



Board of Trustees
Quarterly Meeting
February 23-24, 2026

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Revised 2/23/2026: An additional presentation, "Permanent Fund Performance Review, Asset Allocation Review, and Annual Draw Analysis" was provided by Callan and has been added to the back of this packet.



QUARTERLY MEETING OF THE BOARD OF TRUSTEES February 23-24, 2026

Michael J. Burns Building
David Rose Board Room (3rd Floor)
801 W 10th Street
Juneau, AK 99801

Monday, February 23, 2026

Time: 8:30 a.m. – 4:30 p.m.

Day 1 Teams Webinar Access
(Click [here](#) to join)

Teleconference Option

Phone: 323-792-6284

Phone Conference ID: 543 703 354#

Tuesday, February 24, 2026

Time: 8:30 a.m. – 3:30 p.m.

Day 2 Teams Webinar Access
(Click [here](#) to join)

Teleconference Option

Phone: 323-792-6284

Phone Conference ID: 640 706 576#

Written comments can be sent to Trustees anytime at
boardpubliccomment@apfc.org

AGENDA

MONDAY, FEBRUARY 23, 2026

8:30 a.m. CALL TO ORDER

ROLL CALL (Action)

APPROVAL OF AGENDA (Action)

APPROVAL OF MINUTES (Action)

- December 17, 2025 Quarterly Meeting

OPPORTUNITY FOR PUBLIC PARTICIPATION

COMMITTEE REPORTS (Information)

- Governance Committee

9:00 a.m. CHIEF EXECUTIVE OFFICER'S REPORTS (Information/Standard Reports)
Pending Board Matters, Trustee Education Report, Disclosure Report, Staff Summary Report, Human Resources Summary, Communications Report, Information Technology Update, Investment Referral Log, Financial Update, Financial Report, APFC Transfers, History & Projections, Investment Management Fee Report, Board Budget Update, FY26 Budget Report

10:00 a.m. CHIEF INVESTMENT OFFICER'S REPORT (Information)
Marcus Frampton, Chief Investment Officer

Agenda Cont.

- 10:30 a.m. *BREAK*
- 10:45 a.m. RISK & COMPLIANCE OVERVIEW (Information)
Sebastian Vadakumcherry, Chief Risk and Compliance Officer
- 11:15 a.m. INVESTMENT ADVISOR COMMENTS (Information)
George Zinn
Janet Becker-Wold
John Skjervem
- 11:30 a.m. CORPORATE OPERATIONS OVERVIEW: FINANCE (Board Education & Information)
Val Mertz, Chief Finance Officer
Chris LaVallee, Senior Portfolio Accountant II
Jacki Mallinger, Senior Portfolio Accountant II
- 12:00 p.m. *LUNCH*
- 12:30 p.m. ASSET ALLOCATION (Board Education & Information)
Marcus Frampton, Chief Investment Officer
Sebastian Vadakumcherry, Chief Risk and Compliance Officer
- 1:30 p.m. FUND PERFORMANCE PRESENTATION (Board Education & Information)
Greg Allen, CEO & Chief Research Officer, Callan
Steve Center, CFA, Senior Vice President, Callan
- 2:30 p.m. *BREAK*
- 2:45 p.m. ANNUAL ASSET ALLOCATION STUDY (Board Education & Information)
Greg Allen, CEO & Chief Research Officer, Callan
Steve Center, CFA, Senior Vice President, Callan
- 4:30 p.m. *RECESS FOR THE DAY*

TUESDAY, FEBRUARY 24, 2026

- 8:30 a.m. *MEETING RECONVENES*
- 8:35 a.m. PRIVATE MARKETS OVERVIEW (Board Education & Information)
Allen Waldrop, Deputy CIO – Private Markets
- 9:00 a.m. PUBLIC MARKETS OVERVIEW (Board Education & Information)
Jim Parise, Deputy CIO – Public Markets
- 10:00 a.m. *BREAK*
- 10:15 a.m. ASSET CLASS OVERVIEW: FIXED INCOME (Board Education & Information)
Jim Parise, Deputy CIO – Public Markets
Tom O'Day, Senior Portfolio Manager
- 11:30 a.m. LEGISLATIVE UPDATE (Board Education & Information)
Senate President Gary Stevens
House Speaker Bryce Edgmon
Presiding Officers of the Alaska State Legislature
- 12:00 p.m. *LUNCH*

Agenda Cont.

- 1:00 p.m. INVESTMENT ADVISOR PRESENTATION: DIGITAL ASSETS (Board Education & Information)
George Zinn, Investment Advisor
John Skjervem, Investment Advisor
Matt Jones CFA, Head of Institutional Liquidity, Franklin Templeton
Mike Reed, Head of Digital Asset Partnership Development, Franklin Templeton Digital Assets
- 2:30 p.m. BREAK
- 2:45 p.m. INVESTMENT ADVISOR COMMENTS (Information)
John Skjervem
George Zinn
Janet Becker-Wold
- 3:15 p.m. ADDITIONAL OPPORTUNITY FOR PUBLIC PARTICIPATION
- OTHER BUSINESS
- TRUSTEE COMMENTS
- FUTURE AGENDA ITEMS
- 3:30 p.m. ADJOURNMENT

*NOTE: TIMES MAY VARY AND THE CHAIR MAY REORDER AGENDA ITEMS
(Please telephone Jennifer Loesch at 907.796.1519 with agenda questions.)*

SUBJECT: Approval of Minutes

ACTION: X

DATE: February 23, 2026

INFORMATION:

BACKGROUND:

Staff reviewed the following Board of Trustees meeting summary minutes; draft copies are attached for your approval.

- December 17, 2025 Quarterly Meeting

RECOMMENDATION:

Approval of the summary minutes of the Board of Trustees meeting listed above.

**ALASKA PERMANENT FUND CORPORATION
QUARTERLY MEETING OF THE BOARD OF TRUSTEES MINUTES**

Michael J. Burns Building,
David Rose Board Room (3rd Floor)
801 West 10th Street, Juneau,
Alaska 99801
Teleconference/Webinar Access

December 17, 2025

TRUSTEES PRESENT: Jason Brune, Chair; Ethan Schutt; Vice-Chair; John Binkley; Janelle Earls; Ralph Samuels; Ryan Anderson

APFC STAFF PRESENT: Deven Mitchell, CEO; Marcus Frampton, CIO; Valerie Mertz, CFO; Sebastian Vadakumcherry, Chief Risk and Compliance Officer; Chris Poag; Shannon McCain, Director of Human Resources; Jim Parise, Deputy CIO – Public Markets; Allen Waldrop, Deputy CIO – Private Markets; Joseph Jeralds; Jennifer Loesch, Board Liaison; Larissa Murray; Steve Adams; Josh Ungar; Kelli Patterson, Administration Lead; Lillie Haggard; Juliette Alldredge, Communications Manager; Jacki Mallinger; Cassandra King; Steven Gagliardo; Marisa McComas; Cody Graves; Chris LaVallee; Henry Lloyd; Matthew Ives; Lesley Creswell; Valeria Martinez; Sarah Struble; Ross Alexander; Ian Horwood, Private Equity Associate; Jessica Thornsburry; Eric Ritchie; Brady Owen; Norix Mangual; Michael Gumz; Terek Rutherford; Tara Mendoza; Ben Williams; Luke Kirkham; Lara Pollock; Sarah Clark; Joe Shinn; Tom O'Day; Scott Balovich; Michael Prebeg; Matt Sykes; Fawad Razzaque; Jordyn Perletti; Alex Smith

ADVISORS & CONSULTANTS PRESENT: John Skjervem, Investment Advisor; Janet Becker-Wold, Investment Advisor; Greg Allen, Callan LLC; Steve Center, Callan LLC

MEMBERS OF THE PUBLIC PRESENT: Michael L. McHargue; Mark Sabbatini; Lisa Giaffo; Philip Nunes; Benjamin Hofmeister; Sophia Torres; Alex Psilakis; Trey Prenovost; Michael Bloom; Daniel Abramson; Tristan Walsh; Zane El-Gamal; Jessica Walton; Julee Farley; John Kevin Balaod; Anne Rittgers; Aurora Hauke; Amory Lelake; Robert Gerschultz; James Brooks; Deborah Brollini; Jason Jenkins; Albert Hicks; Jason Katz-Brown; Hannah Zhang; Larry Smith; Elaine Schroeder; Jim Simard; Paige Kirsch; Mazelle Joseph; Atagan Hood; Siena Farr; Zoe Lessard; Sabine Auger

CALL TO ORDER AND ROLL CALL

CHAIR JASON BRUNE called the quarterly meeting of the Board of Trustees to order at 8:04 a.m. JENNIFER LOESCH called the roll and confirmed a quorum was present with all trustees in attendance.

Chair Brune welcomed TRUSTEE RALPH SAMUELS to the Board and thanked former Trustee Craig Richards for his service. Trustee Samuels thanked the staff for their assistance during his orientation.

APPROVAL OF AGENDA AND MINUTES

Approval of Agenda

TRUSTEE ETHAN SCHUTT moved to approve the agenda. TRUSTEE RYAN ANDERSON seconded the motion. Hearing no objections, the agenda was approved.

Approval of Minutes

Trustee Schutt moved to approve the minutes from the September 4, 2025, regular meeting. Trustee Anderson seconded the motion. The minutes were approved without objection.

Trustee Schutt moved to approve the minutes from the annual meeting held October 1–2, 2025. Trustee Anderson seconded the motion. The minutes were approved without objection.

PUBLIC COMMENT

The Board received public testimony regarding the corporation's investment strategy, specifically concerning fossil fuels and climate change.

Elaine Schroeder, representing 350Juneau, urged the Board to conduct a transparent climate risk assessment, citing recent divestment actions by pension funds in New York and the Netherlands.

Sienna Farr, co-president of Alaska Youth for Environmental Action (AYEA), stated that continuing to invest in oil and gas would harm the state's financial interests and criticized the integrity of such investments.

Mazelle Joseph, a student at Yaakoosge Daakahidi High School, spoke on the cultural and economic impacts of the recession of the Mendenhall Glacier and called for an end to the exploitation of Native lands.

Jim Simard, a member of 350Juneau, presented National Oceanic and Atmospheric Administration (NOAA) data regarding the increasing frequency of billion-dollar weather disasters and encouraged the Trustees to examine their fiduciary responsibility regarding energy investments.

Atagan Hood, co-president of AYEА, argued that investing in fossil fuels contradicts the fund’s goal of safety of principal due to diminishing returns and environmental damages.

Paige Kirsch highlighted Iceland’s renewable energy economy as a model for Alaska and urged the Permanent Fund to make long-term investments in renewable energy to protect dividend stability.

Zoe Lessard emphasized that renewable energy projects are becoming cheaper than fossil fuels and asked the Board to protect the future by investing in clean energy.

Sabine Auger discussed the warming temperatures in Alaska and the resulting wildfires and erosion threatening communities, urging investment in renewable energy.

Following the conclusion of public testimony, Chair Brune and Trustee Schutt thanked the students for their testimony and offered to meet with the group in the future to further discuss the fund’s investment strategy and mandates.

CHIEF EXECUTIVE OFFICER’S REPORT

CHIEF EXECUTIVE OFFICER (CEO) DEVEN MITCHELL presented the administrative and operational update.

Pending Board Matters and Trustee Education

D. Mitchell noted that work on proxy voting remains suspended. He encouraged Trustee participation in the upcoming Callan conference scheduled for April 20–22, 2026.

Travel and Human Resources

D. Mitchell reviewed the diligence and travel summary, noting 41 trips taken by staff over the last quarter. He reported on recruitment efforts, highlighting the hiring of KELLI PATTERSON as Administration Lead. SHANNON MCCAIN, Human Resources Director, detailed the internship program, noting 31 candidates for the investment internship and 13 for the finance internship, while acknowledging challenges in finding qualified Alaska-resident applicants.

Communications

D. Mitchell highlighted that APFC was named a "Best Place to Work in Money Management" by *Pensions & Investments* for the fifth consecutive year. COMMUNICATIONS MANAGER JULIETTE ALLDREDGE outlined plans for the fund’s 50th anniversary celebration, spanning from January 2026 through early 2027.

Financial Update

D. Mitchell reported a total return of 4.38% for the first quarter of FY26. He noted the following financial metrics:

- **Net Income (GAAP):** Nearly \$3 billion year-to-date.

- **Statutory Net Income:** Less than \$2 billion, highlighting the structural mismatch between the total return portfolio and statutory income rules.
- **Transfers:** \$1.7 billion transferred to the General Fund for the Percent of Market Value (POMV) draw year-to-date.
- **Mineral Deposits:** \$111 million received in the first quarter.

D. Mitchell provided clarification regarding federal revenue sources, noting that royalties from projects like the National Petroleum Reserve-Alaska (NPRAs) or Arctic National Wildlife Refuge (ANWR) do not currently contribute to the Permanent Fund. However, he advised that recent changes to federal law regarding NPRAs revenue sharing may result in future deposits.

INVESTMENT REPORTS

Chief Investment Officer Report

CHIEF INVESTMENT OFFICER (CIO) MARCUS FRAMPTON reviewed the fund's performance metrics:

- **Inflation Target:** The fund is outperforming the CPI+5% objective by over 2% on a 3-year basis.
- **Passive Benchmark:** The fund is underperforming the passive benchmark on a 3-year basis but outperforming it on a 5-year basis.
- **Asset Class Performance:** M. Frampton noted that the 2022 high inflation period has elapsed from the 3-year metrics, improving relative standing.

Asset Allocation Discussion

M. Frampton discussed a staff recommendation to reduce the target allocation to private markets by 1% per year over three years to increase liquidity. While no formal vote was taken, Trustees expressed consensus support for staff to exercise flexibility within the strategic policy bands to gradually reduce private market exposure.

Benchmark Review

M. Frampton raised the issue that the Private Equity benchmark currently excludes energy, despite the portfolio having significant energy exposure. The Board directed the Governance Committee to oversee a benchmark review process involving investment advisors and consultants.

Risk and Compliance Report

CHIEF RISK AND COMPLIANCE OFFICER (CRO) SEBASTIAN VADAKUMCHERRY presented the risk profile.

- **Risk Appetite:** The fund remains within the risk appetite defined by the 80/20 risk tolerance portfolio.
- **Long-Term Performance:** Over a 25-year period, the fund has outperformed the risk tolerance portfolio by approximately 50 basis points annualized.
- **Compliance:** No breaches of investment policy limits were reported.

CALLAN REPORT

GREG ALLEN and STEVE CENTER from Callan LLC presented the quarterly performance review.

Market Environment

S. Center highlighted that U.S. small-cap stocks rallied 12.4% in the quarter, driven largely by low-quality factors such as highly shorted and unprofitable companies. Gold prices increased 45.6% over the last year, reflecting market uncertainty.

Fund Performance

- **Quarterly Return:** The fund returned 4.38%, outperforming its benchmark by 6 basis points.
- **10-Year Return:** The fund returned 7.83% annualized, outperforming the benchmark.
- **Peer Comparison:** The fund ranks in the top quartile for risk-adjusted returns (Sharpe ratio) against large public funds over all trailing time periods.

Pathway Capital Management Acquisition

Callan reported that Pathway Capital Management, a key private equity partner for APFC, is being acquired by Clearlake Capital. Callan and staff noted potential long-term risks regarding conflicts of interest and culture shifts, and staff confirmed they would continue monitoring the situation.

EXECUTIVE SESSION

Executive Director Review

Trustee Schutt moved that the Board convene in executive session for the purpose of discussing the annual performance evaluation of the executive director, noting that the discussion could affect the director's reputation. Trustee Anderson seconded the motion. The motion passed by roll call vote (6-0).

The Board entered executive session at approximately 10:50 a.m. Chair Brune called the meeting back to order in public session at 2:45 p.m.

Chair Brune stated that only matters mentioned in the motion were discussed and no action was taken during the session.

Action Item: CEO Compensation

Trustee Schutt moved to provide a 3% merit increase to the base salary of Executive Director and CEO Mitchell, effective January 1, 2026, in addition to any amounts received via SB 259.

TRUSTEE JANELLE EARLS seconded the motion. The motion passed unanimously by roll call vote (6-0).

Trustees expressed appreciation for D. Mitchell’s leadership and the depth of the evaluation process.

PUBLIC MARKETS REPORT

DEPUTY CIO – PUBLIC MARKETS JIM PARISE provided an update on the public markets portfolio.

- **Fixed Income:** The \$17.7 billion fixed income portfolio is 100% internally managed and has outperformed its primary benchmark every year since 2012.
- **Public Equities:** The \$29 billion portfolio is transitioning its tracking error down from 400 basis points to 100 basis points by the end of 2026 to reduce active risk. J. Parise noted that the portfolio is currently overweight small-cap, value, and emerging markets.

PRIVATE MARKETS REPORT

DEPUTY CIO – PRIVATE MARKETS ALLEN WALDROP presented the update.

Private Income

A. Waldrop reported strong returns in infrastructure, driven by power generation demand, with a 19% return versus a 9% benchmark. He noted that the team is focused on finding the right opportunities rather than sacrificing diligence for speed in order to meet deployment targets.

Real Estate

The real estate allocation has decreased to 9.6% due to asset growth elsewhere and cash distributions. A. Waldrop highlighted progress in asset dispositions, with 11 assets currently in progress for sale to upgrade the portfolio quality.

Private Equity

A. Waldrop and PRIVATE EQUITY ASSOCIATE IAN HORWOOD reviewed the private equity portfolio.

- **Performance:** Since inception in 2004, the portfolio has generated a 15.2% IRR, outperforming the S&P 500 (10.4%).
- **Cash Flow:** Since inception, the portfolio has received \$1 billion more in distributions than it has paid in contributions, making it a net cash generator.
- **Unfunded Commitments:** Unfunded commitments stand at \$4.3 billion, or 22% of total exposure, which staff deemed a sustainable level.

CALENDARS AND FUTURE MEETINGS

The Board discussed the meeting calendar for 2026 and 2027.

- **Upcoming Locations:** The next meeting will be in Juneau (February), followed by a meeting in Valdez (May). The Board discussed potentially holding the September 2026 annual meeting in Nome.

- **Committee Meetings:** A Governance Committee meeting will be scheduled prior to the next quarterly meeting to address the benchmark review process.
- **Callan Conference:** Trustees confirmed the dates for the Callan conference in Scottsdale, AZ, for April 20–22, 2026.

ADJOURNMENT

TRUSTEE JOHN BINKLEY moved to adjourn the meeting. Trustee Anderson seconded the motion. The meeting adjourned without objection at 4:37 p.m.

SUBJECT: Chief Executive Officer Report

ACTION:

DATE: February 23, 2026

INFORMATION: X

BACKGROUND:

The CEO's report provides reports detailing Board matters, disclosures, staffing and budget updates, and financial reports.

STATUS:

CEO, Deven Mitchell, will present highlights from the following reports:

- Pending Board Matters
- Trustee Education Report
- Disclosure Report
- Staff Summary Report
- Human Resources Summary
- Communications Report
- Legislative Update
- Information Technology Update
- Investment Referral Log
- Financial Update
- Financial Report
- APFC Transfers
- APFC History & Projections
- Investment Management Fee Report
- FY26 Budget Update



SUBJECT: Pending Board Matters

ACTION:

DATE: February 23, 2026

INFORMATION: X

BY	TASK	CAPTURED	TARGET	COMPLETED
Mitchell	Update Compensation Structure	12/22 4/23	TBD	
Mitchell	Peer Group Definition	7/22	TBD	
Frampton Vadakumcherry	Benchmarking	12/25	5/26	

SUBJECT: Trustee Education

ACTION: _____

DATE: February 23, 2026

INFORMATION: X

BACKGROUND:

The Board of Trustees of the APFC has established a Trustee Education Policy with the following objectives:

- To ensure that the members of the Board have access to the knowledge and information necessary for them to fulfill their fiduciary duties as trustees of the Alaska Permanent Fund; and
- To assist them in becoming well informed in all matters pertaining generally to the management of a large institutional fund, both public and private, and more specifically to the management and investments of the APFC.

In accordance with the Trustee Education Policy, the following is a list of conferences and seminars that Trustees may wish to attend.

TRAINING OPPORTUNITY	TOPIC	LOCATION	DATES
Callan	2026 National Conference “Callan College” Introduction to Investments <i>Please see page 71 of the Callan Presentation for more Callan events</i>	Scottsdale Virtual	April 20-22, 2026 March 3, 2026 or September 22, 2026



Memo

To: Governance Committee
 From: Deven Mitchell, Chief Executive Officer
 Date: February 23, 2026
 Re: Investment Disclosure Report

As required by AS 37.13.110(b) and Alaska Permanent Fund Corporation policy relating to personal investments conduct and reporting, trustees and staff must disclose certain financial interests. Below is a list of disclosures for transactions made by trustees and staff, covering initial, quarterly, and annual disclosures for reportable holdings as of December 31, 2025.

APFC Investment Policy Disclosures			
Name	Position Title	Disclosure Type	Received
Janelle Earls	APFC Trustee	Annual	1/8/26
		Quarterly	1/29/26
Ryan Anderson	APFC Trustee	Quarterly	1/31/26
John Binkley	APFC Trustee	Quarterly	1/28/26
Ethan Schutt	APFC Trustee	Quarterly	1/20/26
Jason Brune	APFC Trustee	Quarterly	1/29/26
Craig Richards	APFC Trustee	Through 11/30 (end of term)	1/26/26
Ralph Samuels	APFC Trustee	Initial	12/16/25
		Annual	1/23/26
		Quarterly	1/23/26
Kelli Patterson	Administrative Operations Manager	Initial	11/3/25
Michael Gumz	Credit Analyst	Quarterly	1/23/26
		Annual	1/9/26
Ian Horwood	Private Equity Associate	Quarterly	1/21/26
Youlian Ninkov	Portfolio Manager	Quarterly	1/21/26
		Annual	1/21/26
Terek Rutherford	Investment Associate	Quarterly	1/28/26
Matt Sykes	Investment Analyst	Quarterly	1/27/26
Allen Waldrop	Deputy CIO – Private Markets	Quarterly	1/23/26
Matthew Ives	Credit Analyst	Quarterly	1/29/26
Eric Ritchie	Portfolio Manager	Quarterly	1/29/26
Chris LaVallee	Senior Portfolio Accountant	Quarterly	1/30/26
		Annual	1/30/26

Luke Kirkham	Investment Analyst	Quarterly	1/30/26
		Annual	1/30/2026
Lesley Creswell	HR Generalist	Annual	1/8/26
Lillie Haggard	Investment Analyst	Annual	1/22/26
Henry Lloyd	Investment Analyst	Annual	1/8/26
Jacki Mallinger	Senior Portfolio Accountant	Annual	1/12/26
Valeria Martinez	Director of Investments	Annual	1/23/26
Shannon McCain	Director of Human Resources	Annual	1/8/26
Sebastian Vadakumcherry	Chief Risk & Compliance Officer	Annual	1/13/26
Joe Shinn	Senior Investment Analyst	Annual	1/30/26

As a reminder, quarterly - only subsequent new Reportable Investments made during the quarter must be disclosed by the thirtieth (30) day following the end of each quarter. For the purpose of clarity, acquiring additional shares or selling shares of an already disclosed Reportable Investment does not need to be disclosed again as a quarterly investment.

All disclosures are under review as required per the APFC Investment Disclosure Policy. After review, disclosures are filed in the appropriate personnel file. Detailed records are kept on file and available upon request.

Memo

To: Board of Trustees
 From: Deven Mitchell
 Chief Executive Officer
 Date: February 23, 2026
 Re: Due Diligence and Travel Summary Report

Background:

This report includes APFC staff completed travel and due diligence numbers for the period October 1-December 31, 2025. The travel report is presented to the Board of Trustees for review at each board meeting as required by APFC Resolution 04-10.

Due Diligence Summary:

Department	Number of Meetings Held	
	In Person	Telephonic/Virtual
Executives	17	35
Fixed Income	47	17
Public Equity	10	35
Private Income	32	108
Absolute Return	2	61
Real Estate	31	143
Private Equity	69	101
Total Fund Cash	0	3

Travel Summary:

Budget-to-Actual Report: October 1-December 31, 2025

The following can be found in full in the FY26 Budget Update

CORPORATE OPERATIONS	BOARD-AUTHORIZED BUDGET	EXPENDITURES	BUDGET REMAINING
Travel	\$1,025,000	\$278,956	\$746,044
Staff	\$877,000	\$267,080	\$609,920
Trustees	\$18,000	\$7,348	\$10,652
Moving/Non-Employee	\$130,000	\$4,528	\$125,472

Trip Summary – 2nd Quarter – October 1-December 31, 2025

TRAVELER	PURPOSE	DATES OF TRAVEL		LOCATION
Adams	Due Diligence	10/1/25	10/10/25	San Francisco / Dallas
Lloyd	Due Diligence	10/1/25	10/10/25	San Francisco / Dallas
Pollock	Annual General Meeting	10/6/25	10/10/25	New York
Rutherford	Manager Meetings	10/6/25	10/9/25	Chicago
Alexander	Annual General Meeting	10/7/25	10/9/25	San Francisco
Horwood	Annual General Meeting	10/7/25	10/10/25	Los Angeles
Gagliardo	Annual General Meeting	10/13/25	10/17/25	Charlottesville / New York
Haggard	Annual General Meeting	10/13/25	10/18/25	Charlottesville / New York

Calhoon	Conference	10/13/25	10/17/25	Las Vegas
Prebeg	Conference	10/13/25	10/17/25	Las Vegas
Skuratovskaya	Conference	10/13/25	10/18/25	Washington DC
Ungar	Annual General Meeting	10/13/25	10/17/25	London
Mitchell	AMHTA Presentation	10/15/25	10/16/25	Anchorage
O'Day	Manager Meeting	10/16/25	10/16/25	New York
O'Day	Conference	10/18/25	10/22/25	Miami
Vadakumcherry	Conference	10/19/25	10/23/25	Boston
Pollock	Annual General Meeting	10/19/25	10/22/25	Houston
Alexander	Annual General Meeting	10/19/25	10/22/25	Houston
Rutherford	Annual General Meeting	10/21/25	10/24/25	Miami
Ritchie	Training	10/25/25	11/1/25	Miami
Adams	Training	10/26/25	10/31/25	Miami
Alexander	Annual General Meeting	10/26/25	10/30/25	New York
Sykes	Conference	10/27/25	11/7/25	New York
Mitchell	IFSWF Conference	10/27/25	11/1/25	Abu Dhabi
Rime	Manager Meeting	10/27/25	11/5/25	New York
Rutherford	Annual General Meeting	10/28/25	11/2/25	Los Angeles
Ungar	Annual General Meeting	10/29/25	10/30/25	New York
Razzaque	Due Diligence	11/1/25	11/8/25	London
Waldrop	Manager Meetings	11/2/25	11/8/25	London
Mitchell	Fairbanks Chamber of Commerce	11/3/25	11/4/25	Fairbanks
Rime	Due Diligence	11/9/25	11/15/25	Atlanta / Orlando
Ritchie	Due Diligence	11/9/25	11/22/25	Atlanta / Sarasota / NY
Alexander	Annual General Meeting	11/10/25	11/14/25	New York
Miller	Conference	11/16/25	11/22/25	San Francisco
Gagliardo	Annual General Meeting	11/17/25	11/22/25	New York
Ives	Training	11/18/25	11/19/25	Anchorage
Ungar	Manager Meetings	11/19/25	11/20/25	New York
O'Day	Juneau Office Visit	11/28/25	12/2/25	Juneau
Alexander	Annual General Meeting	12/1/25	12/5/25	New York
Adams	Due Diligence	12/5/25	12/5/25	Los Angeles
Mangual Arbelo	Juneau Office Visit	12/7/25	12/13/25	Juneau
Waldrop	Annual General Meeting	12/8/25	12/12/25	London
Clark	Juneau Office Visit	12/8/25	12/19/25	Juneau
Adams	Juneau Office Visit	12/8/25	12/13/25	Juneau
O'Day	Manager Meetings	12/11/25	12/11/25	New York
O'Day	Manager Meetings	12/18/25	12/18/25	New York
Rime	Due Diligence	12/14/25	12/19/25	Los Angeles
Adams	Due Diligence	12/15/25	12/15/25	Santa Ana / Los Angeles
Samuels	APFC Board Meeting	12/15/25	12/18/25	Juneau
Waldrop	Juneau Office Visit	12/15/25	12/19/25	Juneau

Brune	APFC Board Meeting	12/16/25	12/17/25	Juneau
Schutt	APFC Board Meeting	12/16/25	12/17/25	Juneau

SUBJECT: HR Summary Report

ACTION: None

DATE: February 23, 2026

INFORMATION: X

Staffing Activity and Reports

As of February 2026, APFC continues to maintain a low turnover rate (1.5% FY26 to date), with only one employee departure recorded for the fiscal year. Staffing levels remain stable, reflecting consistent headcount across departments and supporting ongoing operations and program effectiveness.

Recruitment activity during this period remains targeted and intentional. Several long-standing vacancies remain open but are either on hold due to business decisions or are actively progressing through recruitment and interview stages. Of the nine current vacancies, five are within Investments and four within Operations, with active recruitment underway for the Private Income Investment Analyst, Chief of Operations, and Investment Operations Analyst.

Key Highlights

- Turnover rate: 1.5% FY26 to date
- Employee departures: 1 this fiscal year (November)
- Staffing levels remain stable across departments, supporting ongoing operations
- Nine vacancies: five in Investments, four in Operations
- Active recruitment: Private Income Investment Analyst, Chief of Operations, Investment Operations Analyst

Vacancy date	Dept	Section/ Asset Class	Title	Recruitment Status
5/8/2024	Investment	Fixed Income	Investment Analyst (Global Rates)	Vacant - Recruitment Closed
7/8/2024	Investment	Private Income	Portfolio Manager	Vacant
10/12/2024	Investment	Private Income	Investment Analyst	Vacant - Active Recruitment - interviewing
2/20/2025	Investment	Public Equity	Portfolio Manager	Vacant
3/8/2025	Investment	Real Estate	Director of Investments - RE	Vacant
4/23/2025	Operations	Middle Office	Investment Operations Analyst	Position not funded in FY27
5/10/2025	Operations	Admin Ops	Chief Operating Officer	Vacant - Active Recruitment - interviewing
6/9/2025	Operations	Risk & Compliance	Business Analyst	Vacant
10/31/2025	Operations	Middle Office	Investment Operations Analyst	Vacant - Active Recruitment - interviewing

Headcount & Vacancies as of 2/12/2026			
Division	Total FTE	Filled FTE	Vacant FTE
Investments	32	27	5
Operations	35	32	4
Total FTE	68	59	9

Intern Program

APFC has completed the recruitment process for both its Internal Finance and Investment Internships. All hiring teams reported a strong pool of qualified Alaskan candidates, reflecting the ongoing appeal and competitiveness of our programs.

Both programs have selected final candidates, and final offers are in progress. The interns will begin onboarding and are expected to start in May 2026.

- Finance Internship: 27 applicants, 11 eligible, finalist selected (offer in process)
- Investment Internship: 44 applicants, 15 eligible, finalist selected (offer in process)

APFC wants to recognize staff who make the Intern Program possible through their voluntary commitment and extra effort. Special thanks to Lesley Creswell on the HR Team for overseeing the program, and to the Finance and Investment teams—Chris Lavalee, Jordan Perletti, Sarah Struble, Marcus Frampton, Sebastian Vadakumcherry, and Luke Kirkham. Their dedication is essential to the ongoing success of the intern program.

External Partnership Internship Recruitment

The APFC External Partnership Internship recruitment process has now concluded, and the selection of candidates is currently in progress. We appreciate partnering with Denali Advisors located in Anchorage, Alaska; L&B Realty Advisors based in Dallas, Texas; and Pathway Capital Management in Irvine, California to provide this benefit to Alaskan students.

Each of these external organizations has completed their respective recruitment efforts and has moved qualified candidates forward into either the interview or offer stages. At this time, APFC is awaiting updates regarding the issuance of final offers and the confirmation of hires from these partners. Below is a breakdown on the number of applicants after applying the Alaska residency/student requirements.

- Denali Advisors, LLC: Out of 24 applicants, 75% met Alaska residency / Alaska student eligibility criteria.
- L&B Realty Advisors: Out of 15 applicants, 13% met Alaska residency / Alaska student eligibility criteria.
- Pathway Capital Management, LP: Out of 44 applicants, 14% met Alaska residency / Alaska student eligibility criteria.

SUBJECT: Communications Report

ACTION:

DATE: 2/23/2026

INFORMATION: X

APFC Communications

As the investment manager of the Alaska Permanent Fund, APFC is accountable to many audiences: Alaskans, national partners, and global investors. We are committed to providing reliable, accurate information that meets the needs of each audience while fostering trust, transparency, and accountability.

Communications Vision: to be a trusted voice in fostering transparency, engagement, and understanding of APFC's mission.

In-State Mission of Education & Awareness

Together with our Alaska-based partner, Yuit Communications, we aim to strengthen our education efforts and better support Alaskans' understanding.

Financial Focus on Institutional Investing

The coverage of APFC in respected financial publications enhances institutional investor credibility. It ensures accurate, high-quality information about the Fund and our team's stewardship reaches partners, policymakers, stakeholders, and the public.

Combining our local team's insight and our national partner's institutional investment fluency builds trust and credibility, elevating APFC's expertise while sharing Alaska's story.

Presentations, Interviews, Outreach

December 2025-February 2026

- **Pensions & Investments** with Marcus Frampton Dec. 10
- **Infrastructure Investor** with Ross Alexander on Dec. 16
- **Debtwire** with Ross Alexander on Jan. 6
- **Meeting with Senator Stedman** with Deven Mitchell and Paulyn Swanson on Jan. 28
- **Northrim Bank's Lenders Meeting** with Deven Mitchell on Feb. 2
- **Budget Meeting with Co-Chair Josephson** with Deven Mitchell, Kelli Patterson and Paulyn Swanson on Feb. 2
- **Meeting with Representative St. Clair** with Deven Mitchell and Paulyn Swanson on Feb. 6
- **Meeting with Representative Tomaszewski** with Deven Mitchell and Paulyn Swanson on Feb. 6
- **SFIN Overview** with Deven Mitchell and Marcus Frampton on Feb. 11
- **Alaska Pacific University** with Deven Mitchell on Feb. 14
- **HFIN Overview** with Deven Mitchell and Marcus Frampton on Feb. 20
- **HFIN** with Callan CEO & Chief Research Officer Greg Allen and SVP Steve Center on Feb. 24
- **SFIN** with Callan CEO & Chief Research Officer Greg Allen and SVP Steve Center on Feb. 25

50th Anniversary of the Alaska Permanent Fund

2026 offers a pivotal moment to celebrate the Fund's origins, evolution, and its legacy of *Stewardship for Generations*.



Alongside the launch of the 50th anniversary logo, we were honored to release an op-ed, “Half a Century of the Alaska Permanent Fund: Stewardship for Generations,” by the Alaska Permanent Fund Corporation’s Board of Trustees, and a statewide press release, “Alaska Celebrates the Fund’s First 50 Years, Prepares for the Next 50 Years.”

Comms Strategic Plan Alignment

In Q3, emphasis is on APFC’s accountability to Alaskans as we work to actively engage stakeholders to celebrate and deepen understanding of the Fund. We are communicating APFC’s role as a revenue generator for the state, along with the state’s transformation from an oil state to an investment state.

2026 Mid FY Review

To inform Alaskans and policymakers about the performance and management of the Fund, APFC publishes a short 4-page mid-year review. It provides unaudited Fund values and performance through December, highlighting key information in a concise format.

Website Update

APFC is continuing a significant update of apfc.org to strengthen its role as a trusted, reliable source of information. Although the timeline has been extended, the goal remains to improve public understanding through increased transparency, along with improved site and user experience.

APFC “Fact or Myth: Understanding the Alaska Permanent Fund

APFC Communications published “Fact or Myth: Understanding the Alaska Permanent Fund” on apfc.org alongside a series of social and e-newsletter content to build clarity by correcting misconceptions, while strengthening Alaskans’ knowledge base.

People Behind the Fund

In collaboration with our Partners at Yuit, the “People Behind the Fund” campaign includes short-form video interviews. The series aims to build trust and improve public understanding of the work of APFC.

Legislative Outreach

With the 34th Alaska State Legislature – Second Session, we are providing presentations to SFIN, HFIN, Legislative members, and their staff to further understanding of the Fund’s structure and to provide updates on values and performance.

APFC Insights

The email newsletter provides monthly financial statements, quarterly performance reports, Board meeting notices, and key publications, offering data and context.

AK Youth Education Program Delivery

The “Alaska Renewable Revenue” curriculum continues to be taught statewide, now reaching more than 30% of Alaska’s school districts, and the Anchorage School District formally adopted it at the start of the academic year. As of the December 2025 report, ARE has reached over 20 districts, 61 communities, and 3,118 students.

Organic Social Media

APFC’s social media serves as a public education channel, delivering consistent, relevant messaging about the Fund and Corporation that aligns with our strategic priorities.

SUBJECT: Legislative Update

ACTION:

DATE: 2/23/2026

INFORMATION: X

The 34th Alaska State Legislature's 2nd regular session convened on January 20, 2026, with adjournment slated for May 21, 2026.

Legislative Initiatives

- Educate stakeholders to support informed policy decisions
- Secure resources to support APFC's investment management capabilities
- Forward Board Initiatives
 - Constitutional amendment for a single-fund endowment
 - Rules-based inflation proofing under the two-account structure
 - Executive Director recruitment and personnel record confidentiality legislation
- Monitor and respond to legislation that impacts the Fund and the Corporation

Education

Provide legislators and staff with timely updates on the Fund's structure, governance, and performance. As the Alaska Permanent Fund marks its 50th Anniversary, this milestone offers an opportunity to highlight its history, reaffirm its mission, and underscore its commitment to long-term stewardship for current and future generations.

- November 2, 1976 - General Election
Alaska voters approve a constitutional amendment establishing the Permanent Fund by a margin of 75,588 to 38,518.

Resources for Investment Management

Managing a complex, global portfolio requires exceptional talent, disciplined risk management, advanced analytics, and secure, resilient systems. The following reflects the Governor's FY27 Operating Budget submission [HB263/SB 213](#).

FY27 APFC Resource Priorities

- A single appropriation: Alaska Permanent Fund Corporation, with three allocations to promote flexibility and accountability -
 - APFC Operations \$31,047,700
 - APFC Investment Management Fees \$178,451,400
 - Facilities Rent \$649,000
- Recruitment, development, and retention of exceptional talent, including fully funded incentive compensation
- Modern, secure IT systems, including cybersecurity diligence, datacenter maintenance & equipment, and cyclical workstation replacements
- Fund Source for APFC's Budget is 1105 Permanent Fund Corporation Gross Receipts

FY27 Alaska Permanent Fund Appropriations

The Governor's operating budget brings forth the following language appropriations:

- Royalties to Principal
 - Constitutional, Art. IX, Sec. 15 *estimated to be \$323,012,154*
 - Statutory, AS 37.13.010(a)(2) *estimated to be \$108,646,000*
- Inflation Proofing for Permanent Deposits in the Principal AS 37.13.145(c)
 - *estimated to be \$1,491,000,000* from ERA to Principal
- Percent of Market Value Draw per AS 37.13.140(b)
 - 5% POMV \$3,996,868,095 from ERA to Dividend Fund & General Fund
- Amerada Hess Settlement Earnings AS 37.13.145(d)
 - AK Capital Income Fund AS 37.05.565 *estimated to be \$26,312,800*
- State Agency Royalty Support – Fund Source: 1105 PF gross receipts
 - Department of Revenue \$99,600
 - Department of Law \$3,191,000
 - Department of Natural Resources \$7,968,100

Forward Board Initiatives

Seek opportunities to pursue the Board's strategic policy initiatives.

AS 37.13.100 Corporation Staff

- Protect from public records disclosure the identity of all candidates who would like to be considered for the positions of Executive Director and Chief Investment Officer;
- Provide the Board with authority to interview the finalists for the positions of Executive Director and Chief Investment Officer in an executive session; and
- Provide for the confidentiality of personnel records of all APFC staff.

AS 37.13.170. Reports and publications

- The Governor proposed legislation aimed at eliminating or modifying state agency publications that are outdated, redundant, or excessive. APFC is included in the bill that provides for the use of APFC's website to post annual income statements and balance sheets. [HB200](#) and [SB177](#) remain in the 1st committees of referral.

Monitor & respond to legislation that impacts the Fund and the Corporation

Providing timely and accurate information is essential to our legislative communications, and input from the Board and staff is critical to alignment throughout this process. The following is a summary of resolutions and bills that we are tracking.

Proposed resolutions amending the Constitution of the State of Alaska before the voters at the next general election in 2026 -

- 1 Constitutional Amendment proposing a single fund endowment with a 5% POMV draw limit. Fifty percent of this draw would be directed to dividends for eligible Alaskans without needing appropriation, while the remaining fifty percent would be allocated for government operations. [HJR30](#) and [SJR23](#) have been referred to FIN.
- 2 Constitutional Amendments for a classic single fund endowment with a limit of a 5% POMV draw. [HJR10](#) is in HFIN, the 3rd committee of referral, and [SJR14](#) is in SFIN, the 1st committee of referral.
- 1 Constitutional Amendment that includes a 5.5% POMV and guaranteed dividends. [SJR 5](#) remains in SJUD, the 1st committee of referral.

Legislation related to the Fund

- 1 bill that maintains the 5% POMV annual draw from the ERA and provides a distribution to the dividend fund and to the general fund. [SB109](#) remains in the 1st committee of referral, SFIN.
- 1 bill that maintains the statutory 5% annual POMV draw and designates 69% of state mineral royalty revenue for the dividend, [HB114](#), which remains in HSTA, the 1st committee of referral.
- 1 bill to allow individuals to direct a portion of their dividend to the state general fund or the Principal of the Permanent Fund. [HB 11](#) remains in HSTA, the 1st committee of referral.

Legislation related to APFC

- 2 bills that exempt Alaska from observing “advanced time” daylight saving time with the condition that Alaska’s time zone be set to Pacific Standard: [HB41](#) and [SB26](#). SB26 passed the Senate on May 13. The House referrals are to HSTA and HFIN.
- 1 bill that adds a subsection to AS 37.13.120 to prohibit investment from furthering social, political, or ideological interests with the sponsor’s intent to ensure investment decisions are focused on maximizing returns. [HB 6](#) remains in HJUD, the 1st committee of referral.
- 1 bill restricting a fiduciary of a state fund, [SB221](#), is in SFIN, 1st committee of referral.
- 2 resolutions that bring forth a constitutional appropriation limit: [HJR 1](#), [SJR 4](#). APFC will work with sponsors to ensure that the appropriations for managing the Fund fall within the designated exceptions. This aims to ensure that the funds required to manage the portfolio's assets, as they continue to increase in value, do not compete with the general needs of the state government within its budgetary limits. Both resolutions remain in the 1st committee of referral.



Investment Referral Tracking Log - FY26 Q2

October 1 – December 31, 2025

Referred from	via	Name/Company	Date of referral	Action taken	Follow-up Date	Other Notes
IAG John Skjervem	email	Cervin Ventures	10/23/25	Forwarded to Allen Waldrop	10/23/25	Allen followed up with John via email

SUBJECT: FY26 Year-to-Date Financial Update ACTION: _____

DATE: February 23, 2026 INFORMATION: _____ X

KEY TAKEAWAYS:

- Total return for the second quarter of FY26 of 2.15%. Total fund underperformed the performance benchmark by 22 basis points and outperformed the passive benchmark by 24 basis points.
- Accounting net income year-to-date of \$4.7 billion, a gain of \$1.8 billion for the second quarter
- Realized (statutory) net income year-to-date of \$3.6 billion, tracking higher than Callan's high projection of \$6.1 billion for the year
- Total net asset value as of December 31st of \$86.3 billion, an increase of \$6.6 billion from the same time last year
- Three transfers for a total of \$690 million to the General Fund during the quarter, leaving \$1.4 billion to be transferred throughout the second half of the fiscal year
- \$219 million of mineral deposits transferred in during the fiscal year to date, slightly ahead of the Fall Revenue Forecast
- Committed Earnings Reserve balance of \$4.0 billion, including \$4.0 billion for FY27 General Fund transfers and \$18 million for transfer to the ACIF
- \$6.0 billion in uncommitted realized earnings at the end of December
- Inflation rate for FY26 is final at 2.6%, which results in an estimated statutory inflation proofing calculation of \$1.6 billion, however inflation proofing was not appropriated as part of the FY26 budget so no transfer will be made.

Financial results for the second quarter of FY26 reflected growth in nearly every asset class, with largest gains experienced in November. Overall, the portfolio gained \$1.3 billion in value between the end of September and the end of December, which includes net transfers out of \$631 million.

Net assets increased by \$1.2 billion year-to-date through December. This is a result of net income of \$4.7 billion and \$219 million received in mineral royalty deposits offset by the FY26 POMV transfer to the General Fund in the amount of \$3.8 billion. Corporate operating expenses and other appropriations for the quarter totaled \$32 million.

There were three transfers to the General Fund during the second quarter of FY26 in the amount of \$690 million. The remaining \$1.4 billion is scheduled to transfer throughout the remainder of the fiscal year. Staff is in communication with the cash managers at the Department of Revenue to ensure that amounts designated for the General Fund remain invested in the Fund as long as possible, while being available to meet the liquidity needs of the State.



**Financial Report
December 31, 2025**

Fiscal Year 2026 Net Assets

Balances through December 31, 2025

(in millions)

Total assets	\$ 88,066.6
Less liabilities	(1,804.2)
Net assets	<u>\$ 86,262.4</u>
Fund Balances:	
Non-spendable	
Permanent Fund corpus—contributions and appropriations	59,073.1
Not in spendable form—unrealized appreciation on invested assets	14,714.3
Total non-spendable fund balance	<u>\$ 73,787.4</u>
Committed	
General Fund Commitment	3,996.9
Current FY inflation proofing	-
Current FY Alaska Capital Income Fund	17.9
Committed fund balance	<u>\$ 4,014.8</u>
Assigned for future appropriations	
Realized earnings	5,972.5
Unrealized appreciation on invested assets	2,487.7
Total assigned fund balance	<u>8,460.2</u>
Total fund balances	<u><u>\$ 86,262.4</u></u>

Fiscal Year 2026 Income

For the six months ending December 31, 2025

(in millions)

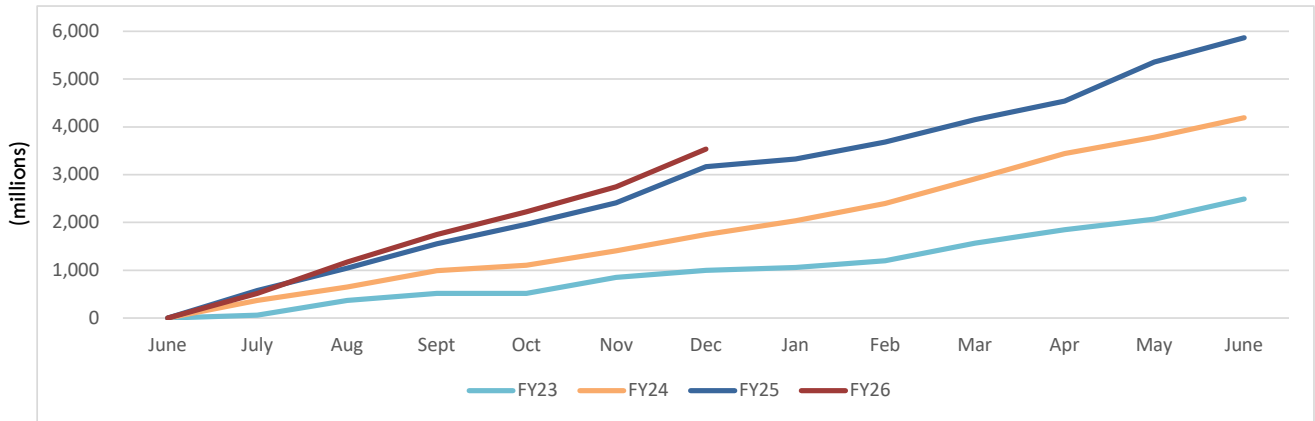
Statutory (Realized) Net Income

Interest, dividends, real estate, and other income	\$ 1,028.7
Realized gains on the sale of invested assets	2,599.7
Less operating expenses/legislative appropriations	(73.7)
Less Alaska Capital Income Fund committed realized earnings	(17.9)
Statutory net income	<u>\$ 3,536.8</u>

GAAP (Accounting) Net Income

Statutory net income	\$ 3,536.8
Unrealized gain on invested assets	1,188.2
Alaska Capital Income Fund committed realized earnings	17.9
Accounting net income	<u>\$ 4,742.9</u>

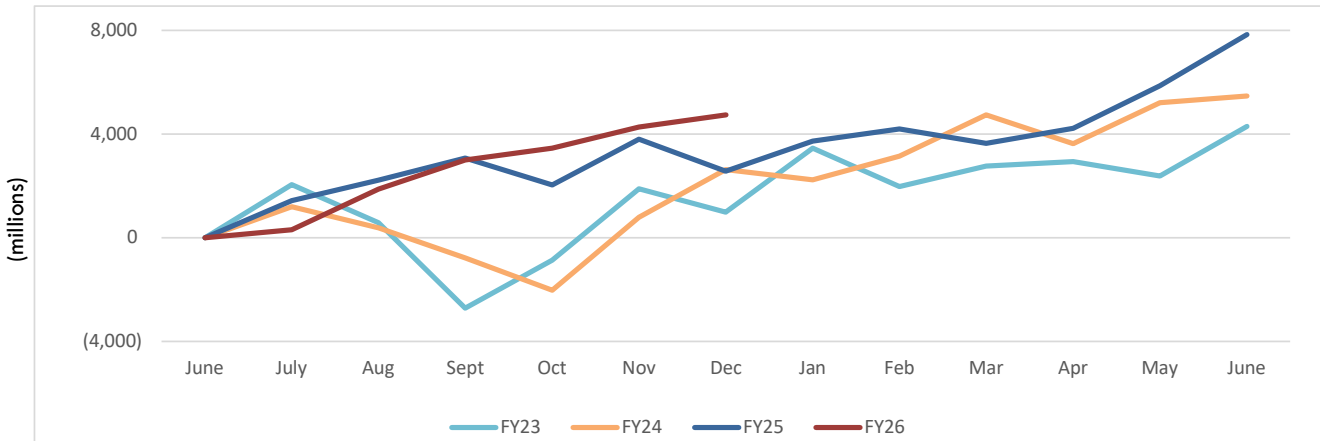
Statutory Net Income, Fiscal Years 2023 - 2026



- Comprised of receipts from interest on fixed income, real estate rentals, stock dividends, and all realized gains and losses on the sales of invested assets, less AK Capital Income Fund committed amounts and operating expenses.

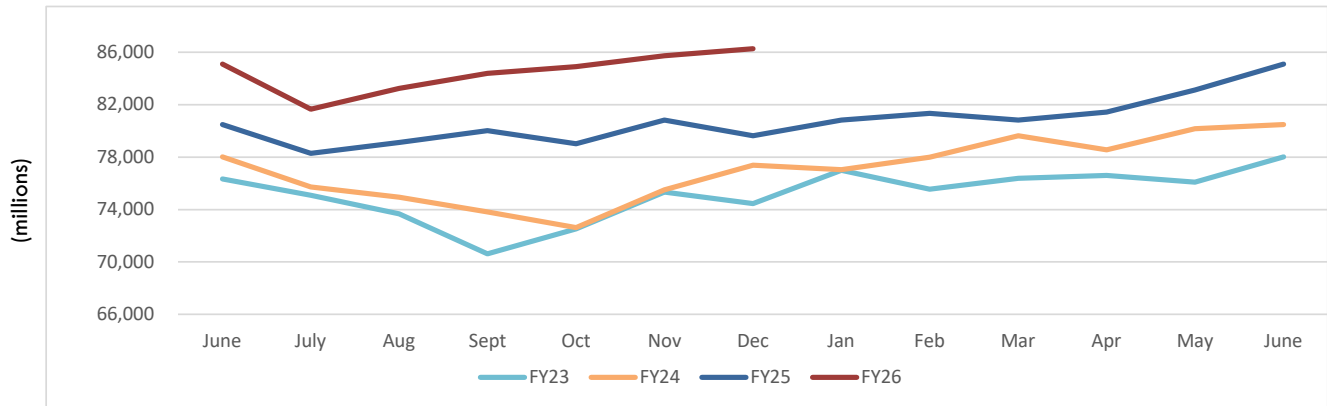
- FY23 statutory net income was \$2,491.1 million.
- FY24 statutory net income was \$4,195.5 million.
- FY25 statutory net income was \$5,865.8 million.
- FY26 statutory net income is \$3,536.8 million to date.

GAAP Accounting Net Income, Fiscal Years 2023 - 2026



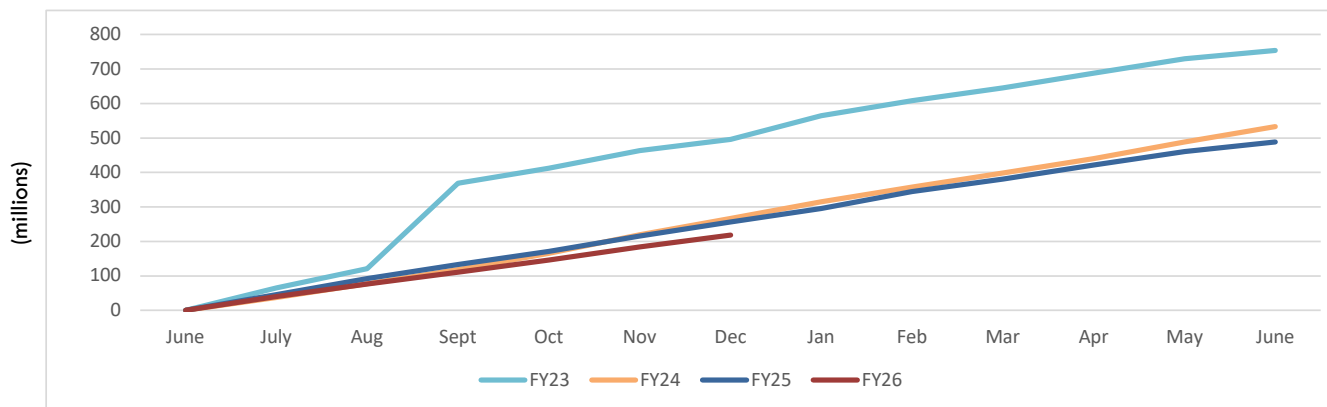
- Accounting net income is the same as statutory net income, except it includes unrealized gains and losses.
- Accounting net income for FY23 was \$4,295.9 million.
- Accounting net income for FY24 was \$5,467.9 million.
- Accounting net income for FY25 was \$7,836.9 million.
- Accounting net income for FY26 is \$4,742.9 million to date.

Market Value of Fund Net Assets, Fiscal Years 2023 - 2026



- FY23 net assets as of June 2023 were \$78 billion, an increase of \$1.7 billion over the FY22 ending balance.
- FY24 net assets as of June 2024 were \$80.5 billion, an increase of \$2.5 billion over the FY23 ending balance.
- FY25 net assets as of June 2025 were \$85.1 billion, an increase of \$4.6 billion from the FY24 ending balance.
- FY26 net assets as of December 2025 were \$86.3 billion, an increase of \$1.2 billion from the FY25 ending balance.

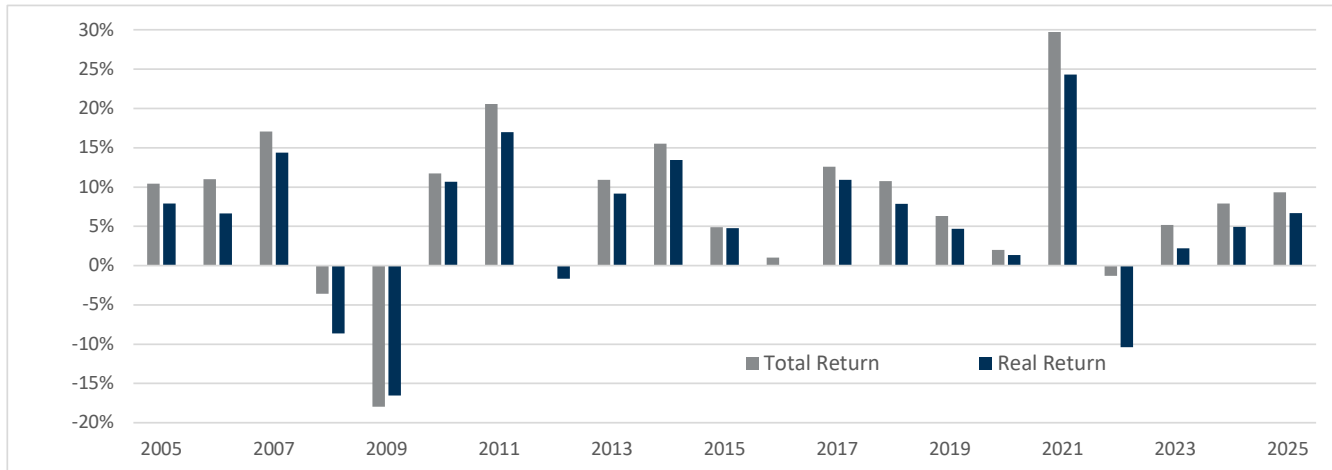
Dedicated Mineral Revenues, Fiscal Years 2023 - 2026



- FY23 mineral revenue was \$753.6 million.
- FY24 mineral revenue was \$532.6 million.
- FY25 mineral revenue was \$488.7 million.
- FY26 mineral revenue is \$218.6 million to date.

