
Real Estate	-0.1	0.6	0.5	0.5	0.5	0.4	0.6	0.4	0.2	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.4	0.3	0.2	0.3	0.3	0.2	-0.2	-0.1	1.0				
REITs	0.0	0.6	0.6	0.6	0.5	0.5	0.6	0.4	0.3	0.1	0.3	0.3	0.4	0.2	0.4	0.4	0.6	0.5	0.5	0.5	0.5	0.3			0.7	1.0			
Infrastructure	0.0	0.7	0.6	0.9	0.8	0.8	0.8	0.7	0.3	-0.1	0.5	0.1	0.4	0.2	0.5	0.3	0.8	0.5	0.7	0.7	0.7	0.5			0.3	0.7	1.0		
Risk Parity	0.0	0.5	0.4	0.6	0.5	0.6	0.6	0.4	0.6	0.3	0.5	0.5	0.7	0.5	0.6	0.6	0.7	0.4	0.7	0.7	0.6	0.6	0.5	0.6	0.3	0.5	0.6	1.0	
Currency Beta	0.0	0.2	0.2	0.1	0.0	0.1	0.1	0.2	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.1			0.0	0.2	0.1	0.0	1.0

III. Retirement asset mix introduction

Comparison of mixes – Retirement

	Retirement Policy	Retirement 6.50	Retirement 6.75	Retirement 7.00	Retirement Simple	Peer: Avg InvMetrics Public DB >$1B	Modified Interim CMAs: Return (g)	Standard Deviation	Sharpe Ratio
Global Equity	*32*	*33*	*35*	*38*	*54*	*47*	*6.3*	*16.3*	*0.37*
Private Equity	*10*	*11*	*12*	*12*	*9*	*10*	*9.5*	*25.3*	*0.36*
Real Estate[1]	*8*	*10*	*10*	*10*	*6*	*11*	*8.3*	*17.7*	*0.45*
Private Debt	*3*	*6*	*6*	*7*	*4*		*5.3*	*10.0*	*0.50*
Sovereign Bonds	*16*	*12*	*10*	*10*			*0.7*	*0.9*	*0.51*
Inflation-Linked Bonds	*16*	*12*	*10*	*10*			*1.3*	*5.4*	*0.20*
Core Plus Bonds					*27*	*20*	*2.5*	*8.3*	*0.28*
Risk Balanced[2]	*10*	*11*	*12*	*15*		*3*	*6.1*	*12.0*	*0.49*
Commodities	*5*					*3*	*3.4*	*15.4*	*0.21*
Enhanced Commodities[3]		*5*	*5*				*3.2*	*16.9*	*0.18*
Hedge Funds						*5*	*4.4*	*7.7*	*0.54*
Implicit Financing (Cash)				*-2*			*0.2*	*1.2*	
Portfolio Subtotal	*100*	*100*	*100*	*100*	*100*	*100*			
Return (g)	*5.43*	*5.91*	*6.15*	*6.36*	*6.08*	*5.96*			
Standard Deviation	*9.4*	*10.1*	*10.7*	*11.1*	*11.9*	*11.6*			
Sharpe Ratio	*0.56*	*0.56*	*0.56*	*0.55*	*0.49*	*0.50*			
Portable Alpha									
Hedge Funds	*20*	*21*	*22*	*22*			*3.2*	*5.5*	*0.54*
Implicit Financing (Cash)	*-20*	*-21*	*-22*	*-22*			*0.2*	*1.2*	
Portfolio Total	*100*	*100*	*100*	*100*	*100*	*100*			
Return (g)	***6.00***	***6.51***	***6.77***	***6.98***	***6.08***	***5.96***			
Standard Deviation	*10.0*	*10.7*	*11.3*	*11.8*	*11.9*	*11.6*			
Sharpe Ratio	*0.58*	*0.59*	*0.58*	*0.57*	*0.49*	*0.50*			
Portable Alpha Return Added	*0.57*	*0.60*	*0.62*	*0.62*					

[1]UM: 100% Value-Add
[2]UM: 12% target vol
[3]UM: 50% Commodities, 50% Gold

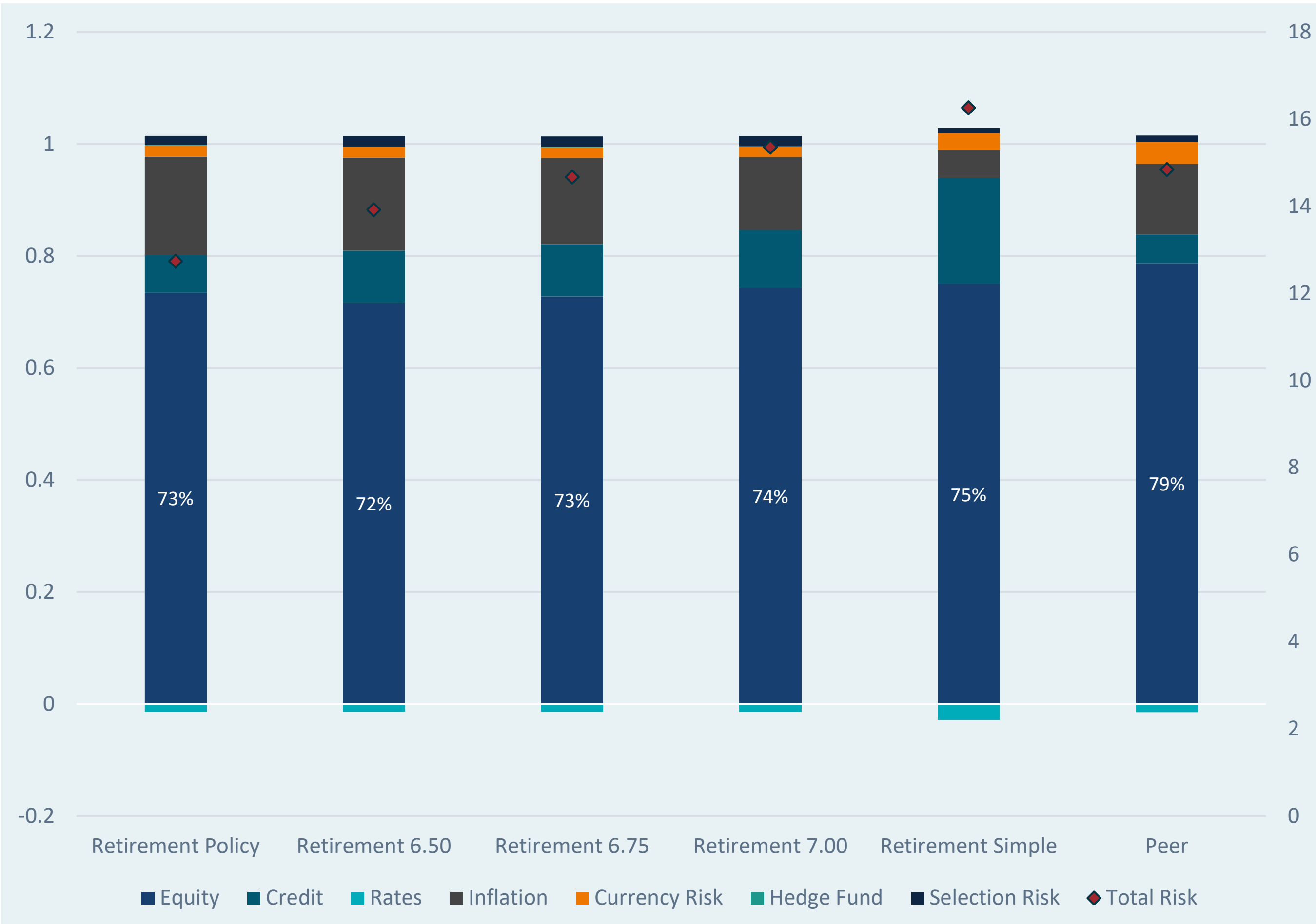
IV. Retirement asset allocation analysis

Risk & Return

7.25%
7.00%
6.75%
6.50%
6.25%
6.00%
5.75%
Expected Return
Retirement 7.00
Retirement 6.75
Retirement 6.50
Retirement Simple
Peer
Retirement Policy
9.50%
10.00%
10.50%
11.00%
11.50%
12.00%
Expected Risk

Risk decomposition – Retirement

RISK DECOMPOSITION

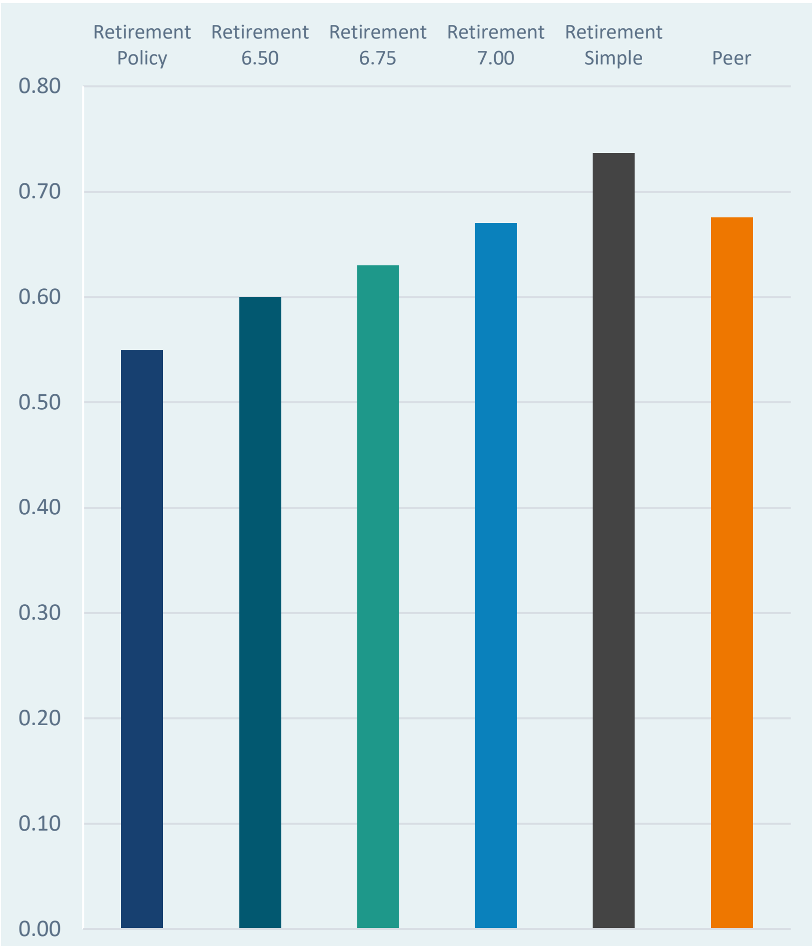


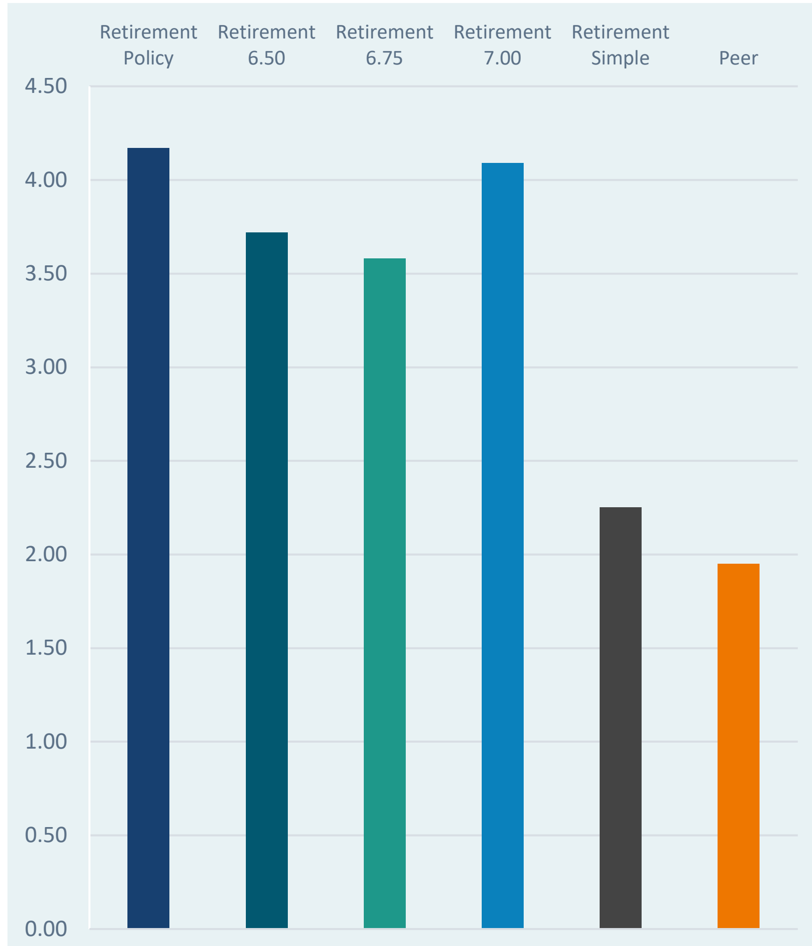
Sources of risk

Larger allocation & volatility target for risk parity increases beta

Larger allocations to risk parity, nominal, and IL bonds all increase duration exposure

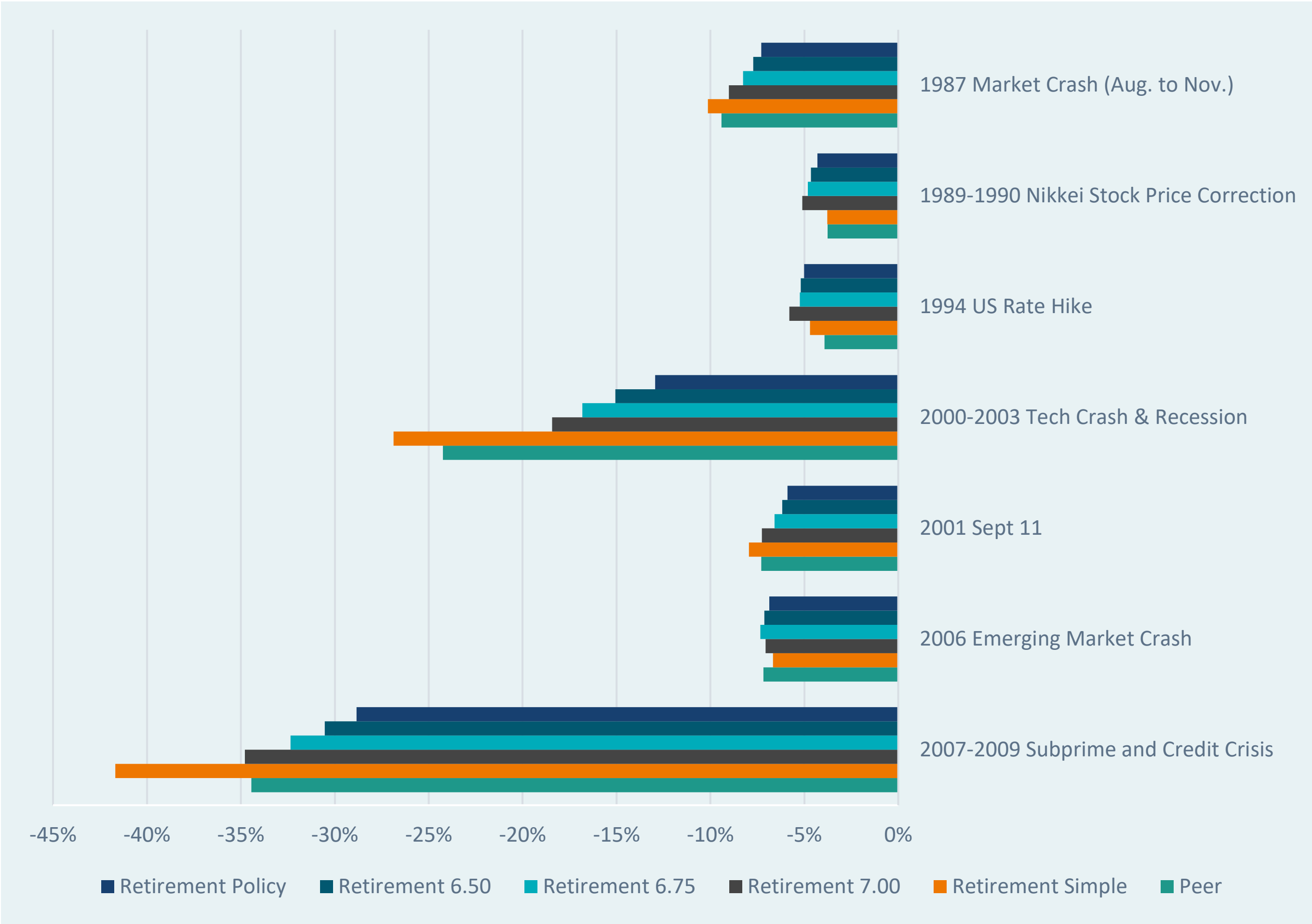
EQUITY BETA





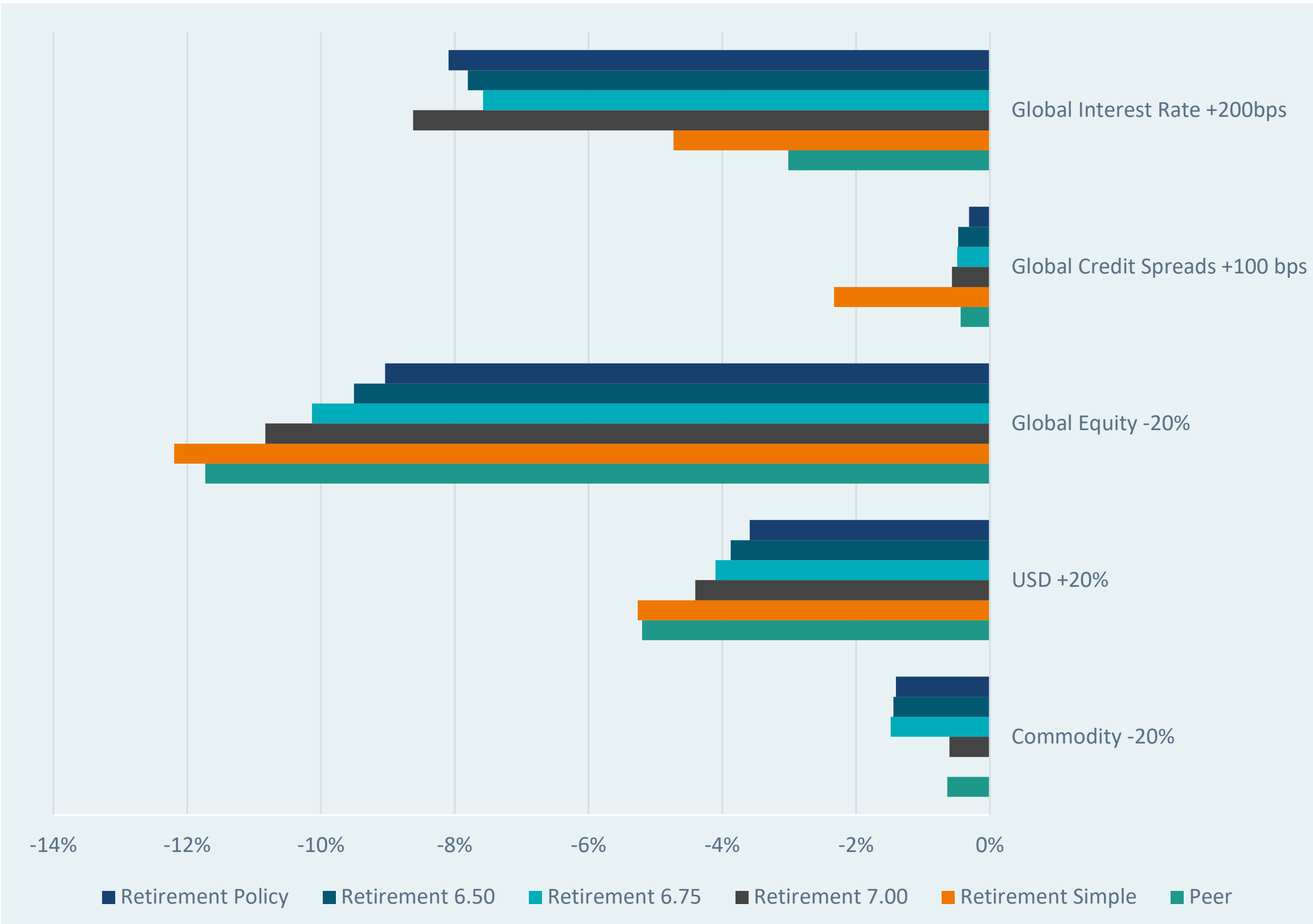
Scenario analysis – Retirement

SCENARIO ANALYSIS



Stress tests – Retirement

STRESS ANALYSIS



V. Appendix: liquidity analysis

— Determining the appropriate allocation to illiquids is not an easy question to answer. In addition to the asset allocation study, an investor should consider cash flow needs and availability in difficult market conditions

— Verus distills sources and uses of cash into a single metric: Liquidity Coverage Ratio, or LCR

— LCR can be used:

1. On a standalone basis, to monitor a fund's liquidity over time

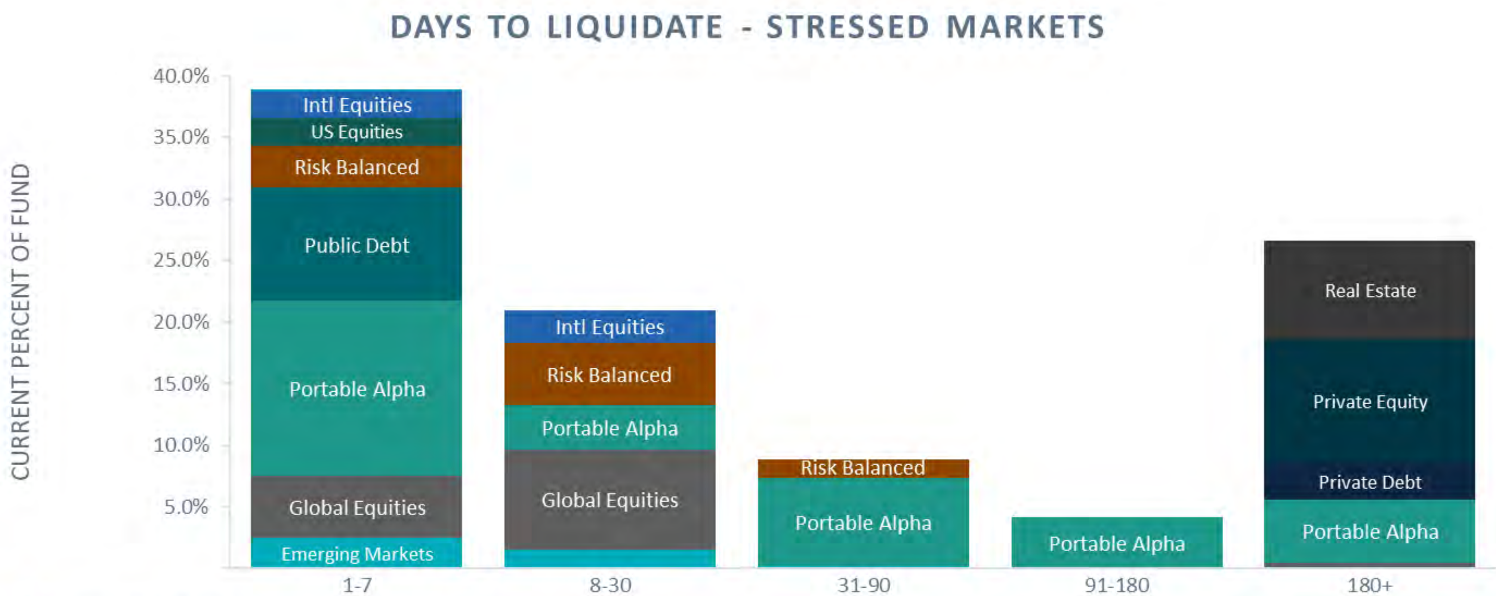
2. For comparison to other Verus clients, who may have a larger or smaller allocation to illiquids

— LCR for both the Retirement Fund and Endowment Pool are calculated on the following slides, and evaluated at the very end of the presentation

The largest factor in the LCR formula is total liquid assets, which are determined in two steps:

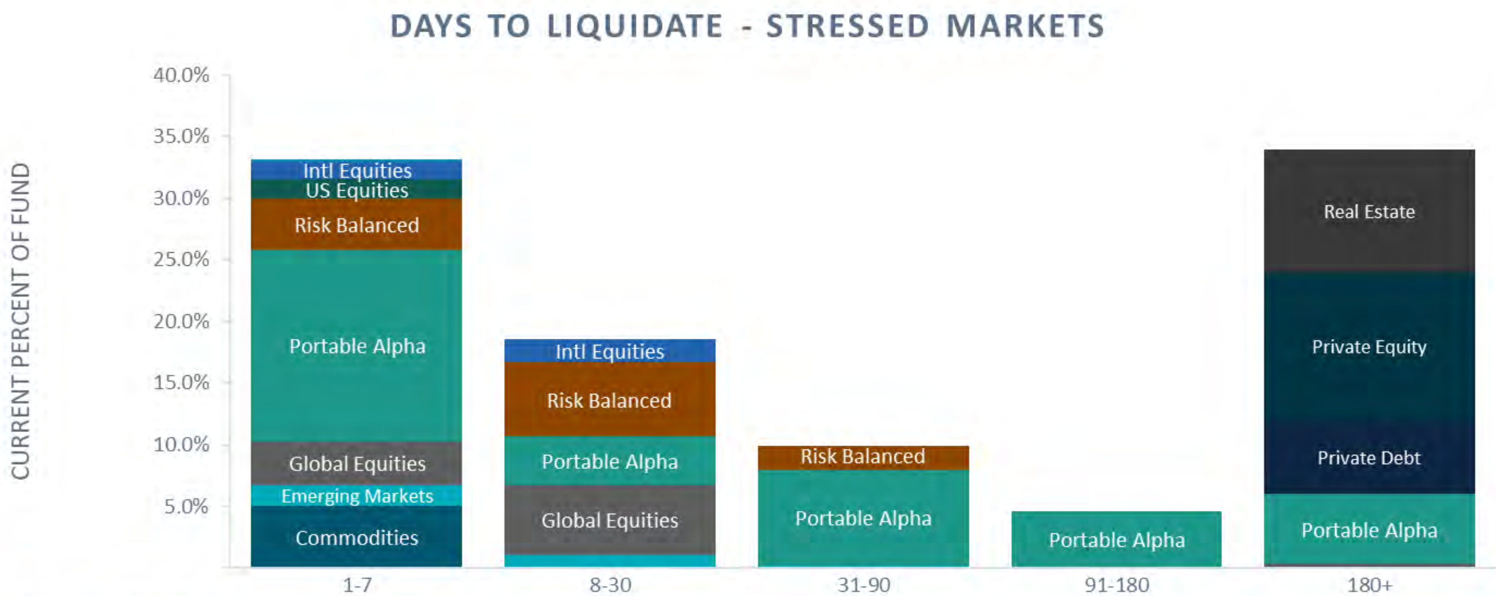
1. Estimate time required (in days) to convert each manager account or group to cash under two market conditions
   - Normal market conditions: defined as periods when liquidity is consistent with historical functioning markets and managers are not imposing gates.
   - Stressed market conditions: defined as periods when liquidity is withdrawn from the market and managers are imposing gates.
2. Sort accounts/groups into liquidity buckets and add-up the current account weights

Stressed liquidity – Retirement Policy



	1-7	8-30	31-90	91-180	180+
Currency Risk Mgmt	0.2%				
Intl Equities	2.1%	2.7%			
US Equities	2.3%				
Risk Balanced	3.4%	5.0%	1.6%		
Real Estate					8.0%
Public Debt	9.2%				
Private Equity					10.0%
Private Debt					3.0%
Portable Alpha	14.2%	3.6%	7.1%	4.1%	5.1%
Opportunistic					
Global Equities	5.0%	8.1%			0.5%
Emerging Markets	2.5%	1.5%	0.2%		
Commodities					
Cash					
Cumulative Pct	39.1%	60.2%	**69.1%**	73.3%	100.0%

Stressed liquidity – Retirement 6.75%



	1-7	8-30	31-90	91-180	180+
Currency Risk Mgmt	0.1%				
Intl Equities	1.5%	1.9%			
US Equities	1.6%				
Risk Balanced	4.1%	6.0%	1.9%		
Real Estate					10.0%
Public Debt					
Private Equity					12.0%
Private Debt					6.0%
Portable Alpha	15.6%	4.0%	7.8%	4.6%	5.7%
Opportunistic					
Global Equities	3.5%	5.6%			0.3%
Emerging Markets	1.7%	1.1%	0.1%		
Commodities	5.0%				
Cash					
Cumulative Pct	33.1%	51.7%	**61.5%**	66.1%	100.0%

LCR calculation – Retirement 6.75%

		Ending Total (Millions)	
Liquidity Available	Liquid Financial Assets	$ 3,101	
	Distributions from LT Illiquids	$ 136	
	Employee + Employer Contributions + Any New Amort	$ 622	
	Investment Income	$ 204	
			$ 4,064
Liquidity Needs	Benefit Payments	$ 1,465	
	Capital Calls	$ 314	
	Plan Expenses	$ 83	
			$ 1,862
Current LCR			**2.2**

LCR sensitivities – Retirement 6.75%

Drawdown and Assumed Return Sensitivity Analysis

Drawdown Scenario (Immediate) / Assumed Return (Subsequent 5-years)

Drawdown Scenario (Immediate)	1.8%	2.8%	3.8%	4.8%	5.8%	6.8%
-50%	1.5	1.5	1.5	1.6	1.6	1.6
-40%	1.6	1.6	1.6	1.7	1.7	1.7
-30%	1.7	1.7	1.7	1.8	1.8	1.8
-20%	1.8	1.8	1.8	1.9	1.9	2.0
-10%	1.9	1.9	1.9	2.0	2.0	2.1
0%	1.9	2.0	2.0	2.1	2.1	**2.2**

Illiquid Asset Sensitivity Analysis

Ending Illiquid Asset Position Increase	
0%	**2.2**
2%	2.1
4%	2.1
6%	2.0
8%	2.0
10%	1.9
12%	1.9

Capital Call / Distribution Sensitivity Analysis

Distribution Reduction / Capital Call Reduction

Distribution Reduction	0%	10%	20%	30%	40%	50%
50%	2.1	2.2	2.2	2.3	2.3	2.3
40%	2.2	2.2	2.2	2.3	2.3	2.4
30%	2.2	2.2	2.2	2.3	2.3	2.4
20%	2.2	2.2	2.2	2.3	2.3	2.4
10%	2.2	2.2	2.3	2.3	2.3	2.4
0%	**2.2**	2.2	2.3	2.3	2.3	2.4

Contribution Sensitivity Analysis

Contribution Reduction	
0%	**2.2**
10%	2.1
20%	2.1
30%	2.1
40%	2.0
50%	2.0
60%	2.0

VI. Appendix: 2020 capital market assumptions

Methodology

Asset	Return Methodology	Volatility Methodology*
Inflation	25% weight to the University of Michigan Survey 5-10 year ahead inflation expectation and the Survey of Professional Forecasters (Fed Survey), and the remaining 50% to the market's expectation for inflation as observed through the 10-year TIPS breakeven rate	-
Cash	Real yield estimate + inflation forecast	Long-term volatility
Bonds	Nominal bonds: current yield; Real bonds: real yield + inflation forecast	Long-term volatility
International Bonds	Current yield	Long-term volatility
Credit	Current option-adjusted spread + U.S. 10-year Treasury – effective default rate	Long-term volatility
International Credit	Current option-adjusted spread + foreign 10-year Treasury – effective default rate	Long-term volatility
Private Credit	Bank loan forecast + 1.75% private credit premium**	Long-term volatility
Equity	Current yield + real earnings growth (historical average) + inflation on earnings (inflation forecast) + expected P/E change	Long-term volatility
Intl Developed Equity	Current yield + real earnings growth (historical average) + inflation on earnings (intl. inflation forecast) + expected P/E change	Long-term volatility
Private Equity	US large cap domestic equity forecast * 1.85 beta adjustment	1.2 * Long-term volatility of U.S. small cap
Commodities	Collateral return (cash) + spot return (inflation forecast) + roll return (assumed to be zero)	Long-term volatility
Hedge Funds	Return coming from traditional betas + 15-year historical idiosyncratic return	Long-term volatility
Core Real Estate	Cap rate + real income growth – capex + inflation forecast	65% of REIT volatility
REITs	Core real estate	Long-term volatility
Value-Add Real Estate	Core real estate + 2%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Opportunistic Real Estate	Core real estate + 4%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Infrastructure	Current yield + real income growth + inflation on earnings (inflation forecast)	Long-term volatility
Risk Parity	Expected Sharpe Ratio * target volatility + cash rate	Target volatility

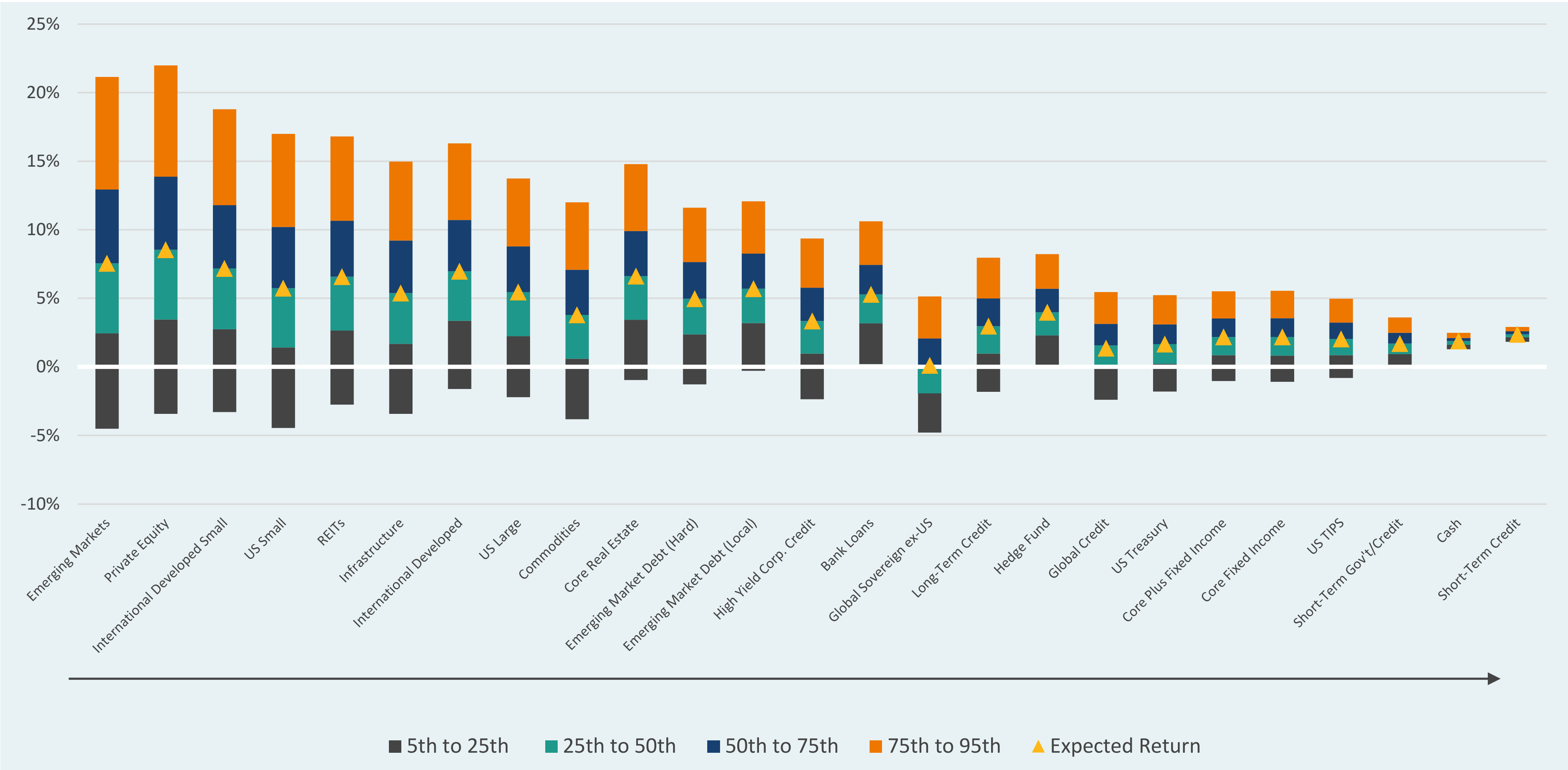
10-year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast Geometric	Ten Year Return Forecast Arithmetic	Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)	10-Year Historical Sharpe Ratio (g)	10-Year Historical Sharpe Ratio (a)
Equities								
U.S. Large	S&P 500	5.5%	6.6%	15.4%	0.23	0.31	1.01	1.02
U.S. Small	Russell 2000	5.7%	7.7%	21.1%	0.18	0.28	0.62	0.67
International Developed	MSCI EAFE	7.0%	8.4%	17.5%	0.29	0.37	0.30	0.37
International Small	MSCI EAFE Small Cap	7.2%	9.3%	21.8%	0.24	0.34	0.46	0.52
Emerging Markets	MSCI EM	7.6%	10.4%	25.6%	0.22	0.33	0.17	0.25
Global Equity	MSCI ACWI	6.4%	7.7%	16.8%	0.27	0.34	0.59	0.63
Private Equity*	Cambridge Private Equity	8.5%	11.3%	25.3%	0.26	0.37	-	-
Fixed Income								
Cash	30 Day T-Bills	1.9%	1.9%	1.2%	-	-	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5-10	2.1%	2.2%	5.4%	0.04	0.06	0.65	0.66
U.S. Treasury	BBgBarc Treasury 7-10 Year	1.7%	1.9%	6.7%	-0.03	0.00	0.68	0.69
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	0.1%	0.6%	9.7%	-0.19	-0.13	0.10	0.14
Global Aggregate	BBgBarc Global Aggregate	1.2%	1.4%	6.2%	-0.11	-0.08	0.39	0.37
Core Fixed Income	BBgBarc U.S. Aggregate Bond	2.2%	2.4%	6.3%	0.05	0.08	1.08	1.09
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	2.7%	3.0%	8.3%	0.10	0.14	1.21	1.22
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1-3 Year	1.7%	1.8%	3.6%	-0.06	-0.03	1.16	1.17
Short-Term Credit	BBgBarc Credit 1-3 Year	1.9%	2.0%	3.6%	0.01	0.03	1.76	1.78
Long-Term Credit	BBgBarc Long U.S. Corporate	3.0%	3.4%	9.4%	0.12	0.16	0.93	0.94
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	3.3%	4.0%	11.3%	0.12	0.18	1.25	1.26
Bank Loans	S&P/LSTA Leveraged Loan	5.3%	5.8%	10.0%	0.34	0.39	1.47	1.50
Global Credit	BBgBarc Global Credit	1.4%	1.6%	7.4%	-0.07	-0.03	0.77	0.78
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	5.0%	5.7%	12.4%	0.25	0.31	1.03	1.03
Emerging Markets Debt (Local)	JPM GBI-EM Global Diversified	5.7%	6.4%	12.0%	0.32	0.37	0.17	0.22
Private Credit	Bank Loans + 175bps	7.0%	7.5%	10.0%	0.51	0.56	-	-
Other								
Commodities	Bloomberg Commodity	3.8%	4.9%	15.4%	0.12	0.20	-0.36	-0.29
Hedge Funds*	HFRI Fund Weighted Composite	4.0%	4.3%	7.7%	0.27	0.31	0.55	0.56
Real Estate Debt	BBgBarc CMBS IG	4.0%	4.3%	7.6%	0.27	0.31	1.55	1.58
Core Real Estate	NCREIF Property	6.6%	7.3%	12.4%	0.38	0.44	1.84	1.89
Value-Add Real Estate	NCREIF Property + 200bps	8.6%	10.0%	17.7%	0.38	0.46	-	-
Opportunistic Real Estate	NCREIF Property + 400bps	10.6%	12.9%	23.0%	0.38	0.48	-	-
REITs	Wilshire REIT	6.6%	8.2%	19.1%	0.25	0.33	0.80	0.83
Global Infrastructure	S&P Global Infrastructure	7.2%	8.6%	17.8%	0.30	0.38	0.52	0.56
Risk Parity	Risk Parity	6.9%	7.4%	10.0%	0.50	0.55	-	-
Currency Beta	MSCI Currency Factor Index	1.8%	1.8%	3.6%	-0.04	-0.02	0.19	0.21
Inflation		1.9%	-	-	-	-	-	-

Correlation assumptions

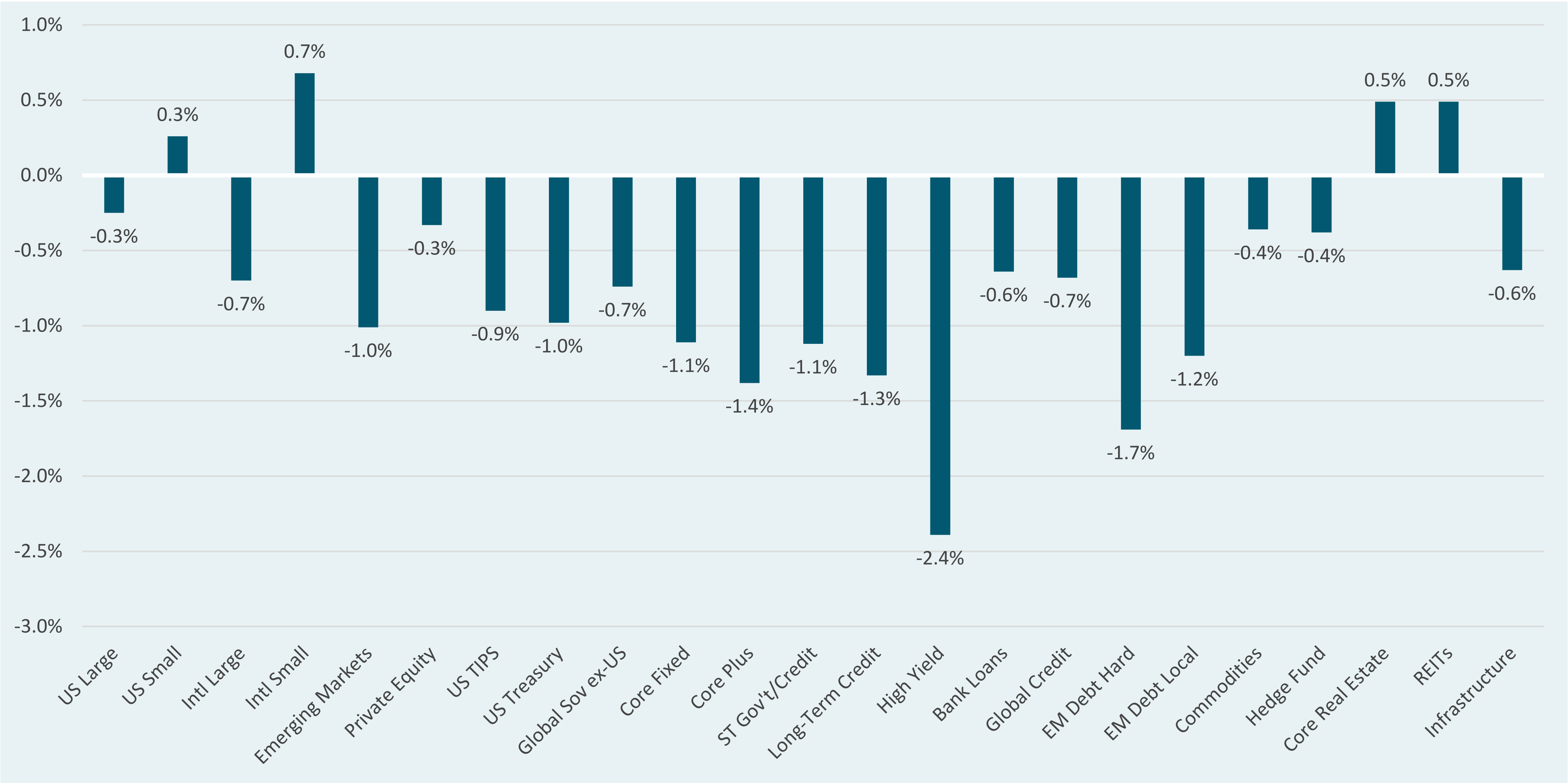
	Cash	US Large	US Small	Intl Large	Intl Small	EM	Global Equity	PE	US TIPS	US Treasury	Global Sovereign	US Core	Core Plus	Short-Term Gov't/Credit	Short-Term Credit	Long-Term Credit	US HY	Bank Loans	Global Credit	EMD USD	EMD Local	Commodities	Hedge Funds	Real Estate	REITs	Infrastructure	Risk Parity	Currency Beta
Cash	1.0																											
US Large	0.0	1.0																										
US Small	-0.1	0.9	1.0																									
Intl Large	0.0	0.9	0.7	1.0																								
Intl Small	-0.1	0.8	0.7	1.0	1.0																							
EM	0.0	0.7	0.6	0.8	0.8	1.0																						
Global Equity	0.0	1.0	0.8	1.0	0.9	0.9	1.0																					
PE	-0.2	0.6	0.6	0.6	0.6	0.5	0.6	1.0																				
US TIPS	0.0	0.0	-0.1	0.1	0.1	0.2	0.1	0.0	1.0																			
US Treasury	0.1	-0.4	-0.5	-0.3	-0.3	-0.2	-0.4	-0.2	0.7	1.0																		
Global Sovereign	0.1	0.2	0.0	0.3	0.3	0.4	0.3	0.0	0.5	0.4	1.0																	
US Core	0.1	-0.2	-0.3	-0.1	-0.1	0.0	-0.1	-0.1	0.8	0.9	0.5	1.0																
Core Plus	0.1	0.1	0.0	0.2	0.2	0.3	0.2	0.0	0.8	0.7	0.6	0.9	1.0															
Short-Term Gov't/Credit	0.3	-0.1	-0.2	0.0	0.0	0.1	0.0	-0.1	0.7	0.7	0.6	0.8	0.7	1.0														
Short-Term Credit	0.2	0.2	0.1	0.4	0.3	0.4	0.3	0.0	0.6	0.4	0.6	0.6	0.8	0.8	1.0													
Long-Term Credit	0.1	0.0	-0.1	0.1	0.1	0.2	0.1	-0.1	0.7	0.7	0.5	0.8	1.0	0.6	0.6	1.0												
US HY	0.0	0.7	0.7	0.8	0.8	0.8	0.8	0.4	0.3	-0.2	0.3	0.1	0.5	0.2	0.6	0.4	1.0											
Bank Loans	-0.1	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.1	-0.3	0.0	-0.1	0.2	-0.1	0.3	0.1	0.8	1.0										
Global Credit	0.1	0.5	0.3	0.7	0.7	0.7	0.6	0.2	0.5	0.2	0.8	0.5	0.7	0.5	0.8	0.6	0.7	0.4	1.0									
EMD USD	0.0	0.4	0.3	0.6	0.5	0.7	0.6	0.2	0.5	0.3	0.6	0.5	0.7	0.4	0.6	0.6	0.7	0.3	0.8	1.0								
EMD Local	0.1	0.5	0.4	0.7	0.6	0.8	0.6	0.2	0.4	0.1	0.6	0.2	0.5	0.3	0.5	0.4	0.6	0.4	0.8	0.8	1.0							
Commodities	0.0	0.5	0.5	0.6	0.6	0.6	0.6	0.3	0.1	-0.3	0.4	-0.1	0.1	0.1	0.3	0.0	0.6	0.4	0.5	0.4	0.6	1.0						
Hedge Funds	0.0	0.8	0.7	0.8	0.8	0.7	0.9	0.6	0.1	-0.3	0.1	-0.1	0.2	0.0	0.3	0.1	0.7	0.6	0.5	0.4	0.4	0.5	1.0					
Real Estate	-0.1	0.6	0.5	0.5	0.5	0.4	0.6	0.4	0.2	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.4	0.3	0.2	0.3	0.3	0.2	0.5	1.0				
REITs	0.0	0.6	0.6	0.6	0.5	0.5	0.6	0.4	0.3	0.1	0.3	0.3	0.4	0.2	0.4	0.4	0.6	0.5	0.5	0.5	0.5	0.3	0.5	0.7	1.0			
Infrastructure	0.0	0.7	0.6	0.9	0.8	0.8	0.8	0.7	0.3	-0.1	0.5	0.1	0.4	0.2	0.5	0.3	0.8	0.5	0.7	0.7	0.7	0.5	0.7	0.3	0.7	1.0		
Risk Parity	0.0	0.5	0.4	0.6	0.5	0.6	0.6	0.4	0.6	0.3	0.5	0.5	0.7	0.5	0.6	0.6	0.7	0.4	0.7	0.7	0.6	0.6	0.6	0.3	0.5	0.6	1.0	
Currency Beta	0.0	0.2	0.2	0.1	0.0	0.1	0.1	0.2	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.0	1.0

Range of likely 10-year outcomes



Source: Verus, MPI

2020 vs. 2019 return forecast



Relevant forecast changes

— Return expectations fell broadly across most asset classes as bond yields moved lower, equities recovered from their 2018 end-of-year drawdown, and valuations became richer. This effect resulted in a decrease of between 0.7%-1.0% to non-U.S. equity expectations.

— Market pricing indicates lower inflation over the next decade. The 10yr U.S. TIPS breakeven inflation rate fell from 1.7% to 1.5% year-to-date, while the University of Michigan Inflation Expectations Survey fell from 2.5% to 2.4%. Inflation is an important component to the performance of asset classes such as equities, real estate, and commodities. Return expectations for these asset classes has come down by 0.1% to 0.2% to reflect this inflation trend. It is important to note that lower inflation expectations decrease *nominal* returns, but do not impact *real* returns.

— Credit spreads dropped throughout the year as the asset class delivered strong performance, which resulted in lower return forecasts for credit assets. Core fixed income spreads fell from 72 bps to 62 bps, and high yield spreads fell from 529 bps to 396 bps.

— The short end of the yield curve fell as the Federal Reserve reversed course, and U.S. markets moved towards a decreasing interest rate environment. The U.S. effective fed funds rate dropped from 2.3% at the beginning of the year to 1.9% in September. The three-month U.S. dollar LIBOR reference rate fell from 2.8% to 2.1%.

— Emerging market hard and local currency debt forecasts have both declined, following strong performance year-to-date. Hard currency-denominated debt spreads to U.S. Treasury yields fell from 421 bps to 351 bps, while yields of local-denominated debt fell from 7.2% to 6.0%.

Inflation

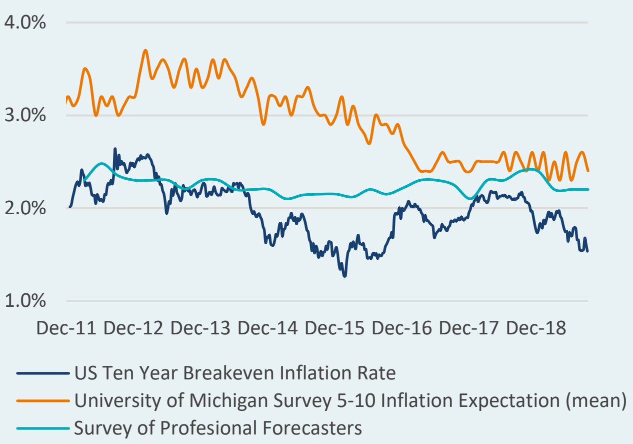
We use a weighted average of market expectations (50%), consumer expectations (25%), and professional forecasts (25%) to create a 10-year inflation forecast. The market's expectations for 10-year inflation can be inferred by taking the difference between the U.S. 10-year Treasury yield and the 10-year Treasury Inflation-Protected (TIPS) yield (referred to as the breakeven inflation rate).

Inflation drifted upward in 2019, reaching the levels not seen in the past decade. However, investors generally expect the low inflation environment to continue well into the future. Breakeven rates rose in the first quarter but then trended downward in Q2 and Q3, likely affected by pessimism around the U.S. economy. Overall, inflation levels remain mild, relative to past economic cycles.

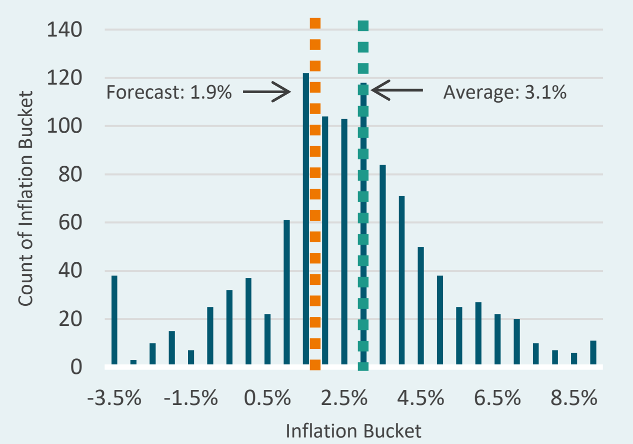
Consumer inflation expectations increased very slightly from 2.7% to 2.8% in September, based on the University of Michigan Consumer Inflation Expectations Survey. Inflation expectations from the Survey of Professional Forecasters fell from 2.4% to 2.3% - this measure has historically been fairly stable, especially in environments characterized by suppressed inflation volatility.

Our inflation forecast decreased slightly from 2.0% to 1.9%.

INFLATION EXPECTATIONS



U.S. 10-YR ROLLING AVERAGE INFLATION SINCE 1923



FORECAST

	10-Year Forecast
University of Michigan Survey *(25% weight)*	+2.4%
Survey of Professional Forecasters *(25% weight)*	+2.2%
US 10-Year TIPS Breakeven Rate *(50% weight)*	+1.5%
Inflation Forecast	1.9%

Cash

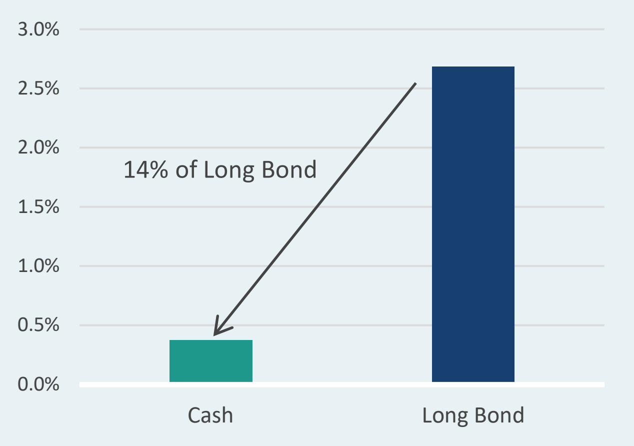
The U.S. Treasury yield curve further flattened in the latter half of the year, inverting temporarily between the 10- and 2-year yields. By other measures, such as the spread between 10-year and 3-month yields, the curve remains inverted. From the time of inversion, the U.S. economy has historically entered recession within 1-3 years. However, unprecedented monetary policy and central bank involvement in the markets may be having an outsized impact on fixed income pricing, which could be muddying this signal.

Over rolling ten-year time periods, the average historical real return to cash has been 14% of the real return to long-term bonds.

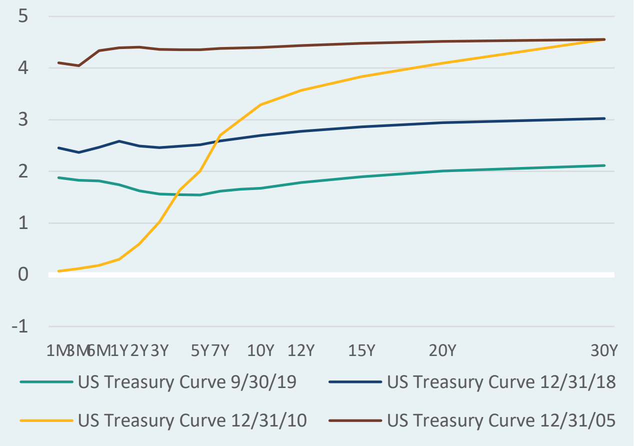
By applying this historical real return relationship, we arrive at a -3 bps expected real return to cash (14% of our -25 bps 10-year U.S. Treasury real return forecast) as real yields are now negative.

Adding our inflation forecast of 1.9% results in a nominal return to cash of 1.9%.

AVERAGE REAL RETURN



U.S. TREASURY YIELD CURVE



FORECAST

	10-Year Forecast
Cash	+1.88%
Inflation Forecast	-1.91%
Real Return	-0.03%

Rates

We forecast the return from rates based upon the current 10-year Treasury yield, with all cash flows reinvested at the current yield. The 10-year yield fell from 2.7% to 1.7% through September.

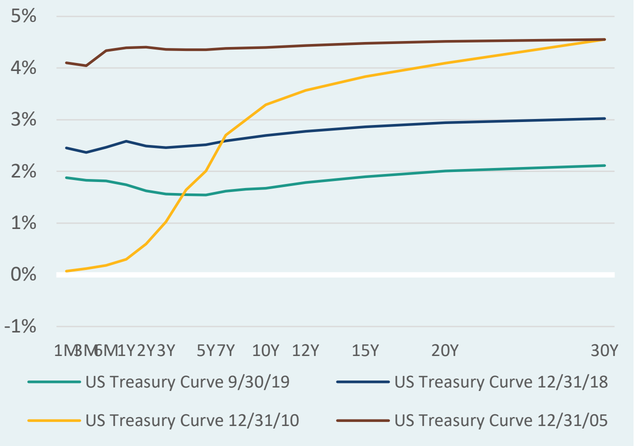
U.S. Treasury yields remain high relative to other developed nations, specifically Japan and Germany. U.S. yields marched upward in 2017 and 2018, but reversed sharply in 2019 as expectations for U.S. economic growth soured and the Federal Reserve shifted to an easing stance. The U.S. yield curve remains surprisingly flat.

Developed world central banks have shifted their narrative from tightening to easing. Discussions have taken place over fiscal stimulus or perhaps renewed quantitative easing. It is unclear how potent a return to monetary easing would be, now that interest rates have been low (or negative) for some time.

In the U.S., further rate cuts are expected, with rate stabilization possibly occurring in late 2020. It is possible that the next recession may bring negative interest rates to the U.S., in line with secularly low interest rates elsewhere.

U.S. 10-YR TREASURY YIELD

U.S. TREASURY YIELD CURVE



FORECAST

	10-Year Forecast
U.S. 10-Year Treasury	+1.7%
Inflation Forecast	-1.9%
Real Return	-0.2%

Real rates

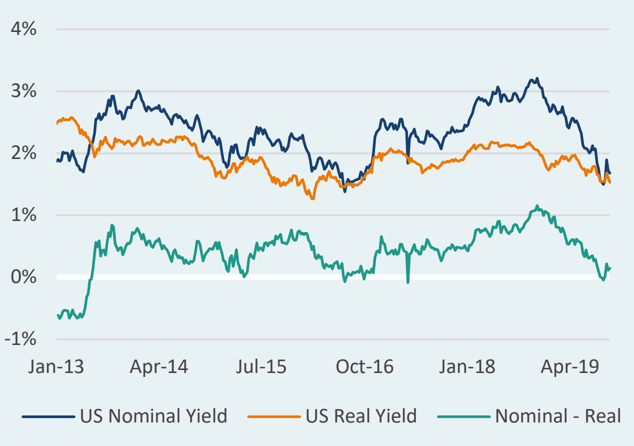
TIPS provide high sensitivity to duration (interest rate risk) over short periods and track inflation (CPI) fairly well over longer periods. Changing inflation expectations, demand for inflation protection, and rate movements contribute to the price volatility of TIPS. Currently, future inflation is expected to be mild, there is low demand for inflation protection, and interest rates are expected to fall. This environment may be muting the price of TIPS.

The U.S. 10-year real yield fell steadily through Q3, along with U.S. TIPS Breakeven rates. Inflation rose slightly, depressing real yields.

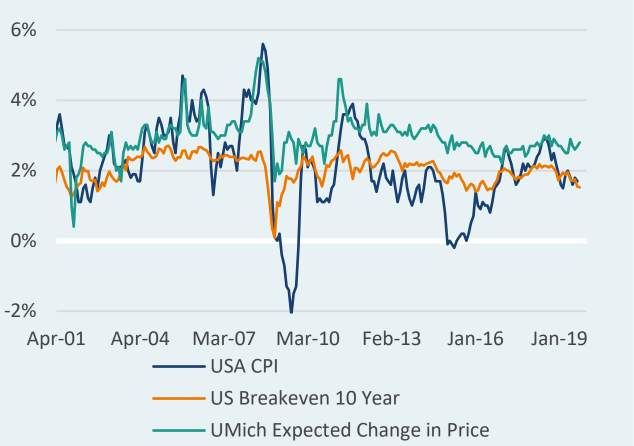
Breakeven rates rose in the first quarter but trended downward in Q2 and Q3, likely impacted by pessimism around the domestic economy.

To arrive at a nominal 10-year forecast, we add the current real TIPS yield to our 10-year inflation forecast. Our real rates forecast fell markedly from 1.0% to 0.1% as nominal interest rate dropped much further than inflation expectations.

NOMINAL YIELD VS. REAL



INFLATION EXPECTATIONS



FORECAST

	10-Year Forecast
U.S. 10-Year TIPS Real Yield	+0.14%
Inflation Forecast	+1.91%
Nominal Return	2.05%

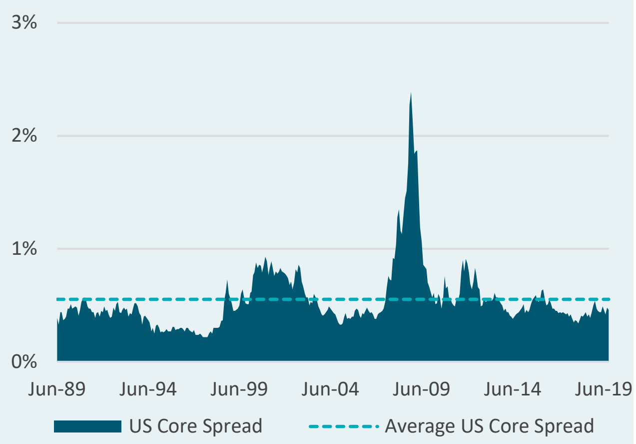
Core fixed

Credit fixed income return is composed of a bond term premium (duration) and credit spread. The bond term premium is represented by the 10-year U.S. Treasury yield.

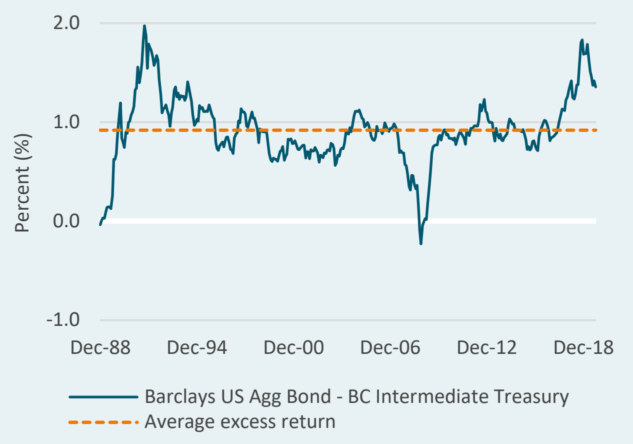
We use default rates and credit spreads for each respective fixed income category to provide our 10-year return forecast. Our default rate assumption is derived from a variety of sources, including historical data and academic research. The effective default that is subtracted from the return forecast is based on our assumed default and recovery rates.

Spreads tightened throughout the year, which resulted in lower return forecasts for credit assets. Core fixed income spreads remain below their 30-year average of 1.25%. Widening credit spreads are typical of late-cycle behavior, as investors demand greater compensation for higher perceived credit risk. Recent activity suggests investors are not yet concerned about late-cycle credit market issues.

U.S. CORE CREDIT SPREAD



ROLLING EXCESS RETURN (10-YR)



FORECAST

	10-Year Forecast
Barclays U.S. Option-Adjusted Spread	+0.6%
Effective Default	-0.1%
U.S. 10-Year Treasury	+1.7%
Nominal Return	2.2%
Inflation Forecast	-1.9%
Real Return	0.3%

Credit summary

	Core	Long-Term Credit	Global Credit	High Yield	Bank Loans	EM Debt (USD)	EM Debt (Local)	Private Credit	Real Estate Debt
Index	BBgBarc U.S. Aggregate	BBgBarc Long U.S. Corporate	BBgBarc Global Credit	BBgBarc U.S. High Yield	S&P LSTA	JPM EMBI	JPM GBI-EM	S&P LTSA + 1.75%	BBgBarc CMBS IG
Method	OAS + U.S. 10-Year	OAS + U.S. 10-Year	OAS + Global 10-Year Treasuries	OAS + U.S. 10-Year	LIBOR + Spread	OAS + U.S. 10-Year	Current Yield	Bank Loans+ 1.75% private premium	LIBOR + Spread
Spread to	Intermediate U.S. Treasury	Long-Term U.S. Treasury	Global Long-Term Treasuries	Intermediate U.S. Treasury	LIBOR	Intermediate U.S. Treasury	-	-	LIBOR
Default Assumption	-0.5%	-4.5%	-3.0%	-3.8%	-3.5%	-0.5%	-0.5%	-	-3.7%
Recovery Assumption	80%	95%	40%	40%	90%	60%	40%	-	47%
Spread	0.6%	1.5%	2.0%	4.0%	3.6%	3.5%	-	-	4.0%
Yield	-	-	-	-	-	-	6.0%	-	-
Risk Free Yield	1.7%	1.7%	1.1%	1.7%	2.1%	1.7%	-	-	2.0%
Effective Default	-0.1%	-0.2%	-1.8%	-2.3%	-0.4%	-0.2%	-0.3%	-	-2.0%
Nominal Return	2.2%	3.0%	1.4%	3.4%	5.3%	5.0%	5.7%	7.1%	4.0%
Inflation Forecast	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
Real Return	0.3%	1.1%	-0.6%	1.4%	3.4%	3.1%	3.8%	5.2%	2.1%

Equities

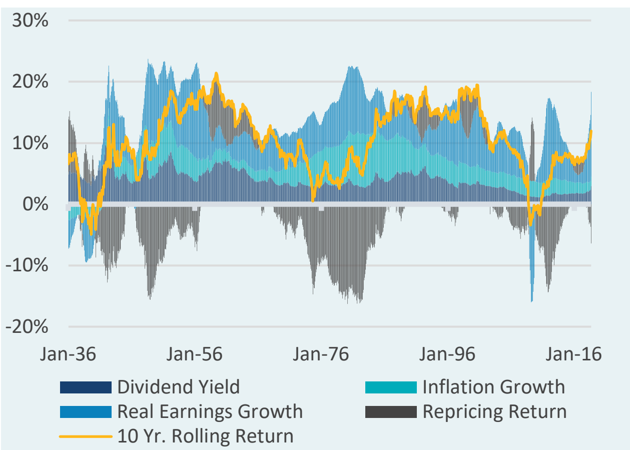
Investment returns in the equity space can be broken down into earnings growth, dividend yield, inflation, and repricing. Over the very long-term, repricing represents a small portion of return to equity investors, but over shorter time frames, the impacts on return can vary considerably.

If investors are willing to pay more for earnings, it could signal that investors are more confident in positive earnings growth going forward, while the opposite is true if investors pay less for earnings. It is somewhat surprising that investor confidence varies so much given that the long-term earnings growth is relatively stable.

Investor confidence in earnings growth can be measured using both the Shiller P/E ratio and the trailing 12-month P/E ratio. We take an average of these two valuations metrics when determining our repricing assumption. In short, if the P/E ratio is too high (low) relative to history, we expect future returns to be lower (higher) than the long-term average. Implicit in this analysis is the assumption that P/E's will exhibit mild mean reversion over 10 years.

We make a conservative repricing estimate given how widely repricing can vary over time. We then skew the repricing adjustment because the percentage change in index price is larger with each incremental rise in valuations when P/E's are low, compared to when they are high.

TRAILING 10-YR S&P 500 RETURN COMPOSITION



U.S. LARGE SHILLER P/E

P/E REPRICING ASSUMPTION

Average P/E Percentile Bucket	Lower P/E	Upper P/E	Repricing Assumption
Lower 10%	-	10	2.00%
10% - 20%	10	13	1.50%
20% - 30%	13	15	0.75%
30% - 45%	15	18	0.50%
45% - 55%	18	19	0.0%
55% - 70%	19	21	-0.25%
70% - 80%	21	22	-0.50%
80% - 90%	22	24	-0.75%
Top 10%	24	-	-1.00%

Global equity

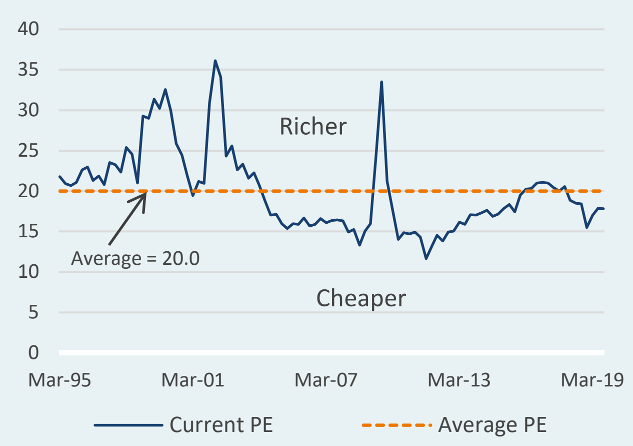
Global Equity is a combination of U.S. large, international developed, and emerging market equities. We can therefore combine our existing return forecasts for each of these asset classes to arrive at our global equity return forecast.

We use the MSCI ACWI Index as our benchmark for global equity and apply the country weights of this index to determine the weightings for our global equity return calculation. As with other equity asset classes, we use the historical standard deviation of the benchmark (MSCI ACWI Index) for our volatility forecast.

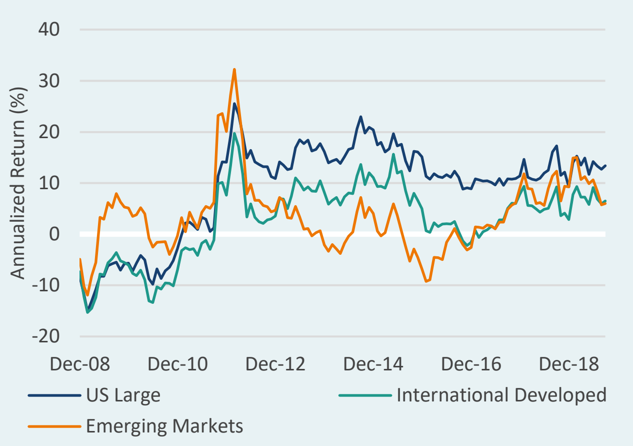
The valuation of global equities are driven by the richness/cheapness of the underlying markets, as indicated by the current price-to-earnings ratio.

Our return building blocks produce a local return forecast for international equities. For investors who wish to incorporate market implied currency movements into the return forecast, please see the adjustments and explanation in the Appendix.

GLOBAL EQUITY P/E RATIO HISTORY



MARKET PERFORMANCE (3-YR ROLLING)



FORECAST

Market	Weight	CMA return
U.S. Large	54.2%	5.5%
Developed Large	32.4%	7.0%
Emerging Markets	10.3%	7.6%
Canada	3.1%	8.9%
Global Equity Forecast		6.4%

Equity summary

	U.S. Large	U.S. Small	EAFE	EAFE Small	EM
Index	S&P 500	Russell 2000	MSCI EAFE Large	MSCI EAFE Small	MSCI EM
Method	Building Block Approach: current dividend yield + historical average real earnings growth + inflation on earnings + repricing				
Current Shiller P/E Ratio	29.0	45.1	17.5	-	10.5
Regular P/E Ratio	19.5	41.0	16.7	18.7*	13.3
2019 Shiller P/E Change	+1.8%	+5.6%	+9.4%	-	+4.0%
2019 Regular P/E Change	+14.0%	-8.3%	+24.6%	-21.4%	+14.9%
Current Shiller P/E Percentile Rank	81%	93%	34%	-	18%
Current Regular P/E Percentile Rank	74%	90%	46%	18%*	34%
Average of P/E Methods' Percentile Rank	77%	92%	40%	18%*	26%
2019 YTD Return	20.5%	14.2%	12.8%	12.1%	5.9%
Shiller PE History	1982	1988	1982	Not Enough History	2005
Long-Term Average Shiller P/E	22.9	31.1	22.6	-	15.1
Current Dividend Yield	2.0%	1.8%	3.5%	2.7%	3.0%
Long-Term Average Real Earnings Growth	2.1%	3.1%	1.9%	1.9%	1.9%
Inflation on Earnings	1.9%	1.9%	1.1%	1.1%	1.9%
Repricing Effect (Estimate)	-0.5%	-1.0%	0.5%	1.5%	0.8%
Nominal Return	5.5%	5.7%	7.0%	7.2%	7.6%
Inflation Forecast	1.9%	1.9%	1.9%	1.1%	1.9%
Real Return	3.6%	3.8%	5.1%	6.1%	5.7%

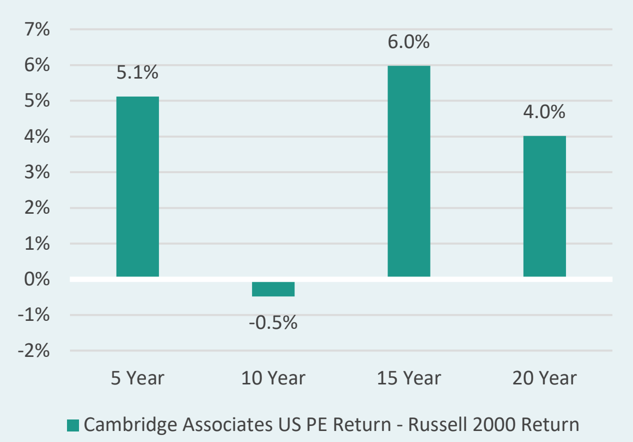
Private equity

Private equity and public equity returns have been correlated historically because the underlying economic forces driving these asset class returns are quite similar. The return relationship between the two can vary in the short-term, but over the long-term investors have received a premium, driven by leverage, concentrated factor exposure (smaller and undervalued companies), skill, and possibly illiquidity.

Historically, the beta of private equity relative to public equities has been high. We use a beta assumption of 1.85 to U.S. large cap equities in our capital market forecast.

Private equity performance typically differs based on the implementation approach. We provide a 10-year forecast for the entire private equity universe of 8.5%. Direct private equity programs have historically outperformed the broader universe by approximately 1.0%, and we forecast direct private equity accordingly with a forecast of 9.5%. Private equity fund-of-fund programs have historically lagged the universe by 1.0%, and we forecast private equity FoF at 7.5% to reflect this drag.

PRIVATE EQUITY EXCESS RETURN (PE – U.S. SMALL CAP EQUITY)



PRIVATE EQUITY IMPLEMENTATION FORECASTS

	10-Year Forecast
Private Equity Universe Forecast	+8.5%
Private Equity FoF Forecast	+7.5%
Private Equity Direct Forecast	+9.5%

PRIVATE EQUITY UNIVERSE FORECAST

	10-Year Forecast
U.S. Large Cap Forecast	+5.5%
1.85 Beta Multiplier	+3.0%
Nominal Return	+8.5%
Inflation Forecast	-1.9%
Real Return	+6.6%

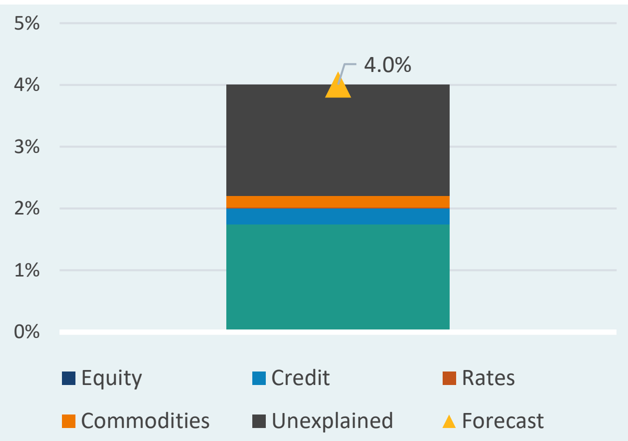
Hedge funds

Hedge fund performance variation through time can be partly explained by public market betas (ex: equity, rates, credit, commodities) and partly explained by non-public sources of return (ex: alternative betas, skill, luck). Certain hedge fund strategies can be mostly explained by public market betas, while other types of hedge fund strategies are driven mostly by non-public sources of return.

To forecast hedge fund returns, we identified the portion of historical hedge fund performance that can be attributed to public market betas, and the portion of hedge fund returns that cannot be attributed to public market beta. This means our forecast has two components: the public market return (explained return) and the non-public market return (unexplained return).

To forecast the public market beta portion of hedge funds, we take the historical sensitivity of hedge funds to equity, rates, credit, and commodities and pair these with our current 10-year public market forecasts for each asset class. To forecast the non-public market return portion of hedge funds (unexplained return) we simply assume the historical performance contribution of these sources will continue over the next 10 years.

HEDGE FUND FORECAST



HEDGE FUND PUBLIC MARKET SOURCES OF RETURN (EXPLAINED RETURN)
Equity
Rates
Credit
Commodities

HEDGE FUND NON-PUBLIC SOURCES OF RETURN (UNEXPLAINED RETURN)
Alternative betas
Skill
Luck

	10-Year Forecast
Public Market % of Return	+2.2%
Non-Public Market % of Return	+1.8%
Nominal Return	+4.0%
Inflation Forecast	-1.9%
Real Return	+2.1%

Source: Verus, as of 9/30/19

Private core real estate/REITS

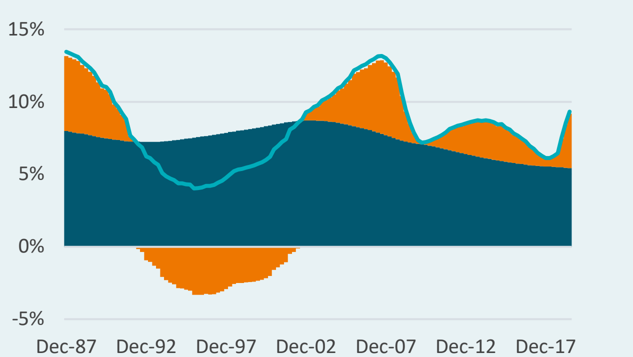
Performance of the NCREIF property index can be decomposed into an income return (cap rate) and capital return. The return coming from income has historically been more stable than the return derived from capital changes.

The cap rate is the ratio of earnings less expenses to price, and does not include extraordinary expenses. A more accurate measure of the yield investors receive should include non-recurring capital expenditures; we assume a 2.0% capex expenditure. We also assume income growth will track inflation as higher prices are passed through to rents.

Private real estate and REITs have provided very similar returns over the long-term. Investors should be careful when comparing risk-adjusted returns of publicly traded assets to returns of appraisal priced assets, due to smoothing effects. While private real estate appears to be less volatile than REITs, the true risks to investors are very similar.

We assume the effects of leverage and liquidity offset each other. Therefore, our return forecast is the same for private real estate and REITs.

TRAILING 10-YR NCREIF RETURN COMPOSITION



PRIVATE REAL ESTATE

	Private Real Estate 10-Year Forecast
Current Cap Rate	+4.4%
Real Income Growth	+2.3%
Capex Assumption	-2.0%
Inflation	+1.9%
Nominal Return	6.6%
Inflation Forecast	-1.9%
Real Return	4.7%

REITS

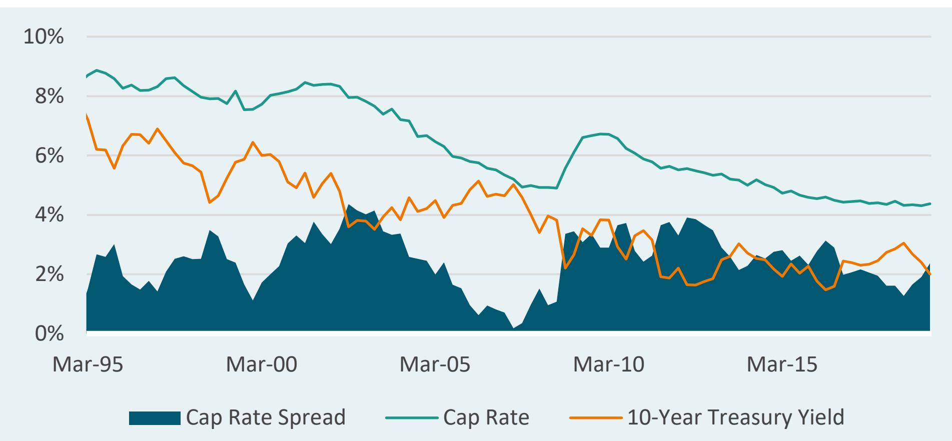
	10-Year Forecast
Nominal Return Forecast	6.6%
Inflation Forecast	-1.9%
Real Return	4.7%

Value-add & opportunistic real estate

Value-add real estate includes properties which are in need of renovation, repositioning, and/or lease-up. Properties may also be classified as value-add due to their lower quality and/or location. Opportunistic real estate can also include development and distressed or very complex transactions. Greater amounts of leverage are usually employed within these strategies. Leverage increases beta (risk) by expanding the purchasing power of property managers via a greater debt load, which magnifies gains or losses. Increased debt also results in greater interest rate sensitivity. An increase/decrease in interest rates may result in a write-up/write-down of fixed rate debt, since debt holdings are typically marked-to-market.

Performance of value-add real estate is composed of the underlying private real estate market returns, plus a premium for additional associated risk, which is modeled here as 200 bps above our core real estate return forecast. Performance of opportunistic real estate strategies rest further out on the risk spectrum, is modeled as 400 bps above the core real estate return forecast.

Additional expected returns above core real estate are justified by the higher inherent risk of properties which need improvement (operational or physical), price discounts built into properties located in non-core markets, illiquidity, and the ability of real estate managers to potentially source attractive deals in this less-than-efficient marketplace.



FORECAST

	Value-Add 10-Year Forecast	Opportunistic 10-Year Forecast
Premium above core	+2.0%	+4.0%
Current Cap Rate	+4.4%	+4.4%
Real Income Growth	+2.3%	+2.3%
Capex Assumption	-2.0%	-2.0%
Inflation	+1.9%	+1.9%
Nominal Return	8.6%	10.6%
Inflation Forecast	-1.9%	-1.9%
Real Return	6.7%	8.7%

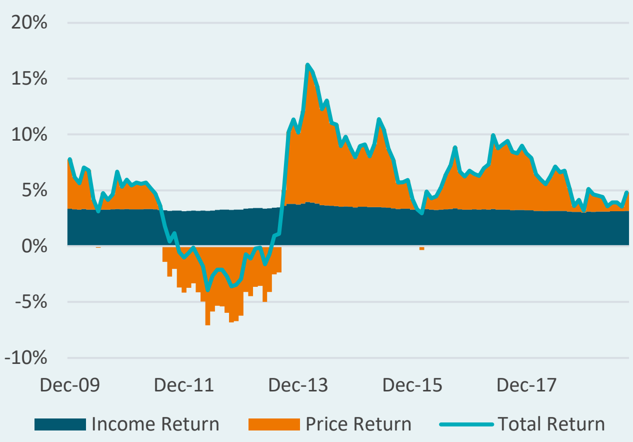
Infrastructure

Infrastructure includes a variety of investment types across a subset of industries. There is not one definition for what can be included within infrastructure. The asset class has grown dramatically in the last decade as investors sought assets that might provide more attractive yield relative to fixed income along with the potential for inflation protection.

Similar to real estate investment, income plays a significant role in the returns investors receive. Income yields are currently lower than average due to higher prices and competition in the space, which might reasonably be expected to translate into lower expected future returns.

Due to the discount rate effect, infrastructure asset valuations would generally be negatively affected by material increases in interest rates. Because leverage is used in this space, higher interest rates would also impact investors in the form of higher borrowing costs.

5-YR ROLLING RETURN COMPOSITION



ADVANCED ECONOMY REAL GDP GROWTH

FORECAST

	10-Year Forecast
Inflation	1.7%
Yield	4.1%
Income Growth	1.5%
Nominal Return	7.2%
Global Inflation Forecast	-1.7%
Real Return	5.5%

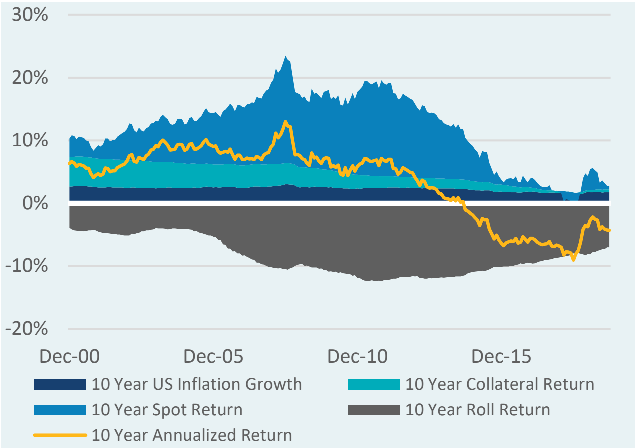
Commodities

Commodity returns can be decomposed into three sources: collateral return (cash), spot changes (inflation), and roll yield.

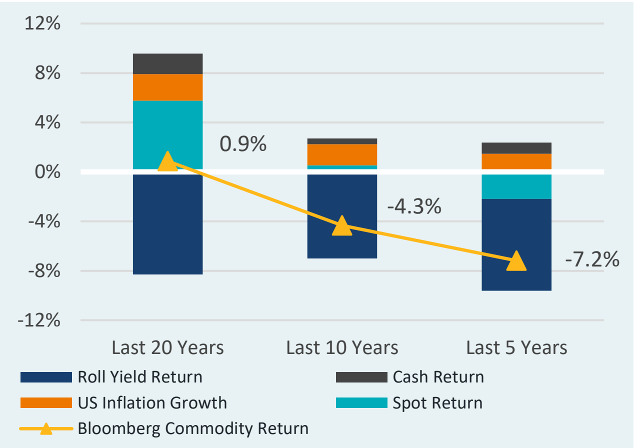
Roll return is generated by either backwardation or contango present in futures markets. Backwardation occurs when the futures price is below the spot price, which results in positive yield. Contango occurs when the futures price is above the spot price, and this results in a loss to commodity investors. Historically, futures markets have fluctuated between backwardation and contango but with a net-zero effect over the very long-term (since 1877). Therefore, roll return is assumed to be zero in our forecast. Over the most recent 10-year period, roll return has been negative, though this is likely the result of multiple commodity crises and a difficult market environment.

Our 10-year commodity forecast combines collateral (cash) return with spot return (inflation) to arrive at the nominal return, and subtracts out inflation to arrive at the real return.

TRAILING 10YR BLOOMBERG COMMODITY RETURN COMPOSITION (%)



BLOOMBERG COMMODITY RETURN COMPOSITION (%)



FORECAST

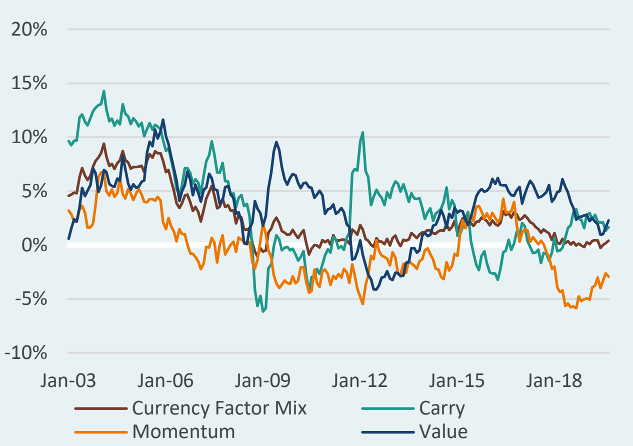
	10-Year Forecast
Collateral Return (Cash)	+1.9%
Roll Return	+0.0%
Spot Return (Inflation)	+1.9%
Nominal Return	3.8%
Inflation Forecast	-1.9%
Real Return	1.9%

Currency beta

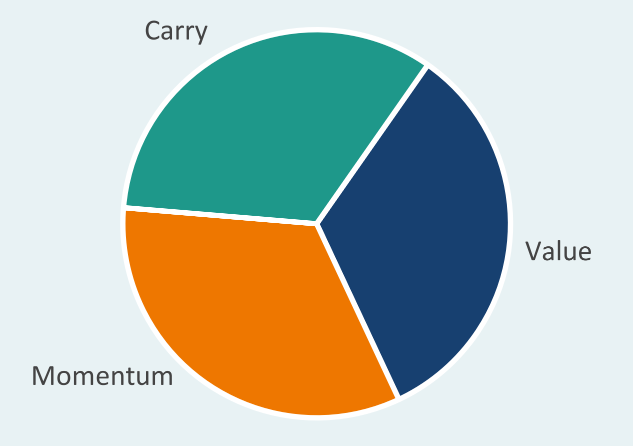
Currency beta is a long-short portfolio of G10 currencies constructed by investing in three equally weighted factors: carry, momentum, and value. A significant amount of academic research has concluded that these factors demand a risk premium in the currency market. Studies have also shown that currency beta explains a high portion of active currency managers' returns, indicating it may be a good neutral starting point or benchmark for currency investing. Currency beta portfolios gain exposure to the carry, momentum, and value factors in a systematic and transparent manner. For more detailed information on currency beta, please contact your consultant.

We model each factor in the currency beta portfolio separately, and then take a weighted average to get an overall return forecast. For the carry portfolio, the main driver of returns is the yield an investor receives from holding currencies with relatively higher interest rates. We therefore use a 12-month average of the portfolio's yield as the expected return. For value, our return forecast assumes a certain level of mean reversion to PPP fair value based on historical data. Lastly, for momentum, we simply assume the average historical return due to lack of long-term fundamental return drivers. Short-term volatility levels typically drive returns in the momentum portfolio, which is difficult to model in a 10-year return forecast.

3-YEAR ROLLING PERFORMANCE



CURRENCY BETA CONSTRUCTION



RETURN FORECAST

Factor	Weight	Return Forecast	Weighted return
Carry	33.3%	2.7%	0.9%
Momentum	33.3%	-0.2%	-0.1%
Value	33.3%	2.8%	0.9%
Currency Beta			**1.8%**

Risk parity

Risk parity is built upon the philosophy of allocating to risk premia rather than to asset classes. Because risk parity by definition aims to diversify risk, the actual asset allocation can appear very different from traditional asset class allocation.

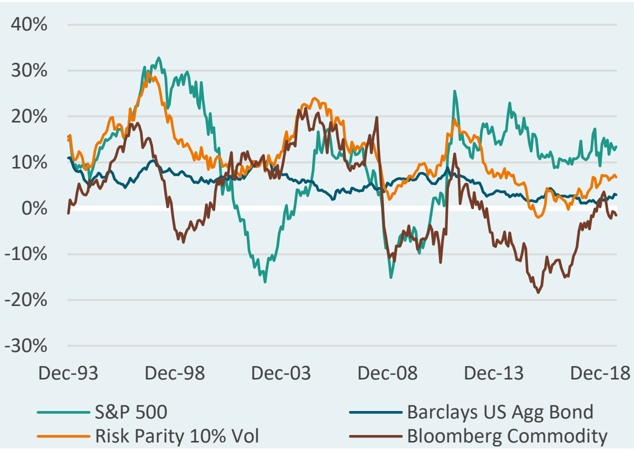
We model risk parity using an assumed Sharpe Ratio of 0.5, which considers the historical performance of risk parity. This assumed Sharpe Ratio is higher than other asset class forecasts, but is consistent with these forecasts because *portfolios* of assets tend to deliver materially higher Sharpe Ratios than individual assets.

The expected return of Risk Parity is determined by this Sharpe Ratio forecast, along with a 10% volatility assumption.

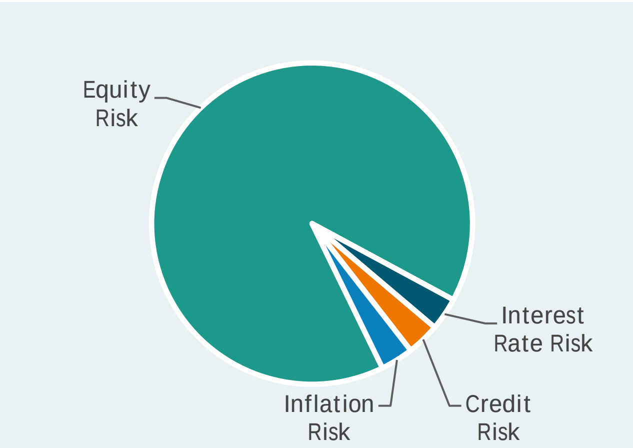
We used a 10-year historical return stream from a market-leading product to represent risk parity correlations relative to the behaviors of each asset class. Risk parity funds are suggested to be better able to withstand various difficult economic environments - reducing volatility without sacrificing return, over longer periods.

It is difficult to arrive at a single model for risk parity , since strategies can differ significantly across firms/strategies. Risk parity almost always requires explicit leverage. The amount of leverage will depend on the specific strategy implementation style, as well as expected correlations and volatility.

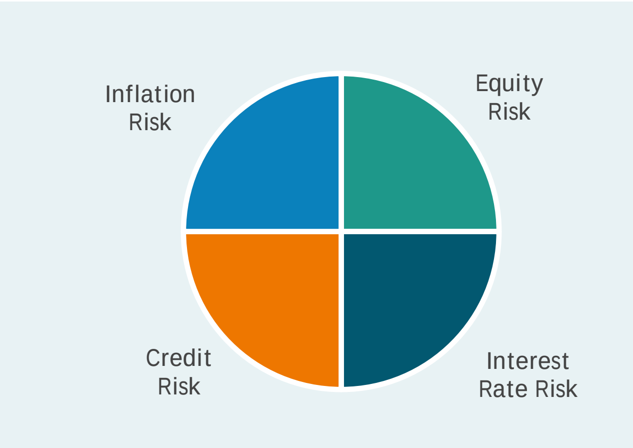
VS. TRADITIONAL ASSET CLASSES



TRADITIONAL ASSET ALLOCATION



RISK PARITY



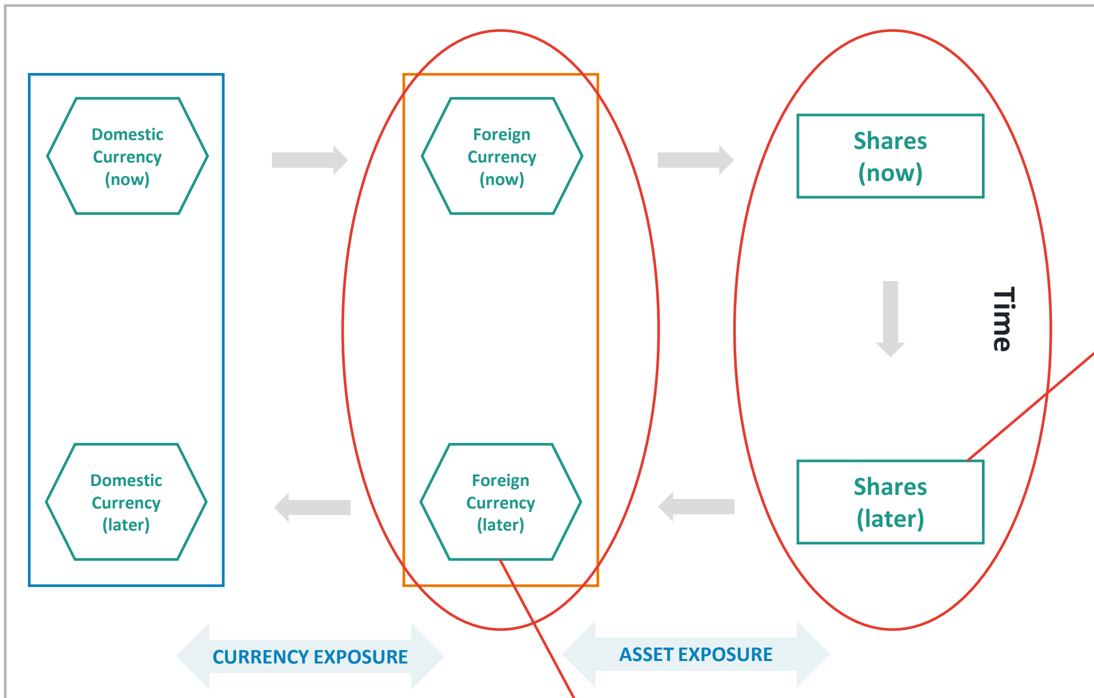
30-year return & risk assumptions

Asset Class	Index Proxy	Thirty Year Return Forecast Geometric	Thirty Year Return Forecast Arithmetic	Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)
Equities						
U.S. Large	S&P 500	5.5%	6.6%	15.4%	0.25	0.32
U.S. Small	Russell 2000	6.1%	8.1%	21.1%	0.21	0.30
International Developed	MSCI EAFE	6.7%	8.0%	17.5%	0.29	0.36
International Small	MSCI EAFE Small Cap	6.2%	8.3%	21.8%	0.21	0.31
Emerging Markets	MSCI EM	6.8%	9.6%	25.6%	0.20	0.31
Global Equity	MSCI ACWI	6.0%	7.3%	16.8%	0.26	0.34
Private Equity*	Cambridge Private Equity	8.7%	11.5%	25.3%	0.28	0.39
Fixed Income						
Cash	30 Day T-Bills	1.7%	1.7%	1.2%	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5 - 10	2.1%	2.3%	5.4%	0.08	0.11
U.S. Treasury	BBgBarc Treasury 7-10 Year	2.1%	2.3%	6.7%	0.07	0.10
U.S. 30-year Treasuries	BBgBarc U.S. Treasury 20+ Year	2.1%	2.9%	12.5%	0.04	0.10
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	0.7%	1.1%	9.7%	-0.10	-0.06
Global Aggregate	BBgBarc Global Aggregate	1.1%	1.3%	6.2%	-0.09	-0.06
Core Fixed Income	BBgBarc U.S. Aggregate Bond	3.0%	3.2%	6.3%	0.21	0.24
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	3.6%	4.0%	8.3%	0.24	0.28
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1 - 3 year	2.3%	2.3%	3.6%	0.17	0.18
Short-Term Credit	BBgBarc Credit 1-3 Year	2.9%	2.9%	3.6%	0.33	0.35
Long-Term Credit	BBgBarc Long U.S. Corporate	3.5%	3.9%	9.4%	0.20	0.24
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	5.3%	5.9%	11.3%	0.32	0.37
Bank Loans	S&P/LSTA Leveraged Loan	4.7%	5.2%	10.0%	0.30	0.35
Global Credit	BBgBarc Global Credit	0.8%	1.1%	7.4%	-0.12	-0.08
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	6.1%	6.8%	12.4%	0.35	0.41
Emerging Markets Debt (Local)	JPM GBI EM Global Diversified	5.7%	6.4%	12.0%	0.34	0.39
Private Credit	Bank Loans + 175bps	6.4%	6.9%	10.0%	0.48	0.52
Other						
Commodities	Bloomberg Commodity	3.2%	4.4%	15.4%	0.10	0.18
Hedge Funds*	HFRI Fund Weighted Composite	4.5%	4.8%	7.7%	0.37	0.40
Real Estate Debt	BBgBarc IG CMBS	4.1%	4.4%	7.6%	0.32	0.35
Core Real Estate	NCREIF Property	6.8%	7.5%	12.4%	0.41	0.47
Value-Add Real Estate	NCREIF Property + 200bps	8.8%	10.2%	17.7%	0.40	0.48
Opportunistic Real Estate	NCREIF Property + 400bps	10.8%	13.0%	23.0%	0.40	0.49
REITs	Wilshire REIT	6.8%	8.4%	19.1%	0.27	0.35
Global Infrastructure	S&P Global Infrastructure	7.0%	8.4%	17.8%	0.30	0.38
Risk Parity	Risk Parity	7.1%	7.6%	10.0%	0.54	0.59
Currency Beta	MSCI Currency Factor Index	2.2%	2.2%	3.6%	0.14	0.15
Inflation		1.6%	-	-	-	-

10-year return forecasts with currency adjustment

Asset Class	Index Proxy	Ten Year Return Forecast (Geometric) CMA Forecast	Currency Adjustment	Total	Standard Deviation Forecast
Equities					
International Developed Equity Unhedged	MSCI EAFE	7.0%	1.8%	8.8%	17.5%
International Developed Equity Hedged	MSCI EAFE Hedged	7.0%	1.8%	8.8%	15.7%
International Small Equity Unhedged	MSCI EAFE Small Cap	7.2%	1.8%	9.0%	21.8%
International Small Equity Hedged	MSCI EAFE Small Cap Hedged	7.2%	1.8%	9.0%	19.2%
Fixed Income					
Global Sovereign ex U.S. Unhedged	BBgBarc Global Treasury ex U.S.	0.1%	1.7%	1.8%	9.7%
Global Sovereign ex U.S. Hedged	BBgBarc Global Treasury ex U.S. Hedged	0.1%	1.7%	1.8%	3.8%
Global Credit Unhedged	BBgBarc Global Credit	1.4%	0.5%	1.9%	7.4%
Global Credit Hedged	BBgBarc Global Credit Hedged	1.4%	0.5%	1.9%	5.0%

Explanation of the currency adjustment



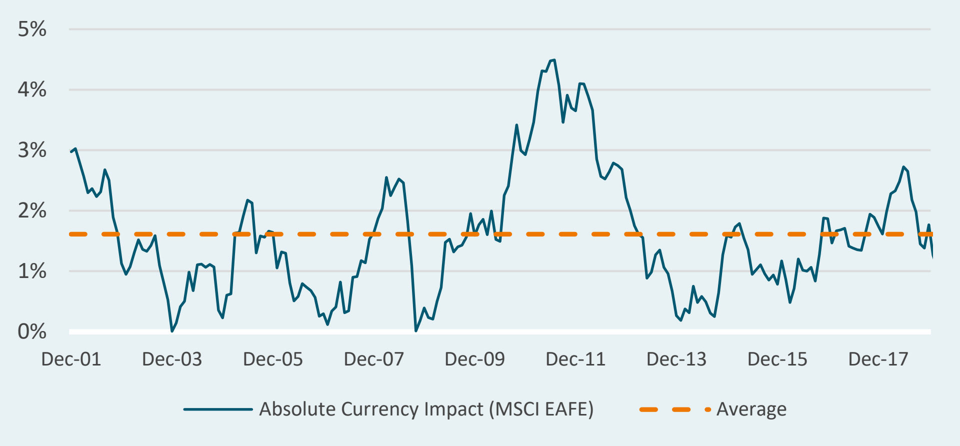
Step 1: Forecast the expected return of the foreign asset in local currency terms

Step 2: Make an assumption on the ending foreign currency exchange rate

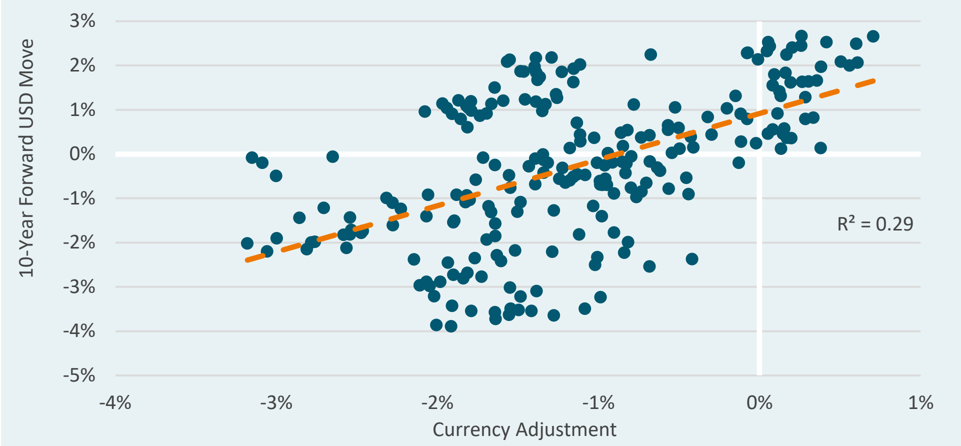
Explanation of the currency adjustment

- There are two options to adjust a local currency return forecast to a U.S. dollar forecast: make a specific exchange rate forecast or take market pricing based on the forward curve
  - It is important to note that ignoring currency is making a specific assumption that the current exchange rate will be unchanged over the next 10 years, which has rarely been the case throughout history
- Markets price future exchange rates in the forward market, which represents the SPOT currency price for FORWARD delivery
- Forward currency contracts are priced based on the interest rate differential between two currencies – interest rate differentials reflect a significant amount of information, including growth, inflation, and monetary policy expectations
- A currency with a higher interest rate is priced to depreciate relative to a currency with a lower interest rate
- We adjust our local currency return forecasts based on forward market pricing because we believe this is the neutral, “no opinion” position, rather than making a specific forecast
- Historically, this currency adjustment has had a positive relationship with 10-year forward exchange rate movements

10-YEAR ROLLING ABSOLUTE CURRENCY IMPACT



CURRENCY ADJUSTMENT VS. FORWARD USD MOVEMENT



Autocorrelation adjustment

— We adjust all volatility forecasts that use the long-term historical volatility for autocorrelation.