Alaska Permanent Fund Historical Returns, Fiscal Years 2005 - 2025

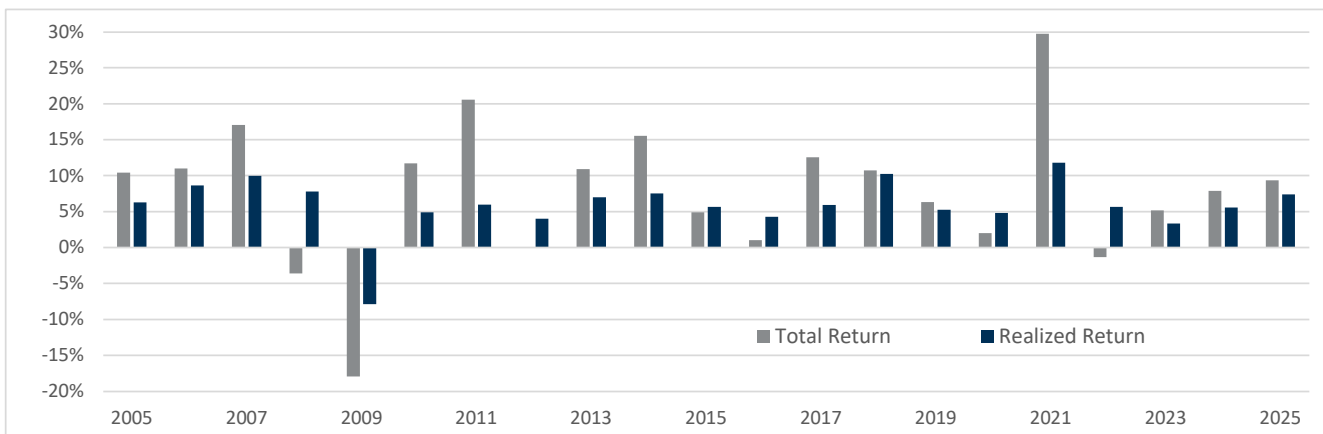
Total return minus inflation equals real return



- Total return annualized over 41 years is 8.8%
- Real return annualized over 41 years is 6%

Alaska Permanent Fund Historical Returns, Fiscal Years 2005 - 2025

Total return minus unrealized gains/losses equals realized return



- Total return annualized over 41 years is 8.8%
- Realized return annualized over 41 years is 7.34%



Board of Trustees - APFC Transfers - October 1, 2025 through December 31, 2025

<u>Type of Transfer</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Total</u>
Public Equities	(1,140,504)	(1,338,394)	(1,459,474)	(3,938,373)
Fixed Income	(305,908)	16,404	149,986,232	149,696,728
Private Equity	(23,128,377)	(160,677,772)	(276,132,586)	(459,938,735)
Real Estate	(64,102,318)	(93,484,306)	37,442,671	(120,143,954)
Private Income	(14,482,755)	15,202,307	17,320,917	18,040,468
Absolute Return	(85,409,249)	(4,975,732)	9,500,553	(80,884,428)
Tactical Opportunities	-	(3,315,383)	274,720	(3,040,663)
Total Fund Cash	(31,970,501)	40,723,734	(139,688,080)	(130,934,848)
Net Transfers	(220,539,612)	(207,849,144)	(202,755,049)	(631,143,804)



Board of Trustees - APFC Transfers - October 2025

Description	Total Fund Cash	Public Equities	Fixed Income	Private Equity	Real Estate	Private Income	Absolute Return	Net
State of Alaska & Administrative								
Mineral revenue	33,863,280							33,863,280
AIM STIF interest	1,718,646							1,718,646
Commission recapture proceeds	60,630							60,630
Class action proceeds	145							145
General Fund Transfer	(230,000,000)							(230,000,000)
PCE Draw	(10,000,000)							(10,000,000)
PCE Contribution	67,868							67,868
AMHT Contribution	1,000,000							1,000,000
Corporate expenses	(17,250,180)							(17,250,180)
Public Equities								
Public EQ Securities Lending	1,140,504	(1,140,504)						-
Fixed Income								
APF FI Cash	147,068,984		(147,068,984)					-
APF FI Overlay	2,931,016		(2,931,016)					-
APF TBA Collateral	299,553		(299,553)					-
APF US AGG	(150,000,000)		150,000,000					-
FI Securities Lending	6,355		(6,355)					-
Private Equity								
Private Equity distributions	133,835,760			(133,835,760)				-
Private Equity capital calls	(110,707,383)			110,707,383				-
Real Estate								
Direct Real Estate distributions	6,277,847				(6,277,847)			-
Direct Real Estate capital calls	(1,148,214)				1,148,214			-
Real Estate Funds distributions	29,090,475				(29,090,475)			-
Real Estate Funds capital calls	(5,117,790)				5,117,790			-
AEW Dom RE Securities	35,000,000				(35,000,000)			-
Private Income								
Infrastructure distributions	3,391,830					(3,391,830)		-
Infrastructure capital calls	(11,530,538)					11,530,538		-
Private Credit distributions	26,281,961					(26,281,961)		-
Private Credit capital calls	(16,457,071)					16,457,071		-
Private Income distributions	18,773,759					(18,773,759)		-
Private Income capital calls	(5,977,185)					5,977,185		-
Absolute Return								
Absolute Return distributions	85,409,249						(85,409,249)	-
Net Transfers	(31,970,501)	(1,140,504)	(305,908)	(23,128,377)	(64,102,318)	(14,482,755)	(85,409,249)	(220,539,612)

Board of Trustees - APFC Transfers - November 2025

Description	Total Fund Cash	Public Equities	Fixed Income	Private Equity	Real Estate	Private Income	Absolute Return	Tactical Opportunities	Net
State of Alaska & Administrative									
Mineral revenue	24,273,711								24,273,711
AIM STIF interest	1,316,468								1,316,468
Commission recapture proceeds	15,699								15,699
Class action proceeds	282								282
General Fund Transfer	(230,000,000)								(230,000,000)
Corporate expenses	(3,455,303)								(3,455,303)
Public Equities									
CastleArk Growth LC	(75,000,000)	75,000,000							-
DFA Intl Small Cap Value	75,000,000	(75,000,000)							-
DFA Intl Small Company	75,000,000	(75,000,000)							-
DSM Growth LC	(75,000,000)	75,000,000							-
International Transition	24,873	(24,873)							-
LSV Intl EQ	50,000,000	(50,000,000)							-
Public EQ Securities Lending	1,313,521	(1,313,521)							-
Schroders Intl EQ	50,000,000	(50,000,000)							-
SSGA LC	(75,000,000)	75,000,000							-
SSGA World Small Cap Index	50,000,000	(50,000,000)							-
Voya LC	(75,000,000)	75,000,000							-
Fixed Income									
APF FI Plus Holding	(24,873)		24,873						-
APF TBA Collateral	487		(487)						-
Cap Guardian High Yield Fixed Income	164		(164)						-
FI Securities Lending	7,818		(7,818)						-
Private Equity									
Private Equity distributions	194,829,733			(194,829,733)					-
Private Equity capital calls	(34,151,960)			34,151,960					-
Real Estate									
Direct Real Estate distributions	96,653,970				(96,653,970)				-
Direct Real Estate capital calls	(19,556,829)				19,556,829				-
Real Estate Funds distributions	16,387,164				(16,387,164)				-
Private Income									
Infrastructure distributions	20,887,463					(20,887,463)			-
Infrastructure capital calls	(66,450,555)					66,450,555			-
Private Credit distributions	41,943,889					(41,943,889)			-
Private Credit capital calls	(13,329,932)					13,329,932			-
Private Income distributions	1,746,829					(1,746,829)			-
Absolute Return									
Absolute Return distributions	4,975,732						(4,975,732)		-
Tactical Opportunities									
APF Tactical Opps Private distributions	3,315,383							(3,315,383)	-
Net Transfers	40,723,734	(1,338,394)	16,404	(160,677,772)	(93,484,306)	15,202,307	(4,975,732)	(3,315,383)	(207,849,144)

Board of Trustees - APFC Transfers - December 2025

Description	Total Fund Cash	Public Equities	Fixed Income	Private Equity	Real Estate	Private Income	Absolute Return	Tactical Opportunities	Net
State of Alaska & Administrative									
Mineral revenue	45,643,744								45,643,744
AIM STIF interest	1,512,813								1,512,813
Commission recapture proceeds	36,428								36,428
Class action proceeds	11,610								11,610
AMHT Contribution	1,300,000								1,300,000
General Fund Transfer	(230,000,000)								(230,000,000)
PCE Draw	(10,000,000)								(10,000,000)
Corporate expenses	(11,259,645)								(11,259,645)
Public Equities									
Allspring Global	10,000,000	(10,000,000)							-
APF SPDR Low Vol	25,000,000	(25,000,000)							-
APF SPDR Momentum	50,000,000	(50,000,000)							-
APF SPDR Yield	25,000,000	(25,000,000)							-
CastleArk Growth LC	(50,000,000)	50,000,000							-
DFA Intl LC	25,000,000	(25,000,000)							-
DFA Intl Small Cap Value	25,000,000	(25,000,000)							-
DFA Intl Small Company	50,000,000	(50,000,000)							-
DSM Growth LC	(75,000,000)	75,000,000							-
Hardman Johnston Global	75,000,000	(75,000,000)							-
LSV Intl EQ	25,000,000	(25,000,000)							-
LSV Value LC	25,000,000	(25,000,000)							-
Lyrical Value LC	25,000,000	(25,000,000)							-
Mellon FTSE RAFI US Large	25,000,000	(25,000,000)							-
Mellon MSCI World Ex-US	100,000,000	(100,000,000)							-
Public EQ Securities Lending	1,459,474	(1,459,474)							-
Pzena Investment Management LLC	25,000,000	(25,000,000)							-
Schroders Intl EQ	25,000,000	(25,000,000)							-
SKBA Value LC	25,000,000	(25,000,000)							-
SSGA Domestic EQ	25,000,000	(25,000,000)							-
SSGA LC	(50,000,000)	50,000,000							-
SSGA MSCI ACWI IMI	(350,000,000)	350,000,000							-
Trustbridge EM	15,000,000	(15,000,000)							-
Voya LC	(75,000,000)	75,000,000							-
Fixed Income									
APF China Bond Market	(1,198,615)		1,198,615						-
APF FI Cash	(147,044,288)		147,044,288						-
APF FI Overlay	(2,955,712)		2,955,712						-
APF Global Rates	1,198,546		(1,198,546)						-
FI Securities Lending	13,837		(13,837)						-
Private Equity									
Private Equity distributions	368,754,611			(368,754,611)					-
Private Equity capital calls	(92,622,025)			92,622,025					-
Real Estate									
Direct Real Estate distributions	31,124,489				(31,124,489)				-
Direct Real Estate capital calls	(108,462,820)				108,462,820				-
Real Estate Funds distributions	2,773,074				(2,773,074)				-
Real Estate Funds capital calls	(2,877,414)				2,877,414				-
AEW Dom RE Securities	40,000,000				(40,000,000)				-
Private Income									
Infrastructure distributions	19,723,605					(19,723,605)			-
Infrastructure capital calls	(18,203,475)					18,203,475			-
Private Credit distributions	26,843,234					(26,843,234)			-
Private Credit capital calls	(34,302,991)					34,302,991			-
Private Income distributions	8,042,356					(8,042,356)			-
Private Income capital calls	(19,423,647)					19,423,647			-
Absolute Return									
Absolute Return distributions	499,447						(499,447)		-
Absolute Return capital calls	(10,000,000)						10,000,000		-
Tactical Opportunities									
APF Tactical Opps Private capital calls	(274,720)							274,720	-
Net Transfers	(139,688,080)	(1,459,474)	149,986,232	(276,132,586)	37,442,671	17,320,917	9,500,553	274,720	(202,755,049)

**ALASKA PERMANENT FUND
FUND FINANCIAL HISTORY & PROJECTIONS
as of December 31, 2025**

Projections extend ten years, and are based on best available information (\$ in millions)

Nonspendable Fund Balance - Principal							Assigned Fund Balance - Earnings Reserve										TOTAL FUND
FY	FY-Begin Contrib. Balance	Dedicated State Revenues	Inflation Proofing & Special Approp.	FY-End Contributions	Unrealized Gain (Loss) FY-End Balance	FY-End Non-spendable Balance	Statutory Net Income	Distributions			FY-End Balance	Unrealized Gain (Loss) FY-End Balance	FY-End Assigned Balance	FY	FY-End Balance		
								Div/POMV Transfer	Inflation Prfg & Spec Approp.	ACIF						Committed	Realized
77-16	0	16,173	23,275	39,448	4,750	44,198	51,912	23,699	19,977	555	7,649	921	8,571	77-16	52,769		
17	39,448	365	0 ⁽⁵⁾	39,813	7,155	46,968	3,214	0	0 ⁽⁵⁾	25	10,863	1,952	12,816	17	59,784		
18	39,813	353	0 ⁽⁵⁾	40,166	5,863	46,030	6,324	726	0 ⁽⁵⁾	43	2,723	13,739	2,403	18,864	18	64,894	
19	40,166	385	989	41,541	6,278	47,820	3,305	2,723	989	22	5,933	10,122	2,426	18,482	19	66,300	
20	41,541	319	4,758 ⁽⁷⁾	46,618	5,789	52,407	3,106	2,933	4,758 ⁽⁷⁾	21	3,091	8,379	1,424	12,894	20	65,302	
21	46,618	320	0 ⁽⁵⁾	46,938	13,810	60,748	7,962	3,091	0 ⁽⁵⁾	50	7,069	9,272	4,807	21,148	21	81,897	
22	46,938	549	4,000 ⁽⁵⁾⁽⁷⁾	51,487	8,700	60,187	4,544	3,069	4,000 ⁽⁵⁾⁽⁷⁾	24	3,361	10,455	2,334	16,150	22	76,337	
23	51,487	754	4,179	56,420	11,100	67,520	2,491	3,361	4,179	14	3,526	5,241	1,725	10,491	23	78,012	
24	56,420	533	1,413	58,366	12,373	70,739	4,195	3,526	1,413	24	3,799	4,366	1,701	9,724	24	80,463	
25	58,366	489	0	58,855	13,642	72,497	5,866	3,657	0	31	3,799	6,432	2,372	12,603	25	85,100	
Lo	58,855	391	0	59,246	12,982	72,228	5,450	3,799	0	21	3,997	7,886	2,604	14,486	26	86,714	
Mid	58,855	391	0	59,246	14,752	73,998	5,948	3,799	0	26	3,997	8,384	3,083	15,463	26	89,461	
Hi	58,855	391	0	59,246	16,356	75,603	6,612	3,799	0	33	3,997	9,048	3,601	16,645	26	92,248	
27	59,246	432	1,492	61,170	15,704	76,874	5,164	3,997	1,492	26	4,073	7,984	3,095	15,151	27	92,025	
28	61,170	440	1,540	63,150	16,685	79,835	5,314	4,073	1,540	26	4,229	7,529	3,107	14,864	28	94,699	
29	63,150	435	1,590	65,175	17,712	82,887	5,468	4,229	1,590	26	4,396	7,010	3,100	14,506	29	97,393	
30	65,175	444	1,640	67,260	18,791	86,050	5,622	4,396	1,640	26	4,566	6,427	3,071	14,063	30	100,113	
31	67,260	485	1,694	69,438	19,924	89,362	5,779	4,566	1,694	26	4,716	5,797	3,016	13,528	31	102,891	
32	69,438	545	1,750	71,733	21,110	92,843	5,941	4,716	1,750	26	4,850	5,138	2,939	12,927	32	105,770	
33	71,733	607	1,808	74,148	22,345	96,493	6,109	4,850	1,808	26	4,987	4,451	2,844	12,283	33	108,775	
34	74,148	634	1,870	76,651	23,629	100,280	6,284	4,987	1,870	26	5,128	3,737	2,733	11,598	34	111,878	
35	76,651	642	1,932	79,226	24,963	104,189	6,463	5,128	1,932	26	5,273	2,995	2,605	10,873	35	115,061	
Cumulative Totals																	
Proj. for FY26-FY35		5,055	15,316				58,093	44,741	15,316	263							

Assumptions:	Total Return - Inflation = Total Real Return			Statutory Return		
Lo	FY26	1.00%	2.50%	-1.50%	Lo	4.90%
Mid	FY26	7.60%	2.50%	5.10%	Mid	6.10%
Hi	FY26	14.30%	2.50%	11.80%	Hi	7.70%
FY26-FY35		7.30%	2.50%	4.80%		6.20%

Notes related to financial history and projections:

(1) Dedicated State Revenues in current and future fiscal years are based on the Fall 2025 Department of Revenue forecast.

(2) Current year returns are based on 2025 Callan capital market assumptions and actual results through the report date. The inflation amount is as appropriated.

(3) Future returns are based on 2025 Callan capital market assumptions and median expected returns (the mid case). Actual results will vary.

(4) The dividend transfer reported for FY16 was paid out in dividends during FY17.

(5) There was no appropriation for inflation proofing in FY16, FY17, FY18, FY21, FY22, FY25 and FY26. An amount less than the statutory amount was appropriated in FY24.

(6) Per AS 37.13.140, beginning in FY19, transfers are based on a percent of market value (POMV) calculation and are to the General Fund. In previous years, transfers were based on an earnings calculation and were to the Dividend Fund.

(7) In FY20 and FY22, an additional \$4 billion was appropriated from the ERA to principal.

(8) All transfers out of the Earnings Reserve are subject to Legislative appropriation.

FY26 POMV Distribution (actual) ⁽⁸⁾		FY26 Statutory Dividend Transfer (actual) ⁽⁸⁾	
Ending Fund Value (ex Am Hess)		Statutory Net Income	
FY24	\$ 80,038.5	FY25	\$ 5,866.0
FY23	77,587.5	FY24	4,195.0
FY22	75,912.8	FY23	2,491.0
FY21	81,472.8	FY22	4,544.0
FY20	64,877.8	FY21	7,962.0
Average \$ 75,977.9		Avail for Dist (21%) \$ 5,262.2	
Statutory Distribution \$ 3,798.9		Statutory Trnsfr Amt \$ 2,631.1	

FY27 POMV Distribution (actual) ⁽⁸⁾		FY27 Statutory Dividend Transfer (projected) ⁽⁸⁾	
Ending Fund Value (ex Am Hess)		Statutory Net Income	
FY25	\$ 84,675.5	FY26	\$ 5,948.2
FY24	80,038.5	FY25	5,866.0
FY23	77,587.5	FY24	4,195.0
FY22	75,912.8	FY23	2,491.0
FY21	81,472.8	FY22	4,544.0
Average \$ 79,937.4		Avail for Dist (21%) \$ 4,839.3	
Statutory Distribution \$ 3,996.9		Statutory Trnsfr Amt \$ 2,419.6	

Income Year-to-Date as of December 31, 2025

FY26 YTD Statutory Net Income	
Interest, dividends, real estate & other income	\$ 1,028.7
Realized gains (losses) on the sale of assets	2,599.7
Less operating expenses	(73.7)
Less AK Capital Income Fund realized earnings	(17.9)
	\$ 3,536.8

FY26 YTD Accounting (GAAP) Net Income	
Statutory net income (loss)	\$ 3,536.8
Unrealized gains (losses) on invested assets	1,188.2
AK Capital Income Fund realized earnings	17.9
Accounting (GAAP) net income (loss)	\$ 4,742.9



FY 2026 Fees & Expenses by Funding Source*

Report Date	December 31, 2025
Total Fund Balance	88,076,919,000
FYTD Change in Total Fund Balance (Net of Transfers)	3,462,367,000

Investment Management Fees

	Paid from Investments	Paid from Investment Management Appropriation	Paid from Operations Appropriations	Total	Basis Points
Public Equity	1,251,000	30,328,000	1,238,000	32,817,000	4
Fixed Income	0	2,150,000	4,291,000	6,441,000	1
Absolute Return	51,162,000	384,000	559,000	52,105,000	6
Private Equity & Special Opps	67,243,000	15,491,000	2,629,000	85,363,000	9
Private Income	39,287,000	1,727,000	1,073,000	42,087,000	5
Real Estate	23,391,000	2,052,000	2,254,000	27,697,000	3
Tactical Opps	1,265,000	0	0	1,265,000	0
Total Investment Management Fees	183,599,000	52,132,000	12,044,000	247,775,000	
Basis Points	21	6	1	28	

Profit Sharing/Performance

	Paid from Investments	Paid from Investment Management Appropriation	Paid from Operations Appropriations	Total	Basis Points
Absolute Return	76,683,000	0	0	76,683,000	9
Private Equity & Special Opps	119,993,000	0	0	119,993,000	14
Private Income	39,809,000	0	0	39,809,000	4
Real Estate	2,880,000	0	0	2,880,000	0
Total Profit Sharing/Performance	239,365,000	0	0	239,365,000	
Basis Points	27	0	0	27	

* All amounts presented, including fund balances and change net of transfers, are in USD and consist of APF, AMHT, and PCE combined.



Budget-to-Actuals Through December 31, 2025

<u>Juneau Office Operations</u>	FY2026 Authorized Budget	FYTD Actuals & Encumbrances	Remaining Budget
Personal Services	\$ 23,881,800	\$ 11,129,350	\$ 12,752,450
Staff	\$ 20,620,800	\$ 9,760,485	\$ 10,860,315
Incentive Compensation	\$ 3,245,000	\$ 1,366,283	\$ 1,878,717
Board: Honoraria	\$ 16,000	\$ 2,582	\$ 13,418
Travel	\$ 1,025,000	\$ 278,956	\$ 746,044
Staff	\$ 877,000	\$ 267,080	\$ 609,920
Trustees	\$ 18,000	\$ 7,348	\$ 10,652
Moving and Non-Employee	\$ 130,000	\$ 4,528	\$ 125,472
Contractual Services	\$ 3,111,500	\$ 1,592,003	\$ 1,519,497
Audit, Legal, Consulting	\$ 768,000	\$ 45,680	\$ 722,320
Public Communications	\$ 547,997	\$ 288,606	\$ 259,391
Board Support and Meetings	\$ 97,400	\$ 23,619	\$ 73,781
Information Technology	\$ 1,282,400	\$ 1,055,897	\$ 226,503
HR and Recruitment	\$ 101,200	\$ 56,768	\$ 44,432
Training and Conferences	\$ 102,003	\$ 33,132	\$ 68,871
Office Support	\$ 212,500	\$ 88,301	\$ 124,199
Juneau Operations Allocation	\$ 28,018,300	\$ 13,000,309	\$ 15,017,991
Facilities Rent Allocation	\$ 583,000	\$ 437,473	\$ 145,527
Juneau Operations Total	\$ 28,601,300	\$ 13,437,782	\$ 15,163,518

<u>Investment Management</u>	FY2026 Authorized Budget	FYTD Actuals & Encumbrances	Remaining Budget
Due Diligence & Custody	\$ 8,313,400	\$ 2,902,885	\$ 5,410,515
Investment Due Diligence	\$ 5,813,400	\$ 1,775,929	\$ 4,037,471
Custody Fees	\$ 2,500,000	\$ 1,126,956	\$ 1,373,044
Investment Manager Fees	\$ 178,251,000	\$ 91,758,629	\$ 86,492,371
Public Equities	\$ 139,157,000	\$ 74,805,807	\$ 64,351,193
Real Estate	\$ 3,594,000	\$ 1,024,768	\$ 2,569,232
Alternative Markets	\$ 35,500,000	\$ 15,928,054	\$ 19,571,946
Investment Management Total	\$ 186,564,400	\$ 94,661,514	\$ 91,902,886

<u>IT and Software Licensing</u>	FY2026 Authorized Budget	FYTD Actuals & Encumbrances	Remaining Budget
Investment Systems	\$ 11,877,700	\$ 3,513,808	\$ 8,363,892
Commodities	\$ 145,000	\$ 42,877	\$ 102,123
Equipment	\$ 443,000	\$ 438,691	\$ 4,309
IT and Software Licensing Total	\$ 12,465,700	\$ 3,995,377	\$ 8,470,323

TOTAL	\$ 227,631,400	\$ 112,094,673	\$ 115,536,727
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SUBJECT: Chief Investment Officer’s Report

ACTION: _____

DATE: February 23, 2026

INFORMATION: X

BACKGROUND:

The Chief Investment Officer’s report provides an overview of Fund performance, personnel updates, asset allocation, investment actions taken during the quarter, and other current topics in the Investment Department.

STATUS:

Marcus Frampton, CIO, will present on the topics described above.



APFC

ALASKA PERMANENT
FUND CORPORATION

CIO Report

February 23, 2026

Investment Department Current Topics

- Performance
- Personnel
- Asset Allocation
- Appendix A - Investment Actions
- Appendix B – Asset Class Performance Detail

Recent Performance & Benchmarks

Performance Summary as of December 31, 2025

	<u>FYTD</u>	<u>1-Year</u>	<u>3-Year</u>	<u>5-Year</u>	<u>10-Year</u>	<u>42-Year</u>
Fund Return	6.63%	12.47%	9.58%	7.92%	9.02%	8.80%
Performance Benchmark	6.86%	12.24%	10.84%	7.76%	8.72%	8.89%
APFC (Under)/Out-Performance	(0.23%)	0.23%	(1.26%)	0.16%	0.30%	(0.09%)
Passive Benchmark	7.30%	16.37%	13.83%	6.51%	7.95%	-
APFC (Under)/Out-Performance	(0.67%)	(3.90%)	(4.25%)	1.41%	1.07%	-
Return Objective (CPI + 5%)	2.92%	7.68%	7.97%	9.47%	8.20%	7.81%
APFC (Under)/Out-Performance	3.71%	4.79%	1.61%	(1.55%)	0.82%	0.99%

Recent Performance & Benchmarks

Performance Benchmark

- What APFC portfolio managers manage against day-to-day; benchmark weights for asset classes equal to target asset allocation (32% global equities, 20% fixed income, 18% private equity, 11% real estate 10% private income, 7% absolute return, etc.)
- Investible benchmarks for public markets, universe of peers for private markets
- **APFC has outperformed on the 1-year, 5-year, and 10-year time periods as of December 2025**

Passive Benchmark

- A benchmark portfolio that is investible “with the click of a mouse” – 60% global equities, 20% fixed income, 10% REITs, 10% TIPs
- **APFC has outperformed on the 5-year and 10-year time periods as of December 2025**

Return Objective (CPI + 5%)

- APFC’s asset allocation targets, informed by third party consultant’s capital market forecasts, are intended to build a portfolio that can deliver expected returns consistent with the return objective of CPI + 5%
- **APFC has outperformed on the FYTD, 1-year, 3-year, 10-year, and 42-year time periods as of December 2025**

What Benchmarks Tell Us

Return Objective

Did APFC's asset allocation (with a lesser contribution from execution / implementation) achieve CPI +5?

Passive Benchmark

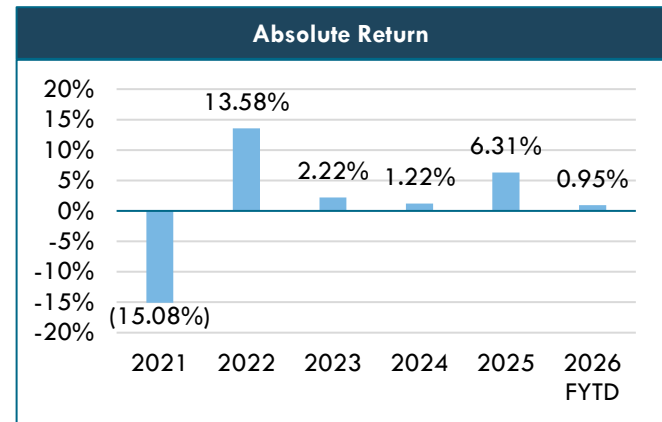
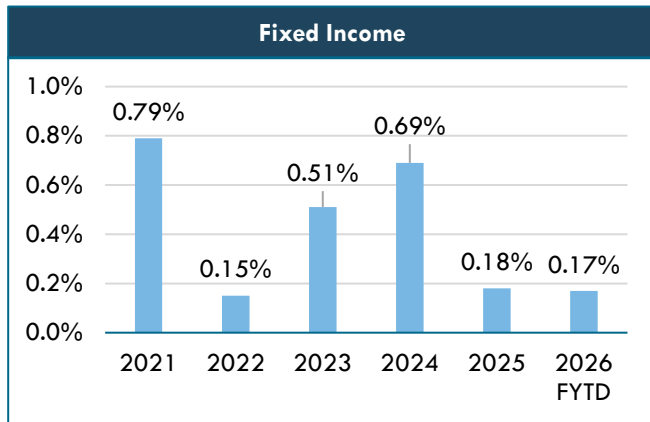
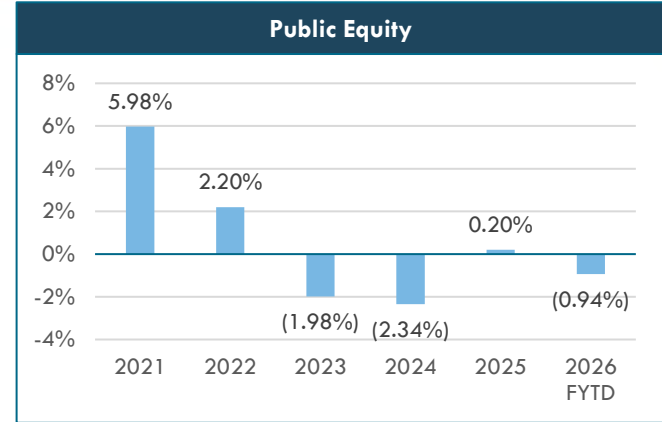
Over market cycles, does the complexity of APFC private markets and alternatives add value versus a “click-of-the-mouse” portfolio of liquid indices?

Performance Benchmark

Over any given time period, did APFC's execution and implementation add or subtract value versus broad industry averages for assigned asset classes?

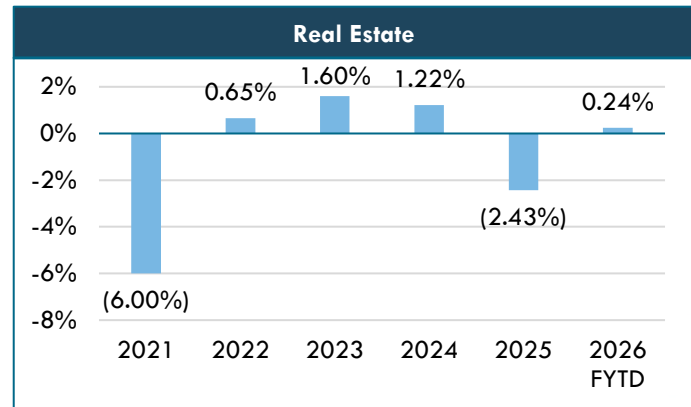
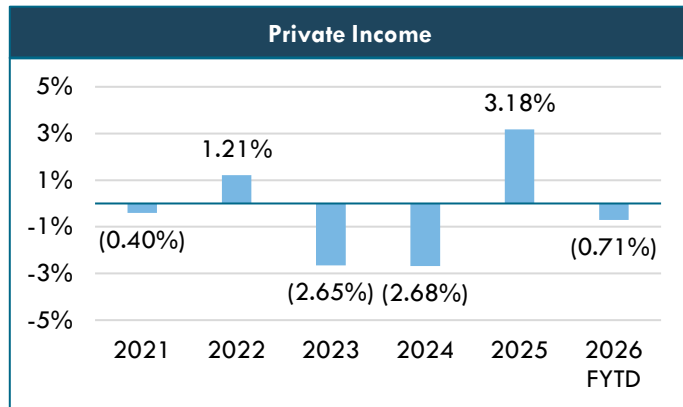
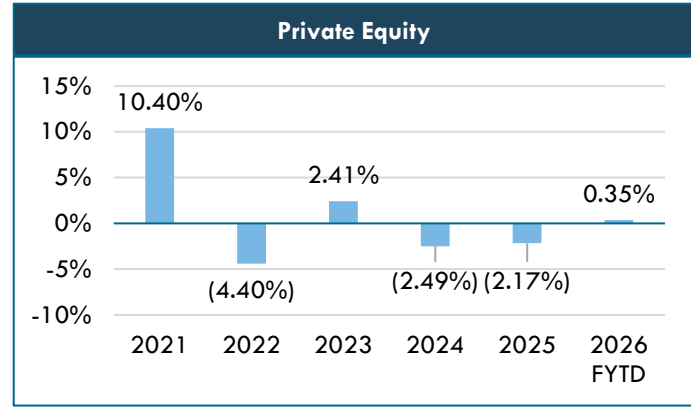
Public Markets vs. Benchmark (As of Dec. 31, 2025)

Annualized Returns			
	<u>1-Year</u>	<u>3-Year</u>	<u>5-Year</u>
Public Equity	0.02%	(2.43%)	0.07%
Fixed Income	0.24%	0.43%	0.34%
Absolute Return	4.08%	3.55%	3.58%



Private Markets vs. Benchmark (As of Dec. 31, 2025)

Annualized Returns			
	<u>1-Year</u>	<u>3-Year</u>	<u>5-Year</u>
Private Equity	(0.78%)	(2.09%)	(0.51%)
Private Income	1.46%	(1.13%)	(0.38%)
Real Estate	0.29%	(0.49%)	(0.74%)



Appendix A – Investment Actions

Quarter-to-Date Ending March 31, 2026

Investment Actions

Quarter-to-Date Ending March 31, 2026

Public Equity

During the quarter, Staff took the following investment actions:

- January 9th: Transferred **\$1 billion** from Public Equity accounts to Fixed Income
- January 31st: Transferred **\$25 million** between Public Equity accounts

January 9th:

<u>Transfer Account</u>	<u>Amount</u>
Arrowstreet Global	-\$100 million
MCM World Ex US Index	-\$150 million
Hardman Johnston INTL Growth	-\$25 million
JP Morgan INTL Growth	-\$25 million
DFA INTL Small Cap	-\$25 million
William Blair EM	-\$45 million
SSGA EM Index	-\$50 million
DFA EM Value	-\$25 million
DFA EM Small Cap	-\$25 million
DSM US LCG	-\$65 million
CastleArk US LCG	-\$65 million
Voya US LCG	-\$70 million
SSGA US LCG	-\$70 million

(1/2) Redemption of **\$1 billion**

January 9th:

<u>Transfer Account</u>	<u>Amount</u>
Lyrical US LCV	-\$25 million
LSV US LCV	-\$40 million
SSGA Domestic Equities (Low PE)	-\$25 million
Jennison US SC	-\$20 million
Mellon S&P 400	-\$20 million
RBC US SC	-\$20 million
Eagle US SC	-\$20 million
T Rowe US SC	-\$20 million
APF SPDR Yield	-\$25 million
APF SPDR Momentum	-\$20 million
APF SPDR Low Vol	-\$25 million

(2/2) Redemption of **\$1 billion**

January 31st:

<u>Transfer Account</u>	<u>Amount</u>
MEASA	-\$25 million
SSGA MSCI ACWI IMI	+\$25 million
	Transfer of \$25 million

Investment Actions (continued)

Quarter-to-Date Ending March 31, 2026

Private Equity

- **\$50 million** to US growth / venture fund
- **\$50 million** to US growth equity fund
- **\$50 million** to US services mid / large buyout fund
- **\$18 million** to midmarket European buyout fund
- **\$30 million** to US growth equity fund

Commitment Total: \$198 million

Real Estate

- **\$300 million** approved for construction lending strategy
- **\$7 million** from retail asset disposition

Investment Action Total: \$307 million

Investment Actions (continued)

Quarter-to-Date Ending March 31, 2026

Private Income

- **\$10 million** to legal services DTTL co-investment
- **\$75 million** to aircraft leasing primary
- **\$20 million** to mining manufacturer co-investment

Investment Action Total: \$105 million

Absolute Return

- **\$13 million** subscription to global macro hedge fund
- **\$32 million** distribution from multi-strategy hedge fund
- **\$50 million** subscription to quantitative investment fund
- **\$35 million** distribution from global macro hedge fund
- **\$4 million** distribution from global macro hedge fund
- **\$1 million** distribution from multi-strategy hedge fund
- **\$54 million** sale of gold
- **\$18 million** purchase of gold

Investment Action Total: \$207 million

Appendix B – Asset Class Performance Detail

Asset Class Performance Detail (As of December 31, 2026)

Annualized Returns

Public Equity	1-Year	3-Year	5-Year
Return	22.08%	17.55%	10.82%
Benchmark	22.06%	19.98%	10.75%
Performance	0.02%	(2.43%)	0.07%

Fixed Income	1-Year	3-Year	5-Year
Return	6.99%	5.96%	0.76%
Benchmark	6.75%	5.53%	0.42%
Performance	0.24%	0.43%	0.34%

Absolute Return	1-Year	3-Year	5-Year
Return	13.28%	10.16%	8.51%
Benchmark	9.20%	6.61%	4.93%
Performance	4.08%	3.55%	3.58%

Private Equity	1-Year	3-Year	5-Year
Return	8.68%	5.21%	11.97%
Benchmark	9.46%	7.30%	12.48%
Performance	(0.78%)	(2.09%)	(0.51%)

Private Income	1-Year	3-Year	5-Year
Return	11.14%	9.84%	11.24%
Benchmark	9.68%	10.97%	11.62%
Performance	1.46%	(1.13%)	(0.38%)

Real Estate	1-Year	3-Year	5-Year
Return	3.91%	(0.99%)	4.07%
Benchmark	3.62%	(0.50%)	4.81%
Performance	0.29%	(0.49%)	(0.74%)

Total Fund	1-Year	3-Year	5-Year
Return	12.47%	9.58%	7.92%
Benchmark	12.24%	10.84%	7.76%
Performance	0.23%	(1.26%)	0.16%

Fiscal Year Annual Returns

Public Equity	2021	2022	2023	2024	2025	'26 FYTD
Return	46.92%	(14.32%)	14.16%	16.06%	16.09%	10.20%
Benchmark	40.94%	(16.52%)	16.14%	18.40%	15.89%	11.14%
Performance	5.98%	2.20%	(1.98%)	(2.34%)	0.20%	(0.94%)

Fixed Income	2021	2022	2023	2024	2025	'26 FYTD
Return	3.68%	(10.82%)	1.63%	4.93%	6.67%	3.08%
Benchmark	2.89%	(10.97%)	1.12%	4.24%	6.49%	2.91%
Performance	0.79%	0.15%	0.51%	0.69%	0.18%	0.17%

Absolute Return	2021	2022	2023	2024	2025	'26 FYTD
Return	12.40%	7.98%	3.84%	9.74%	10.18%	7.96%
Benchmark	27.48%	(5.60%)	1.62%	8.52%	3.87%	7.01%
Performance	(15.08%)	13.58%	2.22%	1.22%	6.31%	0.95%

Private Equity	2021	2022	2023	2024	2025	'26 FYTD
Return	64.61%	17.60%	(2.08%)	2.51%	4.13%	7.08%
Benchmark	54.21%	22.00%	(4.49%)	5.00%	6.30%	6.73%
Performance	10.40%	(4.40%)	2.41%	(2.49%)	(2.17%)	0.35%

Private Income	2021	2022	2023	2024	2025	'26 FYTD
Return	18.06%	16.20%	4.20%	6.55%	11.50%	5.78%
Benchmark	18.46%	14.99%	6.85%	9.23%	8.32%	6.49%
Performance	(0.40%)	1.21%	(2.65%)	(2.68%)	3.18%	(0.71%)

Real Estate	2021	2022	2023	2024	2025	'26 FYTD
Return	1.41%	23.41%	(2.47%)	(3.28%)	1.57%	2.70%
Benchmark	7.41%	22.76%	(4.07%)	(4.50%)	4.00%	1.20%
Performance	(6.00%)	0.65%	1.60%	1.22%	(2.43%)	0.24%

Total Fund	2021	2022	2023	2024	2025	'26 FYTD
Return	29.73%	(1.32%)	5.18%	7.90%	9.35%	6.63%
Benchmark	27.75%	(3.24%)	5.74%	9.49%	9.29%	4.32%
Performance	1.98%	1.92%	(0.56%)	(1.59%)	0.06%	(0.23%)

SUBJECT: Risk & Compliance Overview

ACTION: _____

DATE: February 23, 2026

INFORMATION: X

BACKGROUND:

The Risk & Compliance Report provides an overview of historical and forward-looking measures of risk for the Total Fund and its underlying asset classes. The report also includes a summary of the compliance monitoring activity.

STATUS:

The current report contains the following parts:

- **Part-1 [Information]:** covers the main measures of risk for the Fund. Aggregate fund risk compared to approved risk appetite is a key strategic metric. Others include Value at Risk (VaR) on a standalone and relative-to-benchmark basis, tracking error, statistics that measure realized volatility and Sharpe ratios, asset class and factor contributions to risk and risk scenarios. It also covers Geographic, Currency, and Liquidity risks for the Total Fund.
- **Part-2 [Information]:** includes a summary of the compliance monitoring activity as of the 2025 December 31 quarter end.



APFC

ALASKA PERMANENT
FUND CORPORATION

Risk & Compliance Overview



Part 1:

Key Risk Metrics
as of December 31, 2025

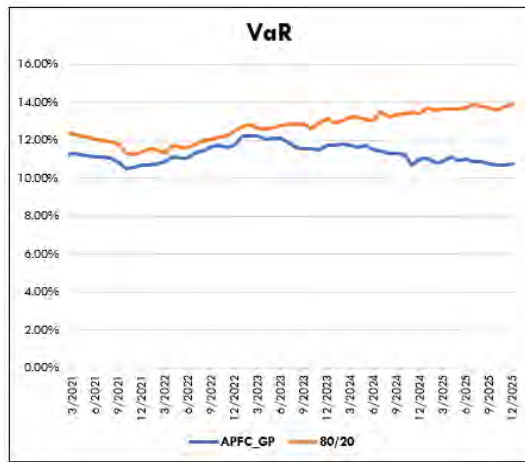
Fund Risk: relative to approved risk appetite

Risk appetite reflects the 80/20 equity/bond Risk Tolerance Portfolio (RTP)

Value at Risk (VaR): Max

1 year, 1SD, 10-year monthly historical data equally weighted

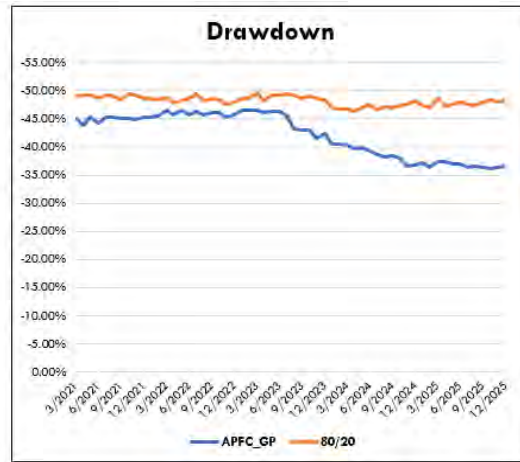
As of Date	Total Fund	Risk Appetite	
12/31/2025	10.7%	13.9%	✓



Drawdown Stress PnL: Max

Stress scenario simulating the GFC – Dec 2007 to Mar 2009

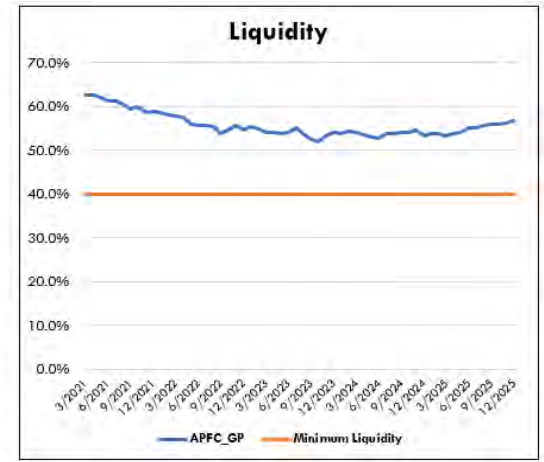
As of Date	Total Fund	Risk Appetite	
12/31/2025	(36.5%)	(48.3%)	✓



Liquidity Level: Min

Public Equities, Fixed Income and Cash, as a % of total fund

As of Date	Total Fund	Risk Appetite	
12/31/2025	56.7%	40%	✓



Total Fund: realized volatility & Sharpe ratio

Realized Fund
Volatility



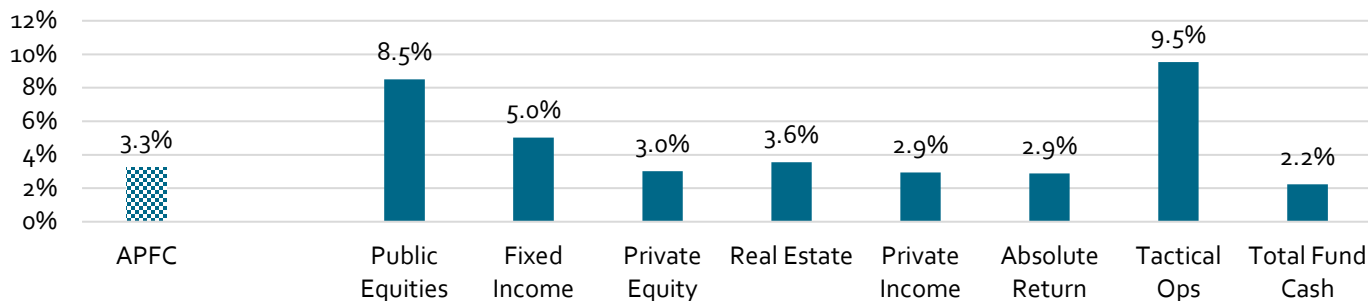
Realized Fund
Sharpe Ratio



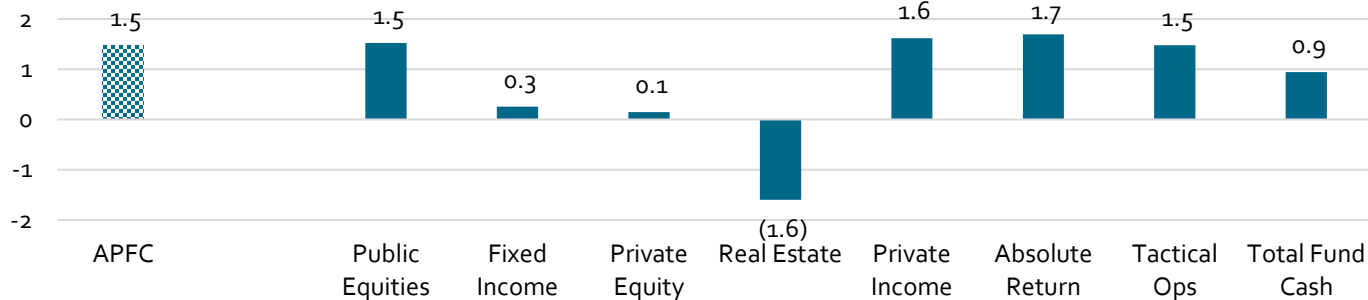
Volatility (standard deviation) and Sharpe ratio have been computed based on rolling 3 year quarterly returns for the Total Fund

Fund & Constituents: realized volatility & Sharpe ratio

Volatility

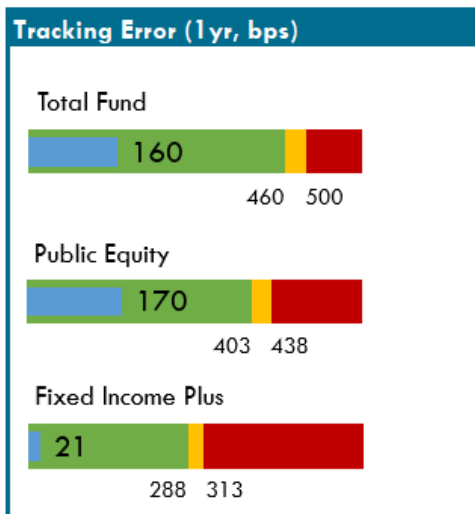


Sharpe Ratio

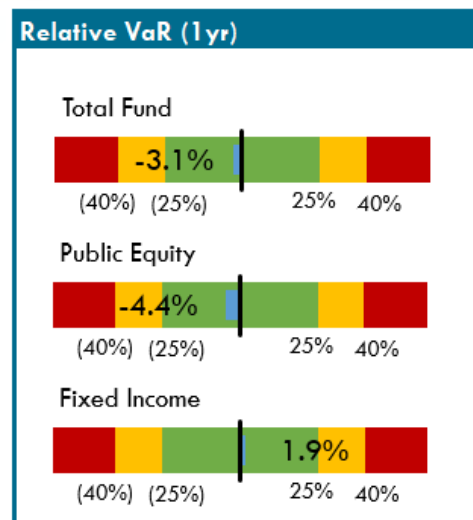


Volatility (standard deviation) and Sharpe Ratio have been computed based on historical 3 year quarterly returns

Tracking Error and VaR vs. Limits



- Tracking error is an indicator of performance relative to benchmark
- It represents the deviation of portfolio returns from benchmark returns
- It is directionally agnostic and does not indicate over or underperformance



- VaR is an estimate of value decline, based on a 97.5% confidence level and 1 year holding period
- The above chart reflects the Relative VaR of the portfolio versus respective benchmark

Liquidity Limits: Private Assets

Private Assets: Investments Vs Targets

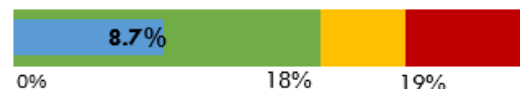
	\$ Billion	% of Total Fund		
		Actual	Target	Actual (Vs) Target
Private Equity	15.2	17.0%	18.0%	-1.0%
Private Income	8.0	9.0%	10.0%	-1.0%
Real Estate	8.5	9.5%	11.0%	-1.5%
Tactical Ops	1.0	1.1%	1.0%	0.1%
Total	32.7	36.5%	40.0%	

Private Assets: Future Commitments Vs Targets

	\$ Billion	% of Total Fund		
		Actual	Target	Actual (Vs) Target
Private Equity	4.6	5.2%	7.0%	-1.8%
Private Income	2.8	3.1%	5.0%	-1.9%
Real Estate	0.4	0.4%	3.0%	-2.6%
Tactical Ops	0.0	0.0%	0.5%	-0.5%
Total	7.8	8.7%	15.5%	

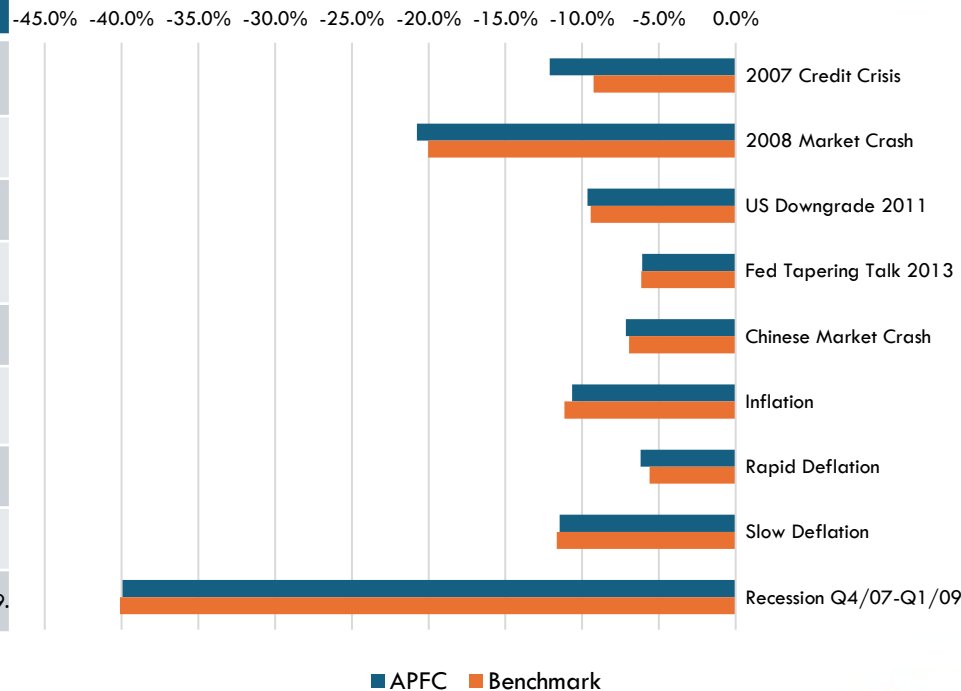
Future Commitments Limits

\$7.8 Billion Unfunded Commitments to Managers



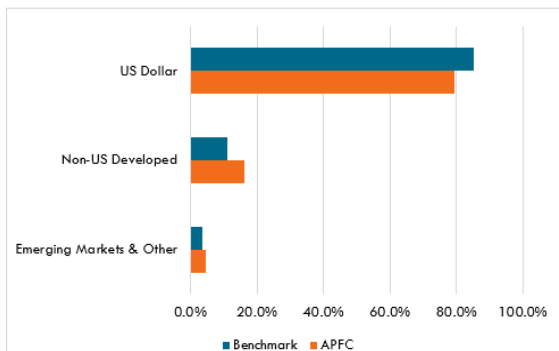
Tail Risk: Current portfolio during extreme events

Scenario	Definition
2007 Credit Crisis	Credit & liquidity crisis stemming from a severe slowdown in the housing market causing significant widening of credit spreads, higher implied volatility.
2008 Market Crash	S&P 500 down 20% (2000 bps).
US Downgrade 2011	The period starts with 50% chance US downgrade indication from S&P standards and ends with Operational Twist announcement from the Fed
Fed Tapering Talk 2013	Equity & bond markets sold off. EM suffered badly due to hot money flight back to U.S.
Chinese Market Crash	Chinese stock market crash beginning with the popping of the stock market bubble on June 12, 2015.
Inflation Overshoot	Economic recovery, pent-up demand, supply chain bottlenecks, and fiscal stimulus cause a surge in inflation, prompting higher interest rates in a taper tantrum-style sell-off.
Rapid Deflation	Oil down 60% (6000 bps); ST Inflation down 350 bps; Mortgage spreads tighten 25 bps.
Slow Deflation	LT deflation down 200 bps; LT Treasury Rates down 100 bps; Mortgage spreads tighten 25 bps.
Recession Q4/07-Q1/09	Recent recessionary period starting Dec 3, 2007, and ending March 9, 2009.



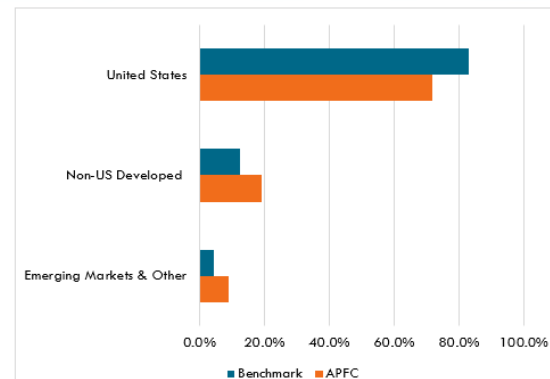
Geography & Currency breakdowns

Currency breakdown



Currency Name	Exposure (\$ 000's)
Euro	\$6,278,466
British Pound	\$2,361,028
Japanese Yen	\$1,826,928
Canadian Dollar	\$1,029,110
Hong Kong Dollar	\$933,843
Australian Dollar	\$502,814
Sub-Total	12,932,189 (14.4% of NAV)
Total Non-US DM Exposure	14,314,978 (16.0% of NAV)

Country breakdown



Country Name	Exposure (\$ 000's)
China	1,627,651
Korea (South), Republic of	813,267
Taiwan	679,339
India	663,638
Brazil	319,875
Mexico	186,436
Sub-Total	4,290,205 (4.8% of NAV)
Total EM Exposure	5,269,174 (5.9% of NAV)

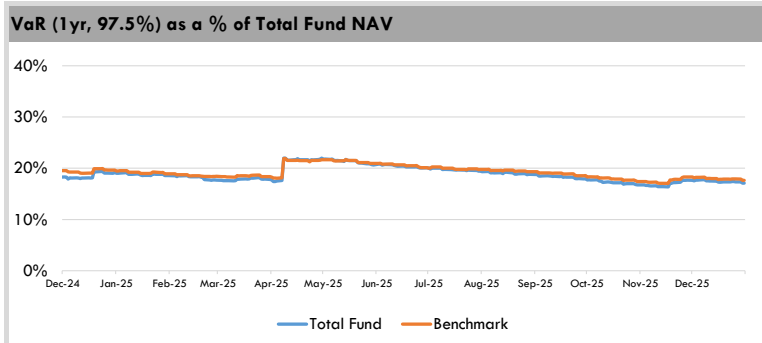
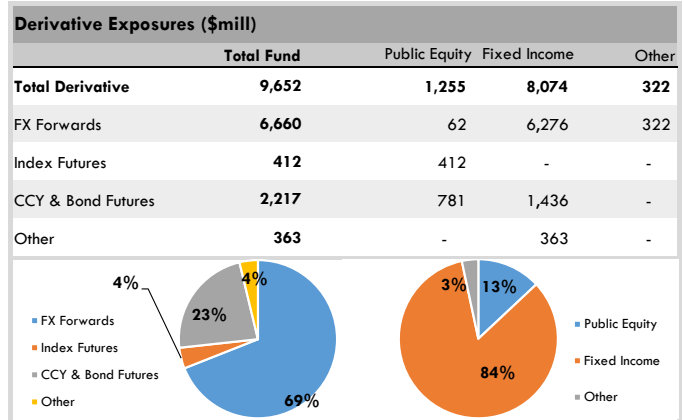
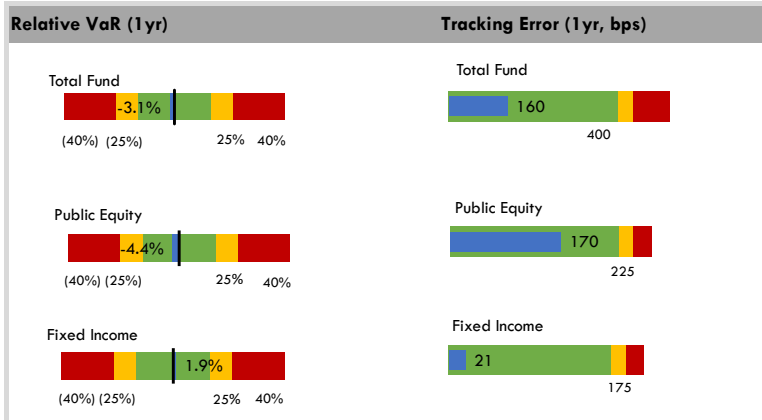
Daily Dashboard - December 31, 2025

NAV : \$ 89,328,307,758



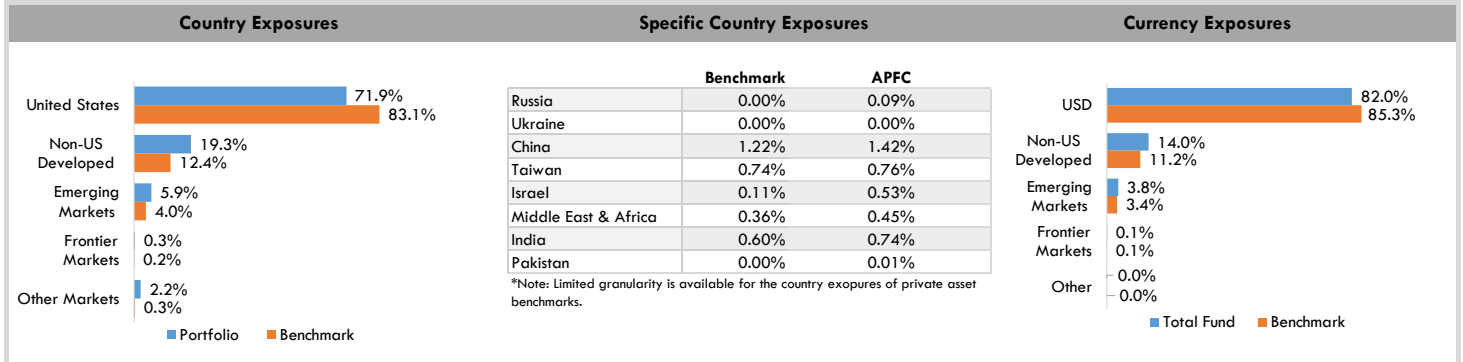
Permanent Fund:	98%	\$ 87,479,211,787
AMHT + PCE:	2%	\$ 1,849,095,971

Risk	Performance (%)							Asset Allocation				
	1 SD	Rel VaR	TE	MTD	FYTD	CYTD	1 Year	NAV (\$mill)	NAV	Target	Compliance	Under/Over
Total Fund	8.7%	-3.1%	1.6%	0.5	6.3	12.8	12.8	89,328				
Public Equity	12.9%	-4.4%	1.7%	1.4	10.4	22.3	18.6	29,787	33.3%	32%		1.3%
Fixed Income	3.5%	1.9%	0.2%	-0.1	3.1	7.0	7.0	18,004	20.2%	20%		0.2%
Private Equity	17.7%	-6.3%	8.2%	0.1	5.7	8.4	8.4	15,027	16.8%	18%		-1.2%
Real Estate	6.8%	-13.8%	4.1%	0.1	1.8	4.3	4.3	8,527	9.5%	11%		-1.5%
Inf. & Private Income	9.5%	67.9%	6.5%	-0.2	4.9	12.3	12.3	7,951	8.9%	10%		1.1%
Absolute Return	2.5%	-22.9%	3.0%	0.1	7.1	12.6	12.6	6,233	7.0%	7%		0.0%
Tactical Opps	14.0%	-7.0%	1.1%	0.1	10.8	15.9	15.9	975	1.1%	1%		0.1%
Total Fund Cash	0.1%	-24.4%	0.1%	0.4	2.1	4.3	4.3	2,823	3.2%	1%		2.2%



Economic Indicators

	12/31/25	12/30/25	% Change
VIX	14.95	14.33	4.3%
U.S. Dollar/Euro	1.17	1.17	0.0%
Credit Index OAS	0.73	0.73	0.0%
Crude Oil (WTI) (\$)	57.42	57.95	-0.9%
10-Year Treasury Yield	4.17	4.12	1.1%
30-Year Treasury Yield	4.84	4.81	0.8%
S&P 500	6,845.50	6,896.24	-0.7%
MSCI ACWI	3,595.10	3,614.63	-0.5%





Part 2:

Compliance Monitoring
as of December 31, 2025

Regulatory/Legal Compliance

Task	Description	Total completed for the quarter ending 12/31/25
SEC 13 F Filing	The Securities & Exchange Commission's (SEC) Form 13F is a quarterly filing required of all institutional investors with >\$100 million in assets. It discloses their public equity holdings and external managers.	1
U.S. KYC	Know Your Customer (KYC) is a process by which financial institutions verify their customers' identity and assess the risks associated with them. APFC must provide notarized passports and utility bills, bylaws, certify authorized signatories and more.	9
Margin compliance verification	Counterparties facilitating over the counter derivatives require margin verifications.	1
Counterparty onboarding	Upon engaging with a new counterparty, APFC signs contracts and completes forms to establish the trading relationship.	1

Regulatory/Legal Compliance

Task	Description	Total completed for the quarter ending 6/30/25
Tax Documentation Request	Form W-9 Request for Taxpayer Identification Number	1
Sanctions Questionnaire	As a matter of due diligence, counterparties assess whether clients have business dealings in or with sanction targets.	2
Authorized Traders Verification	Counterparties request verification of whom APFC authorizes to trade on its behalf.	1
Institutional Suitability Certificate FINRA 2111	Financial Industry Regulatory Authority (FINRA) requires investors to certify that they are capable of independently evaluating investment risk and will exercise independent judgement.	1
QIB certification	The Qualified Institutional Buyer certification allows APFC to participate in large-scale securities offerings.	2
Reg S Update	Reg S is a regulation by the U.S. SEC that allows companies to raise capital outside the United States without the need for SEC registration.	1

Investment Policy (IPS) Compliance

IPS Section VII.G.Table-3 provides asset allocation target levels to ensure proper diversification of the Fund. In the table below, green indicates compliance to these limits. The values reflect the permissible largest concentrations for each matrix parameter, for informational purposes

	Public Equity	Fixed Income	Private Equity	Real Estate	Private Income	Absolute Return	Tactical Opportunities	Cash	Total Fund
Future Outstanding Commitments¹	0.0%	0.0%	7.0%	3.0%	5.0%	2.0%	0.0%	0.0%	17.0%
Benchmark	M684204USN	BBGEMBUS22	CAMB_PE	RE_2021	CAM_PI	HFRIPRVY23	SNP500	LEH3MO_TB	LHJPMUSY2
Tracking Error	See III.A.5 See III.B.5								4.0%
Relative VaR²	100.0%	100.0%							100.0%
% of Asset Allocation									
Single Name / Issuer ³	4%	4%	2%	10%	2%	n/a	n/a	n/a	
Single Sub- Industry ⁴	20%	20%	30%	n/a	30%	n/a	n/a	n/a	
Single Country - EX US	10%	10%	20%	20%	20%	n/a	n/a	n/a	
Total EX US	50%	30%	50%	50%	50%	n/a	n/a	n/a	
Single Fund Investment ⁵	5%	10%	10%	10%	10%	15%	n/a	n/a	
Proportion of Ownership ⁶	5%	n/a	n/a	5%	5%	n/a	n/a	n/a	
Rating - Below Inv Grade	n/a	25%	n/a	n/a	n/a	n/a	n/a	n/a	0%
Rating - Below A- & Unrated	n/a	50%	n/a	n/a	n/a	n/a	n/a	n/a	0%
Rating - Unrated	n/a	5%	n/a	n/a	n/a	n/a	n/a	n/a	0%
FX - Proportion Unhedged	50%	30%	50%	50%	50%	n/a	n/a	n/a	
Liquidity - Proportion w/o Weekly Liq	10%	10%	100%	100%	100%	100%	n/a	n/a	5%
Liquidity - Proportion w/o Monthly Liq	2%	2%	100%	100%	100%	100%	n/a	n/a	0%
Liquidity - Proportion w/o Quarterly Liq	0%	0%	100%	100%	100%	40%	n/a	n/a	0%
Cash & Equivalents	2%	10%	5%	5%	5%	n/a	n/a	n/a	100%
MINIMUM Cash & Equivalents	0%	0%	0%	0%	0%	n/a	n/a	n/a	30%

All Targets are Maximum Permitted except-Minimum Cash

Notes:

- 1 % of Total Fund
- 2 Ratio of Portfolio VaR to Benchmark VaR
- 3 Single Name / Issuer: represents security level exposure to single entity or operating company.
US Treasury & Govt Agencies are exempt. For Private Assets, the limit applies at the time of investment or cost basis.
- 4 Definition: GICS Sub-Industry
- 5 Single Fund Investment: represents exposure to an external fund or external strategy based vehicle.
Excludes passive/index-based strategies.
- 6 Proportion of Ownership: For Real Estate and Private Income, the limit is only applicable to the REIT and listed infrastructure portfolios

Investment Policy Compliance

Asset Class	Parameter	Limit	Actual	Compliance Status
PUEQ	The internally managed public equity transitional account shall not exceed 3% of overall pueq NAV and shall only hold ETFs or cash.	3%	0.01%	✓
PE	No more than 20% of the PE asset class shall be invested in public holdings.	<20%	7%	✓
PE	Following the public listing of any shares held by an APFC controlled vehicle, such shares shall be liquidated within 18 months.	18 months	1 month	✓
PE	No more than 30% of the PE portfolio may be invested with a single manager.	30%	5%	✓
PE	The PE portfolio shall be invested within the following strategy diversification ranges: venture 10-45%, growth equity 0-25%, buyouts 25-75%, specialized funds 0-50%.	Strategy Mix	28.9% VC, 0.7% Growth, 62.7% buyout, 7.7% specialized	✓
IPCIO	No more than 30% of the IPCIO portfolio may be invested with a single manager.	30%	14%	✓
AR	APFC shall not constitute more than 30% of a manager's AUM	30%	13%	✓
AR	The AR portfolio shall follow these strategy restrictions: relative value managers 0-75%, event driven managers 0-50%, tactical managers 0-75%.	Strategy Mix 70 of 446	55% relative value, 14% event driven, 31% directional	✓

Investment Policy Compliance

Asset Class	Parameter	Limit	Actual	Compliance Status
RE	No more than 35% of the RE portfolio may be invested with a single manager.	35%	13%	✓
RE	No more than 60% of the directly-held RE portfolio shall be invested in non-core holdings.	60%	20%	✓
RE	The RE portfolio property type mix is measured against a composite benchmark of 15% REIT plus 85% NCREIF. The portfolio property type weights shall not exceed 1.5x the benchmark or 5%, whichever is higher.	1.5xBM or 5%	<limit	✓
RE	RE Portfolio-wide leverage shall not exceed 50% and individual property level leverage are limited to 65%.	50%	21%	✓
TFCASH	Authorized investments within the TFCASH asset class include cash and the following cash equivalents: US treasuries with a max maturity of 24 months, IG corp bonds, reverse repos, money market funds, gold-backed ETFs, AAA rated asset backed securities, or other cash equivalents approved by the CRO and ED	asset type	cash & cash equivalents only	✓
TFCASH	At any point, min 80% of the TFCASH portfolio should be invested in instruments with a final maturity less than 181 days	80%	88%	✓

-end-

71 of 446

ALASKA PERMANENT FUND CORPORATION

The logo for APFC (Alaska Permanent Fund Corporation) is displayed in white serif font on a dark teal rectangular background. The letters 'A', 'P', 'F', and 'C' are large and bold, with the 'P' and 'F' being the most prominent.

ALASKA PERMANENT
FUND CORPORATION

SUBJECT: Corporate Operations Overview - Finance

ACTION:

DATE: February 23, 2026

INFORMATION: X

BACKGROUND:

Today's meeting will begin a series of presentations meant to inform the board and public on the operations side of APFC. This will bolster the regular board presentations from the investments side of APFC. The information provided will highlight the systems, processes, and financial frameworks that support APFC's performance and long-term stability. The goal is to provide a clear look at how the operations teams support the overall goals and vision of APFC.

STATUS:

For the inaugural presentation, Chris LaVallee and Jacki Mallinger, Senior Portfolio Accountants, along with Val Mertz, Chief Financial Officer, will present an overview of the operations of the Finance Department.

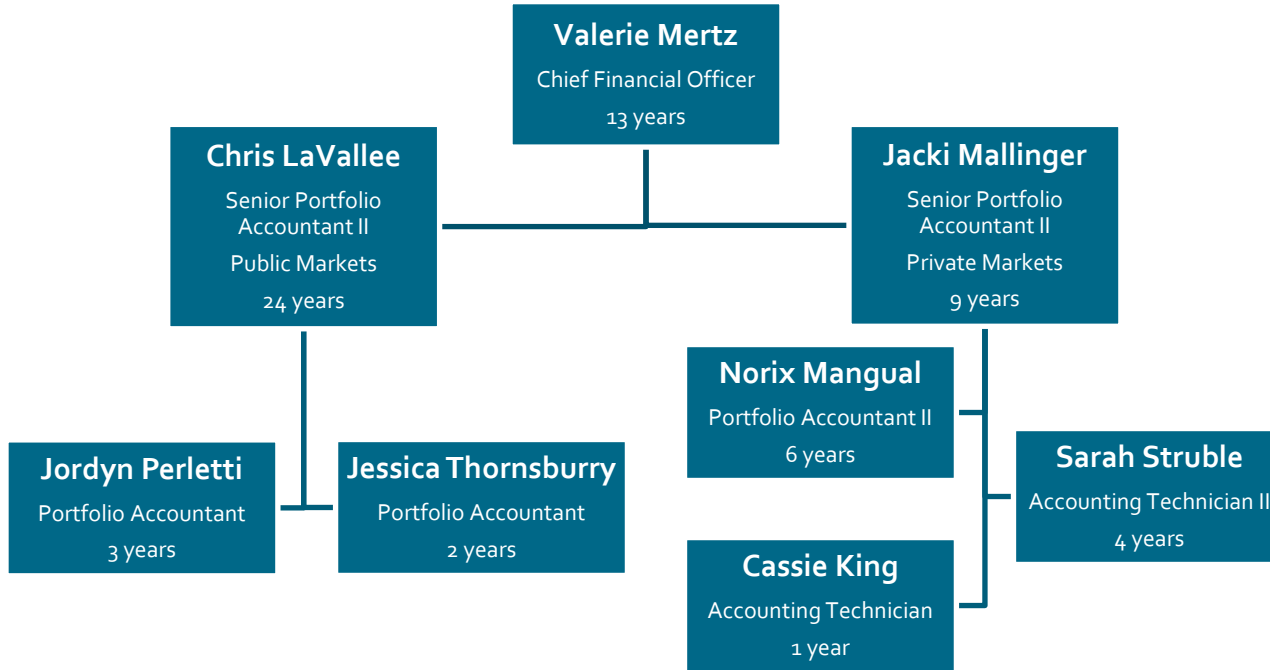


ALASKA PERMANENT
FUND CORPORATION

Corporate Operations Overview: Finance

Valerie Mertz, Chief Financial Officer
Chris LaVallee, Sr. Portfolio Accountant II – Public Markets
Jacki Mallinger, Sr. Portfolio Accountant II – Private Markets

Finance Team



Private Finance Team

Private Markets

Absolute
Return
(22 funds)

Private
Income
(131 funds)

Private Equity
(649 funds)

Tactical Opps
(1 fund)

Real Estate
(16 funds,
71 properties)

- 4 Staff
- 839 bank accounts
- 217 managers

Private Finance Responsibilities

Daily

Cash flow processing &
reconciliation
Journal entry review

Monthly

Mapping file reconciliation
Account opening

Quarterly

Fund statement processing
Real estate valuation
Return review
Commitment, unfunded & fee
reporting

Public Finance Team

Public Markets

Public Equity
(52 external,
5 internal,
4 holding)

Fixed
Income
(11 internal,
2 holding)

Tactical
Opps
(1)

Total
Fund
Cash
(2)

REITS
(1)

Listed
Infrastructure
(1)

- 3 Staff
- 79 bank accounts
- 36 managers

Public Finance Responsibilities

Daily

Trade order & risk management
system reconciliations
Daily asset values for apfc.org

Monthly

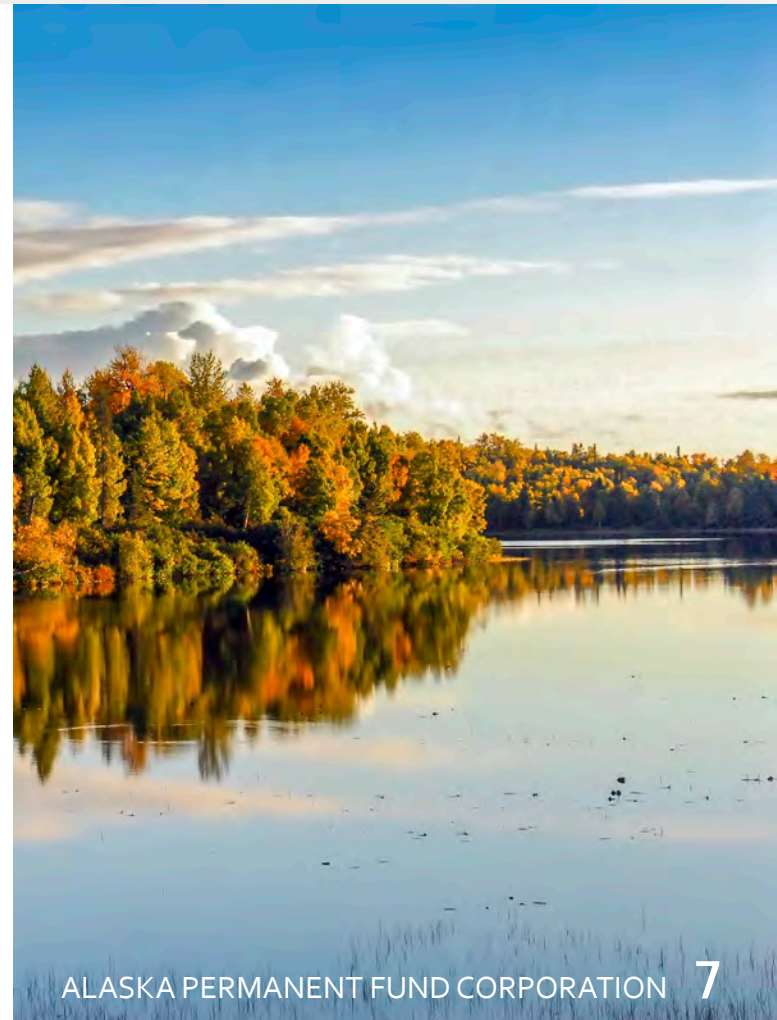
Performance reporting
Asset allocation reporting
Manager reconciliations
Mapping file reconciliations
Accounts payable

Quarterly

Manager fee calculations
Asset flow reporting
Stock holdings report for apfc.org

Annual Responsibilities

- Audit schedules
- Footnote & financial statement preparation
- Auditor inquiries
- Audited financial statement review
- Incentive fees



Finance by the Numbers (as of 2/10/26)

- 918 bank accounts and growing
- 42 different currencies of investments
- ~ 17,000 unique investments
- About 40,000 transactions in a typical month
 - Almost half a million transactions per year



Welcome to Finance where
everybody counts!



SUBJECT: Asset Allocation Presentation

ACTION: _____

DATE: February 23, 2026

INFORMATION: X

BACKGROUND:

The asset allocation presentation provides information regarding asset allocation to include recent actions, alternative options, Staff recommendations, and the October presentation.

STATUS:

Marcus Frampton, CIO, and Sebastian Vadakumcherry, CRO, will present on the topics described above.



APFC

ALASKA PERMANENT
FUND CORPORATION

Asset Allocation

Marcus Frampton
Sebastian Vadakumcherry

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 - Asset Allocation section (pages 64-204) of board packet presented at the October 1-2, 2025 board meeting

Background and Introduction

- In staff's opinion, most of the thoughts on asset allocation presented and discussed at the October 2025 Board meeting continue to be valid and relevant. Hence, the comprehensive presentation made in October is included as appendix to this one.
- With Board action on asset allocation required in May 2026, this would be a good time for the Board to firm up thoughts on the various asset allocation options.
- In the following pages, staff outlines two options in addition to status quo.
- Option-1 and Option-2 incorporate a 9% reduction to private assets over a 3-year period (1% per year each to Private Equity, Real Estate and Infrastructure + Private Credit).
 - *As outlined in October, over the past 15 years the most notable asset allocation move / investment decision taken by APFC has been to very materially increase the Fund's allocation to private markets*
 - *The characteristics and metrics around these private markets asset classes have changed dramatically since the decision to ramp them up was made and warrants a re-evaluation*

Asset Allocation: two options in addition to status quo

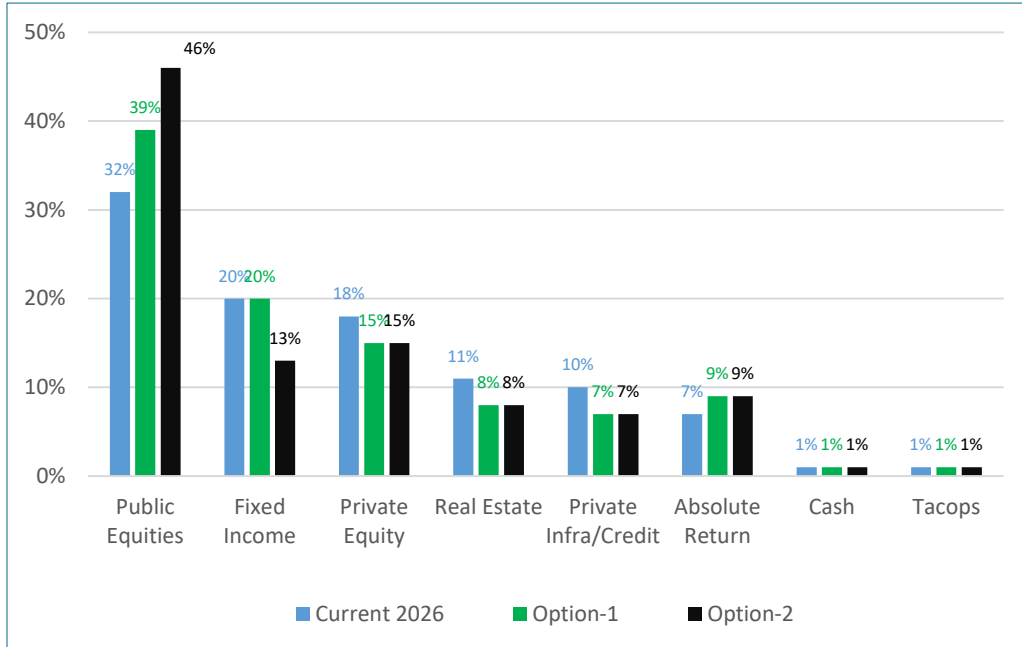
- Asset allocation %, 10-year return and risk (volatility) estimates, stress drawdown projections and illiquidity levels are tabulated below
- The 'Current 2026' allocation represents the existing Board approved Fund portfolio
- Options 1 and 2 reflect fresh asset allocations for consideration for FY 2027 and beyond
- The 80/20 is the board approved risk appetite
- Staff recommends adopting option-1, with a 3-year implementation timeframe

	Asset Allocation								10-year Risk and Return estimates (based on Callan's projections)			(c) + (d) + (e) + (f) Aladdin Estimates	
	Public Equities (a)	Fixed Income (b)	Private Equity (c)	Real Estate (d)	Private Inf/Crd (e)	Absolute Return (f)	Cash (g)	Tacops (h)	Risk (Standard Deviation)	Return (Wtd Avg + GR spread)	Sharpe Ratio	% of Low Liquidity Assets	Stress (GFC scenario) Drawdown
	Option-1	39.0%	20.0%	15.0%	8.0%	7.0%	9.0%	1.0%	1.0%	12.6%	7.3%	0.417	39%
Option-2	46.0%	13.0%	15.0%	8.0%	7.0%	9.0%	1.0%	1.0%	13.7%	7.5%	0.400	39%	-45%
Current 2026	32.0%	20.0%	18.0%	11.0%	10.0%	7.0%	1.0%	1.0%	12.7%	7.3%	0.416	46%	-41%
80/20 RTP	80.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	7.5%	0.383	0%	-49%

Note: Sharpe ratio assumes a risk-free rate of 2%

Asset Allocation: current 2026 (status quo), option-1 and option-2

Asset class weights



	Current 2026	Option-1	Option-2
		A slight reduction in private assets offset by increases to public equities and hedge funds	Option-1 plus a reallocation from fixed income to public equities, aiming for a higher return
Return	7.3%	7.3%	7.5%
Risk (volatility)	12.7%	12.6%	13.7%
Risk (Drawdown)	-41%	-41%	-45%
Illiquidity	46%	39%	39%

- All return and risk numbers are estimates
- Execution of either options 1 and 2 is expected to be over a period of 3 years

Asset Allocation: pros and cons of the three options

	Pros	Cons
Status Quo	<ul style="list-style-type: none"> • No change, business as usual 	<ul style="list-style-type: none"> • Higher exposure to private assets, with the following risks: <ul style="list-style-type: none"> ✓ Illiquid ✓ over-valued relative to historical levels ✓ less transparent ✓ complex asset classes ✓ more prone to agency risks ✓ Generally higher fee burden
Option-1	<ul style="list-style-type: none"> • A moderate and phased scaling back of private assets aiming to mitigate some of the cons of status quo, while continuing to maintain a meaningful exposure to private assets • Maintain fixed income allocation aiming to mitigate some of the cons of option-2 	<ul style="list-style-type: none"> • An expected return slightly lower (by 20bps) than target 5% real return
Option-2	<ul style="list-style-type: none"> • The pros of option-1, plus • Expected return equal to the target of 5% real 	<ul style="list-style-type: none"> • Materially increasing public equities exposure when market is more concentrated and expensive, relative to historical levels • Higher expected volatility • Larger estimated stress drawdown

Note: The pros and cons is an exhaustive list, but are on a relative basis across the three options



Appendix

Asset Allocation section (pages 64-204) of board packet presented at the October 1-2, 2025, board meeting

SUBJECT: Asset Allocation Presentation

ACTION: _____

DATE: October 1, 2025

INFORMATION: X

BACKGROUND:

The asset allocation presentation outlines the private market environment, discusses risk as it pertains to asset allocation, and evaluates portfolio optimization scenarios for APFC.

STATUS:

Marcus Frampton, CIO, and Sebastian Vadakumcherry, CRO, will present on the topics described above.



APFC

ALASKA PERMANENT
FUND CORPORATION

Asset Allocation

Marcus Frampton
Sebastian Vadakumcherry

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- Part 2: Asset Allocation Discussion
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- Appendices:
 - Crypto Slides
 - GS Bitcoin Research Report
 - WSJ article on endowments in the private markets
 - Harvard Business School – “Does the Case for Private Equity Still Hold?”



Part 1:

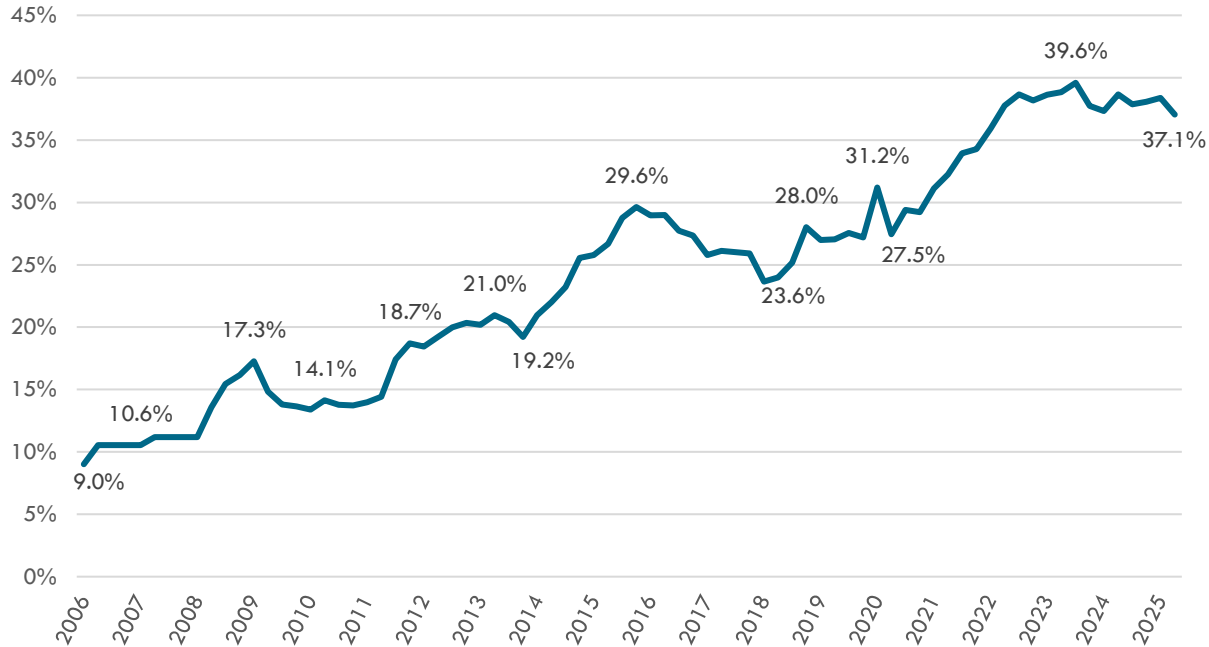
Private Markets Discussion

Executive Summary

- Over the past 15 years the most notable asset allocation move / investment decision taken by APFC has been to very materially increase the Fund's allocation to private markets (Private Equity + Real Estate + Infrastructure + Private Credit)
- The characteristics and metrics around these private markets asset classes have changed dramatically since the decision to ramp them up was made and warrants periodic re-evaluation
- While investors and industry observers commonly make the observation that allocators “will receive an illiquidity premium” for allocation to private markets, the reality is that characteristics of private markets result in a situation where prudent allocators should rather “demand an illiquidity premium” for allocation to private markets
- Whether allocators receive an adequate illiquidity premium is subject to considerable judgement and can not be measured directly in the marketplace
- With no Board action around asset allocation required until May 2026, we believe that this is a good time to start a conversation about whether APFC should moderately and incrementally reduce its targets for private markets and, thereby, preserve optionality to deploy more aggressively in a more attractive market environment

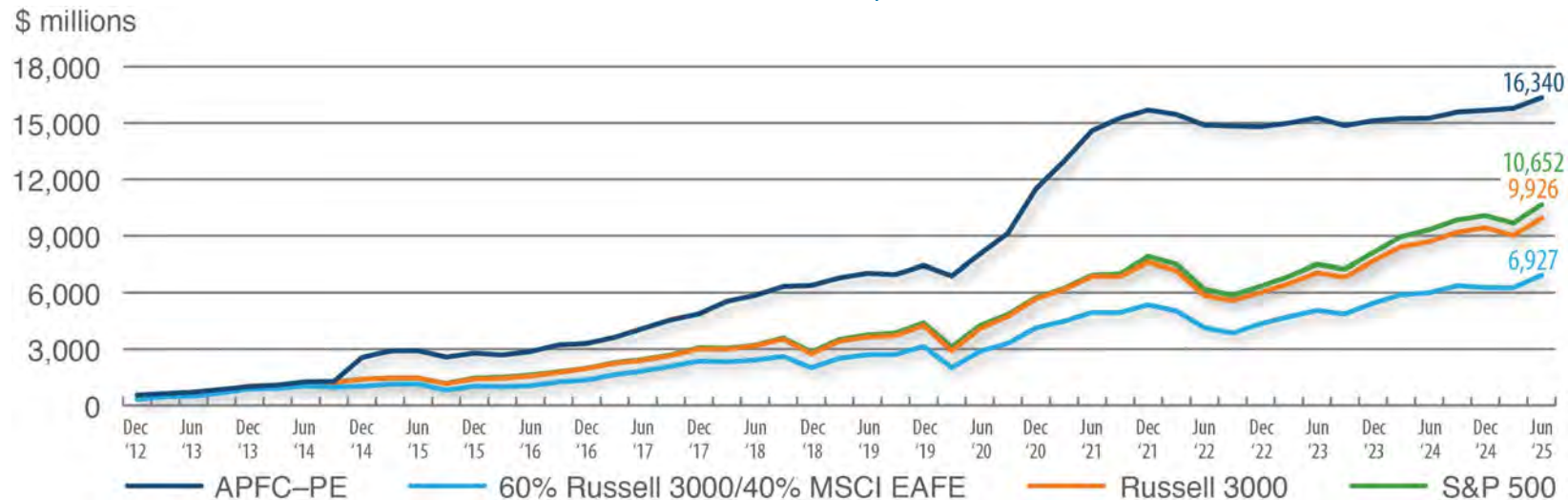
APFC Long-term Private Markets Allocations

2006 – 2025 Private Market Percentage of Total Fund Value



Strong Long-term Performance vs. PME's Private Equity

**SINCE-INCEPTION GAIN/LOSS COMPARISON WITH PUBLIC BENCHMARKS
AS OF JUNE 30, 2025**

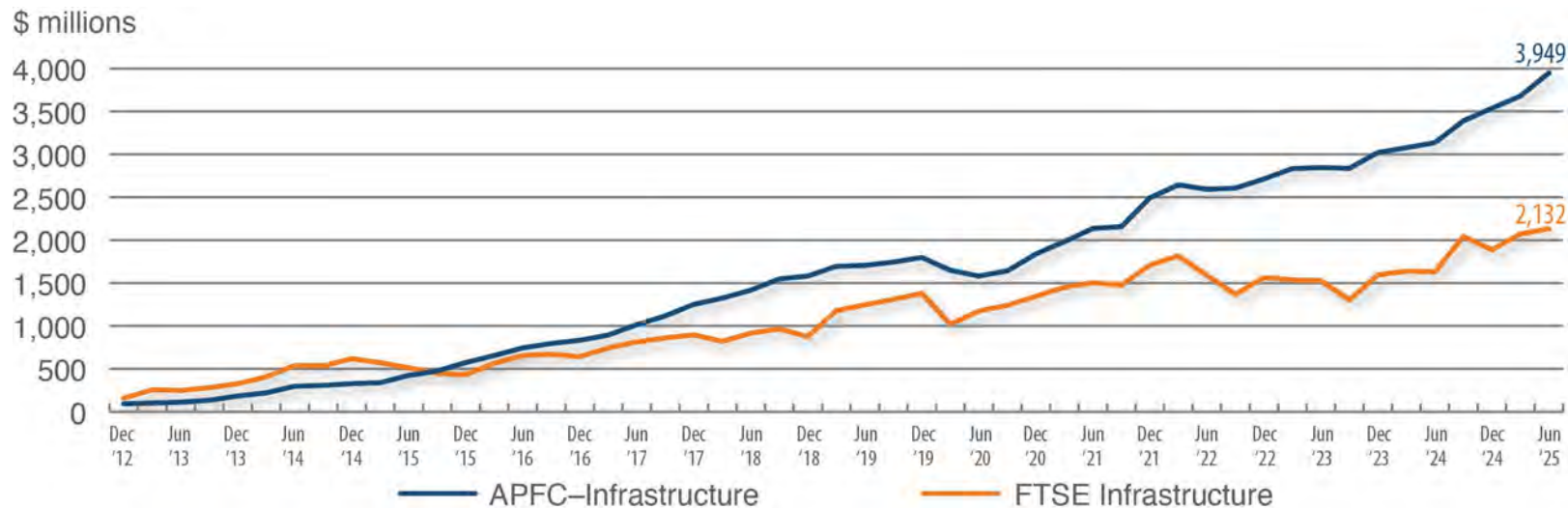


NOTES: Based on daily cash flows. As of June 30, 2025, 17.4% of the portfolio's market value reflects roll-forward values; therefore, market value is subject to change.

- Outperformance of public market benchmarks drove **\$5.7bn - \$9.4bn of additional value.**

Strong Long-term Performance vs. PME's Private Infrastructure

SINCE-INCEPTION GAIN/LOSS COMPARISON WITH PUBLIC BENCHMARKS
AS OF JUNE 30, 2025

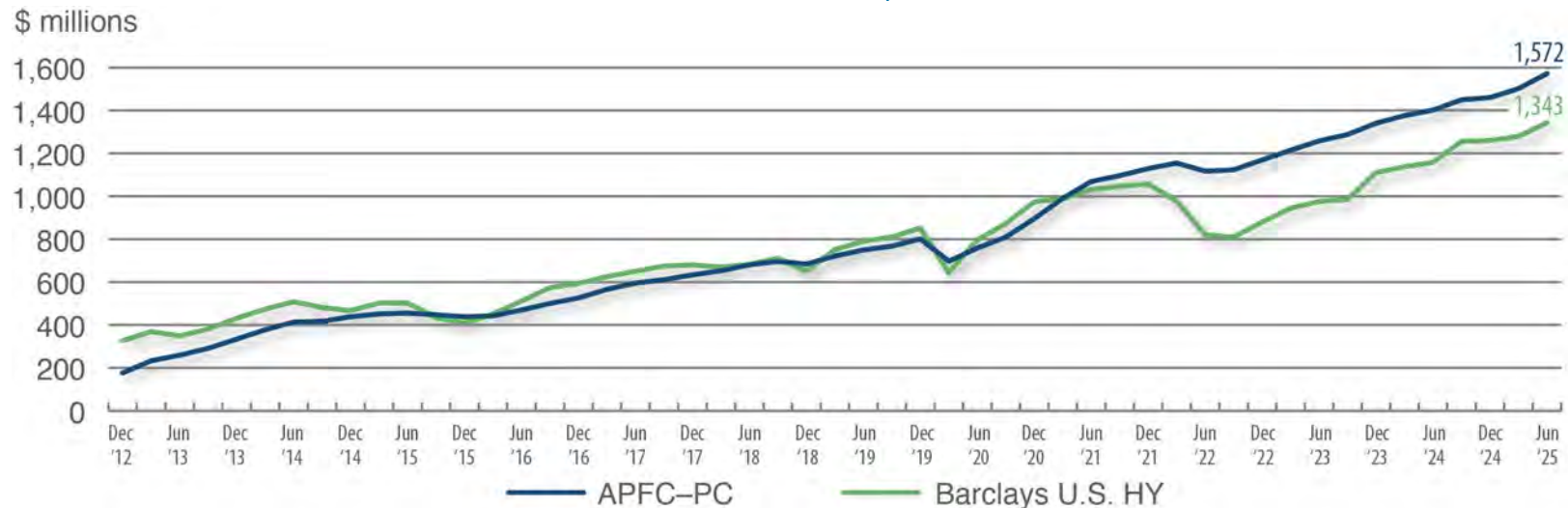


NOTES: Based on daily cash flows. As of June 30, 2025, 2.4% of the portfolio's market value reflects roll-forward values; therefore, market value is subject to change.

- Outperformance of public market benchmarks drove **\$1.8bn of additional value.**

Strong Long-term Performance vs. PME's Private Credit

SINCE-INCEPTION GAIN/LOSS COMPARISON WITH PUBLIC BENCHMARKS
AS OF JUNE 30, 2025

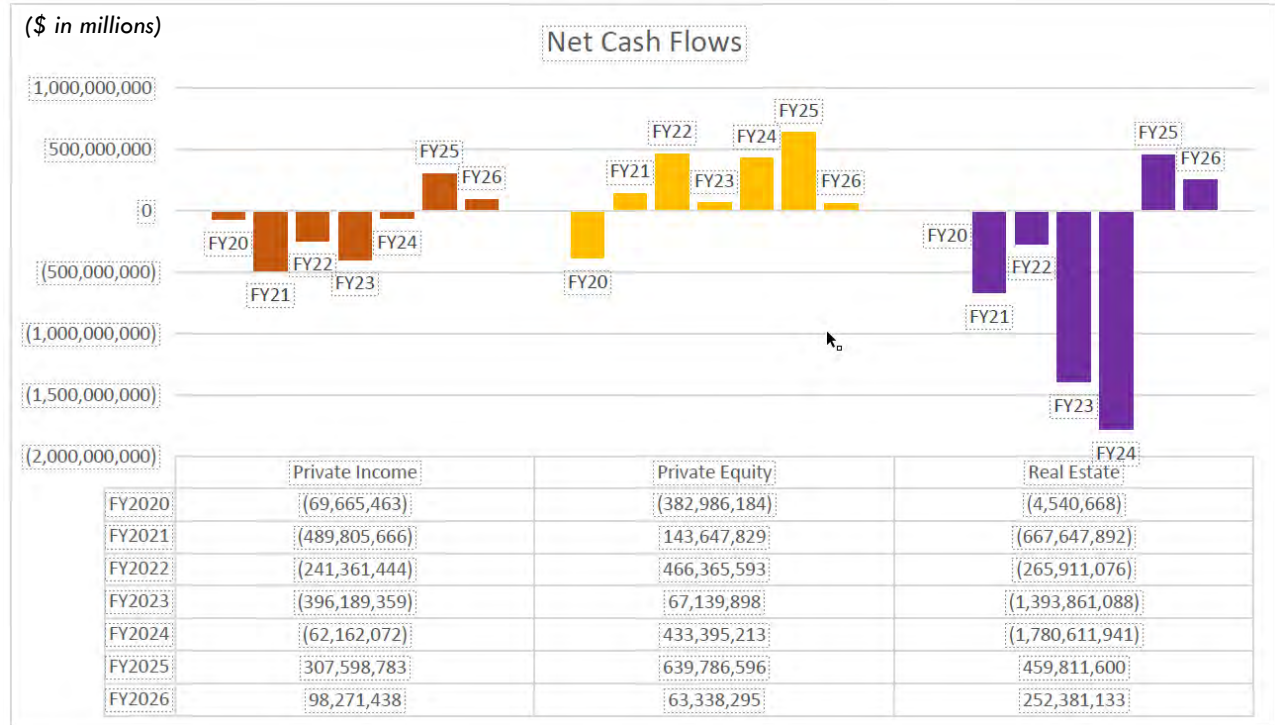


NOTES: Based on daily cash flows. As of June 30, 2025, 8.7% of the portfolio's market value reflects roll-forward values; therefore, market value is subject to change.

- Outperformance of public market benchmarks drove **\$229m of additional value.**

Strong Cash Flow Generation

- Strong positive cash flows (net distributions less net capital calls) for APFC's private equity portfolio is not very common in the industry today as private equity exits have slowed down; this positive net cash flow position of APFC's private equity portfolio is one of the strongest and rarest attributes of our mature private equity portfolio vs. peers
- Real Estate net cash outflows from FY 2021 – FY 2024 reflect growth in portfolio following re-vamped strategy in 2020; switch to positive cash flows in FY 2025 reflects changes to ultimate target allocation



Source: APFC internal accounting data. As of 9/11/25.

Only makes sense to be active if top quartile

Average performance doesn't cut it in the Private Markets... and size, quite frequently, is the enemy of performance in alternative investments

- “The data indicate the average or median PE funds do not actually outperform their PME's, since the GFC.”
 - John Ng and Richard Lietz, Harvard Business School (2024)

- “Returns dispersion in private equity has always been much wider than in public markets... Investors must aim to harvest an expertise premium from taking exposure to top-quartile managers rather than an illiquidity premium from taking exposure to the asset class”
 - Steffen Pauls, former KKR MD writing in *Financial Times* (2025)

US State Pension 10 Year Returns by Major Asset Classes
July 1, 2010 – June 30, 2020

	Total Fund	US Stocks	Non-US Stocks	Fixed Income	Real Estate	Private Equity	Absolute Return
Highest Return	9.74%	15.02%	8.24%	9.75%	13.47%	16.91%	7.27%
25th Percentile	8.93%	13.61%	6.67%	5.17%	11.41%	13.60%	6.15%
Median Return	8.57%	13.17%	6.07%	4.57%	10.65%	12.65%	5.17%
75th Percentile	7.81%	12.65%	5.41%	3.96%	9.86%	11.37%	4.33%
Lowest Return	6.71%	8.81%	4.13%	2.91%	8.20%	5.37%	2.65%
Average Return	8.63%	12.90%	6.26%	4.79%	10.43%	12.75%	4.95%

Source: AQR analysis from April 2024.

- “It seems investing in private assets only makes sense if you have access to top-quartile managers. And actually, I hear this all the time from wealth managers who are going to provide access, we're only going to give the top-quartile. First of all, won't giving retail investors access to private assets dilute those returns potentially? And also, are the top-quartile managers really going to care about the [retail] space.”
 - Kunal Kapoor, CEO, Morningstar (2024)

Qualitative reasons you need a return premium

The following are qualitative challenges that all allocators to private markets face; given these challenges allocators must demand several hundred basis points premium in expected returns; this “illiquidity premium” at any given time is a matter of judgement and can not be directly measured in the market on a go forward basis

1. Difficulty managing portfolios against benchmarks (extremely high tracking error, PM's don't always know their bets)
2. High fees
3. Mis-aligned interests versus managers / partners
4. Inability for PM's to change their portfolios when they change their mind or when positions are inherited
5. Extreme difficulty for CIO, management and Board to assess the quality of decisions being made by investment teams (performance shows up and problems manifest with a multi-year lag)
6. Positions are illiquid and the illiquidity becomes most pronounced in difficult market environments
7. Valuation uncertainty (inaccuracy?) – risks masked by stale marks
8. Incentive fees paid on market beta as frequently or more frequently than alpha (e.g., fixed 6-8% hurdles in up markets)
9. Difficult to measure risks – typically smaller companies versus public markets and materially higher leverage than public markets
10. Inconsistent and often poor transparency
11. Median performance generally lags public market averages (see prior page); allocators must convince themselves that they are truly special to justify their activities

APFC has managed costs well...

- While APFC fees are more fully and prominently disclosed than peers, on an apples-to-apples basis, **our approach to private markets and alternatives investing is relatively efficient**
- A recent paper published by Richard Ennis summarizes fee and expense loads for the few public pension funds he could find that fully discloses these items
- The source paper in its entirety may be found at the following link:

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5163511

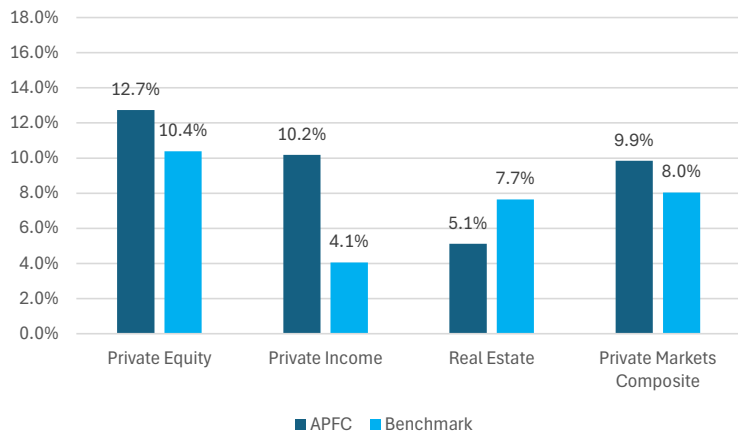
Private/Alternatives Allocation and Cost for Nine Public Pension Plans

Pension Plan	Private/Alts Allocation	Estimated Reported Annual Total Cost
1	0%	0.10%
2	29%	1.50%
3	30%	1.10%
4	38%	1.90%
5	38%	1.90%
6	39%	1.20%
7	43%	1.60%
8	43%	1.00%
9	49%	2.00%
Peer Average (Plans 2-9)	39%	1.53%
APFC	46%	0.97%

Source: Pension fund peers from Ennis (2025). APFC data is per June 2024 "Fees & Expenses" report.

...but Performance has Ebbed Past 5 Years...

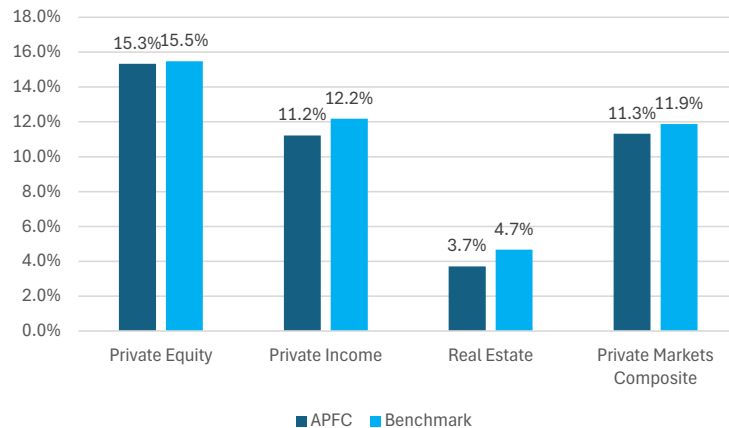
Five Year Returns As of June 30, 2020



Performance vs. Benchmark

+235 bps +612 bps -253 bps +181 bps

Five Year Returns As of June 30, 2025



Performance vs. Benchmark

-15 bps -96 bps -97 bps -55 bps

Source: APFC official performance reports.

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ALASKA PERMANENT FUND CORPORATION

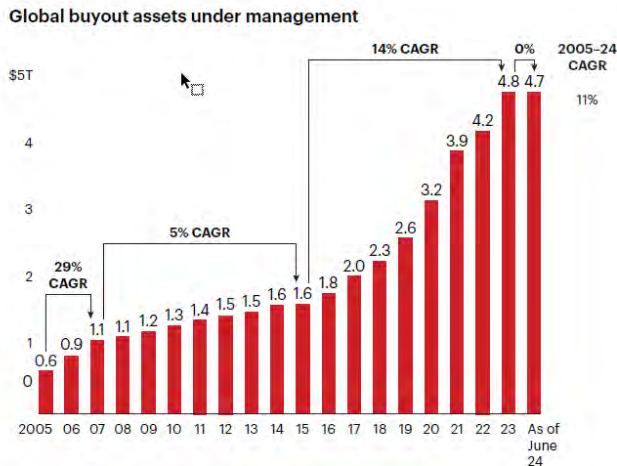
Note: Private Markets Composite weights PE, PE, and RE by their average AUM weights for the five-year period covered.

...Meanwhile Industry AUM has Ballooned...

- “There is probably at least a trillion dollars committed to trying to buy private businesses in the US market... the supply / demand situation for buying private businesses and leveraging them up has changed dramatically from what it was 10 or 20 years ago... we have seen a number of proposals from private equity funds where the returns are not calculated in a manner I would regard as honest.”
 - Warren Buffett (2019)

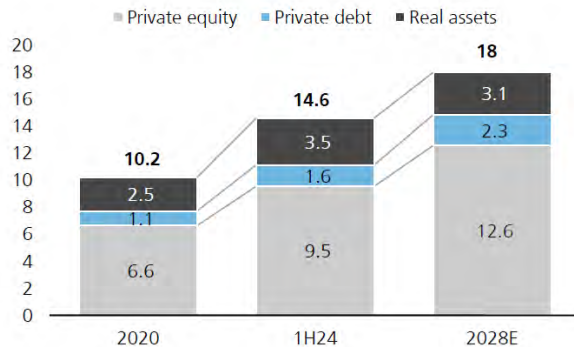
AUM in private equity and private markets broadly have dramatically grown... and, as shown on the following slide, even though the last couple years have been tougher for fundraising than the prior years, “dry powder” remains at or near highs across strategies

(“dry powder” refers to the committed but undrawn funds available to private fund managers)



With USD 14.6 trillion in AuM, global private markets are hard to ignore

Global private markets assets under management, in USD trillion

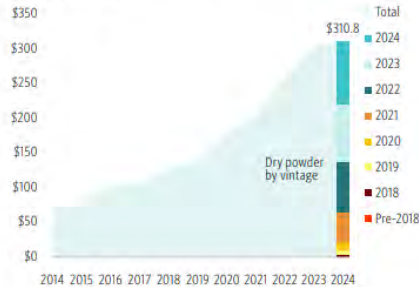


Note: Closed-ended funds only. Excludes fund-of-funds and secondaries to avoid double counting. Source: Pitchbook, Preqin, UBS May 2025.

...and Dry Powder is Elevated Across Segments

Venture Capital

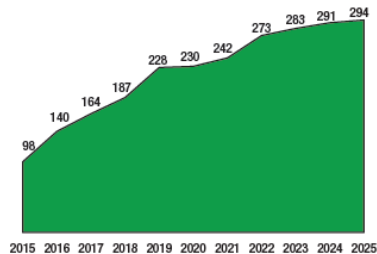
Most dry powder sits within funds of 2022 vintage and later
VC dry powder (\$B)



PIP/Minted-IVCA Venture Monitor • As of September 30, 2024

Real Estate

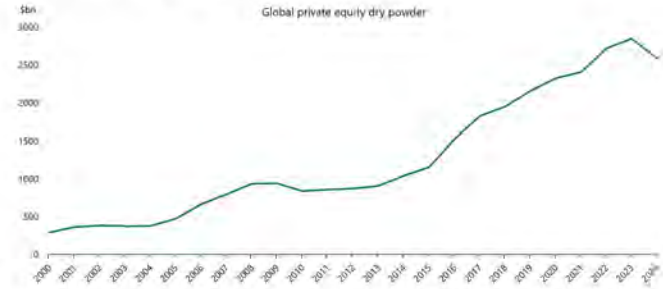
Uninvested Equity (\$Bil.)



Source: Green Street March 2025.

Private Equity

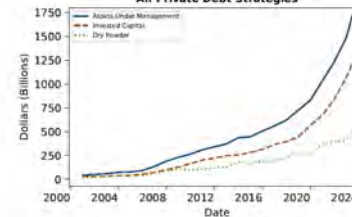
Global private equity dry powder



Source: Apollo.

Private Credit

All Private Debt Strategies

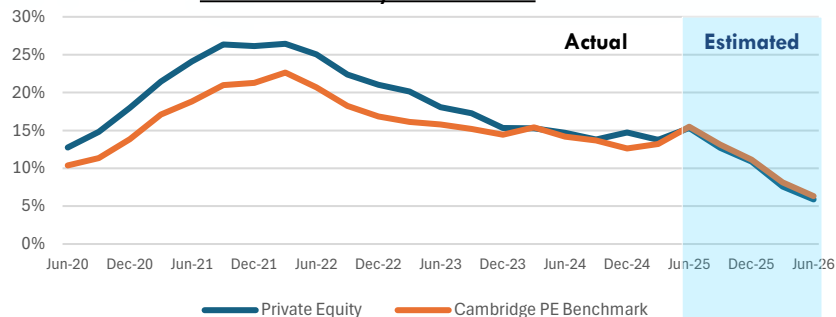


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Source: 2024 Federal Reserve paper.

APFC Private Equity : performance trends

Annualized 5-year Returns



Quarterly Returns



APFC private equity actual and estimated returns

- Annualized 5-year returns for APFC's private equity portfolio have been trending down since the peak in 2021
- The estimated 5-year annualized returns over the next year ending June 2026, based on Callan's capital market assumptions, trend even lower towards around 6%
- The overall private equity market, assumed to be represented by the Cambridge benchmark, has a similar downward trend
- The consistently lower quarterly returns since 2021 reflects a changed (lower) return profile

Lower private equity returns : Cyclical or Structural?

Weakness could be Cyclical...

- Private equity (PE) returns have been cyclical — periods of outperformance often followed by weaker vintages, then rebounds.
- Valuation lag – PE valuations tend to adjust more slowly than public markets, so the markdowns from 2022–2023 may still be working through portfolios.
- Exit environment – IPOs and M&A slowed sharply with rising rates, hurting distributions and IRRs. This could change

...or could be Structural

Past Tailwinds (now mostly gone or reversed)

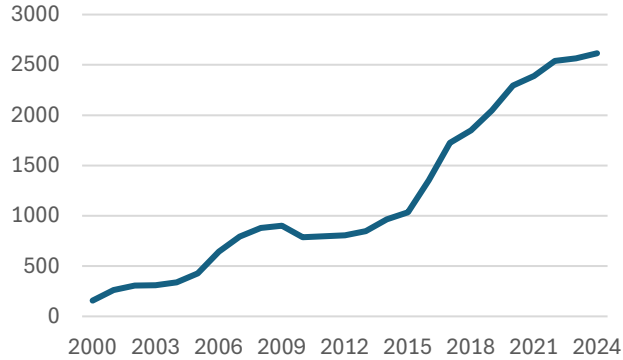
- Low interest rates – Cheap leverage boosted returns; higher rates increase financing costs, reduce deal multiples, and pressure portfolio company cash flows.
- Less competition for deals – there's more dry powder and more managers chasing deals, compressing entry multiples. “There is no investment idea so good that it cannot be ruined by too much capital”
- Untapped market– Many sectors have already been “PE-ized,” reducing easy wins.

Current Headwinds

- High valuations – Even with recent adjustments, good companies rarely trade cheaply.
- Operational improvement ceiling – PE's toolkit is well-known; achieving incremental gains is harder in a mature industry.
- LP capital constraints – LPs committing more selectively, creating fundraising pressure.

Private equity : “there is no investment idea so good that it cannot be ruined by too much capital”

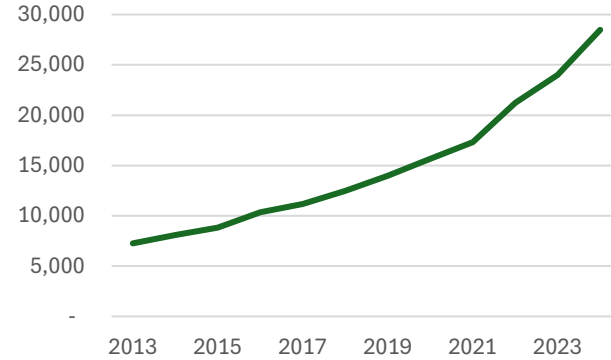
Global Private Equity Dry Powder (\$ Billions)



Source: S&P Global

- Total capital committed but not yet deployed (dry powder) to private equity funds exceeds \$2.6 trillion
- Comparatively, dry powder was only \$157 billion in 2000, reflecting an expansion of more than 16 times or CAGR of 12% over 25 years

Number of Private Equity & Venture funds in US



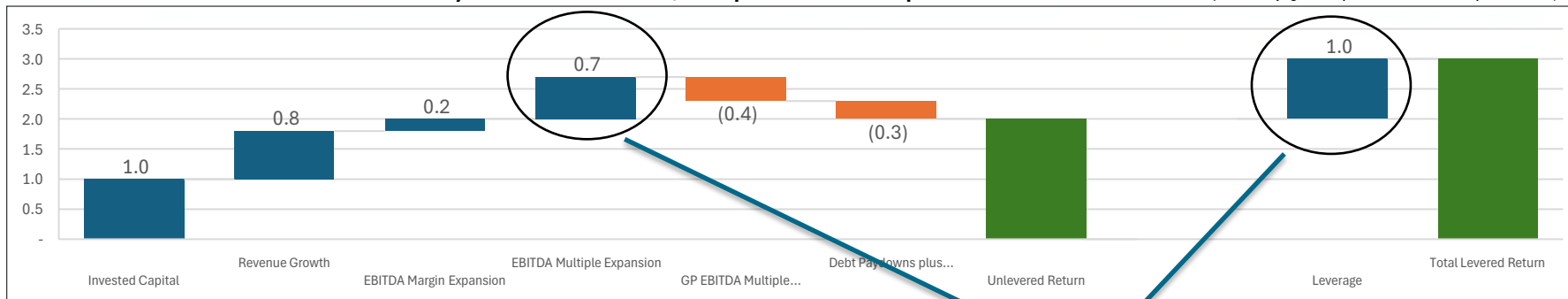
Source: SEC private funds database

- The number of private equity funds grew steadily over the last decade crossing 28,000 in 2024
- In 2013 there were about a quarter of this number (7,259 funds).

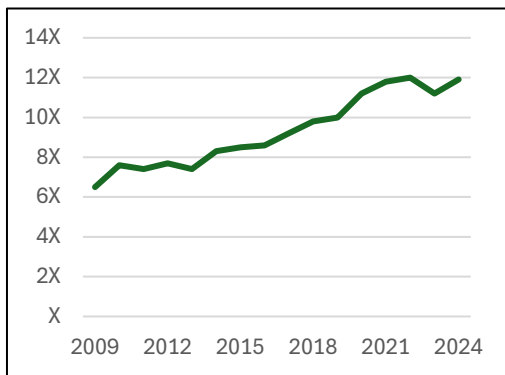
Private equity : High valuations – good companies rarely trade cheaply

Drivers of investment returns for realized buyout deals in 2010–22, multiple of invested capital

Source: (McKinsey global-private-markets-report-2025)



Median multiples of global buyout entry



The median global buyout entry multiple almost doubled over the last 15 years to about 12X in 2024.