— Autocorrelation occurs when the future returns of a time series are described (positively correlated) by past returns.

— Time series with positive autocorrelation exhibit artificially low volatility, while time series with negative autocorrelation exhibit artificially high volatility.

— Many asset classes that we tested showed positive autocorrelation, meaning the volatility forecasts that we use in the forecasting process are too low for those asset classes.

— The result of this process was that several asset classes have higher volatility forecasts than if we had made no adjustment for autocorrelation.

Notices & disclosures

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University of Missouri System
Board of Curators
Finance Committee

November 19, 2020

Asset Allocation – Retirement UM

Summary

- Maintain investment objectives focused on balance and diversification
- Low expected returns for US TIPs and US Treasuries forced compromise - balance vs. return
- Capital redeployed to private markets, public equity and risk balanced strategies
- Lower investment return expectation will cause retirement plan actuarial assumptions to be revisited

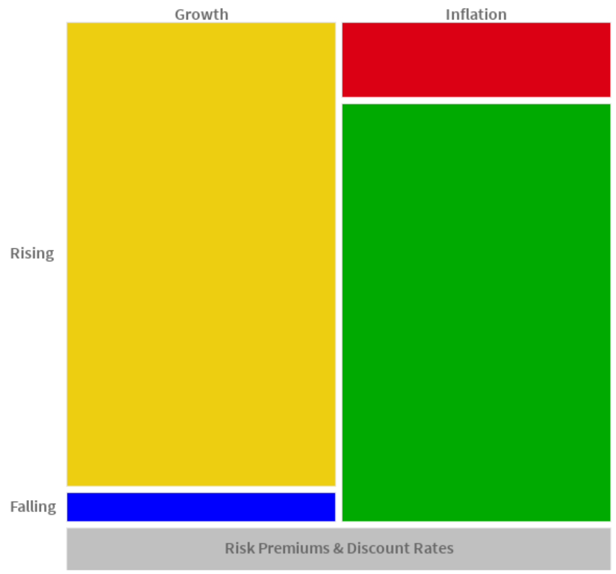
Proposed Changes

Asset Class	Existing	Proposed	Return Expectation
Global Equity	32%	35%	6.3%
Private Equity	10%	12%	9.5%
Private Debt	3%	6%	5.3%
Sovereign Bonds	15%	10%	0.7%
Inflation-Linked Bonds	17%	10%	1.3%
Real Estate	8%	10%	8.3%
Risk Balanced	10%	12%	6.1%
Commodities	5%	5%	3.2%
Total	100%	100%	

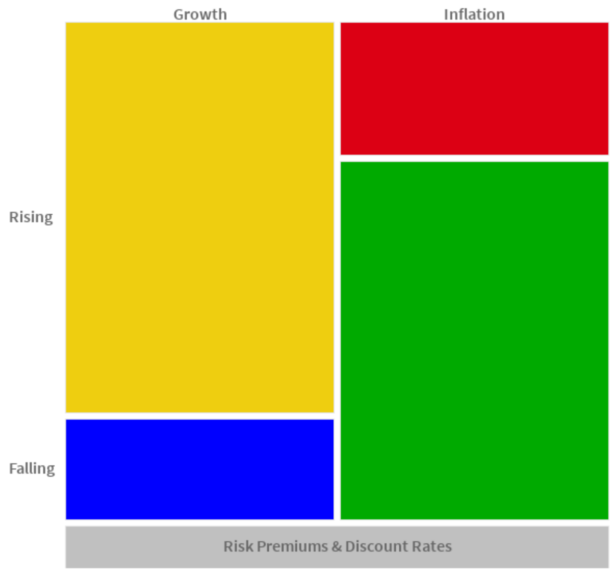
Proposed Changes

	Existing	Proposed	Peer Median
Before Alpha Program			
Mean Expected Return	5.43%	**6.15%**	5.96%
Standard Deviation	9.40%	**10.70%**	11.60%
Sharpe Ratio	0.56	**0.56**	0.50
Alpha Program (% Capital)	20%	**22%**	0%
Including Alpha Program			
Mean Expected Return	6.00%	**6.77%**	5.96%
Standard Deviation	10.00%	**11.30%**	11.60%
Sharpe Ratio	0.58	**0.58**	0.50

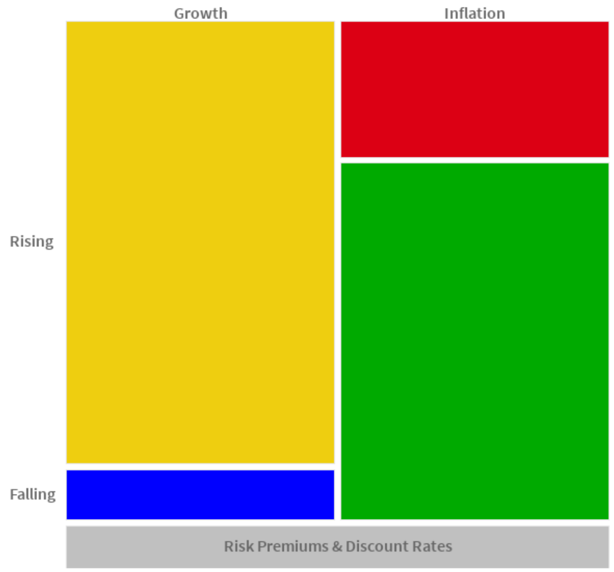
Portfolio Risk Balance



Median Public Pension Plan
> $1 billion

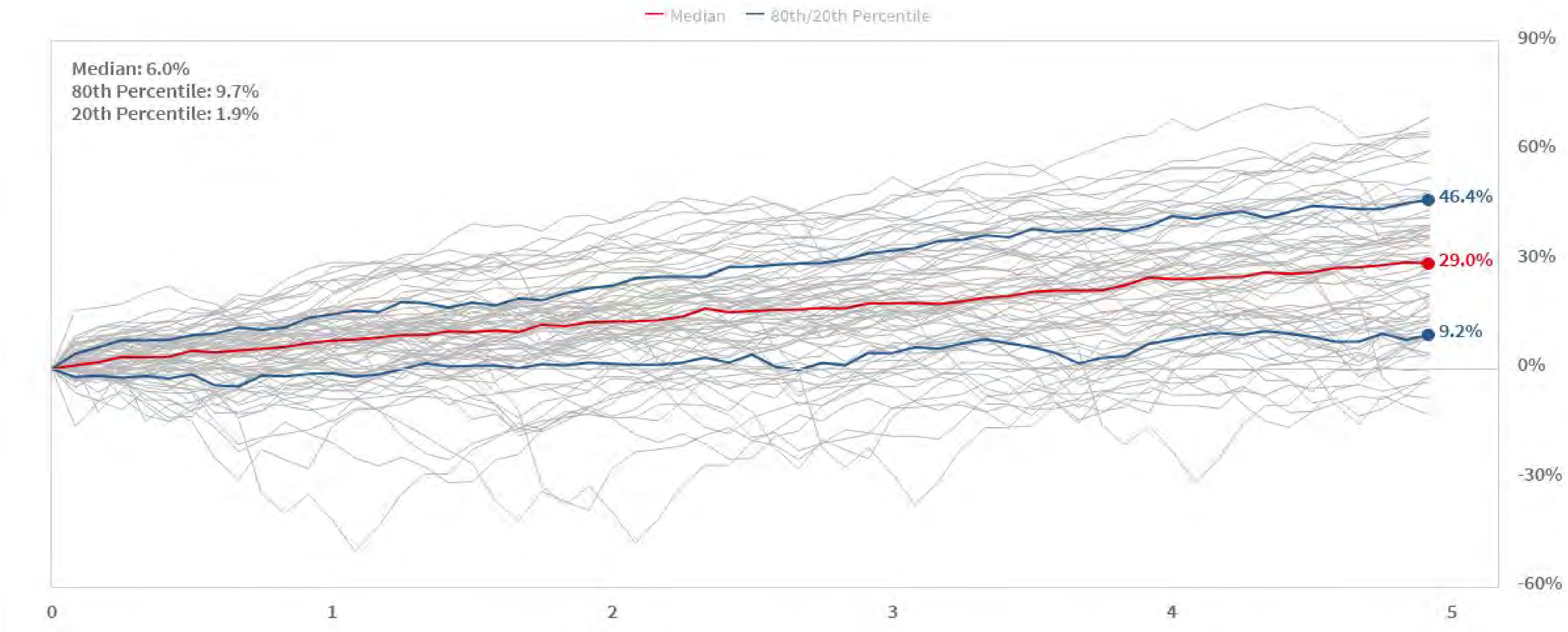


Current Retirement Plan



Proposed Retirement Plan

Proposed Portfolio - Range of Outcomes



Proposed Portfolio Mix (no alpha program) – Range of Rolling Five Year Outcomes (1940-2020)

Actuarial Assumptions

- The current investment return / discount rate actuarial assumption for the Retirement Plan is 7.20%
- Finance and Human Resources staff are currently working with Segal (plan actuary) to revisit actuarial assumptions and determine corresponding costs
- Recommendations will be made to the Board of Curators in the spring of 2021

Questions

Approval of Collected Rules & Regulation 140.015 Investment Pool Policy
UM

Management is presenting for Board approval investment policy changes resulting from an asset allocation study for the Retirement Plan. An asset allocation study for the Endowment Pool will be presented at the February Board of Curators meeting.

In light of recent actions taken by the Federal Reserve to push cash rates back down to near zero, this latest asset allocation study acknowledges that investment returns will likely be even lower going forward. With almost all asset classes considered “expensive” based on valuations, rather than reach for unrealistically high returns through excessive risk taking, our focus will continue to be on better risk management through more meaningfully diversified portfolios better suited to meet the underlying structural needs of the Retirement Plan. The proposed changes to policy targets represent a refinement to these objectives first implemented in 2015 and later strengthened by the Board in 2017. These recommendations were developed through extensive collaboration with the University’s general investment consultant, Verus, and in consultation with the Investment Advisory Committee on both October 20, 2020 and October 30, 2020.

The following investment objective for the Retirement Plan was adopted by the Board of Curators in September 2017 and remains unchanged:

> *Retirement Plan investments should be managed in a manner that maximizes returns while attempting to minimize losses during adverse economic and market events, with an overall appetite for risk governed by the Plan’s liability structure and the need to make promised benefit payments to members over time. This will be accomplished through a more ‘risk-balanced’ portfolio that seeks meaningful diversification of assets, which necessarily means less equity risk and more long-term bond exposure relative to peers. To offset potentially lower returns from a more risk-balanced portfolio, a key component of this strategy includes a less common, yet prudent, program of return enhancement commonly referred to in the investment industry as portable alpha. These investment objectives seek to prioritize the long-term structural needs of the Retirement Plan over short-term performance comparisons of the investment portfolio relative to peers.*

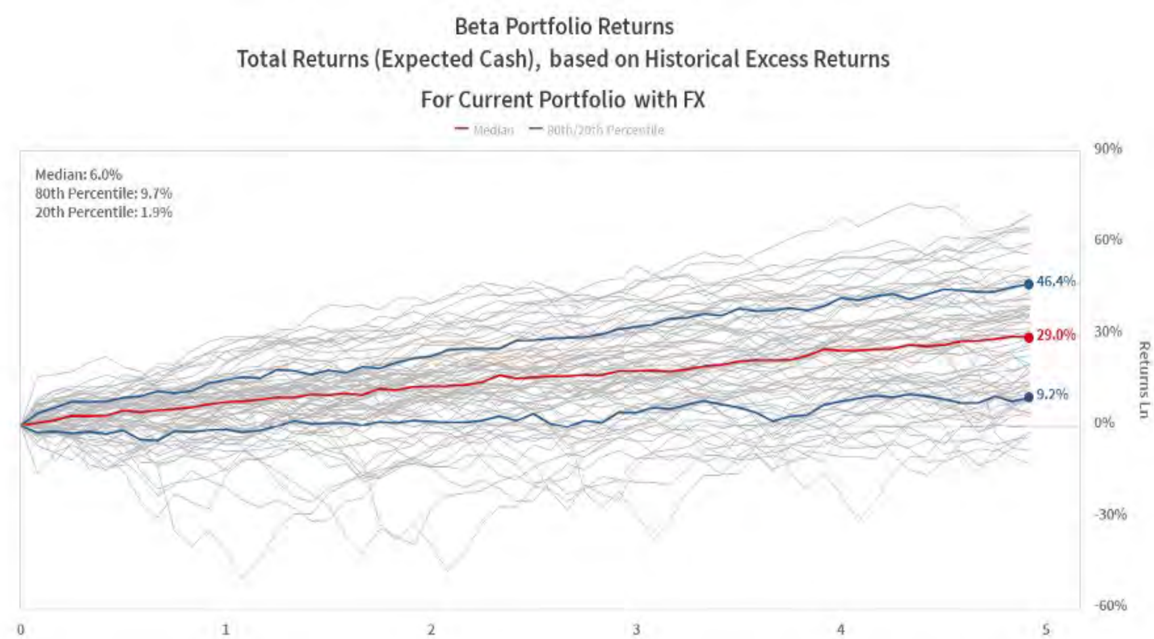
The recommended portfolio changes noted on the following page reflect rather significant changes in market conditions since the last asset allocation study. The expected low returns for sovereign and inflation-linked bonds of 0.7% and 1.3%, respectively, had to be weighed carefully against their diversifying characteristics. A decision was made to recommend a 12% reduction in such bonds (while maintaining a combined 20% allocation), with capital reallocated diversifying private assets, public equities and risk balanced strategies.

Summary of Proposed Portfolio Changes

	Existing Retirement	Proposed Retirement	Peer Median Retirement
Global equity	32%	35%	
Private equity	10%	12%	
Private debt	3%	6%	
Sovereign bonds	15%	10%	
Inflation-linked bonds	17%	10%	
Real estate	8%	10%	
Risk balanced	10%	12%	
Commodities	5%	5%	
Subtotal – Before Portable Alpha	100%	100%	100%
Mean Expected Return	5.43%	6.15%	5.96%
Standard Deviation	9.4%	10.7%	11.6%
Sharpe Ratio	0.56	0.56	0.50
Portable Alpha Program	20%	22%	0%
Mean Expected Return	**6.00%**	**6.77%**	**5.96%**
Standard Deviation	**10.0%**	**11.3%**	**11.6%**
Sharpe Ratio	**0.58**	**0.58**	**0.50**
Portable Alpha Additional Return	*0.57%*	*0.62%*	*0.00%*

Based on current capital market return expectations, the proposed recommendations offer a 77bp (0.77%) increase in mean expected return over the current portfolio mix with a consistent level of risk-adjusted return as measured by Sharpe Ratio. As compared to peer public defined benefit plans over $1 billion, we are able to maintain a higher return expectation at a lower level of risk, resulting in superior risk-adjusted returns.

It is important to note that the expected returns shown above represent the mean, or average, of a wide range of possible outcomes, both positive and negative. The following graph illustrates the range of outcomes over a five year period based on how the proposed retirement portfolio would have performed over rolling five year intervals from 1940 through 2020. Note that these historical portfolio intervals do not include a portable alpha program.



Source: Bridgewater Risk Budget Tool

Retirement Plan Investment Return Actuarial Assumption

The current expected return assumption for the Retirement Plan is 7.20%. Given the forward-looking return expectations for the Retirement Plan, the expected return assumption will need to be revisited. Finance and Human Resources staff are currently working with Segal, the University's actuary, to assess assumptions and projected costs. This will be presented to the Board of Curators for approval in the spring of 2021.

Highlights of Significant Proposed Changes

Public Equities

Despite the proposed 3% increase, our allocation to public equities remains 12% below the public defined benefit plan median. Even though projected public equity returns are modest, this increase will help boost portfolio returns without significantly increasing the portfolio's equity risk.

Private Equity

The 2% increase reflects a growing conviction for this asset class as increasing numbers of companies remain private (with numbers of publicly listed companies continuing to decrease year over year).

Private Debt

As capital is redeployed away from nominal and inflation-linked bonds, we see private debt continuing to offer diversifying characteristics. On a relative basis, the 2% increase to private debt allows us to increase portfolio returns overall without a commensurate increase in equity risk.

Sovereign Bonds

We propose a 5% reduction to the U.S. Treasuries allocation in light of a 0.7% return expectation as well as increasingly asymmetric risks to holding nominal bonds with duration. Given the low starting yields today, U.S. Treasuries no longer offer the same level of portfolio protection to the downside as rates have little room left to fall.

Inflation-Linked Bonds

We are also proposing a 7% reduction to inflation-linked bonds in light of a 1.3% return expectation as well as market disbelief that inflation will increase going forward, despite the Federal Reserve's continuing signals that somewhat higher inflation is desirable. Inflation risk will be monitored closely going forward.

Real Estate

As capital is redeployed away from nominal and inflation-linked bonds, we see real estate continuing to offer diversifying characteristics. The 2% increase allows us to increase portfolio returns overall without a commensurate increase in equity risk. Further, we believe there will be opportunities for new real estate investment as global markets adjust to a post-COVID world.

Risk Balanced

We are proposing a 2% increase in this allocation as we continue to see risk balanced strategies as effective and efficient ways to obtain market exposure with attractive risk-adjusted returns. As a reminder, Risk Balanced is a self-contained approach to investing, building a risk-balanced portfolio diversified across market risks in a manner that should outperform a traditional portfolio over longer time horizons.

Commodities

We are maintaining the current 5% allocation, but plan to dedicate half of the intended exposure to gold which will bring additional diversification to the portfolio. As a reminder, a commodities allocation brings a relatively uncorrelated return stream to the portfolio while adding diversification and tends to perform particularly well in periods of rising inflation.

Portable Alpha

We are recommending a slight increase to our existing portable alpha program from a soft target of 20% of capital (with 25% upper limit) to a soft target of 22% of capital (with a 27% upper limit). Given the strategic repositioning of the alpha portfolio, we feel that we can reasonably allocate the additional capital to high conviction alpha managers.

As background, synthetic market exposures across many asset classes may be obtained through derivative instruments commonly accepted by other institutional investors, such as futures, swaps, options, forward contracts and reverse repurchase agreements. When synthetic market exposures are obtained through derivative instruments, a portion of the resulting cash and cash equivalent balances may be invested by active alpha managers seeking to add returns over the respective asset class benchmarks. These alpha managers possess broadly diverse strategies/styles and, in the aggregate, are expected to produce returns that show little or no relationship to the economic environment being experienced at any given time. Furthermore, this portfolio of managers has been constructed with a goal of low correlations to the synthetic market exposures obtained through the derivative instruments.

Derivative instruments used to gain synthetic market exposures as part of the portable alpha program are currently managed by NISA, a nationally respected investment management firm based in St. Louis, with appropriate expertise, experience and depth of resources.

Risk - Management of liquidity risk is a critical component of the portable alpha program. If not managed appropriately, there is a risk that synthetic market exposures may need to be unwound at undesirable points in time in order to meet margin calls during volatile markets. To help mitigate this risk, prudent balances of cash and cash equivalents shall be maintained as part of the program and monitored daily.

Risk – In times of severe market stress, it is possible that correlations among asset classes and alpha manager strategies could converge causing combined losses to be higher than what would otherwise be expected. This was experienced most recently in March 2020 during the global liquidity crisis sparked by the COVID pandemic as well as a concurrent oil price war between Russia and Saudi Arabia.

Transition Plan

The transition to new policy targets should be done in a prudent, methodical manner over a reasonable period of time as determined by investment staff. The policy benchmark will be adjusted as transitions to new targets take place, with such changes communicated to the Board on a quarterly basis.

Proposed Investment Policy Changes

Investment Policy for Retirement, Disability and Death Plan (CRR 140.015) - new asset allocation targets as discussed above. Clean and redline versions of proposed changes to the Collected Rules and Regulations are attached.

No. 1

Recommended Action - Approval of Collected Rules and Regulations 140.015 Investment Pool Policy, UM

It was recommended by Vice President Rapp, endorsed by UM System President and MU Chancellor Mun Y. Choi, recommended by the Finance Committee, moved by Curator ________________ and seconded by Curator ________________, that the:

> Existing investment policy of Collected Rules and Regulations, Section 140.015, be amended, as noted in the attached documents. Further, the asset allocation changes noted in Section 140.015 should occur in a methodical manner over a reasonable period of time as determined by investment staff:

Roll call vote of the Committee:	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Steelman		
Curator Williams		

The motion ____________________.

Roll call vote of Board of Curators:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion __________________.

140.015 Investment Policy for Retirement, Disability and Death Benefit Plan

Bd. Min. 6-26-12, Revised Bd. Min. 6-14-13, Revised Bd. Min. 9-12-13, Revised 6-25-15, Revised 2-4-16; Revised 4-14-16; Amended Bd. Min. 9-28-17.

A. **Introduction** -- The University's Retirement, Disability and Death Benefit Plan ("Plan") was established to provide retirement income and other stipulated benefits to qualified employees in amounts and under the conditions described in the plan. A Trust was established in 1958 and is being funded to provide the financial security of those benefits.

B. **Responsibilities and Authorities –** See CRR 140.010 "*Policy for Management and Oversight of Selected University Investment Pools*."

C. **Investment objectives** -- The primary objective to be achieved in the active management of Trust assets is to provide for the full and timely payment of retirement, disability and death benefits to qualified employees. In order to fulfill this objective the University must maintain a prudent actuarially sound funding of the Plan's liabilities. This funding requirement is derived from three principal sources; the total investment return on Trust assets and the amount of University and employee contributions.

   Trust assets should be managed in a manner that maximizes returns while attempting to minimize losses during adverse economic and market events, with an overall appetite for risk governed by the Plan's liability structure and the need to make promised benefit payments to members over time. This will be accomplished through a more 'risk-balanced' portfolio that seeks meaningful diversification of assets, which necessarily means less equity risk and more long-term bond exposure relative to peers. To offset potentially lower returns from a more risk-balanced portfolio, a key component of this strategy includes a less common, yet prudent, program of return enhancement commonly referred to in the investment industry as portable alpha. These investment objectives seek to prioritize the long-term structural needs of our Retirement Plan over short-term performance comparisons of the investment portfolio relative to peers.

D. **Authorized Investments –** The Plan shall be invested in externally managed funds, consistent with the guidelines established in CRR 140.011, "*Policy for Investment Manager Selection, Monitoring and Retention*" and CRR 140.017, "*Allowable Investments*," in the following asset classes:

Asset Class	Economic Environment	Risk Factor(s)	Sub-Class Target	Asset Class Target	Range
Public Equity	*Rising Growth* *Falling Inflation*	*Equity* *Currency*		**3~~2~~5%**	**2~~2~~5%-** **4~~2~~5%**
Private Equity	*Rising Growth* *Falling Inflation*	*Equity* *Currency* *liquidity*		**1~~0~~2%**	**~~5~~7%-1~~5~~7%**
Public Debt				**~~3~~20%**	**10~~22~~%-** **30~~42~~%**
Sovereign Bonds	*Falling Growth* *Falling Inflation*	*Interest Rates* *Currency*	*1~~5~~0%*		
Inflation-Linked Bonds	*Falling Growth* *Rising Inflation*	*Inflation* *Interest Rates* *Currency*	*1~~7~~0%*		
Opportunistic	*Rising Growth* *Falling Inflation*	*Interest Rates* *Credit Spreads*	*0%*		
Private Debt	*Rising Growth* *Falling Inflation*	*Credit Spreads* *Liquidity*		**~~3~~6%**	**~~0~~3%-~~7~~11%**
Diversifiers				**2~~3~~7%**	**1~~8~~7-~~28~~37%**
Risk Balanced	*Rising Growth* *Falling Growth* *Rising Inflation* *Falling Inflation*	*Diversified*	*1~~0~~2%*		
Commodities	*Rising Growth* *Rising Inflation*	*Inflation*	*5%*		
Real Estate/ Infrastructure	*Rising Growth* *Rising Inflation*	*Equity* *Credit Spreads* *Inflation* *Liquidity*	*~~8~~10%*		
Opportunistic	*Rising Growth* *Rising Inflation*	*Equity* *Interest Rates*	*0%*		
Total Portfolio				**100%**	

E. **Portfolio Rebalancing**

Asset allocations shall be monitored on an ongoing basis as changes in market behavior may cause variations from the target asset mix. Rebalancing of the portfolio shall be considered at least quarterly, and more often if necessary to maintain allocations within the allowable ranges. The need to rebalance shall take into account any logistical issues associated with fully funding a particular asset sector, as well as any tactical decisions to overweight or underweight a particular asset sector based on current market conditions. The University may utilize external managers to rebalance portfolio exposures consistent with targets and allowable ranges established by this policy. In those instances, conventional derivative instruments commonly accepted by other institutional investors, such as futures, swaps, options, forward contracts and reverse repurchase agreements may be utilized.

Actual asset classes allocations shall not fall outside of the allowable ranges, with the exception of violations caused solely by periods of extreme market distress, when it may not be possible or advisable to immediately bring such allocations back to within the allowable ranges.

F. **Currency Risk Management**

In the context of a global investment portfolio, currency risk exists to the extent that investments contain exposures to foreign currencies. The desirability of this currency exposure is not necessarily aligned dollar for dollar with the desired exposure to assets denominated in foreign currencies. As such, external managers in any asset class may implement currency strategies to alter the currency exposure of the portfolio when deemed prudent to do so in the context of the particular investment mandate. In addition, the University may utilize external managers to implement currency strategies to alter exposures in an active or passive manner as part of a portfolio or asset class overlay when deemed prudent to do so.

G. **Portable Alpha Program**

Synthetic market exposures across asset classes including equities, sovereign bonds, inflation-linked bonds and commodities may be obtained through derivative instruments commonly accepted by other institutional investors, such as futures, swaps, options, forward contracts and reverse repurchase agreements. These derivative instruments shall be managed by external investment firms with appropriate expertise, experience and depth of resources.

When synthetic market exposures are obtained through derivative instruments, a portion of the resulting cash and cash equivalent balances may be invested by active alpha managers seeking to add returns over the benchmark. These alpha managers will possess broadly diverse strategies/styles and, in the aggregate, are expected to produce returns that show little or no relationship to the economic environment being experienced at any given time. Furthermore, this portfolio of managers will be constructed with a goal of low/no correlation to the synthetic market exposures obtained through the derivative instruments. The risk drivers within the portable alpha portfolio should generally be well-known, empirically-tested, sources of return that can be systematically harvested through dynamic long/short strategies. They can be thought of either as returns that underlie "classic" hedge fund strategies (hedge fund risk premia), such as arbitrage and macro or the returns from "classic" styles (style premia), such as value, momentum, carry, defensive and low volatility.

Legal account structures will be in the form of one or a combination of separate accounts, institutional commingled funds and/or limited partnerships or other similar forms.

The allowable range of the portable alpha portfolio shall be 0-2~~5~~**7**% of the total Retirement Plan.

Management of liquidity risk is a critical component of the portable alpha program. If not managed appropriately, there is a risk that synthetic market exposures may need to be unwound at undesirable points in time in order to meet margin calls during volatile markets. To help mitigate this risk, prudent balances of cash and cash equivalents shall be maintained as part of the program and monitored daily.

The following table outlines the minimum cash requirements with associated replenishing guidelines:

	Cash Margin*	Replenishing Guidelines
Target	30%	n/a
Range 1	29.9% to 20%	Develop action plan to replenish to Target within 12 months
Range 2	19.9% to 10%	Develop action plan to replenish to Range 1 within 60 days, with subsequent plan to replenish to Target within 12 months
Range 3	9.9% or less	Take immediate action to replenish to Range 2 as quickly as possible. Follow with plan to replenish to Range 1 within 60 days, and subsequent plan to replenish to Target within 12 months

**Cash Margin is defined as Portable Alpha Program cash and cash equivalents divided by the total of synthetic market exposures outstanding across all asset classes with the program.*

H. **Other** – The Board of Curators delegates to the President of the University the following responsibilities with respect to the Plan:

1. Recommend contributions to the Plan.
2. Recommend annuity, mortality and other tables as may be useful in actuarial determination.
3. Recommend actuarial valuations made by experts retained for that purpose.
4. Maintain data necessary for actuarial valuations of the assets of the Plan.
5. Maintain accurate records for the Plan.

140.015 Investment Policy for Retirement, Disability and Death Benefit Plan

Bd. Min. 6-26-12, Revised Bd. Min. 6-14-13, Revised Bd. Min. 9-12-13, Revised 6-25-15, Revised 2-4-16; Revised 4-14-16; Amended Bd. Min. 9-28-17.

A. **Introduction** -- The University's Retirement, Disability and Death Benefit Plan ("Plan") was established to provide retirement income and other stipulated benefits to qualified employees in amounts and under the conditions described in the plan. A Trust was established in 1958 and is being funded to provide the financial security of those benefits.

B. **Responsibilities and Authorities –** See CRR 140.010 "*Policy for Management and Oversight of Selected University Investment Pools*."

C. **Investment objectives** -- The primary objective to be achieved in the active management of Trust assets is to provide for the full and timely payment of retirement, disability and death benefits to qualified employees. In order to fulfill this objective the University must maintain a prudent actuarially sound funding of the Plan's liabilities. This funding requirement is derived from three principal sources; the total investment return on Trust assets and the amount of University and employee contributions.

   Trust assets should be managed in a manner that maximizes returns while attempting to minimize losses during adverse economic and market events, with an overall appetite for risk governed by the Plan's liability structure and the need to make promised benefit payments to members over time. This will be accomplished through a more 'risk-balanced' portfolio that seeks meaningful diversification of assets, which necessarily means less equity risk and more long-term bond exposure relative to peers. To offset potentially lower returns from a more risk-balanced portfolio, a key component of this strategy includes a less common, yet prudent, program of return enhancement commonly referred to in the investment industry as portable alpha. These investment objectives seek to prioritize the long-term structural needs of our Retirement Plan over short-term performance comparisons of the investment portfolio relative to peers.

D. **Authorized Investments –** The Plan shall be invested in externally managed funds, consistent with the guidelines established in CRR 140.011, "*Policy for Investment Manager Selection, Monitoring and Retention*" and CRR 140.017, "*Allowable Investments*," in the following asset classes:

Asset Class	Economic Environment	Risk Factor(s)	Sub-Class Target	Asset Class Target	Range
Public Equity	*Rising Growth* *Falling Inflation*	*Equity* *Currency*		**35%**	**25%-45%**
Private Equity	*Rising Growth* *Falling Inflation*	*Equity* *Currency* *Liquidity*		**12%**	**7%-17%**
Public Debt				**20%**	**10%-30%**
Sovereign Bonds	*Falling Growth* *Falling Inflation*	*Interest Rates* *Currency*	*10%*		
Inflation-Linked Bonds	*Falling Growth* *Rising Inflation*	*Inflation* *Interest Rates* *Currency*	*10%*		
Opportunistic	*Rising Growth* *Falling Inflation*	*Interest Rates* *Credit Spreads*	*0%*		
Private Debt	*Rising Growth* *Falling Inflation*	*Credit Spreads* *Liquidity*		**6%**	**3%-11%**
Diversifiers				**27%**	**17%-37%**
Risk Balanced	*Rising Growth* *Falling Growth* *Rising Inflation* *Falling Inflation*	*Diversified*	*12%*		
Commodities	*Rising Growth* *Rising Inflation*	*Inflation*	*5%*		
Real Estate/ Infrastructure	*Rising Growth* *Rising Inflation*	*Equity* *Credit Spreads* *Inflation* *Liquidity*	*10%*		
Opportunistic	*Rising Growth* *Rising Inflation*	*Equity* *Interest Rates*	*0%*		
Total Portfolio				**100%**	

E. **Portfolio Rebalancing**

Asset allocations shall be monitored on an ongoing basis as changes in market behavior may cause variations from the target asset mix. Rebalancing of the portfolio shall be considered at least quarterly, and more often if necessary to maintain allocations within the allowable ranges. The need to rebalance shall take into account any logistical issues associated with fully funding a particular asset sector, as well as any tactical decisions to overweight or underweight a particular asset sector based on current market conditions. The University may utilize external managers to rebalance portfolio exposures consistent with targets and allowable ranges established by this policy. In those instances, conventional derivative instruments commonly accepted by other institutional investors, such as futures, swaps, options, forward contracts and reverse repurchase agreements may be utilized.

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Verus

PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS

OCTOBER 2020

University of Missouri

2020 Asset-Liability Study (Revised)

Table of contents

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I. Introduction & historical risk premium

Introduction

— Verus and the University have collaborated on several asset allocation options for the Retirement Fund.

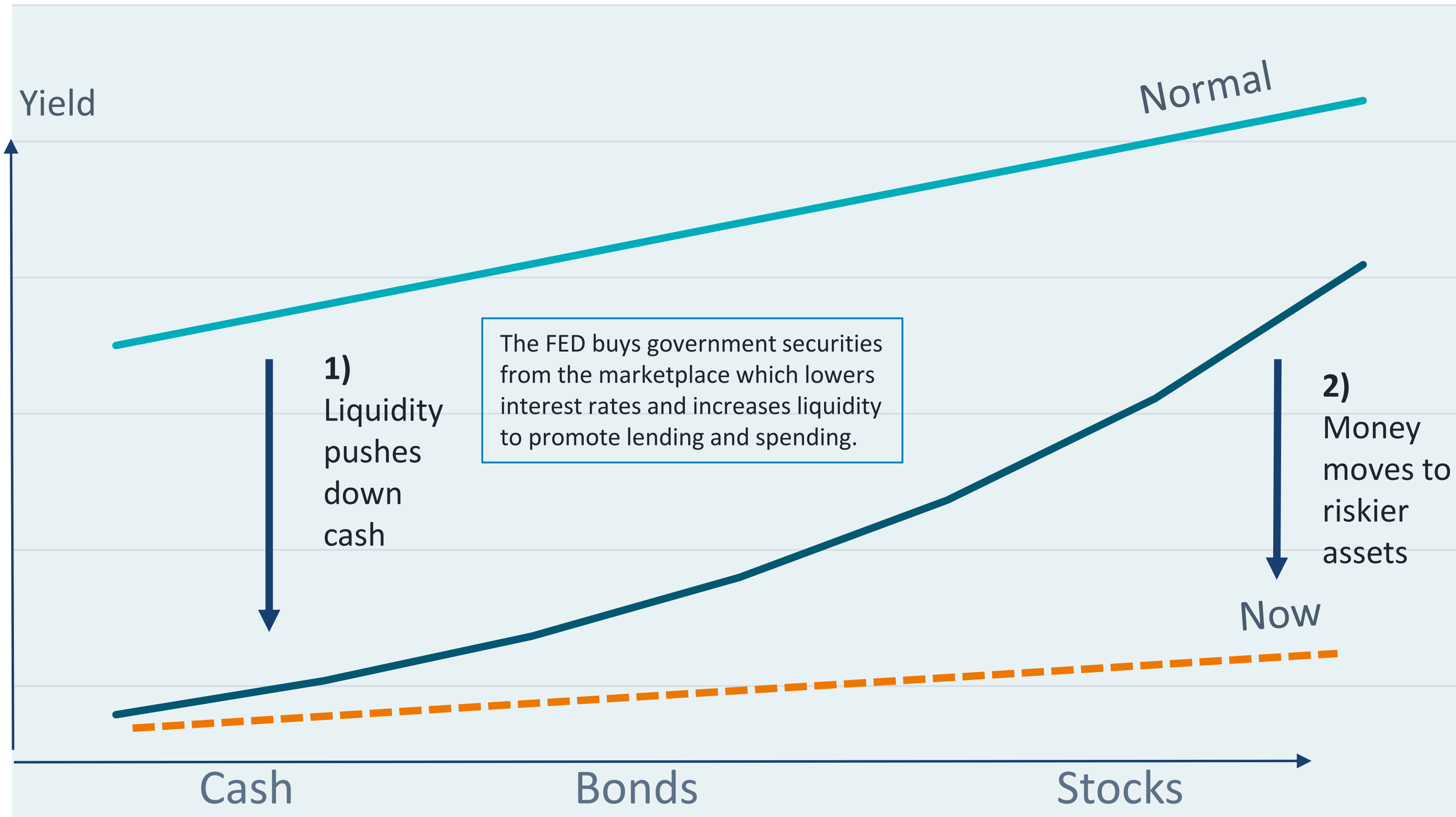
— The purpose of this discussion is to seek approval for what we believe is the best option available to the University in light of lower expected returns, peer risk, and considerations of a likely lower discount rate.

— The Retirement Fund has traditionally been managed to maximize balance and diversification to limit drawdown risk. This creates tracking error to peers. The recommended asset allocation option will continue this policy.

— Lowering the Retirement Fund's discount rate from 7.2% will increase the cost. The expectation is that University leadership will formulate a specific plan and work with the Curators after evaluating all the ramifications associated with making a change.

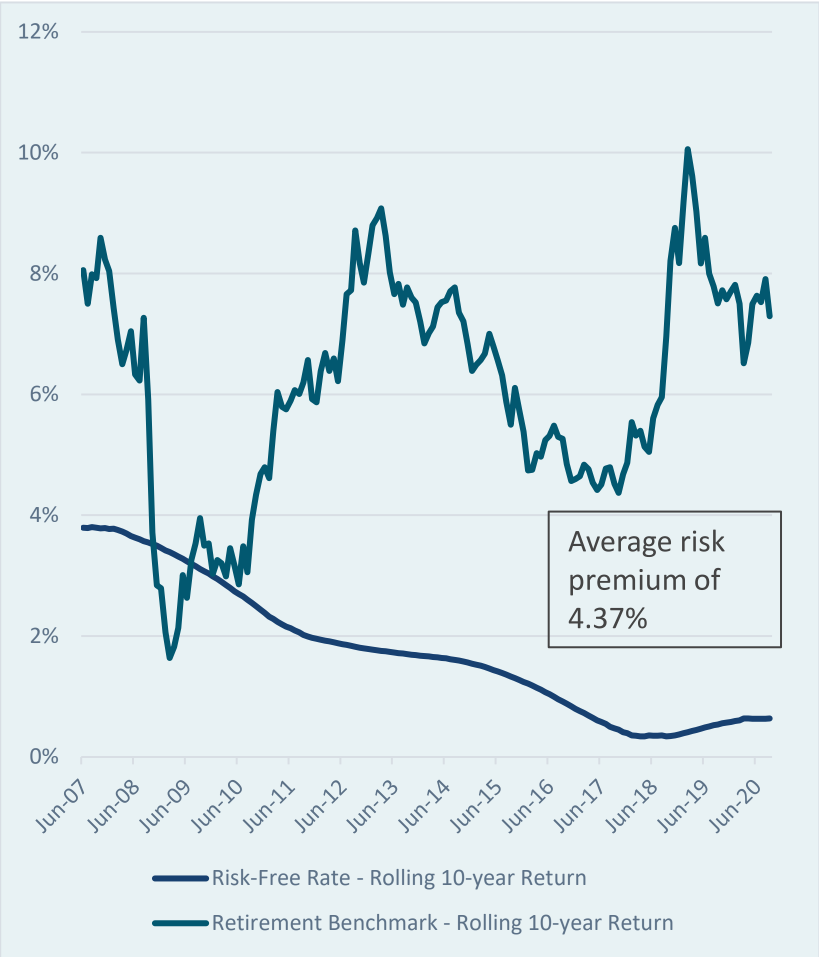
Liquidity and low interest rates

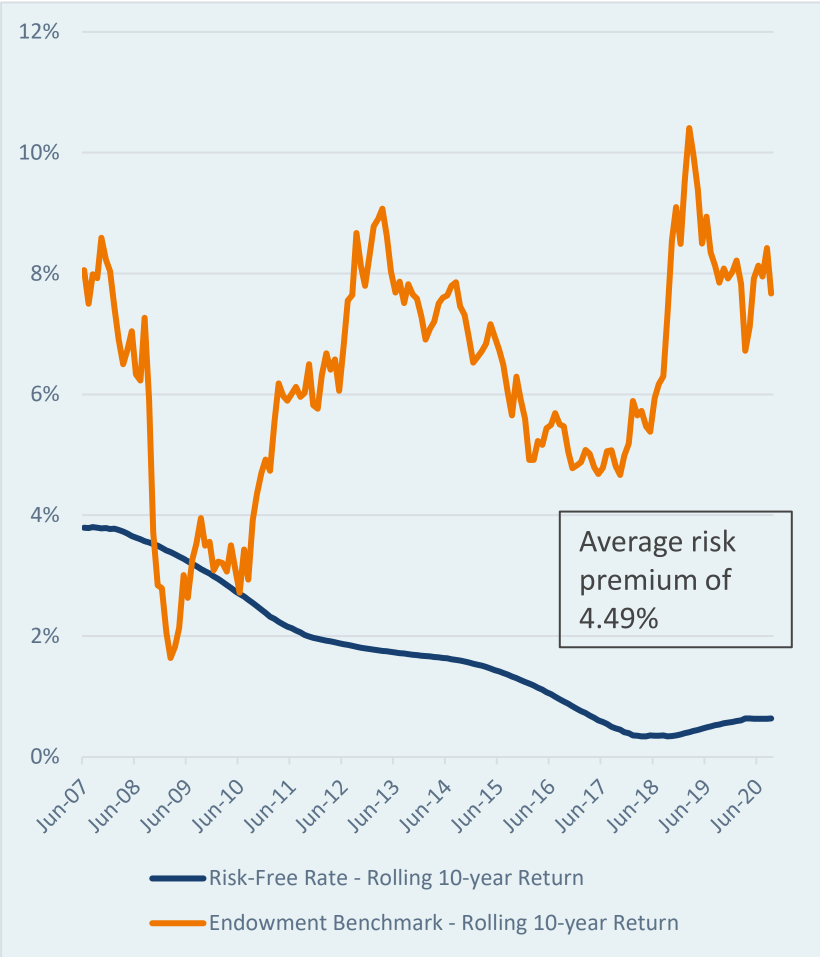
THE CAPITAL MARKETS LINE IS ARTIFICIALLY LOW



Historical policy return & risk-free rate

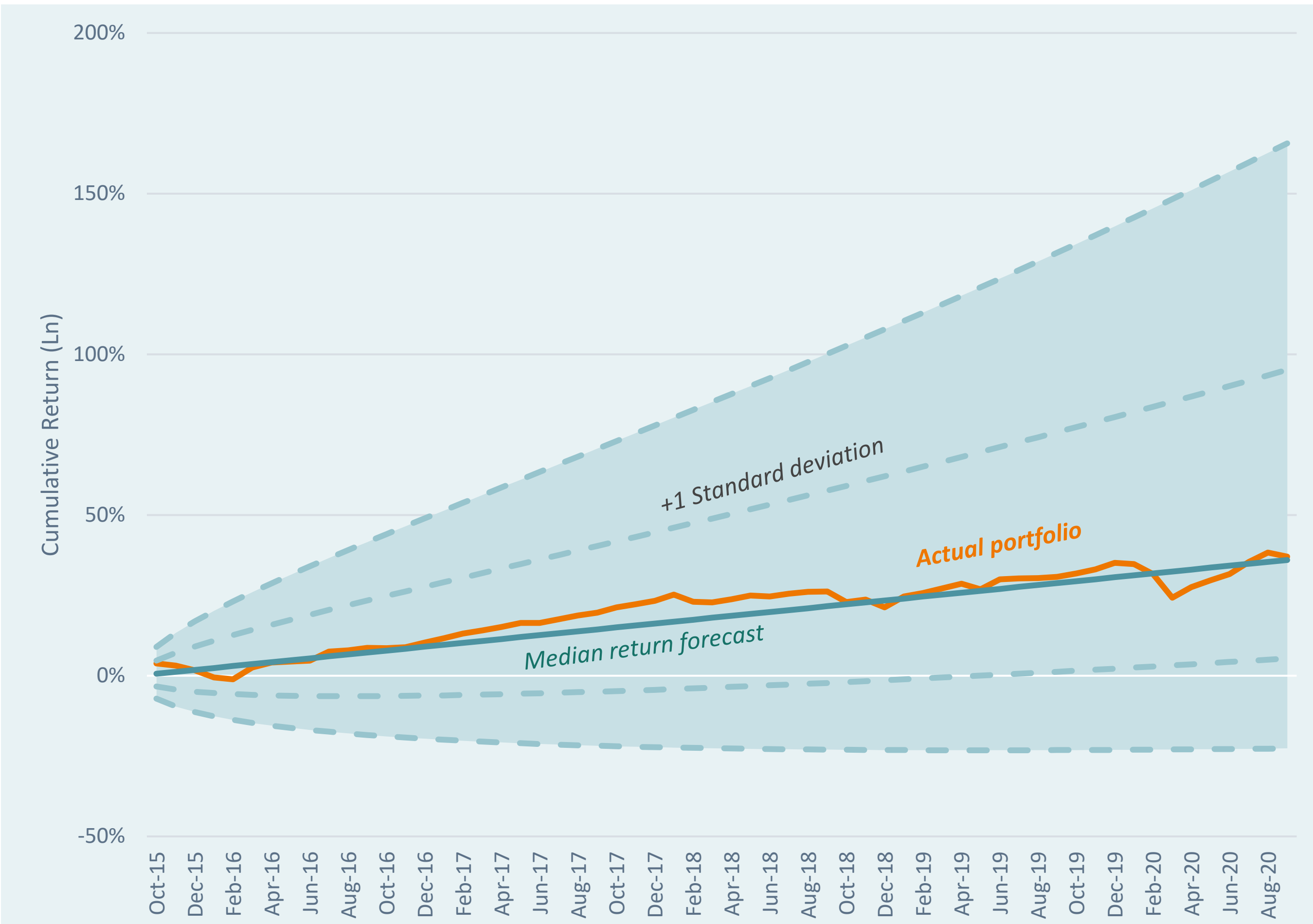
RETIREMENT





Retirement realized performance since 2015

REALIZED PERFORMANCE VS. 2015 AL STUDY PROJECTIONS

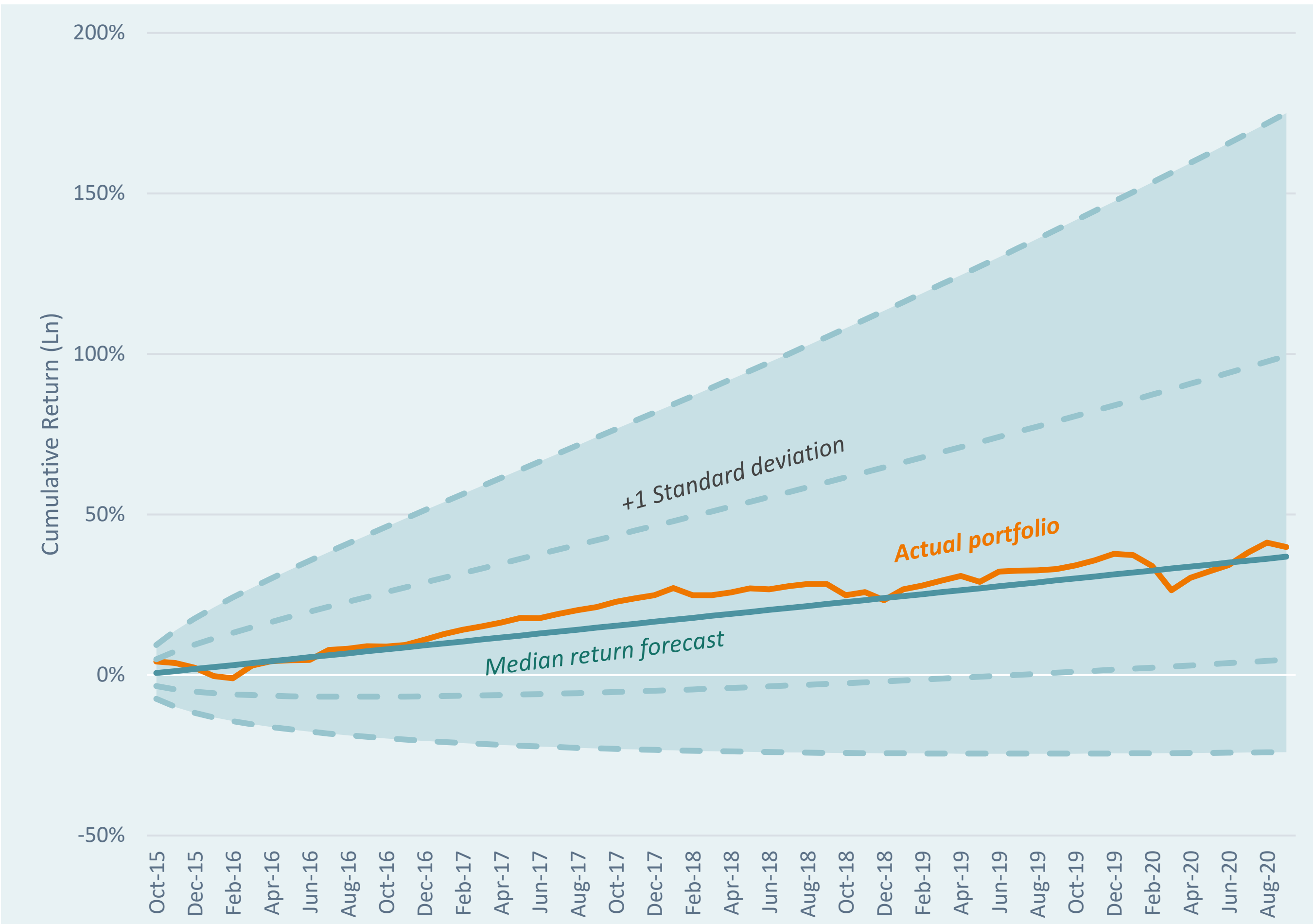


2015 AL Study Projection:
7.47% return
13.79% standard deviation
0.43 Sharpe Ratio

Actual since 9/30/2015:
7.69% return
6.52% standard deviation
1.07 Sharpe Ratio

Endowment realized performance since 2015

REALIZED PERFORMANCE VS. 2015 AL STUDY PROJECTIONS



2015 AL Study Projection:
7.64% return
14.39% standard deviation
0.43 Sharpe Ratio

Actual since 9/30/2015:
8.29% return
6.87% standard deviation
1.11 Sharpe Ratio

II. Capital market assumptions

Methodology to capital market assumptions

— Every Fall, Verus formulates and publishes annual capital market assumptions. The 2021 assumptions are scheduled to be approved by Verus' Investment Committee in November.