Leverage and market multiple expansion drove 61 percent of investment returns for buyout deals from 2010 to 2022.

Source: (McKinsey global-private-markets-report-2025)

Private equity returns : a plausible future scenario

- Key drivers of private equity's "golden era" (past couple of decades) may have reversed. That period was unusually favorable and it's unlikely PE returns will snap back to those averages
- More plausible is a moderate rebound once exits improve, but with a lower ceiling due to structural headwinds. More likely to be high single-digit to low double-digit net returns, rather than the mid-to-high teens many investors became accustomed to.
- The winners in the next cycle will probably be those who:
 - Deploy capital selectively in today's higher-cost-of-capital world.
 - Avoid overpaying for trophy assets.
 - Generate operational value in less crowded niches.

Private versus Public equity: if the expected future returns are not adequately higher for private equity, the rationale for taking on higher risks (illiquid, levered, idiosyncratic, high fees) may have eroded

Private Equity is Less Attractive than the Past

Venture Capital

Pre-Money Valuations up Dramatically Across all Series

(\$ in millions)

Round	Average Pre-Money Valuation		% Increase
	2015	1H 2025	
Pre-Seed	\$4	\$12	223.7%
Seed	\$7	\$37	463.1%
A	\$22	\$76	253.7%
B	\$72	\$252	248.5%
C	\$146	\$789	439.0%
D+	\$795	\$2,694	239.1%

Source: Pitchbook.

Leveraged Buy-outs

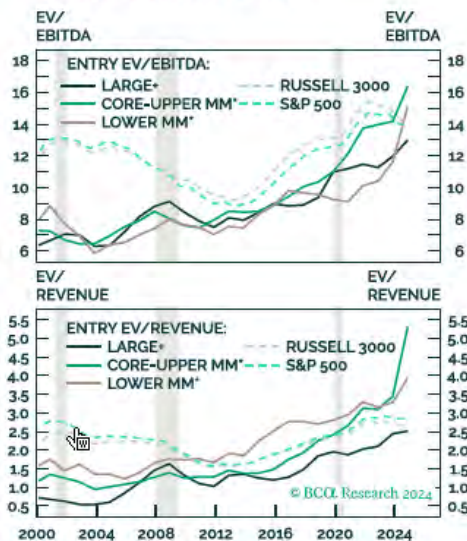
North America

Median total enterprise value (TEV)/EBITDA multiple



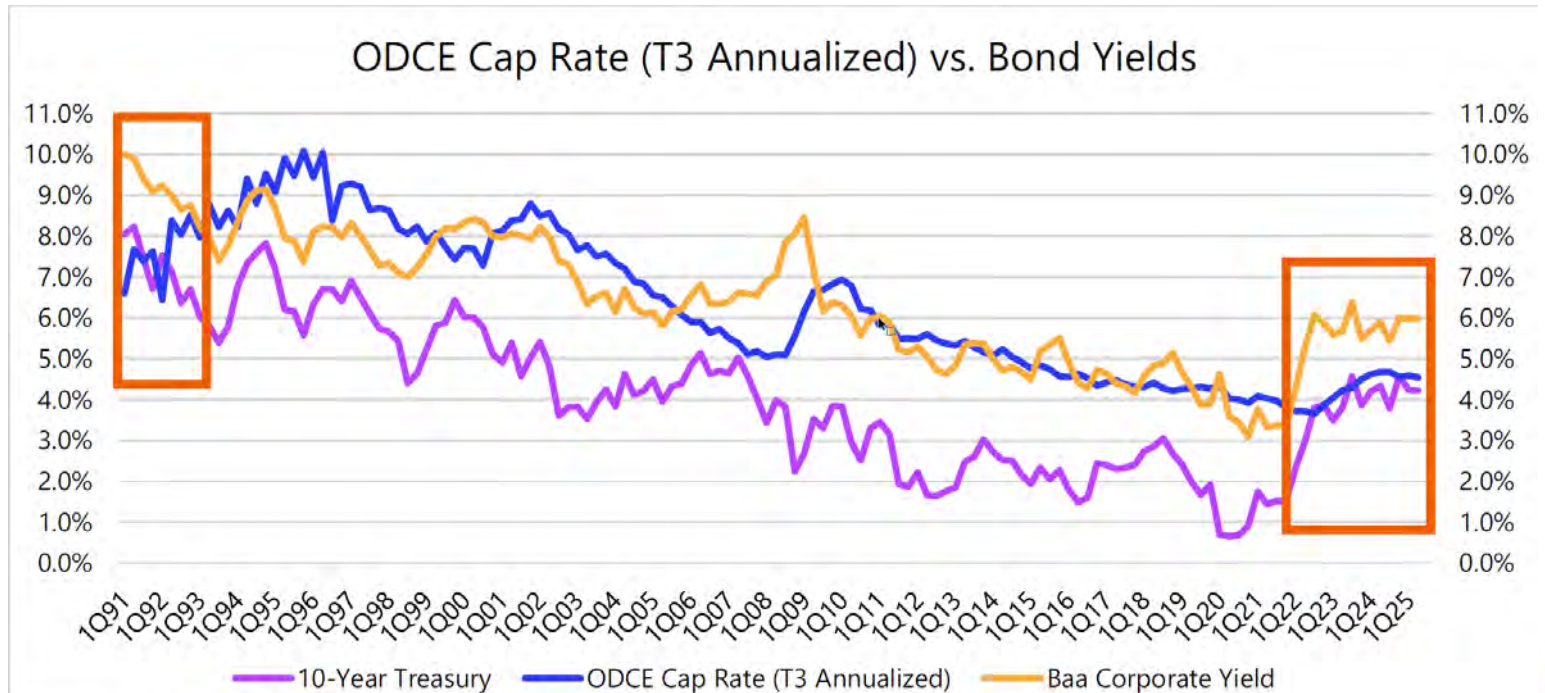
Note: Data as of September 30, 2024
Source: SPI by StepStone

Middle Market Drives Elevated Entry Multiples Versus Publics



Private Real Estate is Less Attractive than the Past

Investors in private core Real Estate today are earning no yield premium to 10 year treasuries; the norm over time has been at least a couple of hundred basis points



Source: NCREIF, U.S. Dept. of Treasury, Moody's, Compiled by SitusAMC

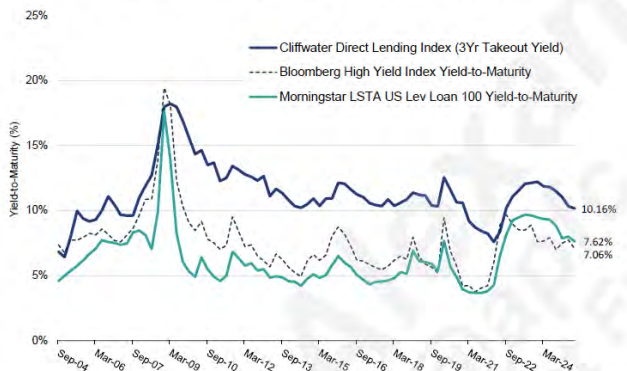
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Private Income is Less Attractive than the Past

Private Credit

- We are seeing spreads between S+450bps and S+500 bps in the middle market and upper middle market for first lien loans; for comparison, the average new issue spread for single B rated broadly syndicated loans was S+355bps as of Q2 2025

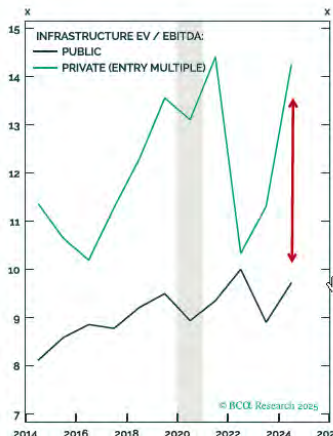
Exhibit 5: CDLI, High Yield Bond, and Leveraged Loan Yield-to-Maturity (Sep 2004 to Jun 2025)



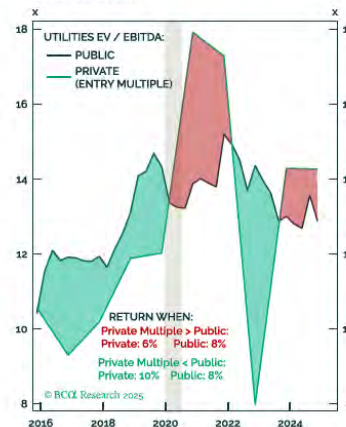
Private Infrastructure

- Private Infrastructure market has many different sectors than other private asset classes with different metrics, however, as a general matter we believe that private infrastructure managers pay large and growing premiums to value available in the public markets for similar quality assets
- Data also suggests weak returns for average private markets infra investments vs. historical listed infrastructure returns + materially higher leverage in privates than publics

Valuations Favor Publics



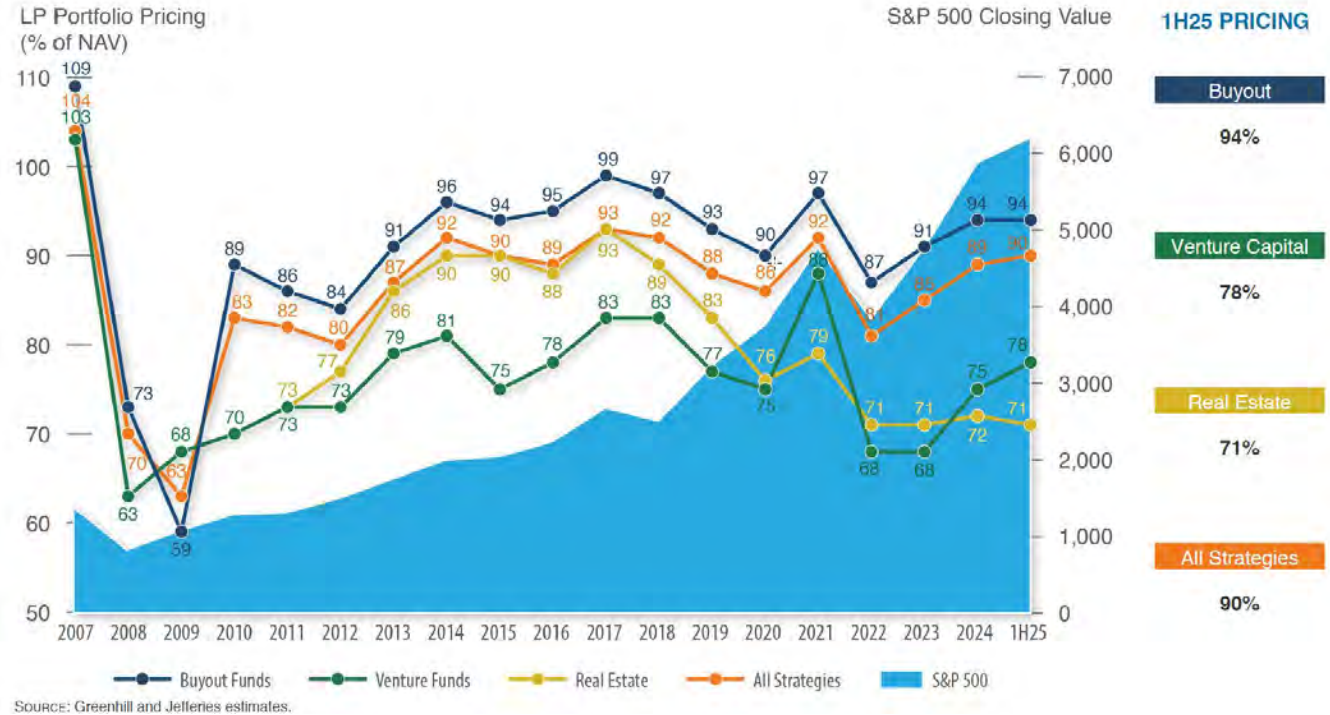
The Private Bid Is Apparent In The Utilities Sector



Changing Your Mind on Private Investments is Costly

Pricing to exit illiquid private markets fund investments in 1H 2025 ranged from 70's of cents on the dollar (Real Estate and Venture) to 94% (Buyouts)...

...and in periods where more institutional investors need liquidity (e.g., 2008 and 2022) pricing gets much worse



Asset Allocation Suggestions

- Last May, Staff reviewed the Status Quo portfolio allocation along with two alternatives (Option 1 and Option 2); ultimately Status Quo was reaffirmed, however, Trustees indicated desire to continue the review in the Fall
- In the next section the CIO and CRO will review materials from last May, but also will introduce a third option (Option 3) which they are recommending for serious consideration as being most consistent with their views and concerns around the private markets space broadly today
- Staff Recommended Option 3:
 - Move incrementally given the “steering the battleship” nature of private markets
 - Reduce allocation to each of Private Equity, Real Estate and Private Income by 1% over each of the next three years
 - Fixed Income allocation also reduced to 15% from 20%
 - Most of the reductions offset by increases to Public Equities with a minor increase to Absolute Return
 - Taken together moves do not represent a de-risking of the portfolio or a lower expected return, but they do result in material increase to portfolio liquidity and increase to future optionality around private markets
 - Review and optimize sub-portfolio allocations within Fixed Income to achieve higher Sharpe Ratio and higher expected return Fixed Income portfolio
- Callan to review Option 3 at their annual asset allocation review in February 2026; no Board action requested or needed until May 2026



Part 2:

Asset Allocation Discussion

Risk is Good: up to a limit

- APFC is in the business of taking risk
- The goal is to be Risk Aware not Risk Averse
- Principal preservation is paramount

Risk Appetite: is as important as target return in formulating strategy

- Defining a performance target in terms of 'returns' alone is not only incomplete but could also lead to inaccurate inferences and undesired outcomes
- Ignoring or not factoring the risks entailed in generating the return could be a costly mistake
- The flaw is more pronounced if comparative performance (say, versus peers) is measured solely in terms of returns. **The same return can be achieved by taking varying levels of risk**
- Risk appetite is a broad-based articulation of the corporation's thresholds, in terms of risks* it is willing to take in pursuit of its objectives. It quantitatively defines the acceptable level of risk

** For now, the focus is only on 'investment' or 'portfolio value' risk (other risks like operational, reputational, legal, etc. are not addressed here)*

APFC Risk Appetite: approved definition

APFC's Risk appetite is defined in terms of (a) a Risk Tolerance Portfolio (RTP) and (b) Liquidity level, as follows:

a) The maximum 'risk' of the APFC portfolio should not exceed that of the RTP (specified below):

- The RTP comprises of an **80/20:Equity/Bond** reference portfolio with the following constituents:
 - 80% MSCI ACWI IMI
 - 8% BB US AGG
 - 8% BB US CORP
 - 4% BB GLBL TRS ex-US
- Here risk is measured across the following volatility and drawdown parameters
 - Value at Risk (VaR), 1 year, 1SD (based on 10-year constant weighted historical monthly data)
 - Drawdown: Recession GFC – Dec 3, 2007 to Mar 9, 2009

b) Liquidity: The combined allocation to Public equities, Fixed income and Cash will not be lower than 40%

APFC Risk Appetite: key assumptions

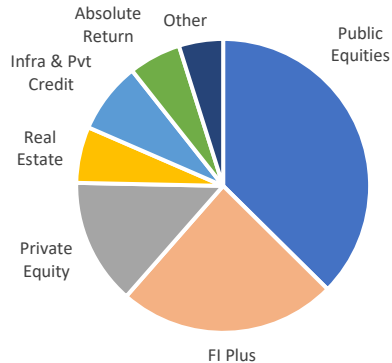
- i. VaR and Drawdown risks will be measured using the Aladdin tool, incorporating the following assumptions:
 - Time Horizon & SD multiple : 1 year & 1 Standard Deviation
 - Historical Data weighting : 10 years, monthly, constant weighted

- ii. **The Private Equity risk estimate computed by Aladdin is at the Board's direction adjusted downward (reduced) by adjusting the private equity exposure to 75% of actual exposure when comparing to RTP (this board action was based on the view that Aladdin's methodology over-estimated risk for private equity)**

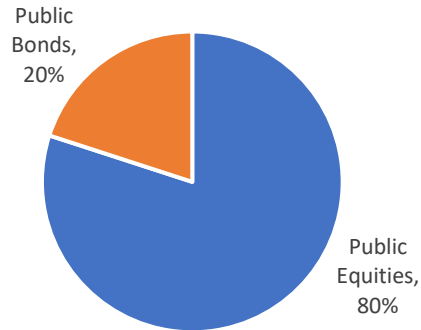
- iii. Drawdown Stresses are based on and as defined within the Aladdin tool

Risk Appetite: how it works

Risk of Fund Portfolio



Risk of RTP



The Fund portfolio can have any type and mix of asset classes subject to:

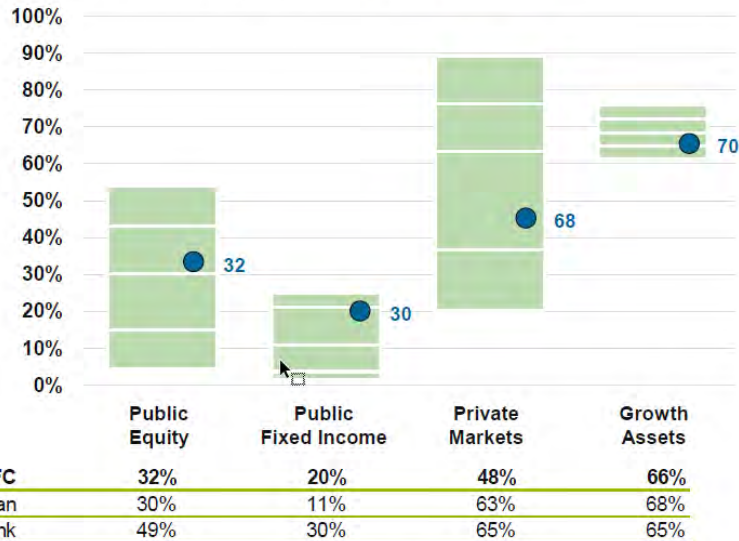
- VaR (volatility) \leq that of RTP
- Drawdown \leq that of RTP
- Public Equities + Fixed Income + Cash \geq 40%

Risk Management independently computes risk of total Fund portfolio to ensure it's below the RTP risk level

Endowments do often feature lower allocations to fixed income than state pensions & APFC...

- High Public Equity**
 - Roughly median allocation to public equities.
 - Median is 30%, APFC is 32%.
- High Public Fixed Income**
 - Higher allocation to public fixed income than 70% of E&F's.
 - Median is 11%, APFC is 20%.
- Low Private Markets**
 - Lower allocation to private markets than 65% of E&F's.
 - Median is 63%, APFC is 48%
- Low Growth Assets**
 - Roughly median allocation to Growth Assets
 - Median is 68%, APFC is 66%

Asset Allocation Distribution as of December 31, 2022
Callan Large Endowment/Foundation (> \$1 billion)

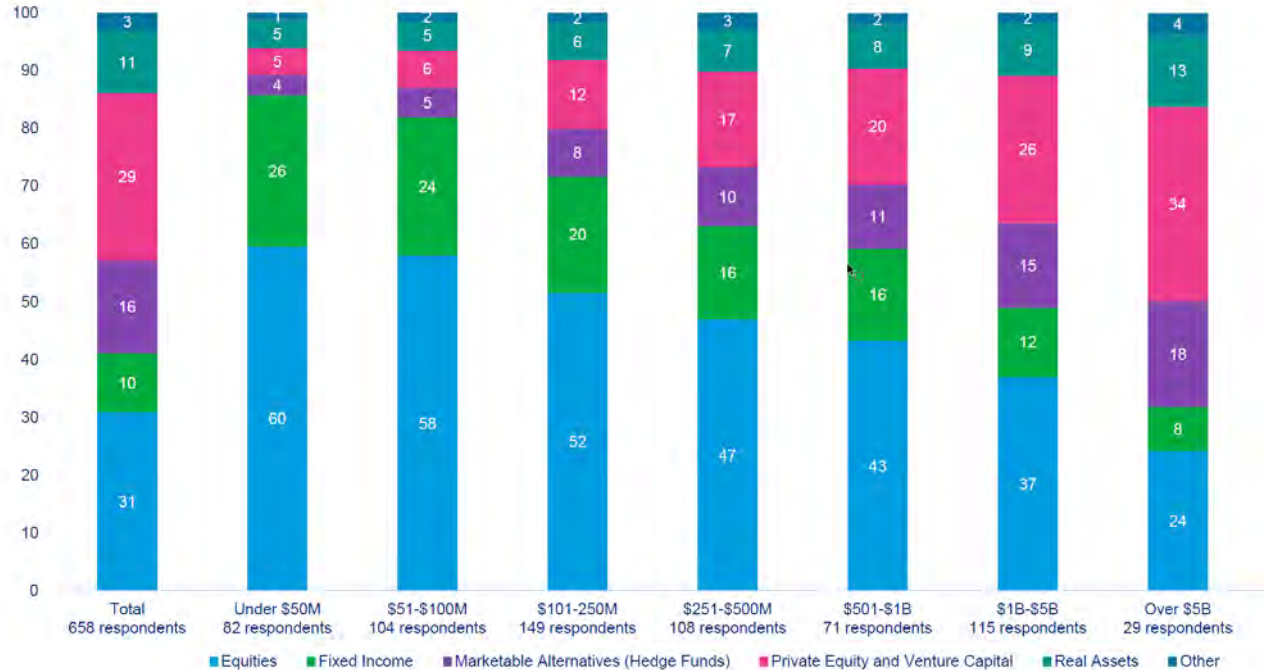


*Growth Assets include public equity, private equity, tactical opportunities, 70% of private real estate, 70% of private infrastructure/credit.

...however, typically other lower risk allocations, in particular hedge funds, offset this...

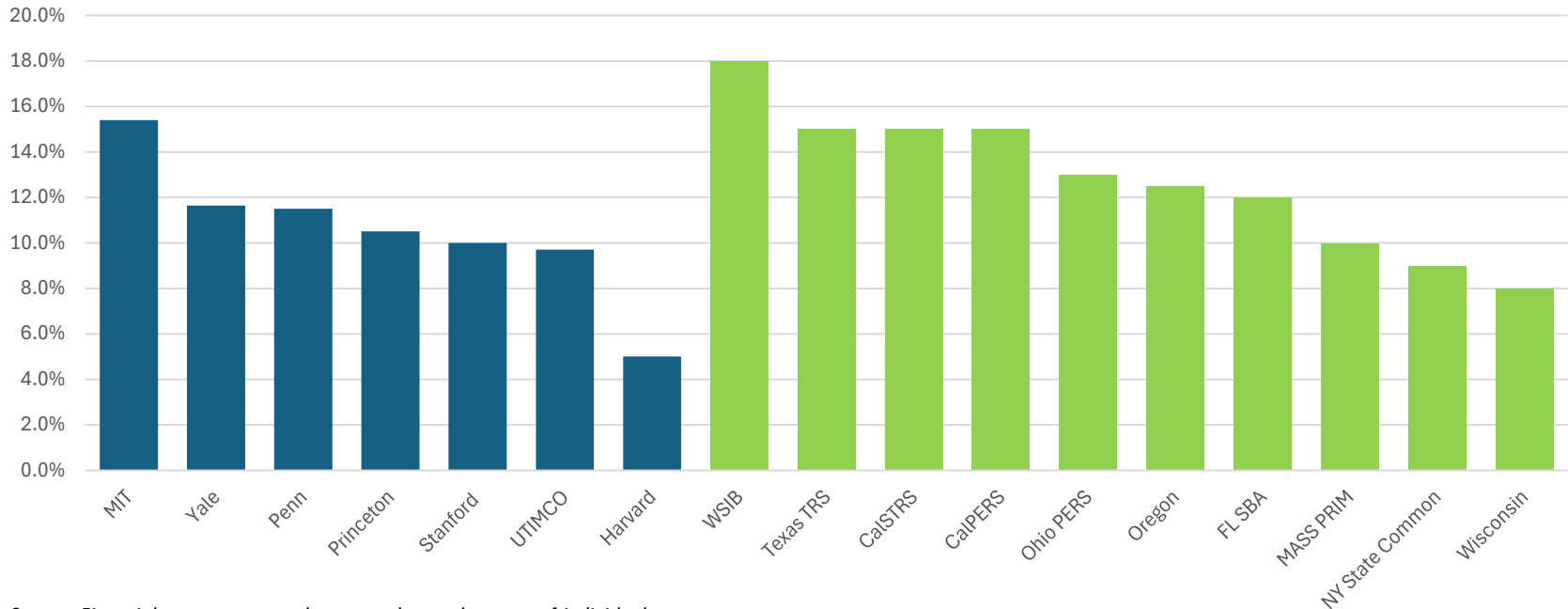
- Data from NACUBO (National Association of College and University Business Officers) 2024 survey
- Survey demonstrates heavy usage of Hedge Funds to achieve prudent diversification (16% overall average, \$18% for \$5 bn+ cohort)

Fixed Income + Hedge Funds: 26% 30% 29% 28% 26% 27% 27% 26%



...and All Endowments and Pensions we Reviewed Included Real Estate as a Further Diversifier

Large Public Pension and Large University Endowment Real Estate allocations



Source: Financial reports, press releases, and annual reports of individual programs.

Notes: (1) Represents target allocations unless only actual allocation is readily available; (2) When available, data reflects target allocation to Real Estate specifically.

For certain programs "Real Assets" or similar asset class labels were used when it appeared that the majority of the asset class was Real Estate investments.

The “Art” of Asset Allocation

In just the last few years, Yale Endowment’s philosophy on portfolio balance and asset allocation has undergone a material shift; between 2020 and 2024 the numbers behind the asset allocation and the endowment’s purpose haven’t shifted, but the University’s judgements about these matters clearly have shifted

2020 (and earlier) Financial Reporting

“Yale targets a minimum allocation of 30% of the endowment to market-insensitive assets (cash, bonds, and absolute return). The university further seeks to limit illiquid assets to 50% of the portfolio.”

-Yale Endowment Annual Letter, 2016, 2017, 2018, 2019, 2020

Total: \$31.2 billion

Private Equity	41.0%
Absolute Return	23.5%
Public Equity	14.0%
Real Estate	9.5%
Fixed Income	7.5%
Natural Resources	4.5%
Total	100.0%
Market Sensitive	69.0%
Market Insensitive	31.0%

2024 Financial Reporting

“Roughly 95% of the endowment pool is invested in assets expected to produce equity-like returns, through domestic and international securities, real assets, and private equity.”

-Yale University Financial Report 2023-2024

Total: \$41.4 billion

Private Equity	53.2%
Public Equity	19.3%
Absolute Return	14.5%
Real Assets	11.6%
Fixed Income	1.4%
Total	100.0%
Market Sensitive	84.1%
Market Insensitive	15.9%

An additional judgement that can be inferred from Yale Endowment’s allocation decisions is that they do not find the arguments for private credit/infra compelling



Part 3:

Portfolio optimisation & efficient frontier simulation

Introduction

- **No board action required at this point:** As requested by and based on feedback from Trustees', staff is bringing back proposals for modifying asset allocation. The aim is to facilitate preliminary discussions and share thoughts prior to asset allocation decisions scheduled for Feb/May 2026.
- This is a follow-up from the May 2025 board meeting, and several slides are a repeat from that meeting
- In general asset allocation works best if adhered to over the long term. Periodic review and necessary adjustments could add value. Staff recommends to alter asset allocation only if there are valid and tested justifications, and not to be based on interim market moves, public opinion, current (temporary) trends, one dimensional views, etc.
- While staff recommends making asset allocation changes deliberately and avoiding frequent changes to targets for illiquid asset classes, three options (Option-1, Option-2 and Option-3) were developed to target an expected return in line with the Fund's mandate of CPI + 5%. Staff recommends pursuing Option-3 with a three-year timeline for full implementation of new targets
- The following slides include a brief overview of modern portfolio theory (MPT), the Montecarlo simulation model staff utilized to generate the efficient frontier and how various portfolios aligned to this efficient frontier. Return and risk estimates for the various portfolios are also tabulated and reviewed in detail

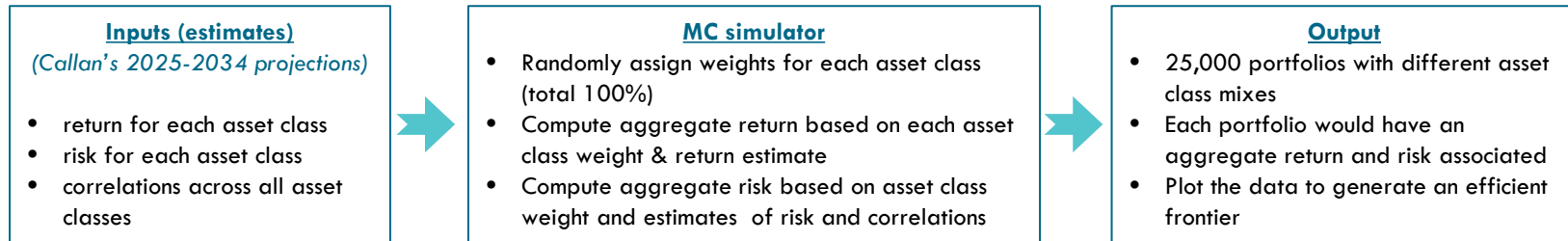
Modern Portfolio Theory (MPT): diversification is a key aspect

- The modern portfolio theory (MPT) is a concept that can be used by investors to construct diversified portfolios that maximize their returns without unacceptable levels of risk
- MPT is a mathematical framework that optimizes asset allocation to maximize return for a given (acceptable) level of risk
- American economist Harry Markowitz pioneered this theory in his paper "Portfolio Selection," which was published in the *Journal of Finance* in 1952. He was later awarded a Nobel Prize for his work on modern portfolio theory
- It is important to note that all inputs into this mathematical framework are estimates, implying that the validity of the output, which is dependent on the accuracy of inputs, is uncertain. GIGO is a very real risk and so prudence and judgement are vital when assessing outputs

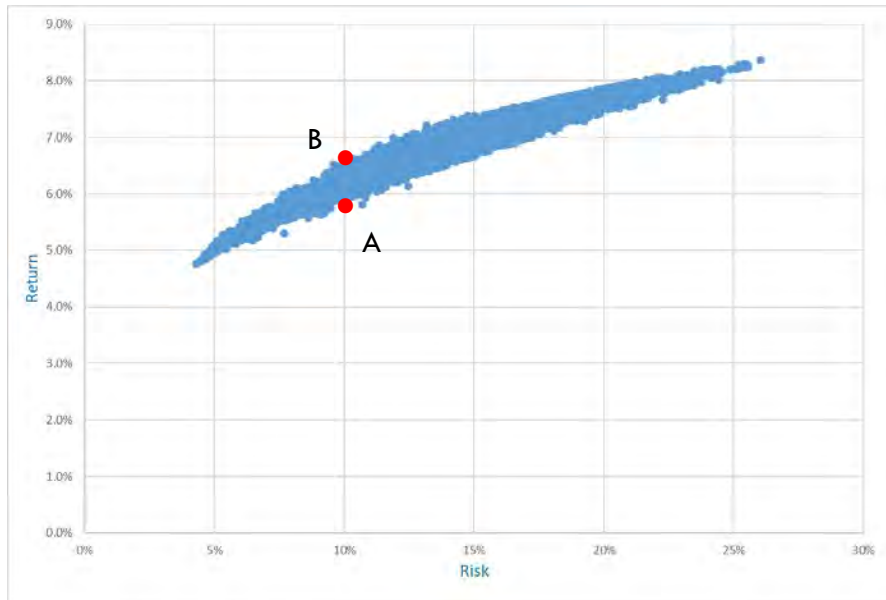
Montecarlo Simulation: to build an efficient frontier

Key steps and inputs:

- Define/select the asset classes we want in the overall portfolio (Fund)
- For each asset class, estimate the return achievable and risk (volatility) that would be entailed
- Additionally, estimate the correlation between the returns for each asset class with every other chosen asset class
- Develop scenarios by applying different weights to asset classes and computing the aggregate portfolio return and risk numbers – we simulated 25,000 different portfolios by randomly assigning weights to asset classes



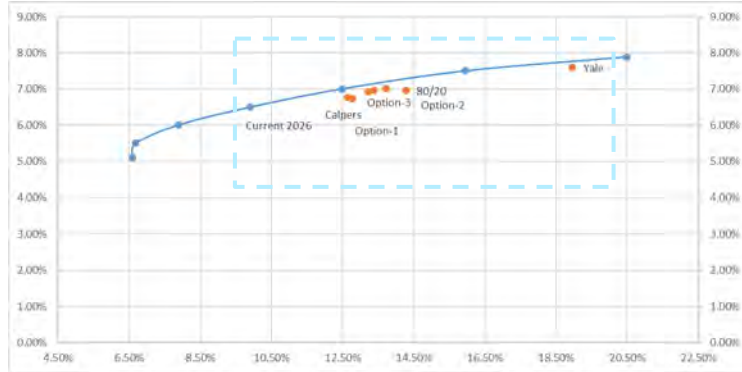
The efficient frontier: [concept] optimal vs. sub-optimal portfolios



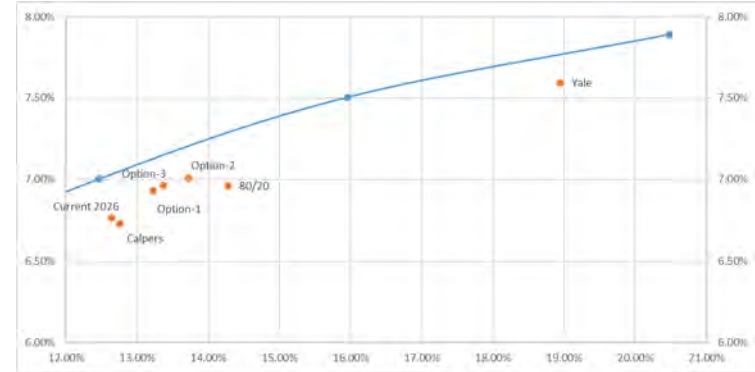
- The scatter plot represents 25,000 portfolios with different weights for the 8 asset classes
- Each portfolio has an associated return (vertical axis) and risk (horizontal axis)
- The upper outward arch represents portfolios on the efficient frontier – i.e., optimal portfolios
- To illustrate:
 - dot A represents a portfolio that has an estimated risk level of 10% and a return estimate of 5.8%
 - dot B represents another portfolio with the same estimated risk of 10% but has a higher expected return of 6.8%
 - B is on the efficient frontier and represents the optimal mix, if the acceptable risk level is 10%

The efficient frontier: [application] a range of portfolio mixes possible

Portfolios relative to the efficient frontier



Magnified View



- The following selection of portfolios (different asset class mixes) is charted against the efficient frontier from the previous page: **Current 2026 allocation; the 80/20 portfolio; CalPERS; Yale; Option-1; Option-2; Option-3**
- All six portfolios are close to the efficient frontier, with some slightly better optimized for risk-return
- Selecting asset class mixes that fall precisely on the efficient frontier may not be practical in terms of execution (e.g., one or more asset classes close to zero % and or an asset class greater than 50%)
- Note: all computations are based on estimates of risk and return – it is prudent to be aware of ‘false precision’

Asset Allocation: options, select peers and risk appetite

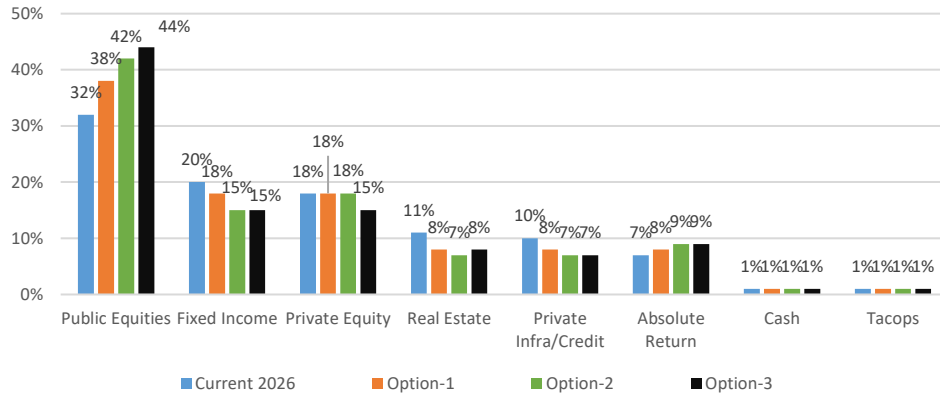
- Asset allocation %, 10-year return and risk (volatility) estimates, stress drawdown projections and illiquidity levels are tabulated below
- The 'Current 2026' allocation represents the existing Board approved Fund portfolio for FY 2026.
- Options 1, 2 and 3 reflect fresh asset allocations for consideration for 2027 and beyond, based on staff interpretation of board preferences
- The 80/20 is the board approved risk appetite
- Calpers and Yale are two peers selected for reference

	Asset Allocation (based on publicly available information)								10-year Risk and Return estimates (computed based on Callan's 10-year projections)				(c) + (d) + (e) + (f)	Aladdin Estimates
	Public Equities (a)	Fixed Income (b)	Private Equity (c)	Real Estate (d)	Private Inf/Crd (e)	Absolute Return (f)	Cash (g)	Tacops (h)	Risk (Standard Deviation)	Weighted Average Return	GR Spread	Geometric Return	% of Low Liquidity Assets	Stress (GFC scenario) Drawdown
	Calpers	41.9%	26.5%	15.6%	13.2%	2.8%	0.0%	0.0%	0.0%	12.8%	6.7%	0.5%	7.2%	32%
Yale	19.3%	1.4%	53.2%	11.6%	0.0%	14.5%	0.0%	0.0%	18.9%	7.6%	0.5%	8.1%	79%	-46%
80/20	80.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	7.0%	0.5%	7.5%	0%	-48%
Option-1	38.0%	18.0%	18.0%	8.0%	8.0%	8.0%	1.0%	1.0%	13.2%	6.9%	0.5%	7.4%	42%	-39%
Option-2	42.0%	15.0%	18.0%	7.0%	7.0%	9.0%	1.0%	1.0%	13.7%	7.0%	0.5%	7.5%	41%	-41%
Option-3	44.0%	15.0%	15.0%	8.0%	7.0%	9.0%	1.0%	1.0%	13.4%	7.0%	0.5%	7.5%	39%	-39%
Current 2026	32.0%	20.0%	18.0%	11.0%	10.0%	7.0%	1.0%	1.0%	12.6%	6.8%	0.5%	7.3%	46%	-38%

Note: A (simplifying) assumption when comparing the return and risk estimates, especially across institutions, is that asset class characteristics are uniform. An exception is that for options 1,2 and 3 the fixed income sub-categories have been modified as described in the following page

Asset Allocation: Current 2026 (status quo), option-1, option-2 and option-3

Asset class weights



For options -1, -2, & -3: in addition to asset allocation, the proposal is to modify allocation withing fixed income with the aim of enhancing risk adjusted returns; Fixed Income projected returns in these three options is ~5% as compared to 4.6% in status quo. This reallocation is an option in status quo case as well, however, we are defaulting to existing allocations in that scenario in recognition of the false precision of these exercises and the preference for existing arrangements in that case.

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	Current 2026	Option-1	Option-2	Option-3
Key Changes	Status Quo	Target higher risk-adjusted return by increasing public equities with offsetting reductions in fixed income, private equity, real estate and private income. Modestly grow absolute return to take advantage of APFC's low vol/correlation/beta strategy here		
Return	7.3%	7.4%	7.5%	7.5%
Risk (volatility)	12.6%	13.2%	13.7%	13.4%
Risk (Drawdown)	-38%	-39%	-41%	-39%
Illiquidity	46%	42%	41%	39%

- All return and risk numbers are estimates
- Execution of either options 1, 2 and 3 is expected to be over a period of 3 years



Appendices

Goldman Sachs Discussion on Bitcoin

March 2025: “Should Bitcoin Play a Role in Multi-Asset Portfolios?”

Goldman Sachs Asset Management

Key Takeaways:

1. Adding a Bitcoin Allocation Increased the Backtested Portfolio Value

“A hypothetical multi-asset portfolio with a 1% Bitcoin allocation returned 8.1% over the past decade, outperforming a traditional 60/40 portfolio by 0.8%.”

2. The Added Value is Paired with Higher Volatility

“Over the past decade, Bitcoin realized a volatility of around 68%. This means that alongside sharp, frequent, and sustained rallies, Bitcoin has also experienced sharp, frequent, and sustained drawdowns. Since July 2010, Bitcoin has experienced five drawdowns that exceeded 70%, with the most recent being between November 2021 and November 2022 when Bitcoin’s value declined by 77%.”

3. The Greatest Realized Gains Were Closer to Inception

“...a large portion of the outperformance occurred prior to 2021...For example, between July 2010 and December 2021, Bitcoin delivered a staggering 220% annualized return, with an annualized volatility of 140%”

4. The Past Rate of Return is Unlikely to Continue

Scenario 1: A Re-run of the Last 10-Year Sharpe Ratio - Highly Unlikely

“...Bitcoin will need to generate an annualized return of 47% to achieve another decade with a Sharpe ratio of 1.1...Therefore, to repeat historical performance, Bitcoin’s market capitalization would need to rise from less than 2% of the global money supply today to 47% by 2034.

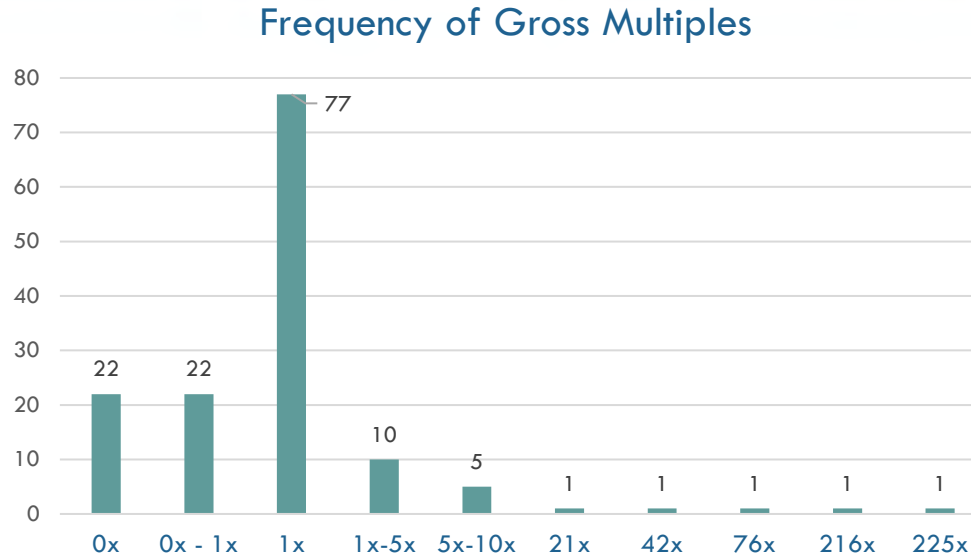
Scenario 2: Annualized Total Return of 10% - Plausible

“...[Bitcoin delivering an annualized total return of 10% over the next decade] would imply that Bitcoin’s market capitalization would be equivalent to around 2.5% of the global money supply in 10 years, which seems more plausible in our view.

5. A Bitcoin Allocation is Not Recommended for Most Institutional Investors

“In summary, while Bitcoin has delivered high returns over the past decade, these returns are difficult to predict and should not be extrapolated. Even if Bitcoin achieves decent annualized returns in the coming years, any potential upside for multi-asset portfolios must be weighted against the significant idiosyncratic risks associated with Bitcoin. While an improved regulatory framework, tighter integration into the global financial system, and broader adoption by both institutions and major central banks could prompt us to re-evaluate Bitcoin’s role in the strategic asset allocation of multi-asset portfolios in the future, our analysis suggests that a strategic allocation Bitcoin is not suitable for most institutional investors today and the bar for changing this view remains high.

Cryptocurrency Investments: Private Markets



Cryptocurrency Investments Undertaken as of March 31, 2025: 141

Value of Investments: \$175 million (~1% of portfolio)

Total Gross Multiple: 8.5x (\$30 mm invested, \$81 mm realized)

Investment return has been positive, largely driven by a handful of high performers

Cryptocurrency Investments: Public Markets

Holdings by Business Type (in thousands):

Crypto Exchanges

Coinbase - \$2,330

Bitcoin Miners:

MARA Holdings - \$89.6

Core Scientific - \$17.7

Riot Platforms - \$58.7

CleanSpark - \$2,184

Hut 8 Corp. - \$1,146

Bitdeer Technologies - \$134.9

Cipher Mining - \$4.8

TeraWulf - \$5.2

Bitfarms - \$61

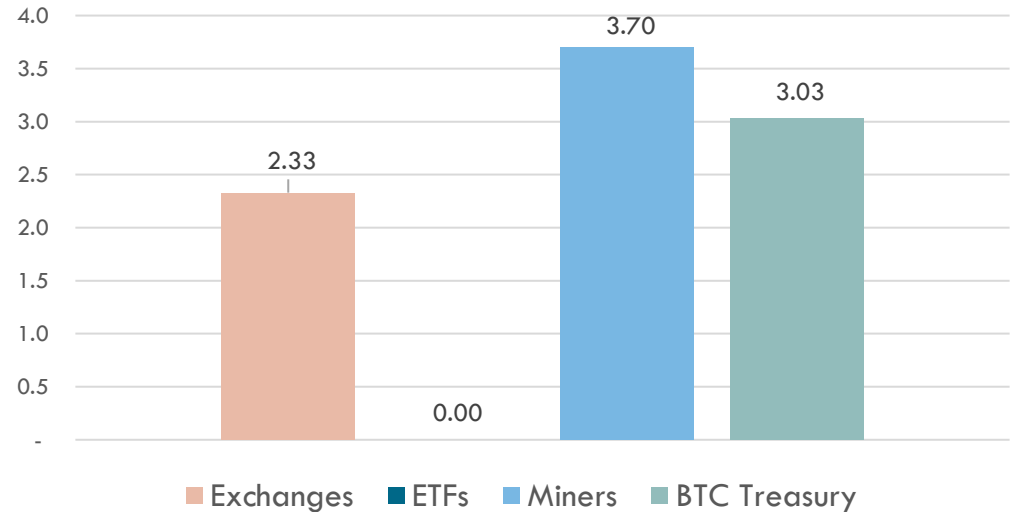
Bitcoin Treasury Model:

Strategy (MSTR) - \$3,032

Total Public Market Exposure

\$9.06 Million

Cryptocurrency Exposure by Business Type (in millions USD)



Cryptocurrency : Investment Risks

- How do we classify crypto? Is it an asset class (commodity, security) or is it a form of fiat currency?
- It has attributes of both:
 - For example, scarcity like commodities (say, gold), is traded on commodity markets – the Commodity Futures Trading Commission (CFTC) has classified Bitcoin and Ethereum as commodities, meaning they can be traded on commodity futures exchanges like CME.
 - It has fiat currency characteristics as well, like being a medium of exchange with a couple of countries adopting it as an alternative currency, it can be viewed as unit of account and store of value.
- The fuzziness in its classification may be one of the biggest risks – regulatory frameworks are still evolving.
- While there is uncertainty in terms of potential policy changes based on changes in administration, there is almost near certainty that governments will generally be uneasy about crypto taking over as money; governments like to have the ability to expand/contract the money supply as they see fit.
- If cryptos don't operate as fiat currencies, how is its intrinsic value discerned? The likelihood of new “crypto” being mined/developed is not low – how do we differentiate and pick “winners”.
- Unstable and unknown correlations to items such as inflation and equities make asset allocation modeling challenging. Very high volatility makes crypto a debatable addition based on asset allocation modeling.
- Reputational risk should this newly emergent investment area fizzle out.

The logo for APFC (Alaska Permanent Fund Corporation) is displayed in white serif font on a dark teal rectangular background. The background of the entire slide is a semi-transparent blue overlay of a financial trading interface, showing various data tables, charts, and navigation menus.

APFC

ALASKA PERMANENT
FUND CORPORATION

MULTI-ASSET SOLUTIONS

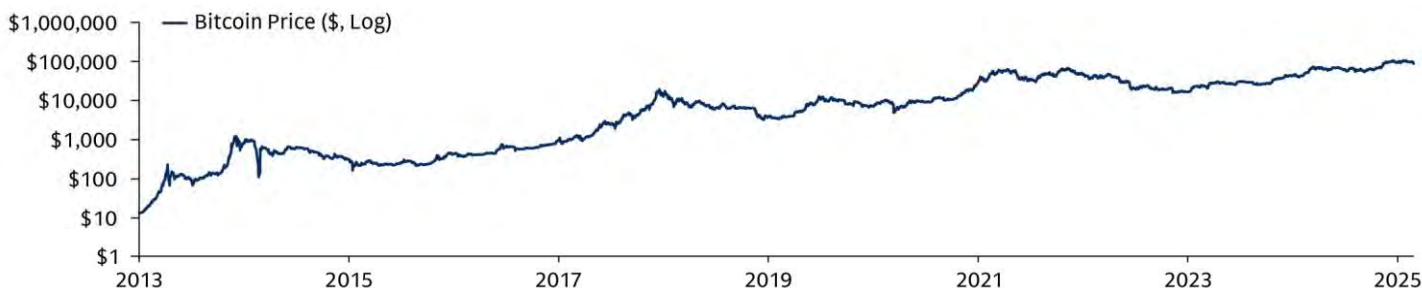
Should Bitcoin Play a Role in Multi-Asset Portfolios?

While Bitcoin has delivered high returns over the past decade, these returns are difficult to predict and should not be extrapolated. Our team discusses the necessary considerations for this investment.

Bitcoin’s Historical Performance

Bitcoin, created in 2009, is the world’s leading cryptocurrency, representing over 60% of the cryptocurrency market.¹ Over a decade ago, Forbes declared 2013 as the "Year of Bitcoin." That year, Bitcoin rallied from \$13.50 to \$805, a 60x increase, resulting in a surge in market capitalization from \$143 million to \$9 billion.² Since then, Bitcoin has experienced three rallies spanning 2015-2017, 2018-2021, and 2022-2024.³ In 2023, Bitcoin returned 153%, and in 2024, it returned 123%, raising its market capitalization from \$870 billion to \$1.83 trillion in 2024.⁴ We think strong performance was driven by increased investor adoption due to broadening market access (e.g., through the launch of spot Bitcoin ETFs on January 10, 2024), endorsements from US President Donald Trump, strong US household finances, and global demand due to geopolitical and fiscal concerns. However, year-to-date performance in 2025 has been slightly weak as relaxation of regulations have been somewhat slower than expected.

Bitcoin's Growth in Value from January 14, 2013, to January 14, 2025



Source: Bloomberg, Forbes, CoinMarketCap, Statista, Goldman Sachs Asset Management. As of February 25, 2025. Note: The y-axis is on a logarithmic scale, meaning each unit increase on the axis represents a tenfold increase in value. **Past performance does not predict future returns and does not guarantee future results, which may vary.**

¹ Source: CoinMarketCap As of February 25, 2025.

² Source: CoinMarketCap As of February 25, 2025.

³ These rallies include January 14, 2015- December 16, 2017, December 15, 2018-November 8, 2021 and November 21, 2022-December 17, 2024.

⁴ Source: Bloomberg, Forbes, CoinMarketCap, Statista, Goldman Sachs Asset Management, Datastream, Goldman Sachs Global Investment Research. As of February 25, 2025.

Any reference to a specific company or security does not constitute a recommendation to buy, sell, hold or directly invest in the company or its securities. Diversification does not protect an investor from market risk and does not ensure a profit. The portfolio risk management process includes an effort to monitor and manage risk, but does not imply low risk. No assurance can be given that the client’s investment objective may be achieved. **Past performance does not predict future returns and does not guarantee future results, which may vary.**

Considerations for Strategic Asset Allocation

Bitcoin's market cap crossing above \$2 trillion at the end of 2024 has naturally led investors to ask whether Bitcoin should play a part in multi-asset portfolios. Strategic asset allocation decisions require consideration of several factors, some of the most important factors in our view include expected returns, expected volatility, cross-asset correlations to determine diversification benefits, fundamental merits of the investment, liquidity needs, and regulatory risks.

Over the past decade, Bitcoin realized a volatility of around 68%.⁵ This means that alongside sharp, frequent, and sustained rallies, Bitcoin has also experienced sharp, frequent, and sustained drawdowns. Since July 2010, Bitcoin has experienced five drawdowns that exceeded 70%, with the most recent being between November 2021 and November 2022 when Bitcoin's value declined by 77%.⁶ This high level of volatility means that even a small allocation to Bitcoin in a traditional 60% equity, 40% bonds (60/40) portfolio could significantly alter the portfolio's risk and return profile relative to its benchmark.⁷

Portfolio Analysis: The Potential Impact of a 1% Allocation to Bitcoin

To quantify the potential impact of a small allocation to Bitcoin, our Multi-Asset Solutions team simulated the risk and return profile of a multi-asset portfolio that replaces 1% of its equity allocation with Bitcoin relative to a traditional 60/40 portfolio over the period spanning 2010 to 2024. Our analysis reveals the following observations:

1. A hypothetical multi-asset portfolio with a 1% Bitcoin allocation returned 8.1% over the past decade, outperforming a traditional 60/40 portfolio by 0.8%.

The Potential Risk-Return Impact of Adding a 1% Bitcoin Allocation to a Hypothetical Multi-Asset Portfolio

		Last 1-Year	Last 3-Year	Last 5-Year	Last 10-Year	Since July 2010
Return	60% Equity/ 40% Bond	14.5%	5.2%	7.6%	7.3%	8.1%
	1% Bitcoin / 59% Equity / 40% Bond	15.4%	5.5%	8.2%	8.1%	9.9%
Volatility	60% Equity/ 40% Bond	6.7%	9.3%	10.7%	8.8%	8.5%
	1% Bitcoin / 59% Equity / 40% Bond	6.8%	9.4%	10.8%	8.9%	8.5%
Sharpe Ratio	60% Equity/ 40% Bond	1.37	0.12	0.46	0.61	0.79
	1% Bitcoin / 59% Equity / 40% Bond	1.48	0.15	0.52	0.70	1.00

Source: Goldman Sachs Asset Management, Bloomberg, MSCI. As of December 2024. Our backtest analysis⁸ is based on the MSCI World Index (50% hedged, 50% unhedged) for equities and the Bloomberg Global Aggregate Index for Bonds. Data on Bitcoin is available since July 2010. Time period: July 2010 – December 2024. These results are based on simulated or hypothetical performance results that have certain inherent limitations. Unlike the results shown in an actual performance record, these results do not represent actual trading. Also, because these trades have not actually been executed, these results may have under- or over-compensated for the impact, if any, of certain market factors, such as lack of liquidity. Simulated or hypothetical trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. No representation is being made that any account will or is likely to achieve profits or losses similar to these being shown. In fact, there are frequently sharp differences between hypothetical performance results and the actual results subsequently achieved. For illustrative purposes only.

⁵ Source: Bloomberg and Goldman Sachs Asset Management Multi-Asset Solutions. As of January 15, 2025.

⁶ Source: Bloomberg and Goldman Sachs Asset Management Multi-Asset Solutions. As of January 15, 2025.

⁷ Source: Bloomberg and Goldman Sachs Asset Management Multi-Asset Solutions. As of January 15, 2025.

⁸ Note that the figures in the table rely on or are based on backtested performance, which is not actual performance and in no way should be construed as indicative of future results. Backtested performance results are created based on an analysis of past market data with the benefit of hindsight, do not reflect any Goldman Sachs Asset Management product and are being shown for informational purposes only. The economic and market forecasts presented herein have been generated by Goldman Sachs Asset Management for informational purposes as of the date of this publication. They are based on proprietary models and there can be no assurance that the forecasts will be achieved. Please see additional disclosures at the end of this publication.

Any reference to a specific company or security does not constitute a recommendation to buy, sell, hold or directly invest in the company or its securities. Diversification does not protect an investor from market risk and does not ensure a profit. The portfolio risk management process includes an effort to monitor and manage risk, but does not imply low risk. No assurance can be given that the client's investment objective may be achieved. **Past performance does not predict future returns and does not guarantee future results, which may vary.**

2. A large portion of the outperformance occurred prior to 2021, which featured outsized returns for Bitcoin. For example, between July 2010 and December 2021, Bitcoin delivered a staggering 220% annualized return, with an annualized volatility of 140%.⁹
3. Another benefit for the period prior to 2021 was low performance correlation with a traditional 60/40 portfolio and equities. Strong risk-adjusted returns along with a low correlation with a traditional 60/40 portfolio contributed to an improved Sharpe ratio for the multi-asset portfolio with a 1% Bitcoin allocation for that period.¹⁰

The Potential Return Boost from Adding Bitcoin into a Hypothetical Multi-Asset Portfolio Largely Pre-Dates 2021

Relative Performance of a 59% Equities, 1% Bitcoin, and 40% Bonds portfolio versus a 60% Equities and 40% Bonds portfolio



Source: Goldman Sachs Asset Management, Bloomberg, MSCI. As of December 2024. Our backtest analysis is based on the MSCI World Index (50% hedged, 50% unhedged) for equities and the Bloomberg Global Aggregate Index for Bonds. These results are based on simulated or hypothetical performance results that have certain inherent limitations. Unlike the results shown in an actual performance record, these results do not represent actual trading. Also, because these trades have not actually been executed, these results may have under- or over-compensated for the impact, if any, of certain market factors, such as lack of liquidity. Simulated or hypothetical trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. No representation is being made that any account will or is likely to achieve profits or losses similar to these being shown. In fact, there are frequently sharp differences between hypothetical performance results and the actual results subsequently achieved. **Past performance does not predict future returns and does not guarantee future results, which may vary.** For illustrative purposes only.