— Ten-year return forecasts are created with a systematic “building-block” method, which is detailed in Appendix X.

— Due to the extraordinary events of 2020, a mid-year update was used using the same methodology except for the estimated return on cash.

— Given extraordinary central bank intervention, the historical connection between cash and real yields became difficult to justify.

— The revised methodology provides a better estimate for the relationship between cash and the 10-year Treasury.

— The result is a lower projected estimate for cash and risk parity.

Capital Market Assumptions
Methodology

Asset	Return Methodology	Volatility Methodology*
Inflation	25% weight to the University of Michigan Survey 5-10 year ahead inflation expectation and the Survey of Professional Forecasters (Fed Survey), and the remaining 50% to the market's expectation for inflation as observed through the 10-year TIPS breakeven rate	-
Cash	~~Real yield estimate + inflation forecast~~ 75% weight to the effective Fed Funds Rate, 25% weight to the 10-year Treasury yield	Long-term volatility
Bonds	Nominal bonds: current yield; Real bonds: real yield + inflation forecast	Long-term volatility
International Bonds	Current yield	Long-term volatility
Credit	Current option-adjusted spread + U.S. 10-year Treasury – effective default rate	Long-term volatility
International Credit	Current option-adjusted spread + foreign 10-year Treasury – effective default rate	Long-term volatility
Private Credit	Bank loan forecast + 1.75% private credit premium**	Long-term volatility
Equity	Current yield + real earnings growth (historical average) + inflation on earnings (inflation forecast) + expected P/E change	Long-term volatility
Intl Developed Equity	Current yield + real earnings growth (historical average) + inflation on earnings (intl. inflation forecast) + expected P/E change	Long-term volatility
Private Equity	US large cap domestic equity forecast * 1.85 beta adjustment	1.2 * Long-term volatility of U.S. small cap
Commodities	Collateral return (cash) + spot return (inflation forecast) + roll return (assumed to be zero)	Long-term volatility
Gold	Inflation forecast	Long-term volatility
Hedge Funds	Return coming from traditional betas + 15-year historical idiosyncratic return, adjusted for lower volatility of UM portfolio	Long-term volatility (70% Macro, 30% Relative Value)
Core Real Estate	Cap rate + real income growth – capex + inflation forecast	65% of REIT volatility
REITs	Core real estate	Long-term volatility
Value-Add Real Estate	Core real estate + 2%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Opportunistic Real Estate	Core real estate + 4%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Infrastructure	Current yield + real income growth + inflation on earnings (inflation forecast)	Long-term volatility
Risk Parity	Expected Sharpe Ratio * target volatility + cash rate	Target volatility

Updated 10-year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast (g)	Standard Deviation Forecast	Sharpe Ratio Forecast (g)	10-Year Historical Sharpe Ratio (g)
Equities					
U.S. Large	S&P 500	5.9%	15.4%	0.37	1.01
U.S. Small	Russell 2000	5.6%	21.1%	0.26	0.62
International Developed	MSCI EAFE	6.3%	17.5%	0.35	0.30
International Small	MSCI EAFE Small Cap	5.7%	21.8%	0.25	0.46
Emerging Markets	MSCI EM	6.8%	25.6%	0.26	0.17
Global Equity	MSCI ACWI	6.3%	16.8%	0.36	0.59
Private Equity*	Cambridge Private Equity	9.5%	25.3%	0.36	-
Fixed Income					
Cash	30 Day T-Bills	0.2%	1.2%	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5-10	1.3%	5.4%	0.20	0.65
U.S. Treasury	BBgBarc Treasury 7-10 Year	0.7%	6.7%	0.07	0.68
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	0.2%	9.7%	0.00	0.10
Global Aggregate	BBgBarc Global Aggregate	0.9%	6.2%	0.20	0.39
Core Fixed Income	BBgBarc U.S. Aggregate Bond	1.6%	6.3%	0.22	1.08
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	2.5%	8.3%	0.28	1.21
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1-3 Year	0.8%	3.6%	0.17	1.16
Short-Term Credit	BBgBarc Credit 1-3 Year	1.9%	3.6%	0.47	1.76
Long-Term Credit	BBgBarc Long U.S. Corporate	2.4%	9.4%	0.23	0.93
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	5.1%	11.3%	0.43	1.25
Bank Loans	S&P/LSTA Leveraged Loan	3.5%	10.0%	0.33	1.47
Global Credit	BBgBarc Global Credit	1.4%	7.4%	0.15	0.77
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	5.9%	12.4%	0.46	1.03
Emerging Markets Debt (Local)	JPM GBI-EM Global Diversified	4.5%	12.0%	0.35	0.17
Private Credit	Bank Loans + 175bps	5.3%	10.0%	0.50	-
Other					
Commodities	Bloomberg Commodity	3.4%	15.4%	0.21	-0.36
Gold	S&P GSCI Spot Gold	1.9%	24.4%	0.07	-
Hedge Funds (UM)*	HFRI Fund Weighted Composite	4.4%	7.7%	0.53	0.55
Real Estate Debt	BBgBarc CMBS IG	4.0%	7.6%	0.48	1.55
Core Real Estate	NCREIF Property	6.3%	12.4%	0.49	1.84
Value-Add Real Estate	NCREIF Property + 200bps	8.3%	17.7%	0.46	-
Opportunistic Real Estate	NCREIF Property + 400bps	10.3%	23.0%	0.45	-
REITs	Wilshire REIT	6.3%	19.1%	0.32	0.80
Global Infrastructure	S&P Global Infrastructure	7.2%	17.8%	0.39	0.52
Risk Parity	Risk Parity	6.1%	12.0%	0.49	-
Currency Beta	MSCI Currency Factor Index	1.8%	3.6%	0.43	0.19
Inflation		1.9%	-	-	-

Correlation assumptions

	Cash	US Large	US Small	Intl Large	Intl Small	EM	Global Equity	PE	US TIPS	US Treasury	Global Sovereign	US Core	Core Plus	Short-Term Gov't/Credit	Short-Term Credit	Long-Term Credit	US HY	Bank Loans	Global Credit	EMD USD	EMD Local	Commodities	Gold	Hedge Funds (UM)	Real Estate	REITs	Infrastructure	Risk Parity	Currency Beta
Cash	1.0																												
US Large	0.0	1.0																											
US Small	-0.1	0.9	1.0																										
Intl Large	0.0	0.9	0.7	1.0																									
Intl Small	-0.1	0.8	0.7	1.0	1.0																								
EM	0.0	0.7	0.6	0.8	0.8	1.0																							
Global Equity	0.0	1.0	0.8	1.0	0.9	0.9	1.0																						
PE	-0.2	0.6	0.6	0.6	0.6	0.5	0.6	1.0																					
US TIPS	0.0	0.0	-0.1	0.1	0.1	0.2	0.1	0.0	1.0																				
US Treasury	0.1	-0.4	-0.5	-0.3	-0.3	-0.2	-0.4	-0.2	0.7	1.0																			
Global Sovereign	0.1	0.2	0.0	0.3	0.3	0.4	0.3	0.0	0.5	0.4	1.0																		
US Core	0.1	-0.2	-0.3	-0.1	-0.1	0.0	-0.1	-0.1	0.8	0.9	0.5	1.0																	
Core Plus	0.1	0.1	0.0	0.2	0.2	0.3	0.2	0.0	0.8	0.7	0.6	0.9	1.0																
Short-Term Gov't/Credit	0.3	-0.1	-0.2	0.0	0.0	0.1	0.0	-0.1	0.7	0.7	0.6	0.8	0.7	1.0															
Short-Term Credit	0.2	0.2	0.1	0.4	0.3	0.4	0.3	0.0	0.6	0.4	0.6	0.6	0.8	0.8	1.0														
Long-Term Credit	0.1	0.0	-0.1	0.1	0.1	0.2	0.1	-0.1	0.7	0.7	0.5	0.8	1.0	0.6	0.6	1.0													
US HY	0.0	0.7	0.7	0.8	0.8	0.8	0.8	0.4	0.3	-0.2	0.3	0.1	0.5	0.2	0.6	0.4	1.0												
Bank Loans	-0.1	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.1	-0.3	0.0	-0.1	0.2	-0.1	0.3	0.1	0.8	1.0											
Global Credit	0.1	0.5	0.3	0.7	0.7	0.7	0.6	0.2	0.5	0.2	0.8	0.5	0.7	0.5	0.8	0.6	0.7	0.4	1.0										
EMD USD	0.0	0.4	0.3	0.6	0.5	0.7	0.6	0.2	0.5	0.3	0.6	0.5	0.7	0.4	0.6	0.6	0.7	0.3	0.8	1.0									
EMD Local	0.1	0.5	0.4	0.7	0.6	0.8	0.6	0.2	0.4	0.1	0.6	0.2	0.5	0.3	0.5	0.4	0.6	0.4	0.8	0.8	1.0								
Commodities	0.0	0.5	0.5	0.6	0.6	0.6	0.6	0.3	0.1	-0.3	0.4	-0.1	0.1	0.1	0.3	0.0	0.6	0.4	0.5	0.4	0.6	1.0							
Gold	0.1	0.1		0.1		0.3		-0.1	0.5	0.3												0.4	1.0						
Hedge Funds (UM)	0.0	0.5		0.5		0.5		0.2	0.4	0.1												0.4	0.3	1.0					
Real Estate	-0.1	0.6	0.5	0.5	0.5	0.4	0.6	0.4	0.2	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.4	0.3	0.2	0.3	0.3	0.2	-0.2	-0.1	1.0				
REITs	0.0	0.6	0.6	0.6	0.5	0.5	0.6	0.4	0.3	0.1	0.3	0.3	0.4	0.2	0.4	0.4	0.6	0.5	0.5	0.5	0.5	0.3			0.7	1.0			
Infrastructure	0.0	0.7	0.6	0.9	0.8	0.8	0.8	0.7	0.3	-0.1	0.5	0.1	0.4	0.2	0.5	0.3	0.8	0.5	0.7	0.7	0.7	0.5			0.3	0.7	1.0		
Risk Parity	0.0	0.5	0.4	0.6	0.5	0.6	0.6	0.4	0.6	0.3	0.5	0.5	0.7	0.5	0.6	0.6	0.7	0.4	0.7	0.7	0.6	0.6	0.5	0.6	0.3	0.5	0.6	1.0	
Currency Beta	0.0	0.2	0.2	0.1	0.0	0.1	0.1	0.2	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.1			0.0	0.2	0.1	0.0	1.0

III. Retirement asset mix introduction

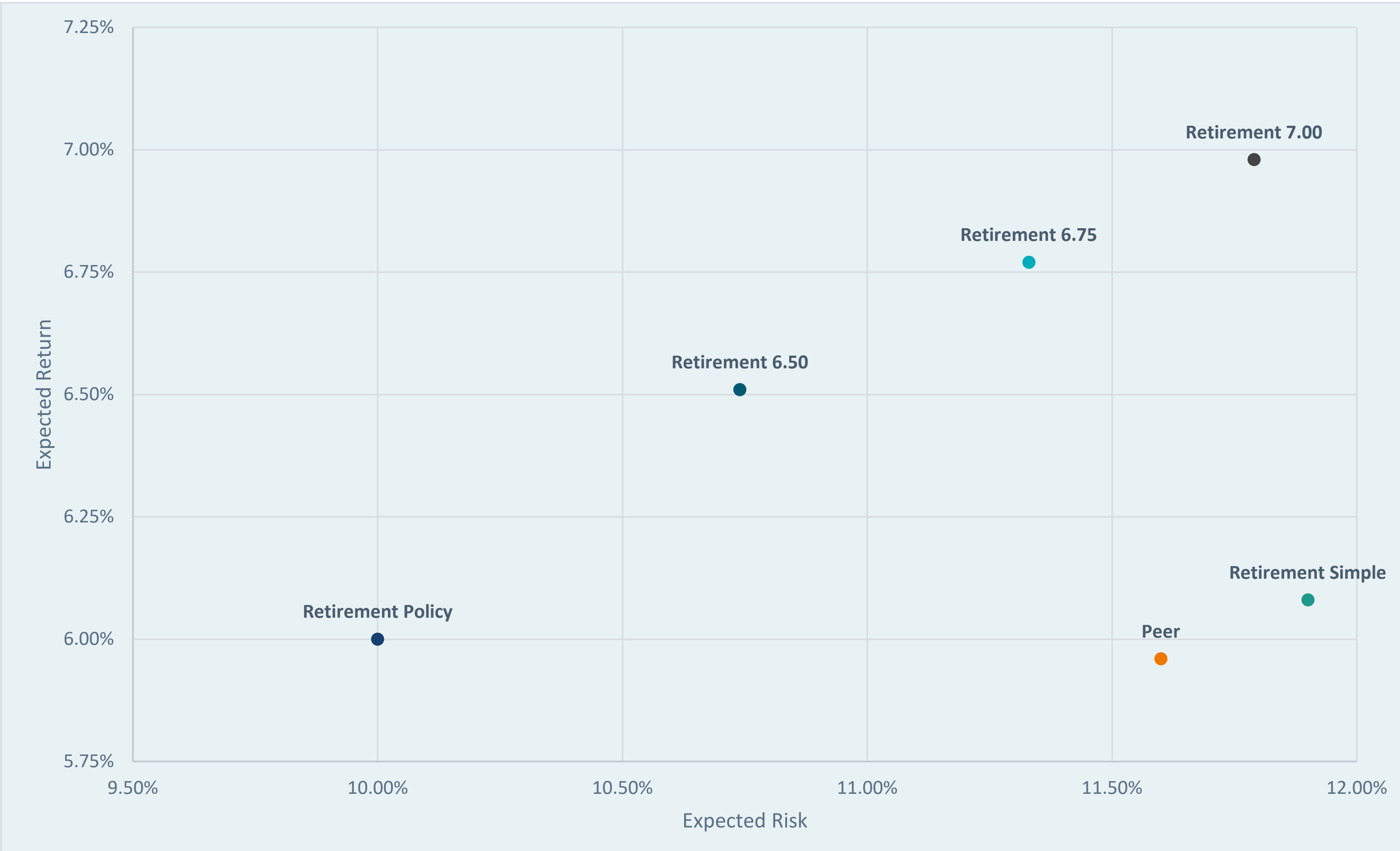
Comparison of mixes – Retirement

	Retirement Policy	Retirement 6.50	Retirement 6.75	Retirement 7.00	Retirement Simple	Peer: Avg InvMetrics Public DB >$1B	Modified Interim CMAs Return (g)	Standard Deviation	Sharpe Ratio
Global Equity	*32*	*33*	*35*	*38*	*54*	*47*	*6.3*	*16.3*	*0.37*
Private Equity	*10*	*11*	*12*	*12*	*9*	*10*	*9.5*	*25.3*	*0.36*
Real Estate[1]	*8*	*10*	*10*	*10*	*6*	*11*	*8.3*	*17.7*	*0.45*
Private Debt	*3*	*6*	*6*	*7*	*4*		*5.3*	*10.0*	*0.50*
Sovereign Bonds	*16*	*12*	*10*	*10*			*0.7*	*0.9*	*0.51*
Inflation-Linked Bonds	*16*	*12*	*10*	*10*			*1.3*	*5.4*	*0.20*
Core Plus Bonds					*27*	*20*	*2.5*	*8.3*	*0.28*
Risk Balanced[2]	*10*	*11*	*12*	*15*		*3*	*6.1*	*12.0*	*0.49*
Commodities	*5*					*3*	*3.4*	*15.4*	*0.21*
Enhanced Commodities[3]		*5*	*5*				*3.2*	*16.9*	*0.18*
Hedge Funds						*5*	*4.4*	*7.7*	*0.54*
Implicit Financing (Cash)				*-2*			*0.2*	*1.2*	
Portfolio Subtotal	*100*	*100*	*100*	*100*	*100*	*100*			
Return (g)	*5.43*	*5.91*	*6.15*	*6.36*	*6.08*	*5.96*			
Standard Deviation	*9.4*	*10.1*	*10.7*	*11.1*	*11.9*	*11.6*			
Sharpe Ratio	*0.56*	*0.56*	*0.56*	*0.55*	*0.49*	*0.50*			
Portable Alpha									
Hedge Funds	*20*	*21*	*22*	*22*			*3.2*	*5.5*	*0.54*
Implicit Financing (Cash)	*-20*	*-21*	*-22*	*-22*			*0.2*	*1.2*	
Portfolio Total	*100*	*100*	*100*	*100*	*100*	*100*			
Return (g)	***6.00***	***6.51***	***6.77***	***6.98***	***6.08***	***5.96***			
Standard Deviation	*10.0*	*10.7*	*11.3*	*11.8*	*11.9*	*11.6*			
Sharpe Ratio	*0.58*	*0.59*	*0.58*	*0.57*	*0.49*	*0.50*			
Portable Alpha Return Added	*0.57*	*0.60*	*0.62*	*0.62*					

[1] UM: 100% Value-Add
[2] UM: 12% target vol
[3] UM: 50% Commodities, 50% Gold

IV. Retirement asset allocation analysis

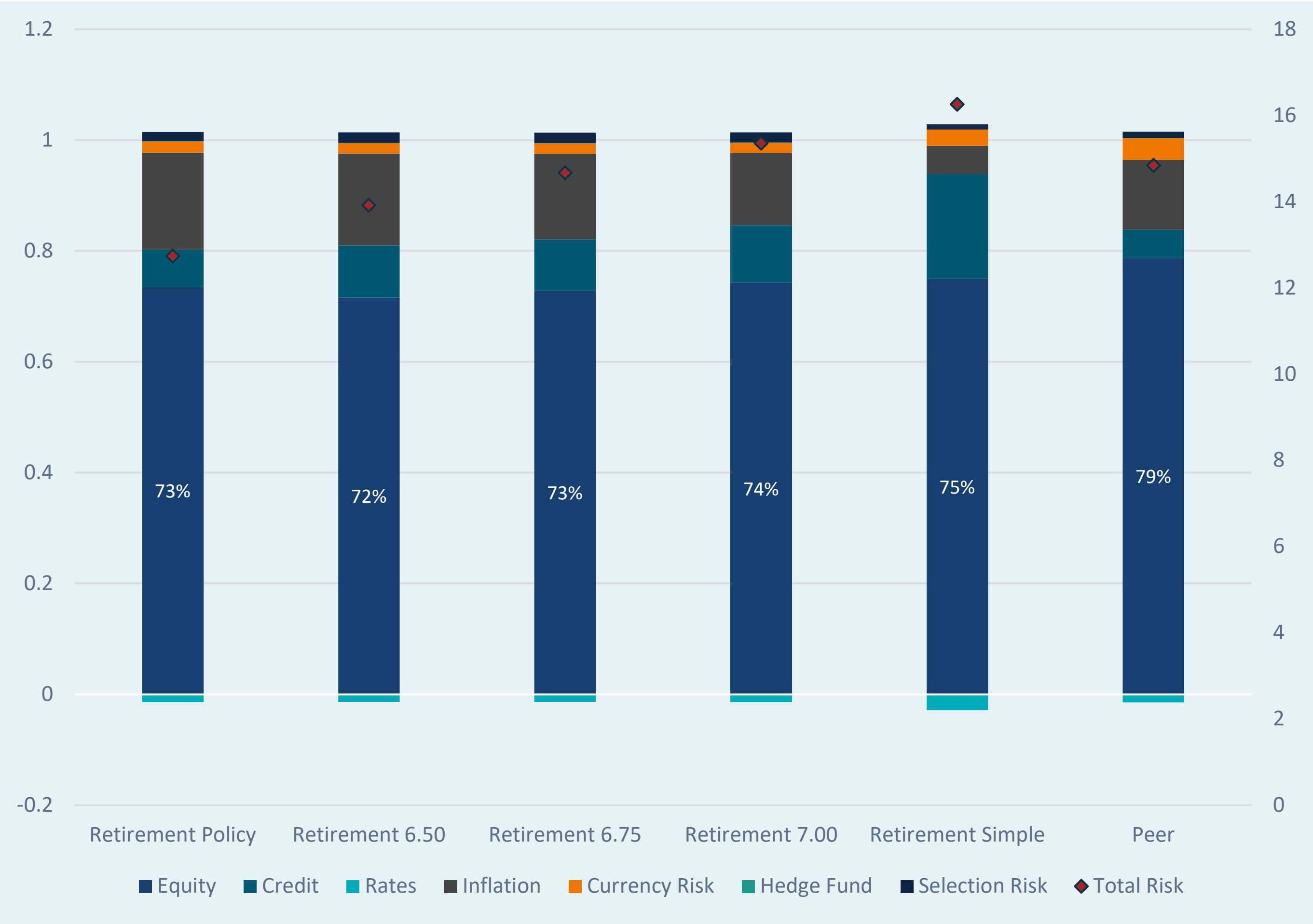
Risk & Return



Retirement 7.00
Retirement 6.75
Retirement 6.50
Retirement Simple
Retirement Policy
Peer
7.25%
7.00%
6.75%
6.50%
6.25%
6.00%
5.75%
Expected Return
9.50%
10.00%
10.50%
11.00%
11.50%
12.00%
Expected Risk

Risk decomposition – Retirement

RISK DECOMPOSITION

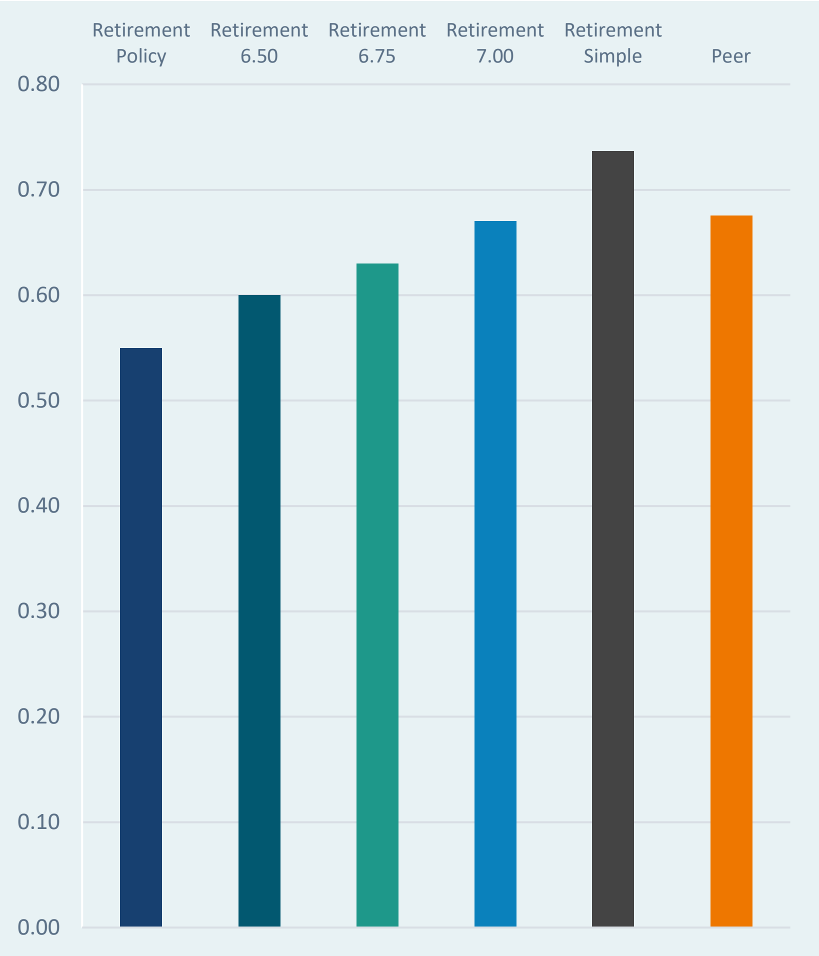


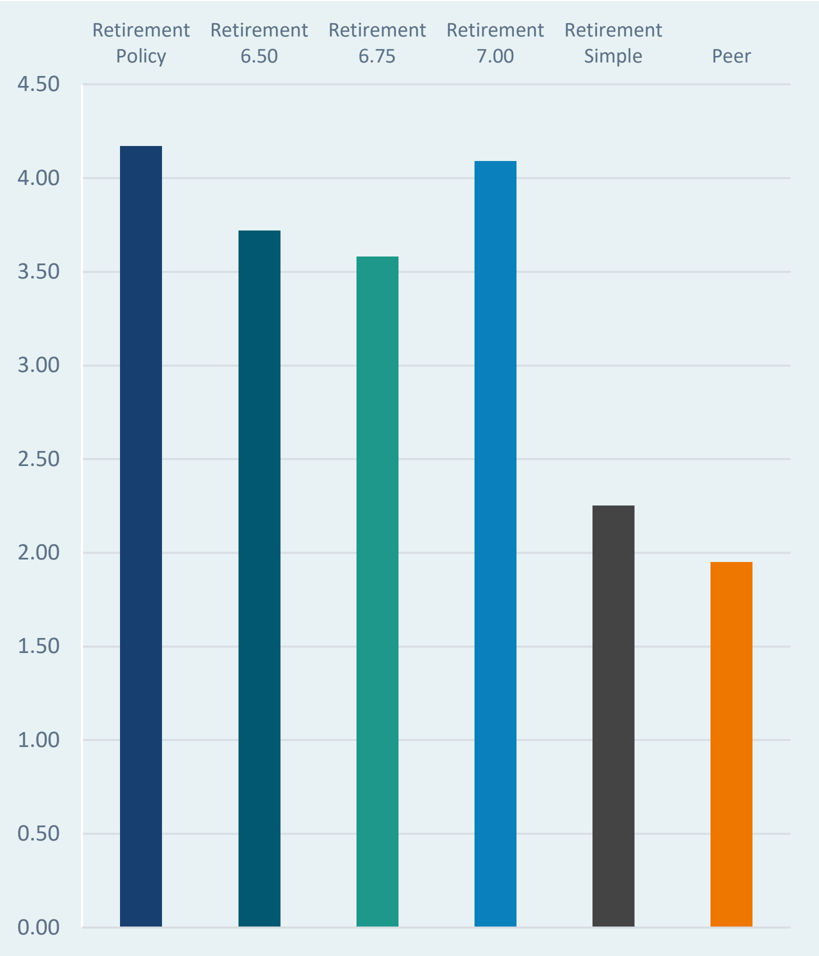
Sources of risk

Larger allocation & volatility target for risk parity increases beta

Larger allocations to risk parity, nominal, and IL bonds all increase duration exposure

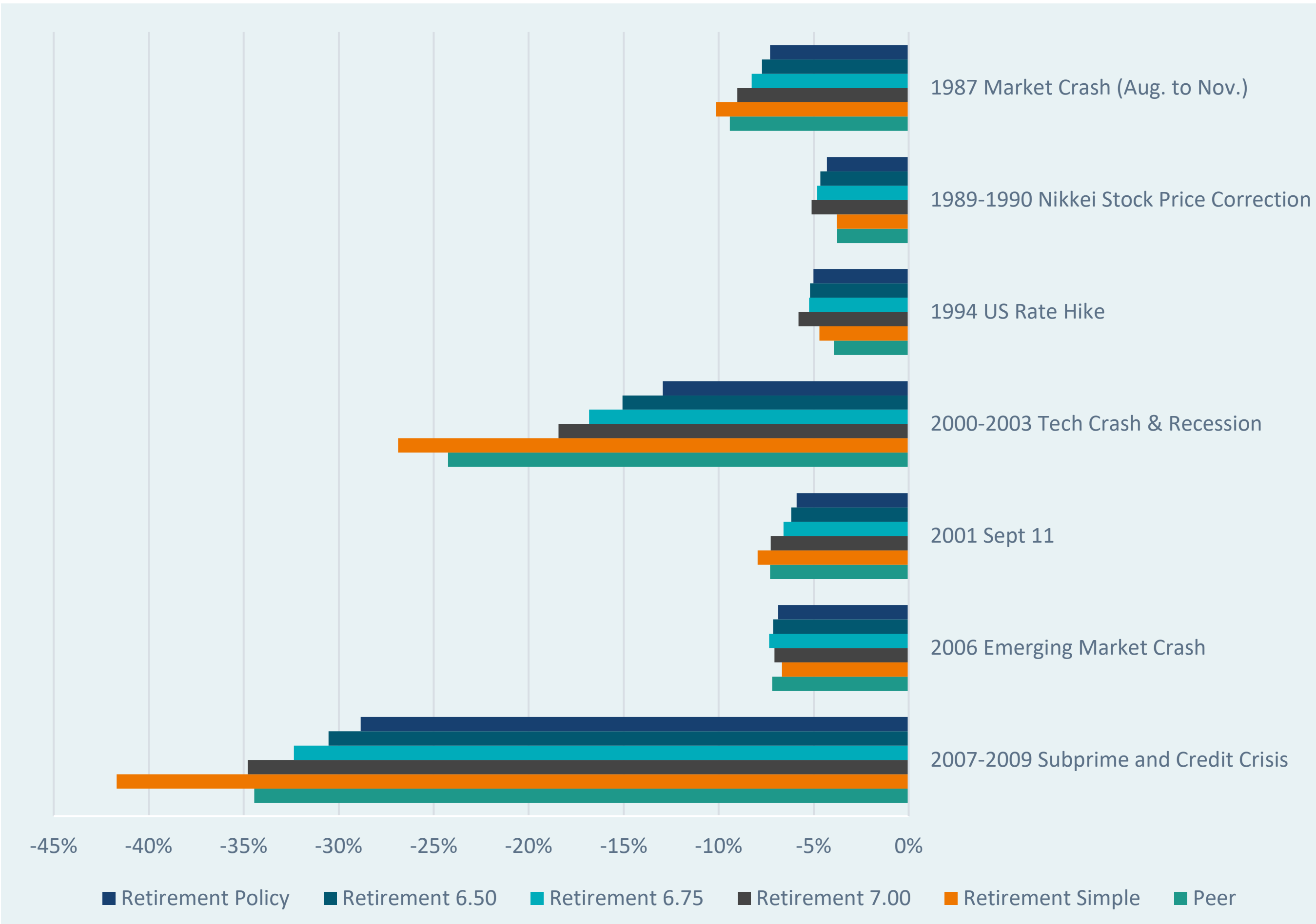
EQUITY BETA





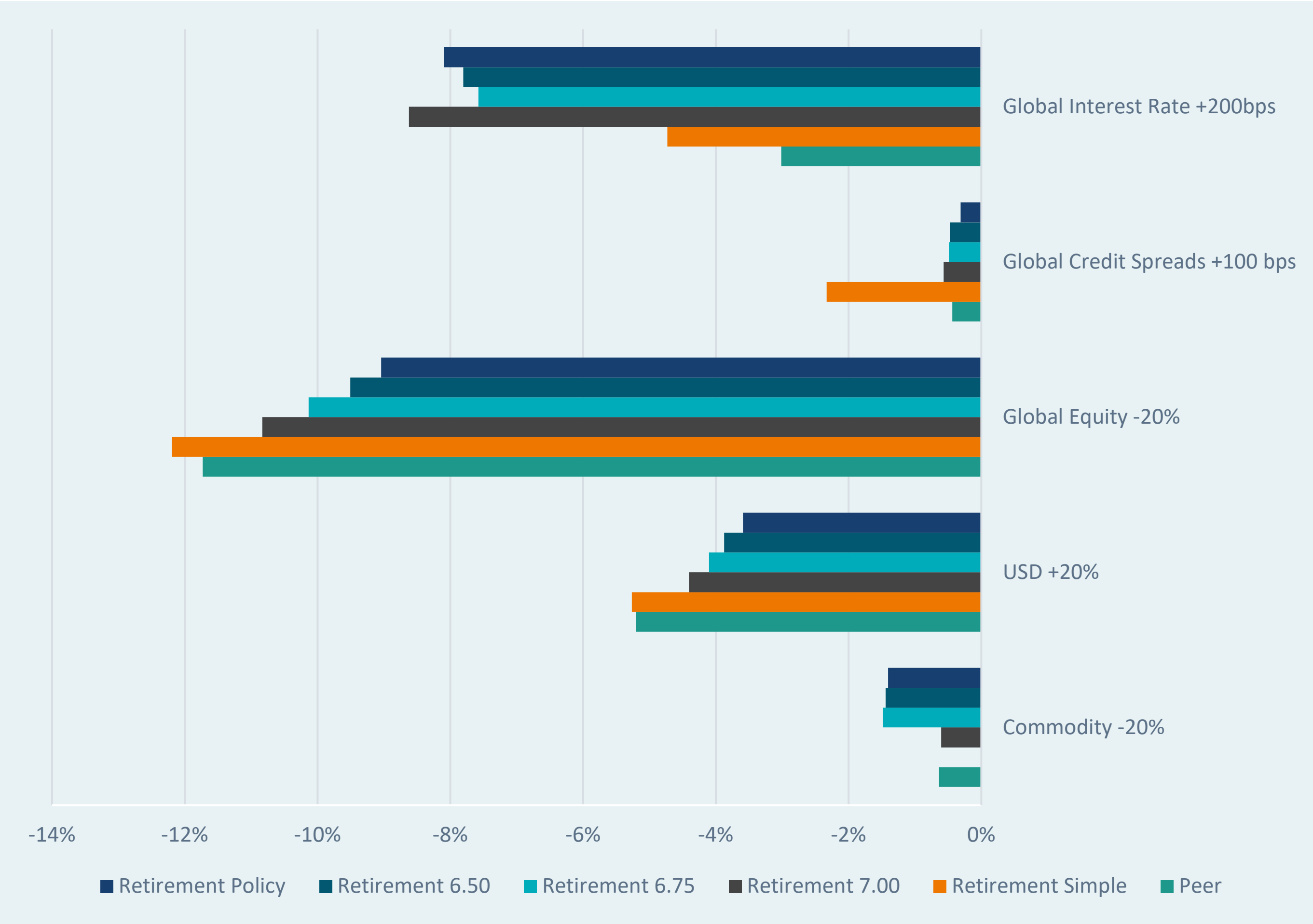
Scenario analysis – Retirement

SCENARIO ANALYSIS



Stress tests – Retirement

STRESS ANALYSIS



V. Appendix: liquidity analysis

— Determining the appropriate allocation to illiquids is not an easy question to answer. In addition to the asset allocation study, an investor should consider cash flow needs and availability in difficult market conditions

— Verus distills sources and uses of cash into a single metric: Liquidity Coverage Ratio, or LCR

— LCR can be used:

1. On a standalone basis, to monitor a fund's liquidity over time

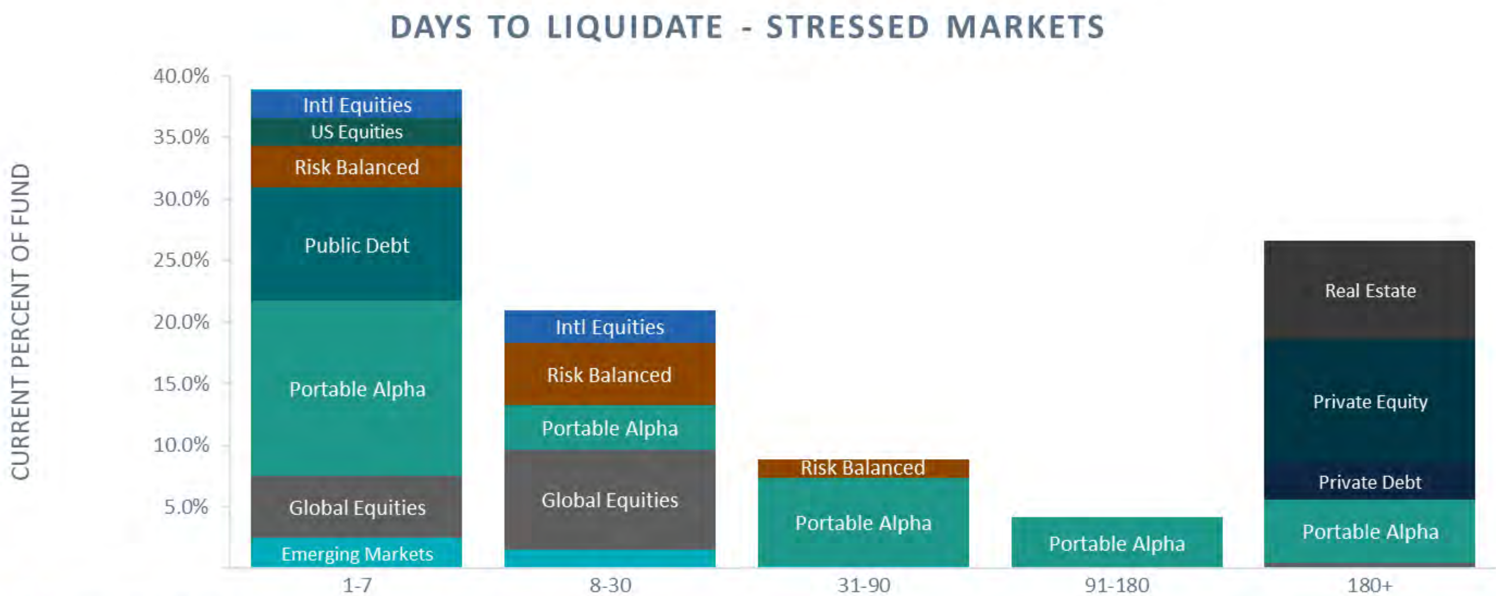
2. For comparison to other Verus clients, who may have a larger or smaller allocation to illiquids

— LCR for both the Retirement Fund and Endowment Pool are calculated on the following slides, and evaluated at the very end of the presentation

The largest factor in the LCR formula is total liquid assets, which are determined in two steps:

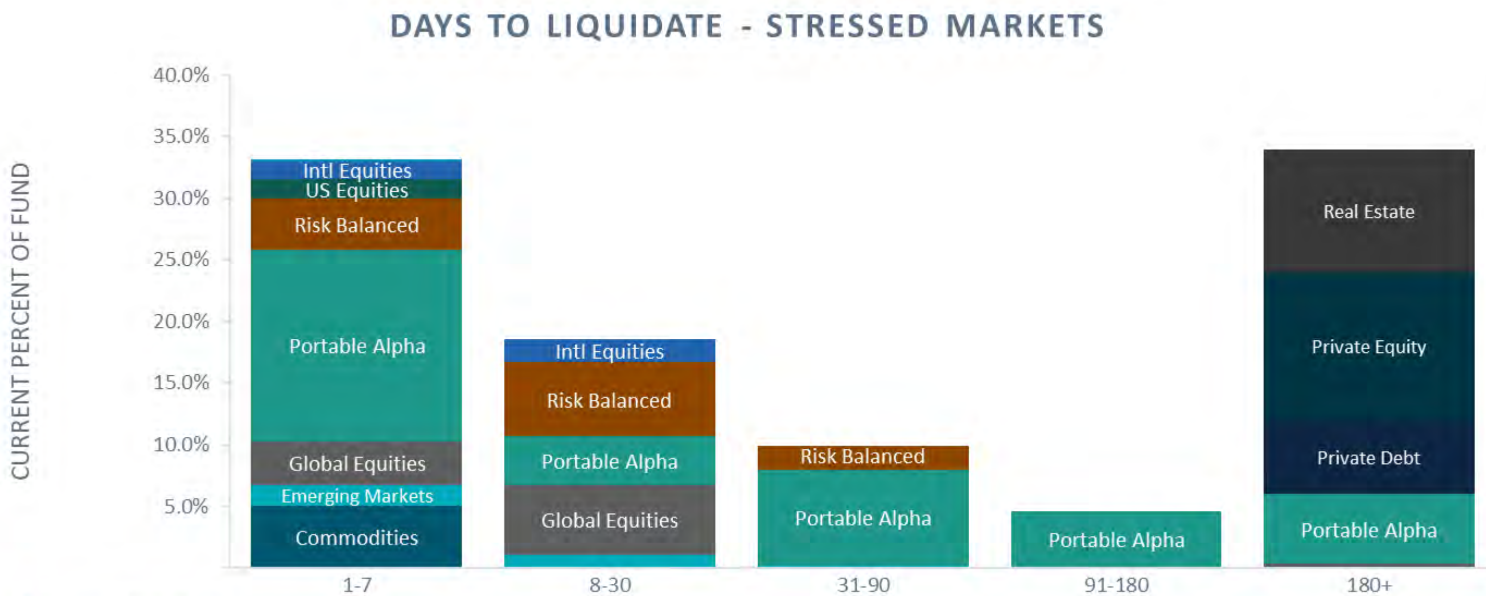
1. Estimate time required (in days) to convert each manager account or group to cash under two market conditions
    - Normal market conditions: defined as periods when liquidity is consistent with historical functioning markets and managers are not imposing gates.
    - Stressed market conditions: defined as periods when liquidity is withdrawn from the market and managers are imposing gates.
2. Sort accounts/groups into liquidity buckets and add-up the current account weights

Stressed liquidity – Retirement Policy



	1-7	8-30	31-90	91-180	180+
Currency Risk Mgmt	0.2%				
Intl Equities	2.1%	2.7%			
US Equities	2.3%				
Risk Balanced	3.4%	5.0%	1.6%		
Real Estate					8.0%
Public Debt	9.2%				
Private Equity					10.0%
Private Debt					3.0%
Portable Alpha	14.2%	3.6%	7.1%	4.1%	5.1%
Opportunistic					
Global Equities	5.0%	8.1%			0.5%
Emerging Markets	2.5%	1.5%	0.2%		
Commodities					
Cash					
Cumulative Pct	39.1%	60.2%	**69.1%**	73.3%	100.0%

Stressed liquidity – Retirement 6.75%



	1-7	8-30	31-90	91-180	180+
Currency Risk Mgmt	0.1%				
Intl Equities	1.5%	1.9%			
US Equities	1.6%				
Risk Balanced	4.1%	6.0%	1.9%		
Real Estate					10.0%
Public Debt					
Private Equity					12.0%
Private Debt					6.0%
Portable Alpha	15.6%	4.0%	7.8%	4.6%	5.7%
Opportunistic					
Global Equities	3.5%	5.6%			0.3%
Emerging Markets	1.7%	1.1%	0.1%		
Commodities	5.0%				
Cash					
Cumulative Pct	33.1%	51.7%	**61.5%**	66.1%	100.0%

LCR calculation – Retirement 6.75%

		Ending Total (Millions)	
Liquidity Available	Liquid Financial Assets	$ 3,101	
	Distributions from LT Illiquids	$ 136	
	Employee + Employer Contributions + Any New Amort	$ 622	
	Investment Income	$ 204	
			$ 4,064
Liquidity Needs	Benefit Payments	$ 1,465	
	Capital Calls	$ 314	
	Plan Expenses	$ 83	
			$ 1,862
Current LCR			**2.2**

LCR sensitivities – Retirement 6.75%

Drawdown and Assumed Return Sensitivity Analysis

Drawdown Scenario (Immediate)	Assumed Return (Subsequent 5-years): 1.8%	2.8%	3.8%	4.8%	5.8%	6.8%
-50%	1.5	1.5	1.5	1.6	1.6	1.6
-40%	1.6	1.6	1.6	1.7	1.7	1.7
-30%	1.7	1.7	1.7	1.8	1.8	1.8
-20%	1.8	1.8	1.8	1.9	1.9	2.0
-10%	1.9	1.9	1.9	2.0	2.0	2.1
0%	1.9	2.0	2.0	2.1	2.1	**2.2**

Illiquid Asset Sensitivity Analysis

Ending Illiquid Asset Position Increase	
0%	**2.2**
2%	2.1
4%	2.1
6%	2.0
8%	2.0
10%	1.9
12%	1.9

Capital Call / Distribution Sensitivity Analysis

Distribution Reduction	Capital Call Reduction: 0%	10%	20%	30%	40%	50%
50%	2.1	2.2	2.2	2.3	2.3	2.3
40%	2.2	2.2	2.2	2.3	2.3	2.4
30%	2.2	2.2	2.2	2.3	2.3	2.4
20%	2.2	2.2	2.2	2.3	2.3	2.4
10%	2.2	2.2	2.3	2.3	2.3	2.4
0%	**2.2**	2.2	2.3	2.3	2.3	2.4

Contribution Sensitivity Analysis

Contribution Reduction	
0%	**2.2**
10%	2.1
20%	2.1
30%	2.1
40%	2.0
50%	2.0
60%	2.0

VI. Appendix: 2020 capital market assumptions

Methodology

Asset	Return Methodology	Volatility Methodology*
Inflation	25% weight to the University of Michigan Survey 5-10 year ahead inflation expectation and the Survey of Professional Forecasters (Fed Survey), and the remaining 50% to the market's expectation for inflation as observed through the 10-year TIPS breakeven rate	-
Cash	Real yield estimate + inflation forecast	Long-term volatility
Bonds	Nominal bonds: current yield; Real bonds: real yield + inflation forecast	Long-term volatility
International Bonds	Current yield	Long-term volatility
Credit	Current option-adjusted spread + U.S. 10-year Treasury – effective default rate	Long-term volatility
International Credit	Current option-adjusted spread + foreign 10-year Treasury – effective default rate	Long-term volatility
Private Credit	Bank loan forecast + 1.75% private credit premium**	Long-term volatility
Equity	Current yield + real earnings growth (historical average) + inflation on earnings (inflation forecast) + expected P/E change	Long-term volatility
Intl Developed Equity	Current yield + real earnings growth (historical average) + inflation on earnings (intl. inflation forecast) + expected P/E change	Long-term volatility
Private Equity	US large cap domestic equity forecast * 1.85 beta adjustment	1.2 * Long-term volatility of U.S. small cap
Commodities	Collateral return (cash) + spot return (inflation forecast) + roll return (assumed to be zero)	Long-term volatility
Hedge Funds	Return coming from traditional betas + 15-year historical idiosyncratic return	Long-term volatility
Core Real Estate	Cap rate + real income growth – capex + inflation forecast	65% of REIT volatility
REITs	Core real estate	Long-term volatility
Value-Add Real Estate	Core real estate + 2%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Opportunistic Real Estate	Core real estate + 4%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Infrastructure	Current yield + real income growth + inflation on earnings (inflation forecast)	Long-term volatility
Risk Parity	Expected Sharpe Ratio * target volatility + cash rate	Target volatility