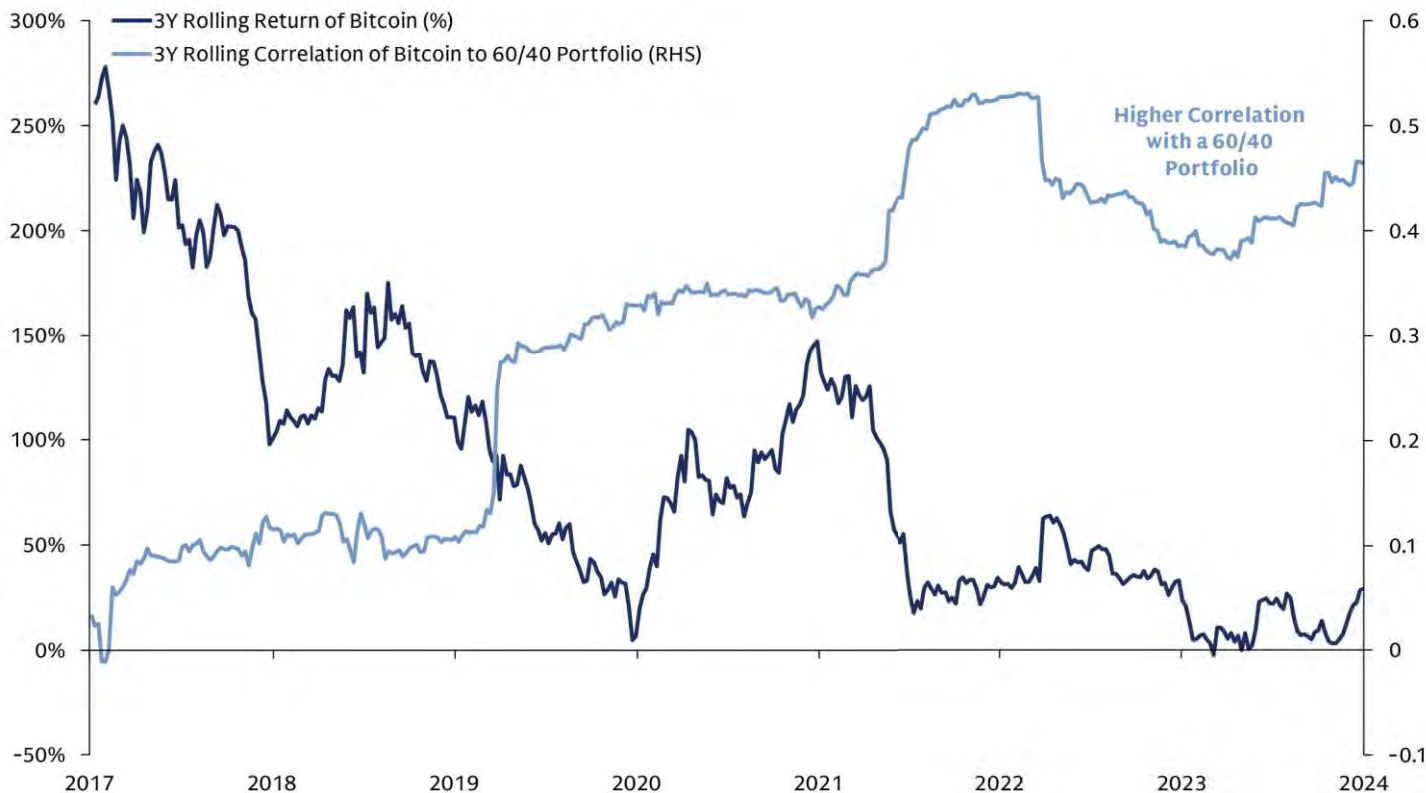
⁹ Source: Bloomberg and Goldman Sachs Asset Management Multi-Asset Solutions. As of January 15, 2025.

¹⁰ Source: Bloomberg and Goldman Sachs Asset Management Multi-Asset Solutions. As of January 15, 2025.

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4. Since 2021, Bitcoin's performance, while still high compared to other assets, has moderated alongside its volatility, while its correlations with a traditional 60/40 portfolio and equities have trended higher.¹¹ As a result, the incremental portfolio value of an allocation to Bitcoin has declined.

Since 2021, Bitcoin's Return Boost Has Diminished and Its Correlation to a Multi-Asset Portfolio Has Increased



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5. Overall, over the last 10 years, adding 1% Bitcoin to a multi-asset portfolio yielded an improved risk-adjusted return relative to a 60/40 allocation, with the Sharpe ratio of the Bitcoin portfolio standing at 0.7 compared to 0.6 for the traditional portfolio.

¹¹ Source: Bloomberg and Goldman Sachs Asset Management Multi-Asset Solutions. As of January 15, 2025.

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What About the Next Decade?

Past performance is not a reliable indicator of future results, particularly in an asset class like Bitcoin, which has experienced few market cycles and has unpredictable future returns. We analyzed the impact of Bitcoin on a 60/40 portfolio in two potential scenarios and what, in our view, is the likelihood of each.

Scenario 1: A Re-run of the Last 10-Year Sharpe Ratio

Likelihood: Highly unlikely

Between 2014 and 2024, Bitcoin delivered an annualized total return of 77% with a volatility of 68%, resulting in a Sharpe ratio of 1.1. If we assume Bitcoin's volatility moderates to 40% from its last decade average of 68%, and the risk-free rate is 3%, Bitcoin will need to generate an annualized return of 47% to achieve another decade with a Sharpe ratio of 1.1. This would imply a significant increase in Bitcoin's market capitalization to approximately \$90 trillion.

For perspective, global money supply (M2) is currently around \$105 trillion.¹² If M2 grows at its last decade's annual trend of 6%, it will reach \$190 trillion by 2034. Therefore, to repeat historical performance, Bitcoin's market capitalization would need to rise from less than 2% of the global money supply today to 47% by 2034. For added context, gold's market capitalization is equivalent to 18% of the money supply. Even if Bitcoin grows in popularity among certain investors, we think it would be challenging for its market capitalization to expand to these levels both on an absolute basis and relative to the global money supply.

Scenario 2: Annualized Total Return of 10%

Likelihood: Plausible

Based on recent correlation, volatility, and our long-term expected risk and return of a 60/40 portfolio,¹³ Bitcoin would need to deliver an annualized total return of 10% over the next decade for a 1% allocation in a multi-asset portfolio to be justified. This would imply that Bitcoin's market capitalization would be equivalent to around 2.5% of the global money supply in 10 years, which seems more plausible in our view.

Long-Term Asset Allocation Entails Added Considerations

As outlined, Bitcoin has delivered high returns and while volatility has moderated over the years, it still exhibits significant volatility compared to other assets.¹⁴ Our simulated analysis indicates a small allocation to Bitcoin could offer marginal value to a hypothetical traditional 60/40 portfolio over the next decade if it achieves an annualized return of more than 10%. However, long-term investors must consider the complex idiosyncratic risks associated with Bitcoin that extend beyond financial metrics such as return, volatility, and correlation. These risks and considerations include, but are not limited to:

Regulatory Risks: The current regulatory oversight for cryptocurrencies is relatively limited compared to traditional asset classes, with fragmentation and varying degree of advancement across jurisdictions. While the limited regulatory oversight has facilitated market growth, it has also led to numerous cases of investor losses due to fraud and other criminal activities, which has heightened policymakers concerns around the misuse of cryptocurrencies for illicit activity. As the market expands with more investment products introduced akin

¹² Source: Bloomberg. As of January 24, 2025.

¹³ Source: Goldman Sachs Asset Management Multi-Asset Solutions. As of January 24, 2025. Our long-term assumptions for a 60/40 portfolio imply a 5.8% annualized return with a volatility of 9.5%. We assume a 0.35 correlation between Bitcoin and a traditional 60/40 portfolio, and a 55% volatility for Bitcoin. Alpha and tracking error assumptions reflect Multi-Asset Solutions' estimates for above-average active managers and are based on a historical study of the net-of-fee results of active management. Strategic long-term assumptions are subject to high levels of uncertainty regarding future economic and market factors that may affect future performance. They are hypothetical indications of a broad range of possible returns. All numbers reflect Multi-Asset Solutions' strategic assumptions as of September 30, 2024. Please see additional disclosures.

¹⁴ Source: Bloomberg and Goldman Sachs Asset Management Multi-Asset Solutions. As of January 15, 2025.

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to those familiar to a wider set of traditional investors (e.g. ETFs), and institutional adoption continues at a larger scale, there is an increasing likelihood of clearer and more constructive regulatory frameworks emerging.

Liquidity Risks: Bitcoin trading liquidity has improved notably in recent years. However, if buy-and-hold investors increase allocations, liquidity could decrease. Additionally, the total supply of Bitcoin is capped at 21 million coins, meaning that if certain investors capture a dominant market share, trading volume and liquidity might suffer.

Lack of Clarity Regarding the Economic Role of Bitcoin: Bitcoin and other cryptocurrencies can theoretically be used as a medium of exchange for goods and services. However, data from Statista shows that cryptocurrencies' share of transactions in global e-commerce payments remained subdued at 0.2% in 2022 and is only expected to rise modestly to 0.5% by 2026. Additionally, Bitcoin has experienced downturns of more than 75% twice in the last ten years, which does not align well with the characteristics of a financial instrument used to store value.

Technological Risk: Due to the technologically complex nature of Bitcoin, it is prone to heightened risk of cyber threats. Whether it is quantum computing invalidating the cryptography currently used in Bitcoin, bugs within wallet bridges, cyber-attacks to exchanges, investors should consider all cyber risks and controls when evaluating the use of distributed ledger technology.

These risks, combined with high uncertainty over expected returns, make it highly challenging for most long term/multi-asset investors to justify a strategic allocation to Bitcoin today, in our view.

What Could Change Our View?

In the US, the regulatory framework around Bitcoin has improved over the last decade, with the expectation that further clarity will emerge following President Trump issuing an Executive Order to establish a Digital Assets Regulatory Framework. The Securities and Exchange Commission (SEC) under the Biden Administration recognized most cryptocurrencies as securities, with the exception of Bitcoin, though the classification of these assets under the Trump Administration will be a focus of both the regulatory agencies and market structure legislation. Recently, the SEC rescinded its Staff Accounting Bulletin (SAB) No. 121, which required an entity to recognize a custodied crypto asset on balance sheet.¹⁵ Additionally, the Internal Revenue Service (IRS) treats cryptocurrencies as property and applies taxation, and the Commodities and Futures Trading Commission (CFTC) has increased cryptocurrency regulation around trading. Nonetheless, the misuse of cryptocurrencies for illicit financing and money laundering remains a concern that needs to be addressed. An improved regulatory framework could also lead to wider adoption of cryptocurrencies for economic transactions.

Another potential upside for cryptocurrencies could be adoption by major central banks as part of their reserve policy. Currently, official foreign exchange reserves and gold holdings are around \$15 trillion⁵. A small allocation of reserve assets to Bitcoin may or may not be prudent policy, but it could instill confidence among private investors, leading to further inflows into cryptocurrencies in general and Bitcoin in particular. Finally, we would need to see tighter integration and significant adoption of Bitcoin in the real economy. Without greater integration, understanding the real value of Bitcoin will continue to remain challenging and volatility likely elevated.

Current Unsuitability, High Bar

In summary, while Bitcoin has delivered high returns over the past decade, these returns are difficult to predict and should not be extrapolated. Even if Bitcoin achieves decent annualized returns in the coming years, any potential upside for multi-asset portfolios must be weighed against the significant idiosyncratic risks associated with Bitcoin. While an improved regulatory framework, tighter integration into the global financial system, and broader adoption by both institutions and major central banks could prompt us to re-evaluate Bitcoin's role in the strategic asset allocation of multi-asset portfolios in the future, our analysis suggests that a strategic allocation to Bitcoin is not suitable for most institutional investors today and the bar for changing this view remains high.

¹⁵ Source: CFTC. As of February 18, 2025.

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NOTES:**Our Strategic Long-Term Assumptions for Equities, Bonds, and 60/40 Portfolio**

	Expected Return	Volatility
Equity	6.8%	15%
Bonds	4%	4%
60% Equities & 40% Bonds Portfolio	5.8%	9.5%

Multi-Asset Solutions Assumptions for Bitcoin

	Volatility	Correlation with 60/40 Portfolio
Bitcoin	55%	0.35

Our long-term horizon is ten years. Expected returns are estimates of hypothetical average returns of economic asset classes derived from statistical models. There can be no assurance that these returns can be achieved. Actual returns are likely to vary. Please see additional disclosures. Alpha and tracking error assumptions reflect Multi-Asset Solutions' estimates for above-average active managers and are based on a historical study of the net-of-fee results of active management. Strategic long-term assumptions are subject to high levels of uncertainty regarding future economic and market factors that may affect future performance. They are hypothetical indications of a broad range of possible returns. All numbers reflect Multi-Asset Solutions' strategic assumptions as of September 30, 2024. Please see additional disclosures. The returns presented herein are gross and do not reflect the deduction of investment advisory fees, which will reduce returns.

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GLOSSARY

The Sharpe ratio is a measure used to evaluate the risk-adjusted return of an investment. It is calculated by subtracting the risk-free rate from the investment's return and then dividing this result by the investment's standard deviation.

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The Ivy League Keeps Failing This Basic Investing Test

Elite universities are again stuck with illiquid assets just when they badly need cash



By [Jason Zweig](#) [Follow](#)

Aug. 22, 2025 10:00 am ET



ILLUSTRATION: ALEX NABAUM

Why does the smart money keep flunking Investing 101?

During the 2008-09 global financial crisis, many of the world's biggest investors found themselves in dire need of cash because they had sunk too much money into assets that couldn't be publicly traded.

Now they've made the same mistake all over again.

Over the past couple of decades, no group of investors has piled into what are called alternative assets more eagerly than the endowment funds of major colleges and universities. In their rush to emulate the [stellar success of Yale University's endowment](#) head David Swensen, who [died in 2021](#), educational institutions pulled

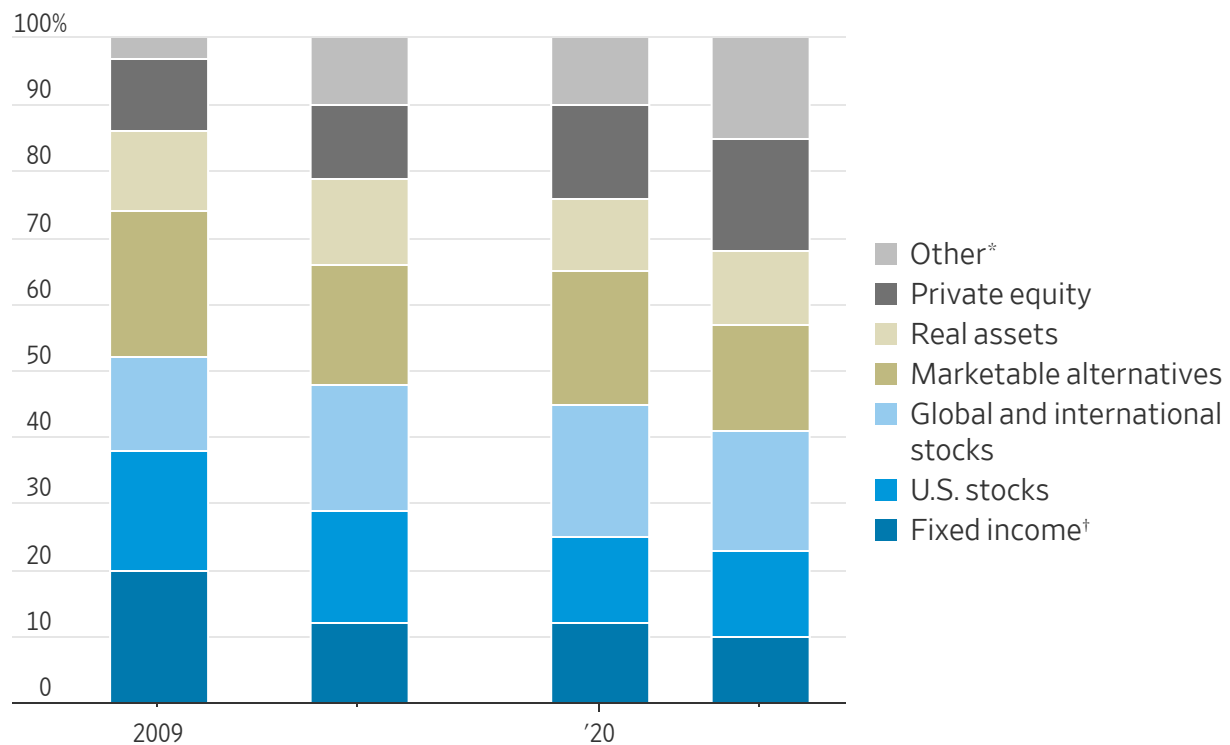
tens of billions of dollars out of stocks and bonds and poured it into hedge funds, private equity, venture capital and other investments that don't trade publicly.

The result looks nothing like the portfolio of 60% stocks and 40% bonds that has long been a guidepost for many investors. On average, in fiscal 2024, educational endowments with more than \$5 billion in assets held only 2% in cash, 6% in bonds, 8% in U.S. stocks and 16% in international stocks, according to the National Association of College and University Business Officers. That left two-thirds of their total holdings in private funds and other non-traditional assets that can't readily be turned into cash.

Now you understand the life-or-death panic that [seized such elite institutions](#) as [Brown](#), [Columbia](#), [Cornell](#), [Harvard](#), [Northwestern](#) and other universities when the Trump administration threatened to cut off their federal funding. Even though their endowments hold billions of dollars, much of that immense wealth might as well be stored on the planet [Proxima Centauri b](#), about 4.2 light years away.

These universities [are slashing budgets](#), freezing their hiring and scrambling to raise money any way they can.

Average asset allocation of U.S. college and university endowments



*Includes venture capital †Includes cash Notes: Weighted by size of endowments. Marketable alternatives include hedge funds. Fixed income includes U.S. and international bonds, short-term debt, high yield and distressed debt, and private credit. Real assets include private real estate, energy, infrastructure. For 2024, "other" includes sustainable investments and secondary private-equity funds.

Source: NACUBO-Commonfund Study of Endowments

Brown, whose endowment assets exceed \$7.2 billion, had to borrow \$300 million in April and an additional \$500 million in July “to protect the university against worst-case financial scenarios,” it said this month. Northwestern, with its \$14.3 billion endowment, borrowed \$500 million earlier this year; Harvard, with its titanic \$53.2 billion endowment, raised \$750 million in April.

To be fair, much of the money at endowments is restricted, meaning it can be spent only for prespecified purposes. But that’s all the more reason why putting so much of it in nontraded assets is a bad idea.

The saddest part of this sad saga is that it’s déjà vu all over again. “A recent survey of college and university presidents found that 50% have, or will soon, put in a hiring freeze,” [I wrote in 2009](#). “Nearly 7% admitted selling assets into a bear market; another 9% have been forced to borrow money at punitive rates.”

The lesson is so simple even Ivy Leaguers should be able to understand it.

In good times, investors give no thought to liquidity, because cash is plentiful and the need for it isn’t pressing.

In hard times, liquidity becomes the only thing investors can think about, because cash is scarce and the need for it is desperate.

And when you have a sudden, urgent need for cash, good luck selling your alternative assets.

Yale—which started the whole craze for alternative assets decades ago—has reportedly been seeking to sell several billion dollars in private-equity funds for more than a year. The Wall Street Journal has reported that the funds are expected to sell for [less than their stated value](#).

This spring, after months of effort, Harvard sold \$1 billion in private-equity funds at about a 7% discount to their stated value, the Journal has also reported.

Note that this retrenchment is recurring amid one of the biggest bull markets in history. Just imagine how hard it would be for these institutions to raise cash if public markets were crashing, as in 2008-09, or if interest rates were skyrocketing, as in 2022.

Back in 2007, Laurence Siegel, then research director for the Ford Foundation’s endowment, analyzed what would happen if institutional investors that had gorged on alternative assets suddenly needed to raise cash.

An endowment that had sold most of its bonds to fund the purchase of private assets, as many already had done by then, would have to sell its publicly traded stocks if it had to raise cash, [he wrote](#).

In a bear market for stocks, Siegel warned, an institution with 50% of its assets in alternatives could run out of cash in as little as two years.

Nobody listened.

Within months, many institutional investors suffered their worst losses since the 1970s—and often turned those paper losses into real ones, selling their most liquid assets into a market panic.

What the university “smart money” should have learned is that liquidity is priceless and must never be taken for granted.

And that’s why investors, no matter how large or small, should never put most of their assets into illiquid securities. No one can possibly predict when public markets will crash or public officials will take unprecedented action, turning private assets into albatrosses.

Of all the ailments investors suffer, amnesia is the most deadly. What happened less than 20 years ago feels as if it took place in ancient Mesopotamia. As Siegel told me this week, instead of learning the obvious lessons of 2008-09, university endowments “just doubled down.”

But, I protested, aren’t they supposed to be the smart money?

“They’re not as smart as they look,” Siegel said, “because they’re human, and humans are quite closely related by evolution to monkeys.”

Don’t be a monkey. Don’t put a penny into alternatives that you can’t afford to have locked up when you suddenly need cash.

Write to Jason Zweig at intelligentinvestor@wsj.com

Appeared in the August 23, 2025, print edition as ‘Colleges Fail This Basic Test’.

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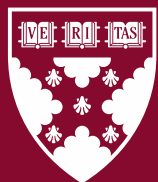
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Working Paper 24-066

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Business
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Does the Case for Private Equity Still Hold?

January 10, 2024

Nori Gerardo Lietz

Philipp Chvanov

Executive Summary

Private Equity (“PE”) has received an extraordinary 10-fold increase in capital flows since the Great Financial Crisis (“GFC”) by investors seeking higher nominal returns relative to those they could obtain in the public capital markets. This paper questions the fundamental assumptions underlying why investors should select PE as an asset class to be included in their composite portfolios.

The basic historical premises for including PE were:

- Superior returns relative to public markets or public market equivalents (“PMEs”)
- Superior returns that would compensate the investor for the associated lack of liquidity
- Low correlations relative to the public markets and lower volatility
- Generating appropriate excess performance relative to the public markets net of fees
- Superior returns were due to:
 - Identifying appropriate target companies at “bargain” prices
 - Creating operational improvements within portfolio companies
 - Generating multiple expansion and increased value due to operational improvements
 - Restructuring the portfolio companies’ balance sheets primarily by adding significant leverage
 - Exiting the investment at the appropriate inflection point

The current data raises questions about these predicate assumptions. All the actions PE firms claim add value to portfolio companies should result in superior returns relative to PMEs. The data indicate the average or median PE funds do not actually outperform their PMEs since the GFC. While the top quartile PE funds have outperformed the PMEs since the GFC, the data raises three particularly disturbing conclusions.

First, General Partner (“GP”) fund performance persistence has eroded materially. Past performance is not necessarily indicative of future performance. While the top quartile GPs outperform relative to PMEs over time, they are not necessarily **the same** GPs over time. This conclusion relates to the aggregate data. There may be some individual firms who consistently perform exceptionally well or exceptionally poorly. Indeed, the most predictive information relates to those GPs who are more consistently in the bottom quartile.

The second disturbing conclusion is that if there is little persistence among the top quartile firms, then the selection of any GP is potentially a “random walk”. If that is the case, then investors should expect to achieve at best only average or median PE results. There are two studies indicating that the results of successful GPs may be as much attributable to “luck” than skill, mirroring the conclusions of the venerable Eugene Fama regarding active equity managers.

The third conclusion is there has been a somewhat shocking concentration of capital flows among a small number of firms. Is this a good attribute for the industry? Given the general lack of performance persistence among PE GPs, one should ask whether (i) capital is flowing to the best firms, (ii) capital is flowing based upon the “brand” of the PE firm, or (iii) capital flows are based on investors “looking in the rear view mirror” or desiring one stop shopping?

In sum, the PE data suggest that (i) traditional methods of evaluating a given GP partnership are questionable; (ii) evaluating performance persistence post 2008 may be subject to doubt at the time the investment is made; (iii) selecting a given GP in the hopes of obtaining top quartile results may be a random walk; (iv) investment performance may possibly be as much attributable to luck rather than skill; (v) the recent median PE investments do not outperform PME and one is just as likely to select a median GP as a top quartile GP; and (vi) PE performance may actually underperform PME on a risk adjusted basis given the amount of leverage they employ generating equivalent results on a nominal basis.

These conclusions suggest that the PE industry may be ripe for disruption, much as the mutual fund industry after the introduction of ETFs and index funds. There are disruptive forces at play by investors attempting to reduce their costs, and thereby enhance their returns, by adopting alternative investment methods. Some are internalizing their investment efforts. Others may look for alternative investment products that will mirror PE results at a lower cost. Similar disruptive forces have been evidenced in other financial service industries which may affect where the very best talent wants to go.

Given the size of the private markets, investors are likely to continue to desire exposure to these segments of the capital markets. The fundamental question is not *if* they want exposure to private investments but *how* they will achieve it. In short, the PE industry may have to structurally change in order to continue to attract capital or the rationale for investing in PE may have to be revised.

Does the Case for Private Equity Still Hold?

Unfortunately, the last billionaire in private equity (“PE”) has already been made. This statement will understandably disappoint the scores of Harvard Business School (“HBS”), other business school students, and others clamoring to enter the industry. The PE and VC courses are among the most popular at HBS and students take them hoping to gain access to the industry. Securing a position within a PE firm is no easy task. Steve Schwarzman, CEO of Blackstone, has publicly claimed that getting into Blackstone is more competitive than getting into Harvard as they accept 0.6% of applicants¹.

It has been well documented that the PE industry has dramatically changed over the last decade. Among these changes discussed below are:

- A ten-fold increase in the assets under management (“AUM”)
- A dramatic increase in the size of the mega funds
- A concentration of capital among the largest 20 PE General Partners (“GPs”) firms, especially among the top five firms
- An acceleration of fund-raising cycles
- Reduced returns relative to the public markets over the past 10 years
- An economic environment in which interest rates fell or remained quite low for a sustained period; for purposes of this paper since the Great Financial Crisis (“GFC”)

These industry changes and the public capital markets have had an impact on PE performance. The more recent results in the past decade call into question the basic premises as to why investors include PE within a mixed asset class portfolio.

This paper lays out the case for why the PE industry is ripe for disruption, and why this disruption is already beginning to occur. Major changes will likely occur for PE over the next several years. Some may perceive this paper as a PE indictment. That is not the case. The point is not to suggest that PE is inherently “bad”. Rather, it is a call for investors to reexamine how and with whom they invest.

This is not a traditional academic paper. Academics tend to look at historical data and draw conclusions to be derived from the data explaining what happened in a historical context. The author lives on the hyphen between academia and the business world and wants to translate academic conclusions for practitioners. The purpose of this paper is not to replicate the excellent work other academics have already done but instead to extrapolate from their conclusions as to future industry ramifications. It should be emphasized these academics have not produced “pointy headed” exercises of angels dancing on the head of a pin. Their studies and conclusions are critically important.

The focus will be on PE, not venture capital (“VC”) and real estate private equity as the conclusions from data for those asset classes are different. Real estate will be separately addressed in another paper.

Section 1 summarizes the historical case made for private equity. Section 2 analyzes whether the underlying assumptions associated with the case for private equity still hold true. Section 3 reviews pertinent academic research concerning PE performance. Section 4 reviews the trends in the mutual fund industry and whether its evolution portends potential changes that may occur in the PE industry. Section 5 addresses some of the incipient ideas for alternative investment approaches that may disrupt the PE industry.

Section 1: The State of the State of Private Equity

A. The Original Case for Private Equity

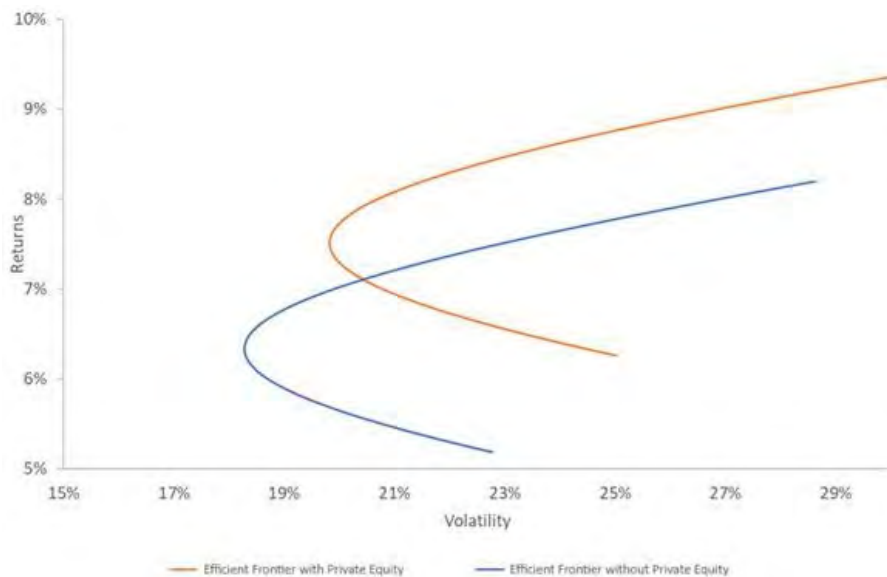
The early case for investing in private equity was made to institutional investors, most notably the Oregon and Washington state pension funds who were among the earliest PE investors. They invested in KKR's early funds in the 1980's. The State of Oregon was the author's initial client in 1988 and witnessed the early presentations of the now behemoth PE firms including KKR, Blackstone, TPG, among others. At the time, the firms' original founders made the "pitches". One of the most effective presentations was by George Roberts, co-founder of KKR, to the Oregon Investment Council. In the mid- 1990's he said to the Council, "You gave us \$1 Billion. We've given you back \$1 Billion. We conservatively value the remainder of your investment with us at \$3 Billion. Any questions?" There were none.

There was a consistent story line associated with these presentations. These new firms would differentiate themselves from active public equity managers in that they would be directly involved in setting their portfolio companies strategies and exercise actual control over the companies by having a majority of the portfolio company's board seats. In short, their approach would add value to the company's operations and in the long run would generate outsized returns especially relative to public market alternatives.

At the time, pension funds turned to their advisors and asked for a more quantitative rationale to support the inclusion of a new asset class in their composite investment portfolios. The analysis led to the several conclusions concerning this new asset class based upon a series of assumptions about how the most inefficient PE asset class would perform, including: (i) low correlations with the traditional asset classes of public equities and public fixed income; (ii) higher potential returns than the traditional asset classes; and (iii) lower reported volatility and therefore a reduction of composite portfolio risk due to the lower reported volatility. The aggregation of these factors would help move the composite portfolio higher on the efficient frontier by increasing returns at a seemingly lower level of risk. Expected returns became codified as the "2 and 20" rule, otherwise known as a 2x MOIC (Multiple of Invested Capital) and a 20% IRR (Internal Rate of Return). The phrase 2 and 20 also refers to the fees the GPs received in terms of management fees and carried interest percentages.

Pension fund advisors created a series of efficient frontiers illustrating the impact of including PE as an asset class in a mixed asset portfolio. Not surprisingly composite portfolios became more "efficient" suggesting higher returns at a lower level of risk by including these private investments. The expected return and correlation assumptions for each asset class, which are the inputs into the "optimizer", are reflected in **Exhibit 1. Figure 1** illustrates how the inclusion of PE in a mixed asset portfolio improves risk adjusted performance over time.

Figure 1 Model Portfolios With and Without PE in a Mixed Asset Portfolio



Source: Authors.

See **Exhibit 1** for the underlying assumptions in constructing the Efficient Frontier in **Figure 1**.

The historic reported volatility, which has been used as a proxy for risk, is much lower in PE than in the public markets. The optimizer models used by institutions to determine their asset allocations gravitate to lower volatility asset classes with commensurate or higher returns, and uncorrelated results based on the reported returns used as inputs. An unconstrained asset allocation optimizer would allocate significant percentages to PE, real estate, and VC as they exhibited (i) lower reported correlations to traditional asset classes; (ii) lower reported volatility than the traditional asset classes; and (iii) historic returns in the 1990's and early 2000's that were higher in PE and VC.

However, sophisticated investors recognize this result is simply a function of the data inputs into the optimizer model and the private markets' volatility is understated. Consequently, the allocations to these asset classes are typically constrained. Does a rational, knowledgeable investor genuinely believe a private investment in a private company leveraged 65% is less risky than a comparable public company leveraged 30%?

It should be noted that the historical lower correlations and lower volatilities were largely attributable to the accounting methodology used in the private markets to report returns. Historically, most investments were held at cost until an "event" occurred, such as a follow-on investment or a sale, and were then marked to market at the transaction price. In short, they were held at the lower of cost or market until the event actually occurred. Investments were not marked to market each day as they are in the public markets or even on a quarterly or annual basis.

This reporting convention changed over time prompted in part by the 2008 Great Financial Crisis (“GFC”) in which mortgages and real estate contributed to the heavy incurred losses. In 2009 the Financial Accounting Standards Board (“FASB”) adopted guidelines of IFRS 13 and FASB ASC 820, which suggested that even private assets should be marked to market. These guidelines require PE firms to report using fair value accounting and mark their investments to market on a quarterly basis using internal valuations. PE firms continue to have audited annual financials in which their reported marked to market values are reviewed by the external accounting firm. The Securities and Exchange Commission has also recently proposed new regulations that would require audited marked to market values for their portfolios.

In marking to market PE firms frequently look to public market multiples of comparable companies as a proxy for the multiple to be used to value the private investment. Query whether this change in accounting methodology has caused the return convergence between the public and private markets as is reflected in **Figure 10** below. This reporting methodology change increases the volatility of PE investments and using public market comparables should increase the correlations with public market returns. Public market prices reflect investor psychology in a way that the private markets do not. More research needs to be done on this topic.

How would PE firms achieve these promised outsized returns relative to the public markets? The firms professed they would: (i) exercise their investment acumen by selecting appropriate target companies; (ii) negotiate the terms of the investment; (iii) restructure the target company’s balance sheet typically by adding significant amounts of leverage; (iv) monitor the investment; (v) add value via operational improvements, by modifying the corporate strategy and/or by implementing cost cutting measures; and (vi) then exit the investment at an appropriate inflection point. The exits were often by taking the company public or a sale to another strategic investor. The early PE results supported the investment theses. GPs also maintained that their track records exhibited persistence and were predictive of future results.

In the 1980s and 1990s, most PE firms had a sole product line, which was their flagship fund. This paper focuses on the flagship PE funds that have attracted the bulk of investment capital. Further, given the amount of capital, the length of their track record and the academic research, the focus and conclusions are primarily on US private equity firms.

During this early time period PE was a cottage industry largely unknown outside the pension fund institutional market. Early PE funds were considered large if they exceeded \$500 million. The backwater nature of the industry changed when Barbarians at the Gate (KKR’s acquisition of RJR Nabisco) was published in 1989.²

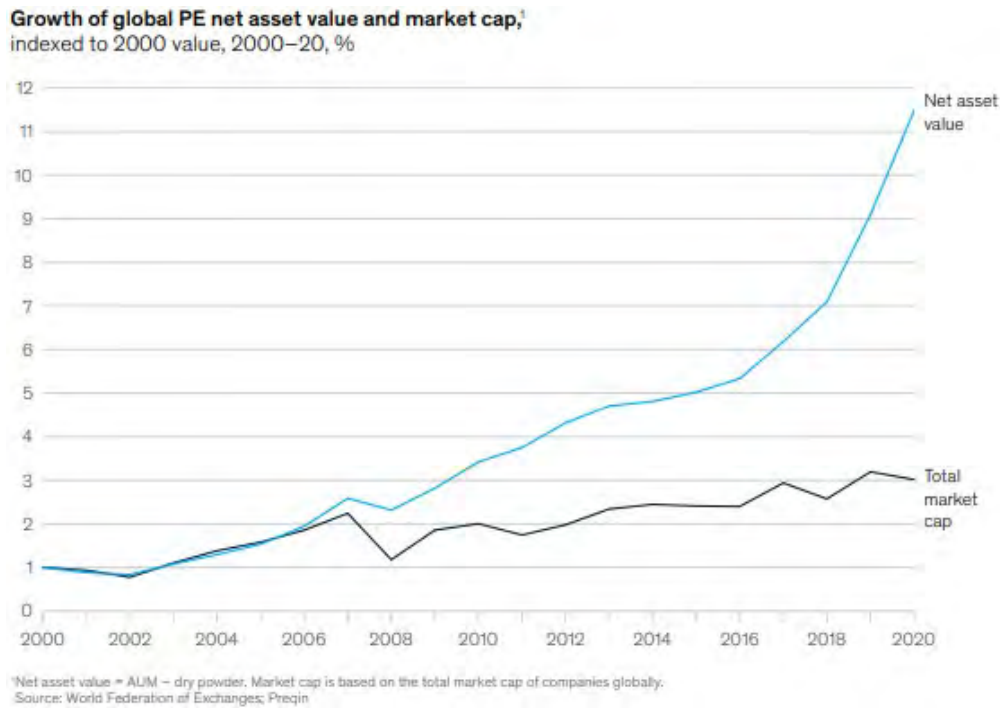
B. Current State of the Industry

Clearly, the industry has evolved dramatically over the decades. The PE industry has transformed the capital markets. The funds raised by these firms are now multibillion dollar portfolios. The largest firms have multi product lines including real estate and credit and have become global investment institutions. The aggregate size of their investment portfolios dwarfs the public markets as depicted in **Figure 2**. Most of the change has occurred in a comparatively short time period since the GFC. The industry today bears little resemblance to the PE industry pre-2010. Many of the largest PE fund managers are now public companies.³

The impact on the capital markets has been dramatic. The number of PE backed companies was 1,698 in 2000 and grew to 8,892 in 2020.⁴ Further, the number of public companies declined from approximately 7,500 listed companies in 1998 to under 4,400 in 2018.⁵ The value of these private companies grew almost exponentially when compared to an estimate of the size of the global public capital markets. Many of these private companies do not want to be bothered with the expense or “hassles” of being public companies.

Perhaps the better rationale for PE inclusion in a portfolio is to have access to these companies. But what is the most effective way one should invest to gain access to these companies is a legitimate question. Is the current PE model the best and most effective one to follow? It should be noted that the largest firms are for the most part no longer investing in the smaller, mid-market private firms via their flagship funds.

Figure 2 Growth of a Dollar of Global PE Net Asset Value and Market Cap, Indexed to 2000 Value, 2000-20, %



Source: “Private Markets Rally to New Heights,” p. 23, Exhibit 15, McKinsey & Company, March 2022, <https://www.mckinsey.com/~media/mckinsey/industries/private%20equity%20and%20principal%20investors/our%20insights/mckinseys%20private%20markets%20annual%20review/2022/mckinseys-private-markets-annual-review-private-markets-rally-to-new-heights-vf.pdfm>, accessed November 2023.

How did this exponential growth happen? The early PE funds generally delivered on the expectations created for these investments. Success beget success. In the last 13 years the industry has dramatically increased in terms of the proliferation of the number of both funds and firms as well as their fundraising activity. The number of funds focusing on US buyout strategies from

1996 to 2007 was 2,275, and by 2021 the number funds increased to 3,317.⁶ The number of firms (fund managers) increased by 34% in the respective time periods, from 1,143 to 2,527.⁷ Cumulative funds raised (starting from 1996) nearly trebled, from \$1.3 trillion by the end of 2007 to \$3.2 trillion by the end of 2021.⁸ See **Figure 3**.

Figure 3 Growth of US Buyouts Industry at the End of the Respective Period

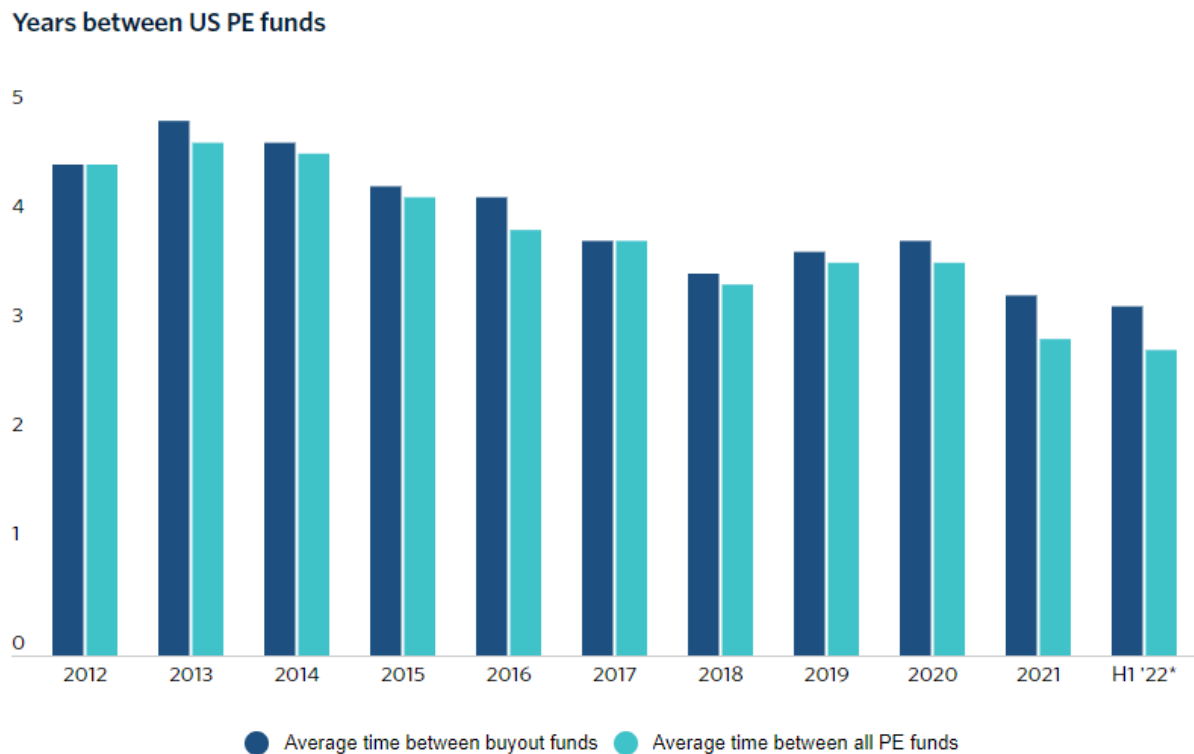
	1996-2007	2008-2021	Change
Number of fund managers	1,143	1,527	33.6%
Number of funds	2,275	3,317	45.8%
Funds raised	\$1,322,203	\$3,209,252	142.7%

Source: Created by authors using data from Refinitiv, accessed October 6, 2022.

The early firms' success in attracting capital was compounded by the needs of many institutional underfunded pension funds seeking higher nominal returns to reduce their unfunded liabilities. The promise of higher nominal returns was, and remains, an extremely attractive rationale for committing additional capital, especially with the decline in nominal returns in the equity and fixed income portfolios over the past several years. Many of the institutions have gradually increased their allocations to PE from the 8-10% range. Now the largest PE investor, the Canadian Pension Fund, has approximately 33% of their composite portfolio with more than \$130 Billion allocated to PE.⁹ Many others exceed 20%.

The largest PE firms now seek retail investors who similarly desire higher nominal returns.¹⁰ They are either developing an internal distribution method with the assistance of external retail distributors, such as Blackstone or Partners Group, or simply buying smaller wealth management firms, such as KKR, Lightyear Capital, General Atlantic, or Oak Hill Capital.¹¹ In the latter instance the PE firm will sell their products through the acquired wealth management firms. The time frame between capital raises for their flagship funds has declined as shown in **Figure 4**. In short, the largest PE firms have recently been "Hoovering" up money and have cut the time-period between fundraising by approximately one-half. The industry is seeking an additional \$1 Trillion of new funding.¹² Why is this happening? We address the rationale and its potential impact in Section 4.

Figure 4 Years Between US PE Funds



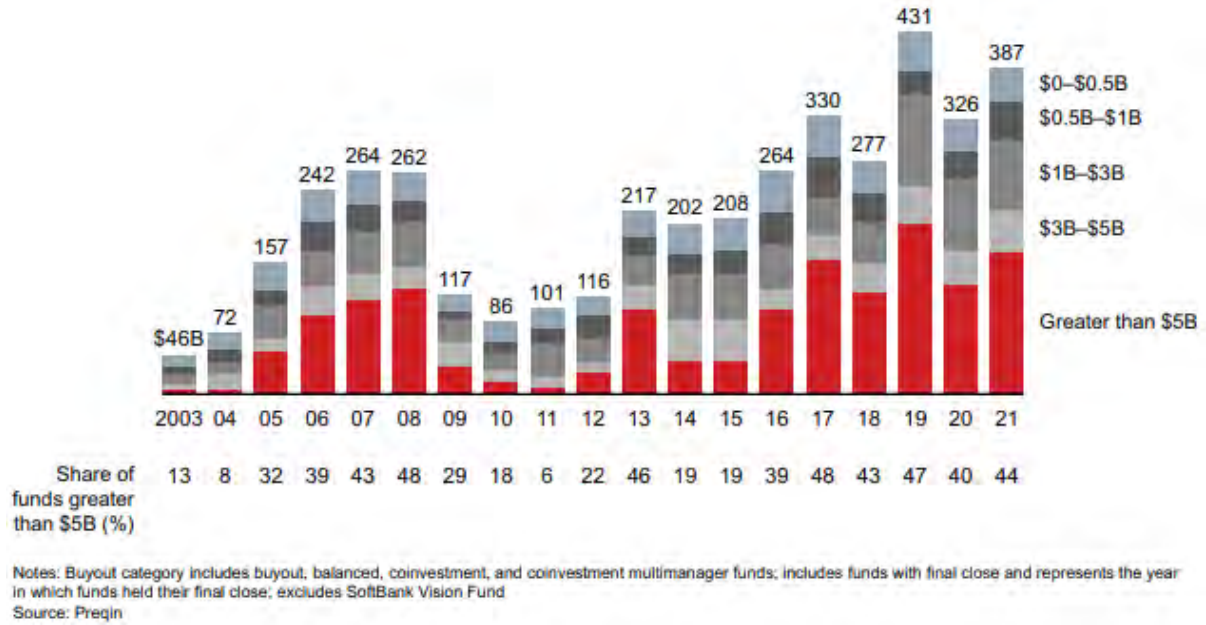
Source: US PE Breakdown
*As of June 30, 2022

Source: “Charting US PE’s performance in Q2,” Pitchbook, 18 July 2022, <https://pitchbook.com/news/articles/pe-breakdown-trends-charts#:~:text=The%20average%20time%20between%20PE,on%20average%20for%20buyout%20funds>, accessed November 2023.

Additionally, PE firms’ evolution spawned an entire ecosystem of other firms established to serve the PE firms and their investors. Investment banks received fees from transactions on both the buy and sell side when companies were acquired and later sold. Attorneys specialized in transactions, fundraising and other private market issues. Valuation firms specializing in underwriting private companies were created or new departments formed in management consulting and accounting firms to assist in transaction due diligence. An entire consulting or “gatekeeping” industry came into being to assist investors in underwriting the general partners and assessing their track records. In addition, LPs now have PE specialists whose sole responsibility is to select and monitor their PE portfolios. All these parties have a considerable vested interest in maintaining the status quo of a multibillion-dollar industry.

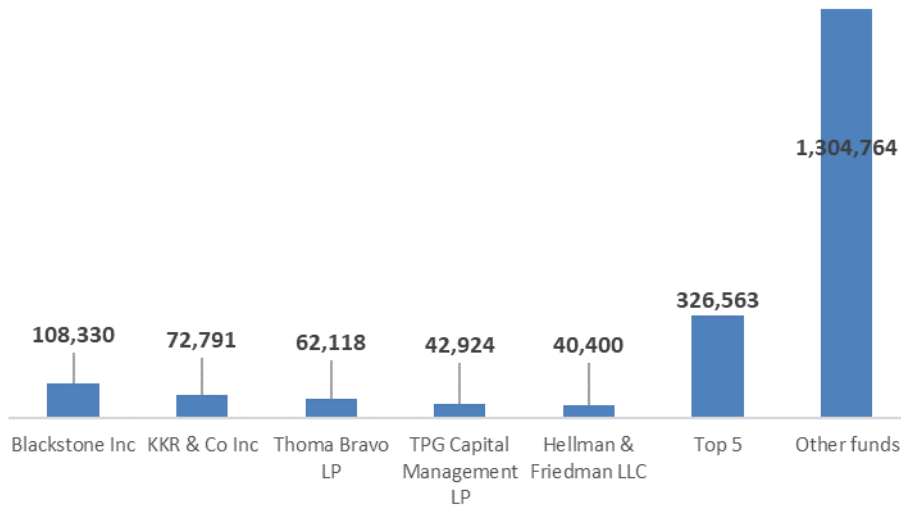
The industry has been transformed in multiple ways since 2000 but particularly post 2008. The assets under management have exploded ten-fold since 2003 as shown in **Figure 5** below. Other key trends show the concentration of capital among the largest firms. Funds over \$5 billion have received between 43%-48% of all the capital raised in the last five years as shown in **Figure 5** below. Indeed, the top five firms account for **25% of all the capital raised** between June 2017 and June 2022 as shown in **Figure 6**.

Figure 5 Global Buyout Capital Raised, by Fund Size (\$B)



Source: “Global Private Equity Report 2022,” p. 22, Figure 24, Bain & Company, 2022, https://www.bain.com/globalassets/noindex/2022/bain_report_global-private-equity-report-2022.pdf , accessed November 2023.

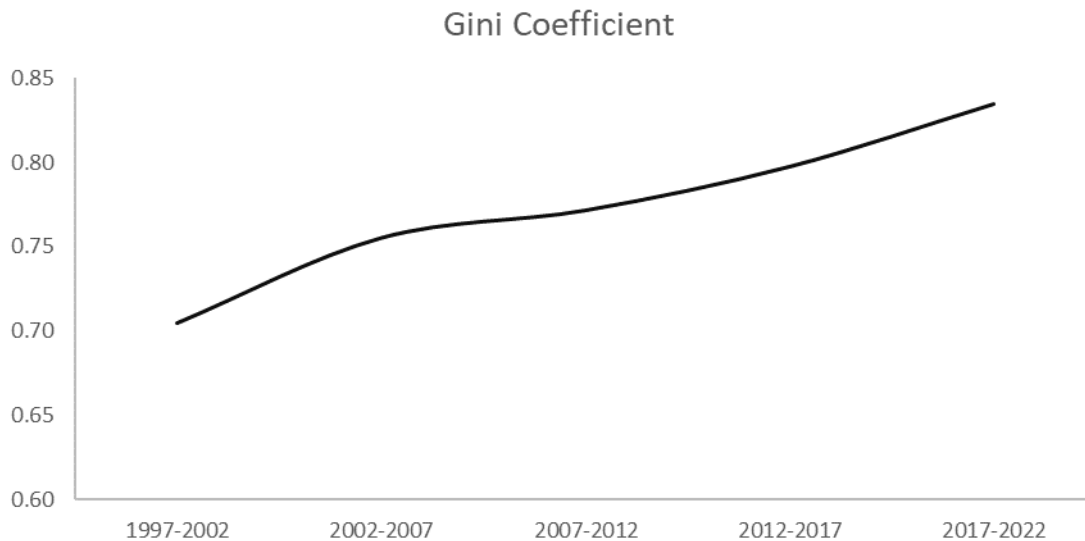
Figure 6 Concentration of PE Capital, \$mm Funds Raised (Global Buyouts, June 2017 – June 2022)



Source: Created by authors using data from Refinitiv, accessed June 2022.

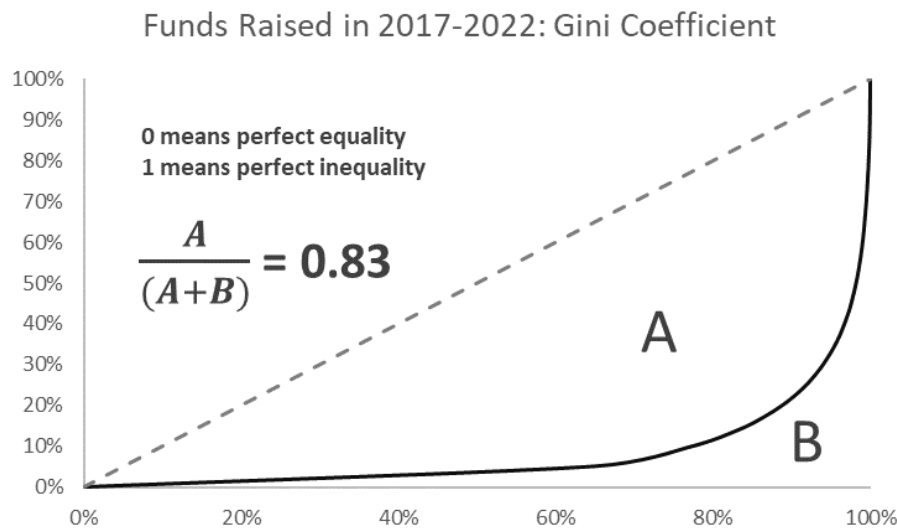
Concentration of the industry can be gauged by standard market measures such as the Herfindahl-Hirschman Index popular with antitrust regulators and the Gini coefficient, which is typically used to measure the level of inequality (see **Exhibit 4** for methodology disclosure). **Figures 7 and 8** confirm the thesis that the buyout industry has become more concentrated and unequal with a smaller number of firms capturing the largest amount of total funds raised.

Figure 7 Gini Coefficient (Global PE, All Strategies)



Source: Created by authors using data from Refinitiv and Preqin Pro.

Figure 8 Gini Coefficient for Funds Raised During 2017-2021

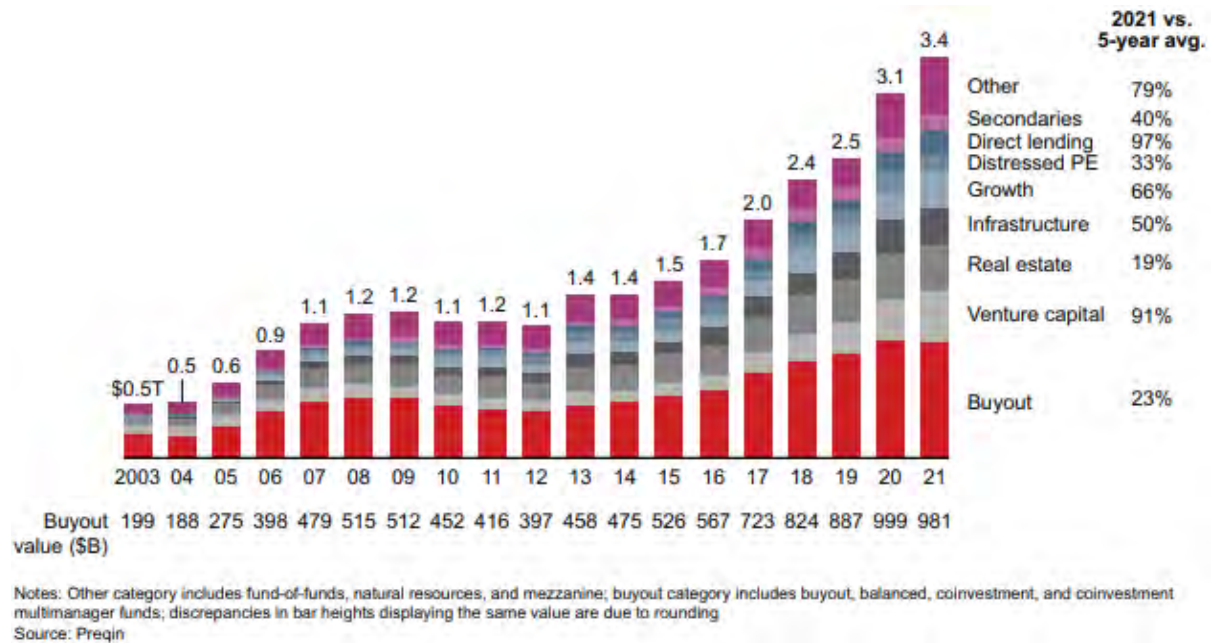


Source: Created by authors using data from Refinitiv and Preqin Pro.

Is the concentration of capital allocations beneficial to investors and the industry? The answer is yes only if the top firms consistently outperform in comparison to one another and to PMEs.

Similarly, the amount of capital to be invested or “dry powder” has grown substantially. It has been well documented that there is considerable uninvested capital in all private sectors, estimated to be over \$3 Trillion sitting on the sidelines waiting to be invested. This is a potentially concerning phenomenon based on academic research as discussed below. The largest percentage of dry powder is in PE.

Figure 9 Global Private Capital by Dry Powder, by Fund Type (\$T)



Source: “Global Private Equity Report 2022,” p. 9, Figure 8, Bain & Company, 2022, https://www.bain.com/globalassets/noindex/2022/bain_report_global-private-equity-report-2022.pdf, accessed November 2023.

Section 2: Does the Case for Private Equity Still Hold True? Are the Fundamental Assumptions Still Valid?

Allocations to PE firms were predicated on the key assumptions referenced above. Do they still hold true? Many of the academic analyses utilize data dating back to the early days of the industry. The performance data in the early years are very different from those of the last decade. Given the structural changes in the industry since the GFC in terms of (i) the growth of the industry; (ii) the returns; and (iii) the change of accounting practices, one can question whether the early years data distort the conclusions one should derive based on the data since the GFC. PE is now a very different industry and the industry data post 2008 lead to different conclusions. This paper focuses on the industry metrics post 2008.

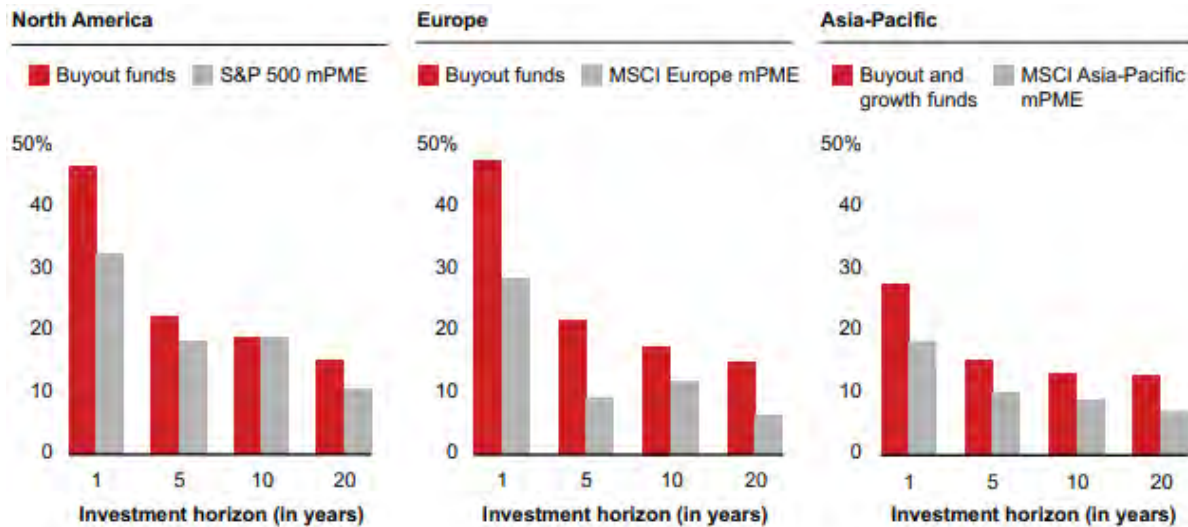
The first key assumption was that PE should generate superior results relative to public market alternatives. Part of the rationale for this assumption is the premise that long term, private

investments should provide some liquidity premium relative to public market alternatives. PE performance comparisons to the public markets have changed dramatically in the recent decade. This is likely partially attributable to the substantial industry changes noted above but more research on this topic should be done to determine whether this is accurate.

A. Nominal Return Outperformance Relative to Public Markets

Figure 10 illustrates that over the last decade the pooled IRRs of PE funds investing in North America have not outperformed a US customized benchmark created by Cambridge Associates, a leading PE consulting firm. This does not mean that in an individual year the PE firms will not outperform. This is the aggregated performance over time. The benchmark is comprised of PME's to those typically acquired by PE firms. There does appear to be sizeable outperformance in Europe and Asia, but not in the US over the past 10 years. The amount of capital raised to be invested in the European and Asian markets has been dwarfed by the amount allocated to the US as shown in **Figure 11**.¹³ While Figure 11 does not depict where the capital was actually invested, it is reasonable to assume that the preponderance of the capital was invested in North America relative to Europe and Asia Pacific. These capital flows may have had an impact on performance in the US market in the past decade relative to non-US markets in the past 10 years. The academic research concerning capital flows discussed in the next section supports this conclusion.

Figure 10 End-to-End Pooled Net IRR (as of Q3 2021) for North America, Europe, and Asia-Pacific at the end of the Trailing One Year, Five Year, Ten Year, and Twenty Year Periods at 12/31/2021



Notes: Data for US and Asia-Pacific calculated in US dollars; data for Europe calculated in euros; Europe includes developed economies only; Cambridge Associates Modified Public Market Equivalent (mPME) replicates private investment performance under public market conditions
Source: Cambridge Associates

Source: “Global Private Equity Report 2022,” p. 25, Figure 26, Bain & Company, 2022, https://www.bain.com/globalassets/noindex/2022/bain_report_global-private-equity-report-2022.pdf, accessed November 2023.

It is unclear whether these numbers are dollar weighted. If not, the results are **materially** distorted by including the superior results within the 20 year time period within the later 10 year time period. The funds in the early days of PE (from 2000 through 2010) had vastly lower aggregate capital commitments than those funds raised in the past 10 years. The early funds performed materially better than those in the subsequent 10 year time period. Including the results of both sets of funds in the 20 year time period makes the 20 year results artificially high if not dollar weighted. Thus, the conclusions one might draw about PE's performance relative to PMEs may be wrong.

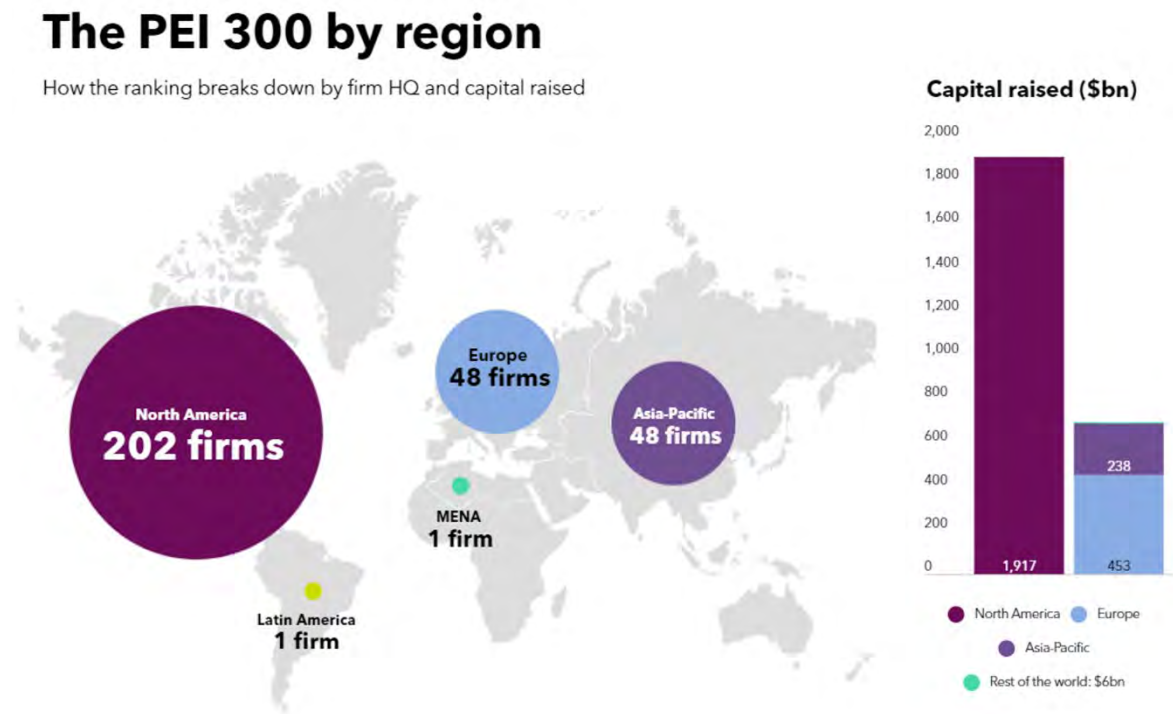
If the 20 year time series were dollar weighted, the past 10 year dollar weighted PE results would likely be reduced, as they include the performance results of the much smaller funds for the preceding 10 years. It is not possible to estimate how many funds or how long the 20 year results are included in the shorter time period before they rolled out of the sample pool.

However, even if the results were dollar weighted, the conclusions would be the same.

During the last 10 years PE on average did not outperform the public markets in aggregate. Given the industry changes within the last decade, the 10-year comparison is the more relevant statistic than the 20 year time frame.

A few additional comments are warranted about **Figure 10**. The charts reflect pooled IRRs and not multiples on invested capital or "MOICs", which other data collectors present. IRRs can be manipulated in the early years and comparisons between one year and five year returns of private to public company performance are likely misleading. IRR comparisons in the first two to three years of a PE fund are often artificially distorted due to the use of Subscription Lines in the early years of a PE fund, which can inflate IRRs in a fund's early years.¹⁴ The practice of using Subscription Lines to augment performance began approximately 15 years ago. The perhaps overstated one and five year results are included within and may distort the 10 year results.

Figure 11 The PEI 300 by Region



Source: “The 2022 PEI 300 in eight charts,” p. 5, Private Equity International, 22 June 2022, <https://www.privateequityinternational.com/download-this-years-pei-300-in-eight-charts/>, accessed November 2023.

Given the industry changes within the last decade, the 10-year comparison is the more relevant statistic than the 20 year time frame. The 20-year comparison shows the industry did, in fact, outperform the PMEs over the past 20 years. This is notwithstanding the potential dilution of the past 10 years, as the results are included within the 20 year statistic. This chart suggests the PE industry did significantly better during the period of 1999 to 2009 relative to the public markets, if one extracted out the past 10 years at June 30, 2021 for those investments made in the United States.

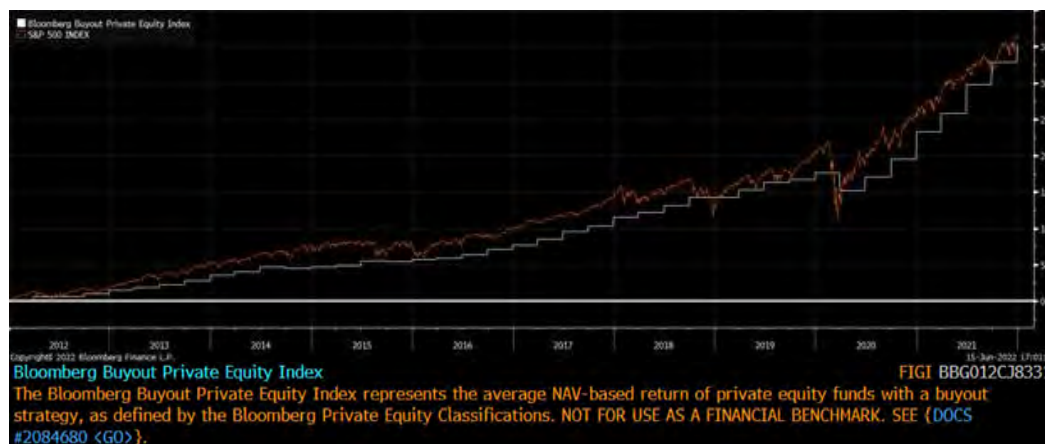
Why are these observations important? Seventy five percent of PE capital raised has been by US based firms. While not all the capital raised has been invested in the US, the preponderance has been, as **Figure 11** above illustrates. The industry capital raised has increased 10-fold since 2003 as depicted in **Figure 5** above. **Figure 10** indicates that over the past decade the preponderance of the capital raised and invested in the US did not, on average and net of fees, outperform a comparable public market benchmark.

The resulting disappointing average performance versus PMEs may be attributable to the amount of capital invested in the US and the ensuing competition this created. If the US market has become more competitive, and possibly more efficient, this market context does not augur well for the sizeable amount of uninvested capital that may be targeting US based companies today. Academics have provided data that supports this concern.

Academic research by Steve Kaplan (one of the most respected academics specializing in PE) and his colleagues similarly found that the average PE performance in North America did not outperform the S&P 500 and other PME indices, net of fees, in the 1980's and 1990's contradicting the results depicted in **Figure 10**. Their research in this seminal piece, discussed in more detail below, analyzed the performance of 746 largely liquidated funds from 1980 to 1997. They found that: *“Over the entire sample period (1980 to 1997), average [PE] fund returns net of fees are roughly equivalent to those of the S & P.”*¹⁵

In subsequent updates to Kaplan's research in 2010, they noted that funds formed **before** 2005 did on average outperform the public market as measured by both the S&P and the Russell indices. However, **post 2005** until the time of their research the average PE funds did not outperform. They were equivalent.¹⁶ These conclusions are consistent with **Figure 10** above. The average PE funds only outperformed on a gross of fees basis in a similar study conducted in roughly the same time period (Philippou).¹⁷ This paper found underperformance when compared to a smaller cap value orientated (the types of companies PE firms then bought) PMEs on a net of fee basis. Others drew similar conclusions using different data sources.¹⁸ The chart below, **Figure 12**, independently corroborates this conclusion.

Figure 12 S&P 500 vs Bloomberg Private Equity Index



Source: Bloomberg, accessed June 15th, 2022.

In **Figure 12**, the white line represents the performance of the Bloomberg Private Equity Index from 2012 through June 2022. The underperformance is evident.

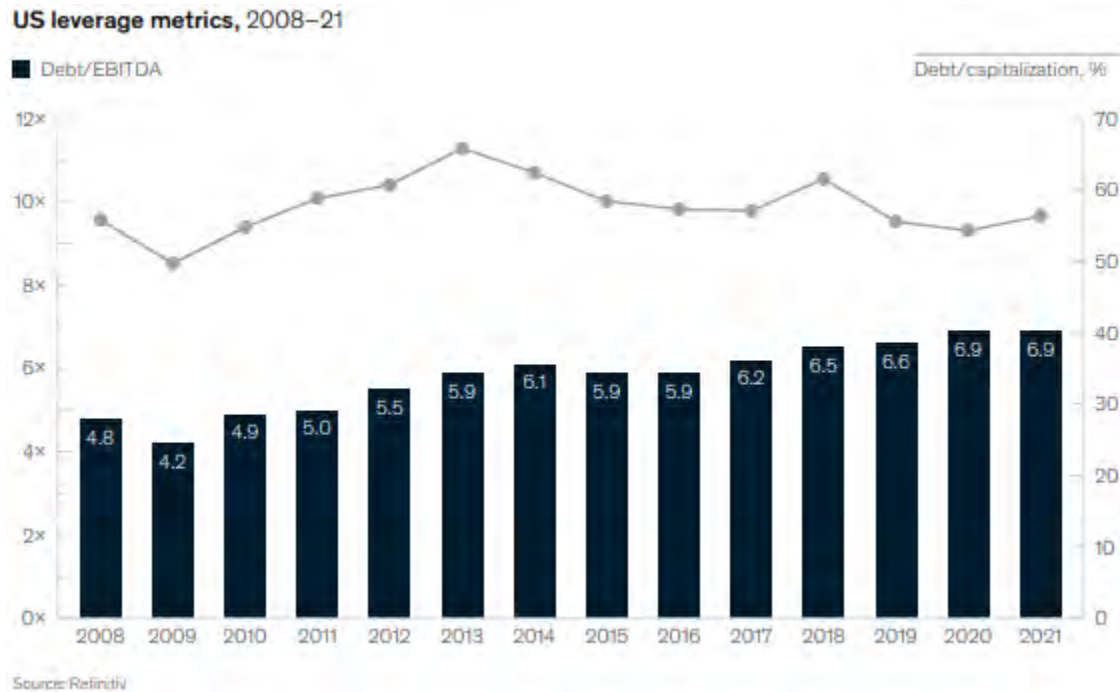
In short, data from multiple sources, examining PE performance post 2005, call into question the premise that the average PE fund will outperform a PME benchmark on a nominal and net of fees basis, much less on a risk adjusted basis due to the leverage of PE portfolio companies. **It is plausible to argue that PE has underperformed on a risk adjusted basis relative to PMEs given the amount of leverage in their portfolios, if PE only delivers equivalent results on a nominal basis.**

The leverage comparisons are addressed next and then we examine whether there are different conclusions to be drawn from the top quartile, as opposed to the average or median performance of the funds.

B. Leverage Impacts

Given the material drawdown in the public markets through 2022 and given the higher leverage ratios of PE funds (See **Figures 13** and **14** below), the probability is that average PE funds may, on average, materially underperform the PME's on a nominal basis in the near term. The PE leverage ratio as measured by debt to EBITDA was 7x as compared to a 2x ratio for the Russell 3000. While the leverage ratio of public companies increased dramatically from 2008 to the present, based on falling interest rates, it is nowhere near the ratio of their PE counterparts.

Figure 13 US Buyout Leverage Remained at Nearly Seven Times in 2021

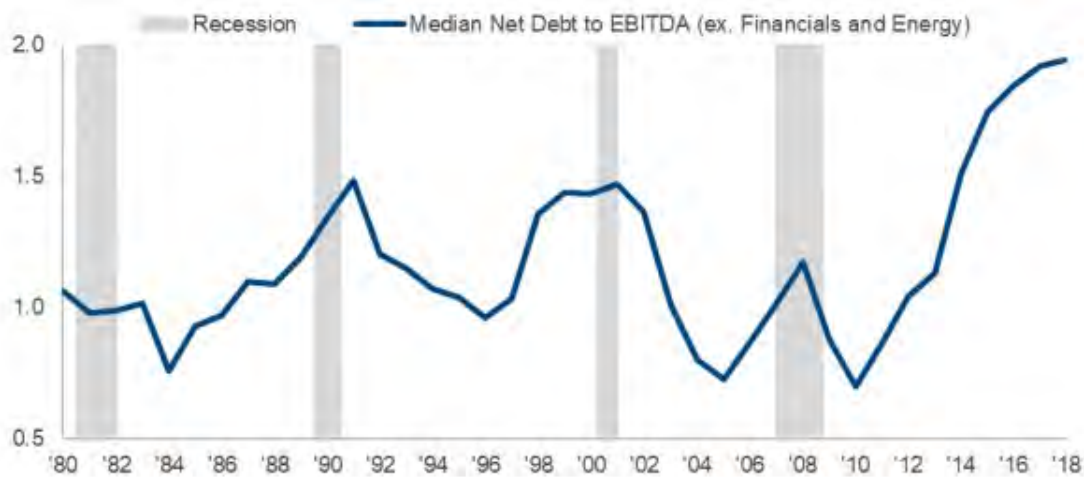


Source: “Private Markets Rally to New Heights,” p. 29, Exhibit 21, McKinsey & Company, March 2022,

<https://www.mckinsey.com/~/media/mckinsey/industries/private%20equity%20and%20principal%20investors/our%20insights/mckinseys%20private%20markets%20annual%20review/2022/mckinseys-private-markets-annual-review-private-markets-rally-to-new-heights-vf.pdfm>, accessed November 2023.

Note: Russell 2000 Debt/EBITDA leverage YoY.

Figure 14 Net Leverage of Russell 3000 Companies (Ratio of Net Debt to EBITDA)



Source: FPA Risk is Where You're Not Looking, January 2, 2019, p. 10, <https://fpa.com/docs/default-source/funds/fpa-crescent-fund/literature/risk-is-where-you're-not-looking.pdf?sfvrsn=8>, Accessed May 30, 2022.

The difference in the leverage ratios between PE and PME and the equivalent performance of average PE funds over the past decade relative to these PMEs raises the question of whether PE firms are adding value on a risk adjusted basis. Even if they outperform, are they adding value or simply generating leveraged beta?

This is an important question, especially given the historical context since the GFC. Since the GFC the market economic environment was particularly salutary for PE given that interest rates either fell or remained quite low during this time period. In other words, investment performance may have been generated simply by “being there” with floating rate debt as opposed to some of the historically touted value enhancements PE GPs suggest they generate.

The likelihood that this historical pattern will continue prospectively seems highly unlikely given the Federal Reserve's actions in the past 18 months embarking on a continued pattern of raising rates to tame inflation. Indeed, some such as Howard Marks believe we are entering a “Sea Change” in the overall economy in which higher interest rates may be the norm.¹⁹ In the face of rising rates, PE GPs will have to find other strategies to generate superior returns relative to PMEs.

Marks also highlighted that, “Relatively few investors today are old enough to remember a time when interest rates behaved differently. **Everyone who has come into the business since 1980 – in other words, the vast majority of today's investors – has, with relatively few exceptions, only seen interest rates that were either declining or ultra-low (or both).**” (emphasis in the original).²⁰ This points to the fact that the experience levels of current GPs in this market environment may be subject to question. They will no longer be able to necessarily rely on falling rates as one of the tools in their toolkit to generate returns.

However, some investors may still be attracted to the asset class notwithstanding the fact that the returns might be equivalent or slightly lower than the PMEs because the PE reported volatility is lower. Equivalent returns suggest PE results are superior on a risk adjusted basis

based upon the reported data because their Sharpe Ratios would be lower. Unfortunately, the analysis of whether this is an accurate conclusion requires further research particularly given the higher leverage levels at the transaction level in PE as shown in **Figures 13** and **14**. It would be helpful to extract out the impact of the excess leverage at the portfolio company level and then compare performance to comparable PME. This data has not been made readily available.

Academics have attempted to back out the impact of leverage, but these studies had to make certain key assumptions due to the lack of transparency at the portfolio company level so the leverage impacts, and thus their conclusions, are subject to question. For example, in one study the author attempted to increase the leverage of the PME benchmark to make it more comparable to leverage ratios of PE portfolio companies.²¹ However, interest rates fluctuate over time and many GPs use floating rate debt, GPs pay down debt over time, or do dividend recapitalizations, so these comparisons are at best only approximate. It would be reasonable to conclude that in a falling interest rate environment and concurrent rising PME market, that the positive impact of leverage would be significant. However, the contra would be true in a rising interest rate environment and falling PME capital market context, which we experienced in 2021 through 2023.

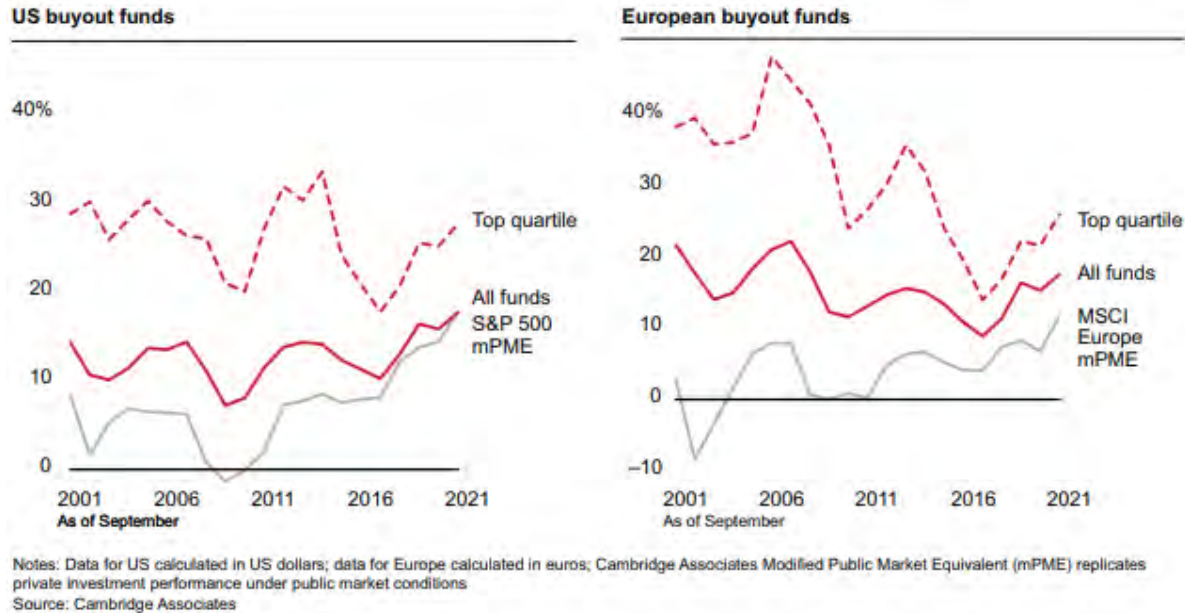
C. Average Versus Top Quartile PE Results

The fundamental question becomes whether there is a material difference between the performance of average performance versus top quartile performance of PE funds. The case for investing in the average PE funds is tenuous at best. If the top quartile firms do not consistently outperform PMEs, then the case for PE becomes largely obliterated. However, top quartile firms do appear to outperform the S&P PMEs and the MSCI PMEs (Cambridge Associates) in the US and Europe over the past 20 years at the end of 2021.

Figure 15 below illustrates the performance of the top and the aggregate average of PE quartiles against the public PME Index in the US and in Europe. One needs to focus on the more recent time period as the early time period from 2001 through 2008 with superior performance, as referenced above, distorts the results. Meaning, if we could separate out the performance of funds formed post 2008 the results might differ as the earlier better performing funds may have dropped out of the pool over the 20 year time period. The industry size exploded post 2008 and during this time period the practice of using fair value accounting was adopted as mentioned above. However, no matter what the underlying methodology was in creating this chart, it illustrates that the more recent **average** pooled PE net IRR results in the past five years have converged with the PMEs in the US.²²

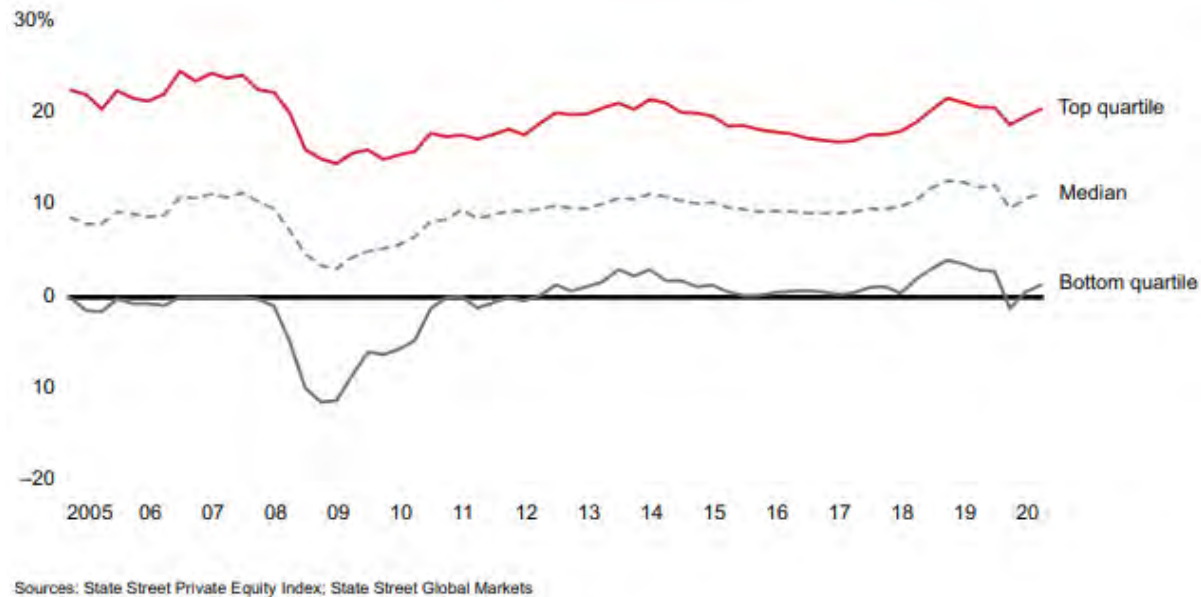
However, the **top quartile** funds did outperform the S&P 500 over the 20 year time period in the Cambridge Associates analysis. Similar results were reported by State Street over the time period of 2005 through 2021.²³ See **Figures 15** and **16**. Note again that these results may not be dollar weighted so the inclusion of the smaller, better performing funds early in the 20 year time period may distort the results. However, the early funds would likely have burned off after 2015 making the convergence of the more recent time periods more striking for the average funds.

Figure 15 10-year horizon pooled net IRR for...



Source: “Global Private Equity Report 2022,” p. 26, Figure 27, Bain & Company, 2022, https://www.bain.com/globalassets/noindex/2022/bain_report_global-private-equity-report-2022.pdf, accessed November 2023.

Figure 16 10-Year Annualized IRR Global Buyouts



Source: “Global Private Equity Report 2021,” p. 22, Figure 23, Bain & Company, 2021, https://www.bain.com/globalassets/noindex/2021/bain_report_2021-global-private-equity-report.pdf, accessed November 2023.

While there are some methodology differences between **Figures 15** and **16**, one would draw the same conclusions.²⁴ The top quartile firms outperformed the PME's **substantially** over time in the US and Europe and the median firms did not. All one needs to do then is select those firms who will generate top quartile performance to obtain superior results relative to the PME's. It has been one of the fundamental precepts of the PE industry that past performance **IS** predictive of future results. So, an investor might ignore the fact that the average PE firm will not outperform PME's, indeed as historically that appears to be the case, so long as the investor can pick a prior top quartile performer.

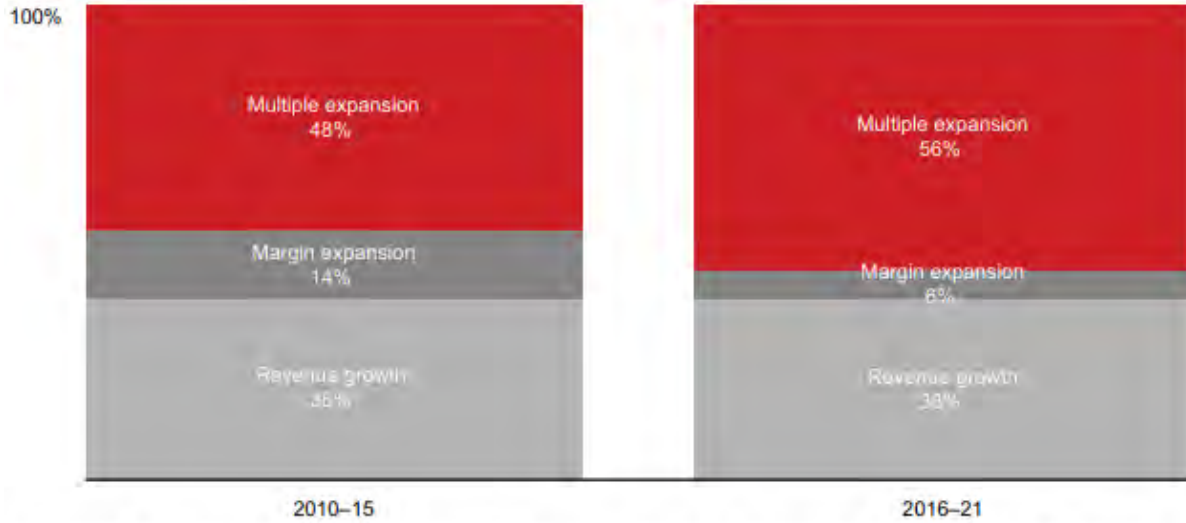
So, the critical question becomes can any investor consistently identify the top quartile firms who would hopefully outperform the PME's going forward and capture this relative outperformance? This question is addressed in Section 3.

D. Adding Value Through Operational Improvements

An additional premise justifying PE investments is the added value the firms create via operational improvements to their portfolio companies and not just produce leveraged beta. These improvements should result in top line revenue growth, improved profit margins, and EBIDTA and Adjusted EBIDTA growth. Increases in these factors would justify increased multiples for the company, which would result in a higher valuation. Are these operational improvements actually happening?

Figures 17 and **18** below may call these assumptions into question as the impact of operational improvements as measured by margin expansion and revenue growth appear to have stalled. The primary driver of recent PE returns appears to be multiple expansion. This multiple expansion mirrors the multiple expansion that occurred in the PME's over the respective time periods raising the question of whether the multiple expansion was actually attributable to operational improvements or capital market effects.

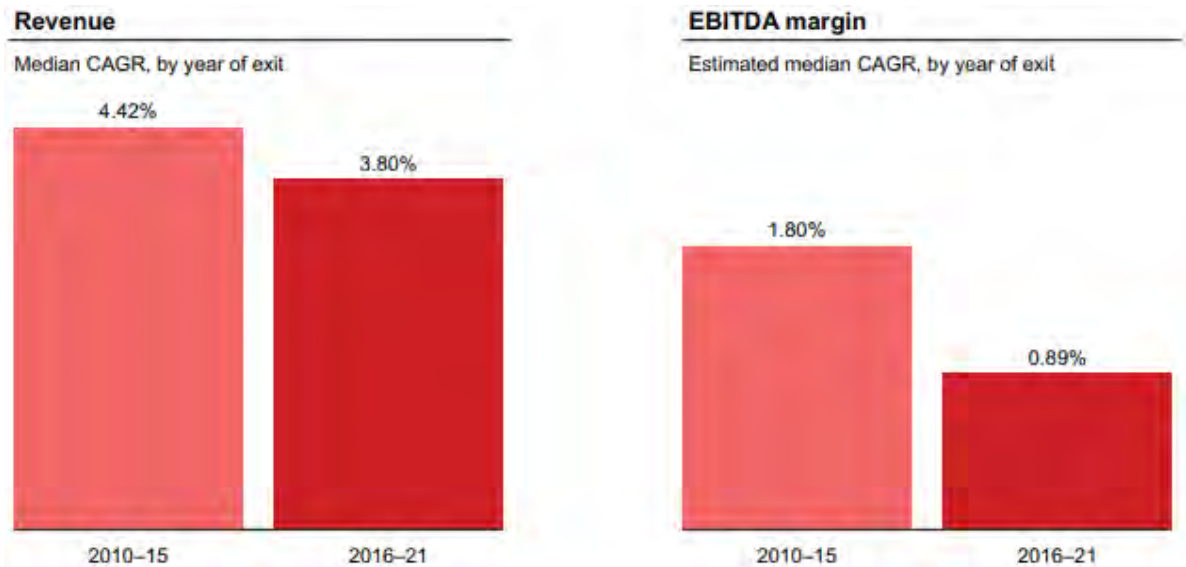
Figure 17 Median Value Creation, by Year of Exit



Notes: Includes fully realized global buyout deals with more than \$50 million in invested capital; excludes deals with missing data; excludes real estate and infrastructure deals; 2021 data as of December 14, 2021
Source: CEPRES Market Intelligence

Source: “Global Private Equity Report 2022,” p. 76, Figure 2, Bain & Company, 2022, https://www.bain.com/globalassets/noindex/2022/bain_report_global-private-equity-report-2022.pdf, accessed November 2023.

Figure 18 Median Value Creation by Revenue and EBITDA Margin Growth



Notes: Includes fully realized global buyout deals with more than \$50 million in invested capital; excludes real estate and infrastructure deals; 2021 data as of December 14, 2021
Sources: CEPRES Market Intelligence; Bain analysis

Source: “Global Private Equity Report 2022,” p. 77, Figure 3, Bain & Company, 2022, https://www.bain.com/globalassets/noindex/2022/bain_report_global-private-equity-report-2022.pdf, accessed November 2023.

Note that Bain did not include updated charts in their Bain Global Private Equity Report 2023.

In the past six years over half of PE returns appear to be attributable to multiple expansion. Multiple expansion can be attributable to several factors. If the PE firm, in fact, drives operational improvements by accomplishing one or more of the factors enumerated above, then multiple expansion should be warranted. The trend line for revenue growth and margin improvements has declined suggesting the PE performance enhancements impacts may be waning. Given the PME performance over the past 13 years, one can question whether the multiple expansion for PE was generated as much by market beta as actual operational improvements.

Academics have struggled to analyze operational improvements as most GPs do not publish the financial results of their portfolio companies other than realized and forecasted IRRs. Some academic studies generally found some improvement in operations at the portfolio company level for buyouts that occurred in the 1980's by analyzing the results of corporate tax returns.²⁵

However, more recent studies have questioned this conclusion. One academic study examined the tax returns of the portfolio companies and stated “... *we find little evidence that LBOs in the 1990s and 2000s result in improvements in operating performance on average*”.²⁶ Another study reviewed the financial statements provided by the portfolio companies to mezzanine lenders and reached a similar conclusion.²⁷ This study was updated and reviewed the operating results of 933 transactions from 1996-2021 with data sourced from Capital IQ. The methodology reviewed the SEC public filings for companies that had issued public debt. They examined whether accelerated revenue growth, expanded profit margins and increased capital expenditures post-acquisition occurred when compared to the prior three years of operations. While admittedly a small sample, they concluded, “*The industry mythology of savvy and efficient operators streamlining operations and directing strategy to increase growth just isn't supported by data.*”²⁸

Clearly, more research needs to be done to dissect how much value PE firms are adding to their portfolio companies. PE firms need to be more transparent regarding the actual performance of the portfolio companies, so investors can differentiate the factors driving performance: actual operational improvements versus market beta.

In short, even if PE firms are enhancing returns at the portfolio company level, it does not appear that these enhancements are translating into superior investor returns for their LPs based upon the more recent average industry results. Whether this fact is due to GPs (i) paying too much for their portfolio companies, thereby offsetting operational improvements; or (ii) buying inferior companies which can be operationally improved but are still unattractive; or (iii) not really adding value via operational improvements is unclear.

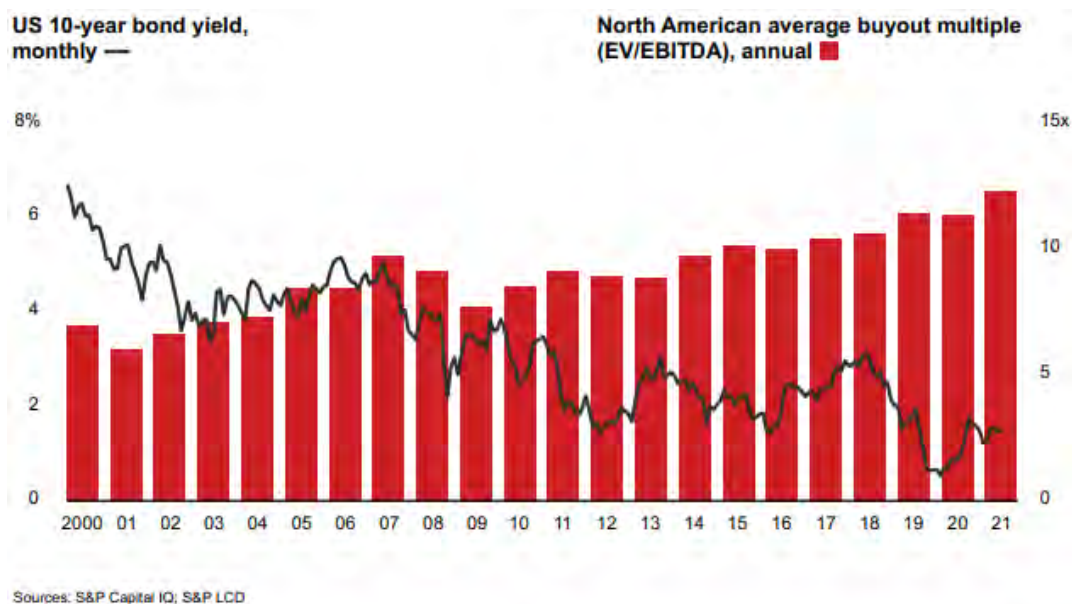
Without operational improvements and without falling interest rates, it is unclear how superior results will be generated.

E. Negotiating the Transaction

The fact that the impact of operational improvements appears to have declined over the past five years overlaps with the fact that PE firms are paying ever higher entry multiples on their

transactions driven in part by the decline in Treasury yields. In short, PE firms are on average paying more to acquire portfolio companies. As interest rates rise and multiples likely contract, PE firms will be under greater pressure to improve operations in their portfolio companies to make up for the doubtful near-term ability to rely on multiple expansion to bolster their returns. **Figure 20** shows the relationship between entry multiples on PE transactions versus PMEs. Other than the last year shown in the chart, they have generally been in the 200 bp range and increasing over time from 2008 through 2021.

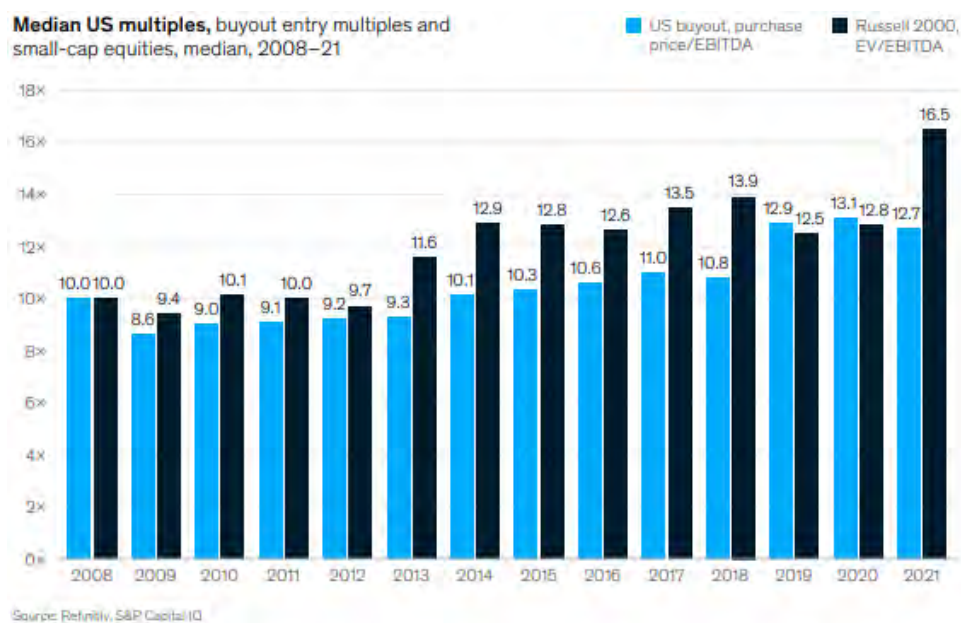
Figure 19 US Bond Yields Versus North American Annual EV/EBITDA Multiples



Source: “Global Private Equity Report 2022,” p. 75, Figure 1, Bain & Company, 2022, https://www.bain.com/globalassets/noindex/2022/bain_report_global-private-equity-report-2022.pdf, accessed November 2023.

Part of the convergence of the US PE returns to the public market may be due to the fact that PE firms appear to be paying more for their portfolio companies when compared to historical prices. Entry EBITDA multiples have grown higher over the past decade and have approached the same levels as those of comparable public companies except for 2021 as **Figure 20** illustrates. Indeed, in 2019 and 2020 PE firms actually paid higher entry multiples than the multiples of the Russell 2000.

Figure 20 Median US Multiples, Buyout Entry Multiples and Small-cap Equities, Median, 2008-2021



Source: “Private Markets Rally to New Heights,” p. 28, Exhibit 20, McKinsey & Company, March 2022,

<https://www.mckinsey.com/~/media/mckinsey/industries/private%20equity%20and%20principal%20investors/our%20insights/mckinseys%20private%20markets%20annual%20review/2022/mckinseys-private-markets-annual-review-private-markets-rally-to-new-heights-vf.pdfm>, accessed November 2023.

In the late 70’s underpinning the rationale for investing in PE was the notion that GPs could exploit market inefficiencies. They could make attractive acquisitions of portfolio companies at more attractive prices than those available in the public markets. However, in today’s market environment this assumption may no longer hold.

Compounding the increased entry multiple issue, making companies more expensive, is the fact that most large transactions are no longer “off market”. They are brokered sales or auctions. Sellers, especially larger companies, have become quite sophisticated over time and are willing to retain expert advice in selling all or a portion of their companies. This clearly makes the acquisition market much more competitive and efficient, which should have a deleterious impact on returns. Indeed, part of the premise for potentially superior returns was predicated on the GP’s ability to exploit market inefficiencies in the private markets. The academic research suggests that the VC market has produced more consistent, persistent results than large cap PE firms. Perhaps this is since VCs invest in a much smaller segment of the capital markets, which may, in fact, be more inefficient than the market segment in which large cap PE firms direct their attention.

Section 3: What Does Academic Research Suggest?

Academics have long struggled to better understand and interpret PE industry returns due in large part to poor data quality. It has taken years to aggregate sufficient data at the partnership level to be able to draw definitive conclusions as returns are only reported quarterly. Complicating matters is the fact that the data is poorly disclosed with regards to portfolio company performance other than IRR calculations both realized and unrealized. Audited financial statements are typically presented at the PE partnership level, not at the portfolio company level. Cash flows tracked by some monitoring firms again represent contributions and distributions primarily made only at the partnership level.

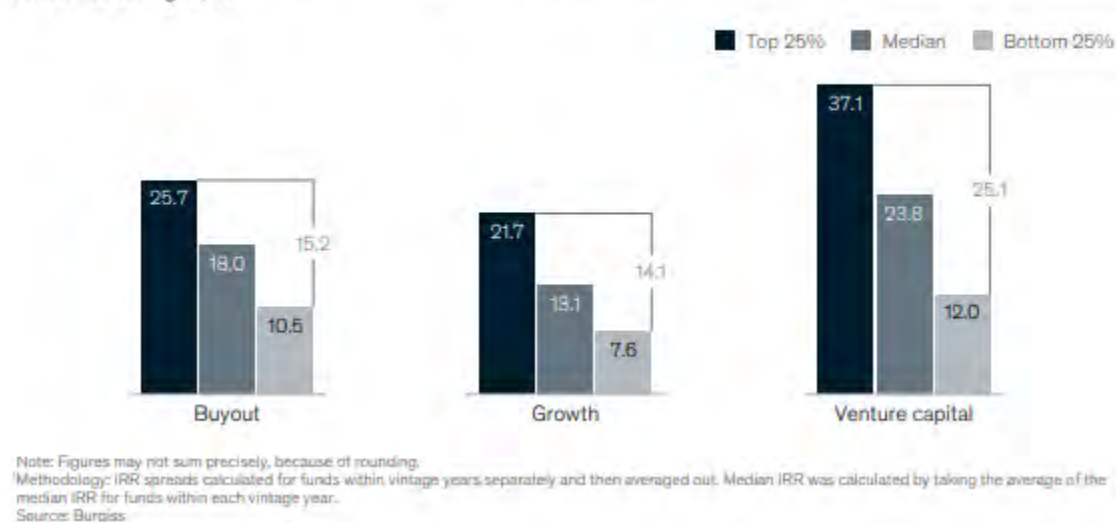
Since the GFC, data sources have improved materially, and academics have been pouring over the partnership level data leading to some startling conclusions. The primary questions they have addressed include: Is there persistence in returns that would serve as the basis for future investment decisions? Does a GP raising sequentially larger and larger partnerships have a negative impact on their performance? How do capital flows into the PE industry impact performance?

A. Persistence of Returns

One of the fundamental PE precepts is that a firm's track record is important and needs to be dissected. Investors have believed that unlike the public markets, past performance of PE funds **is** indicative of future results. The investment thesis is that one must ascertain the top quartile performing firms as it has been believed they are more likely to produce top quartile results in their subsequent funds. Given the dispersion in returns between the highest versus lowest quartiles, as illustrated in **Figure 21** below, return driven investors have had a laser focus on a firm's track record in the hopes of obtaining future top quartile results.

Figure 21 Dispersion of IRR Returns Across PE, Growth Equity and VC (globally)

Global PE fund performance by strategy, net IRR to date through Sept 30, 2021, 2008–18 vintages, %



Source: “Private Markets Rally to New Heights,” p. 25, Exhibit 17, McKinsey & Company, March 2022,

<https://www.mckinsey.com/~/media/mckinsey/industries/private%20equity%20and%20principal%20investors/our%20insights/mckinseys%20private%20markets%20annual%20review/2022/mckinseys-private-markets-annual-review-private-markets-rally-to-new-heights-vf.pdf>, accessed November 2023.

In a seminal piece, Private Equity Performance: Returns, Persistence (2005)²⁹, Kaplan and Schoar analyzed the returns of PE and VC firms. The authors found persistence in the PE returns and even stronger evidence of persistence among VC firms. Similar studies, some using different databases, reached similar conclusions again for firms raising funds in the pre-2010 time.³⁰ These early studies were primarily focused on the results from US based funds.

In Performance Persistence in PE Funds, Chun (2012), using data for funds raised pre 2000 found that there was persistence between the first fund and the follow on fund, but that persistence was short lived. Performance dropped materially in subsequent funds thereafter. Indeed, he stated “...that it is more difficult for funds in the top performing portfolios to sustain their performance.”³¹ He found, as others have, that the strongest persistence is among the poorer performing funds. His most disconcerting conclusion comparatively early in the industry analysis was that the data “...raises doubts as to whether private equity partnerships have proprietary skills enabling them to maintain consistent performance.”³² Further, he stated, “...the results do not support buyout funds have differential or proprietary skills.”³³

It should be noted that different databases (Burgiss, Preqin, PitchBook, Cambridge Associates being the primary sources) use different methodologies in presenting their results. While one might quibble as to which data source is superior, and whether one should analyze IRR only, IRR, MOIC, Multiple on Committed Capital (“MOCC”), cash flows, PMEs or all of them, the salient point is that while the data is imperfect, the early and subsequent studies directionally

reached similar conclusions over approximately comparable time periods. It is also important to note that the conclusions below relate to the aggregate conclusions based on the data samples. There may be performance outliers meaning there may indeed be some firms who exhibit performance persistence on the positive side and more conclusively on the negative side.

The early conclusions regarding persistence in PE and VC performance for the pre 2010 time period were important because the industry generally adopted the belief that analyzing a PE firm's track record was a critical component of an LP's due diligence for the subsequent fund. The belief in persistence became engrained among the LP community. The Kaplan and Schoar conclusions became the basis of the relentless pursuit of top quartile performing PE and VC firms. The entire gatekeeping industry was largely predicated on the assumption that their databases would enable them to identify the top quartile GPs and avoid those GPs who were "persistently" in the fourth quartile. All of this occurred notwithstanding the fact that a few academics early on raised some cautionary flags.

Similarly, in the analysis of LP performance, academics found there was return persistence of some LPs in the pre-2008 era, especially those following the so-called Yale investment model, which led to their outperformance relative to peers and benchmarks.³⁴ However, their outperformance evaporated in the post GFC era.³⁵

Harris, Kaplan, and colleagues ("Harris et.al.") did an additional study in 2014³⁶ and updated their work in 2020 evaluating the performance of buyout partnerships from 1982 through 2014 and importantly reached different conclusions.³⁷ The authors noted material changes in the industry in terms of the size of the market and segregated the results between the performance results of PE partnerships pre-2001 and post-2000. Their conclusions are potentially profound.

In their latest paper the authors examined the data several ways. They looked at the cash flows, IRR and MOIC performance of over 2,220 PE and VC funds at the end of June 2019 for the vintages from 1984 to 2014. They excluded subsequent vintages as they believed they were still in their investment period. They grouped the partnerships by vintage years and performance quartiles and deciles. They also compared their performance to PMEs as well and ran regression analyses on both the PE and VC funds. The authors also adopted a novel strategy analyzing the GP's preceding funds' performance. They examined the information investors would have had at the time the GP was raising its next fund. In essence, this was the performance information and quartile rankings the investor would have had at the time when they were making the investment decision to invest in the next fund.

The results for VC and PE were different. The authors continued to find persistence among VC firm performance even in the post 2000 time period. This conclusion held even when using various analytic methodologies. They found:

"Our results on VC funds have two implications. First, the persistence in VC suggests that the industry rule of thumb is to invest with GPs that have previously performed well and to avoid those that have not remains consistent with our results. The stronger performance persistence for VC as compared to buyout suggests that GP skills and networks for successful VC investing are harder to replicate than is true in buyout."³⁸

In the case of VC, 44.6% of GPs that had been in the top quartile for the prior fund were in the top quartile subsequently, and 26.9% of those prior top quartile funds were subsequently in the second quartile.³⁹

The PE firm results were mixed. When the authors looked at the results at the end of June 2019, they confirmed some persistence using quartile rankings for both the pre and post 2000 and 2001 funds, respectively, when looking at performance after the fact at June 2019. The persistence level among the top quartile funds for the next fund for pre-2001 funds was stronger than post-2000 funds at 41% and 33%, respectively. But, stated differently, two-thirds of the post 2000 funds in the top quartile were not subsequently in the top quartile for their subsequent funds.

However, the authors concluded that ***“For our overall sample, as well as for both pre-2001 and post 2000 funds, fund performance is persistent. The conventional wisdom would appear to hold.”***⁴⁰ They also noted buyout performance persistence was described as “modest” when using PME regressions.⁴¹ Indeed, the PME regression analyses and the persistence they found was driven by the funds in the **4th quartile**, not the top quartile, analogous to Chun’s findings.⁴² **Surprisingly, the persistence conclusions are driven more by the worst performing, not best performing funds.**

The predictive quality of using the top quartile rankings **fell** for the post-2000 funds. The predictive power of the 4th quartile results increased for funds in this time period, which is somewhat counterintuitive. 1984-2019 is a long time period; why are the poorer performing funds in the database still in existence? While the authors noted a large attrition rate in the 4th quartile, there were still sufficient firms in the quartile with results from prior funds to be able to draw these conclusions. The data suggests the most predictive information for the investor to know is which firms to avoid.

When Harris et. al. examined the predictive indication of quartile rankings looking at the available information at the time of the LP’s investment, they found vastly different results. There was some persistence for the pre-2001 funds in that they found 37% of the top quartile in those vintage years produced top quartile results in the subsequent fund. For the post-2000 funds the persistence fell to 24% and they concluded ***“performance persistence based on fund quartiles disappears.”***⁴³ Their conclusion was that ***“The conventional wisdom [for PE], therefore, does not appear to hold for buyout funds”***⁴⁴ when looking at the available information at the time of the fund raise. ***“There is still no evidence of reliable outperformance by the top previous performers.”***⁴⁵ They also found **first time funds were just as likely to be in the top quartile as more seasoned investors contradicting the conventional wisdom of avoiding them until the firm has proven itself.**

These conclusions held regardless of which performance metric (IRR, MOIC, PMEs or regression analyses) was used. They found using PMEs as a metric was slightly more predictive than using quartile rankings.

The most recent 2023 study by Pitchbook confirms these conclusions. They analyzed multiple asset classes (PE, VC, Real Estate and Fund of Funds). They found ***“At a high level we found no to weak performance persistence across asset classes.....Persistence was nonexistent for PE and fund of funds”***.⁴⁶

Using their updated database, Preqin found comparable results in using quartile rankings of the 1st through 4th quartiles at December 31, 2021.⁴⁷ Preqin used similar analytic methodologies as Harris et. al. They also bifurcated the results pre and post the GFC and also examined the results utilizing the information investors would have at the time of the GP fundraising. In their analysis they found that North American focused funds persistence declined post the GFC. Only 23% of top quartile firms in their database were in the top quartile in their next fund. Only 46% of the top quartile firms were subsequently above the median.⁴⁸

Preqin concluded, “[Results] show that relying on past performance would not necessarily increase the odds of a top quartile rank in the future for North America-focused funds”.⁴⁹ They found similar results in Europe. Preqin also found similar results concerning the bottom quartile funds as Harris et. al. and Chun papers.

Preqin stated, “These findings tell us that conventional investment wisdom has not always led to expected outcomes.The fact that performance persistence is neat and intuitively sensible means that any research that conflicts with this conventional wisdom is usually met with skepticism.”⁵⁰

We examined the Preqin database of the “Flagship Funds” of the firms within the Preqin database from 2008 through 2018 vintage years. We excluded the non-Flagship funds of the firms, or their ancillary products. In the Harris et. al. updated study, they found that the GP core funds performed better than their later “*secondary style funds ...launched later.*”⁵¹ We excluded funds from 2019 through 2022 as they were still in their investment phases. The time period was selected due to the industry structural transformation as shown in **Figures 3** through **6** in the preceding section. We also segregated the returns associated with the largest 20 mega firms of portfolios over \$1 Billion and those associated with 20 largest funds under \$1 Billion.⁵²

Again, we focused on the so-called “Flagship Funds” of PE firms, not their ancillary products. The results are illustrated in Panels A through V in **Exhibit 2**. These exhibits contain the raw data and identify the 954 funds and 444 firms in each quartile by vintage year measured by both IRR and MOIC.

Through 2021 the capital fund raising process had condensed to less than two years and less than a year in some instances, as shown in **Figure 4**. So, over the past decade one would expect each GP would have approximately three or four funds. Consequently, no firm could be in the top quartile in each vintage year, but one can draw conclusions as to how their more recent three funds performed in a rising market context.

Figures 22 and **23** depict the performance results of the top 20 firms in terms of size for funds over and under \$1 billion, respectively. These firms were selected as they have raised the most capital in their respective categories. As illustrated above, there is a significant concentration of capital among the very largest firms. **The question this raises is whether the money is flowing to the best firms?**

The results of all these studies illustrate there is little persistence of the large (funds over \$1 Billion) firms being consistently in the top quartile with a few exceptions. It appears that those firms operating in the technology sector and KKR over the past 10 years exhibited greater persistent performance. See **Figure 24**.

Interesting is the fact that of the top 20 large firms in terms of Assets under Management (AUM), only six firms, or 30%, appeared in the top quartile more than once during the time period measured. Note that the top five firms, as **Figure 5** illustrates, raised 25% of all the buyout capital in the last five years. The top 20 firms have raised nearly 40% of the committed capital in the past 10 years. The top 20 quartile rankings of the 20 largest firms are depicted in **Figure 22**.

Of the top 5 capital raising firms shown in **Figure 6**, KKR, Thoma Bravo and Hellman & Friedman had funds in the top quartile more than once. Their capital allocations appear, with the benefit of hindsight, to be appropriate. Of the top 20 firms in terms of raising capital over the past 10 years, only 30%, or 6 firms, of the top quartile funds had top quartile performance more than once. Two of these six firms specialized in the technology sector over the past 10 years. Was their outperformance during this time period driven by sector selection, or market beta, or portfolio company selection and operational improvements? Given the material technology sector drawdown in 2022, it remains to be seen if Thoma Bravo, Silver Lake and Vista Equity Partners will continue to remain in the top quartile.

Note that some of the top 20 in raised AUM did not appear even once in the top quartile. Some appeared once in the top quartile but not in second quartile for their other flagship funds. Others, such as CVC, which recently announced the largest PE fund ever raised⁵³, has only one fund in the second quartile and three in the third quartiles. Carlyle has more funds in the third and fourth quartiles than in the first quartile.

Figure 22 Top 20 PE Fundraisers and Funds above \$1bn, Preqin Quartile Performance, at December 31, 2021

Fund Manager Name	Funds raised				
	last 10 years, \$mm	number of years top quartile	number of years 2nd quartile	number of years 3rd quartile	number of years 4th quartile
Blackstone Inc	140,361	1	0	2	0
KKR & Co Inc	118,116	1	3	0	0
Thoma Bravo LP	76,792	3	1	1	0
CVC Capital Partners SICAV FIS SA	67,507	0	1	3	0
Carlyle Group Inc	64,068	1	1	3	4
Ares Management LLC	63,192	0	0	1	1
TPG Capital Management LP	61,932	0	2	1	0
Apollo Asset Management Inc	53,551	0	1	1	0
Hellman & Friedman LLC	51,300	2	0	0	0
EQT Partners AB	48,652	2	2	1	1
Advent International Corp	45,475	1	1	1	1
Silver Lake Partners LP	45,300	2	0	0	1
Vista Equity Partners Management	41,611	1	3	1	0
Permira Advisers LLP	32,975	1	1	0	0
Leonard Green & Partners LP	28,688	0	1	0	0
Clearlake Capital Group LP	28,376	0	0	0	0
Clayton Dubilier & Rice LLC	28,000	2	1	0	0
Apax Partners LLP	27,517	2	0	1	0
Cinven Group Ltd	25,885	0	0	0	0
Oaktree Capital Management LP	24,527	1	0	1	0
Total Top 20	1,073,822				
Total worldwide	2,776,256				

Source: Created by authors using data from Refinitiv and Preqin.

Figure 23 Top 20 PE mid-market fundraisers and Funds below \$1 Billion Preqin Quartile Performance, as of December 31, 2021

Fund Manager Name	funds raised	number of years			
	last 10 years, \$mm	top quartile	2nd quartile	3rd quartile	4th quartile
Alpha Group	999	0	0	1	0
ICV Partners LLC	985	0	0	0	1
Warren Equity Partners LLC	983	0	0	0	0
Dignari Capital Partners HK Ltd	977	0	0	0	0
Lee Equity Partners LLC	970	0	1	1	0
Nonantum Capital Partners LLC	960	0	0	0	0
ECM Equity Capital Management C	958	0	0	0	1
Great Point Partners LLC	953	0	1	0	1
Crossharbor Capital Partners LLC	937	0	0	0	0
Diversis Capital LLC	930	0	0	0	0
Longreach Group Inc	925	0	0	0	0
Trinity Hunt Partners GP LLC	923	1	1	0	0
Birch Hill Equity Partners Managen	920	0	0	1	0
Fortissimo Captial Fund Israel LP	915	1	2	0	0
King Street Capital Management LF	911	0	0	0	0
Abris Capital Partners Sp z o o	896	0	0	0	0
Martis Capital Management LLC	895	0	0	0	0
Banc Funds Company LLC	893	0	0	0	0
Halifax Group LLC	893	0	0	1	0
ProA Capital de Inversiones SGEIC	892	0	2	1	0
Total Top 20	18,715				
Total worldwide	2,776,256				

Source: Created by authors using data from Refinitiv and Preqin.

With regards to the next category of firms and funds, in the under \$1 Billion sized funds, the data for the 20 top fundraisers with funds below \$1 Billion, shown in **Figure 23**, appears worse than for the largest firms in that they are even more inconsistent. **Figure 23** illustrates a few key observations. Only two firms (10%) in this category had one fund in the top quartile with a subsequent fund in the second quartile.