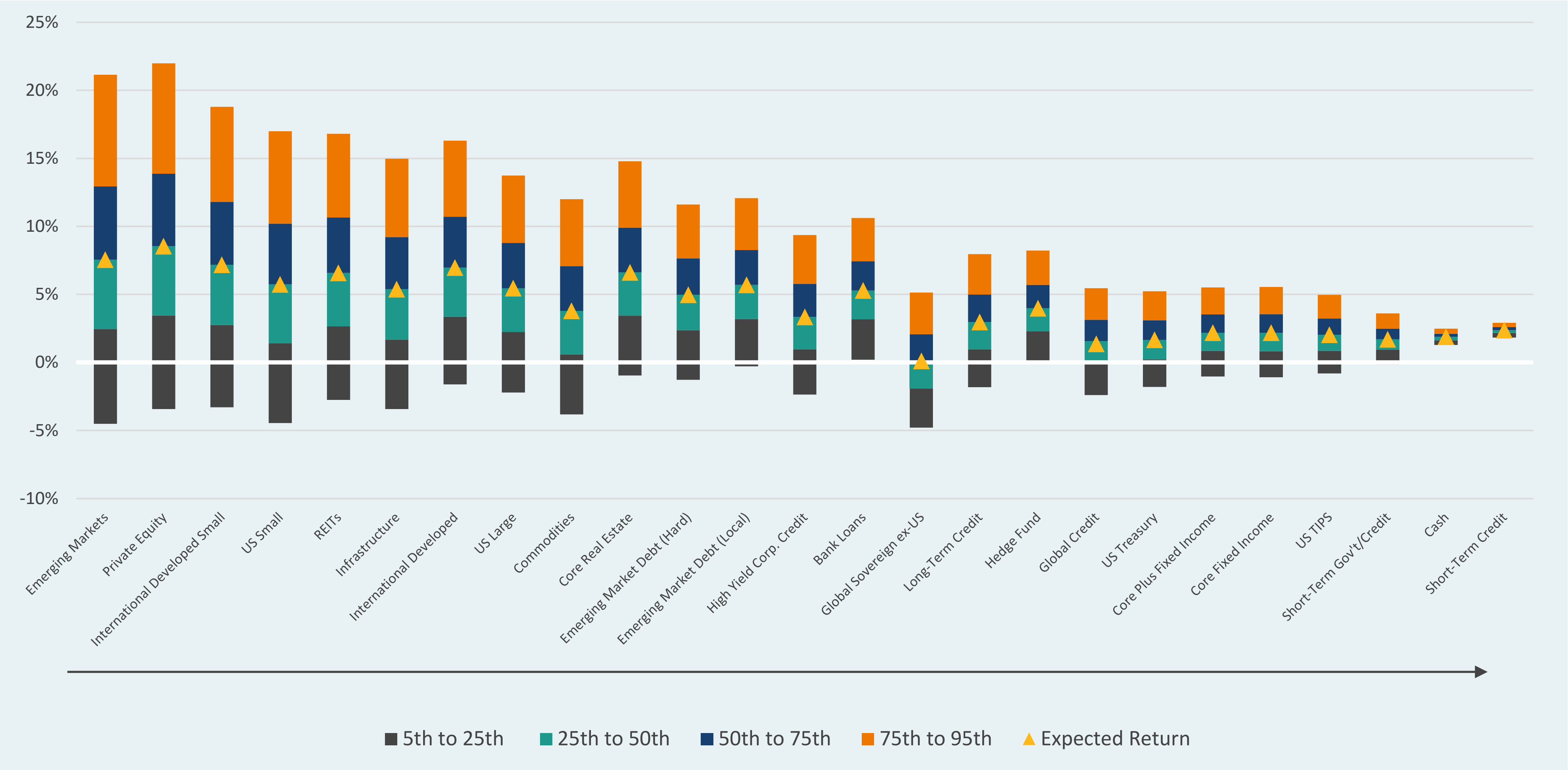
10-year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast Geometric	Ten Year Return Forecast Arithmetic	Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)	10-Year Historical Sharpe Ratio (g)	10-Year Historical Sharpe Ratio (a)
Equities								
U.S. Large	S&P 500	5.5%	6.6%	15.4%	0.23	0.31	1.01	1.02
U.S. Small	Russell 2000	5.7%	7.7%	21.1%	0.18	0.28	0.62	0.67
International Developed	MSCI EAFE	7.0%	8.4%	17.5%	0.29	0.37	0.30	0.37
International Small	MSCI EAFE Small Cap	7.2%	9.3%	21.8%	0.24	0.34	0.46	0.52
Emerging Markets	MSCI EM	7.6%	10.4%	25.6%	0.22	0.33	0.17	0.25
Global Equity	MSCI ACWI	6.4%	7.7%	16.8%	0.27	0.34	0.59	0.63
Private Equity*	Cambridge Private Equity	8.5%	11.3%	25.3%	0.26	0.37	-	-
Fixed Income								
Cash	30 Day T-Bills	1.9%	1.9%	1.2%	-	-	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5-10	2.1%	2.2%	5.4%	0.04	0.06	0.65	0.66
U.S. Treasury	BBgBarc Treasury 7-10 Year	1.7%	1.9%	6.7%	-0.03	0.00	0.68	0.69
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	0.1%	0.6%	9.7%	-0.19	-0.13	0.10	0.14
Global Aggregate	BBgBarc Global Aggregate	1.2%	1.4%	6.2%	-0.11	-0.08	0.39	0.37
Core Fixed Income	BBgBarc U.S. Aggregate Bond	2.2%	2.4%	6.3%	0.05	0.08	1.08	1.09
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	2.7%	3.0%	8.3%	0.10	0.14	1.21	1.22
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1-3 Year	1.7%	1.8%	3.6%	-0.06	-0.03	1.16	1.17
Short-Term Credit	BBgBarc Credit 1-3 Year	1.9%	2.0%	3.6%	0.01	0.03	1.76	1.78
Long-Term Credit	BBgBarc Long U.S. Corporate	3.0%	3.4%	9.4%	0.12	0.16	0.93	0.94
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	3.3%	4.0%	11.3%	0.12	0.18	1.25	1.26
Bank Loans	S&P/LSTA Leveraged Loan	5.3%	5.8%	10.0%	0.34	0.39	1.47	1.50
Global Credit	BBgBarc Global Credit	1.4%	1.6%	7.4%	-0.07	-0.03	0.77	0.78
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	5.0%	5.7%	12.4%	0.25	0.31	1.03	1.03
Emerging Markets Debt (Local)	JPM GBI-EM Global Diversified	5.7%	6.4%	12.0%	0.32	0.37	0.17	0.22
Private Credit	Bank Loans + 175bps	7.0%	7.5%	10.0%	0.51	0.56	-	-
Other								
Commodities	Bloomberg Commodity	3.8%	4.9%	15.4%	0.12	0.20	-0.36	-0.29
Hedge Funds*	HFRI Fund Weighted Composite	4.0%	4.3%	7.7%	0.27	0.31	0.55	0.56
Real Estate Debt	BBgBarc CMBS IG	4.0%	4.3%	7.6%	0.27	0.31	1.55	1.58
Core Real Estate	NCREIF Property	6.6%	7.3%	12.4%	0.38	0.44	1.84	1.89
Value-Add Real Estate	NCREIF Property + 200bps	8.6%	10.0%	17.7%	0.38	0.46	-	-
Opportunistic Real Estate	NCREIF Property + 400bps	10.6%	12.9%	23.0%	0.38	0.48	-	-
REITs	Wilshire REIT	6.6%	8.2%	19.1%	0.25	0.33	0.80	0.83
Global Infrastructure	S&P Global Infrastructure	7.2%	8.6%	17.8%	0.30	0.38	0.52	0.56
Risk Parity	Risk Parity	6.9%	7.4%	10.0%	0.50	0.55	-	-
Currency Beta	MSCI Currency Factor Index	1.8%	1.8%	3.6%	-0.04	-0.02	0.19	0.21
Inflation		1.9%	-	-	-	-	-	-

Correlation assumptions

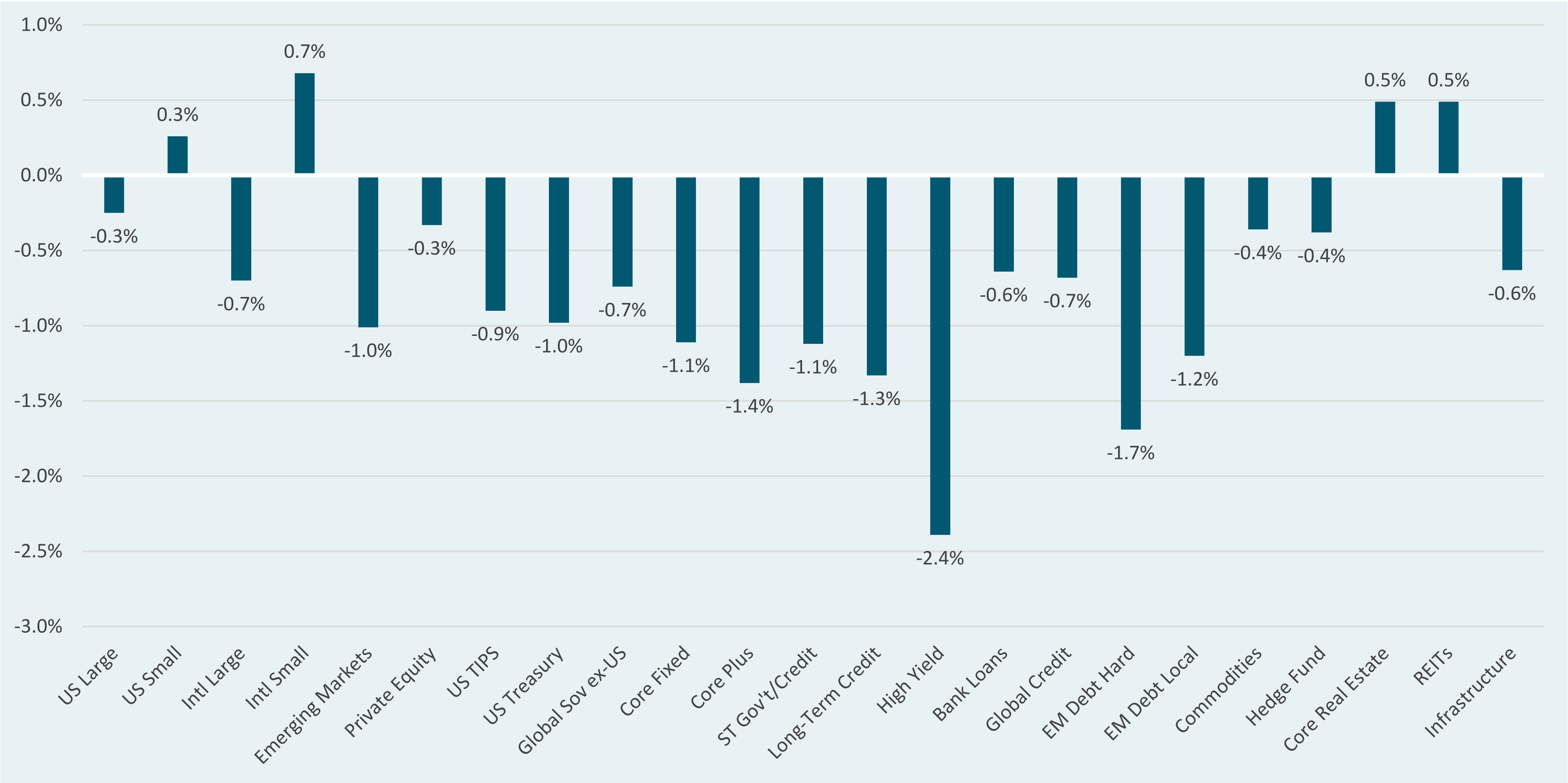
	Cash	US Large	US Small	Intl Large	Intl Small	EM	Global Equity	PE	US TIPS	US Treasury	Global Sovereign	US Core	Core Plus	Short-Term Gov't/Credit	Short-Term Credit	Long-Term Credit	US HY	Bank Loans	Global Credit	EMD USD	EMD Local	Commodities	Hedge Funds	Real Estate	REITs	Infrastructure	Risk Parity	Currency Beta
Cash	1.0																											
US Large	0.0	1.0																										
US Small	-0.1	0.9	1.0																									
Intl Large	0.0	0.9	0.7	1.0																								
Intl Small	-0.1	0.8	0.7	1.0	1.0																							
EM	0.0	0.7	0.6	0.8	0.8	1.0																						
Global Equity	0.0	1.0	0.8	1.0	0.9	0.9	1.0																					
PE	-0.2	0.6	0.6	0.6	0.6	0.5	0.6	1.0																				
US TIPS	0.0	0.0	-0.1	0.1	0.1	0.2	0.1	0.0	1.0																			
US Treasury	0.1	-0.4	-0.5	-0.3	-0.3	-0.2	-0.4	-0.2	0.7	1.0																		
Global Sovereign	0.1	0.2	0.0	0.3	0.3	0.4	0.3	0.0	0.5	0.4	1.0																	
US Core	0.1	-0.2	-0.3	-0.1	-0.1	0.0	-0.1	-0.1	0.8	0.9	0.5	1.0																
Core Plus	0.1	0.1	0.0	0.2	0.2	0.3	0.2	0.0	0.8	0.7	0.6	0.9	1.0															
Short-Term Gov't/Credit	0.3	-0.1	-0.2	0.0	0.0	0.1	0.0	-0.1	0.7	0.7	0.6	0.8	0.7	1.0														
Short-Term Credit	0.2	0.2	0.1	0.4	0.3	0.4	0.3	0.0	0.6	0.4	0.6	0.6	0.8	0.8	1.0													
Long-Term Credit	0.1	0.0	-0.1	0.1	0.1	0.2	0.1	-0.1	0.7	0.7	0.5	0.8	1.0	0.6	0.6	1.0												
US HY	0.0	0.7	0.7	0.8	0.8	0.8	0.8	0.4	0.3	-0.2	0.3	0.1	0.5	0.2	0.6	0.4	1.0											
Bank Loans	-0.1	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.1	-0.3	0.0	-0.1	0.2	-0.1	0.3	0.1	0.8	1.0										
Global Credit	0.1	0.5	0.3	0.7	0.7	0.7	0.6	0.2	0.5	0.2	0.8	0.5	0.7	0.5	0.8	0.6	0.7	0.4	1.0									
EMD USD	0.0	0.4	0.3	0.6	0.5	0.7	0.6	0.2	0.5	0.3	0.6	0.5	0.7	0.4	0.6	0.6	0.7	0.3	0.8	1.0								
EMD Local	0.1	0.5	0.4	0.7	0.6	0.8	0.6	0.2	0.4	0.1	0.6	0.2	0.5	0.3	0.5	0.4	0.6	0.4	0.8	0.8	1.0							
Commodities	0.0	0.5	0.5	0.6	0.6	0.6	0.6	0.3	0.1	-0.3	0.4	-0.1	0.1	0.1	0.3	0.0	0.6	0.4	0.5	0.4	0.6	1.0						
Hedge Funds	0.0	0.8	0.7	0.8	0.8	0.7	0.9	0.6	0.1	-0.3	0.1	-0.1	0.2	0.0	0.3	0.1	0.7	0.6	0.5	0.4	0.4	0.5	1.0					
Real Estate	-0.1	0.6	0.5	0.5	0.5	0.4	0.6	0.4	0.2	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.4	0.3	0.2	0.3	0.3	0.2	0.5	1.0				
REITs	0.0	0.6	0.6	0.6	0.5	0.5	0.6	0.4	0.3	0.1	0.3	0.3	0.4	0.2	0.4	0.4	0.6	0.5	0.5	0.5	0.5	0.3	0.5	0.7	1.0			
Infrastructure	0.0	0.7	0.6	0.9	0.8	0.8	0.8	0.7	0.3	-0.1	0.5	0.1	0.4	0.2	0.5	0.3	0.8	0.5	0.7	0.7	0.7	0.5	0.7	0.3	0.7	1.0		
Risk Parity	0.0	0.5	0.4	0.6	0.5	0.6	0.6	0.4	0.6	0.3	0.5	0.5	0.7	0.5	0.6	0.6	0.7	0.4	0.7	0.7	0.6	0.6	0.6	0.3	0.5	0.6	1.0	
Currency Beta	0.0	0.2	0.2	0.1	0.0	0.1	0.1	0.2	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.0	1.0

Range of likely 10-year outcomes



Source: Verus, MPI

2020 vs. 2019 return forecast



Relevant forecast changes

— Return expectations fell broadly across most asset classes as bond yields moved lower, equities recovered from their 2018 end-of-year drawdown, and valuations became richer. This effect resulted in a decrease of between 0.7%-1.0% to non-U.S. equity expectations.

— Market pricing indicates lower inflation over the next decade. The 10yr U.S. TIPS breakeven inflation rate fell from 1.7% to 1.5% year-to-date, while the University of Michigan Inflation Expectations Survey fell from 2.5% to 2.4%. Inflation is an important component to the performance of asset classes such as equities, real estate, and commodities. Return expectations for these asset classes has come down by 0.1% to 0.2% to reflect this inflation trend. It is important to note that lower inflation expectations decrease *nominal* returns, but do not impact *real* returns.

— Credit spreads dropped throughout the year as the asset class delivered strong performance, which resulted in lower return forecasts for credit assets. Core fixed income spreads fell from 72 bps to 62 bps, and high yield spreads fell from 529 bps to 396 bps.

— The short end of the yield curve fell as the Federal Reserve reversed course, and U.S. markets moved towards a decreasing interest rate environment. The U.S. effective fed funds rate dropped from 2.3% at the beginning of the year to 1.9% in September. The three-month U.S. dollar LIBOR reference rate fell from 2.8% to 2.1%.

— Emerging market hard and local currency debt forecasts have both declined, following strong performance year-to-date. Hard currency-denominated debt spreads to U.S. Treasury yields fell from 421 bps to 351 bps, while yields of local-denominated debt fell from 7.2% to 6.0%.

Inflation

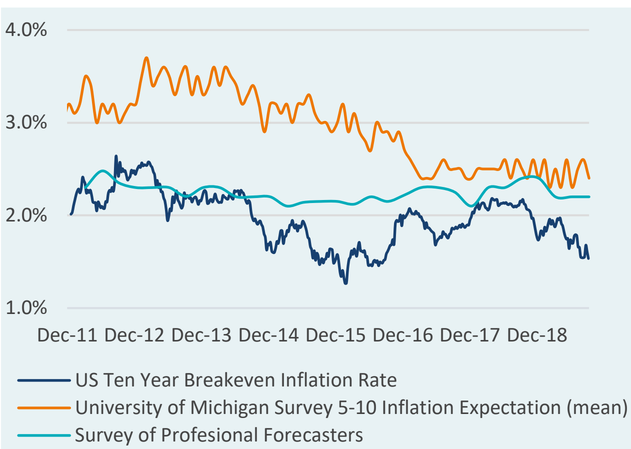
We use a weighted average of market expectations (50%), consumer expectations (25%), and professional forecasts (25%) to create a 10-year inflation forecast. The market's expectations for 10-year inflation can be inferred by taking the difference between the U.S. 10-year Treasury yield and the 10-year Treasury Inflation-Protected (TIPS) yield (referred to as the breakeven inflation rate).

Inflation drifted upward in 2019, reaching the levels not seen in the past decade. However, investors generally expect the low inflation environment to continue well into the future. Breakeven rates rose in the first quarter but then trended downward in Q2 and Q3, likely affected by pessimism around the U.S. economy. Overall, inflation levels remain mild, relative to past economic cycles.

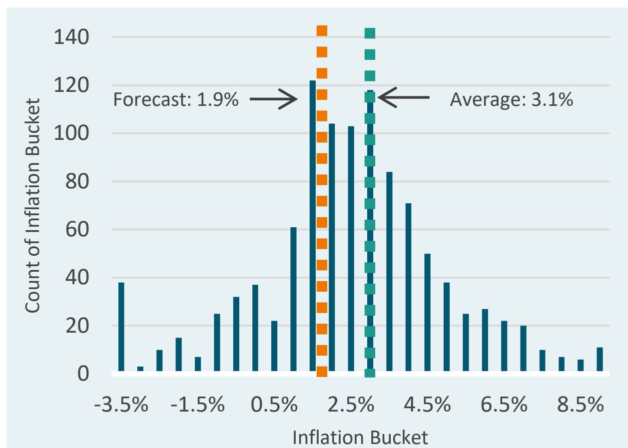
Consumer inflation expectations increased very slightly from 2.7% to 2.8% in September, based on the University of Michigan Consumer Inflation Expectations Survey. Inflation expectations from the Survey of Professional Forecasters fell from 2.4% to 2.3% - this measure has historically been fairly stable, especially in environments characterized by suppressed inflation volatility.

Our inflation forecast decreased slightly from 2.0% to 1.9%.

INFLATION EXPECTATIONS



U.S. 10-YR ROLLING AVERAGE INFLATION SINCE 1923



FORECAST

	10-Year Forecast
University of Michigan Survey *(25% weight)*	+2.4%
Survey of Professional Forecasters *(25% weight)*	+2.2%
US 10-Year TIPS Breakeven Rate *(50% weight)*	+1.5%
Inflation Forecast	1.9%

Cash

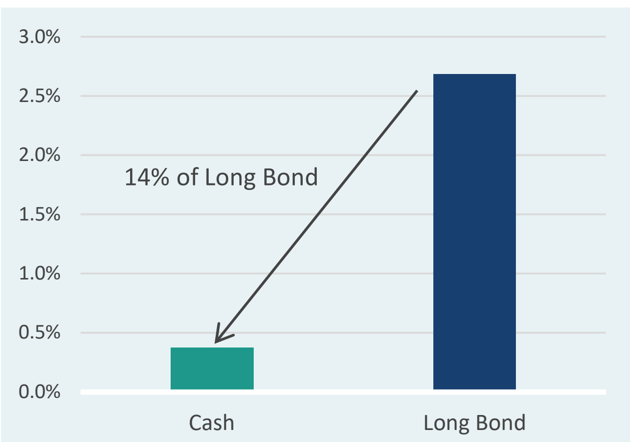
The U.S. Treasury yield curve further flattened in the latter half of the year, inverting temporarily between the 10- and 2-year yields. By other measures, such as the spread between 10-year and 3-month yields, the curve remains inverted. From the time of inversion, the U.S. economy has historically entered recession within 1-3 years. However, unprecedented monetary policy and central bank involvement in the markets may be having an outsized impact on fixed income pricing, which could be muddying this signal.

Over rolling ten-year time periods, the average historical real return to cash has been 14% of the real return to long-term bonds.

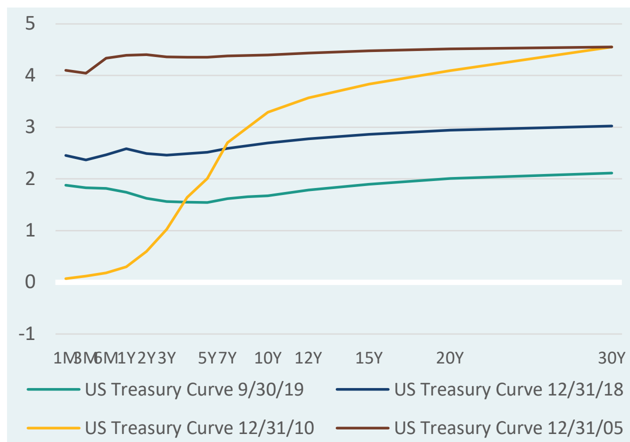
By applying this historical real return relationship, we arrive at a -3 bps expected real return to cash (14% of our -25 bps 10-year U.S. Treasury real return forecast) as real yields are now negative.

Adding our inflation forecast of 1.9% results in a nominal return to cash of 1.9%.

AVERAGE REAL RETURN



U.S. TREASURY YIELD CURVE



FORECAST

	10-Year Forecast
Cash	+1.88%
Inflation Forecast	-1.91%
Real Return	-0.03%

Rates

We forecast the return from rates based upon the current 10-year Treasury yield, with all cash flows reinvested at the current yield. The 10-year yield fell from 2.7% to 1.7% through September.

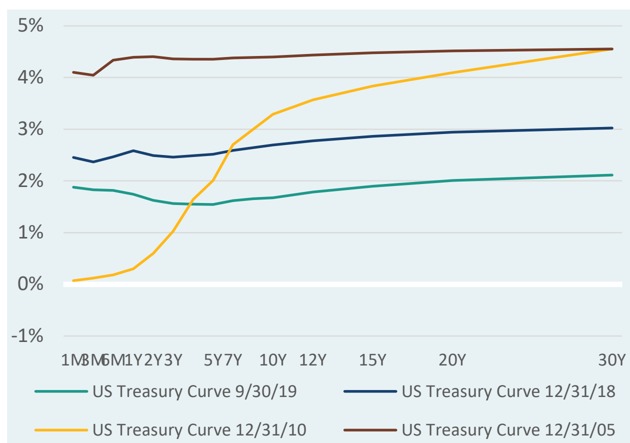
U.S. Treasury yields remain high relative to other developed nations, specifically Japan and Germany. U.S. yields marched upward in 2017 and 2018, but reversed sharply in 2019 as expectations for U.S. economic growth soured and the Federal Reserve shifted to an easing stance. The U.S. yield curve remains surprisingly flat.

Developed world central banks have shifted their narrative from tightening to easing. Discussions have taken place over fiscal stimulus or perhaps renewed quantitative easing. It is unclear how potent a return to monetary easing would be, now that interest rates have been low (or negative) for some time.

In the U.S., further rate cuts are expected, with rate stabilization possibly occurring in late 2020. It is possible that the next recession may bring negative interest rates to the U.S., in line with secularly low interest rates elsewhere.

U.S. 10-YR TREASURY YIELD

U.S. TREASURY YIELD CURVE



FORECAST

	10-Year Forecast
U.S. 10-Year Treasury	+1.7%
Inflation Forecast	-1.9%
Real Return	-0.2%

Real rates

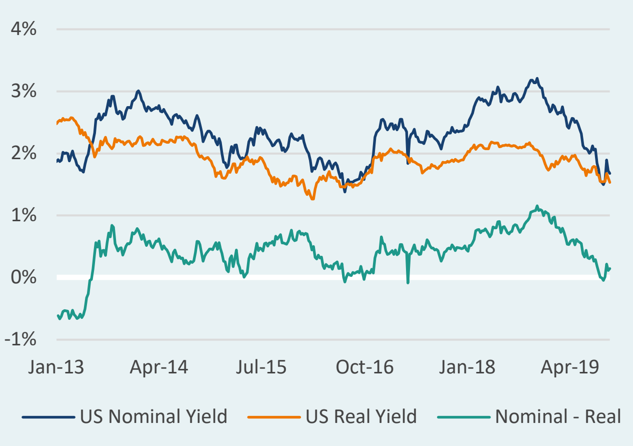
TIPS provide high sensitivity to duration (interest rate risk) over short periods and track inflation (CPI) fairly well over longer periods. Changing inflation expectations, demand for inflation protection, and rate movements contribute to the price volatility of TIPS. Currently, future inflation is expected to be mild, there is low demand for inflation protection, and interest rates are expected to fall. This environment may be muting the price of TIPS.

The U.S. 10-year real yield fell steadily through Q3, along with U.S. TIPS Breakeven rates. Inflation rose slightly, depressing real yields.

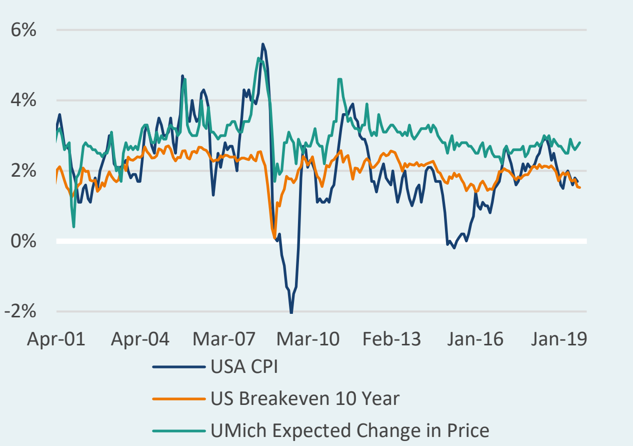
Breakeven rates rose in the first quarter but trended downward in Q2 and Q3, likely impacted by pessimism around the domestic economy.

To arrive at a nominal 10-year forecast, we add the current real TIPS yield to our 10-year inflation forecast. Our real rates forecast fell markedly from 1.0% to 0.1% as nominal interest rate dropped much further than inflation expectations.

NOMINAL YIELD VS. REAL



INFLATION EXPECTATIONS



FORECAST

	10-Year Forecast
U.S. 10-Year TIPS Real Yield	+0.14%
Inflation Forecast	+1.91%
Nominal Return	2.05%

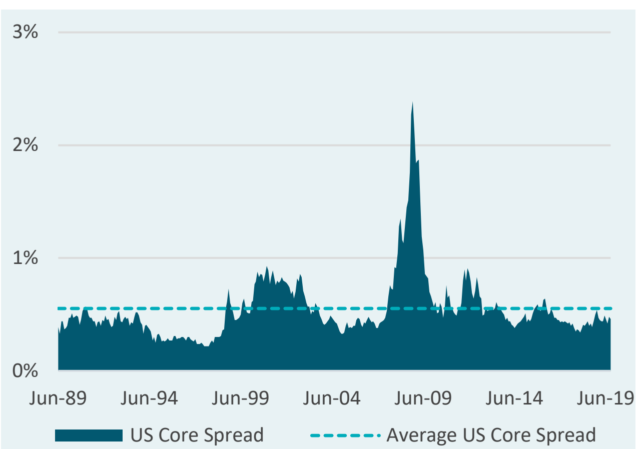
Core fixed

Credit fixed income return is composed of a bond term premium (duration) and credit spread. The bond term premium is represented by the 10-year U.S. Treasury yield.

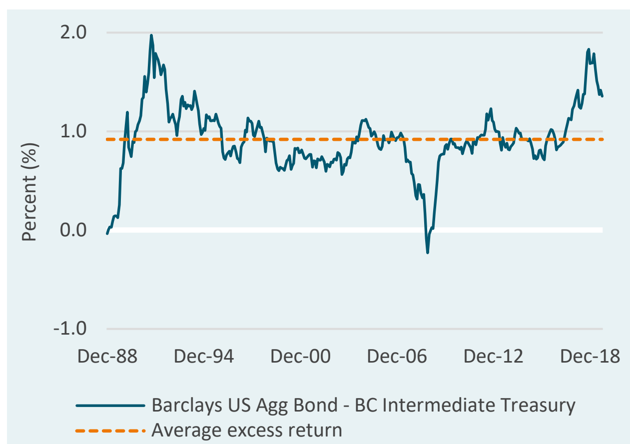
We use default rates and credit spreads for each respective fixed income category to provide our 10-year return forecast. Our default rate assumption is derived from a variety of sources, including historical data and academic research. The effective default that is subtracted from the return forecast is based on our assumed default and recovery rates.

Spreads tightened throughout the year, which resulted in lower return forecasts for credit assets. Core fixed income spreads remain below their 30-year average of 1.25%. Widening credit spreads are typical of late-cycle behavior, as investors demand greater compensation for higher perceived credit risk. Recent activity suggests investors are not yet concerned about late-cycle credit market issues.

U.S. CORE CREDIT SPREAD



ROLLING EXCESS RETURN (10-YR)



FORECAST

	10-Year Forecast
Barclays U.S. Option-Adjusted Spread	+0.6%
Effective Default	-0.1%
U.S. 10-Year Treasury	+1.7%
Nominal Return	2.2%
Inflation Forecast	-1.9%
Real Return	0.3%

Credit summary

	Core	Long-Term Credit	Global Credit	High Yield	Bank Loans	EM Debt (USD)	EM Debt (Local)	Private Credit	Real Estate Debt
Index	BBgBarc U.S. Aggregate	BBgBarc Long U.S. Corporate	BBgBarc Global Credit	BBgBarc U.S. High Yield	S&P LSTA	JPM EMBI	JPM GBI-EM	S&P LTSA + 1.75%	BBgBarc CMBS IG
Method	OAS + U.S. 10-Year	OAS + U.S. 10-Year	OAS + Global 10-Year Treasuries	OAS + U.S. 10-Year	LIBOR + Spread	OAS + U.S. 10-Year	Current Yield	Bank Loans+ 1.75% private premium	LIBOR + Spread
Spread to	Intermediate U.S. Treasury	Long-Term U.S. Treasury	Global Long-Term Treasuries	Intermediate U.S. Treasury	LIBOR	Intermediate U.S. Treasury	-	-	LIBOR
Default Assumption	-0.5%	-4.5%	-3.0%	-3.8%	-3.5%	-0.5%	-0.5%	-	-3.7%
Recovery Assumption	80%	95%	40%	40%	90%	60%	40%	-	47%
Spread	0.6%	1.5%	2.0%	4.0%	3.6%	3.5%	-	-	4.0%
Yield	-	-	-	-	-	-	6.0%	-	-
Risk Free Yield	1.7%	1.7%	1.1%	1.7%	2.1%	1.7%	-	-	2.0%
Effective Default	-0.1%	-0.2%	-1.8%	-2.3%	-0.4%	-0.2%	-0.3%	-	-2.0%
Nominal Return	2.2%	3.0%	1.4%	3.4%	5.3%	5.0%	5.7%	7.1%	4.0%
Inflation Forecast	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
Real Return	0.3%	1.1%	-0.6%	1.4%	3.4%	3.1%	3.8%	5.2%	2.1%

Equities

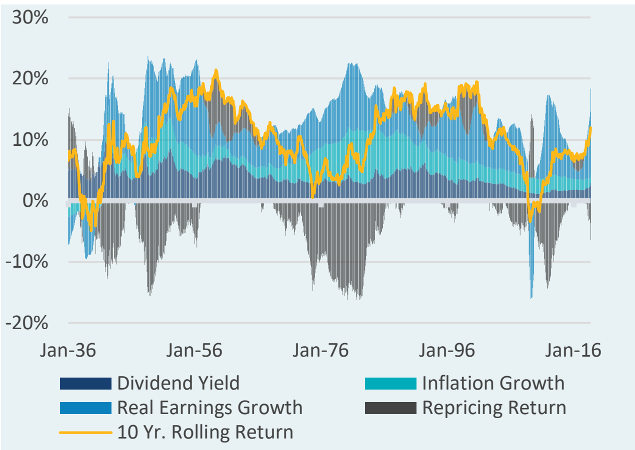
Investment returns in the equity space can be broken down into earnings growth, dividend yield, inflation, and repricing. Over the very long-term, repricing represents a small portion of return to equity investors, but over shorter time frames, the impacts on return can vary considerably.

If investors are willing to pay more for earnings, it could signal that investors are more confident in positive earnings growth going forward, while the opposite is true if investors pay less for earnings. It is somewhat surprising that investor confidence varies so much given that the long-term earnings growth is relatively stable.

Investor confidence in earnings growth can be measured using both the Shiller P/E ratio and the trailing 12-month P/E ratio. We take an average of these two valuations metrics when determining our repricing assumption. In short, if the P/E ratio is too high (low) relative to history, we expect future returns to be lower (higher) than the long-term average. Implicit in this analysis is the assumption that P/E's will exhibit mild mean reversion over 10 years.

We make a conservative repricing estimate given how widely repricing can vary over time. We then skew the repricing adjustment because the percentage change in index price is larger with each incremental rise in valuations when P/E's are low, compared to when they are high.

TRAILING 10-YR S&P 500 RETURN COMPOSITION



U.S. LARGE SHILLER P/E

P/E REPRICING ASSUMPTION

Average P/E Percentile Bucket	Lower P/E	Upper P/E	Repricing Assumption
Lower 10%	-	10	2.00%
10% - 20%	10	13	1.50%
20% - 30%	13	15	0.75%
30% - 45%	15	18	0.50%
45% - 55%	18	19	0.0%
55% - 70%	19	21	-0.25%
70% - 80%	21	22	-0.50%
80% - 90%	22	24	-0.75%
Top 10%	24	-	-1.00%

Global equity

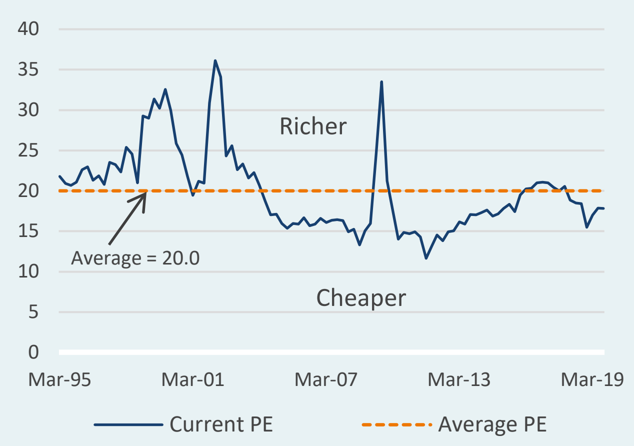
Global Equity is a combination of U.S. large, international developed, and emerging market equities. We can therefore combine our existing return forecasts for each of these asset classes to arrive at our global equity return forecast.

We use the MSCI ACWI Index as our benchmark for global equity and apply the country weights of this index to determine the weightings for our global equity return calculation. As with other equity asset classes, we use the historical standard deviation of the benchmark (MSCI ACWI Index) for our volatility forecast.

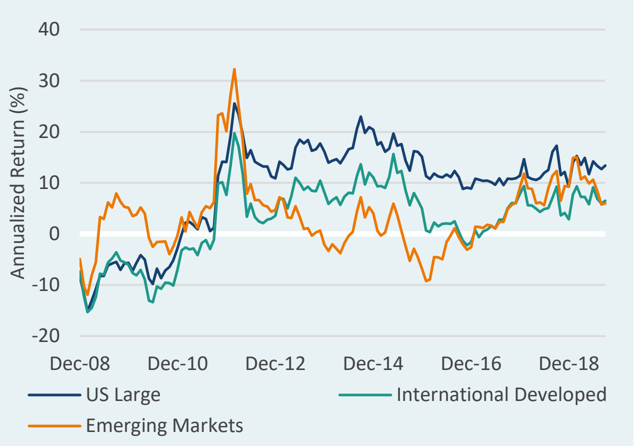
The valuation of global equities are driven by the richness/cheapness of the underlying markets, as indicated by the current price-to-earnings ratio.

Our return building blocks produce a local return forecast for international equities. For investors who wish to incorporate market implied currency movements into the return forecast, please see the adjustments and explanation in the Appendix.

GLOBAL EQUITY P/E RATIO HISTORY



MARKET PERFORMANCE (3-YR ROLLING)



FORECAST

Market	Weight	CMA return
U.S. Large	54.2%	5.5%
Developed Large	32.4%	7.0%
Emerging Markets	10.3%	7.6%
Canada	3.1%	8.9%
Global Equity Forecast		6.4%

Equity summary

	U.S. Large	U.S. Small	EAFE	EAFE Small	EM
Index	S&P 500	Russell 2000	MSCI EAFE Large	MSCI EAFE Small	MSCI EM
Method	Building Block Approach: current dividend yield + historical average real earnings growth + inflation on earnings + repricing				
Current Shiller P/E Ratio	29.0	45.1	17.5	-	10.5
Regular P/E Ratio	19.5	41.0	16.7	18.7*	13.3
2019 Shiller P/E Change	+1.8%	+5.6%	+9.4%	-	+4.0%
2019 Regular P/E Change	+14.0%	-8.3%	+24.6%	-21.4%	+14.9%
Current Shiller P/E Percentile Rank	81%	93%	34%	-	18%
Current Regular P/E Percentile Rank	74%	90%	46%	18%*	34%
Average of P/E Methods' Percentile Rank	77%	92%	40%	18%*	26%
2019 YTD Return	20.5%	14.2%	12.8%	12.1%	5.9%
Shiller PE History	1982	1988	1982	Not Enough History	2005
Long-Term Average Shiller P/E	22.9	31.1	22.6	-	15.1
Current Dividend Yield	2.0%	1.8%	3.5%	2.7%	3.0%
Long-Term Average Real Earnings Growth	2.1%	3.1%	1.9%	1.9%	1.9%
Inflation on Earnings	1.9%	1.9%	1.1%	1.1%	1.9%
Repricing Effect (Estimate)	-0.5%	-1.0%	0.5%	1.5%	0.8%
Nominal Return	5.5%	5.7%	7.0%	7.2%	7.6%
Inflation Forecast	1.9%	1.9%	1.9%	1.1%	1.9%
Real Return	3.6%	3.8%	5.1%	6.1%	5.7%

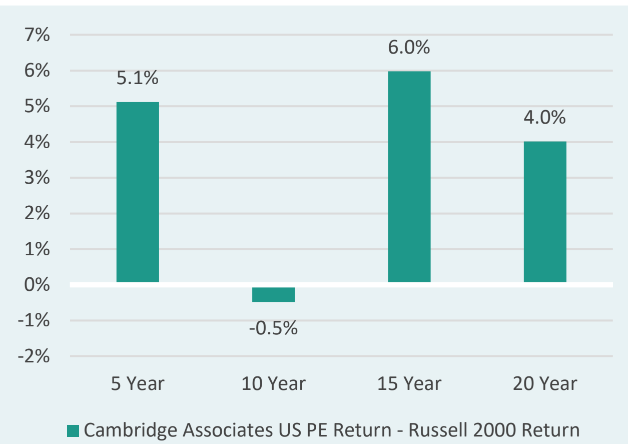
Private equity

Private equity and public equity returns have been correlated historically because the underlying economic forces driving these asset class returns are quite similar. The return relationship between the two can vary in the short-term, but over the long-term investors have received a premium, driven by leverage, concentrated factor exposure (smaller and undervalued companies), skill, and possibly illiquidity.

Historically, the beta of private equity relative to public equities has been high. We use a beta assumption of 1.85 to U.S. large cap equities in our capital market forecast.

Private equity performance typically differs based on the implementation approach. We provide a 10-year forecast for the entire private equity universe of 8.5%. Direct private equity programs have historically outperformed the broader universe by approximately 1.0%, and we forecast direct private equity accordingly with a forecast of 9.5%. Private equity fund-of-fund programs have historically lagged the universe by 1.0%, and we forecast private equity FoF at 7.5% to reflect this drag.

PRIVATE EQUITY EXCESS RETURN (PE – U.S. SMALL CAP EQUITY)



PRIVATE EQUITY IMPLEMENTATION FORECASTS

	10-Year Forecast
Private Equity Universe Forecast	+8.5%
Private Equity FoF Forecast	+7.5%
Private Equity Direct Forecast	+9.5%

PRIVATE EQUITY UNIVERSE FORECAST

	10-Year Forecast
U.S. Large Cap Forecast	+5.5%
1.85 Beta Multiplier	+3.0%
Nominal Return	+8.5%
Inflation Forecast	-1.9%
Real Return	+6.6%

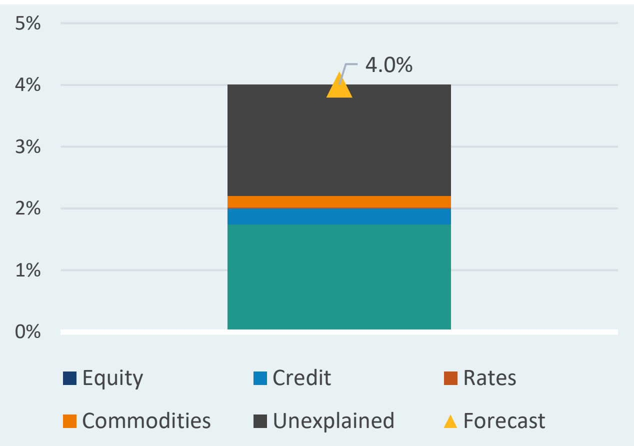
Hedge funds

Hedge fund performance variation through time can be partly explained by public market betas (ex: equity, rates, credit, commodities) and partly explained by non-public sources of return (ex: alternative betas, skill, luck). Certain hedge fund strategies can be mostly explained by public market betas, while other types of hedge fund strategies are driven mostly by non-public sources of return.

To forecast hedge fund returns, we identified the portion of historical hedge fund performance that can be attributed to public market betas, and the portion of hedge fund returns that cannot be attributed to public market beta. This means our forecast has two components: the public market return (explained return) and the non-public market return (unexplained return).

To forecast the public market beta portion of hedge funds, we take the historical sensitivity of hedge funds to equity, rates, credit, and commodities and pair these with our current 10-year public market forecasts for each asset class. To forecast the non-public market return portion of hedge funds (unexplained return) we simply assume the historical performance contribution of these sources will continue over the next 10 years.

HEDGE FUND FORECAST



HEDGE FUND PUBLIC MARKET SOURCES OF RETURN (EXPLAINED RETURN)
Equity
Rates
Credit
Commodities

HEDGE FUND NON-PUBLIC SOURCES OF RETURN (UNEXPLAINED RETURN)
Alternative betas
Skill
Luck

	10-Year Forecast
Public Market % of Return	+2.2%
Non-Public Market % of Return	+1.8%
Nominal Return	+4.0%
Inflation Forecast	-1.9%
Real Return	+2.1%

Source: Verus, as of 9/30/19

Private core real estate/REITS

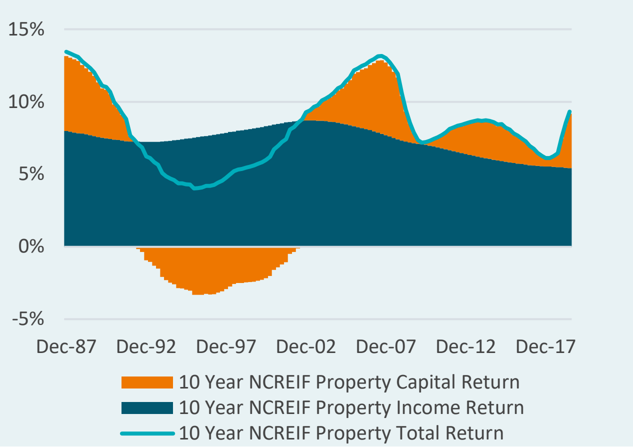
Performance of the NCREIF property index can be decomposed into an income return (cap rate) and capital return. The return coming from income has historically been more stable than the return derived from capital changes.

The cap rate is the ratio of earnings less expenses to price, and does not include extraordinary expenses. A more accurate measure of the yield investors receive should include non-recurring capital expenditures; we assume a 2.0% capex expenditure. We also assume income growth will track inflation as higher prices are passed through to rents.

Private real estate and REITs have provided very similar returns over the long-term. Investors should be careful when comparing risk-adjusted returns of publicly traded assets to returns of appraisal priced assets, due to smoothing effects. While private real estate appears to be less volatile than REITs, the true risks to investors are very similar.

We assume the effects of leverage and liquidity offset each other. Therefore, our return forecast is the same for private real estate and REITs.

TRAILING 10-YR NCREIF RETURN COMPOSITION



PRIVATE REAL ESTATE

	Private Real Estate 10-Year Forecast
Current Cap Rate	+4.4%
Real Income Growth	+2.3%
Capex Assumption	-2.0%
Inflation	+1.9%
Nominal Return	6.6%
Inflation Forecast	-1.9%
Real Return	4.7%

REITS

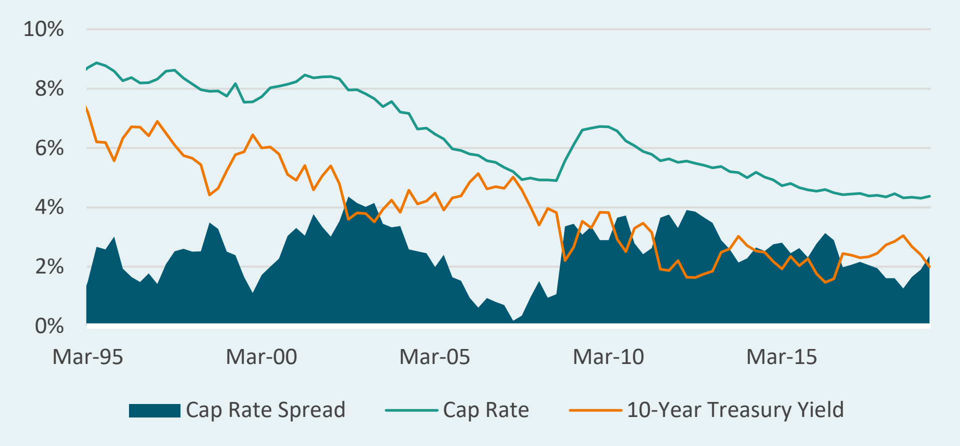
	10-Year Forecast
Nominal Return Forecast	6.6%
Inflation Forecast	-1.9%
Real Return	4.7%

Value-add & opportunistic real estate

Value-add real estate includes properties which are in need of renovation, repositioning, and/or lease-up. Properties may also be classified as value-add due to their lower quality and/or location. Opportunistic real estate can also include development and distressed or very complex transactions. Greater amounts of leverage are usually employed within these strategies. Leverage increases beta (risk) by expanding the purchasing power of property managers via a greater debt load, which magnifies gains or losses. Increased debt also results in greater interest rate sensitivity. An increase/decrease in interest rates may result in a write-up/write-down of fixed rate debt, since debt holdings are typically marked-to-market.

Performance of value-add real estate is composed of the underlying private real estate market returns, plus a premium for additional associated risk, which is modeled here as 200 bps above our core real estate return forecast. Performance of opportunistic real estate strategies rest further out on the risk spectrum, is modeled as 400 bps above the core real estate return forecast.

Additional expected returns above core real estate are justified by the higher inherent risk of properties which need improvement (operational or physical), price discounts built into properties located in non-core markets, illiquidity, and the ability of real estate managers to potentially source attractive deals in this less-than-efficient marketplace.



FORECAST

	Value-Add 10-Year Forecast	Opportunistic 10-Year Forecast
Premium above core	+2.0%	+4.0%
Current Cap Rate	+4.4%	+4.4%
Real Income Growth	+2.3%	+2.3%
Capex Assumption	-2.0%	-2.0%
Inflation	+1.9%	+1.9%
Nominal Return	8.6%	10.6%
Inflation Forecast	-1.9%	-1.9%
Real Return	6.7%	8.7%

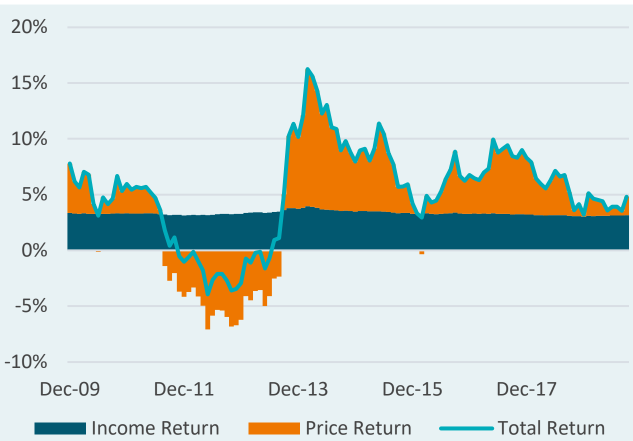
Infrastructure

Infrastructure includes a variety of investment types across a subset of industries. There is not one definition for what can be included within infrastructure. The asset class has grown dramatically in the last decade as investors sought assets that might provide more attractive yield relative to fixed income along with the potential for inflation protection.

Similar to real estate investment, income plays a significant role in the returns investors receive. Income yields are currently lower than average due to higher prices and competition in the space, which might reasonably be expected to translate into lower expected future returns.

Due to the discount rate effect, infrastructure asset valuations would generally be negatively affected by material increases in interest rates. Because leverage is used in this space, higher interest rates would also impact investors in the form of higher borrowing costs.

5-YR ROLLING RETURN COMPOSITION



ADVANCED ECONOMY REAL GDP GROWTH

FORECAST

	10-Year Forecast
Inflation	1.7%
Yield	4.1%
Income Growth	1.5%
Nominal Return	7.2%
Global Inflation Forecast	-1.7%
Real Return	5.5%

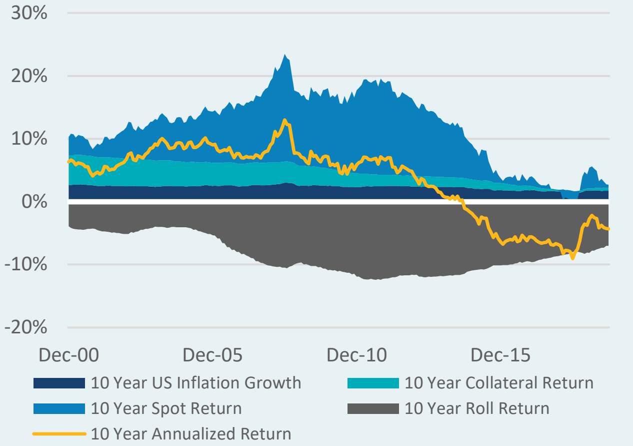
Commodities

Commodity returns can be decomposed into three sources: collateral return (cash), spot changes (inflation), and roll yield.

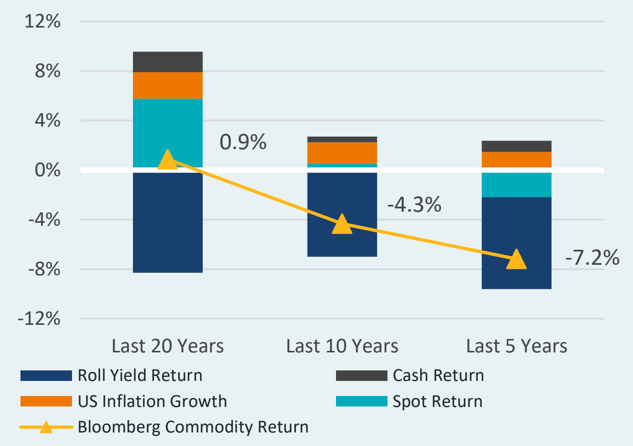
Roll return is generated by either backwardation or contango present in futures markets. Backwardation occurs when the futures price is below the spot price, which results in positive yield. Contango occurs when the futures price is above the spot price, and this results in a loss to commodity investors. Historically, futures markets have fluctuated between backwardation and contango but with a net-zero effect over the very long-term (since 1877). Therefore, roll return is assumed to be zero in our forecast. Over the most recent 10-year period, roll return has been negative, though this is likely the result of multiple commodity crises and a difficult market environment.

Our 10-year commodity forecast combines collateral (cash) return with spot return (inflation) to arrive at the nominal return, and subtracts out inflation to arrive at the real return.

TRAILING 10YR BLOOMBERG COMMODITY RETURN COMPOSITION (%)



BLOOMBERG COMMODITY RETURN COMPOSITION (%)



FORECAST

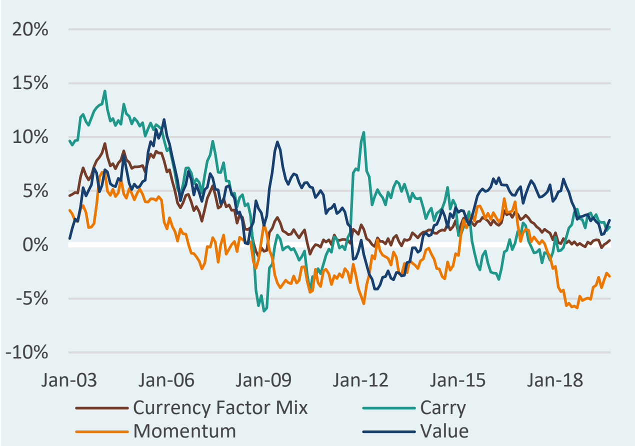
	10-Year Forecast
Collateral Return (Cash)	+1.9%
Roll Return	+0.0%
Spot Return (Inflation)	+1.9%
Nominal Return	3.8%
Inflation Forecast	-1.9%
Real Return	1.9%

Currency beta

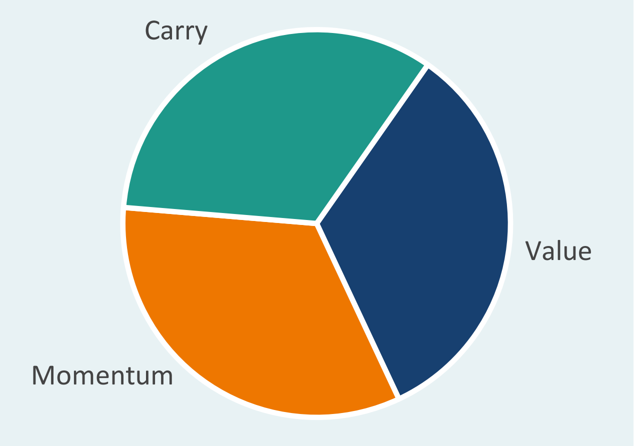
Currency beta is a long-short portfolio of G10 currencies constructed by investing in three equally weighted factors: carry, momentum, and value. A significant amount of academic research has concluded that these factors demand a risk premium in the currency market. Studies have also shown that currency beta explains a high portion of active currency managers' returns, indicating it may be a good neutral starting point or benchmark for currency investing. Currency beta portfolios gain exposure to the carry, momentum, and value factors in a systematic and transparent manner. For more detailed information on currency beta, please contact your consultant.

We model each factor in the currency beta portfolio separately, and then take a weighted average to get an overall return forecast. For the carry portfolio, the main driver of returns is the yield an investor receives from holding currencies with relatively higher interest rates. We therefore use a 12-month average of the portfolio's yield as the expected return. For value, our return forecast assumes a certain level of mean reversion to PPP fair value based on historical data. Lastly, for momentum, we simply assume the average historical return due to lack of long-term fundamental return drivers. Short-term volatility levels typically drive returns in the momentum portfolio, which is difficult to model in a 10-year return forecast.

3-YEAR ROLLING PERFORMANCE



CURRENCY BETA CONSTRUCTION



RETURN FORECAST

Factor	Weight	Return Forecast	Weighted return
Carry	33.3%	2.7%	0.9%
Momentum	33.3%	-0.2%	-0.1%
Value	33.3%	2.8%	0.9%
Currency Beta			**1.8%**

Risk parity

Risk parity is built upon the philosophy of allocating to risk premia rather than to asset classes. Because risk parity by definition aims to diversify risk, the actual asset allocation can appear very different from traditional asset class allocation.

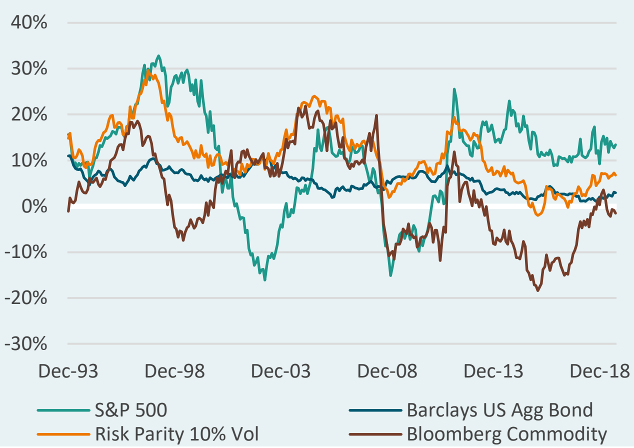
We model risk parity using an assumed Sharpe Ratio of 0.5, which considers the historical performance of risk parity. This assumed Sharpe Ratio is higher than other asset class forecasts, but is consistent with these forecasts because *portfolios* of assets tend to deliver materially higher Sharpe Ratios than individual assets.

The expected return of Risk Parity is determined by this Sharpe Ratio forecast, along with a 10% volatility assumption.

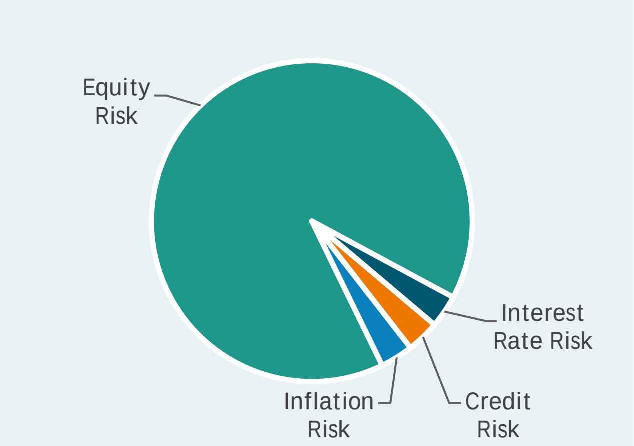
We used a 10-year historical return stream from a market-leading product to represent risk parity correlations relative to the behaviors of each asset class. Risk parity funds are suggested to be better able to withstand various difficult economic environments - reducing volatility without sacrificing return, over longer periods.

It is difficult to arrive at a single model for risk parity , since strategies can differ significantly across firms/strategies. Risk parity almost always requires explicit leverage. The amount of leverage will depend on the specific strategy implementation style, as well as expected correlations and volatility.

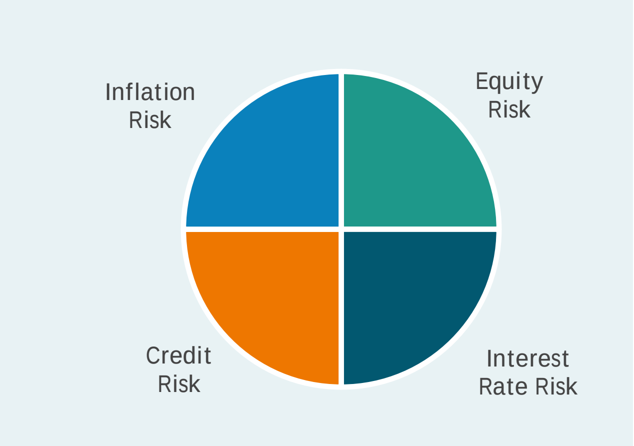
VS. TRADITIONAL ASSET CLASSES



TRADITIONAL ASSET ALLOCATION



RISK PARITY



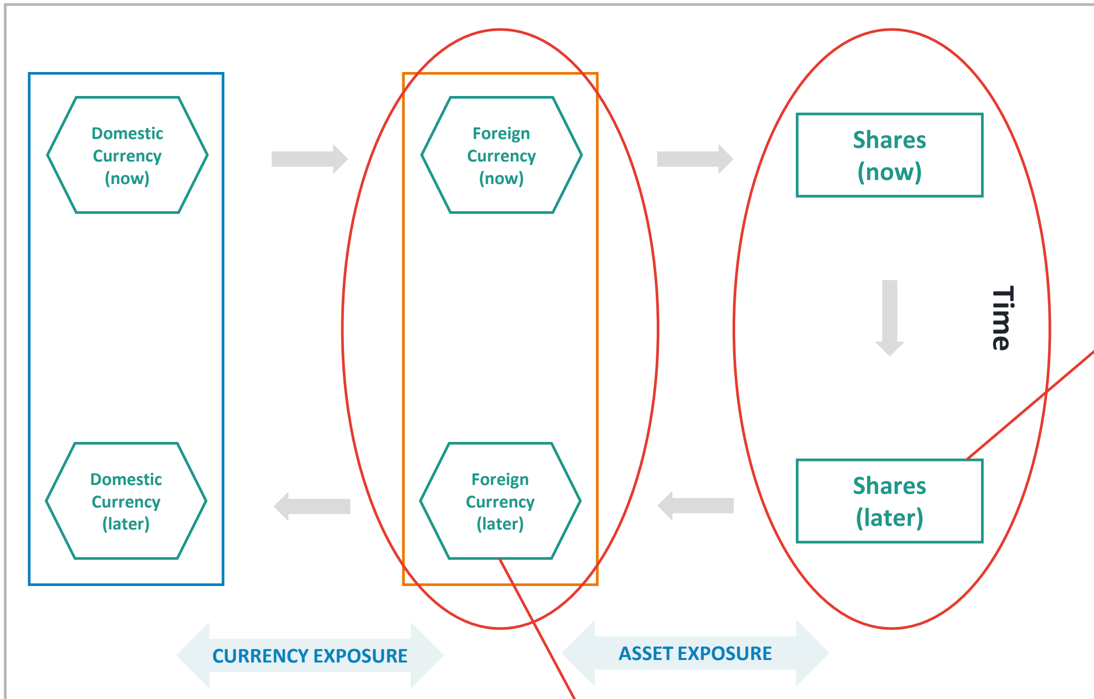
30-year return & risk assumptions

Asset Class	Index Proxy	Thirty Year Return Forecast Geometric	Thirty Year Return Forecast Arithmetic	Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)
Equities						
U.S. Large	S&P 500	5.5%	6.6%	15.4%	0.25	0.32
U.S. Small	Russell 2000	6.1%	8.1%	21.1%	0.21	0.30
International Developed	MSCI EAFE	6.7%	8.0%	17.5%	0.29	0.36
International Small	MSCI EAFE Small Cap	6.2%	8.3%	21.8%	0.21	0.31
Emerging Markets	MSCI EM	6.8%	9.6%	25.6%	0.20	0.31
Global Equity	MSCI ACWI	6.0%	7.3%	16.8%	0.26	0.34
Private Equity*	Cambridge Private Equity	8.7%	11.5%	25.3%	0.28	0.39
Fixed Income						
Cash	30 Day T-Bills	1.7%	1.7%	1.2%	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5 - 10	2.1%	2.3%	5.4%	0.08	0.11
U.S. Treasury	BBgBarc Treasury 7-10 Year	2.1%	2.3%	6.7%	0.07	0.10
U.S. 30-year Treasuries	BBgBarc U.S. Treasury 20+ Year	2.1%	2.9%	12.5%	0.04	0.10
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	0.7%	1.1%	9.7%	-0.10	-0.06
Global Aggregate	BBgBarc Global Aggregate	1.1%	1.3%	6.2%	-0.09	-0.06
Core Fixed Income	BBgBarc U.S. Aggregate Bond	3.0%	3.2%	6.3%	0.21	0.24
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	3.6%	4.0%	8.3%	0.24	0.28
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1 - 3 year	2.3%	2.3%	3.6%	0.17	0.18
Short-Term Credit	BBgBarc Credit 1-3 Year	2.9%	2.9%	3.6%	0.33	0.35
Long-Term Credit	BBgBarc Long U.S. Corporate	3.5%	3.9%	9.4%	0.20	0.24
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	5.3%	5.9%	11.3%	0.32	0.37
Bank Loans	S&P/LSTA Leveraged Loan	4.7%	5.2%	10.0%	0.30	0.35
Global Credit	BBgBarc Global Credit	0.8%	1.1%	7.4%	-0.12	-0.08
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	6.1%	6.8%	12.4%	0.35	0.41
Emerging Markets Debt (Local)	JPM GBI EM Global Diversified	5.7%	6.4%	12.0%	0.34	0.39
Private Credit	Bank Loans + 175bps	6.4%	6.9%	10.0%	0.48	0.52
Other						
Commodities	Bloomberg Commodity	3.2%	4.4%	15.4%	0.10	0.18
Hedge Funds*	HFRI Fund Weighted Composite	4.5%	4.8%	7.7%	0.37	0.40
Real Estate Debt	BBgBarc IG CMBS	4.1%	4.4%	7.6%	0.32	0.35
Core Real Estate	NCREIF Property	6.8%	7.5%	12.4%	0.41	0.47
Value-Add Real Estate	NCREIF Property + 200bps	8.8%	10.2%	17.7%	0.40	0.48
Opportunistic Real Estate	NCREIF Property + 400bps	10.8%	13.0%	23.0%	0.40	0.49
REITs	Wilshire REIT	6.8%	8.4%	19.1%	0.27	0.35
Global Infrastructure	S&P Global Infrastructure	7.0%	8.4%	17.8%	0.30	0.38
Risk Parity	Risk Parity	7.1%	7.6%	10.0%	0.54	0.59
Currency Beta	MSCI Currency Factor Index	2.2%	2.2%	3.6%	0.14	0.15
Inflation		1.6%	-	-	-	-

10-year return forecasts with currency adjustment

Asset Class	Index Proxy	Ten Year Return Forecast (Geometric): CMA Forecast	Ten Year Return Forecast (Geometric): Currency Adjustment	Ten Year Return Forecast (Geometric): Total	Standard Deviation Forecast
Equities					
International Developed Equity Unhedged	MSCI EAFE	7.0%	1.8%	8.8%	17.5%
International Developed Equity Hedged	MSCI EAFE Hedged	7.0%	1.8%	8.8%	15.7%
International Small Equity Unhedged	MSCI EAFE Small Cap	7.2%	1.8%	9.0%	21.8%
International Small Equity Hedged	MSCI EAFE Small Cap Hedged	7.2%	1.8%	9.0%	19.2%
Fixed Income					
Global Sovereign ex U.S. Unhedged	BBgBarc Global Treasury ex U.S.	0.1%	1.7%	1.8%	9.7%
Global Sovereign ex U.S. Hedged	BBgBarc Global Treasury ex U.S. Hedged	0.1%	1.7%	1.8%	3.8%
Global Credit Unhedged	BBgBarc Global Credit	1.4%	0.5%	1.9%	7.4%
Global Credit Hedged	BBgBarc Global Credit Hedged	1.4%	0.5%	1.9%	5.0%

Explanation of the currency adjustment



Step 1: Forecast the expected return of the foreign asset in local currency terms

Step 2: Make an assumption on the ending foreign currency exchange rate

Explanation of the currency adjustment

— There are two options to adjust a local currency return forecast to a U.S. dollar forecast: make a specific exchange rate forecast or take market pricing based on the forward curve

- It is important to note that ignoring currency is making a specific assumption that the current exchange rate will be unchanged over the next 10 years, which has rarely been the case throughout history

— Markets price future exchange rates in the forward market, which represents the SPOT currency price for FORWARD delivery

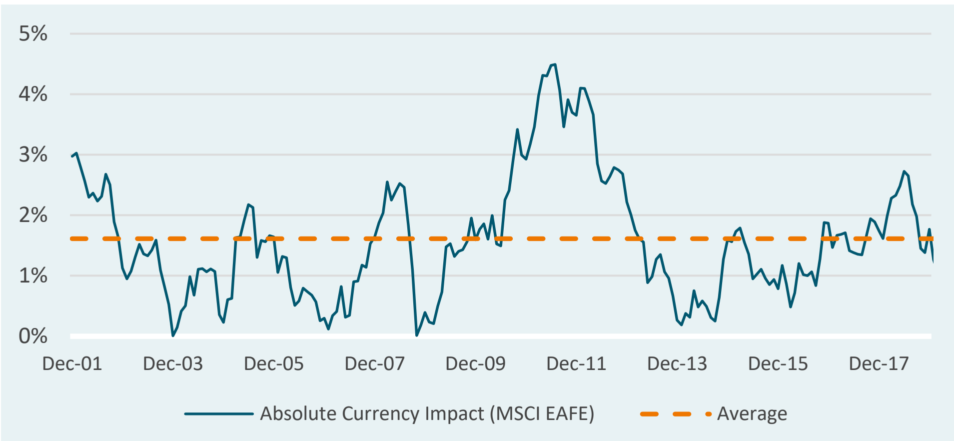
— Forward currency contracts are priced based on the interest rate differential between two currencies – interest rate differentials reflect a significant amount of information, including growth, inflation, and monetary policy expectations

— A currency with a higher interest rate is priced to depreciate relative to a currency with a lower interest rate

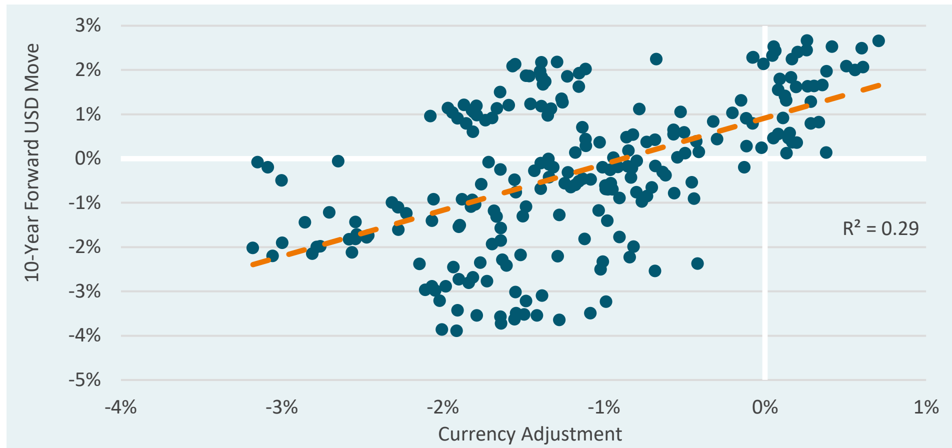
— We adjust our local currency return forecasts based on forward market pricing because we believe this is the neutral, “no opinion” position, rather than making a specific forecast

— Historically, this currency adjustment has had a positive relationship with 10-year forward exchange rate movements

10-YEAR ROLLING ABSOLUTE CURRENCY IMPACT



CURRENCY ADJUSTMENT VS. FORWARD USD MOVEMENT



Autocorrelation adjustment

— We adjust all volatility forecasts that use the long-term historical volatility for autocorrelation.

— Autocorrelation occurs when the future returns of a time series are described (positively correlated) by past returns.

— Time series with positive autocorrelation exhibit artificially low volatility, while time series with negative autocorrelation exhibit artificially high volatility.

— Many asset classes that we tested showed positive autocorrelation, meaning the volatility forecasts that we use in the forecasting process are too low for those asset classes.

— The result of this process was that several asset classes have higher volatility forecasts than if we had made no adjustment for autocorrelation.

Notices & disclosures

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University of Missouri System
Board of Curators
Finance Committee

November 19, 2020

Asset Allocation – Retirement UM

Summary

- Maintain investment objectives focused on balance and diversification
- Low expected returns for US TIPs and US Treasuries forced compromise - balance vs. return
- Capital redeployed to private markets, public equity and risk balanced strategies
- Lower investment return expectation will cause retirement plan actuarial assumptions to be revisited

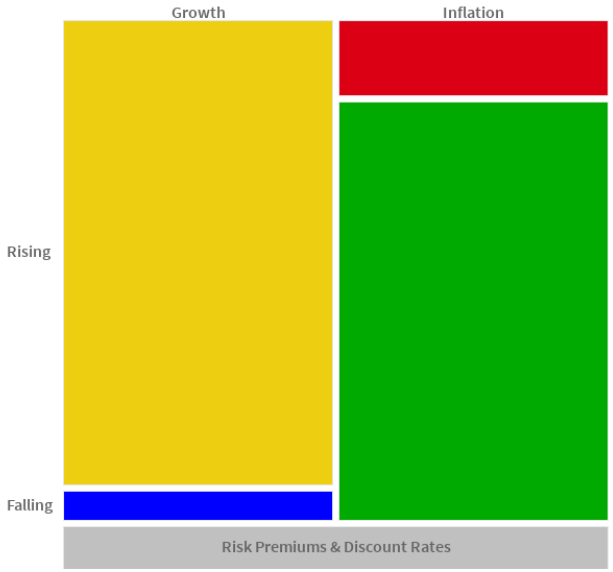
Proposed Changes

Asset Class	Existing	Proposed	Return Expectation
Global Equity	32%	35%	6.3%
Private Equity	10%	12%	9.5%
Private Debt	3%	6%	5.3%
Sovereign Bonds	15%	10%	0.7%
Inflation-Linked Bonds	17%	10%	1.3%
Real Estate	8%	10%	8.3%
Risk Balanced	10%	12%	6.1%
Commodities	5%	5%	3.2%
Total	100%	100%	

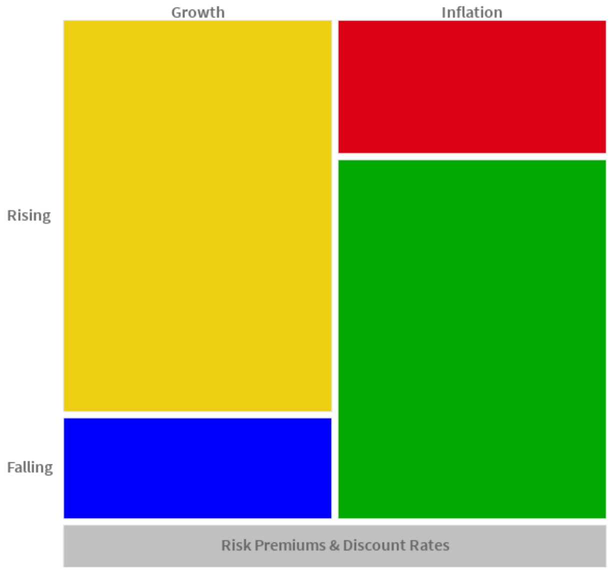
Proposed Changes

	Existing	Proposed	Peer Median
Before Alpha Program			
Mean Expected Return	5.43%	**6.15%**	5.96%
Standard Deviation	9.40%	**10.70%**	11.60%
Sharpe Ratio	0.56	**0.56**	0.50
Alpha Program (% Capital)	20%	**22%**	0%
Including Alpha Program			
Mean Expected Return	6.00%	**6.77%**	5.96%
Standard Deviation	10.00%	**11.30%**	11.60%
Sharpe Ratio	0.58	**0.58**	0.50

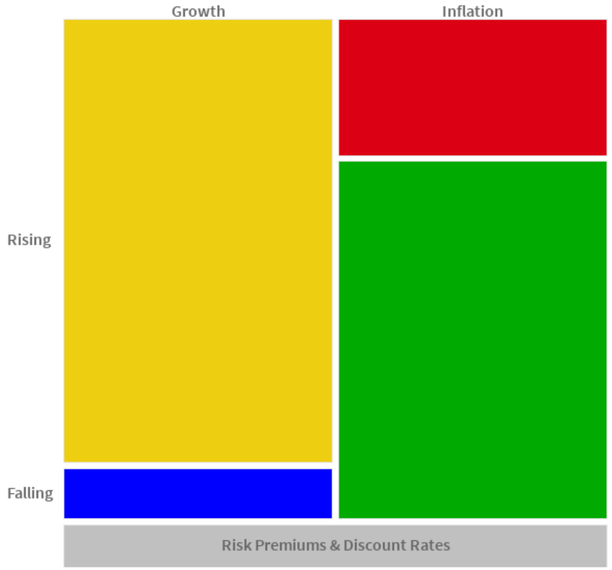
Portfolio Risk Balance



Median Public Pension Plan
> $1 billion

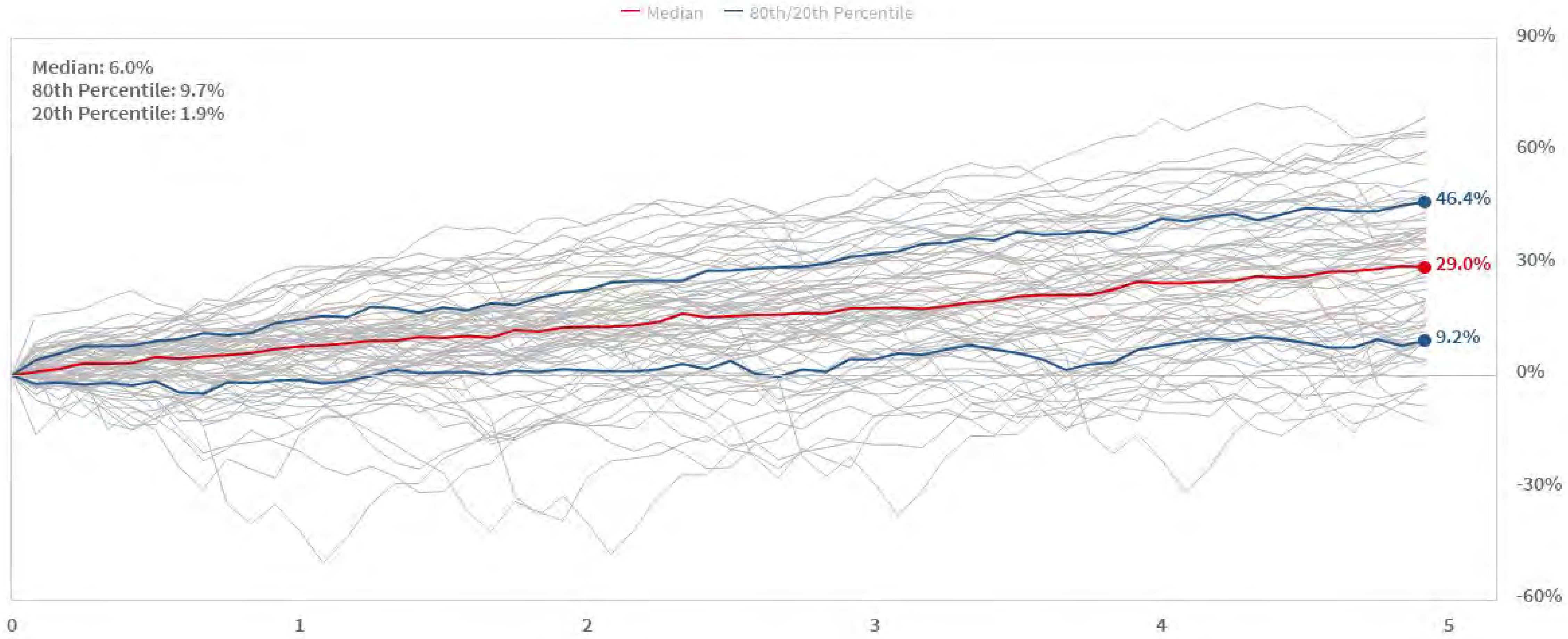


Current Retirement Plan



Proposed Retirement Plan

Proposed Portfolio - Range of Outcomes



Proposed Portfolio Mix (no alpha program) – Range of Rolling Five Year Outcomes (1940-2020)

Actuarial Assumptions

- The current investment return / discount rate actuarial assumption for the Retirement Plan is 7.20%
- Finance and Human Resources staff are currently working with Segal (plan actuary) to revisit actuarial assumptions and determine corresponding costs
- Recommendations will be made to the Board of Curators in the spring of 2021

Questions

Financial Policies and Governance
UM

Vice President Rapp will present changes to CRR 230.010, Tuition and Supplemental Course Fees; and introduce new CRR 140.025, Financial Performance and Accountability, at the November Board of Curators Meeting:

The changes and the new policy reflect the outcomes and requests from the discussion at the September 15th Finance Committee meeting.

The changes to Tuition and Supplemental Course Fees reflect the role of the chancellor and the relative independence granted to each campus in defining tuition and related fees. In addition to the policy change, the Office of Finance will work with MDHE to decouple the four individual university tuition rates for the purposes of the Higher Education Student Funding Act (HESFA).

The Financial Accountability Policy reflects the increased importance of financial accountability for each individual university, and move the rule from a presidential executive order to a Board-approved collected rule. The changes add clarity to the timing of the process and the levers of action that will be undertaken if a university fails to meet the financial performance targets.

No. 2

Recommended Action - Financial Policies and Governance, UM

It was recommended by Vice President Ryan Rapp, endorsed by UM System President and MU Chancellor Mun Y. Choi, recommended by the Finance Committee, moved by Curator ________________, seconded by Curator ________________, that

> Collected Rules and Regulations, Section 230.010, Tuition and Supplemental Course Fees, be amended as outlined in the following pages
>
> and
>
> Collected Rules and Regulations, Section 140.025 Financial Performance and Accountability; Executive Order #47 be amended and moved from a presidential executive order to a Board-approved Collected Rule as outlined in the following pages be approved

Roll call vote of the Committee:	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Steelman		
Curator Williams		

The motion ____________________.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ____________________.

230.010 Tuition and Supplemental Course Fees

Bd. Min. 6-29-79; Amended Bd. Min. 12-17-82; Amended Bd. Min. 5-2-86; Amended Bd. Min. 1-27-95; Amended Bd. Min. 5-4-06; Amended Bd. Min. 12-9-16; Amended Bd. Min. 2-9-17.

A. **Authorization and Approval**

1. The Board of Curators shall set and approve tuition and supplemental course fees charged to undergraduate, graduate, and first-professional students enrolled at ~~the University~~each university.
2. The amount of the tuition and supplemental course fees for each student level shall be assessed for any credit course enrollment.
3. The University reserves the right to make changes at any time in any or all tuition and fees without advance notice.

B. **Tuition and Supplemental Fee Assessment**

1. Assessment of tuition and supplemental fees shall be based on the credit value of a course, a flat fee per semester, or an equivalent value in the case of a zero-credit course. Assessment of tuition and fees shall be made regardless of whether a student is enrolled in a course for credit or auditing a course.
2. Residents of Missouri, as defined in Section 230.020, shall be assessed the tuition at resident rates. Students who are not residents of Missouri shall be assessed the tuition at nonresident fees.

C. **Tuition Waivers** -- The Board delegates to the ~~President~~ Chancellor of~~of the~~ each ~~University of Missouri System~~ University or his/her designate the authority to waive all or a portion of the tuition, if deemed appropriate and for sound educational purposes.

D. Effective on the date of adoption hereof, the Board hereby revokes and repeals all previous rules and regulations adopted by the Board authorizing, establishing or limiting the amount of tuition, educational and supplemental course fees. This action shall not be construed to revoke or repeal any schedule or listing of educational and supplemental course fees currently in effect. The Board finds such action to be necessary for the maintenance and operation of the University.

230.010 Tuition and Supplemental Course Fees

Bd. Min. 6-29-79; Amended Bd. Min. 12-17-82; Amended Bd. Min. 5-2-86; Amended Bd. Min. 1-27-95; Amended Bd. Min. 5-4-06; Amended Bd. Min. 12-9-16; Amended Bd. Min. 2-9-17.

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140.025 Financial Performance and Accountability

Executive Order No. 47, November 7, 2019

System and University/Health System (~~u~~Unit) leadership will set and track progress against financial performance targets. Financial performance targets will be set by System L~~l~~eadership in the context of the ~~u~~Unit's mission and will work in concert with delivery on the enterprise (the four universities and health system) mission and budget constraints. Each ~~u~~Unit leadership team will implement policies and procedures to establish accountability frameworks that meet the defined financial performance targets.

Primary ~~System leadership~~ responsibility for determining financial performance targets for the enterprise rests with the UM System President and UM System Chief Financial Officer (CFO) [collectively, System Leadership) and will be approved by the Board of Curators. In setting financial performance targets, the President and CFO will consider both external context (i.e., market environment, investor expectations, capital market benchmarks, etc.) and internal context (i.e., short versus long-term considerations, strategic priorities, risk tolerance, etc.). The Board of Curators will approve the annual financial performance targets at the Unit and enterprise level.

Financial performance targets will encompass the entirety of the enterprise's financial health, including: revenue growth, expense management, inter-university transfers, return on spending, return on capital employed, reserve adequacy, and appropriate use of debt/capital. Performance targets will be set during the five-year financial planning process and reviewed during the annual~~ly~~ budget process. Performance target adjustments will be considered through an interactive planning process involving System and ~~u~~Unit leadership. Building towards a comprehensive five-year financial plan and annual operating budget, System and ~~u~~Unit leadership will consider each ~~u~~Unit's strategic, staffing and capital plans.

Financial performance must fall within an acceptable, defined range of the individual targets on an annual basis. Average performance over the preceding five-year period should meet the defined financial performance targets. Adjustments to the range may be made at the discretion of ~~the~~ System ~~l~~Leadership to reflect unexpected and extreme environmental shocks, such as an unexpected withhold of state appropriations late in a fiscal year. Any changes in performance expectations will incorporate an adjustment period and will be communicated to the accountable and responsible parties. Unit leadership is accountable for maintaining performance at or above target over ~~of~~ time. Failure by a ~~u~~Unit to perform at targeted levels will require a ~~remediation~~ corrective action plan to be presented to and approved by the President and Board of Curators.

Units that fail to perform at targeted levels may experience preventative or corrective measures, including but not limited to one or more of the following:

- ~~Capital Project Probation – no new projects may be presented to the Board while on probation.~~

November 19, 2020

- Forced Capitalization/Principal Paydown - strategic funding from investment earnings will be used to stabilize financial performance
- Strategic Funding Restrictions – any spending of strategic funding from investment earnings by the Unit requires approval from outside of the Unit.
- Capital Project Probation – no new projects may be presented to the Board while on probation.
- Debt Prohibition - no new debt or internal loans until performance moves back into range.
- Reserve Lockbox - any spending above plan requires approval from outside the ~~u~~Unit.
- Hiring Freeze - any job postings/hiring requires approval from outside the ~~u~~Unit.
- Employee Separations - Disciplinary action following relevant HR policies at the discretion of the leader's supervisor.

Performance targets will reflect the entirety of the financial health of the enterprise and reference best practices for financial management. These metrics will be reviewed with the Board annually and change with best practices for financial management within the industry.

~~Units that consistently perform at or above targeted levels are eligible for the following benefits:~~

- ~~Capital project prioritization~~
- ~~Favorable financing terms on new debt issuances~~
- ~~Priority access to strategic funding at the President's discretion from investment earnings~~

~~As an example, the performance target for a unit might look as follows:~~

- ~~5% operating margin~~
- ~~Performance floor of 0%~~

~~In this case, operating margin performance below a floor of 0% in a given year or a multi-year trend of operating margin performance below 5% but above 0% would result in one or more of the aforementioned corrective measures, unless there was an unexpected and extreme environmental shock as determined by System leadership.~~

Role of Chancellors and Health System Chief Executive Officer:

- Accountable for financial performance to target.
- Ensure the ~~u~~Unit meets the mission while balancing financial performance.
- Conduct an annual financial planning process that aligns the strategic plan, staffing plan, capital plan, and operations with the financial performance targets.
- Submit financial plans and related performance against targets to the ~~President~~ Board of Curators for approval.
- Receive updates from CFO and monitor financial performance against targets throughout the year. Inform the President of performance below target and corrective action plans to improve performance.
- Delegate financial and operational targets for leaders including the Provosts, Deans, Directors and other leaders. (The Chancellor / Chief Executive Officer remains ultimately accountable for their ~~u~~Unit's performance)

Role of University and Health System Chief Financial Officers:

- Responsible for financial performance to target.
- Develop assumptions for campus financial plans and approve college/division plans for financial reasonableness and alignment.
- Accountable for the validity and completeness of financial assumptions as a part of the annual financial planning process. Advise the leadership team on the impact of various strategic and operating initiatives on financial performance.
- Submit financial plans and related performance against targets to the UM System CFO for approval.
- Monitor financial performance against plan on a monthly basis. Report performance against plan to UM System CFO. Advise Chancellor/Hospital CEO when performance is off plan and work jointly to develop corrective action plans. Request target adjustment for material unforeseen, non-controllable factors (example: mid-year state appropriation withholds).

Role of President:

- Accountable for the financial health of the University of Missouri at the enterprise level.
- Ensure the institution meets the mission while balancing financial performance.
- Approve and set the financial performance targets.
- Oversee and approve the financial, strategic, and capital plans of each ~~u~~Unit.
- Monitor financial performance against plan for the enterprise.
- Hold leadership accountable for financial performance and manage lower than expected performance with appropriate ~~sanctions~~ measures above.

Role of UM System Chief Financial Officer:

- Responsible for the financial health of the University of Missouri at the enterprise level.
- Collaboratively propose the financial performance targets for each ~~u~~Unit.
- Present capital and financial plans to the Board of Curators for approval.
- Monitor financial performance for the enterprise. Provide a quarterly update on projected financial performance to the President and Board on financial performance starting in the second quarter.
- Report to the Board when performance is materially off plan for the enterprise with appropriate corrective actions.
- Determines key performance metrics with approval from the President. Approves adjustments to performance targets for unforeseen, non-controllable factors for each ~~u~~Unit. Consults President on target adjustments if there is a risk of missing enterprise-level performance targets.

140.025 Financial Performance and Accountability

Executive Order No. 47, November 7, 2019

System and University/Health System (Unit) leadership will set and track progress against financial performance targets. Financial performance targets will be set by System Leadership in the context of the Unit's mission and will work in concert with delivery on the enterprise (the four universities and health system) mission and budget constraints. Each Unit leadership team will implement policies and procedures to establish accountability frameworks that meet the defined financial performance targets.

Primary responsibility for determining financial performance targets for the enterprise rests with the UM System President and UM System Chief Financial Officer (CFO) [collectively, System Leadership) and will be approved by the Board of Curators. In setting financial performance targets, the President and CFO will consider both external context (i.e., market environment, investor expectations, capital market benchmarks, etc.) and internal context (i.e., short versus long-term considerations, strategic priorities, risk tolerance, etc.). The Board of Curators will approve the annual financial performance targets at the Unit and enterprise level.

Financial performance targets will encompass the entirety of the enterprise's financial health, including: revenue growth, expense management, inter-university transfers, return on spending, return on capital employed, reserve adequacy, and appropriate use of debt/capital. Performance targets will be set during the five-year financial planning process and reviewed during the annual budget process. Performance target adjustments will be considered through an interactive planning process involving System and Unit leadership. Building towards a comprehensive five-year financial plan and annual operating budget, System and Unit leadership will consider each Unit's strategic, staffing and capital plans.

Financial performance must fall within an acceptable, defined range of the individual targets on an annual basis. Average performance over the preceding five-year period should meet the defined financial performance targets. Adjustments to the range may be made at the discretion of System Leadership to reflect unexpected and extreme environmental shocks, such as an unexpected withhold of state appropriations late in a fiscal year. Any changes in performance expectations will incorporate an adjustment period and will be communicated to the accountable and responsible parties. Unit leadership is accountable for maintaining performance at or above target over time. Failure by a Unit to perform at targeted levels will require a corrective action plan to be presented to and approved by the President and Board of Curators.

Units that fail to perform at targeted levels may experience preventative or corrective measures, including but not limited to one or more of the following:

- Forced Capitalization/Principal Paydown - strategic funding from investment earnings will be used to stabilize financial performance

- Strategic Funding Restrictions – any spending of strategic funding from investment earnings by the Unit requires approval from outside of the Unit.
- Capital Project Probation – no new projects may be presented to the Board while on probation.
- Debt Prohibition - no new debt or internal loans until performance moves back into range.
- Reserve Lockbox - any spending above plan requires approval from outside the Unit.
- Hiring Freeze - any job postings/hiring requires approval from outside the Unit.
- Employee Separations - Disciplinary action following relevant HR policies at the discretion of the leader's supervisor.

Performance targets will reflect the entirety of the financial health of the enterprise and reference best practices for financial management. These metrics will be reviewed with the Board annually and change with best practices for financial management within the industry.

Role of Chancellors and Health System Chief Executive Officer:

- Accountable for financial performance to target.
- Ensure the Unit meets the mission while balancing financial performance.
- Conduct an annual financial planning process that aligns the strategic plan, staffing plan, capital plan, and operations with the financial performance targets.
- Submit financial plans and related performance against targets to the Board of Curators for approval.
- Receive updates from CFO and monitor financial performance against targets throughout the year. Inform the President of performance below target and corrective action plans to improve performance.
- Delegate financial and operational targets for leaders including the Provosts, Deans, Directors and other leaders. (The Chancellor / Chief Executive Officer remains ultimately accountable for their Unit's performance)

Role of University and Health System Chief Financial Officers:

- Responsible for financial performance to target.
- Develop assumptions for campus financial plans and approve college/division plans for financial reasonableness and alignment.
- Accountable for the validity and completeness of financial assumptions as a part of the annual financial planning process. Advise the leadership team on the impact of various strategic and operating initiatives on financial performance.
- Submit financial plans and related performance against targets to the UM System CFO for approval.
- Monitor financial performance against plan on a monthly basis. Report performance against plan to UM System CFO. Advise Chancellor/Hospital CEO when performance is off plan and work jointly to develop corrective action plans. Request target adjustment for material unforeseen, non-controllable factors (example: mid-year state appropriation withholds).

Role of President:

- Accountable for the financial health of the University of Missouri at the enterprise level.
- Ensure the institution meets the mission while balancing financial performance.
- Approve and set the financial performance targets.
- Oversee and approve the financial, strategic, and capital plans of each Unit.
- Monitor financial performance against plan for the enterprise.
- Hold leadership accountable for financial performance and manage lower than expected performance with appropriate measures above.

Role of UM System Chief Financial Officer:

- Responsible for the financial health of the University of Missouri at the enterprise level.
- Collaboratively propose the financial performance targets for each Unit.
- Present capital and financial plans to the Board of Curators for approval.
- Monitor financial performance for the enterprise. Provide a quarterly update on projected financial performance to the President and Board on financial performance starting in the second quarter.
- Report to the Board when performance is materially off plan for the enterprise with appropriate corrective actions.
- Determines key performance metrics with approval from the President. Approves adjustments to performance targets for unforeseen, non-controllable factors for each Unit. Consults President on target adjustments if there is a risk of missing enterprise-level performance targets.

Financial Policies and Governance
UM

Vice President Rapp will present changes to CRR 230.010, Tuition and Supplemental Course Fees; and introduce new CRR 140.025, Financial Performance and Accountability, at the November Board of Curators Meeting:

The changes and the new policy reflect the outcomes and requests from the discussion at the September 15th Finance Committee meeting.

The changes to Tuition and Supplemental Course Fees reflect the role of the chancellor and the relative independence granted to each campus in defining tuition and related fees. In addition to the policy change, the Office of Finance will work with MDHE to decouple the four individual university tuition rates for the purposes of the Higher Education Student Funding Act (HESFA).

The Financial Accountability Policy reflects the increased importance of financial accountability for each individual university, and move the rule from a presidential executive order to a Board-approved collected rule. The changes add clarity to the timing of the process and the levers of action that will be undertaken if a university fails to meet the financial performance targets.

No. 2

Recommended Action - Financial Policies and Governance, UM

It was recommended by Vice President Ryan Rapp, endorsed by UM System President and MU Chancellor Mun Y. Choi, recommended by the Finance Committee, moved by Curator ________________, seconded by Curator ________________, that

> Collected Rules and Regulations, Section 230.010, Tuition and Supplemental Course Fees, be amended as outlined in the following pages
>
> and
>
> Collected Rules and Regulations, Section 140.025 Financial Performance and Accountability; Executive Order #47 be amended and moved from a presidential executive order to a Board-approved Collected Rule as outlined in the following pages be approved

Roll call vote of the Committee:	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Steelman		
Curator Williams		

The motion ____________________.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ___________________.

230.010 Tuition and Supplemental Course Fees

Bd. Min. 6-29-79; Amended Bd. Min. 12-17-82; Amended Bd. Min. 5-2-86; Amended Bd. Min. 1-27-95; Amended Bd. Min. 5-4-06; Amended Bd. Min. 12-9-16; Amended Bd. Min. 2-9-17.

A. **Authorization and Approval**

1. The Board of Curators shall set and approve tuition and supplemental course fees charged to undergraduate, graduate, and first-professional students enrolled at ~~the University~~each university.
2. The amount of the tuition and supplemental course fees for each student level shall be assessed for any credit course enrollment.
3. The University reserves the right to make changes at any time in any or all tuition and fees without advance notice.

B. **Tuition and Supplemental Fee Assessment**

1. Assessment of tuition and supplemental fees shall be based on the credit value of a course, a flat fee per semester, or an equivalent value in the case of a zero-credit course. Assessment of tuition and fees shall be made regardless of whether a student is enrolled in a course for credit or auditing a course.
2. Residents of Missouri, as defined in Section 230.020, shall be assessed the tuition at resident rates. Students who are not residents of Missouri shall be assessed the tuition at nonresident fees.

C. **Tuition Waivers** -- The Board delegates to the ~~President~~ Chancellor of~~of the~~ each ~~University of Missouri System~~ University or his/her designate the authority to waive all or a portion of the tuition, if deemed appropriate and for sound educational purposes.

D. Effective on the date of adoption hereof, the Board hereby revokes and repeals all previous rules and regulations adopted by the Board authorizing, establishing or limiting the amount of tuition, educational and supplemental course fees. This action shall not be construed to revoke or repeal any schedule or listing of educational and supplemental course fees currently in effect. The Board finds such action to be necessary for the maintenance and operation of the University.

230.010 Tuition and Supplemental Course Fees

Bd. Min. 6-29-79; Amended Bd. Min. 12-17-82; Amended Bd. Min. 5-2-86; Amended Bd. Min. 1-27-95; Amended Bd. Min. 5-4-06; Amended Bd. Min. 12-9-16; Amended Bd. Min. 2-9-17.

A. **Authorization and Approval**

1. The Board of Curators shall set and approve tuition and supplemental course fees charged to undergraduate, graduate, and first-professional students enrolled at each university.
2. The amount of the tuition and supplemental course fees for each student level shall be assessed for any credit course enrollment.
3. The University reserves the right to make changes at any time in any or all tuition and fees without advance notice.

B. **Tuition and Supplemental Fee Assessment**

1. Assessment of tuition and supplemental fees shall be based on the credit value of a course, a flat fee per semester, or an equivalent value in the case of a zero-credit course. Assessment of tuition and fees shall be made regardless of whether a student is enrolled in a course for credit or auditing a course.
2. Residents of Missouri, as defined in Section 230.020, shall be assessed the tuition at resident rates. Students who are not residents of Missouri shall be assessed the tuition at nonresident fees.

C. **Tuition Waivers** -- The Board delegates to the Chancellor of each University or his/her designate the authority to waive all or a portion of the tuition, if deemed appropriate and for sound educational purposes.

D. Effective on the date of adoption hereof, the Board hereby revokes and repeals all previous rules and regulations adopted by the Board authorizing, establishing or limiting the amount of tuition, educational and supplemental course fees. This action shall not be construed to revoke or repeal any schedule or listing of educational and supplemental course fees currently in effect. The Board finds such action to be necessary for the maintenance and operation of the University.

REDLINE

140.025 Financial Performance and Accountability

Executive Order No. 47, November 7, 2019

System and University/Health System (~~u~~Unit) leadership will set and track progress against financial performance targets. Financial performance targets will be set by System L~~l~~eadership in the context of the ~~u~~Unit's mission and will work in concert with delivery on the enterprise (the four universities and health system) mission and budget constraints. Each ~~u~~Unit leadership team will implement policies and procedures to establish accountability frameworks that meet the defined financial performance targets.

Primary ~~System leadership~~ responsibility for determining financial performance targets for the enterprise rests with the UM System President and UM System Chief Financial Officer (CFO) [collectively, System Leadership) and will be approved by the Board of Curators. In setting financial performance targets, the President and CFO will consider both external context (i.e., market environment, investor expectations, capital market benchmarks, etc.) and internal context (i.e., short versus long-term considerations, strategic priorities, risk tolerance, etc.). The Board of Curators will approve the annual financial performance targets at the Unit and enterprise level.

Financial performance targets will encompass the entirety of the enterprise's financial health, including: revenue growth, expense management, inter-university transfers, return on spending, return on capital employed, reserve adequacy, and appropriate use of debt/capital. Performance targets will be set during the five-year financial planning process and reviewed during the annual~~ly~~ budget process. Performance target adjustments will be considered through an interactive planning process involving System and ~~u~~Unit leadership. Building towards a comprehensive five-year financial plan and annual operating budget, System and ~~u~~Unit leadership will consider each ~~u~~Unit's strategic, staffing and capital plans.

Financial performance must fall within an acceptable, defined range of the individual targets on an annual basis. Average performance over the preceding five-year period should meet the defined financial performance targets. Adjustments to the range may be made at the discretion of ~~the~~ System ~~l~~Leadership to reflect unexpected and extreme environmental shocks, such as an unexpected withhold of state appropriations late in a fiscal year. Any changes in performance expectations will incorporate an adjustment period and will be communicated to the accountable and responsible parties. Unit leadership is accountable for maintaining performance at or above target over ~~of~~ time. Failure by a ~~u~~Unit to perform at targeted levels will require a ~~remediation~~ corrective action plan to be presented to and approved by the President and Board of Curators.

Units that fail to perform at targeted levels may experience preventative or corrective measures, including but not limited to one or more of the following:

- ~~Capital Project Probation – no new projects may be presented to the Board while on probation.~~

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- Forced Capitalization/Principal Paydown - strategic funding from investment earnings will be used to stabilize financial performance
- Strategic Funding Restrictions – any spending of strategic funding from investment earnings by the Unit requires approval from outside of the Unit.
- Capital Project Probation – no new projects may be presented to the Board while on probation.
- Debt Prohibition - no new debt or internal loans until performance moves back into range.
- Reserve Lockbox - any spending above plan requires approval from outside the ~~u~~Unit.
- Hiring Freeze - any job postings/hiring requires approval from outside the ~~u~~Unit.
- Employee Separations - Disciplinary action following relevant HR policies at the discretion of the leader's supervisor.