In this segment, there are many more funds than the mega funds (665 mega-funds versus 2008 mid-market funds or 293 mega-fund GPs and 1,191 mid-market GPs, according to Refinitiv database). This segment of the market is also far less concentrated than the mega fund category. The top 20 mid-market firms (with less than \$1 billion capital raised cumulatively during the last 10 years) represent only 0.6% of the total capital raised in the buyout space (\$18.7bn of total \$2.78 Trillion).

Why is the question of concentration important? Capital should flow to those firms that have exhibited performance persistence over time. Of the top five firms that have raised 25% of the recent capital allocations, three had more consistent performance based upon the reported data. This suggests capital to these firms had been allocated rationally. Query whether this conclusion will hold after the technology sector inevitable write-downs.

Overall, the largest 20 fundraisers in the mega category had inconsistent results. Only 30% had more than one fund in the top quartile. Stated differently, 70% of the mega funds were not in the top quartile more than once. Only 9 of the 20 had more than two funds in the top two quartiles or 45%. This is hardly overwhelming evidence of persistence. This group of GPs raised

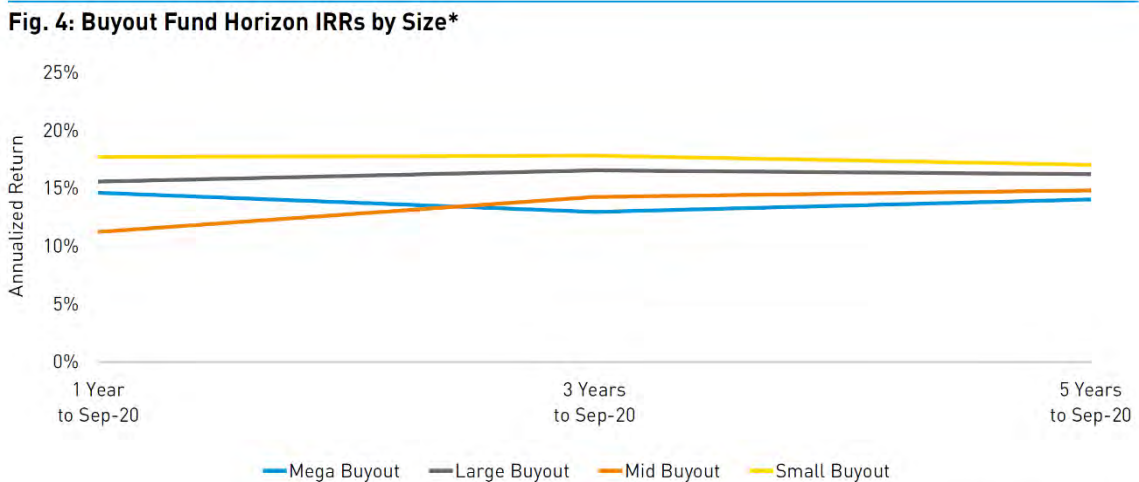
39% of the capital over the past 10 years. Investors appear to be chasing past returns with those firms in the mega fund category.

In the second category of funds under \$1 Billion, only 10% of the top 20 fund raisers had even one fund in the top quartile. Fortississimo Capital and Trinity Hunt Partners had funds in both the top and second quartiles. **Figures 22 and 23** and the concentration figures suggest that capital may not have flowed to the correct firms.

Further, in terms of performance, capital appears to be flowing to the wrong subsector of PE. Small buyout funds consistently outperformed large cap buyout funds over the recent time period as **Figure 24** illustrates. It appears that the capital flows were inconsistent with the objective of obtaining the highest nominal returns. While the smaller funds as a group outperformed, the question becomes can one select the individual firms that will be in the top quartile in this subsector?

This analysis also raises the question of whether the same firms will remain in each of the respective categories. It has been documented that the more successful funds subsequently raise increasingly larger funds, discussed below, which tend to underperform the prior fund. A more successful investment strategy should focus on smaller buyout firms and those who have remained in this subsector. It also reaffirms the Kaplan conclusion that first time funds should be considered as they tend to raise smaller buyout funds and have as much of a probability of success as their larger counterparts. LPs may also have greater leverage in negotiating terms with first time funds further enhancing the probability of receiving higher returns.

Figure 24 Buyout Fund Horizon IRRs by Size (on a net-to-LP basis)



Source: “Private Capital Performance Update: Q3 2020,” p.3, Figure 4, 30 September 2020, <https://docs.preqin.com/reports/Preqin-Private-Capital-Performance-Update-Q3-2020.pdf>, accessed November 2023.

In their paper on private equity performance, Kaplan and Schoar analyzed the relationship between past performance and the flow of capital into subsequent funds.⁵⁴ They found that capital flows into PE are positively and significantly related to past performance and that during boom times, capital flows disproportionately to funds with lower performance instead of flowing to the best GPs.⁵⁵ In other words, the better the GP did in a prior fund, the more the GP can subsequently raise. The conclusion academia generally reached was that size does matter. Having significantly more capital to invest was negatively correlated to performance from an early fund to a later fund.⁵⁶ This concept became an industry accepted thesis.

The researchers offered two suggestions as to why the best performing funds might prefer staying smaller: (i) it is possible that the number of good deals in the economy is limited at each point in time; and (ii) better funds might face constraints, if GP human capital is not easily scalable, and new, qualified individual GPs are scarce.⁵⁷ In another paper, Brown, Fei and Robinson (Brown *et al*), were able to analyze performance at the transaction level using the Burgiss database. They found that larger transactions had lower returns, but exhibited less volatility, than smaller transactions.⁵⁸

This PE behavior contrasts with the VC industry. The most successful VCs in terms of performance have not attempted to raise the largest possible sequential funds, with some notable exceptions. While they have increased their fund size, they have limited access to new LPs. Indeed, the most successful VCs in Silicon Valley have closed their funds to new investors. Scarcity of capital does impose a measure of investment discipline. Perhaps this investment discipline coupled with operating in a smaller, more inefficient market segment accounts for VC return persistence.

However, the conclusion that raising increasingly larger funds is deleterious for later performance due to the increased size of the subsequent fund has been challenged in a recent peer reviewed paper by Andrea Rossi.⁵⁹ He, like others, did find a ***“negative and significant relationship between fund growth and fund performance”***.⁶⁰ Rossi notes that many investors have been disappointed when they invest in a top quartile fund only to experience poorer performance in subsequent funds. The industry has attributed this trend to the subsequent increase in fund size. Rossi, however, hypothesized a different reason for the decline not related to fund growth. “I show that a substantial portion of the spread [decline in return from one fund to the next] in realized returns between funds whose follow-ons grow the most and funds whose follow-ons grow the least is attributable to noise or, in other words, luck.”⁶¹

This suggests that the higher returns of the preceding fund were possibly more attributable to “luck” rather than skill. So, the subsequent, larger fund would be based on “luck” not superior investment acumen. Thus, he concludes that since there is no reason why “luck” will necessarily continue, the follow on funds will likely revert to the industry mean or have poorer returns than the prior fund. This is a potentially damning conclusion.

Most of the investor “disappointment” in his words is ***“due to luck in past winners reverting to zero rather than to the effects of fund growth”***. In short, firms raising successively larger funds based on their past performance, and whether this will negatively impact future performance, is not the right question. The better question is whether the prior fund generated superior results as a consequence of luck versus skill. This conclusion parallels the public equity

markets in which public equity money managers have had⁶² significant difficulty outperforming their relevant indices.

Rossi's analysis suggests poorer subsequent performance due to its larger size is a classic example of correlation not causation result.

Brown *et al* reached similar conclusions when they performed an attribution analysis at the transaction level. They found that only 4% of the results were attributable to the GP's skill and over 90% of the results were attributable to "luck". They found more of an impact from the GP's portfolio construction.

The illustration of the recent success of the technology orientated funds being in the top quartile more consistently in the past 10 years may be consistent with Rossi's analysis. Sector selection by the GP may have had as much of an impact on their results as their ability to select individual companies. Brown *et al* found that more specialized funds in terms of sector and geographies had better performance than the more diversified portfolios. The conclusion one might draw from this analysis is that investors would be better served by focusing on sector selection first based on then existing market opportunities, and then finding the best specialists in that sector, as opposed to chasing returns of the past successful investment strategies.

Given the more recent performance (from 2008 to 2018) of PE firms, the assumption that analyzing past performance at the time of the investment decision will be predictive of future results is tenuous based on academic studies and the Preqin data when examining performance of the larger firms in both the mega fund and smaller fund subsectors. Investors have not consistently selected the top quartile firms based on to whom the capital has been allocated. The ramifications of this conclusion are discussed below. Capital has flowed to firms based more on early performance (in the 1980s and 1990s) or the "brand" name of the firm versus more recent performance over the past decade. Investor intransigence in terms of continuing commitments to firms not generating top quartile performance is discussed below.

B. Impact of Capital Flows

Notwithstanding Rossi's controversial conclusions, suggesting that "luck" not scale accounts for declining performance, there have been additional academic studies on the impact of capital flows on investment performance in the public markets⁶³. In their research on the mutual funds industry, Berk and Green addressed the question why financial intermediaries are so highly rewarded despite the seeming uncertainty about whether their activities add value. Their econometric model confirmed the idea that active management did not outperform passive benchmarks, and the explanation they offered was based on the idea that ***"investors competitively supply funds to managers and there are decreasing returns for managers in deploying their superior ability; managers increase the size of their funds, and their own compensation, to the point at which at which expected returns to investors are competitive going forward"***⁶⁴. In plain words, excess capital flows to a firm decreases their performance as they scale having a negative impact on their future performance.

The example of Fidelity's Flagship Magellan Fund provides an interesting example of performance declines due to growth. The Magellan Fund was initially run by Peter Lynch, one of the paragons of the mutual fund industry. It became a victim of its own success. The fund had extraordinary success when the portfolio size was quite small. The fund was initially only

available to Fidelity principals from 1963 until 1981 when it opened to the public. Based on its spectacular track record, Lynch's portfolio grew from \$20 million to \$52 Billion. Under Lynch's guidance the Magellan Fund became one of the most successful actively managed mutual funds, usually outperforming its benchmark.

Lynch retired in 1990 and the Magellan Fund had a series of subsequent portfolio managers. However, Fidelity continued to grow Magellan's AUM and the outperformance declined with the fund lagging the S&P. Its performance declined to the point that the Magellan Fund was closed to new investors in 1997 due to the belief it had become too large to outperform. Indeed, the Magellan Fund largely underperformed the S&P for the 20 year period from 2000 through 2020. It was not reopened until 2008. The fund shrank in size from ~\$100 billion in 2000 to \$23.6 billion in July 2022 (including a major capital distribution while the fund was closed). The performance of the smaller portfolio of late has improved. Notwithstanding the downsizing, the Magellan Fund performance relative to the S&P was 13.05% vs 13.08% over the past trailing 10 years at August 31, 2022.⁶⁵ In short, its returns were essentially comparable to the public benchmark.

Figure 20 above indicates that PE entry multiples increased over time overlapping the increase in capital flows into PE as well as the increase in multiples of public PMEs. The industry has raised unprecedented amounts of capital in recent years which does not augur well for the future performance generally for the PE industry.

The preponderance of PE capital has been concentrated with a comparatively small number of firms with inconsistent performance. Perhaps these PE funds are beginning to mirror the issues associated with Magellan's portfolio managers at Fidelity and the other large mutual funds as illustrated in **Figure 25** below. One can legitimately ask whether the mega fund GP sponsors have gotten too large and whether the market in which they operate has become too efficient. Should the focus instead be on smaller funds that as a category have performed better and to which less capital has flowed? They are closer in size to some of the successful VC firms who have demonstrated more persistent performance.

The PE industry may be ripe for disruption. The evolution of other financial services companies who have faced disruptive forces may provide some insights as to the challenges the PE industry may face. The mutual fund industry and its trends over the past 15 years are especially relevant.

Section 4: Disruptive Potentials for PE

A. Mutual Fund Trends

Why do mutual funds have any bearing on the PE industry? There are several reasons. Structurally, the large PE GPs have essentially become mutual funds focusing on the private markets as opposed to the public markets. Like the large mutual fund managers, large PF firms have a "smorgasbord" of investment products ranging from their original flagship funds to numerous specialized products in a variety of asset classes. They have become "one stop" shopping platforms for private investing. As an example, Blackstone offers their flagship PE fund, Real Estate, Credit, Tactical Opportunities, Infrastructure, Hedge Funds, Secondaries, Life Sciences, Growth Equity, and registered products for retail investors.⁶⁶ The evolution of the mutual fund industry could provide guidance as to what may happen to the PE industry. Large

public mutual funds companies essentially have the same multi-product structure. Rarely has any mutual fund become the industry leader in each sector in which they had an investment strategy raising the question of whether one stop shopping works.

There have been multiple academic papers beginning with Eugene Fama documenting the difficulty active managers have in consistently outperforming their respective benchmarks.⁶⁷ The Efficient Market Hypothesis (EMH) coined by Fama in the 1960-1970s states that public markets are efficient, if current publicly traded security prices reflect all relevant information including past market data (such as stock prices and trading volume) as well as all publicly available and private information⁶⁸. Therefore, if EMH holds, few active equity investors consistently “beat” the market, i.e., generate excess returns above their benchmark with a commensurate level of market risk over the long term.

The very term “random walk” in security selection suggested that *“a blindfolded monkey throwing darts at a newspaper’s financial pages could select a portfolio that would do just as well as one carefully selected by experts.”*⁶⁹ In other words, investment manager results may be as much a function of luck versus skill. This conclusion results from stock price movements that are unpredictable and public markets that are too efficient, as well as the costs of trading. These conclusions are consistent with Rossi’s about PE mentioned before.

EMH is a convenient theoretical framework that helps analyze how useful different investment toolkits could be under different market circumstances when trying to outperform a passive management approach. These toolkits include technical analysis, fundamental analysis, portfolio management techniques, and identifying various market anomalies.

These are the same acquisition tools used in PE. Historically, the argument has been that the private markets are inefficient so that market anomalies can be identified and exploited. The GP might try to achieve excess returns by gaining a competitive edge in analyzing various forms of information that can be costly or not readily available to other market participants. Such an approach requires extensive use of fundamental analysis that encompasses assessing the intrinsic value of assets using different valuation tools, using accounting data, incorporating management forecasts, and analyzing various macroeconomic assumptions. In short, if the PE firm is acquiring a private company, they can trade on inside information with management’s cooperation. If the target is a public company, the PE firm must sign “stand off” agreements in which they cannot trade the company’s securities in exchange for receiving inside information utilized to acquire the company.

The primary difference between the public and private market money managers is in the management of their portfolio companies post-acquisition. PE GPs typically take control over their portfolio companies and exert considerable influence over the company’s strategy, and management’s execution of that strategy, which public money managers do not do. One might ask how effective PE GPs have been in adding value via operational improvements based on the discussion above.

The markets in which PE GPs operate have changed so radically over the past decade that previous assumptions regarding their inefficiencies are subject to question. Information concerning potential acquisition targets is far more readily available. Couple this fact with the increased competition for transactions, the ability to exploit private market inefficiencies may be declining particularly at the larger cap size of the market. The ability for large cap PE GPs to

consistently outperform the average PE market performance may mirror the results of public active equity managers who historically do not consistently outperform their benchmarks net of fees. Fama’s conclusions may now bear on large cap PE firms.

Historical data on the mutual fund industry showcases that the largest actively managed mutual funds have trailed the S&P and have not outperformed the index as **Figure 25** illustrates. The largest flagship mutual funds have outperformed the S&P Index only episodically.

Figure 25 Performance of Largest Actively Managed Mutual Funds vs. S&P 500



Source: Bloomberg, accessed November 2023.

Note: S&P is shown in white, Fidelity Magellan Fund in blue, Vanguard Prime Cap Fund in red, and American Funds Core Fund Class A in purple.

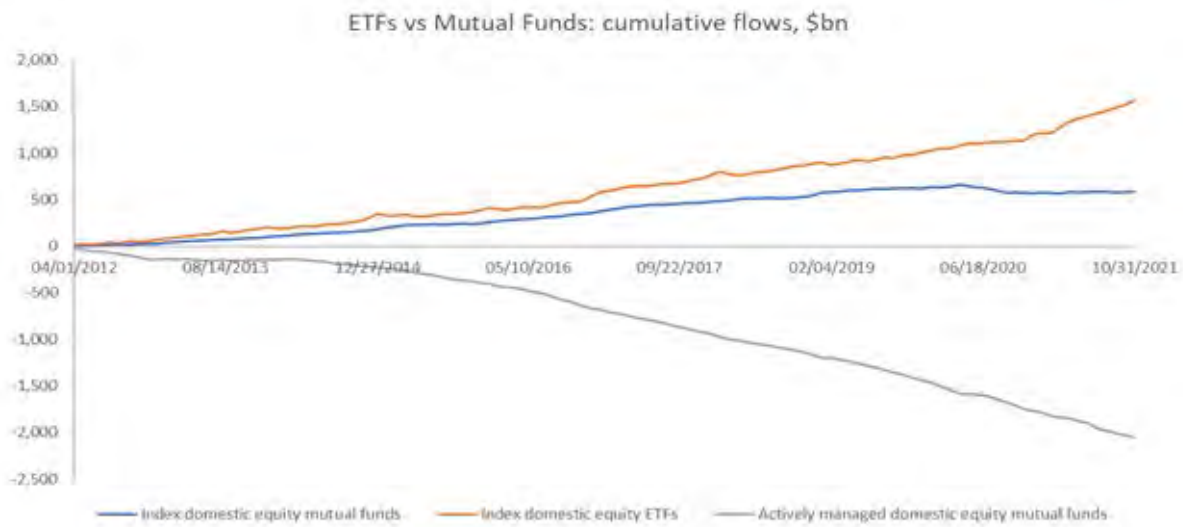
It took decades for the public market to realize and to accept this information. In recent years the investment community has begun to vote with their money and shift into passive products as illustrated in **Figures 26** and **27**.⁷⁰

Figure 26 Net New Cash Flow of Mutual Funds in the US from 2000 to 2020, by Fund Management Type (in billion US dollars)



Source: “Net new cash flow of mutual funds in the United States from 2000 to 2022, by fund management type,” Statista, May 2023, <https://www.statista.com/statistics/1263876/active-passive-mutual-funds-net-new-cash-flow-usa/>, accessed November 2023.

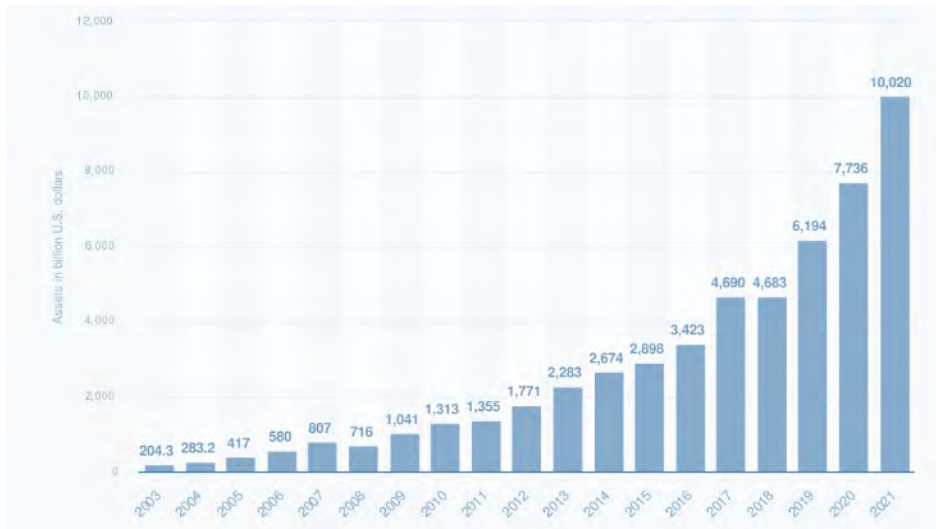
Figure 27 ETFs vs. Mutual Funds: cumulative flows, \$bn



Source: Adapted by authors, from “2022 Investment Company Fact Book,” Fig. 3.16, p. 62. Investment Company Institute, 2022, https://www.ici.org/system/files/2022-05/2022_factbook.pdf, accessed November 2023.

The mutual fund industry has become materially disrupted over the past 10 years because of active equity managers' difficulty in achieving and sustaining alpha. Other products offering passive replicating alternatives in the form of Index Funds and ETFs were developed. These products offer near benchmark returns at a fraction of the cost of active management. **Figure 28** illustrates the growth of the passive ETF investment strategies.

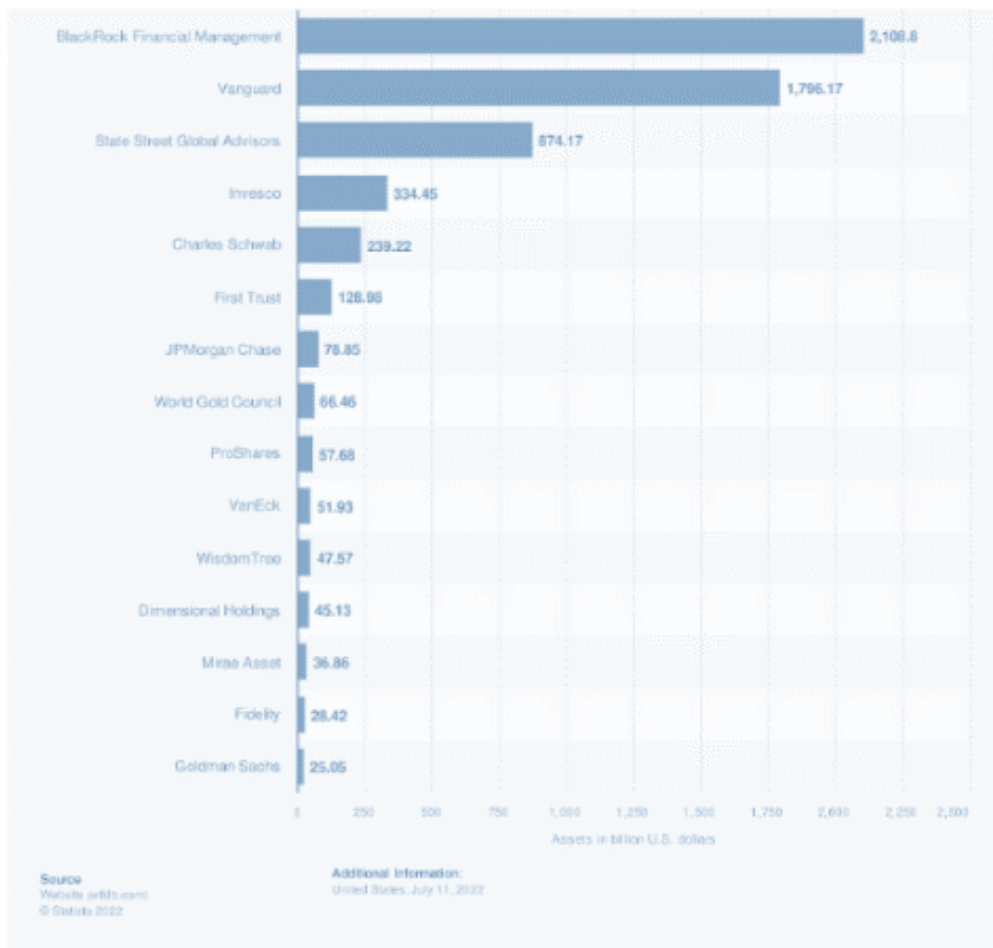
Figure 28 Development of Assets of Global ETFs from 2003 to 2021 (in billion US dollars)



Source: “Development of assets of global exchange traded funds (ETFs) from 2003 to 2022,” Statista, February 2023, <https://www.statista.com/statistics/224579/worldwide-etf-assets-under-management-since-1997/>, accessed November 2023.

Mutual fund companies reacted by adapting and offering both active and passive management services: actively managed vehicles have historically considerably exceeded passively managed vehicles although passive management has recently demonstrated substantial growth. In 2018, passively managed assets comprised a fifth of global AUM with the top three managers (iShares, Vanguard, and State Street) accounting for 70% of the passively managed industry assets. According to the CFA Institute, there are two main catalysts for passive management development: first, more clients are attracted by lower fees compared to those in actively managed products; and second, greater challenges in generating alpha by active managers.

Figure 29 Largest ETF providers in the US, by AUM, as of July 2022



Source: “Largest providers of ETFs in the United States as of September 2023, by assets under management,” Statista, September 2023, <https://www-statista-com.ezp-prod1.hul.harvard.edu/statistics/269928/assets-under-management-of-the-largest-etf-providers-in-the-us/>, accessed November 2023.

Figure 30 Largest ETF Providers Globally, by AUM

ETP Provider	Assets (US\$ billions)	Market Share (%)
iShares	1,583	37
Vanguard	803	19
State Street Global Advisors	596	14
PowerShares	132	3
Nomura	100	2

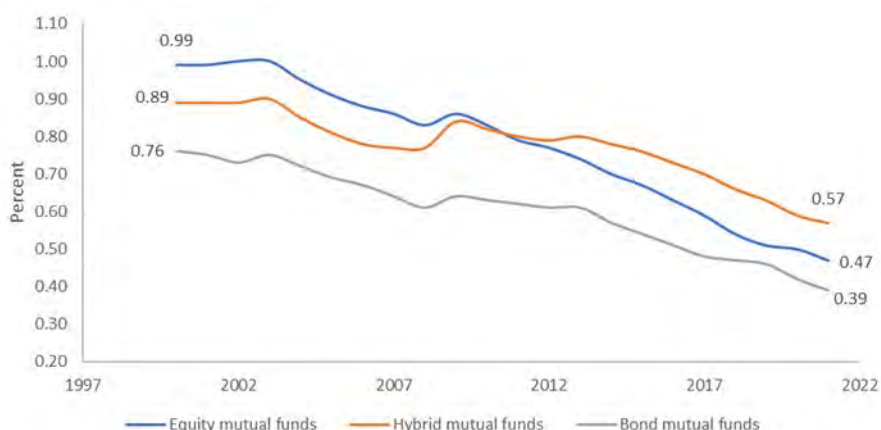
Source: ETFGI.

Source: “The Asset Management Industry,” Fixed Income, Derivatives, Alternative Investments, Portfolio Management, vol. 5, CFA Institute, 2022, p. 522.

This concentration of assets mirrors what has happened in the PE industry notwithstanding the performance of some of the larger PE firms. Smaller PE firms will struggle to raise capital relative to the “brand” name firms, as has happened in the past few years comparable to what happened in the mutual fund industry. Capital has been disproportionately allocated to the larger PE firms at the expense of the smaller PE firms. So how are they likely to compete?

The public active equity managers’ reaction to the potential disruption from ETFs and Index funds was clear. If you cannot compete on the basis of performance, the way to enhance performance is to reduce fees; in other words, compete on the basis of price. To stave off the capital outflows active equity managers began to offer their own passive products and began to compete on price by reducing their management fees on their active products. **Figure 31** below illustrates the expense ratios, of which the management fee is the largest component, trend for active public equity managers. In short it has been a race to the bottom. The mutual fund industry has become commoditized. So will the PE industry. Only the most consistent active equity managers have not yet sought to compete based on price.

Figure 31 Expense Ratios Incurred by Mutual Fund Investors



Source: Created by authors using data from “2022 Investment Company Fact Book,” Fig. 6.1, p. 100, Investment Company Institute, 2022, https://www.ici.org/system/files/2022-05/2022_factbook.pdf, accessed November 2023.

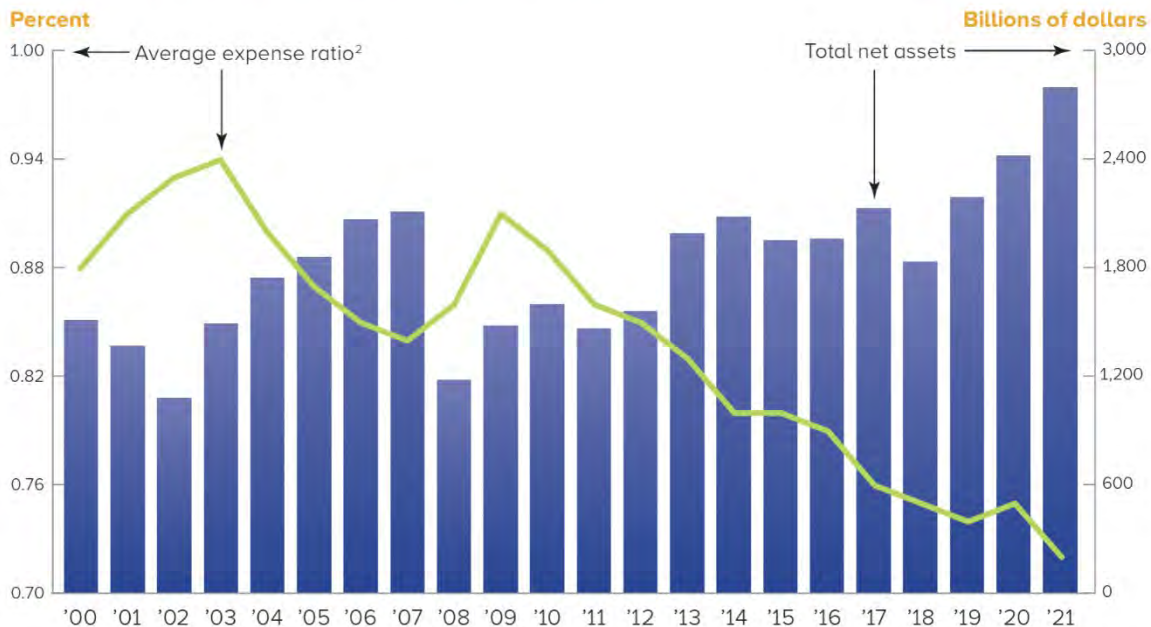
Note: See ICI Research Perspective, “Trends in the Expenses and Fees of Funds, 2021.”

Figure 32 illustrates that the expense ratios declined precipitously notwithstanding the fact that AUM grew. Since asset management fees are fixed as a percentage of AUM, one would have expected the line to parallel the growth of the industry. The decline illustrates the impact of the reduced fees associated with the competition from passive management.

Figure 32 Mutual Fund Expense Ratios

Mutual Fund Expense Ratios Tend to Fall as Fund Assets Rise

Share classes of actively managed domestic equity mutual funds continuously in existence since 2000¹



¹ Calculations are based on a fixed sample of share classes. Data exclude mutual funds available as investment choices in variable annuities and index mutual funds.

² Expense ratios are measured as asset-weighted averages.

Sources: Investment Company Institute, Lipper, and Morningstar. See *ICI Research Perspective*, "Trends in the Expenses and Fees of Funds, 2021."

Source: "2022 Investment Company Fact Book," Fig. 6.2, p. 101, Investment Company Institute, 2022, https://www.ici.org/system/files/2022-05/2022_factbook.pdf, accessed November 2023.

Why did this structural change take so long given the fact that Fama et. al. identified the issues about the lack of alpha in active management decades before? There are two primary reasons, the first of which is the lack of products until the late 1990s that were widely accepted. John Vogel of Vanguard is credited with establishing the first indexed mutual fund in 1976, although it was not initially well received. He did not publish his classic Common Sense on Mutual Funds until 1999.⁷¹

The second reason why it took so long is attributable to human inertia and delays in modifying long held opinions. Although most researchers agree that public markets tend to be efficient, they have also identified various market anomalies (time-series, cross-sectional, and some others) that can be explained by various theories stemming from behavioral economics popularized by Kahneman and Tversky in the 1970-1980s.

Their ideas focus on understanding human beings' decision-making processes and the degree of their rationality. A key concept of behavioral economics is that people often deviate from

rational behavior, exhibit various cognitive errors and emotional biases (representativeness, herding, overconfidence, naïve diversification, etc.), and tend not to use all available information when making decisions. In the investment arena, they often resort to herd thinking and buy into bubbles and sell into crises.⁷²

Kahneman's in his *tour de force* Thinking Fast and Slow,⁷³ showed a group of active investment managers that they had not produced any consistent alpha over time and even when confronted with the data, they could not believe it, nor more importantly, incorporate it. In short, the inertia associated with holding a strongly held belief makes it exceedingly difficult to change that belief.

Kahneman showed the firm that they were rewarding luck not skill and that:

“The illusion of skill is not only an individual aberration; it is deeply engrained in the culture of the industry. Facts that challenge such basic assumptions – and thereby threaten people’s livelihood and self-esteem -are simply not absorbed....the illusions of validity and skill are supported by a powerful professional culture.Given the professional culture of the financial community, it is not surprising that large numbers of individuals in that world believe themselves to be among the chosen few who can do what they believe others cannot.”⁷⁴

This quote could have been written about the PE industry.

In sum, the PE data suggest that (i) traditional methods of evaluating a given GP partnership are questionable; (ii) evaluating performance persistence post 2008 may be subject to doubt at the time the investment is made; (iii) selecting a given GP in the hopes of obtaining top quartile results may be a random walk; (iv) investment performance may possibly be as much attributable to luck rather than skill; (v) the recent median PE investments do not outperform PME's and one is just as likely to select a median GP as a top quartile GP; and (vi) PE performance may actually underperform PME's on a risk adjusted basis given the amount of leverage they employ generating equivalent results on a nominal basis.

The conclusions, should they become widely accepted, have the potential to materially disrupt the PE industry in terms of how capital is allocated. However, given the entrenched interests not only of the PE firms and those firms who support them in maintaining the status quo it may take years for these conclusions to be accepted by LPs and will most certainly be strongly resisted by the entrenched interests. Eventually, though, the data should prevail.

B. Other Disruptive Potentials for PE

There is no question that disruptive forces have radically changed the mutual fund industry that may be paralleled in PE. As it became apparent that active equity managers on average did not outperform their benchmarks on a sustained basis, investors sought alternative methods to invest on a more cost effective basis. What are potential disruptive forces in PE that could structurally change the industry?

These disruptive factors may include:

- PE firms converting from entrepreneurial incentives (carried interests) to asset gatherers (management fee orientated)
- Lower return expectations
- Increased competition from clients
- Alternative investment executions or products
- Industry consolidation and the hollowing out of the “middle”
- Structural changes to PE organizations
- Commodization of the PE industry

Need to Grow AUM and Change of Incentives

The dynamics of the PE industry have changed profoundly since the 1980's and 1990's. In the early years of the industry the GP's primary economic motivation was the carried interest they might earn. GPs then invested substantial amounts of their own capital alongside the LPs. Their collective interests were aligned.

The early successful market entrants are now large public companies. As public entities their primary motivation is to increase AUM and increase their base management fees. This is directly analogous to the mutual fund industry. The value of public PE firms is primarily driven by their AUM growth, and the derivative management fees that are easily quantifiable, as opposed to the value of carried interests that are generally viewed by the capital markets as non-recurring income. In short, public GPs have become asset gatherers and their incentive is to grow AUM as much as possible. While carried interests are still important there is a profound shift in the incentives of these GPs from the early days of the industry.

Indeed, the consequences of these incentives were identified 17 years ago by Howard Marks in one of his famous Memos, entitled “The New Paradigm”. He stated,

“...[Large] amounts of money are demanding access to the alternative markets... For this reason, investors may attach more importance to the ability to put large sums to work than to be able to attain historic returns and risk premiums, clear high due diligence hurdles, or structure fee arrangements that channel managers' energies for the benefit of clients. (emphasis in the original).”⁷⁵ Marks identified the new paradigm as:

- **“First, raise a lot of money.**
- **Second try for a rate of return that clients will find acceptable.**
- **Third, don't take enough risk to possibly preclude an encore.**
- **Fourth, invest as prudently as possible, so that another fund can be raised while the markets are accommodating.”** (emphasis in the original)⁷⁶

Marks turned out to be prophetic. The trends he identified and the attitudes towards investors' attitudes towards risk and return have largely come to pass.

Their sheer current size requires these firms to continually invest as they keep raising capital or lose their commitments after the investment period. This business model takes away flexibility on the GP's part to put their "foot on the brake" when the market cycle hits a peak.

The recent behavior of GPs supports the conclusion of the shift to asset gathering. GPs have reduced the time period between fund raises shown in **Figure 4**. Indeed, it was announced in July 2022 that Blackstone intended to raise its next \$30 Billion real estate opportunity fund this year even before its prior \$30 Billion real estate opportunity fund, BREP X, had closed.⁷⁷ Blackstone announced it had passed the \$1 Trillion mark in terms of AUM in its most recent earnings call.⁷⁸

GPs have a new emphasis on the retail sector in an effort to tap into a new market, thereby augmenting their base fees. This trend results from the declining importance of defined benefit plans and the rise of defined contribution plans going forward. Again, this is to support the continued growth of their AUM. This investor category generally is less sophisticated than their institutional counterparts and more subject to marketing influences.

This business model shift incentivizes GPs to invest as quickly as possible so they can then raise the next fund to capture additional management fees. Most of the Limited Partnership agreements require the committed capital to be substantially committed (~70%) to investments before the next fund can be raised. **The fact that GPs are then continuously in the market forces them to become dollar cost averagers as opposed to opportunistic investors.** Dollar cost averagers generally do not exceed the market returns.

Additionally, to lock in fee streams, there is a new emphasis on creating long dated funds and engaging in secondary transactions in which the GP asks existing LPs to approve the transfer of all or a portion of an existing partnership into a new partnership for another 10 year term. According to PEI "...*buying, holding and selling within five years is largely a thing of the past.*"⁷⁹ GP attempts to raise capital to acquire or seek approval from LPs to rollover their commitments increased by 113% between 2020 and 2021.⁸⁰ Clearly, the intent on the part of the GPs is to lock in the management fees for a longer term as that is the primary driver of how the public markets value these companies.

Perhaps GPs see the clouds on the horizon for their future performance from the various factors identified above, which have also been identified in the press, including rising interest rates, and falling company entry multiples, as well as the fact that larger funds have underperformed prior funds.⁸¹ Future performance issues may present challenges for future fundraising given the drawdown in the public capital markets in 2022. So, raising as much capital as possible today may protect them in the future.

The industry changes coupled with recent market changes have the potential to change GP incentives. At the inception of the industry the primary motivation of GPs was to maximize performance because the preponderance of their compensation was derived from the carried interest. Now, with multiple funds and new long-duration funds, the value of the management fee is as, if not more, valuable. These fees are "risk free" in that they are locked in for essentially 10 years. Given the importance of this category of fees the GP is highly motivated to ensure their continuity.

Does the shift to become asset gatherers matter? Incentive changes within GPs that they themselves have created may become a disruptive force as there is a potential for an impact on

future returns. It has been previously documented that increasing the size of subsequent funds has had a negative impact on performance. In the mutual fund industry as funds scaled, they had difficulty maintaining their alpha. **Scale was the enemy of returns.** Indeed, in 1997 Fidelity's flagship Magellan Fund closed to new investors due to the decline in performance as the fund had become too large. The shift to index funds was mirrored in the large public pension fund community when they realized that in aggregate their performance did not continually outperform a passive benchmark.

Further, the emphasis on increasing AUM, which is the same incentive for traditional mutual funds, may be at odds with PE firm's LPs in an actual partnership. From their perspective, the LPs want the highest possible returns and top quartile performance, not necessarily the returns associated with a dollar cost averaging approach. LPs are not interested in the GPs increasing their AUM, especially if it has the potential to negatively impact performance. They are not interested in the firm's stock price; they are interested in the performance of the fund in which they are invested. For LPs bigger isn't better; better is better. But when a material component of the firm's value is attributable to AUM, this incentive may be at odds with the LPs. Query whether the incentive today is to be just "good enough," as Marks suggested, to raise the next fund at a lower risk level as opposed to truly attempting to achieve the highest possible returns and assuming commensurate risks with those they historically took to maximize their carried interests.

The public shareholder interests are potentially at odds with the private LPs in that they are interested in the continued increase in AUM, which should help the stock price, as well as the potential to make distributions in the form of dividends. Managing these conflicts has the potential to disrupt the industry should the private LPs come to believe the conflicts are not being managed in their best interests.

C. PE Performance Attributes Changing

Historically, GPs promised their investors "2x and 20%" referenced above. Return expectations generally have declined in the past decade for PE. Investors today do not expect to receive a PE 20% return. Indeed, in **Exhibit 1** the asset allocation assumption for PE is 12%, which is materially lower. The recent net returns for the average global buyout funds approximated 12-13%.

As stated above, PE should generate excess returns against PMEs to compensate for the lack of liquidity and the higher leverage ratios. During the past decade the average pooled fund IRRs in the US, where the preponderance of capital has been invested, converged with the US public markets. Return expectations appear to be declining and the correlations with the PMEs may have increased making the case for PE less compelling. If this hypothesis is correct, then PE is beginning to behave more like the public markets suggesting certain segments of the private markets may have become more efficient. This appears to be particularly the case for the very large cap PE funds as the data above (concerning the median results) may be skewed by the market cap of these funds.

Intuitively this makes sense. The larger funds have moved into a larger market cap segment versus VC. The data suggests that the VC firms continue to have performance persistence perhaps in large part because they operate in a more inefficient market segment. The EMH

theory suggests that when the markets are efficient, active management strategies cannot consistently outperform passive holdings of a diversified market portfolio over time.

In the past decade the amount of market information in the private sector has increased dramatically. Research firms publish reams of data concerning the multiples of all companies in each sector. Larger PE firms have been investing larger transactions, in part because of the larger amount of capital they must deploy, and that sector of the market is far more transparent than VC and very small companies. Further, as mentioned earlier, many of these larger transactions are essentially auctions, because sellers have become more sophisticated, and buyers are subject to the “winner’s curse” of paying the highest price. Fama’s EMF conclusions may apply to PE, which would also support Rossi’s conclusions.

Given the preponderance of capital raised and invested in the US, investors should closely monitor these trends. If the private markets have profoundly changed by becoming so large and more efficient thereby changing the fundamental assumptions driving the asset allocation models, this fact could disrupt the PE industry.

D. Potential Disruptions from Alternative Methods of Investing

When investors received 20% returns, they were somewhat indifferent to PE fund costs. When the median net returns are in the 12-13% range, the returns and costs associated with PE investments come into focus more clearly.

As returns come down and if alpha declines, the dilution associated with costs, primarily management fees and carried interests, becomes an investor concern. The simplest way to increase returns is to reduce fees. **Figures 31** and **32** illustrate what happened in the mutual fund industry. Investors gravitated towards lower cost alternatives. A number of PE investors now seek to replicate PE returns on a more cost effective basis.

It has been documented that the costs of investing in PE are considerable. It has been estimated that the return dilution from gross to net returns at a 20% return level is 600-700 basis points, suggesting net returns are then in the 13%-14% range.⁸² These numbers do not include the costs of internal management and external hired consultants to monitor their investments. In fact, net returns for PE reported by numerous sources suggest that average net global returns are in the 10% range as shown in **Figure 16** above.

Should PE returns converge with the public markets over a longer time period, and if the other predicate assumptions concerning the rationale for investing in PE diminish, investors will seek alternatives as they did in the mutual fund industry. The primary pressure will be on PE fees.

Many large institutions have attempted to reduce PE costs by investing directly. Initially, they attempted to maximize the amount of their co-investments in which they would invest in an individual transaction alongside the PE fund. These investments were typically made on a no-fee, no carry basis. Such investments allowed the LP to reduce the overall PE investment costs by averaging down the aggregate fees they paid thereby increasing their net returns.

Why would GPs do this as they lose the associated fees with the co-investments? There are two primary reasons. First, if the GP wanted to acquire a particularly large transaction, it allowed the GP to avoid undue concentration in their fund. Second, GPs are acutely aware that investors

are very fee sensitive. This practice allows them to curry favor with the largest GPs by offering, in essence, a fee cut without having to advertise that fact to their smaller clients. This practice has historically been largely nontransparent, prompting the Securities and Exchange Commission to require GPs to disclose to all their LPs what these arrangements are on a going forward basis.

Many large LPs have gone beyond co-investments to reduce their costs. The fact that PE is so expensive has caused several large investors, such as the Canadian pension funds, Singapore's GIC and Temasek, to create their own internal PE teams on the theory that with a 600 basis point spread, they could invest themselves more effectively than investing in a PE fund managed by an external GP. They now have large internal investment teams.

Many large family offices are following suit. The rise of family offices has been an important development in the last decade. Many are consolidating and creating their own internal investment teams including individuals capable of making direct PE investments. UBS, one of the largest wealth managers in the world, surveyed 221 of the world's largest single family offices representing \$493 Billion in assets about their investment activities.⁸³ They found these firms had increased their allocation to PE by 5% to 21% from 2019 to 2021 of their total portfolios. Forty-two percent were investing in both funds and directly. However, 21% were only investing directly and this percentage is anticipated to rise significantly. The rationale is how bad do they have to be, if they have a 600 basis point margin for error? In short, former PE LP clients, both large sovereigns and family offices, have become competitors and could materially disrupt the industry.

As potential competitors these organizations have a significant advantage over traditional PE firms in that their cost of capital is materially lower. These direct investors can target 17% gross returns and still be better off on a net basis than investing in a PE fund in which the net return would be 14% should the PE firm produce a 20% gross return. This 300 basis point delta theoretically allows the family offices and large institutional investors to be able to pay more than the PE firm and still achieve a better net return, due to their lower cost of capital. It remains to be seen whether companies will prefer to align themselves with this new category of investors as opposed to the traditional PE firms, again potentially disrupting the PE industry.

A few other alternatives are beginning to percolate in the investment community. There have been recent articles about the attempts to "democratize PE". For example, Hamilton Lane offers a product in which retail investors can invest.⁸⁴ These products are both for accredited investors and small investors who can invest in tokenized amounts as small as \$10,000. Others, mentioned above, are similarly exploring other products at a reduced entry ticket to offer to the public. But to be clear, these are not "disruptive" products. These are fund of funds, and the retail investor will bear the higher costs due to higher distribution costs and consequently even lower returns relative to the institutional market.

The truly disruptive products are taking different forms. Some companies are executing with leveraged PME⁸⁵, others using Equity Index Option products⁸⁶. The major issue with some of these products is the fact they have proposed to use REPO financing as their leverage source. In the 2022 drawdown of the public markets and the corresponding interest rate increases, the inevitable margin calls would have been difficult for a firm to cover unless the LPs were amenable to adding additional capital to the program to cover them. However, there should eventually be a practical solution to leveraging PMEs that product sponsors could arrange with the expanding private credit lender market. GPs should be able to duration match their debt

secured by the portfolio companies in which they invest. Others are using hedged leverage positions to structure their portfolios.⁸⁷ In the latter instance, the proposed fees are zero management fees and 15% over a designated benchmark.

Alternatively, on-line platforms have been created in venture capital, such as AngelsList and Funders Club, and real estate, such as Cadre and Alteinvest. These platforms offer investors an opportunity to invest directly into specific companies or individual buildings. They are, for now, available to accredited investors and institutions to potentially democratize investments in these asset classes. They also offer these investment opportunities at a fraction of the cost of traditional venture capital and real estate.

Even Vanguard is rumored to be exploring a synthetic product in lieu of the more traditional fund of funds product it has with HarbourVest. Should Vanguard be able to create such a product, it could be highly disruptive to the PE industry. These products will be offered at a drastically reduced cost to conventional PE. Further, as the market contracts due to the denominator effect referenced above, and capital commitments concentrate with fewer firms, GPs will have to choose how to attract capital. The mutual fund industry response was to reduce fees dramatically.

E. Structural Industry Changes in other Financial Services Industries and Consolidation

Other financial service industries such as law, accounting, private wealth management, and even investment banking have already exhibited trends that are relevant to the PE industry. These industries have been profoundly affected by disruptive alternatives in their organizational structures. These changes have impacted their ability to attract and retain talent.

All these firms followed similar evolutionary tracks in terms of their corporate organizational structures. At their inception these firms originated as true partnerships. They had comparatively flat organizational structures with a few partners and a few associates beneath them. When the firm had up to 100 employees, the founders still knew all the individuals with whom they worked. Over time the successful firms grew substantially and became large corporations, not traditional partnerships, and operated as such with all the ensuing corporate bureaucracies. Their organizational structures evolved into a pyramid. At the top of the pyramid the C Suite management/Executive Committee controlled all aspects of the firm. Over the past 40 years small law and accounting firms grew and merged until there were comparatively few very large firms that evolved into global organizations. Smaller firms chose to remain more specialized boutiques, or general mid-sized regional firms, or merged with others to become larger firms. They had to determine how to compete. Smaller PE firms are likely to follow a similar transition.

The impact of the structural evolution of PE firms when compared to other financial service companies is a topic for another paper. The patterns are very similar and do not necessarily bode well for PE. If incoming talent views going to a large cap PE firm as the equivalent of signing on with an investment bank, which appears to be the case among many business school students, it may impact large PE firms' ability to attract and more importantly retain the best talent. This is a consequence of the "institutionalization" of the PE industry which emphasizes scale, fees, margins and efficiencies when compared to more boutique firms.

The very best talent may prefer to gravitate to other organizations or create their own companies as their means to wealth creation. How the PE firms have grown and how they are

now institutionally configured has the potential to be disruptive. Even one of the original founders of Terra Firma, Guy Hands, has questioned the “institutionalization” of the PE industry as potentially negatively affecting the future “dealmakers” to execute like those who were the industry pioneers.⁸⁸

Conclusion

So, What Does All of the Above Mean for PE?

There are certain key assumptions investors made for investing in PE. If one queried any PE investor, 100% would state they only want to invest in top quartile funds.⁸⁹ They assumed that the top quartile funds would outperform the public market alternatives over time. They assumed that examining the PE firms’ track records was a critical exercise to determine which firms would be in the top quartile going forward. The key assumption was that there was persistence in performance and past top quartile performance would predict future outperformance. Lastly, top quartile performance was attributed to the investment skills of the GP and their ability to add value to their portfolio companies.

These assumptions have been called into question by recent research. The PE data suggest that traditional methods of evaluating a given GP partnership are questionable. While it is technically true that the top quartile firms outperform the public markets over time as illustrated in **Figure 12** above, the fact is that the **top quartile firms** generating that performance **are not** necessarily the **same** firms over time. The academic research by Harris et.al. suggests that if one examines the track records of PE firms at the time the investor is making the investment decision, the performance information they have at that time is essentially irrelevant in selecting a future top quartile fund. **Harris et.al. conclusions suggest that the selection of any PE firm by any investor based on the information they have at the time of the commitment may be a random walk.** The data from multiple sources illustrates that performance persistence has waned materially post 2008.

All one needs to do is review panels A through V to see a lack of consistent performance across the board, with a few exceptions. Query whether sector selection or market beta is the primary driver of superior performance as much as portfolio company selection. So perhaps the requirement of all public offering documents to state “***Past performance does not guarantee future results***” should apply to PE.

If the selection of any PE firm based on past performance is a poor basis on which to make an investment decision to select any firm, at the time they make the investment, the investor should assume that the probability of top quartile performance is substantially less likely than the probability of average or median performance. Will this conclusion be acceptable to investors?

If picking a given GP is a random walk, how should LPs react? Pick smaller firms? Select first time funds and negotiate the pricing? Reject firms that continue to successively raise larger and larger funds? Larger funds perform less well, based on the data, than the prior funds regardless of whether this fact is due to the size of the subsequent fund or the “luck” of the GP in the prior fund. Rossi’s conclusions, if further substantiated, could disrupt the conventional wisdom concerning the factors driving PE performance in the same way as Eugene Fama’s

conclusions did concerning the value of active equity management in his pioneering work in the 1960's and 1979's.⁹⁰ More research is required to answer these questions.

If one assumes that the investor will more likely receive over time the average performance of all PE funds, then the comparison to public markets becomes important. In the US, as shown in **Figure 12**, the aggregated pooled PE funds IRR performance in the past decade has converged with the public market notwithstanding the higher leverage ratios of the PE firms relative to the PME's. The comparison may be even worse if the data is not dollar weighted. PE performance may actually underperform PME's on a risk adjusted basis given the amount of leverage they employ should they generate equivalent results on a nominal basis.

Are these conclusions surprising? The PE results may be attributable to several factors. One is the fact that the concentration of capital among the top 20 firms has caused them to shift towards larger transactions, which is a more efficient segment of the market when compared to the early years of the industry. Large PE firms must focus on larger transactions given the amount of capital they have to deploy. This results in an increasingly smaller number of target companies in which they can invest. Further exacerbating the efficiency of the market is the concentration of capital in the US market. Many of the larger transactions are held via auctions, not off market transactions. The markets in Europe and Asia have received comparatively less capital and may be more inefficient than the US market. Another factor may be that GPs in the private markets behave more akin to their brethren in the public markets where it has been well documented that it is difficult to outperform the market consistently. Lastly, the sheer number of new firms and products has made the US overall market far more competitive.

As referenced above, the smallest segment of the PE buyout market has been the better performer over the past five years. But the statistics suggest that even this market segment is quite competitive, and its results are even more inconsistent than those of the mega funds.

What do these factors mean generally for the PE industry? What conclusions can we reach based upon the performance since the GFC when the industry changed profoundly as well as the behavior of the larger firms? Examining the mutual fund industry and its trends over the past 15 years may provide insights for the PE industry's future. Some thoughts for industry participants:

- The PE industry is simply different since the GFC
 - The capital concentration among a small number of firms is profound; is this a good thing?
 - Query whether the firms with the best performance are attracting capital, meaning are investors are rewarding the "brand" and early performance, not the performance of the past 10 years? Are investors allocating capital looking primarily in the rear view mirror?
 - Does the one stop shop approach to investing with a firm lead to optimal results?
 - The largest buyout firms are now public which has incentivized them to be AUM gatherers as opposed return optimizers. There are also potential conflicts between the private LP interests and the interests of the public shareholders.

- The increase in long duration funds and secondary funds (rollovers from prior funds) supports the suggestion that PE firms are attempting to secure long term management fees based on AUM.
- The industry appears ripe for disruption.
- Students coming out of college and business schools may reevaluate their prospects within these firms. The path to wealth may be in creating their own firms versus securing a position within a large PE firm.
- Investors may have to fundamentally change their investment approach to achieve the best possible nominal results.
 - The assumption that past performance for large cap and smaller cap PE firms predicts future performance is tenuous.
 - The return assumptions for large cap PE firms should be revisited.
 - The correlation assumptions between and among PE, public equities and fixed income should be reexamined.
 - Investors should consider that past results may be a function as much of luck versus skill.
 - Investors should consider that their future results, should they continue to invest in the same manner, will lead to average or median results.
 - Investors should consider alternative, disruptive investment strategies to achieve comparable results given the high costs associated with PE investments.
 - Investors should recognize that large GPs, both public and private, are now motivated by increasing their AUM, not necessarily producing the highest nominal returns. This fact has led to a shortened time between fund raising. This fact forces GPs to invest their committed capital as soon as possible because they cannot raise the next fund until 70-75% of the prior fund's committed capital has been "committed". The pressure to invest as quickly as possible has caused the large funds to essentially become "dollar cost averagers" as opposed to being able to respond to market cycles on a more opportunistic basis.
 - More direct investments and/or investments in lower cost vehicles with similar investment objectives may produce superior returns given the cost differentials, if the expected net returns are in the 13% range.
 - Investors may conclude that investing in the private markets is just another tool in their in their portfolio construction "toolkit" and that they want exposure to a large segment of the capital markets. However, if that is the conclusion, benchmarking, monitoring, and return expectations should be rethought. If some excess return premium is required, the data suggest the only obvious mechanism to achieve it is to reduce investment costs.
- GPs may need to rethink their investment strategies given the relative underperformance to the public PMEs

- Strategies focused on larger cap companies may be operating in a market that has become too efficient.
- GPs may need to return to their origins to better ensure their interests are better aligned with their investors, meaning they have actual “skin in the game”, not corporate balance sheet co-investments, and that their primary compensation is derived from carried interests.
- When the facts that actively equity managers generally produced no alpha over time became accepted in the mutual fund business, profound changes occurred. Will that happen in PE?

As stated at the outset, this paper is not an indictment of the PE industry. Investors should want exposure to the large number of private companies that have opted to grow in the private markets. It is a call for investors to question **how to invest in the future, not whether they should invest in the industry** to avoid “average” PE returns. Average returns are, in essence, a “C”. Is that good enough? Indeed, the academic literature suggests that the superior PE performance of certain private investors, such as the Yale Endowment, has waned over time.⁹¹ These historically superior investors have regressed to the mean as the market has grown and become more efficient.

In the face of achieving only persistently average returns, investors in the mutual fund industry opted for passive alternatives that were less expensive. In essence, the clear trend in the public mutual fund industry has been to price investment management services as a commodity. This is the “race to the bottom” in terms of pricing. Will PE firms follow suit and cut their fees to attract capital? If current market conditions persist that is likely to happen.

When will this happen? The inertia associated with the belief in the benefits of active equity management was sustained for decades even after research clearly called this belief into doubt. As Kahneman said, *“Cognitive illusions can be more stubborn than visual illusions.”*⁹² The very same factors exist and will likely persist in the PE industry, as the GPs, LPs, and the entire derivative service providers to it have an extraordinary interest in maintaining the status quo, for a very long time notwithstanding the evidence to the contrary regarding the fundamental assumptions concerning whether and how to invest in PE.

In the mutual fund industry, in addition to the inertia associated with strongly held beliefs supporting the belief in active management was the undeniable influence of pervasive and persuasive marketing. These efforts by the mutual fund industry to perpetuate the belief in the value of active management strongly reinforced these beliefs. The same powerful factor exists in the PE industry. The personal relationships between the GPs and LPs are strongly sustained by some of the most effective marketing professionals in the entire financial industry. These products are often “sold” not “bought” possibly explaining why so many of the GPs in the 4th quartile still exist and raise capital.

These conclusions, should they become widely accepted, have the potential to materially disrupt the PE industry in terms of how capital is allocated. However, given the entrenched interests not only of the PE firms and those firms who support them in maintaining the status quo, it may take an inordinate amount of time for these conclusions to be accepted by LPs and

will most certainly be strongly resisted by the entrenched interests. Eventually, though, the data should prevail, and the inexorable conclusion will be that the industry must change.