Performance targets will reflect the entirety of the financial health of the enterprise and reference best practices for financial management. These metrics will be reviewed with the Board annually and change with best practices for financial management within the industry.

~~Units that consistently perform at or above targeted levels are eligible for the following benefits:~~

- ~~Capital project prioritization~~
- ~~Favorable financing terms on new debt issuances~~
- ~~Priority access to strategic funding at the President's discretion from investment earnings~~

~~As an example, the performance target for a unit might look as follows:~~

- ~~5% operating margin~~
- ~~Performance floor of 0%~~

~~In this case, operating margin performance below a floor of 0% in a given year or a multi-year trend of operating margin performance below 5% but above 0% would result in one or more of the aforementioned corrective measures, unless there was an unexpected and extreme environmental shock as determined by System leadership.~~

Role of Chancellors and Health System Chief Executive Officer:

- Accountable for financial performance to target.
- Ensure the ~~u~~Unit meets the mission while balancing financial performance.
- Conduct an annual financial planning process that aligns the strategic plan, staffing plan, capital plan, and operations with the financial performance targets.
- Submit financial plans and related performance against targets to the ~~President~~ Board of Curators for approval.
- Receive updates from CFO and monitor financial performance against targets throughout the year. Inform the President of performance below target and corrective action plans to improve performance.
- Delegate financial and operational targets for leaders including the Provosts, Deans, Directors and other leaders. (The Chancellor / Chief Executive Officer remains ultimately accountable for their ~~u~~Unit's performance)

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Role of University and Health System Chief Financial Officers:

- Responsible for financial performance to target.
- Develop assumptions for campus financial plans and approve college/division plans for financial reasonableness and alignment.
- Accountable for the validity and completeness of financial assumptions as a part of the annual financial planning process. Advise the leadership team on the impact of various strategic and operating initiatives on financial performance.
- Submit financial plans and related performance against targets to the UM System CFO for approval.
- Monitor financial performance against plan on a monthly basis. Report performance against plan to UM System CFO. Advise Chancellor/Hospital CEO when performance is off plan and work jointly to develop corrective action plans. Request target adjustment for material unforeseen, non-controllable factors (example: mid-year state appropriation withholds).

Role of President:

- Accountable for the financial health of the University of Missouri at the enterprise level.
- Ensure the institution meets the mission while balancing financial performance.
- Approve and set the financial performance targets.
- Oversee and approve the financial, strategic, and capital plans of each ~~u~~Unit.
- Monitor financial performance against plan for the enterprise.
- Hold leadership accountable for financial performance and manage lower than expected performance with appropriate ~~sanctions~~ measures above.

Role of UM System Chief Financial Officer:

- Responsible for the financial health of the University of Missouri at the enterprise level.
- Collaboratively propose the financial performance targets for each ~~u~~Unit.
- Present capital and financial plans to the Board of Curators for approval.
- Monitor financial performance for the enterprise. Provide a quarterly update on projected financial performance to the President and Board on financial performance starting in the second quarter.
- Report to the Board when performance is materially off plan for the enterprise with appropriate corrective actions.
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140.025 Financial Performance and Accountability

Executive Order No. 47, November 7, 2019

System and University/Health System (Unit) leadership will set and track progress against financial performance targets. Financial performance targets will be set by System Leadership in the context of the Unit's mission and will work in concert with delivery on the enterprise (the four universities and health system) mission and budget constraints. Each Unit leadership team will implement policies and procedures to establish accountability frameworks that meet the defined financial performance targets.

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Financial performance must fall within an acceptable, defined range of the individual targets on an annual basis. Average performance over the preceding five-year period should meet the defined financial performance targets. Adjustments to the range may be made at the discretion of System Leadership to reflect unexpected and extreme environmental shocks, such as an unexpected withhold of state appropriations late in a fiscal year. Any changes in performance expectations will incorporate an adjustment period and will be communicated to the accountable and responsible parties. Unit leadership is accountable for maintaining performance at or above target over time. Failure by a Unit to perform at targeted levels will require a corrective action plan to be presented to and approved by the President and Board of Curators.

Units that fail to perform at targeted levels may experience preventative or corrective measures, including but not limited to one or more of the following:

- Forced Capitalization/Principal Paydown - strategic funding from investment earnings will be used to stabilize financial performance

- Strategic Funding Restrictions – any spending of strategic funding from investment earnings by the Unit requires approval from outside of the Unit.
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- Employee Separations - Disciplinary action following relevant HR policies at the discretion of the leader’s supervisor.

Performance targets will reflect the entirety of the financial health of the enterprise and reference best practices for financial management. These metrics will be reviewed with the Board annually and change with best practices for financial management within the industry.

Role of Chancellors and Health System Chief Executive Officer:

- Accountable for financial performance to target.
- Ensure the Unit meets the mission while balancing financial performance.
- Conduct an annual financial planning process that aligns the strategic plan, staffing plan, capital plan, and operations with the financial performance targets.
- Submit financial plans and related performance against targets to the Board of Curators for approval.
- Receive updates from CFO and monitor financial performance against targets throughout the year. Inform the President of performance below target and corrective action plans to improve performance.
- Delegate financial and operational targets for leaders including the Provosts, Deans, Directors and other leaders. (The Chancellor / Chief Executive Officer remains ultimately accountable for their Unit’s performance)

Role of University and Health System Chief Financial Officers:

- Responsible for financial performance to target.
- Develop assumptions for campus financial plans and approve college/division plans for financial reasonableness and alignment.
- Accountable for the validity and completeness of financial assumptions as a part of the annual financial planning process. Advise the leadership team on the impact of various strategic and operating initiatives on financial performance.
- Submit financial plans and related performance against targets to the UM System CFO for approval.
- Monitor financial performance against plan on a monthly basis. Report performance against plan to UM System CFO. Advise Chancellor/Hospital CEO when performance is off plan and work jointly to develop corrective action plans. Request target adjustment for material unforeseen, non-controllable factors (example: mid-year state appropriation withholds).

Role of President:

- Accountable for the financial health of the University of Missouri at the enterprise level.
- Ensure the institution meets the mission while balancing financial performance.
- Approve and set the financial performance targets.
- Oversee and approve the financial, strategic, and capital plans of each Unit.
- Monitor financial performance against plan for the enterprise.
- Hold leadership accountable for financial performance and manage lower than expected performance with appropriate measures above.

Role of UM System Chief Financial Officer:

- Responsible for the financial health of the University of Missouri at the enterprise level.
- Collaboratively propose the financial performance targets for each Unit.
- Present capital and financial plans to the Board of Curators for approval.
- Monitor financial performance for the enterprise. Provide a quarterly update on projected financial performance to the President and Board on financial performance starting in the second quarter.
- Report to the Board when performance is materially off plan for the enterprise with appropriate corrective actions.
- Determines key performance metrics with approval from the President. Approves adjustments to performance targets for unforeseen, non-controllable factors for each Unit. Consults President on target adjustments if there is a risk of missing enterprise-level performance targets.

Resource Allocation Principles
UM

At the September 15th Board of Curators Meeting, Vice President Rapp shared an update on resource allocation for the UM System to reflect the new paradigm for higher education for Missouri. Since the meeting, the University's leadership team took Board feedback and drafted the Council of Chancellors report and resource allocation principles that are included in the following pages. The goal of these principles is to provide the tools to allow Chancellors to make their campuses successful in the new environment, while ensuring there is appropriate accountability for sustainable financial results at each University.

No. 3

Recommended Action - Resource Allocation Principles, UM

It was recommended by Vice President Ryan Rapp, endorsed by UM System President and MU Chancellor Mun Y. Choi, recommended by the Finance Committee, moved by Curator ________________, seconded by Curator ________________, that the Resource Allocation Principles outlined in the following pages be approved.

Roll call vote of the Committee:	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Steelman		
Curator Williams		

The motion ____________________.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ____________________.

Resource Allocation Principles

1. Each campus will retain all resources, such as tuition and fees, gifts, sales and services, that it generates through its own activities. Each campus will retain resources that it generates through cost reductions.

   A. Each university will set tuition and fees independently to allow market demand and the differential costs of programs to drive price. This allows the individual campus to control price and brand to generate additional fee revenue.

   B. Within the shared responsibility among the University, the State government, and the Federal government, each campus will manage its financial aid relative to its recommended tuition increases and its student demographics in order to maintain financial access and affordability. Financial aid decisions will be delegated to the Chancellors, as reflected in the update to CRR 230.010.

2. Resource allocation for state funding will consider the different missions and unique nature of each campus with funding based on enrollments, programs and levels of students (undergraduates versus graduates and professionals). The Council of Chancellors will propose the allocation of state funding to the Board for approval. The Board has full discretion on the allocation of State Appropriations.

   A. Funding for the University's fiduciary responsibilities (e.g., the Missouri Endowed chair program) will be the first priority in the allocation process.

   B. Additional funding requests will be decided by the Council of Chancellors and approved by the Board of Curators each year. This will determine the allocation of appropriations on the appropriations request. The final budget for state appropriations will be determined by the State's annual budget process approved by the legislature and signed by the governor. These final amounts will serve as the annual budget, which is approved by the Board of Curators annually.

   C. Any unexpected cuts or withholds will be allocated first based on the line items defined by the governor. Mandatory programs will be maintained via the cuts. The remaining cuts will be allocated based on each University's share from the Board Approved budget. The Council of Chancellors may propose a different allocation of State Appropriation cuts for Board of Curators approval. Any changes cannot override legislative or governor allocations.

3. As a land grant, University Outreach and Extension is an integral part of the University's mission. University Outreach and Extension has been funded primarily by county, state and federal appropriations in compliance with Smith-Lever Act regulations and state and federal grants. As federal and state support shrink, program offerings will need to be adjusted to match county, state, and federal resources or other sources of funding will need to be identified. University Outreach and

Extension will remain at MU and serve all four universities where collaboration opportunities exist.

4. As research universities, investment in research remains a key priority for each institution to maintain their status and rankings. Research investments will be managed by each Chancellor, with all research related revenues and overhead reimbursement retained by the university generating the awards.

5. Each university will retain all sales and services income generated from auxiliary operations. Each Chancellor is responsible for ensuring the operations generating these income streams meet their obligations, with the first and foremost being the obligations that arise from the debt issued for the campus. Failure by a University to meet financial performance expectations as a whole will result in sanctions, as defined in CRR 140.025.

6. Investment income will be allocated based upon each university's relative assets that generated the income. This principle is already followed for the endowment pool where each account receives a pro-rata share of income, with smoothing principles for market volatility. This same principle will be followed for interest income earned on the University's working capital. The Board will retain approval rights for the use of the dividend portion of the proceeds, which represents the excess earnings above a cash rate of return provided to each campus. Each Chancellor will submit a plan for the use of the dividend to the Board for approval as a part of the annual budget process. These dividend earnings will be utilized to help capitalize individual universities who underperform on their financial performance targets.

7. System administration, which provides university-wide services in finance, human resources, information technology, government relations, and legal counsel, has been funded primarily by state appropriations and investment income. With the changing resource allocation principles, System administration will change to a cost center funded by the four universities and health system. The state appropriations previously allocated to system will be allocated via principle #2, whereas investment income will be allocated via principle #6.

    A. The cost for providing these services will be allocated to each university based on its share of total operating expense or other cost drivers for specific services.

    B. Any percent annual cost growth in these services will be capped at percent revenue growth for the enterprise.

    C. The President could override this cap as needed in consultation with the Council of Chancellors.

Resource Allocation Principles
UM

At the September 15th Board of Curators Meeting, Vice President Rapp shared an update on resource allocation for the UM System to reflect the new paradigm for higher education for Missouri. Since the meeting, the University's leadership team took Board feedback and drafted the Council of Chancellors report and resource allocation principles that are included in the following pages. The goal of these principles is to provide the tools to allow Chancellors to make their campuses successful in the new environment, while ensuring there is appropriate accountability for sustainable financial results at each University.

No. 3

Recommended Action - Resource Allocation Principles, UM

It was recommended by Vice President Ryan Rapp, endorsed by UM System President and MU Chancellor Mun Y. Choi, recommended by the Finance Committee, moved by Curator _______________, seconded by Curator _______________, that the Resource Allocation Principles outlined in the following pages be approved.

Roll call vote of the Committee:	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Steelman		
Curator Williams		

The motion ___________________.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
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Curator Wenneker		
Curator Williams		

The motion ___________________.

Resource Allocation Principles

1. Each campus will retain all resources, such as tuition and fees, gifts, sales and services, that it generates through its own activities. Each campus will retain resources that it generates through cost reductions.

    A. Each university will set tuition and fees independently to allow market demand and the differential costs of programs to drive price. This allows the individual campus to control price and brand to generate additional fee revenue.

    B. Within the shared responsibility among the University, the State government, and the Federal government, each campus will manage its financial aid relative to its recommended tuition increases and its student demographics in order to maintain financial access and affordability. Financial aid decisions will be delegated to the Chancellors, as reflected in the update to CRR 230.010.

2. Resource allocation for state funding will consider the different missions and unique nature of each campus with funding based on enrollments, programs and levels of students (undergraduates versus graduates and professionals). The Council of Chancellors will propose the allocation of state funding to the Board for approval. The Board has full discretion on the allocation of State Appropriations.

    A. Funding for the University's fiduciary responsibilities (e.g., the Missouri Endowed chair program) will be the first priority in the allocation process.

    B. Additional funding requests will be decided by the Council of Chancellors and approved by the Board of Curators each year. This will determine the allocation of appropriations on the appropriations request. The final budget for state appropriations will be determined by the State's annual budget process approved by the legislature and signed by the governor. These final amounts will serve as the annual budget, which is approved by the Board of Curators annually.

    C. Any unexpected cuts or withholds will be allocated first based on the line items defined by the governor. Mandatory programs will be maintained via the cuts. The remaining cuts will be allocated based on each University's share from the Board Approved budget. The Council of Chancellors may propose a different allocation of State Appropriation cuts for Board of Curators approval. Any changes cannot override legislative or governor allocations.

3. As a land grant, University Outreach and Extension is an integral part of the University's mission. University Outreach and Extension has been funded primarily by county, state and federal appropriations in compliance with Smith-Lever Act regulations and state and federal grants. As federal and state support shrink, program offerings will need to be adjusted to match county, state, and federal resources or other sources of funding will need to be identified. University Outreach and

Extension will remain at MU and serve all four universities where collaboration opportunities exist.

4. As research universities, investment in research remains a key priority for each institution to maintain their status and rankings. Research investments will be managed by each Chancellor, with all research related revenues and overhead reimbursement retained by the university generating the awards.

5. Each university will retain all sales and services income generated from auxiliary operations. Each Chancellor is responsible for ensuring the operations generating these income streams meet their obligations, with the first and foremost being the obligations that arise from the debt issued for the campus. Failure by a University to meet financial performance expectations as a whole will result in sanctions, as defined in CRR 140.025.

6. Investment income will be allocated based upon each university's relative assets that generated the income. This principle is already followed for the endowment pool where each account receives a pro-rata share of income, with smoothing principles for market volatility. This same principle will be followed for interest income earned on the University's working capital. The Board will retain approval rights for the use of the dividend portion of the proceeds, which represents the excess earnings above a cash rate of return provided to each campus. Each Chancellor will submit a plan for the use of the dividend to the Board for approval as a part of the annual budget process. These dividend earnings will be utilized to help capitalize individual universities who underperform on their financial performance targets.

7. System administration, which provides university-wide services in finance, human resources, information technology, government relations, and legal counsel, has been funded primarily by state appropriations and investment income. With the changing resource allocation principles, System administration will change to a cost center funded by the four universities and health system. The state appropriations previously allocated to system will be allocated via principle #2, whereas investment income will be allocated via principle #6.

   A. The cost for providing these services will be allocated to each university based on its share of total operating expense or other cost drivers for specific services.

   B. Any percent annual cost growth in these services will be capped at percent revenue growth for the enterprise.

   C. The President could override this cap as needed in consultation with the Council of Chancellors.

Project Approval
MU Health Care – Children's Hospital Facility
MU

The University of Missouri – Columbia requests Project Approval for the MU Health Care Children's Hospital facility project, with a total project budget of $232,000,000.

University Hospital (UH) is the flagship hospital for MU Health Care (MUHC) and provides the highest-level services and training for Trauma, Heart Attack, Stroke, and many other high complexity medical services. Women's & Children's Hospital (WCH) is the premiere local hospital serving women and children in the mid-Missouri area. Both hospitals are at full capacity with limited expansion abilities as currently configured. Additionally, there are increased costs as a result of operating inpatient services at two locations. Expanding UH and WCH inpatient services while reducing operational inefficiencies has been identified as a strategic priority as a continued mechanism for growth of MUHC. Both hospitals currently operate at greater than 85% occupancy (closer to 95% during the winter months) when optimal efficiency is 70% occupancy to allow the free flow of patients through the system. Operating at such a high occupancy has hindered the ability to grow additional sub-specialty services, impacted referral relationships, patient transfers, and decreased staff and physician satisfaction.

The Children's Hospital facility project is the largest component to successfully achieve the vision for the WCH consolidation with the UH campus. The Children's Hospital facility will support the MUHC mission by integrating inpatient and high-acuity operations into a single campus; enhancing the patient/faculty/staff experience; promoting growth and improved operational efficiencies; enhancing clinical care across several specialties though co-location of services; facilitating collaboration between clinicians, researchers and educators that has been difficult with two separate inpatient campuses; reducing duplication of services; and bringing specialized services under one roof achieves advantages of scale that enhance the care delivered and results in more affordable and efficient care.

The Children's Hospital facility will consist of a seven-story, plus basement and mechanical penthouse, 323,400 gross square foot (GSF) facility constructed on the east side of the Patient Care Tower and extending to Hitt Street on the east and the existing Patient & Visitor Parking Structure on the south. The building will have contiguous floors to the Patient Care Tower which will include separate program elements for supporting Women's and Children's Hospital consolidation. The project will include an elevated skybridge connection, as a bid alternate, across Hitt Street to the University Physician's Medical Building, visually and functionally linking it to the NextGen Precision Health campus area. This location is an important nexus for interdisciplinary activities involving the MU Health Sciences and campus research core facilities. A key principle in the initial conceptual design has focused on a bed pavilion that delivers high efficiency/high quality health care, that will have adequate shelled space to provide the ability and flexibility to meet future health care needs of the community.

Preliminary program concepts include a lower level dock to access back-of-house materials management and support spaces; a 1st floor with a lobby, registration, a grab-n-go food area, a conference center and shelled space; a 2nd floor with a Pediatric Minor Procedure Suite, the Children's Cancer and Blood Disorder Unit, and shelled space; a 3rd floor shelled for future Surgery growth; a 4th floor with a 60-bed Neonatal Intensive Care Unit; a 5th floor for Women's services including Obstetrics Triage, Antepartum, Labor Delivery Rooms, and Cesarean Section Operating Rooms; a 6th floor for Pediatric Intensive Care Unit and General Pediatrics rooms; a 7th Floor for Neurosciences Intensive Care Unit; and a mechanical penthouse. The facility will initially provide 142 patient beds along with shelled space for future fit-out.

The exterior aesthetic is envisioned to embrace and compliment the NextGen Precision Health facility architecture while also integrating the character of the Patient Care Tower and identity as a destination Women's and Children's Hospital.

Planning for future use of the existing WCH structure is underway. Options being explored include temporary/permanent repurposing of the building and repurposing the property. Target date for a recommendation is spring 2021.

Burns and McDonnell Engineering Company, Inc., Kansas City, Missouri, is the recommended architect for this project. Burns and McDonnell associated with HKS, Inc., a national healthcare design firm, and presented a well-balanced team of experts with in-depth knowledge of complex teaching hospital environments, and demonstrated clinical integration strategy successes. The design team includes HKS, Inc., Dallas, Texas, as associated architect; Burns and McDonnell Engineering Company, Inc., Kansas City, Missouri, for structural, mechanical, plumbing, electrical and fire protection engineering and cost estimating; SK Design Group, Inc., Kansas City, Missouri (MBE) for civil engineering; Odimo, LLC, Kansas City, Missouri (WBE) for architectural support; GoEnergistics, LLC, Southlake, Texas (SDVE) for medical equipment planning; CMG Fire Protection Engineering, Inc., Overland Park, Kansas (WBE) for code consulting; and Kansas City Audio Visual, Inc., Kansas City, Missouri, for audio/visual planning.

The selection committee also interviewed HOK Architects, Inc. St. Louis, Missouri, and TreanorHL, Inc., Kansas City, Missouri.

The fee for basic architectural and engineering services has been determined based on the University of Missouri's "Architectural and Engineering Basic Services Fee Estimating Guidelines." The project is a Type V – New Construction (considerably more complex than average), and the maximum basic services calculated fee permitted is 5.50% of the $174,999,068 construction contract cost, for $9,624,949. Additional services for medical equipment planning and coordination; design of four bid alternates; audio-visual planning; building envelope/curtainwall consultant; building maintenance system consultant; mockup design and coordination; cost reconciliation associated with a CMR delivery; and multiple bid packages is anticipated at $2,675,728, for a total design fee of $12,300,677.

Project delivery will be by Construction Manager at Risk (CMR) and the construction cost is estimated at $554/GSF with project completion Summer 2024.

Project funding will be provided by a minimum of $32,000,000 from capital and not to exceed $200,000,000 from long-term debt financing. The project funding plan anticipates contributions of up to $25,000,000 from private gifts. To the extent these gifts are secured, the amount of long-term financing required ($200,000,000) will be reduced accordingly. The long-term financing component is not anticipated to initially require a new bond issuance and will be accomplished within the University's central bank program through re-allocation of existing external debt and issuance of commercial paper. In addition to long-term financing, the project funding plan may utilize short-term financing, pending the final receipt of funds from external sources. Funding for the estimated annual debt service of $15,184,000 will come from operating cash flows of the hospital.

No. 4

Recommended Action - Project Approval, MU Health Care – Children's Hospital New Facility, MU

It was recommended by UM System President and MU Chancellor Mun Y. Choi, recommended by the Finance Committee, moved by Curator ________________ and seconded by Curator ________________, that the following action be approved:

the project approval for the MU Health Care – Children's Hospital New Facility, MU

Funding of the project budget is from:	
Reserves	$ 32,000,000
Long Term Debt (not to exceed)*	$200,000,000
Total	$232,000,000

*Gifts received will reduce long term debt for project

Roll call vote of the Committee:	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Steelman		
Curator Williams		

The motion ____________________.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ____________________.

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*Gifts received will reduce long term debt for project

Roll call vote of the Committee:	YES	NO
Curator Chatman		
Curator Hoberock		
Curator Steelman		
Curator Williams		

The motion ____________________.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion ____________________.

ACADEMIC, STUDENT AFFAIRS, RESEARCH AND ECONOMIC DEVELOPMENT COMMITTEE

ACADEMIC, STUDENT AFFAIRS,
RESEARCH AND ECONOMIC DEVELOPMENT COMMITTEE

Darryl M. Chatman, Chair

Greg E. Hoberock

Jeff L. Layman

Phil H. Snowden

The Academic, Student Affairs, Research and Economic Development Committee ("Committee") will review and recommend polices to enhance quality and effectiveness of academic, student affairs, research and economic development and align the available resources with the University's academic mission.

I. Scope
In carrying out its responsibilities, the Committee reviews and makes recommendations to the Board of Curators on strategies and policies relating to student and faculty welfare, academic standards, educational and instructional quality, intercollegiate athletics, degree programs, economic development, research initiatives, and associated programs.

II. Executive Liaison
The Senior Associate Vice President for Academic Affairs of the University, or some other person(s) designated by the President of the University, with the concurrence of the Board Chair and the Committee Chair, shall be the executive liaison to the committee and responsible for transmitting committee recommendations.

III. Ex Officio Member
The Student Representative to the Board of Curators shall be an ex officio member of the Committee.

IV. Responsibilities
In addition to the overall responsibilities of the Committee described above and in carrying out its responsibilities, the charge of the Committee shall include reviewing and making recommendations to the Board on the following matters:

1. Selection of Curators' Distinguished Professors;
2. Approval and review of new degree programs;
3. Intercollegiate athletics, as specifically outlined in Section 270.060 of the Collected Rules and Regulations with a commitment to the academic success, and physical and social development of student-athletes;
4. Changes to university-level admissions requirements, academic standards, student services, and graduation requirements;
5. Quarterly and annual reports providing information on academic programs that have been added, deactivated, or deleted; and
6. Highlight successful research and economic development efforts and partnerships; linking research and commercialization from the University with business and industry across the state and around the world. Additional matters customarily addressed by the academic, student affairs, research & economic development committee of a governing board for an institution of higher education.

Approved by the Board of Curators: April 9, 2020

University of Missouri

Board of Curators

Academic, Student Affairs, Research and Economic Development Committee Meeting

Thursday, November 12, 2020
10:30 A.M.

This Committee Meeting is being held in conjunction with the November 19, 2020 Board of Curators Meeting.

Originating:
From remote locations via conference telephone and Zoom webinar.

Please click the link below to join the webinar:
https://umsystem.zoom.us/j/92081758249

Or Telephone:
Dial US: +1 646 876 9923

Webinar ID: 92081758249

AGENDA

PUBLIC SESSION – 10:30 A.M.

Call to Order – Chair Chatman

Roll Call of the Committee

Information

1. Intercollegiate Athletics Annual Report per Collected Rule and Regulation 270.060 (Campus Athletic Directors and Compliance Officers)

Recess

Review of the Annual Report & Communication Process - CRR 270.060 (E), Executive Order No. 29, Intercollegiate Athletics

Within the last year, we identified various constituents (including but not limited to selected members of the Board of Curators and Compliance Officers) to review the annual report as stipulated by CRR 270.060, Intercollegiate Athletics (Executive Order No. 29) to make it more substantive to meet the needs and address inquiries of the President and the Board of Curators. Based upon feedback provided during the review process, we decided to enhance the annual report and initiate a supplemental communications process.

Each university will submit the annual report as outlined in CRR 270.060 (E), Executive Order No. 29, Intercollegiate Athletics. Based on the initial input from Curator Chatman, the report will include a 2-3 page synopsis/narrative on the activities covering the preceding academic year:

1. Rates of admissions exceptions for Athletics as compared to campus admissions exceptions.
2. Academic progress rates by sport, as defined by the NCAA if applicable. (Disaggregate the data by sport and for a single year)
3. Graduation rates by sport, as defined by the NCAA if applicable. (Disaggregate the data by sport and for a single year)
4. Financial performance of all operations of the Department of Intercollegiate Athletics.
5. Those items as the President may from time to time direct be added to the annual reports. (Discuss known substantive issues and the plan for resolving/addressing such issues.)

Each Chancellor will review the annual report and append a memo to explain any noteworthy trends, accomplishments or critical issues. In addition, the annual report will contain a spreadsheet highlighting financial performance.

As a way to keep the President and Board of Curators informed about individual campuses and major occurrences concerning intercollegiate athletics, we proposed the following communications plan to disseminate information to the President and the Board of Curators:

1. Submit the annual report for review by early-November (changed the executive order so the report **is due October 31st**).
2. Provide staff (i.e., Athletic Directors, Compliance Officers, CFOs) at the November/December board meeting to review highlights of the annual report, and address questions in public session.
3. Conduct a compliance and legal session on NCAA Rules at June board development session in closed session.

Executive Summary
Intercollegiate Athletics Annual Reports

Pursuant to Collected Rule and Regulation (CR&R) 270.060 (E) relating to Campus Athletic Directors and Compliance Officers, the attached reports for the 2019-2020 academic year from each of the four UM universities is submitted for your information. Each report includes information relating to student-athlete admissions exceptions, academic progress of student-athletes, graduation rates by sport, financial performance, and other comments. More detailed information relating to each report can be found in the appendix of this section.

The Campus Athletic Directors will be available during the Board of Curators meeting to answer any questions you have regarding the contents of these reports.

University of Missouri

Office of the Chancellor

105 Jesse Hall
Columbia, MO 65211

PHONE 573-882-3387
FAX 573-882-9907
WEB chancellor.missouri.edu

October 30, 2020

Darryl Chatman
Board of Curators
Board of Curators Office
316 University Hall
Columbia, MO 65211

Dear Mr. Chatman,

This letter serves as the 2019-2020 annual athletics report required by CRR 270.060 (E). More specifically, this letter summarizes data provided per subparts of CRR 270.060 (E) (1) through (5).

1. Rates of admissions exceptions for Athletics as compared to campus admissions exceptions.

There were 342 student admissions exceptions made, 45 of which (11.6%) were made for student-athletes.

2. Academic progress rates ("APR") by sport, as defined by the NCAA, if applicable.

NCAA rules require each sport to have an APR rate above 930 in order to avoid penalties. All women's team APR rates were above 989 while all men's team APR rates were above 956. The Football team APR was 973, while the Men's Basketball team APR was 958. Complete APR details can be found in the attached annual athletics report (spreadsheet).

3. Graduation rates by sport, as defined by the NCAA if applicable.

There are two main metrics used to track student-athlete graduation rates, the Federal Graduation Rate ("FGR") and Graduation Success Rate ("GSR"). Both methods analyze the graduation rates from freshmen cohorts over a four-year period, beginning ten years prior. For example, the most recent 2019-2020 FGR and GSR rates are generated by looking at the freshmen cohorts from 2010-2011, 2011-2012, 2012-2013 and 2013-2014. The primary difference between the two metrics is that the FGR does not take into account transfers into or from any cohort, while the GSR does. For 2019-2020, the FGR was 64% and the GSR (four-year cohort) was 89%. The GSR for the Football team was 84%, while the Men's Basketball team was at 71%. Complete graduation rate details can be found in the attached annual athletics report (spreadsheet).

4. Financial performance of all operations of the Department of Intercollegiate Athletics

The department had a $4.6M operational budget deficit in 2019-2020. More detailed information regarding the budget and financial picture can be found in the attached annual athletics report (spreadsheet).

5. Those items as the President may from time to time direct be added to the annual reports.

***Academic Highlights*:** Mizzou student-athletes established new standards for classroom excellence in 2019-20, registering school-record grade-point averages for both the Fall 2019 (3.19) and Spring 2020 (3.51) semesters while running their string of consecutive
3.00 terms to six straight. Those marks rank as the top two semester GPAs in department history, while the spring term mark was also a record for any one semester and marked the fifth time in six semesters MU student-athletes posted a record-setting semester GPA.

In addition, 17 of Mizzou's 18 programs registered a team grade-point average of 3.00 or above for the Spring 2020 semester and 16 established a program record for the term, as some 81 percent of Mizzou's student-athletes had a spring GPA of 3.00 or better. Mizzou had 307 student-athletes named to the 2019-2020 SEC Academic Honor Rolls, and broke department records for Dean's List honorees (207) and 4.0s (90) during the Spring 2020 semester as 397 Tigers registered a 3.00 or higher grade-point average.

Seven Mizzou teams led the Southeastern Conference in the NCAA's 2020 Graduation Success Rate (GSR) metric—Men's Golf (100), Wrestling (100), Women's Golf (100), Women's Swimming & Diving (100), Women's Tennis (100), Women's Gymnastics (100) and Women's Soccer (100)—while it registered an institutional GSR score of 89 for the second-consecutive year. It marked the 11th-straight year Mizzou posted an institutional GSR of at least 80.

In the NCAA's other academic metric, Academic Progress Rate (APR), 16 of Mizzou's 18 programs in which APR is registered either equaled or improved their multi-year APR score year over year from 2017-18 to 2018-19, led by double-digit increases in both baseball (959 in 2017-18 to 974 in 2018-19) and women's cross country (989 in 2017-18 to 1,000 in 2018-19). Mizzou's Women's Basketball, Women's Tennis and Women's Cross Country programs earned NCAA Public Recognition Awards for their 2018-19 APR, all with perfect scores of 1000. It marked the fifth-straight year Mizzou Women's Tennis earned an APR award, while Women's Basketball garnered its second-straight (and sixth overall) award and Women's Cross Country received its first honor since 2005-06 (and fourth overall). Mizzou Athletics has earned 51 all-time NCAA Public Recognition Awards in 13 different sports over the honor program's 15-year history.

***Inclusion Highlights*:** Mizzou Athletics continued to provide student-athlete diversity and inclusion education and leadership opportunities within Student-Athletes Fostering Equality ("SAFE"), and hosted a series of "Real Talk" virtual discussions after the murder of George Floyd to allow Black athletes to voice their pain and frustrations with the social injustice and racial unrest. The department also organized and hosted an open forum with President Choi, City of Columbia Chief of Police Geoff Jones, Director of Athletics Jim Sterk, Tiger head coaches, student-athletes and staff to discuss issues of racial inequality and social injustices at Mizzou.

The Mizzou Football team, coaches, administrators and campus leaders led a march from Mizzou to downtown Columbia in acknowledgment of on-going social injustice and racial unrest across the nation culminated by registering of 62 athletes to vote. A group of

Mizzou student-athletes from several sports founded a new group, the Mizzou Black Student- Athlete Association, which is designed to provide a safe space to promote education and advocacy for social justice on the MU campus.

Mizzou Athletics released dozens of videos on social media of its student-athletes using their voices commenting on social injustices, established a Diversity and Inclusion resource library for student-athletes and staff on mutigers.com and participated in a social media campaign acknowledging and celebrating "Juneteenth."

The department also established the Mizzou Athletics Committee on Inclusive Excellence (MACIE) to foster diversity and inclusiveness within the Department of Intercollegiate Athletics by providing a welcoming environment for all student-athletes coaches, and staff, with a focus on 1). Training and Education, 2). Hiring and Recruiting Practices; 3). Community and Affinity Groups; and 4). MU Inclusive Excellence Framework.

Outreach & Engagement Highlights**:** Mizzou Athletics partnered with the City of Columbia to construct the Gans Creek Cross Country Course and it enjoyed a successful debut season, capped by the return of Missouri's state high school cross country championships to Columbia. Faurot Field again served as host of the state high school football championship games and Mizzou Arena once again played host to the state high school wrestling championships.

Our partnership with MU Extension Services has seen our Ambassador volunteer program grow to more than 100 individuals covering 102 of the state's 115 counties, and we again partnered with them on a state-wide healthy eating campaign featuring Mizzou student- athletes. Athletics sponsored the fourth-annual Mizzou Youth Experience with more than 1,800 underserved and underrepresented youth traveling from St. Louis, Kansas City, Springfield and rural Missouri to participate in academic learn shops, a pep rally and the Tigers' Sept. 14 football game vs Southeast Missouri State. Mizzou student-athletes and staff also volunteered over 3,800 hours with 70 different organizations around Mid- Missouri.

For the second-straight year, Mizzou Athletics partnered with Mizzou Greek Life to have an Athletics Ambassador within each sorority and fraternity and teamed with Residential Life to create a student sports pass. The Tiger Scholarship Fund raised $27.0M, the seventh-highest mark in its history, and the fourth Top 10 fund-raising performance it has produced in the last four years.

Athletic Highlights**:** COVID-19 brought the entire sporting world to a halt on March 12, 2020, and forced the cancellation of all NCAA Winter & Spring Championships, as well as any remaining SEC Championships. Eight Mizzou squads ranked in the nation's Top 25 at one point during their respective season and five ended their year ranked among the Top 25 in Men's Swimming & Diving (No. 7), Women's Gymnastics (No. 14), Women's Swimming & Diving (No. 20), Softball (No. 15/No. 25) and Wrestling (No. 23). Mizzou Wrestling claimed its ninth-straight conference tournament title and eighth-straight Mid- American Conference Tournament championship, and captured its seventh MAC regular- season crown in eight years.

Some 26 Mizzou student-athletes in eight sports garnered 2019-20 All-America honors, 28 earned All-SEC recognition and nine received All-SEC Freshman status. In addition, Mizzou produced a pair of 2020 SEC individual champions in sophomore

Martin Prodanov in the men's indoor 800-meter run and sophomore Danny Kovac in the men's 100-fly, while sophomore Brock Mauller won the MAC 149-pound title. In addition, freshman gymnast Helen Hu received SEC Event Specialist of the Year honors and senior Sarah Luebbertt was the SEC Co-Scholar-Athlete of the Year.

The department welcomed two new head coaches in Eliah Drinkwitz, who was introduced at the Tigers' 33rd Head Football Coach on Dec. 10, 2019, and Joshua Taylor, who had the interim tag removed from his title on Nov. 14, 2019, as Mizzou's Head Volleyball Coach. Mizzou Football moved into Memorial Stadium's new $98 South End Zone Facility ahead of the 2019 season and the Gans Creek Cross Country Course came on-line in September 2019.

We are hopeful that this information is helpful to you and to the Board of Curators. Please feel free to contact me for any additional questions you may have.

Sincerely,

Mun Y. Choi

Mun Y. Choi, Ph.D.
President, University of Missouri System
Chancellor, University of Missouri

Enclosures: Annual Athletic Department Report 19-20 - Missouri – Columbia

October 29, 2020

Mun Y. Choi, Ph.D.
President
University of Missouri System
321 University Hall
Columbia, MO 65211

Dear Dr. Choi,

This letter serves as a brief summary of the 2018-19 data provided in the annual athletics report required by CCR 270.060 (E). More specifically, this letter summarizes data provided per subparts (a) through (E) of CCR 270.060 (E).

a. Rates of admissions exceptions for Athletics as compared to campus admissions exceptions.

There were 563 student admissions exceptions made, 13 of which were made for student-athletes.

b. Academic Progress Rates (APR) by sport, as defined by the NCAA, if applicable.

The NCAA's APR is a measurement of eligibility and retention. As determined by the NCAA all varsity teams are evaluated and need to meet the minimum multi-year threshold score of 930. The maximum score a team can achieve is 1000. The APR score is a four year average.

All of Kansas City Athletics teams scored above 955. Men's basketball scored 957, while women's basketball and volleyball scored 995. Women's soccer scored 988 and men's soccer scored 986, both ranked in the top half of the conference. Women's tennis scored 1000 earning an APR Public Recognition. Complete APR details can be found in the attached annual athletics report (spreadsheet).

c. Graduation Success Rate (GSR) by sport, as defined by the NCAA if applicable.

There are two main metrics used to track student-athlete graduation rates, the Federal Graduation Rate (FGR) and the Graduation Success Rate (GSR). Both methods analyze the percentage of students who complete a BA/BS within a six year time frame. The FGR counts all transfers as academic failures, however the GSR calculation allows for transfers in and out. In the GSR calculation, student-athletes who depart a school while in good academic standing (meetings the NCAA's Progress Towards Degree standards) are passed from one school's cohort to another school's cohort.

For 2018-19 Kansas City's GSR was 92%, above the NCAA average of 89%. The federal rate was 62% for student-athletes and 48% for UMKC students. The GSR for men's basketball was 100%, while women's basketball scored 91%. Four of Kansas City's teams scored 100%, and 15/16 team were at 80% and higher. Complete GSR details can be found in the attached annual athletics report (spreadsheet).

d. Financial performances of all operations of the Department of Intercollegiate Athletics.

The department had a total expense sum of $13,222,213 for Fiscal Year 2020, and came under in the operational account by $224,471. Overall the department ran a small deficit of $44,339, this was the first time since FY18 that the department ran a deficit. The department reached its revenue goals in the areas of ticket sales, increasing ticket sales by 36.75% from the previous year. In the area of sponsorships, the department fell short of its goal, however sponsorships significantly increased from the previous year. In FY20 sponsorships reached $394,220 which was an increase of $303,468. Gift revenue reached $347,868 but was significantly impacted by COVID-19 and the global pandemic. More detailed information regarding the budget and financial picture can be found in the attached annual athletics report.

e. Those items as the President may from time to time direct be added to the annual reports.

Academic Highlights:

Kansas City Athletics continues to produce strong results in the classroom. The cumulative GPA for student-athletes rose to 3.40 after the spring semester, with 16 of 16 teams achieving a GPA above 3.0. Leading the way in GPA was women's golf at 3.76, followed closely by women's cross country at 3.67, and women's tennis at 3.58. The Graduation Success Rate also continued to climb, reaching 92%. The department's cumulative APR of 989 was top ranked in the Western Athletic Conference.

Inclusion Highlights:

Kansas City Athletics continues to engage the urban core, committing over 2000 hours per year to community service in locations such the Boys and Girls Club, Turn the Page KC, Children's Mercy Hospital and several local elementary schools. The department also participated in the annual Walk-A-Mile in Her Shoes campaign held each fall on campus, and Title IX training from Dr. Sybil Wyatt, Director of Affirmative Action. We also provided mental health training to all of our 16 sports teams, and engaged all new student-athletes in Step UP! bystander intervention training. In line with new NCAA regulations, we designated a new position within our staff of a Diversity, Equity and Inclusion Officer, this individual will guide programming for both staff and student-athletes.

Leadership Highlights:

Dr. Brandon Martin continued his impressive elevation of Kansas City Athletics throughout 2019-20. He continued to prioritize the external unit, and focus on securing revenue while enhancing the Athletic Department's relevance within the region. The Roo Athletic Fund continued to grow its membership, while the department secured new major strategic partnerships with Truman Medical Center, Cherry Sports Gear and Skyline E3. Kansas City Athletics continued to solidify its brand by unveiling facility improvements to the interior and exterior of the Swinney Center. Enhancements assisted in elevating the fan experience, and attracted a sharp increase in student attendance to men's and women's basketball games. For the first time in several years annual ticket sales exceed department goals. One of the most significant changes Dr. Martin ushered in was the decision to move Kansas City Athletics from the Western Athletic Conference (WAC) to the Summit League. In an attempt to be fiscally responsible, foster rivalries, reduce missed class time, and secure a regional presence, the decision was made to move the Roos to a new league starting in 2020-21. Over a three year period of time the projected savings by entering the Summit League totals $1,514,828.

Dr. Martin also hired several new coaches including head men's soccer coach, Ryan Pore, and head women's soccer coach, Jessica Smith. Ryan Pore brings to Kansas City a wealth of experience, including playing in the MLS for Sporting Kansas City and Portland. Jessica Smith spent time at Kansas State University before transitioning to UMKC. In addition, after an impressive winning season Dr. Martin signed head women's basketball coach to a new contract securing her time in Kansas City for years to come.

Athletic Highlights:

Competitively Kansas City Athletics had a significant championship – for the first time in school history women's basketball secured a bid to the NCAA Tournament. Unfortunately, their ability to compete was cut short as a result of COVID-19 and the cancellation of the NCAA Tournament. Head coach, Jacie Hoyt, earned Coach of the Year honors, while student-athlete Erika Mattingly earned Player of the Year honors. Under first year Head Coach, Billy Donlon, men's basketball produced a winning record and are ready for a robust season under the second year head coach. Women's soccer also produced a winning season, and advanced in the conference tournament. Sports that were poised to advance into the Conference

Championships, including men's golf, had their sport seasons cut short as a result of COVID-19.

We are hopeful that this information is helpful to you and to the Board of Curators. Please feel free to contact me for any additional questions you may have.

Sincerely,

C. Mauli Agrawal, Ph.D.
Chancellor

Enclosures:
Annual Athletic Department Report 2019-20 – Kansas City

MISSOURI S&T | Office of the Chancellor

October 26, 2020

Mun Y. Choi, Ph.D.
President
University of Missouri System
105 Jesse Hall
Columbia, MO 65211

Dear Dr. Choi:

This letter serves as the 2019-20 annual Athletics report required by CRR 270.060 (E). More specifically, this letter summarizes data provided per subparts of CRR 270.060 (E) (1) through (5).

1. Rates of admissions exceptions for Athletics as compared to campus admissions exceptions.
    - Admissions for student-athletes are handled in the same manner as the general student body. Athletics does not request admission exceptions. There were six admission exceptions for student-athletes as compared to 56 for the general student body. Student-athletes represented 10.71% of the total student body with admissions exceptions.

2. Academic progress rates by sport, as defined by the NCAA if applicable.
    - NCAA Division II does not have Academic Progress Rates.
    - NCAA Division II does have a different measure, Academic Success Rates, which are included on the attached report showing an 81% academic success rate for student-athletes.

3. Graduation rates by sport, as defined by the NCAA if applicable.
    - Graduation rates for student-athletes continue to be significantly higher than the general student body. For the 2013 cohort, student-athletes increased to 77% while the general study body was at 67%.
    - See attached report for disaggregated graduation rates data by sport.

4. Financial performance of all operations of the Department of Intercollegiate Athletics.
    - There were a number of decreased income and expenses in the annual budget that occurred due to the COVID-19 pandemic. Budget cuts for 19/20 also occurred mid-year and at year end. Expenses that exceeded the annual budget were covered by Athletics through fiscal closing and gift/sponsorship accounts. Balance of fiscal closing were retained by the Division of Student Affairs due to revenue losses due to COVID-19.

- Several new endowed scholarships were secured in the past two years, as well as support from the Academy of Miner Athletics for athletic facilities.

    - Support provided by Academy of Miner Athletics for varsity weight room renovations.
    - A $500,000 pledge from John & Kristie Gibson given for the renovation of the men's and women's basketball locker rooms.
    - A $25,000 gift to create the AC "Sperm Whale" football scholarship endowment.
    - A $25,000 gift to create the Mark Mullin-Jackling Jocks Athletic Scholarship.
    - An estate gift with an initial $1,000,000 gift to create the Mullin-Elmore Endowment to Support Leadership in Athletics.

5. Those items as the President may from time to time direct be added to the annual reports.
    - Missouri S&T has a national ranking of seventh all-time in NCAA Division II in the number of Academic All-America honors.
    - 1 Great Lakes Valley Conference (GLVC) Team Championship in Men's Indoor Track & Field
    - GLVC Richard F. Scharf Paragon Award winner – DeShawn Jones, BioS'20, football
    - 208 GEICO Academic All-GLVC Honorees
    - 93 Division II ADA Academic Achievement Awards
    - 47 GLVC Distinguished Scholar-Athletes
    - 36 All-GLVC Selections
    - 26 GLVC Academic Excellence Awards
    - 11 GEICO Team Academic Awards
    - 11 CSCAA Scholar All-America Honorees
    - 9 Swimming All-America Awards
    - 9 GLVC Player of the Week Selections
    - 6 CoSIDA Academic All-District Selections
    - 4 USTFCCCA All-Academic Awards
    - 2 CoSIDA Academic All-America Selections
    - 2 GLVC Scholar-Athletes of the Year
    - 2 GCAA All-America Scholars

Sincerely,

M Dehghani

Mo. Dehghani, Ph.D.
Chancellor

MMD:chg
Attachments

UMSL | Chancellor

University of Missouri–St. Louis

401 Woods Hall
One University Boulevard
St. Louis, MO 63121, USA
1-314-516-5252
chancellor@umsl.edu

October 30, 2020

Mun Y. Choi, Ph.D.
President
University of Missouri System
105 Jesse Hall
Columbia, MO 65211

Dear Dr. Choi,

This letter serves as the 2019-20 annual athletics report required by CRR 270.060 (E). More specifically, this letter summarizes data provided per subparts of CRR 270.060 (E) (1) through (5).

- ***Rates of admissions exceptions for Athletics as compared to campus admissions exceptions***.

  At the University of Missouri – St. Louis the admission exceptions are consistently 80% or higher for the general population as compared to Intercollegiate Athletics. Rationale includes:

  - Requirements of the NCAA for a prospective student-athlete and the core courses they must successfully complete while in high school establishes a strong baseline for admissions.
  - Student-athletes must have earned high test scores which are more likely to exceed the qualifier for straight admission to our university.
  - Coaches are recruiting earlier in each cycle; therefore, prospective students have time to meet university standards and not qualify for an exception. (i.e. Standardized Test Scores retake, summer school courses in a junior college)

- ***Academic success rate by sport: Cohort is from 2009-2012***

  Academic success rates include your first-time freshman and all transfer students.

  - Overall academic success rate for the entire department is 82%
  - Tendencies are the female sports success rates are higher. 90% versus 81%
  - Comprehensive plan from the Academic Coordinator for Athletics to each student and coach which allows a true plan to earn a diploma. Students do not get lost within a

very complex system of degrees and NCAA restrictive rules.
  - Individual sports (tennis, and golf) are consistently higher than team sports.
  - Flagging system within the university communicates earlier in each semester students who are struggling and need additional academic support or intervention.

- ***Graduation rate by sport, as defined by the NCAA:***
  - Graduation rates are based only on first time, full time freshman.
  - Cohorts for each UMSL sport of true freshman are very small
  - Overall – 64% graduation rates for athletics compared to 57% of all students.

- ***Financial performance of all operations of the Department of Intercollegiate Athletics.***
  - Cancellation of spring sports due to COVID 19 offset the overall spending
  - Created two endowed scholarships (Baseball)
  - Overall, the revenues were in excess of the expenses for FY2020.

- ***Substantive Issues and Plans for resolving / addressing such issues***
  - Overall winning percentage of the program is .629
  - Overall grade point average of the 13 sports is 3.4 (Highest ever)
  - 144 students achieved Academic All-GLVC Accolades with a cumulative grade point of 3.3 or above.
  - Success of the men's basketball team – earned a bid to the DII NCAA National Championship. Overall record was 27-6, Coach Sundvold was Coach of the Year.
  - Success of the women's volleyball team – earned a bid to the DII NCAA National Championship. Overall record was 29-5, Coach Young was Coach of the Year.
  - Addition of men's and women's cross country and track and field.

<u>Plans</u>

- ***COVID 19 Requirements***
  - Working with local, state and University guidelines or protocols
  - Working with conference and NCAA requirements or recommendations
  - Resocialization of sports to provide safe environments for student-athletes and coaches

- ***Facility Enhancements***
    - Conference requirements of sports schedules is creating facility concerns due to UMSL not having all weather sport venues (Soccer, baseball, softball). Currently renting those venues in the St. Louis region.
    - Web streaming and digital productions (working with interns from the business schools, communications department to offset requirements)

Sincerely,

Kristen Sobolik

Kristen Sobolik
Chancellor

Appendices
Intercollegiate Athletics – Additional Information

2019-20 ANNUAL REPORT
Department of Intercollegiate Athletics
University of Missouri - Columbia
<u>List of Sponsored Sports</u>

Instructions:
Check all that apply. Add sports as needed.

<u>Men's Sports</u>

_X__Baseball
_X__Basketball
_X__Cross Country
_X__Football
_X__Golf
_X__Indoor Track & Field
_X__Outdoor Track & Field
___ Rifle
___ Soccer
_X__Swimming & Diving
_X__Wrestling

<u>Women's Sports</u>

_X__Basketball
_X__Cross Country
_X__Golf
_X__Gymnastics
_X__Indoor Track & Field
_X__Outdoor Track & Field
___ Rifle
_X__Soccer
_X__Softball
_X__Swimming & Diving
_X__Tennis
_X__Volleyball

2019-20 ANNUAL REPORT
Department of Intercollegiate Athletics
University of Missouri - Columbia
Budget

Revenues:	Football	Men's Basketball	Women's Basketball	Other Sports	Non-Program Specific	Operating Total	Capital Projects	Total
Ticket Sales	9,595,652	3,663,686	175,950	109,487	2,579,956	16,124,731		16,124,731
Guarantees	200,000	-	-	18,447		218,447		218,447
Contributions	4,997,233	2,202,453	163,478	334,731	14,038,649	21,736,544	8,925,293	30,661,837
Direct Institutional Support					1,015,000	1,015,000		1,015,000
Indirect Facilities and Administrative Support						-		-
NCAA/Conference Distributions incl. All Tournament Revenues	13,881,666	4,561,484	-	22,668	27,989,378	46,455,196		46,455,196
Broadcast, Television, Radio, and Internet Rights	-				6,649,332	6,649,332		6,649,332
Program Sales, Concessions, Novelty Sales, and Parking	1,820,235	350,280	20,410	29,695	188,273	2,408,893		2,408,893
Royalties, Advertisements, and Sponsorships					1,107,710	1,107,710		1,107,710
Endowment and Investment Income					1,281,796	1,281,796	19,067	1,300,863
Other Revenues	16,726	40,551	6,139	390,059	3,542,729	3,996,204	4,500,000	8,496,204
Total Revenues	30,511,512	10,818,454	365,977	905,087	58,392,823	100,993,853	13,444,359	114,438,212

Expenses:	Football	Men's Basketball	Women's Basketball	Other Sports	Non-Program Specific	Operating Total	Capital Projects	Total
Athletics Student Aid	4,072,774	670,877	595,388	7,179,951	49,635	12,568,625		12,568,625
Guarantees	2,000,000	670,000	45,000	100,088	1,755,074	4,570,162		4,570,162
Coaching Salaries, Benefits, & Bonuses Paid by the University	11,953,496	3,675,245	1,394,681	5,780,235	-	22,803,657		22,803,657
Support Salaries Paid by the University	1,657,627	1,005,556	459,389	791,603	19,085,331	22,999,506		22,999,506
Recruiting	621,334	265,527	105,180	470,962	-	1,463,003		1,463,003
Team Travel	1,673,128	1,347,689	842,806	2,435,733	65,404	6,364,760		6,364,760
Equipment, Uniforms, and Supplies	1,580,911	99,512	19,187	478,684	1,108,788	3,287,082	463,952	3,751,035
Game Expenses	1,277,316	478,859	236,096	517,008	1,194,234	3,703,513		3,703,513
Fundraising, Marketing, and Promotion	3,625		1,611	10,948	1,074,303	1,090,487		1,090,487
Direct Facilities, Maintenance, and Rental	233,331		111	213,814	19,334,093	19,781,349	5,444,840	25,226,189
Spirit Groups					522,623	522,623		522,623
Indirect Facilities and Administrative Support	-	-	-	-	-	-		-
Medical Expense and Medical Insurance	12,586	-	-	2,988	1,135,289	1,150,863		1,150,863
Membership and Dues	5,197	2,121	840	31,829	51,309	91,296		91,296
Other Operating Expenses	3,007,904	590,503	66,990	580,485	5,244,593	9,490,475	3,268,468	12,758,943
Total Expenses	28,099,229	8,805,889	3,767,279	18,594,328	50,620,676	109,887,401	9,177,261	119,064,662
Excess (Deficiency of Revenues over Expenses)	2,412,283	2,012,565	(3,401,302)	(17,689,241)	7,772,147	(8,893,548)	4,267,098	(4,626,450)

Net Assets	**30-Jun-19**	**30-Jun-20**
Unrestricted	3,627,984	(5,357,469)
Restricted Expendable	5,725,577	10,059,641
Restricted Non-expendable	35,062,616	33,699,756
TOTAL	44,416,177	38,401,928

2019-20 ANNUAL REPORT
Department of Intercollegiate Athletics
University of Missouri - Columbia
Athletic Participation by Student Athletes

Men's Sports (indicate if not applicable--n/a)	Scholarship	Walk-On	Total
Baseball	27	16	43
Basketball	14	4	18
Football	95	39	134
Golf	7	0	7
Rifle	N/A	N/A	N/A
Soccer	N/A	N/A	N/A
Swimming & Diving	31	0	31
Track & Field/Cross Country	22	21	43
Wrestling	32	9	41
Subtotal	228	89	317

Women's Sports (indicate if not applicable--n/a)	Scholarship	Walk-On	Total
Basketball	14	0	14
Gymnastics	15	3	18
Golf	9	0	9
Rifle	N/A	N/A	N/A
Soccer	31	2	33
Softball	24	4	28
Swimming & Diving	33	0	33
Tennis	7	1	8
Track & Field/Cross Country	42	28	70
Volleyball	15	2	17
Subtotal	190	40	230

Grand Total	418	129	547

NOTE: Scholarship student-athletes include all students receiving athletic aid awards, including post-eligible and medical awards.

2019-20 ANNUAL REPORT
Department of Intercollegiate Athletics
University of Missouri - Columbia
Academic Progress Rate by Sport and
Respective Sport Ranking within the Southeastern Conference

Men's Sports (indicate if not applicable--n/a)	APR Score	Ranking
Baseball	974	7
Basketball	958	T-11
Cross Country	986	5
Football	973	7
Golf	994	8
Outdoor Track & Field	956	12
Swimming & Diving	992	3
Wrestling	989	1

Women's Sports (indicate if not applicable--n/a)	APR Score	Ranking
Basketball	1000	T-1
Cross Country	1000	T-1
Golf	992	12
Gymnastics	990	8
Outdoor Track & Field	996	T-3
Soccer	990	9
Softball	989	T-9
Swimming & Diving	998	3
Tennis	1000	T-1
Volleyball	990	T-12

APR Score based upon multi-year rate including the 2014-15, 2016-17, 2017-18 and 2018-19 academic years.

2019-20 ANNUAL REPORT
Department of Intercollegiate Athletics
University of Missouri - Columbia
Grade Point Averages by Semester

(indicate if not applicable - - n/a)

	2010-2011		2011-2012		2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		2017-2018		2018-2019		2019-2020	
Men's Sports	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
Baseball	2.99	2.87	3.08	3.06	3.05	2.94	2.96	2.76	2.47	2.62	2.86	2.56	2.90	2.52	2.98	2.94	3.13	2.95	3.03	3.36
Basketball	2.55	2.42	2.74	2.47	3.06	2.45	2.46	2.30	2.31	2.37	2.29	2.20	2.61	2.70	2.50	2.46	2.69	2.73	2.62	2.89
Football	2.48	2.64	2.65	2.64	2.62	2.59	2.41	2.57	2.58	2.55	2.69	2.52	2.48	2.34	2.48	2.62	2.90	2.87	2.97	3.12
Golf	3.41	3.53	3.48	3.42	3.32	3.23	3.46	3.43	3.08	3.31	3.38	3.07	3.47	3.40	3.41	3.26	3.38	3.38	3.45	3.64
Swimming & Diving	2.91	2.94	2.74	2.93	2.93	2.89	2.84	2.97	2.95	3.14	3.24	3.09	3.18	3.18	3.21	3.05	3.19	3.20	3.22	3.64
Track & Field/Cross Country																				
Cross Country	3.29	3.27	3.33	3.38	2.93	3.05	3.01	2.93	3.07	3.07	3.09	3.27	3.43	3.34	2.92	3.27	3.02	3.05	2.83	3.60
Track	3.06	3.12	3.27	3.27	2.97	3.04	2.84	2.88	2.81	2.89	2.99	3.18	3.11	3.16	2.81	2.80	2.90	2.91	2.84	3.33
Wrestling	2.81	2.95	2.91	2.60	3.02	2.91	2.79	2.64	2.68	2.63	2.80	2.78	2.67	2.62	2.89	2.87	2.89	2.79	2.80	3.16
Subtotal	2.94	2.97	3.03	2.97	2.99	2.89	2.85	2.81	2.74	2.82	2.92	2.83	2.98	2.91	2.90	2.91	3.01	2.99	2.97	3.34

	2010-2011		2011-2012		2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		2017-2018		2018-2019		2019-2020	
Women's Sports	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
Basketball	3.00	2.91	3.03	3.01	3.13	3.04	2.99	3.12	2.89	2.86	3.17	3.31	3.29	3.28	3.34	3.40	3.14	3.11	3.05	3.39
Golf	3.29	3.30	3.27	3.46	3.21	3.40	3.08	3.26	3.48	3.55	3.44	3.22	3.36	3.20	3.53	3.33	3.35	3.38	3.34	3.61
Gymnastics	3.41	3.63	3.41	3.19	3.32	3.38	3.35	3.39	3.34	3.43	3.34	3.42	2.94	3.18	3.30	3.40	3.20	3.24	3.28	3.76
Soccer	3.08	2.79	2.89	3.12	3.20	3.30	3.27	3.24	3.11	3.29	3.40	3.21	2.93	3.29	3.14	3.26	3.13	3.29	3.44	3.61
Softball	3.35	3.22	3.31	3.18	3.10	3.05	2.89	2.98	3.22	3.03	3.14	3.17	3.22	3.08	3.02	3.19	3.14	3.14	3.19	3.52
Swimming and Diving	3.12	3.23	3.12	3.14	3.38	3.22	3.29	3.37	3.26	3.35	3.57	3.52	3.43	3.49	3.40	3.38	3.53	3.47	3.50	3.73
Tennis	3.27	3.44	3.29	3.47	3.16	3.32	3.08	3.18	3.32	3.33	3.46	3.27	3.31	3.32	3.54	3.42	3.39	3.52	3.77	3.92
Track & Field/Cross Country																				
Cross Country	3.17	3.33	3.57	3.59	3.26	3.55	3.68	3.52	3.32	3.35	3.44	3.33	3.35	3.37	3.50	3.33	3.39	3.47	3.60	3.82
Track	3.41	3.40	3.47	3.43	3.40	3.53	3.50	3.39	3.28	3.32	3.18	3.34	3.32	3.34	3.37	3.35	3.42	3.41	3.49	3.73
Volleyball	2.86	3.03	3.12	3.22	3.26	3.26	3.40	3.38	3.44	3.55	3.55	3.57	3.55	3.50	3.53	3.56	3.30	3.57	3.38	3.74
Subtotal	3.20	3.23	3.25	3.28	3.24	3.31	3.43	3.43	3.27	3.31	3.37	3.34	3.27	3.31	3.37	3.36	3.30	3.36	3.40	3.68

Grand Total	3.07	3.10	3.14	3.13	3.11	3.10	3.14	3.12	3.00	3.06	3.14	3.08	3.13	3.11	3.13	3.14	3.16	3.17	3.19	3.51

2019-20 ANNUAL REPORT
Department of Intercollegiate Athletics
University of Missouri - Columbia
STUDENT-ATHLETE GRADUATION RATES (Freshman cohort)

Four-year average (Federal IPEDS Rate)	All Students	Student-Athletes
2020 (13-14, 12-13, 11-12, 10-11 freshman cohort)	**69%**	**64%**
2019 (12-13, 11-12, 10-11, 09-10 freshman cohort)	**69%**	**66%**
2018 (11-12, 10-11, 09-10, 08-09 freshman cohort)	**69%**	**71%**
2017 (10-11, 09-10, 08-09, 07-08 freshman cohort)	**69%**	**72%**
2016 (09-10, 08-09, 07-08, 06-07 freshman cohort)	**70%**	**71%**
Four-year average (Graduation Success Rate)		**Student-Athletes**
2020 (13-14, 12-13, 11-12, 10-11 freshman cohort)	**N/A**	**89%**
2019 (12-13, 11-12, 10-11, 09-10 freshman cohort)	**N/A**	**89%**
2018 (11-12, 10-11, 09-10, 08-09 freshman cohort)	**N/A**	**91%**
2017 (10-11, 09-10, 08-09, 07-08 freshman cohort)	**N/A**	**91%**
2016 (09-10, 08-09, 07-08, 06-07 freshman cohort)	**N/A**	**88%**

Men's Sports	GSR Score
Baseball	89
Basketball	71
Cross Country	79
Football	84
Golf	100
Outdoor Track & Field	79
Swimming & Diving	80
Wrestling	100

Women's Sports	GSR Score
Basketball	92
Cross Country	95
Golf	100
Gymnastics	100
Outdoor Track & Field	95
Soccer	100
Softball	80
Swimming & Diving	100
Tennis	100
Volleyball	80

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Admission Exceptions

	Summer 2019	Fall 2019	Spring 2020	Total
Student-Athlete Admission Exceptions *(# of individual exceptions)*	20	22	3	45
All Student Admission Exceptions *(# of individual exceptions)*	4	334	4	342
Percent of Admissions Exceptions who are Student-Athletes	**83.30%**	**6.17%**	**42.85%**	**11.62%**

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Men's Sports

	Baseball
X	Basketball
X	Cross Country
	Football
X	Golf
X	Indoor Track & Field
X	Outdoor Track & Field
	Rifle
X	Soccer
X	Tennis
	Swimming & Diving
	Wrestling

Women's Sports

X	Basketball
X	Cross Country
X	Golf
	Gymnastics
X	Indoor Track & Field
X	Outdoor Track & Field
	Rifle
X	Soccer
X	Softball
	Swimming & Diving
X	Tennis
X	Volleyball

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Actuals

Revenues:	Men's Basketball	Women's Basketball	Other Sports	Non-Program Specific	Operating Total	Capital Projects	Total
Student fees (Athletic Fee)				$ 1,180,792	$1,180,792		$1,180,792
Ticket Sales	$103,040	$33,075	$22,125		$158,240		$158,240
Guarantees	$275,000	$0	$16,500		$291,500		$291,500
Contributions				$347,868	$347,868		$347,868
Direct Institutional Support	$1,557,868	$1,202,417	$2,611,240	$2,140,541	$7,512,066		$7,512,066
Indirect Facilities and Administrative Support				$363,808	$363,808		$363,808
NCAA/Conference Distributions incl. All Tournament Revenues				$314,709	$314,709		$314,709
Broadcast, Television, Radio, and Internet Rights					$0		$0
Program Sales, Concessions, Novelty Sales, and Parking				$22,750	$22,750		$22,750
Royalties, Advertisements, and Sponsorships				$420,730	$420,730		$420,730
Endowment and Investment Income				$1,779	$1,779		$1,779
Other Revenues	$205,754	$230,514	$2,212,647	-$87,474	$2,561,441		$2,561,441
Total Revenues	$2,141,662	$1,466,006	$4,862,512	$4,705,505	$13,175,685	$0	$13,175,685

Expenses:	Men's Basketball	Women's Basketball	Other Sports	Non-Program Specific	Operating Total	Capital Projects	Total
Athletics Student Aid	$466,413	$431,244	$2,638,336	$348,121	$3,884,114		$3,884,114
Guarantees	$10,500	$2,506	$0		$13,006		$13,006
Coaching Salaries, Benefits, & Bonuses Paid by the University	$824,781	$478,009	$1,353,521		$2,656,311		$2,656,311
Support Salaries Paid by the University	$67,798	$72,054	$0	$1,800,813	$1,940,665		$1,940,665
Recruiting	$59,989	$34,765	$24,549	$270	$119,572		$119,572
Team Travel	$357,237	$247,548	$570,503	$30,184	$1,205,471		$1,205,471
Equipment, Uniforms, and Supplies	$62,724	$34,163	$176,085	$171,774	$444,745		$444,745
Game Expenses	$76,500	$92,627	$46,217	$88,951	$304,295		$304,295
Fundraising, Marketing, and Promotion	$1,775	$3,075	$4,555	$467,947	$477,352		$477,352
Direct Facilities, Maintenance, and Rental	$8,695	$12,180	$115,200	$398,459	$534,534		$534,534
Spirit Groups				$15,809	$15,809		$15,809
Indirect Facilities and Administrative Support				$363,808	$363,808		$363,808
Medical Expense and Medical Insurance	$0	$0	$2,600	$393,314	$395,914		$395,914
Membership and Dues	-$235	$21	$5,168	$124,301	$129,256		$129,256
Camp Expenses	$1,920	$5,532	$16,586		$24,038		$24,038
Student Athlete Meals - Non Travel	$69,535	$7,345	$23,127		$100,007		$100,007
Other Operating Expenses	$59,586	$22,732	$55,084	$473,724	$611,126		$611,126
Total Expenses	$2,067,217	$1,443,801	$5,031,530	$4,677,476	$13,220,023	$0	$13,220,023
Excess (Deficiency of Revenues over Expenses)	$74,445	$22,206	-$169,018	$28,029	-$44,339	$0	-$44,339

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Athletic Participation by Student Athletes

Men's Sports	Scholarship	Walk-On	Total
Basketball	13	4	17
Golf	7	2	9
Soccer	24	7	31
Track & Field/Cross Country	30	6	36
Tennis	8	1	9
Subtotal	82	20	102

Women's Sports	Scholarship	Walk-On	Total
Basketball	13	0	13
Golf	5	0	5
Soccer	25	1	26
Softball	19	2	21
Tennis	7	0	7
Track & Field/Cross Country	36	1	37
Volleyball	14	3	17
Subtotal	119	7	126

Grand Total	201	27	228

NOTE: Scholarship student-athletes include all students receiving athletic aid awards, including post-eligible and medical awards.

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Academic Progress Rate by Sport and Respective Sport Ranking within the Western Athletic Conference

Men's Sports (indicate if not applicable--n/a)	APR Score	Ranking
Basketball	957	6/8
Cross Country	988	2/8
Golf	985	5/8
Indoor Track & Field	N/A	N/A
Outdoor Track & Field	968	4/7
Soccer	986	4/11
Tennis	985	5/6

Women's Sports (indicate if not applicable--n/a)	APR Score	Ranking
Basketball	995	2/8
Cross Country	995	3/8
Golf	992	5/8
Indoor Track & Field	N/A	N/A
Outdoor Track & Field	989	4/8
Soccer	988	4/8
Softball	970	5/6
Tennis	1000	1/6
Volleyball	995	4/8

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Grade Point Averages by Semester

	2016-17		2017-18		2018-19		2019-20		4-Year	4-Year
Men's Sports	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Average**	**Change**
Basketball	3.060	3.190	2.980	2.570	2.780	2.260	3.150	3.130	2.890	0.015
Golf	3.120	3.080	3.210	2.930	3.360	2.860	3.390	3.570	3.190	0.380
Soccer	3.180	3.500	3.230	3.330	3.440	3.440	3.280	3.440	3.355	0.020
Tennis	3.420	3.060	2.830	2.950	3.280	3.320	3.460	3.420	3.218	0.200
Cross Country	3.090	3.370	3.410	3.400	3.440	3.350	3.210	3.470	3.343	0.110
Indoor Track	3.160	3.200	3.200	3.100	3.010	3.210	3.070	3.100	3.131	-0.095
Outdoor Track	3.160	3.200	3.200	3.100	3.010	3.210	3.070	3.100	3.131	-0.095
Average	3.170	3.229	3.151	3.054	3.189	3.093	3.233	3.319	3.180	0.076

	2016-17		2017-18		2018-19		2019-20		4-Year	4-Year
Women's Sports	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Average**	**Change**
Basketball	3.660	3.680	3.030	3.100	3.270	3.360	3.280	3.540	3.365	-0.260
Golf	3.600	3.380	3.700	3.490	3.670	3.700	3.710	3.970	3.653	0.350
Soccer	3.470	3.400	3.250	3.460	3.630	3.620	3.560	3.610	3.500	0.150
Softball	3.330	3.230	3.250	3.460	3.510	3.380	3.310	3.370	3.355	0.060
Tennis	3.030	3.060	3.400	3.310	3.530	3.590	3.670	3.630	3.403	0.605
Cross Country	3.450	3.390	3.490	3.520	3.580	3.610	3.640	3.830	3.564	0.315
Indoor Track	3.350	3.280	3.300	3.100	3.210	3.210	3.260	3.420	3.266	0.025
Outdoor Track	3.350	3.280	3.300	3.100	3.210	3.210	3.260	3.420	3.266	0.025
Volleyball	3.520	3.410	3.270	3.210	3.460	3.540	3.450	3.510	3.421	0.015
Average	3.418	3.346	3.332	3.306	3.452	3.469	3.460	3.589	3.421	0.143

Overall Average	3.309	3.294	3.253	3.196	3.337	3.304	3.361	3.471	3.316	0.114

NOTE: Scholarship student-athletes include all students receiving athletic aid awards, including post-eligible and medical awards.

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STUDENT-ATHLETE GRADUATION RATES (Freshman cohort)

Six-year average (federal IPEDS rate)	All Students	Student Athletes
2019	**48%**	**62%**
2018	**49%**	**60%**
2017	**50%**	**71%**
2016	**51%**	**58%**

Six-year average (graduation success rate)	All Students	Student Athletes
2019 (07-08, 06-07, 05-06, 04-05 freshman cohort)		92%
2018 (06-07, 05-06, 04-05, 03-04 freshman cohort)		88%
2017 (05-06, 04-05, 03-04, 02-03 freshman cohort)		87%
2016 (04-05, 03-04, 02-03, 01-02 freshman cohort)		84%

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Missouri S&T
List of Sponsored Sports

Instructions:
Check all that apply. Add sports as needed.

Men's Sports

_X__Baseball
_X__Basketball
_X__Cross Country
_X__Football
_X__Golf
_X__Indoor Track & Field
_X__Outdoor Track & Field
___Rifle
_X__Soccer
_X__Swimming & Diving - SWIMMING ONLY
___Wrestling

Women's Sports

_X__Basketball
_X__Cross Country
_X__Golf
___Gymnastics
_X__Indoor Track & Field
_X__Outdoor Track & Field
___Rifle
_X__Soccer
_X__Softball
___Swimming & Diving
___Tennis
_X__Volleyball

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Missouri S&T
Budget

Revenues:	Football	Men's Basketball	Women's Basketball	Other Sports	Non-Program Specific	Operating Total	Capital Projects	Total	
Broadcast, Television, Radio, and Internet Rights						-		-	
Contributions	5,110	9,552	399	71,647	22,586	109,294		109,294	
Direct Institutional Support	1,335,637	418,191	389,510	2,564,544	872,227	5,580,110		5,580,110	
Endowment and Investment Income	96,208	16,969	14,912	62,314	34,653	225,055		225,055	
Guarantees	35,000	2,000	3,500			40,500		40,500	
Indirect Facilities and Administrative Support						-		-	
NCAA/Conference Distributions incl. All Tournament Revenues				12,240	14,436	26,676		26,676	
Other Revenues	1,470			12,664	(180,408)	(166,274)		(166,274)	
Program Sales, Concessions, Novelty Sales, and Parking				1,000	32,725	33,725		33,725	
Royalties, Advertisements, and Sponsorships					24,940	24,940		24,940	
Sports Camp Revenues	2,070	3,800		30,155	0	36,025		36,025	
Student Activity Fee	211,418	100,611	101,003	375,080	170,624	958,736		958,736	
Ticket Sales	11,050	3,683	3,683	3,683	20,760	42,860		42,860	
Total Revenues	1,697,963	554,806	513,008	3,133,328	1,012,542	6,911,648	134,789	6,911,648	3 year pledg

Expenses:	Football	Men's Basketball	Women's Basketball	Other Sports	Non-Program Specific	Operating Total	Capital Projects	Total
Athletic Facilities Debt Service, Leases and Rental Fee		(60)	(430)	(7,500)	(500)	(8,490)		(8,490)
Athletics Student Aid	(1,084,752)	(323,552)	(284,402)	(2,000,092)		(3,692,799)		(3,692,799)
Coaching Salaries, Benefits, & Bonuses Paid by the University	(320,238)	(152,930)	(137,974)	(677,512)		(1,288,654)		(1,288,654)
Direct Overhead and Administrative Expenses	(6,424)			(1,262)	(80,812)	(88,499)		(88,499)
Equipment, Uniforms, and Supplies	(51,083)	(10,592)	(9,508)	(127,025)	(134,638)	(332,845)		(332,845)
Fundraising, Marketing, and Promotion	(6,666)	(2,961)	(2,566)	(4,418)	(9,467)	(26,078)		(26,078)
Game Expenses	(14,485)	(14,228)	(17,261)	(49,824)		(95,798)		(95,798)
Guarantees	(23,000)	(1,500)	(4,200)	(5,404)		(34,104)		(34,104)
Indirect Facilities and Administrative Support								-
Medical Expense and Medical Insurance				(517)	(182,193)	(182,710)		(182,710)
Membership and Dues	(1,620)	(915)	(500)	(5,811)	(26,578)	(35,424)		(35,424)
Other Operating Expenses	(4,542)	(3,959)	(3,101)	(33,307)	(70,037)	(114,945)		(114,945)
Recruiting	(14,278)	(12,152)	(13,970)	(23,875)		(64,275)		(64,275)
Spirit Groups								-
Sports Camp Expense	(1,167)	(2,312)	(848)	(13,155)	(42)	(17,524)		(17,524)
Student-Athlete Meals (non-travel)	(21,699)	(5,656)	(4,136)	(3,582)		(35,073)		(35,073)
Support Salaries Paid by the University				(1,382)	(669,604)	(670,986)		(670,986)
Team Travel	(100,130)	(41,555)	(36,579)	(234,041)	0	(412,306)		(412,306)
Total Expenses	(1,650,084)	(572,313)	(515,045)	(3,188,708)	(1,173,371)	(7,100,511)	(426,302)	(7,100,511)
Excess (Deficiency of Revenues over Expenses)	47,879	(17,506)	(2,038)	(55,380)	(160,829)	(188,864)	561,091	(188,864)

Net Assets	30-Jun-19	30-Jun-20
Unrestricted	266,046	135,057
Restricted Expendable	464,612	407,112
Restricted Non-expendable	5,485,661	5,677,084
TOTAL	6,216,319	6,219,253

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Missouri S&T
Athletic Participation by Student Athletes

Men's Sports (indicate if not applicable--n/a)	Scholarship	Walk-On	Total
Baseball	31	7	38
Basketball	13	3	16
Football	82	17	99
Golf	8	2	10
Rifle	NA	NA	0
Soccer	18	27	45
Swimming & Diving	20	0	20
Track & Field/Cross Country	23	33	56
Wrestling	NA	NA	0
Subtotal	195	89	284

Women's Sports (indicate if not applicable--n/a)	Scholarship	Walk-On	Total
Basketball	11	1	12
Gymnastics	NA	NA	0
Golf	8	0	8
Rifle	NA	NA	0
Soccer	26	5	31
Softball	15	2	17
Swimming & Diving	NA	NA	0
Tennis	NA	NA	0
Track & Field/Cross Country	*19*	*11*	30
Volleyball	*17*	*0*	17
Subtotal	*96*	*19*	*115*

Grand Total	291	108	399
			71.18%
			28.82%

NOTE: Scholarship student-athletes include all students receiving athletic aid awards, including post-eligible and medical awards.

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Missouri S&T
Academic Success Rate

S&T ONLY - Division II

19/20 for the 2013 cohort	81%	77%
Men's Sports (indicate if not applicable--n/a)	**ASR score**	**Fed Rate**
Baseball	83	82
Basketball	53	33
Cross Country/Track	82	83
Football	70	64
Golf	NA	NA
Indoor Track & Field	NA	NA
Outdoor Track & Field	NA	NA
Rifle	NA	NA
Soccer	88	77
Swimming & Diving	85	79
Wrestling	NA	NA

Women's Sports (indicate if not applicable--n/a)	ASR Score	Fed Rate
Basketball	64	75
Cross Country/Track	93	86
Golf	NA	NA
Gymnastics	NA	NA
Indoor Track & Field	NA	NA
Outdoor Track & Field	NA	NA
Rifle	NA	NA
Soccer	97	97
Softball	100	100
Swimming & Diving	NA	NA
Tennis	NA	NA
Volleyball	91	70

Division II's Academic Success Rate is similar to the Division I GSR, except it measures the academic success of all student-athletes, not just those who receive financial aid.

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Missouri S&T

Grade Point Averages by Semester

(indicate if not applicable - - n/a)

	2015-2016		2016-2017		2017-2018		2018-2019		2019-2020	
Men's Sports	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
Baseball	3.204	3.136	3.086	3.14	3.221	3.269	3.361	3.29	3.332	3.612
Basketball	2.570	2.748	2.541	2.805	2.646	2.509	3.083	3.038	2.845	3.047
Football	2.511	2.577	2.542	2.725	2.685	2.741	2.599	2.825	2.754	3.407
Golf					3.043	3.201	3.452	3.378	3.489	3.745
Soccer	3.294	3.491	3.327	3.364	3.509	3.558	3.381	3.333	3.342	3.785
Swimming & Diving	3.15	3.1	3.299	3.231	3.342	3.188	3.276	3.186	3.315	3.642
Track & Field/Cross Country										
Cross Country	3.134	2.956	2.977	2.996	3.226	3.196	3.073	3.326	3.267	3.713
Indoor Track	3.041	2.905	3.127	3.079	3.207	3.208	3.264	3.311	3.243	3.709
Outdoor Track	3.076	2.966	3.113	2.952	3.176	3.202	3.264	3.311	3.243	3.709
Subtotal	2.998	2.985	3.002	3.037	3.117	3.119	3.195	3.222	3.203	3.597

	2015-2016		2016-2017		2017-2018		2018-2019		2019-2020	
Women's Sports	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**
Basketball	2.923	3.091	2.858	2.866	3.31	3.116	3.165	3.242	3.278	3.546
Golf					3.528	3.593	3.446	3.311	3.51	3.892
Soccer	3.274	3.377	3.611	3.367	3.332	3.321	3.279	3.389	3.085	3.587
Softball	3.241	3.144	3.456	3.349	3.361	3.333	3.174	3.397	3.232	3.793
Track & Field/Cross Country										
Cross Country	3.473	3.161	3.278	3.256	3.174	3.385	3.23	3.228	3.41	3.826
Indoor Track	3.322	3.112	3.263	3.255	3.267	3.398	3.224	3.324	3.356	3.711
Outdoor Track	3.364	3.142	3.392	3.405	3.285	3.415	3.224	3.324	3.356	3.711
Volleyball	3.448	3.443	3.546	3.521	3.472	3.607	3.25	3.314	3.358	3.786
Subtotal	3.292	3.210	3.343	3.288	3.341	3.396	3.249	3.316	3.323	3.732

Grand Total	3.145	3.097	3.172	3.162	3.229	3.258	3.222	3.269	3.263	3.664

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Department of Intercollegiate Athletics

Missouri S&T

STUDENT-ATHLETE GRADUATION RATES (Freshman cohort)

Four-year average (Federal IPEDS Rate)	All Students	Student Athletes	ASR	
2020 (13-14, 12-13, 11-12, 10-11 freshman cohort)	**67%**	**77%**	**81%**	2010-2013
2019 (12-13, 11-12, 10-11, 09-10 freshman cohort)	**65%**	**75%**	**81%**	2009-2012
2018 (11-12, 10-11, 09-10, 08-09 freshman cohort)	**66%**	**74%**	**81%**	2008-2011
2017 (10-11, 09-10, 08-09, 07-08 freshman cohort)	**67%**	**72%**	**79%**	2007-2010
2016 (09-10, 08-09, 07-08, 06-07 freshman cohort)	**66%**	**71%**	**81%**	2006-2009

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Missouri S&T
Admission Exceptions

	Summer 2019	Fall 2019	Winter 2020	Total
Student-Athlete Admission Exceptions *(# of individual exceptions)*	0	6	0	6
All Student Admission Exceptions *(# of individual exceptions)*	0	56	0	56
Percent of Admissions Exceptions who are Student-Athletes	**0.00%**	**10.71%**	**0.00%**	10.71%

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UMSL

List of Sponsored Sports

Men's Sports	
X	Baseball
X	Basketball
	Cross Country
	Football
X	Golf
	Indoor Track & Field
	Outdoor Track & Field
	Rifle
X	Soccer
X	Tennis
x	Swimming & Diving
	Wrestling
Women's Sports	
X	Basketball
	Cross Country
X	Golf
	Gymnastics
	Indoor Track & Field
	Outdoor Track & Field
	Rifle
X	Soccer
x	Softball
x	Swimming & Diving
X	Tennis
X	Volleyball

FY20 NCAA Report University of Missouri - St. Louis

Revenue	Men's Baseball	Men's Basketball	Men's Golf	Men's Soccer	Men's Swimming	Men's Tennis	Mens Track and Field	Women's Basketball	Women's Golf	Women's Soccer	Women's Softball	Women's Swimming	Women's Tennis	Womens Track and Field	Women's Volleyball	Other	Grand Total
01 Ticket Sales	0.00	5,860.55	0.00	1,442.56	0.00	0.00	0.00	3,414.20	0.00	1,572.53	0.00	0.00	0.00	0.00	2,390.13	0.00	14,679.97
04 Direct Institutional Support	269,788.39	593,865.12	140,502.65	246,430.22	146,876.94	118,131.51	34,956.91	501,702.94	141,536.30	297,446.71	377,545.23	169,638.37	115,235.59	32,254.41	272,263.73	2,966,333.81	6,424,508.83
07 Gurantees	0.00	(9,750.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(9,750.00)
08 Contributions	1,550.00	10,000.00	28,635.45	1,600.00	3,000.00	5,015.00	0.00	3,690.00	0.00	30.00	0.00	0.00	4,260.00	0.00	295.00	4,764.92	62,840.37
12 NCAA Distributions	0.00	2,100.00	0.00	0.00	3,447.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4,200.00	11,796.00	21,543.27
13 Conference Distribution	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3,500.00	3,500.00
14 Program Novelty, Parking	0.00	0.00	1,503.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11,636.30	13,139.63
15 Royalties, Licensing, Advert	8,863.75	17,400.00	7,365.00	0.00	3,663.75	660.00	0.00	1,500.00	0.00	0.00	0.00	0.00	660.00	0.00	0.00	104,569.51	144,682.01
16 Sports Camp Revenues	3,760.00	4,280.00	0.00	0.00	0.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9,140.00
17 Athletics Restricted Endow	(12,337.54)	0.00	(3,661.07)	1,781.51	0.00	0.00	0.00	(5,019.64)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,929.53	(17,307.21)
18 Other Operating Revenue	1,250.00	70.00	1,200.00	85.64	387.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40,497.29	43,490.06
Grand Total	**272,874.60**	**623,825.67**	**175,545.36**	**251,339.93**	**157,375.09**	**123,806.51**	**34,956.91**	**506,387.50**	**141,536.30**	**299,049.24**	**377,545.23**	**169,638.37**	**120,155.59**	**32,254.41**	**279,148.86**	**3,145,027.36**	**6,710,466.93**
Expense																	
20 Athletic Student Aid	133,797.70	288,819.40	128,176.20	135,534.50	190,996.24	204,386.84	0.00	307,308.20	181,977.50	167,563.90	195,576.80	222,245.60	191,142.20	0.00	214,248.20	21,000.00	2,582,773.28
22 Coaching Salaries, Benef	116,756.11	229,682.33	33,670.48	75,504.96	42,012.28	33,858.41	31,345.70	183,606.33	31,374.47	87,803.65	157,003.43	40,940.46	33,606.68	31,345.68	76,999.11	1,528.36	1,207,038.44
24 Support Staff/Admin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	840,367.54	840,367.54
27 Recruiting	365.77	4,110.08	2,692.48	1,160.31	1,735.97	57.54	2,461.03	3,673.28	1,876.24	1,262.70	2,055.75	1,297.33	44.69	341.19	342.96	28.27	23,505.59
28 Team Travel	23,273.27	75,419.24	21,494.46	48,687.79	19,247.46	11,350.28	0.00	53,302.91	25,459.82	16,177.10	38,949.73	35,768.61	11,288.47	0.00	44,625.60	22,971.50	448,016.24
29 Sports Equipment, Uniforms	15,103.85	15,433.58	11,244.80	6,850.92	6,611.18	3,833.89	0.00	10,746.79	9,284.29	6,280.00	13,765.07	8,380.62	3,330.92	0.00	10,333.60	11,516.02	132,715.53
30 Game Expenses	1,600.00	23,384.00	7,872.79	4,193.00	577.50	900.00	0.00	17,647.97	(6,559.29)	3,913.00	4,869.92	677.50	900.00	0.00	4,366.00	44,748.74	109,091.13
31 Fund Raising, Marketing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8,207.12	8,207.12
33 Spirit Groups	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5,694.02	5,694.02
34 Athletic Facilities Deb Ser	0.00	0.00	2,336.00	1,595.00	0.00	0.00	0.00	0.00	1,740.00	1,710.00	0.00	0.00	0.00	0.00	0.00	0.00	7,381.00
35 Direct Overhead and Admin	21,430.96	5,750.97	4,829.09	12,535.06	391.69	266.65	941.04	3,464.15	528.97	13,674.88	39,866.50	1,107.52	2,857.73	370.04	3,327.35	90,429.26	201,771.86
37 Medical Expenses and Insur	15,320.00	5,745.00	4,213.00	9,575.00	4,596.00	3,064.00	0.00	6,375.48	2,681.00	9,575.00	6,128.00	4,596.00	3,064.00	0.00	6,894.00	13,715.97	95,542.45
38 Memberships and Dues	0.00	2,463.50	525.00	395.00	1,025.00	175.00	197.50	650.00	410.00	445.00	1,237.49	1,025.00	175.00	197.50	458.96	30,066.50	39,446.45
39 Student Athlete Meals	0.00	6,078.65	231.44	1,209.32	1,357.48	0.00	0.00	5,128.31	142.12	2,373.78	1,218.97	643.82	0.00	0.00	1,481.92	369.58	20,235.39
40 Other Operating Expenses	3,155.48	3,953.42	21,767.86	1,045.58	772.38	1,533.79	11.64	3,330.74	759.80	4,390.71	(14,301.13)	701.51	1,463.89	0.00	1,039.11	17,565.05	47,189.83
Grand Total	**279,362.14**	**607,836.73**	**169,481.19**	**252,139.24**	**147,026.94**	**119,042.26**	**34,956.91**	**511,099.16**	**141,642.11**	**300,596.92**	**389,293.73**	**169,638.37**	**118,701.38**	**32,254.41**	**278,868.61**	**2,217,035.77**	**5,768,975.87**
EXCESS (Surplus)	(6,487.54)	15,988.94	6,064.17	(799.31)	10,348.15	4,764.25	0.00	(4,711.66)	(105.81)	(1,547.68)	(11,748.50)	0.00	1,454.21	0.00	280.25	927,991.59	941,491.06

***YELLOW= NEVER**
02 Direct State or Other Government Support 03 Student Fees
06 Indirect Institutional Support 10 Compensation and Benefits provided by a third party
19 Bowl Revenues
23 Coaching Salaries, Benefits and 25 Support Staff/Administrative Co
36 Indirect Institutional Support 41 Bowl Expenses
41A Bowl Expenses-Coaching Compensation/Bonuses

***PEACH = 0**
24 Support Staff/Administrative C
31 Fund Raising,
Marketing and Prom (Other only)

2019 - 2020 ANNUAL REPORT
Department of Intercollegiate Athletics
UMSL

Athletic Participation by Student Athletes

Men's Sports	Scholarship	Walk-On	Total
Baseball	22	16	38
Basketball	15	0	15
Golf	9	1	10
Soccer	21	4	25
Swimming	15	5	20
Tennis	7	0	7
Subtotal	89	26	115

Women's Sports	Scholarship	Walk-On	Total
Basketball	13	0	13
Golf	7	0	7
Soccer	21	3	24
Softball	19	0	19
Tennis	7	0	7
Swimming	17	2	19
Volleyball	18	0	18
Subtotal	102	5	107

Grand Total	191	31	222

NOTE: Scholarship student-athletes include all students receiving athletic aid awards, including post-eligible and medical awards.

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Department of Intercollegiate Athletics

University of Missouri - St. Louis

Academic Success Rate

UMSL ONLY - Division II

2013-2014 Graduation Years	82%	65%
Men's Sports (indicate if not applicable--n/a)	**ASR score**	**Fed Rate**
Baseball	81	77
Basketball	65	58
Golf	100	62
Soccer	70	71
Swimming & Diving	n/a	n/a
Tennis	88	50
Women's Sports (indicate if not applicable--n/a)	**ASR Score**	**Fed Rate**
Basketball	72	42
Golf	100	80
Soccer	83	50
Softball	95	88
Swimming & Diving	n/a	n/a
Tennis	100	78
Volleyball	94	57

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Grade Point Averages by Semester

	2016 -2017		2017-2018		2018-2019		2019-2020		4-Year
Men's Sports	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Average**
Baseball	2.941	3.040	3.223	3.107	3.085	3.006	2.944	3.386	3.092
Basketball	2.828	2.950	2.678	2.834	2.718	2.875	2.900	2.876	2.832
Golf	3.350	3.542	3.577	3.589	3.338	3.316	3.463	3.562	3.467
Soccer	2.882	3.125	3.060	3.190	3.060	3.138	2.960	2.836	3.031
Swimming	3.119	3.270	3.013	3.303	2.918	3.153	3.708	3.730	3.277
Tennis	3.050	3.360	3.427	3.448	3.463	3.626	2.993	3.081	3.306
Average	3.028	3.215	3.163	3.245	3.097	3.186	3.161	3.245	3.168

	2016 -2017		2017 - 2018		2018-2019		2019 - 2020		4-Year
Women's Sports	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Average**
Basketball	3.411	3.241	3.275	3.345	3.404	3.406	3.573	3.838	3.437
Golf	3.615	3.560	3.627	3.611	3.133	3.244	2.650	3.496	3.367
Soccer	3.069	3.124	3.327	3.282	3.483	3.420	3.533	3.427	3.333
Softball	3.191	3.242	3.473	3.381	3.597	3.332	3.657	3.819	3.462
Tennis	3.720	3.270	3.737	3.582	3.733	3.731	3.862	3.905	3.693
Swimming	3.500	3.526	3.371	3.450	3.669	3.621	3.630	3.692	3.557
Volleyball	3.386	3.013	3.649	3.570	3.649	3.776	3.600	3.598	3.530
Average	3.413	3.282	3.494	3.460	3.544	3.521	3.489	3.656	3.483

Overall Average	3.236	3.251	3.341	3.361	3.327	3.357	3.344	3.480	3.337

NOTE: Scholarship student-athletes include all students receiving athletic aid awards, including post-eligible and medical awards.

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STUDENT-ATHLETE GRADUATION RATES (Freshman cohort)

Four-year average (federal IPEDS rate)	All Students	Student Athletes	Academic Success
2018 (12-11,11-10, 09-10, 08-09, freshman cohort)	57%	64%	82%
2017 (11-10, 09-10, 08-09, 07-08, freshman cohort)	55%	62%	83%
2016 (09-10,08-09,07-08, 06-07, freshman cohort)	60%	56%	82%
2015 (08-09,07-08, 06-07, 05-06, freshman cohort)	54%	62%	83%
2014 (07-08, 06-07, 05-06, 04-05, freshman cohort)	54%	68%	84%

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Department of Intercollegiate Athletics
UMSL
Admission Exceptions

	Summer 2019	Fall 2019	Winter 2020	Total
Student-Athlete Admission Exceptions *(# of individual exceptions)*	0	11	0	11
All Student Admission Exceptions *(# of individual exceptions)*	1	83	8	92
Percent of Admissions Exceptions who are Student-Athletes	**0.00%**	**13.25%**	**0.00%**	11.96%

GOVERNANCE, COMPENSATION AND HUMAN RESOURCES

GOVERNANCE, COMPENSATION AND HUMAN RESOURCES COMMITTEE

Michael A. Williams, Chair

Darryl M. Chatman

Jeff L. Layman

Phil H. Snowden

I. Governance, Compensation and Human Resources Committee

The Governance, Compensation and Human Resources Committee ("Committee") will review and recommend policies to enhance quality and effectiveness of the Board as well as compensation, benefits and human resources functions of the University.

II. Governance

1. Scope

   In carrying out its responsibilities regarding governance, the Committee has the central authority of ensuring that board members are prepared to exercise their fiduciary duties and assisting the Board to function effectively, efficiently and with integrity.

2. Executive Liaison

   The General Counsel of the University, or some other person(s) designated by the President of the University with the concurrence of the Board Chair and the Committee Chair, shall serve as executive liaison to the Committee on governance matters and be responsible for transmitting Committee recommendations related to governance.

3. Responsibilities

   In addition to the overall responsibilities of the Committee described above, and in carrying out its responsibilities regarding governance, the Committee shall review and make recommendations on the following matters:

   1. ensuring that Board members are prepared to carry out their fiduciary duties to the University;
   2. providing and monitoring a substantive orientation process for all new Board members and a continuous board education program for existing Board members;
   3. overseeing, or determining with the Board Chair and President, the timing and process of periodic Board self-assessment;
   4. establishing expectations and monitoring compliance of individual Board members;
   5. ensuring that the Board adheres to its rules of conduct, including conflict-of-interest and disclosure policies, and that it otherwise maintains the highest levels of integrity in everything it does;
   6. periodically reviewing the adequacy of the Board's bylaws and other Collected Rules and Regulations adopted by the Board that pertain to its internal operations (all recommendations for bylaws amendment shall first be considered by this Committee);
   7. identifying best practices in institutional and Board governance;
   8. monitoring and assessing external influences and relationships with affiliated entities;
   9. assessing areas of expertise needed in future Board members; and
   10. those additional matters customarily addressed by the governance committee of a governing board for an institution of higher education.

III. Compensation and Human Resources

1. Scope
   In carrying out its responsibilities regarding compensation and human resources, the Committee reviews and makes recommendations to the Board of Curators on strategies and policies relating to compensation, benefits and other human resources functions and associated programs.

2. Executive Liaison
   The Associate Vice President and Chief Human Resources Officer of the University, or some other person(s) designated by the President of the University, with the concurrence of the Board Chair and the Committee Chair, shall serve as executive liaison to the Committee on human resources and compensation matters and be responsible for transmitting committee recommendations related to human resources and compensation.

3. Responsibilities
   In addition to the overall responsibilities of the Committee described above and in carrying out its responsibilities regarding human resources and compensation, the charge of the Committee shall include reviewing and making recommendations to the Board on the following matters:

   1. Performance and compensation of individuals reporting directly to the Board:
      1. President
      2. General Counsel
      3. Secretary of the Board of Curators
      4. Chief Audit and Compliance Officer, in conjunction with the Audit, Compliance and Ethics Committee
   2. Pursuant to Section 320.020 of the Collected Rules and Regulations, appointment or change of appointment of the following shall be reported to and approved by the Board before the effective date:

      1. Vice Presidents
      2. Chancellors
      3. Curators Professors
   3. Intercollegiate Athletics
      Pursuant to Section 270.060 of the Collected Rules and Regulations, contracts for Directors of Intercollegiate Athletics and Head Coaches may not exceed five (5) years and shall not include buyout clauses calling for the individual to receive more than the balance of the annual base salary the individual would have earned under the remaining terms of the contract, unless approved by the UM Board of Curators upon the recommendation of the President.

   4. Benefit, retirement and post retirement plans, including an annual benefits report, as further defined in Section 520.010, Benefit Programs, of the Collected Rules and Regulations.
   5. Additional employee benefits including the Education Assistance Program for University Employees, CRR 230.070, and Layoff and Transition Assistance, CRR 350.051.
   6. Labor Union Recognition and matters as further defined in Section 350.020, Labor Union Recognition, of the Collected Rules and Regulations.
   7. Employment related policies including those related to employee absences, conduct and grievances.
   8. Additional matters customarily addressed by the compensation and human resources committee of a governing board for an institution of higher education.

Approved by the Board of Curators: April 9, 2020

No. 1

Recommended Action - Resolution for Executive Session of the Governance, Compensation and Human Resources Committee, November 19, 2020

It was moved by Curator __________ and seconded by Curator __________, that there shall be an executive session with a closed record and closed vote of the Board of Governance, Compensation and Human Resources Committee meeting November 19, 2020, for consideration of:

- **Section 610.021(1), RSMo**, relating to matters identified in that provision, which include legal actions, causes of action or litigation, and confidential or privileged communications with counsel; and
- **Section 610.021(3), RSMo**, relating to matters identified in that provision, which include hiring, firing, disciplining, or promoting of particular employees; and
- **Section 610.021(12), RSMo,** relating to matters identified in that provision, which include sealed bids and related documents and sealed proposals and related documents or documents related to a negotiated contract; and
- **Section 610.021 (13), RSMo**, relating to matters identified in that provision, which include individually identifiable personnel records, performance ratings, or records pertaining to employees or applicants for employment.

Roll call vote of the Committee:	YES	NO
Curator Chatman		
Curator Layman		
Curator Snowden		
Curator Williams		

The motion ____________________.

GENERAL BUSINESS (continued)

UNIVERSITY OF MISSOURI – ST. LOUIS
CAMPUS HIGHLIGHTS – CHANCELLOR SOBOLIK

There are no materials for this information item.

STRATEGIC THEME DISCUSSION
COUNCIL OF CHANCELLORS AND
ADMINISTRATIVE EFFICIENCY REPORTS

There are no materials for this information item.

No. 1

Recommended Action - Election of Board of Curators Chair, 2021

Upon the motion of Curator ___________, Curator ___________ was nominated to serve as Chair of the Board of Curators for the term January 1, 2021 through December 31, 2021. The nomination was seconded by Curator __________.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion _________________.

November 19, 2020

No. 2

Recommended Action - Election of Board of Curators Vice Chair, 2021

Upon the motion of Curator ___________, Curator ___________ was nominated to serve as Vice Chair of the Board of Curators for the term January 1, 2021 through December 31, 2021. The nomination was seconded by Curator __________.

Roll call vote:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion _____________.

November 19, 2020

No. 3

Recommended Action – Resolution for Executive Session of the Board of Curators Meeting November 19, 2020

It was moved by Curator _________ and seconded by Curator __________, that there shall be an executive session with a closed record and closed vote of the Board of Curators meeting November 19, 2020 for consideration of:

- **Section 610.021(1), RSMo**, relating to matters identified in that provision, which include legal actions, causes of action or litigation, and confidential or privileged communications with counsel; and
- **Section 610.021(2), RSMo,** relating to matters identified in that provision, which include leasing, purchase, or sale of real estate; and
- **Section 610.021(3), RSMo**, relating to matters identified in that provision, which include hiring, firing, disciplining, or promoting of particular employees; and
- **Section 610.021(12), RSMo,** relating to matters identified in that provision, which include sealed bids and related documents and sealed proposals and related documents or documents related to a negotiated contract; and
- **Section 610.021 (13), RSMo**, relating to matters identified in that provision, which include individually identifiable personnel records, performance ratings, or records pertaining to employees or applicants for employment; and
- **Section 610.021 (14), RSMo,** relating to matters identified in that provision, which include records which are protected from disclosure by law.

Roll call vote of the Board:	YES	NO
Curator Brncic		
Curator Chatman		
Curator Graham		
Curator Hoberock		
Curator Layman		
Curator Snowden		
Curator Steelman		
Curator Wenneker		
Curator Williams		

The motion _________________.

GOOD AND WELFARE OF THE BOARD

There are no materials for this information item.