Exhibit 1 Assumptions on Returns, Volatilities, and Correlations for Various Asset Classes

Name	US Stock Market	Global ex-US Stock Market	Total US Bond Market	REIT	Commodities	Buyouts Proxy	Annualized Return	Annualized Standard Deviation	Sharpe ratio
US Stock Market	1	0.06	0.79	-0.05	0.76	0.21	14.72%	14.30%	0.925
Global ex-US Stock Market	0.06	1	0.05	0.6	0.18	0.26	6.59%	14.22%	0.358
Total US Bond Market	0.79	0.05	1	-0.02	0.61	-0.03	1.82%	3.60%	0.091
REIT	-0.05	0.6	-0.02	1	0.13	0.23	10.57%	15.98%	0.568
Commodities	0.76	0.18	0.61	0.13	1	0.27	-0.89%	22.02%	(0.108)
Buyouts Proxy - Accelerate Private Equity Alpha Fund ALFA.TO	0.21	0.26	-0.03	0.23	0.27	1	21.45%	21.75%	0.918

Covariance Matrix						
	US Stock Market	Global ex-US Stock Market	Total US Bond Market	REIT	Commodities	US Buyouts
US Stock Market	0.02045	0.00122	0.00407	-0.00114	0.02393	0.00653
Global ex-US Stock Market	0.00122	0.02022	0.00026	0.01363	0.00564	0.00804
Total US Bond Market	0.00407	0.00026	0.00130	-0.00012	0.00484	-0.00023
REIT	-0.00114	0.01363	-0.00012	0.02554	0.00457	0.00799
Commodities	0.02393	0.00564	0.00484	0.00457	0.04849	0.01293
US Buyouts	0.00653	0.00804	-0.00023	0.00799	0.01293	0.04731

Risk-free rate		1.49%
Weights: Portfolio #1 with 5% standard deviation		
US Stock Market	7.87%	
Global ex-US Stock Market	–	
Total US Bond Market	68.18%	
REIT	11.71%	
Commodities	–	
Buyouts Proxy - ALFA.TO	12.23%	
Total	100%	

Weights: Portfolio #2 with 5% standard deviation		
US Stock Market		22.86%
Global ex-US Stock Market		–
Total US Bond Market		43.71%
REIT		17.41%
Commodities		–
Buyouts Proxy - ALFA.TO		16.02%
Total	100%	100%

Source: Compiled by authors from Refinitiv; Prequin; Portfoliovisualizer.com.

Exhibit 2 Buyouts Performance: Mega funds (more than \$1bn), by vintage

Panel A

Buyouts Performance: 2018 Vintage		
Top Quartile		
Name	IRR	MOIC
Blackstone Group	73	3.0x
Hg	60	2.2x
Searchlight Capital Partners	56	1.5x
Thoma Bravo	56	2.0x
The Jordan Company	54	2.0x
Nordic Capital	51	2.0x
Kelso & Company	49	1.7x
EQT	48	2.0x
GTCR	40	1.8x
Carlyle Group	34	–
Reverence Capital Partners	33	1.5x
Silver Lake	30	1.8x
Roark Capital Group	27	1.7x
Second Quartile		
Name	IRR	MOIC
TPG	53	1.6x
Hg	35	1.7x
American Securities	32	1.3x
Hillhouse Capital Manager	29	1.4x
CVC	29	1.6x
PAI Partners	29	1.3x
Epiris	27	1.7x
Roark Capital Group	27	1.5x
Equistone Partners Europe	26	1.5x
Primavera Capital	26	–
Francisco Partners	25	1.7x
Siris Capital	25	1.6x
Wellspring Capital Management	24	1.3x
Vestar Capital Partners	23	1.4x
Certares	22	–
Third Quartile		
Name	IRR	MOIC
Inflexion Private Equity Partners	31	1.4x
PAI Partners	29	1.3x
Wellspring Capital Management	24	1.3x
Tailwind Capital	24	1.4x
Vestar Capital Partners	23	1.4x
Onex	22	–
Brookfield Asset Management	22	1.3x
Linden	22	1.3x
Charlesbank Capital Partners	20	1.3x
Centurium Capital	18	1.4x
Affinity Equity Partners	18	1.4x
H.I.G. Capital	17	1.3x
Nordic Capital	17	1.5x
Certares	15	–
Fourth Quartile		
Name	IRR	MOIC
Triton	18	1.2x
Silver Lake	15	1.3x
Palladium Equity Partners	13	1.3x
Noalpina Capital	13	1.1x
Platinum Equity	9	1.1x
Carlyle Group	8	1.1x
Pritzker Private Capital	7	–
Trilantic North America	5	–
Sycamore Partners	0	1.0x

Panel B

Buyouts Performance: 2017 Vintage		
Top Quartile		
Name	IRR	MOIC
Veritas Capital	60	3.8x
Clayton Dubilier & Rice	53	2.1x
Vitruvian Partners	52	2.2x
KKR	42	2.2x
Altaris	38	1.9x
Parthenon Capital	37	2.2x
Genstar Capital Partners	33	2.4x
Second Quartile		
Name	IRR	MOIC
HGGC	34	1.8x
New Mountain Capital	33	2.0x
MidOcean Partners	32	–
EQT	29	1.8x
Leonard Green & Partners	28	2.1x
Permira	25	2.0x
Waud Capital Partners	24	1.7x
Third Quartile		
Name	IRR	MOIC
Waterland Private Equity Invest	33	1.5x
Brentwood Associates	27	1.4x
Kohlberg & Company	24	1.8x
Stone Point Capital	24	1.8x
Berkshire Partners	24	1.7x
MBK Partners	23	1.8x
Cornell Capital	23	1.4x
Quad-C	20	1.5x
BC Partners	19	1.6x
Lone Star Funds	18	1.5x
CVC	13	1.5x
Fourth Quartile		
Name	IRR	MOIC
GI Partners	23	1.6x
Corsair Capital	18	1.4x
Bain Capital	16	1.3x
Bernhard Capital Partners Mana	14	0.8x
Ares Management	10	1.3x
Levine Leichtman Capital Partners	8	1.2x
Chequers Capital	6	1.1x

Panel C

Buyouts Performance: 2016 Vintage		
Top Quartile		
Name	IRR	MOIC
TA Associates	42	2.6x
Apax Partners France	38	2.5x
Thoma Bravo	38	3.1x
Oaktree Capital Management	35	3.1x
Apax Partners	30	2.3x
Vista Equity Partners	28	1.9x
Hellman & Friedman	27	–
Bain Capital	27	1.6x
Audax Group	27	2.1x
The Sterling Group	27	2.2x
Harvest Partners	24	2.0x
PAG	20	2.0x
Second Quartile		
Name	IRR	MOIC
Ardian	29	1.85
Morgan Stanley	28	1.90
Oak Hill Capital Partners	27	1.59
FIMI	26	1.80
Advent International	26	2.25
Platinum Equity	25	1.85
Rivean Capital	24	2.02
Vista Equity Partners	24	2.15
Thomas H Lee Partners	24	1.87
Charterhouse Capital Partners	22	1.72
IK Partners	19	1.63
Third Quartile		
Name	IRR	MOIC
Blackstone Group	21	1.7x
ACON Investments	20	1.7x
Thoma Bravo	18	1.9x
KSL Capital Partners	17	1.6x
Investindustrial	15	1.5x
Carlyle Group	13	–
Ardian	10	1.3x
Fourth Quartile		
Name	IRR	MOIC
Goldman Sachs Asset Managem	20	1.5x
American Securities	14	1.5x
ONCAP	14	–
FIMI	12	–
Gamut Capital Management	11	1.3x
Trustar Capital	9	1.3x
Harvest Partners	8	–
Roark Capital Group	7	1.4x
Hony Capital	1	1.0x

Panel D

Buyouts Performance: 2015 Vintage		
Top Quartile		
Name	IRR	MOIC
Brookfield Asset Management	48	2.5x
Francisco Partners	35	3.7x
Lindsay Goldberg	35	2.2x
Genstar Capital Partners	35	2.6x
Aquiline Capital Partners	34	2.1x
Wynnchurch Capital	31	2.4x
Veritas Capital	29	3.7x
Waterland Private Equity Investments B.V.	28	2.4x
EQT	27	2.2x
Bridgepoint	25	2.3x
Irving Place Capital	20	4.3x
Second Quartile		
Name	IRR	MOIC
Welsh, Carson, Anderson & Stowe	30	2.5x
Vector Capital	27	–
Searchlight Capital Partners	25	1.9x
Rhône Group	22	1.7x
One Equity Partners	22	2.1x
Partners Group	21	2.0x
Pacific Equity Partners	21	1.7x
Thoma Bravo	20	2.3x
TPG	20	1.8x
KKR	19	1.8x
Third Quartile		
Name	IRR	MOIC
Advent International	19	1.7x
Centerbridge Partners	19	1.6x
FFL Partners	18	1.7x
AEA Investors	18	1.9x
Inflexion Private Equity Partners	17	1.7x
Hahn & Company	17	1.8x
Madison Dearborn Partners	16	1.6x
Astorg	16	1.7x
Charlesbank Capital Partners	15	1.6x
Exponent Private Equity	13	1.7x
Fourth Quartile		
Name	IRR	MOIC
Siris Capital	14	1.5x
Crestview Partners	13	1.5x
RRJ Capital	12	1.3x
Lone Star Funds	12	1.3x
Cortec Group	12	1.5x
ABRY Partners	11	1.4x
Equistone Partners Europe	9	1.5x
Carlyle Group	6	–

Panel E

Buyouts Performance: 2014 Vintage		
<i>Top Quartile</i>		
Name	IRR	MOIC
GTCR	43	4.4x
Thoma Bravo	31	3.8x
Vitruvian Partners	30	–
TowerBrook	26	2.2x
Permira	25	3.1x
Sentinel Capital Partners	22	2.0x
<i>Second Quartile</i>		
Name	IRR	MOIC
H.I.G. Capital	25	1.9x
Stone Point Capital	23	2.3x
Vista Equity Partners	22	2.3x
The Jordan Company	21	2.1x
PAI Partners	18	2.1x
Altor	18	2.0x
Carlyle Group	18	–
Tailwind Capital	12	1.6x
<i>Third Quartile</i>		
Name	IRR	MOIC
CVC	17	1.8x
Altor	17	2.0x
Carlyle Group	16	2.0x
Olympus Partners	15	1.6x
HitecVision	14	1.6x
Apollo Global Management	12	1.5x
Freeman Spogli & Co	11	1.6x
Palladium Equity Partners	10	1.5x
<i>Fourth Quartile</i>		
Name	IRR	MOIC
H.I.G. Capital	15	1.5x
Onex	9	–
Littlejohn & Co.	8	1.4x
Sycamore Partners	5	1.2x
Hopu Investment Management	1	1.1x
Odyssey Investment Partner	0	1.0x

Panel F

Buyouts Performance: 2013 Vintage		
<i>Top Quartile</i>		
Name	IRR	MOIC
TDR Capital	36	3.6x
Bain Capital	31	2.5x
Silver Lake	27	2.7x
New Mountain Capital	23	2.2x
Partners Group	19	2.4x
Hg	18	2.2x
<i>Second Quartile</i>		
Name	IRR	MOIC
Clayton Dubilier & Rice	27	2.4x
H.I.G. Capital	23	2.1x
Affinity Equity Partners	16	1.7x
IK Partners	15	1.9x
CCMP Capital Advisors	15	2.0x
<i>Third Quartile</i>		
Name	IRR	MOIC
Nordic Capital	17	1.8x
Vista Equity Partners	16	2.1x
Audax Group	15	1.8x
Carlyle Group	13	1.6x
CCMP Capital Advisors	13	1.8x
Archer Capital	13	1.7x
MBK Partners	12	1.7x
RRJ Capital	11	1.4x
<i>Fourth Quartile</i>		
Name	IRR	MOIC
EQT	9	–
Lone Star Funds	9	1.2x
Morgan Stanley Private Equi	8	1.4x

Panel G

Buyouts Performance: 2012 Vintage		
<i>Top Quartile</i>		
Name	IRR	MOIC
Thoma Bravo	40	3.2x
Baring Vostok Capital Partners	23	2.9x
<i>Second Quartile</i>		
Name	IRR	MOIC
TSG Consumer Partners	30	2.7x
Platinum Equity	30	1.9x
Providence Equity	24	2.1x
KKR	20	2.2x
Bain Capital	19	–
<i>Third Quartile</i>		
Name	IRR	MOIC
Court Square	19	1.9x
Roark Capital Group	17	2.6x
AEA Investors	17	2.0x
Kohlberg & Company	16	1.7x
Ares Management	16	2.0x
Apax Partners	15	1.9x
Ardian	13	1.7x
Actera Group	8	1.4x
<i>Fourth Quartile</i>		
Name	IRR	MOIC
Audax Group	13	1.6x

Panel H

Buyouts Performance: 2011 Vintage		
<i>Top Quartile</i>		
Name	IRR	MOIC
Waterland Private Equity Investments B.V.	41	3.3x
Sycamore Partners	29	2.2x
Hellman & Friedman	25	3.3x
Francisco Partners	24	3.5x
American Securities	23	2.3x
<i>Second Quartile</i>		
Name	IRR	MOIC
Harvest Partners	21	2.1x
GTCR	21	2.0x
PAG	19	2.0x
Berkshire Partners	18	2.1x
Wellspring Capital Management	17	1.7x
EQT	16	1.9x
Equistone Partners Europe	16	1.7x
Vista Equity Partners	16	2.1x
BC Partners	16	2.0x
Chequers Capital	16	1.9x
<i>Third Quartile</i>		
Name	IRR	MOIC
Equistone Partners Europe	16	1.7x
Wellspring Capital Management	16	1.7x
EQT	16	–
ABRY Partners	14	1.8x
Blackstone Group	13	1.8x
KSL Capital Partners	10	1.3x
BPEA EQT Asia	9	1.6x
<i>Fourth Quartile</i>		
Name	IRR	MOIC
Carlyle Group	8	–
Rhône Group	6	1.2x
Advent International	1	1.1x

Panel I

Buyouts Performance: 2010 Vintage		
Top Quartile		
Name	IRR	MOIC
TA Associates	27	3.9x
Birch Hill Equity Partners	23	3.6x
Second Quartile		
Name	IRR	MOIC
NA	NA	NA
Third Quartile		
Name	IRR	MOIC
Littlejohn & Co.	14	1.9x
Oaktree Capital Managem	13	1.6x
Stone Point Capital	12	1.9x
Fourth Quartile		
Name	IRR	MOIC
The Gores Group	1	1.0x

Panel J

Buyouts Performance: 2009 Vintage		
Top Quartile		
Name	IRR	MOIC
Clayton Dubilier & Rice	26	2.7x
Second Quartile		
Name	IRR	MOIC
Clessidra Capital Partners	16	1.5x
Third Quartile		
Name	IRR	MOIC
Waterland Private Equity Ir	17	1.6x
Clessidra Capital Partners	16	1.5x
Charterhouse Capital Partn	13	1.5x
Triton	10	1.6x
Fourth Quartile		
Name	IRR	MOIC
Onex	11	–
FFL Partners	4	1.0x

Panel K

Buyouts Performance: 2008 Vintage		
Top Quartile		
Name	IRR	MOIC
Madison Dearborn Partners	23	2.3x
American Securities	21	1.9x
Ares Management	20	2.1x
MBK Partners	20	2.3x
Altor	19	2.6x
Bain Capital	18	2.0x
CVC	17	2.0x
Advent International	17	2.1x
Second Quartile		
Name	IRR	MOIC
Apollo Global Management	25	1.7x
ABRY Partners	20	2.1x
Avista Capital Partners	16	1.7x
PAI Partners	13	2.2x
KKR	13	1.8x
Bridgepoint	13	1.8x
Third Quartile		
Name	IRR	MOIC
CVC	13	1.6x
GI Partners	13	1.6x
Welsh, Carson, Anderson & St	12	1.7x
Lone Star Funds	12	1.6x
TA Associates	11	1.8x
HGGC	10	1.3x
TPG	10	1.5x
Bain Capital	10	1.6x
Riverside Company	9	1.5x
Fourth Quartile		
Name	IRR	MOIC
Carlyle Group	12	1.6x
Yucaipa Companies	9	1.7x
TowerBrook	8	1.3x
Lindsay Goldberg	8	1.4x
Nordic Capital	8	1.6x
Pacific Equity Partners	8	1.4x
Kelso & Company	7	1.4x
Lee Equity Partners	6	1.2x

Buyouts Performance: Mid-Market Funds (less than \$1bn), by Vintage

Panel L

Buyouts Performance: 2018 Vintage			
Top Quartile			
Name	IRR	MOIC	
Sole Source Capital	102	–	
CONSTELLATION CAPITAL	69	3.9x	
Periscope Equity	57	2.9x	
WestBridge Capital	55	1.8x	
INVL Asset Management	48	3.1x	
LFM Capital	46	1.6x	
New State Capital Partners	45	–	
Wind Point Partners	42	2.5x	
Exponent Private Equity	39	2.1x	
ArchiMed	36	1.6x	
ECI Partners	35	1.7x	
Verdane Capital Advisors	33	1.6x	
Acatia Capital	32	2.0x	
Cressey & Company	30	1.4x	
Revelstoke Capital Partners	30	1.6x	
Second Quartile			
Name	IRR	MOIC	
New Heritage Capital	43	1.6x	
Cressey & Company	39	1.6x	
Hastings Equity Partners	35	1.8x	
Glenwood Private Equity	35	–	
Miura Partners	31	1.6x	
Andera Partners	31	1.5x	
Advent Partners	28	1.5x	
Behrman Capital	27	1.6x	
Frazier Healthcare Partners	26	1.4x	
Presidio Investors	26	1.8x	
Lee Equity Partners	26	1.3x	
Borromin Capital Management	25	1.6x	
LightBay Capital	25	1.4x	
Innova Capital	25	1.5x	
B & Capital	24	1.4x	
Third Quartile			
Name	IRR	MOIC	
Lee Equity Partners	26	1.3x	
Blue Point Capital Partners	21	1.4x	
ParkerGale	20	1.3x	
Windjammer Capital Investors	19	1.3x	
Star Capital	19	1.3x	
Anacacia Capital	18	1.3x	
IK Partners	16	1.2x	
Down 2 Earth Capital	15	–	
Bolster Investment Partners	14	1.4x	
GCP Capital Partners	12	1.3x	
Progressio SGR	9	1.3x	
Ardian	8	1.2x	
Ethos	6	1.3x	
Fourth Quartile			
Name	IRR	MOIC	
Great Point Partners	11	1.1x	
Water Street Healthcare Partners	9	1.2x	
KJK Capital	3	1.1x	
Crescendo Equity Partners	3	1.1x	

Panel M

Buyouts Performance: 2017 Vintage			
Top Quartile			
Name	IRR	MOIC	
Hg	90	2.1x	
GMT Communications Partners	89	2.1x	
Francisco Partners	81	3.7x	
Gemspring Capital	77	2.7x	
Sole Source Capital	60	–	
Value4Capital	57	2.9x	
Novacap	55	2.6x	
Prospect Hill Growth Partners	55	–	
LongueVue Capital	41	2.7x	
BV Investment Partners	39	1.9x	
Seidler Equity Partners	36	1.9x	
Marlin Equity Partners	33	2.1x	
Main Capital Partners	32	2.2x	
EmergeVest	28	3.0x	
Second Quartile			
Name	IRR	MOIC	
Trinity Hunt Partners	55	1.8x	
Frontenac Company	50	2.3x	
The Vistria Group	36	1.9x	
Kinderhook Industries	30	1.9x	
RUBICON Technology Partners	30	1.6x	
Argos Wityu	28	1.7x	
Incline Equity Partners	27	1.6x	
Gilde Equity Management Benelux	25	1.6x	
Procuritas Partners	23	1.5x	
Lightyear Capital	22	1.7x	
Montefiore Investment	20	1.7x	
Axcel	19	1.8x	
Amergent Capital	17	3.2x	
Third Quartile			
Name	IRR	MOIC	
New MainStream Capital	33	1.7x	
Bain Capital	31	1.7x	
Cotton Creek Capital	31	1.7x	
Incline Equity Partners	26	1.6x	
Gallatin Point Capital	22	1.4x	
Lightyear Capital	22	1.8x	
EmergeVest	20	–	
Palatine Private Equity	19	1.4x	
NB Renaissance Partners	16	1.4x	
August Equity	14	1.5x	
Innova Capital	11	2.1x	
Fourth Quartile			
Name	IRR	MOIC	
Centre Lane Partners	21	–	
Marlin Equity Partners	17	1.5x	
Riordan, Lewis & Haden Equity Partners	17	1.3x	
Procuritas Partners	15	1.3x	
Omaha Beach Capital	15	–	
Vista Equity Partners	12	1.4x	
Arcadia SGR	11	1.3x	
Vaaka Partners	10	1.2x	
Quadrant Private Equity	10	1.2x	
EQT	7	–	
Platte River Equity	6	1.1x	

Panel N

Buyouts Performance: 2016 Vintage		
Top Quartile		
Name	IRR	MOIC
Renovus Capital Partners	79	6.4x
Falfurrias Capital Partners	75	6.9x
Nautic Partners	53	1.7x
Avista Capital Partners	48	2.1x
Bridgepoint	43	2.3x
Bertram Capital	39	2.4x
EagleTree Capital	36	2.7x
Synova	36	2.7x
YFM Equity Partners	32	2.1x
Imperial Capital Group	32	2.6x
Palm Beach Capital	32	2.2x
Veronis Suhler Stevenson	31	2.0x
Atlantic Street Capital	31	2.1x
Cordovan Capital Management	30	2.2x
Speyside Equity	30	3.1x
Accelmed	30	-
Altaris	30	2.7x
Key Capital Partners	30	2.3x
Vendis Capital	23	2.6x
Second Quartile		
Name	IRR	MOIC
Graycliff Partners	46	1.9x
CBPE Capital	33	1.8x
Wind Point Partners	31	1.9x
Arlington Capital Partners	29	2.0x
DC Capital Partners	29	1.5x
Artá Capital	28	1.7x
DW Healthcare Partners	28	2.2x
WindRose Health Investors	28	2.3x
Branford Castle	28	-
CenterOak Partners	27	2.0x
Levine Leichtman Capital Partners	26	2.1x
Seaport Capital	25	2.0x
Via Equity	24	2.0x
MCH Private Equity	23	1.8x
Endeavour Capital	21	2.0x
AEA Investors	20	2.0x
Holland Capital	20	1.8x
OpenGate Capital	19	2.0x
Third Quartile		
Name	IRR	MOIC
DC Capital Partners	26	1.5x
Excellere Partners	24	1.6x
CenterGate Capital	24	1.9x
Phoenix Equity Partners	24	1.7x
Seaport Capital	24	2.0x
Korona Invest	23	1.1x
Argand Partners	22	1.8x
Growth Capital Partners	21	1.7x
Oriens Investment Management	21	1.6x
AEA Investors	20	2.0x
Holland Capital	20	1.8x
NB Renaissance Partners	20	1.8x
Angeles Equity Partners	20	1.6x
Mason Wells	19	1.9x
OpenGate Capital	19	2.0x
NorthEdge	18	1.7x
STAR Capital Partners	17	1.6x
Liberty Hall Capital Partners	16	1.3x
Flexpoint Ford	15	1.8x
Endeavour Capital	15	1.6x
OpCapita	15	1.6x
Quadrant Private Equity	14	1.6x
Glenwood Private Equity	12	1.1x
L Catterton	9	1.3x
Fourth Quartile		
Name	IRR	MOIC
EOS Investment Management Group	15	1.5x
Shamrock Capital Advisors	14	1.3x
Century Equity Partners	14	1.3x
Flexpoint Ford	13	1.3x
Frazier Healthcare Partners	13	1.5x
Swander Pace Capital	13	1.4x
Gen Cap America	12	1.2x
Mobius Equity Partners	12	1.3x
MBO & Co	11	1.3x
PineBridge Investments	11	1.3x
DFW Capital Partners	10	1.4x
Livingbridge	9	1.3x
Omaha Beach Capital	8	-
Karmijn Kapitaal	8	1.4x
Arbor Private Investment Company	8	1.2x
TDR Capital	5	1.4x
Australis Partners	2	1.0x

Panel O

Buyouts Performance: 2015 Vintage		
Top Quartile		
Name	IRR	MOIC
Gridiron Capital	55	6.1x
New State Capital Partners	42	-
Detong Capital	40	4.7x
Crescendo Equity Partners	39	2.9x
Linden	38	2.9x
Apax Partners	36	3.1x
J.F. Lehman & Company	35	2.6x
WM Partners	35	2.2x
Main Capital Partners	33	2.6x
Sumeru Equity Partners	32	2.8x
Sparring Capital	32	2.5x
Carlyle Group	32	-
EmergeVest	28	2.8x
Polaris Private Equity	26	2.1x
Lineage Capital	26	2.2x
Palatine Private Equity	25	2.0x
Evoco	24	2.1x
Crescent Capital Partners	22	3.3x
Revelstoke Capital Partners	21	2.4x
Second Quartile		
Name	IRR	MOIC
Riverside Company	46	1.5x
Cressey & Company	26	2.3x
Fortissimo Capital	25	2.0x
Invision	25	1.8x
Latour Capital	24	1.8x
Kedma Capital	24	2.1x
Panoramic Growth Equity	24	2.1x
Nippon Mirai Capital	23	2.1x
Amulet Capital Partners	23	2.1x
Hamilton Robinson	21	-
Kinderhook Industries	21	2.4x
SkyKnight Capital	20	-
Levine Leichtman Capital Partners	19	1.9x
Stirling Square Capital Partners	19	2.2x
Gilde Equity Management Benelux	16	1.9x
Third Quartile		
Name	IRR	MOIC
IK Partners	23	1.7x
Ridgemont Equity Partners	21	1.8x
Birch Hill Equity Partners	20	1.7x
Lovell Minnick Partners	20	1.7x
Encore Consumer Capital	19	1.8x
CapStreet Group	19	1.6x
Riverside Company	17	2.0x
Gilde Equity Management Benelux	16	1.9x
EQT	16	-
Shorehill Capital	14	1.6x
Bernhard Capital Partners Management	14	1.9x
IFM Investors	13	1.8x
MidOcean Partners	13	-
Azulis Capital	13	1.5x
Fourth Quartile		
Name	IRR	MOIC
Flexpoint Ford	16	1.6x
GHO Capital	14	1.6x
MSouth Equity Partners	14	1.6x
Brentwood Capital Advisors	13	1.2x
Comvest Partners	12	1.6x
AE Industrial Partners	12	1.5x
True North	12	1.6x
Linzor Capital Partners	11	1.4x
JZ Capital Partners	11	1.4x
Livingbridge	10	1.4x
ParkerGale	10	1.5x
Segulah	10	1.4x
Neuberger Berman	9	1.3x
AnaCap Financial Partners	9	1.2x
HCapital Partners	9	1.5x
Elysian Capital	9	1.4x
Harwood Capital Management Group	8	1.3x
CAI Capital Partners	8	1.4x

Panel P

Panel Q

Buyouts Performance: 2014 Vintage		
Top Quartile		
Name	IRR	MOIC
Detong Capital	82	4.7x
ArchiMed	46	2.3x
Nautic Partners	43	4.1x
Novacap	43	4.1x
Riverside Company	39	5.9x
Alpine Investors	38	3.7x
Marlin Equity Partners	34	2.5x
Aksia Group	34	2.6x
LFM Capital	32	2.6x
Harvest Capital	32	2.9x
Nordian Capital Partners	32	4.3x
Altaris	32	2.5x
Stripes	27	2.6x
Quadrant Private Equity	27	1.8x
Reverence Capital Partners	24	1.9x
Portobello Capital	23	1.9x
Second Quartile		
Name	IRR	MOIC
ACA Group	35	1.6x
ZMC	27	-
Glenwood Private Equity	27	1.7x
The Vistria Group	26	2.5x
Next Capital	26	2.3x
Tritium Partners	25	2.2x
Webster Equity Partners	24	2.5x
Andera Partners	23	1.9x
Miura Partners	20	2.3x
Seidler Equity Partners	19	2.3x
Novacap	19	1.9x
ProA Capital	18	1.8x
Egeria	18	1.9x
JLL Partners	17	1.8x
Bluegem Capital Partners	11	2.3x
Third Quartile		
Name	IRR	MOIC
Stellex Capital Management	21	1.5x
ProA Capital	19	2.0x
Hastings Equity Partners	18	1.8x
Blue Point Capital Partners	17	1.6x
RUBICON Technology Partners	16	1.6x
Timesbole Venture Capital	16	-
Sorenson Capital	16	1.8x
Union Park Capital	15	2.2x
Prospect Hill Growth Partners	15	-
Sovereign Capital Partners	13	1.5x
Sentica Partners	12	1.6x
STAR Capital Partners	8	1.6x
Ford Financial	8	1.7x
Fourth Quartile		
Name	IRR	MOIC
Content Partners	12	1.5x
Harbert Management Corporation	10	1.6x
New MainStream Capital	10	1.4x
Primary Capital Partners	10	1.5x
Paine Schwartz Partners	9	1.4x
Mill City Capital	8	1.5x
OpCapita	8	1.4x
EmergeVest	7	-

Panel R

Buyouts Performance: 2013 Vintage		
Top Quartile		
Name	IRR	MOIC
Consonance Capital	74	3.5x
Holland Capital	74	5.1x
Eureka Equity Partners	41	3.0x
Down 2 Earth Capital	38	2.8x
Clarion Capital Partners	37	2.8x
Thoma Bravo	36	3.3x
Water Street Healthcare Partner	36	2.9x
Harren Equity Partners	36	3.3x
Accel-KKR	35	2.7x
Quad-C	30	2.6x
FSN Capital	28	2.9x
Synova	25	2.5x
Second Quartile		
Name	IRR	MOIC
Alvarez & Marsal Capital	27	2.1x
Clearview Capital	26	2.6x
Pencarrow Private Equity	23	2.0x
August Equity	23	2.2x
Montefiore Investment	22	2.3x
Insignia Capital Group	22	1.9x
Vaaka Partners	22	2.3x
Silver Oak Services Partners	22	2.6x
Great Point Partners	22	1.8x
CID Capital	20	2.2x
New Heritage Capital	19	1.9x
Windjammer Capital Investors	17	2.2x
HCI Equity Partners	15	2.2x
Third Quartile		
Name	IRR	MOIC
NorthEdge	18	1.6x
Invision	16	1.9x
GenNx360 Capital Partners	15	1.7x
High Road Capital Partners	15	1.9x
Guardian Capital Partners	13	1.8x
Parallax Capital Partners	13	1.6x
Anacacia Capital	10	1.4x
ACON Investments	10	1.6x
Nexus Group - Peru	9	1.5x
Swander Pace Capital	9	1.7x
Spire Capital	8	1.3x
Fourth Quartile		
Name	IRR	MOIC
Riverside Partners	12	1.7x
AAC Capital Partners	8	1.5x
ICV Partners	8	1.3x
Brentwood Associates	7	1.4x
JPB Partners	7	1.4x
Palatine Private Equity	6	1.3x
Graphite Capital Management	6	1.4x
CapMan	4	1.1x

Panel S

Buyouts Performance: 2012 Vintage			
Top Quartile			
Name	IRR	MOIC	
CapVest	48	4.2x	
WindRose Health Investors	44	4.2x	
Imperial Capital Group	41	5.5x	
BV Investment Partners	40	2.4x	
Parthenon Capital	39	4.2x	
Incline Equity Partners	37	2.5x	
Frontenac Company	35	2.4x	
DFW Capital Partners	34	2.9x	
Cortec Group	31	4.1x	
Trinity Hunt Partners	27	3.3x	
Main Capital Partners	27	3.1x	
Livingbridge	27	2.7x	
The Growth Fund	21	2.7x	
Second Quartile			
Name	IRR	MOIC	
Excellere Partners	32	2.1x	
One Rock Capital Partners	26	2.2x	
Centre Lane Partners	25	-	
Ridgmont Equity Partners	25	2.5x	
Hg	23	2.4x	
Bridgepoint	23	1.9x	
Wicks Group	22	2.3x	
Linsalata Capital Partners	21	2.1x	
Thompson Street Capital Partners	21	1.8x	
FIMI	20	2.5x	
Elbrus Capital	20	2.9x	
DW Healthcare Partners	19	2.2x	
Procuritas Partners	18	2.3x	
Fortissimo Capital	17	2.2x	
Third Quartile			
Name	IRR	MOIC	
Ridgmont Equity Partners	25	2.5x	
Arsenal Capital Partners	25	2.4x	
Ardian	19	2.2x	
Yellow Wood Partners	18	1.5x	
FIMI	15	2.2x	
Juggernaut Capital Partners	14	1.9x	
The Gores Group	14	1.4x	
MSouth Equity Partners	14	1.7x	
Heartwood Partners	13	1.5x	
Summer Street Capital Partners	12	1.5x	
Stripes	11	1.9x	
The Halifax Group	3	2.1x	
Fourth Quartile			
Name	IRR	MOIC	
Harbour Group	13	1.6x	
EagleTree Capital	12	1.5x	
Fort Point Capital	10	1.3x	
RFE Investment Partners	9	1.5x	
Encore Consumer Capital	9	1.5x	
Renovus Capital Partners	9	1.7x	
ECM Equity Capital Management	8	1.3x	
Riverside Company	8	1.2x	
Karmijn Kapitaal	8	1.6x	
Crescent Capital Partners	7	1.4x	
KarpReilly	6	1.3x	
Siris Capital	6	1.2x	
LNK Partners	4	1.1x	
SG Private Equity	3	1.0x	
Turkven Private Equity	3	1.2x	
Victoria Capital Partners	2	1.1x	

Panel T

Buyouts Performance: 2011 Vintage			
Top Quartile			
Name	IRR	MOIC	
Via Equity	49	3.3x	
Key Capital Partners	37	2.7x	
Atlantic Street Capital	37	3.3x	
Levine Leichtman Capital Partners	37	4.4x	
Alpine Investors	28	6.9x	
Novo Tellus Capital Partners	28	3.9x	
Vestiar Capital Partners	24	2.0x	
Lightyear Capital	24	2.3x	
Second Quartile			
Name	IRR	MOIC	
Latour Capital	29	2.6x	
Falfurrias Capital Partners	24	2.5x	
Inflexion Private Equity Partners	21	1.8x	
Blue Sea Capital	21	3.4x	
Waud Capital Partners	20	2.1x	
ONCAP	19	-	
Rivean Capital	14	1.9x	
Third Quartile			
Name	IRR	MOIC	
Borromin Capital Management	26	2.4x	
Rising Japan Equity	22	1.6x	
Advent Partners	16	1.5x	
Litorina	13	1.9x	
Altus Capital Partners	13	1.7x	
Argos Wityu	11	1.6x	
Nexus Group - Peru	11	2.0x	
Alpha Group	11	1.4x	
Linden	10	1.8x	
GCP Capital Partners	9	2.0x	
American Industrial Partners	9	1.7x	
Endeavour Capital	9	1.5x	
Pegasus Capital Advisors	9	1.5x	
Carousel Capital	1	3.3x	
Fourth Quartile			
Name	IRR	MOIC	
Brass Ring Capital	8	1.5x	
Arcadia SGR	8	1.3x	

Panel U

Buyouts Performance: 2010 Vintage		
Top Quartile		
Name	IRR	MOIC
Riverside Company	47	9.6x
Seaport Capital	40	5.0x
Quadrant Private Equity	32	2.1x
The Sterling Group	29	2.8x
Seidler Equity Partners	27	22.7x
Dominus Capital	26	–
ECI Partners	25	2.3x
Bertram Capital	23	3.1x
GEC	19	2.0x
Growth Capital Partners	19	1.9x
Second Quartile		
Name	IRR	MOIC
Comvest Partners	27	1.8x
Wynnchurch Capital	25	2.0x
Gen Cap America	24	2.6x
Freeman Spogli & Co	23	2.8x
Palm Beach Capital	22	2.3x
Mason Wells	20	3.0x
L Catterton	20	2.4x
CBPE Capital	19	2.1x
AEA Investors	19	2.4x
Green Arrow Capital	17	1.8x
WestBridge Capital	15	1.8x
Rizvi Traverse Management	15	2.7x
Risk Capital Partners	13	1.9x
Third Quartile		
Name	IRR	MOIC
Silverhawk Capital Partners	21	1.8x
Cressey & Company	20	2.2x
Green Arrow Capital	17	1.8x
WestBridge Capital	15	1.8x
Risk Capital Partners	14	2.1x
MBO & Co	14	1.7x
Commerce Street Holdings	13	1.9x
J.H. Whitney & Co	13	1.9x
Hahn & Company	13	1.8x
Phoenix Equity Partners	12	1.6x
Corsair Capital	11	1.6x
Fourth Quartile		
Name	IRR	MOIC
Lovell Minnick Partners	11	1.6x
TruArc Partners	9	1.5x
Insight Equity	9	1.6x
Aquiline Capital Partners	8	1.5x
Andera Partners	7	1.4x
Castle Harlan	6	1.2x
Innova Capital	6	1.2x
Progressio SGR	5	1.3x
True North	4	1.2x
Bunker Hill Capital	3	1.2x
Linzor Capital Partners	2	1.1x

Buyouts Performance: 2009 Vintage		
Top Quartile		
Name	IRR	MOIC
Vista Equity Partners	39	3.0x
Karnell	38	2.3x
Sentinel Capital Partners	37	2.7x
Vendis Capital	26	3.5x
Egeria	22	2.2x
Bruckmann Rosser Sherrill & Co	22	2.5x
Bridgepoint	20	2.4x
Sentica Partners	20	2.5x
Second Quartile		
Name	IRR	MOIC
Partnership Capital Growth Investors	33	1.7x
KSL Capital Partners	25	2.2x
KPS Capital Partners	23	2.0x
Riverside Partners	21	2.4x
Harwood Capital Management Group	20	2.4x
Polaris Private Equity	19	2.0x
Leeds Equity Partners	18	2.5x
Elysian Capital	15	2.2x
Third Quartile		
Name	IRR	MOIC
Wind Point Partners	19	2.0x
Pfingsten Partners	16	2.1x
Stripes	13	1.7x
Azulis Capital	10	1.7x
Riverside Company	7	1.4x
Vision Capital	5	1.3x
Fourth Quartile		
Name	IRR	MOIC
Chart Capital Partners	11	1.9x
Lincolnshire Management	9	1.4x
21st Century Group	7	1.3x
Halder	3	1.2x
ACON Investments	2	1.1x
Carlyle Group	1	–
KKR	0	1.0x

KKR has small fund

Panel V

Buyouts Performance: 2008 Vintage		
<i>Top Quartile</i>		
Name	IRR	MOIC
OFS Energy Fund	123	3.5x
Thoma Bravo	45	3.8x
ZMC	44	2.7x
Anacacia Capital	41	3.4x
Helix Kapital	37	–
Egis Capital Partners	37	3.7x
Vaaka Partners	28	2.4x
Water Street Healthcare Partners	28	2.3x
Altaris	27	2.6x
MSouth Equity Partners	27	2.4x
CAI Capital Partners	26	5.1x
Fortissimo Capital	26	3.8x
Accel-KKR	24	5.6x
Procuritas Partners	22	2.3x
Imperial Capital Group	20	3.0x
FIMI	19	2.3x
Partners Group	17	2.6x
Carlyle Group	16	1.9x
<i>Second Quartile</i>		
Name	IRR	MOIC
CapStreet Group	25	2.1x
Graham Partners	23	2.3x
Evergreen Pacific Partners	22	2.0x
Guardian Capital Partners	21	2.6x
Chicago Growth Partners	20	2.1x
Amberjack Capital Partners	18	2.4x
Hamilton Robinson	18	–
Swander Pace Capital	17	2.3x
Pechel Industries	12	1.6x
FSN Capital	12	1.6x
ProA Capital	11	1.7x
Iwakaze Capital	11	2.1x
Capvis AG	8	1.4x
<i>Third Quartile</i>		
Name	IRR	MOIC
Calera Capital	14.93	1.7x
Transportation Resource Partners	14.51	1.9x
Hastings Equity Partners	12.76	1.5x
Brazos Private Equity Partners	12.71	1.6x
High Road Capital Partners	11.00	1.5x
Endeavour Capital	10.70	2.0x
MCH Private Equity	8.70	1.5x
RLJ Equity Partners	8.10	1.5x
RFE Investment Partners	7.95	1.7x
Halyard Capital	6.60	1.5x
Turkven Private Equity	6.20	1.5x
Accent Equity Partners	5.60	1.3x
Altra Investments	5.25	1.5x
Bowmark Capital	5.10	1.4x
<i>Fourth Quartile</i>		
Name	IRR	MOIC
Sparring Capital	5	1.3x
Vance Street Capital	4	1.2x
Riverside Company	4	1.1x
Riverlake Partners	2	1.1x

Source: Preqin, accessed December 21, 2021.

Note: Quartile performance is calculated by Preqin and includes both IRR and MOIC metrics

Exhibit 3 Concentration Measures - Methodology

We use **Preqin** database to analyze aggregate capital raising dynamics of Top 100 fund managers that operate across buyouts verticals. We study the data in four dimensions: Top 25 and Top 100 fund managers in the world; Top25 and Top 100 fund managers in the US

The goal of the analysis is to gauge private capital industry consolidation in terms of concentration of funds in industry constituencies. For this purpose, we use two standard market concentration measures:

- **Herfindahl–Hirschman Index** defined as $H = \sum_{i=1}^N S_i^2$ where S_i is the market share of fund manager i (funds raised by fund manager relative to total funds raised) and N is the number of fund managers. HHI below 2000 signifies relatively competitive markets.
- **Concentration Ratio** defined as $CR = \frac{S_1 + \dots + S_n}{T}$ where S is fund manager, n is chosen to be 5, and T is the total funds raised during the period. CR between 40-70% implies medium concentration.

Source: Authors.

Endnotes

- ¹ What It Takes: Lessons in the Pursuit of Excellence, Stephen A. Schwarzman, 2019
- ² Barbarians at the Gate, The Fall of RJR Nabisco, Bryan Burrough, and John Helyar, 1989.
- ³ Query why these firms opted to go public when the very nature of their business is buyouts. Why were the next generation of leaders unwilling to assume the risk of the leverage that would have been required to buy the firm? Instead they transferred the future risk of performance primarily to their public shareholders.
- ⁴ UBS Global Family Office Report 2022, <file:///C:/Users/nglie/Downloads/ubs-gfo-2022-single-pages.pdf>, accessed June 29, 2022. (UBS Report)
- ⁵ A. Lee, Why the Private Equity Model Needs to Evolve, Private Equity International May 13, 2021.
- ⁶ Thompson Reuters Refinitiv Private Equity/VC Research Tool, accessed July 17, 2022; Buyout Firms Seek \$1 Trillion of New Funding Even as Markets Drop and Deal Making Dries Up, M Gottfried and L Cooper, Wall Street Journal, July 18, 2022. <https://www.wsj.com/articles/buyout-firms-seek-1-trillion-of-new-funding-even-as-markets-drop-and-deal-making-dries-up-11658136602>, Accessed July 18, 2022.
- ⁷ Ibid.
- ⁸ Private Equity May Be Heading for a Fall, Economist, July 7, 2022.
- ⁹ Mendoza, Carmela, CPP: the World's Largest Investor Gets Bigger and Bigger, Private Equity International, July 1, 2022, accessed July 11, 2022.
- ¹⁰ [Blackstone Other Large Private-Equity Firms Turn Attention to Vast Retail Market - WSJ.pdf](#); [Blackstone Other Large Private-Equity Firms Turn Attention to Vast Retail Market - WSJ.pdf](#), June 7, 2022, accessed June 30, 2022.
- ¹¹ Shi, Madeline, Wealth Managers Want to Pass the Baton ("Passing the Baton"). PE Firms are Ready, PitchBook, July 6, 2022, Accessed July 11, 2022.
- ¹² Buyout Firms Seek \$1 Trillion of New Funding Even as Markets Drop and Deal Making Dries Up, M Gottfried and L Cooper, op cit.
- ¹³ This Figure depicts where the capital has been raised. Some of the capital has been raised by global firms to be invested outside the US. Some of the European capital may have also been invested in the US. However, the preponderance of the capital is presumably invested regionally.
- ¹⁴ Subscription Lines are credit facilities obtained by General Partners collateralized by the Limited Partners capital commitments used to finance early acquisitions and initial expenses so that the General Partners do not need to draw Limited Partner capital early in the life cycle of a fund. This practice can have the result of artificially increasing the reported returns early on by reducing or eliminating the so-called J Curve.
- ¹⁵ S. Kaplan and A. Schoar, Private Equity Performance: Returns, Persistence and Capital Flows, The Journal of Finance, Vol LX, No. 4, August 2005. ("Original Persistence Paper")
- ¹⁶ R. Harris, T. Jenkinson, and S. Kaplan, How Do Private Equity Investments Perform Compared to Public Equity? , Journal of Investment Management Volume 14, Number 3, Third Quarter 2016. In this study the authors examined cash flows of over 2000 funds through 2010.

They observed outperformance versus the public markets in the vintage years pre 2006. Funds formed post 2005 did not outperform, similar results to those depicted in **Figure 10**.

¹⁷ L. Phalippou, Performance of Buyout Funds Revisited?, November 2012, <file:///C:/Users/nglie/Downloads/SSRN-id1969101.pdf> accessed July 22, 2022.

¹⁸ L. Phalippou, Beware of Venturing into Private Equity, *Journal of Economic Perspectives*, Volume 23, Number 1, Winter 2009 p 147-166.

¹⁹ Marks, Howard, Sea Change Memo, December 13, 2022, [Memos \(oaktreecapital.com\)](https://oaktreecapital.com) Accessed December 18, 2023.

²⁰ Marks, Howard, Further Thoughts on Sea Change Memo, October 11, 2023, [Further Thoughts on Sea Change \(oaktreecapital.com\)](https://oaktreecapital.com), Accessed December 18, 2023.

²¹ FPA Risk is Where You're Not Looking, January 2, 2019, p. 10, <https://fpa.com/docs/default-source/funds/fpa-crescent-fund/literature/risk-is-where-you-re-not-looking.pdf?sfvrsn=8>, Accessed May 30, 2022.

²² We have assumed this data reflects the average, not the median results. We contacted both Bain Capital and Cambridge Associates to ask whether the data reflects the average or median results and did not receive clarification.

²³ Note that State Street reported median results not average results and their results were for Global funds, not US funds.

²⁴ The performance discrepancies between **Figures 15** and **Figure 16** are explained by such factors as time horizon (**Figure 15** reflects the performance from 2001 to 2021 while **Figure 16** measures the performance during the period between 2005 and 2020), geography (**Figure 15** focuses on the US and European markets separately while **Figure 16** addresses the global market), as well as being annualized IRRs, calculated slightly differently than the pooled IRRs.

²⁵ S. Kaplan, The Effects of Management Buyouts on Operating Performance and Value, *Journal of Financial Economics* 24, 217-254, 1989; A. Smith, Corporate Ownership Structure and Performance: the Case of Management Buyouts, *Journal of Financial Economics* 27, 143-164; and S. Smart and J. Waldfogel, Measuring the Effect of Restructuring on Corporate Performance: The Case of Management Buyouts, *Review of Economics and Statistics* 76, 503-511.

²⁶ J Cohn, L Mills, E Towery, The Evolution of Capital Structure and Operating Performance after Leveraged Buyouts: Evidence from U.S. Corporate Tax Returns, April 2013, https://faculty.mcombs.utexas.edu/jonathan.cohn/papers/CMT_2012_4.10.2013.pdf, accessed June 16, 2022.

²⁷ D Rasmussen, Private Equity Overvalued and Overrated? , *American Affairs Journal*, Vol II, Number 1, Spring 2018, 3-16. <https://americanaffairsjournal.org/2018/02/private-equity-overvalued-overrated/>, accessed June 16, 2022. The author examined the financial statements of 390 transactions aggregating over \$700 billion and hypothesized that if PE firms added value, they should see an increase in revenues, margins, and increased capital expenditures. In fact, they found in the companies, 54% had slower revenue growth, 45% had margin contraction, and 55% had reduced capital expenditures as a percentage of sales.

²⁸ Rasmussen, Dan, Private Equity Operational Improvements, Measuring Value Creation in LBOs, July 10, 2023, <https://verdadcap.com/archive/private-equity-operational-improvements>, accessed July 14, 2023.

²⁹ Kaplan, Steven and Schoar, Antionette Private Equity Performance: Returns, Persistence and Capital Flows, *Journal of Finance*, Vol. LX, No. 4, August 2005. Referred to herein as “the Original Persistence Paper”. They analyzed the essentially realized performance of 746 funds invested from 1980 through 1997.

³⁰ Robinson and Sensoy (2016) Chung (2012). While these authors used different data sources (Preqin versus Venture Economics), their conclusions were directionally consistent with those of Kaplan and Schoar in the Original Persistence Paper. In Private Equity Performance: Returns, Persistence, and Capital Flows, Robinson and Sensoy (2016) found analogous persistence results, using Venture Economics data, as well as superior results in liquidity constrained markets contexts.

³¹ Chung, Ji-Woong, Performance Persistence in Private Equity Funds, February 2012, <file:///C:/Users/nglie/Downloads/SSRN-id1686112.pdf>, accessed June 15, 2022. Chung found directionally consistent results with the Original Persistence paper using Preqin data. However, Chung found somewhat different results such as a lack of persistence in the third and thereafter funds and with subsequently larger funds.

³² Ibid. p. 4

³³ Ibid. p. 6

³⁴ J. Lerner, A. Schoar and W. Wongsunwai, Smart Institutions, Foolish Choices? The Limited Partner Performance Puzzle. *Journal of Finance* 62, 731-64., 2007.

³⁵ Sensoy, Berk, Y. Wang and M.S. Weisbach, Limited Partner Performance and the Maturing of the Private Equity Industry, *Journal of Financial Economics* Vol. 112, 320-343, 2014.

³⁶ Harris, Robert, Jenkinson, Tim, Kaplan Steven, and Stucke, Ruediger, Has Persistence Persisted in Private Equity? Evidence from Buyout and Venture Capital Funds, November 2020, NBR Working Paper No. 202-167, November 2020 Available at SSRN: <https://ssrn.com/abstract=3735676>, (“Updated Persistence Paper”). The authors utilized the Burgiss database of their LP client portfolios covering 893 buyout funds. The switch was made to Burgiss as some flaws in the original Venture Economics data were subsequently uncovered. The Burgiss database is the most comprehensive of the ones noted above in that it includes actual cash flows, the IRRs and MOICs from LP portfolios.

³⁷ Ibid

³⁸ Ibid., p.22

³⁹ Ibid., p 30

⁴⁰ Ibid., p. 2

⁴¹ Ibid.p., 9

⁴² Ibid.p., 3.

⁴³ Ibid., p. 2

⁴⁴ Ibid. p13

⁴⁵ Ibid. p20.

⁴⁶ Pitchbook, Allocator Solutions, Evaluating Persistence in Fund Performance, Q 3, 2023, p. 7.

⁴⁷ Persistence in Alternative Asset Strategies: Private Equity Buyouts, Preqin, 2022.

⁴⁸ Ibid., p. 8

⁴⁹ Ibid., p.8

⁵⁰ Ibid., p.3 and 8.

⁵¹ Updated Persistence Paper, p. 3-4. These secondary products have investment strategies that vary from the original flagship fund and in all likelihood the anticipated return may well be lower. These secondary products need to be compared to those with comparable investment strategies, i.e., credit to credit, real estate to real estate, etc.

⁵² The Preqin database ranks firms based on GP reported IRRs that include both realized and unrealized results to calculate the IRRs and MOICs. They equally weight both the IRR and MOIC over the time period measured to determine their quartiles. The Burgiss data contains the same information regarding unrealized returns reported by the GPs. Nonetheless Preqin provides directional guidance as to how firms are performing after the investment period and their results are consistent with those in the Harris et.al. paper.

⁵³ <https://www.privateequityinternational.com/cvc-confirms-close-on-largest-ever-buyout-fund-collecting-e26bn/> Accessed July 24, 2023.

⁵⁴ Steven N. Kaplan, Antoinette Schoar, Original Persistence Paper, 12 August 2005.

⁵⁵ Original Persistence Paper, Ibid.

⁵⁶ Original Persistence Paper, Ibid. But in the later Updated Persistence Paper, Kaplan et al reached the opposite conclusion. F. Lopez-de-Silanes, L. Phalippou, O. Gottschalg, Giants at the Gate: on the Cross-Section of PE Investment Returns, March 2009, https://www.researchgate.net/publication/48376484_Giants_at_the_Gate_On_the_Cross-Section_of_Private_Equity_Investment_Returns, accessed July 21, 2022, which found diseconomies of scale which negatively impacted returns; Berk and Green (2004), Kaplan and Lerner 2010 Pastor and Stambaugh 2012

⁵⁷ Ibid.

⁵⁸ Portfolio Management In Private Equity, Gregory W. Brown, Celine Yue Fei, David T. Robinson (“Brown *et al*”) Working Paper 31664, <http://www.nber.org/papers/w31664>, National Bureau of Economic Research, September 2003.

⁵⁹ Decreasing Returns or Mean-reversion of Luck? The Case of Private Equity Fund Growth, Andrea Rossi, Working Paper Fischer College of Working Paper Series, 2017-03-026, Dice Center Working Paper 2017-26, referred to herein as Rossi Paper.

⁶⁰ Ibid, p.2

⁶¹ Ibid, p. 2

⁶² Brown *et al*, op cit.

⁶³ Mutual Fund Flows and Performance in Rational Markets, Jonathan B. Berk and Richard C. Green, Journal of Political Economy, Vol. 112, No. 6 (December 2004), pp. 1269-1295

⁶⁴ Ibid.

⁶⁵ <https://fundresearch.fidelity.com/mutual-funds/view-all/316184100>, Accessed September 2, 2022.

⁶⁶ Blackstone web site, <https://www.blackstone.com/our-businesses/private-equity/>, accessed June 13, 2022.

⁶⁷ Fama, Eugene F. 1970. “Efficient Capital Markets: A Review of Theory and Empirical Work.” *Journal of Finance*, vol. 25, no. 2:383–417. 10.2307/2325486. Other sources include Malkiel, Burton Gordon. *A Random Walk down Wall Street : the Time-Tested Strategy for Successful Investing*. New York :W.W. Norton, 2003.

⁶⁸ Fama, Eugene F. 1998. “Market Efficiency, Long-Term Returns, and Behavioral Finance.” *Journal of Financial Economics*, vol. 50, no. 3:283–306. 10.1016/S0304-405X(98)00026-9

⁶⁹ Forbes, “Any Monkey Can Beat the Market”
<https://www.forbes.com/sites/rickferri/2012/12/20/any-monkey-can-beat-the-market/?sh=247da1f2630a>, Accessed June 13,2022.

⁷⁰ The first passively managed fund was created by Vanguard Group (then known as First Investment Trust) back in 1975.

⁷¹ Bogel, John, *Common Sense on Mutual Funds: New Imperatives for the Intelligent Investor*, January 1, 1999.

⁷² Nations, Scott, *The Anxious Investor : Mastering the Mental Game of Investing*, April 2022.

⁷³ Kahneman, Daniel, *Thinking Fast and Slow*, 2011.

⁷⁴ *Ibid.* page 216.

⁷⁵ Marks, Howard, *The New Paradigm*, October 19, 2006, [Memo to: \(oaktreecapital.com\)](https://www.oaktreecapital.com), accessed December 18, 2023, p. 2.

⁷⁶ *Ibid.*, p. 11.

⁷⁷ Blackstone Readies Back-to Back \$30 Billion Fundraises, *Private Equity Real Estate*, July 21,2022, Accessed July 22, 2022.

⁷⁸Blackstone Becomes the First \$1 Trillion Private Equity Manager,
<https://www.nytimes.com/2023/07/20/business/dealbook/blackstone-trillion.html>, accessed July 24, 2023.

⁷⁹ James, Rod, *Follow-on Funds Are a Sign of a New Private Equity Paradigm*, PEI International, June 30, 2022, accessed July 10, 2022.

⁸⁰ *Ibid.*

⁸¹ Private Equity May Be Heading for a Fall, *The Economist*, July 7, 2022; H de Beer and A Lynn, PE’s Halcyon Days Might be Over – At Least for Now, *Private Equity International*, June 30,2022.

⁸² Ludovic

⁸³ UBS Report op cit.

⁸⁴ Weitzman, *Buyouts*, December 6, 2021, <https://www.hamiltonlane.com/en-us/news/buyouts-retail-space-expansion>, accessed August 21, 2022.; Pitchbook, <https://pitchbook.com/news/articles/hamilton-lane-token-individual-investors-addx-private-markets>, March 29, 2022 which is offering tokenized investments in amounts as small as \$10,000.

⁸⁵ Erik Stafford, *Replicating Private Equity with Value Investing, Homemade Leverage, and Hold to Maturity Accounting*, December 2015. This concept uses REPO financing on a customized PME basket of securities. The premise is questionable as it presumes an investor will cover all margin calls from other asset classes.

- ⁸⁶ Steve Ross and Mengu, Synthetic Private Equity Exposure Using Equity Index Options, January 2017.
https://static1.squarespace.com/static/5a95cf794611a042ed7831c3/t/5b6c8284cd83663c82c03371/1533837957627/Synthetic+Private+Equity+Exposure+Using+Equity+Index+Options_201701.pdf, Accessed June 16, 2022.
- ⁸⁷ Accelerate PE Alpha Fund, TSX Alpha, which has an objective of achieving PE returns using hedged leverage positions. Marketing materials dated February 26, 2021. They charge zero management fees and 15% over a designated benchmark.
- ⁸⁸ From trailblazing dealmakers to asset gathering giants: The Changing Face of European Private Equity, Private Equity International, August 30, 2023, [From trailblazing dealmakers to asset gathering giants_ The changing face of European private equity.pdf](#) accessed September 3, 2023.
- ⁸⁹ Obviously, it is improbable for 100% of investors to invest only in top quartile funds.
- ⁹⁰ Fama, Eugene F. 1970. "Efficient Capital Markets: A Review of Theory and Empirical Work." *Journal of Finance*, vol. 25, no. 2:383–417. 10.2307/2325486.
- ⁹¹ Updated Persistence Paper op cit.
- ⁹² Thinking Fast and Slow, op cit. page 216.

The logo for APFC (Alaska Permanent Fund Corporation) is displayed in a dark teal rectangular box. The letters 'APFC' are rendered in a white, serif, all-caps font.

ALASKA PERMANENT
FUND CORPORATION

SUBJECT: Fund Performance Review
Greg Allen, Callan CEO & Chief Research Officer
Steve Center, Callan Senior VP

ACTION:

DATE: February 23, 2026

INFORMATION: X

BACKGROUND:

Callan is currently under contract to perform APFC's core general consulting services of 1) Investment policies and procedures review; 2) annual preparation of an asset allocation plan; 3) performance reporting and analysis; 4) risk analysis; 5) statistical modeling, manager searches, selection, and oversight; and 6) other special consulting services as needed.

STATUS:

At every quarterly board meeting or as requested, Callan provides an extensive review of the Fund's performance as well as updates on market conditions. Greg Allen, Chief Executive Officer and Chief Research Officer, and Steven Center, Senior Vice President, will be the presenters at this meeting.



February 23, 2026

**Alaska Permanent Fund
Corporation**

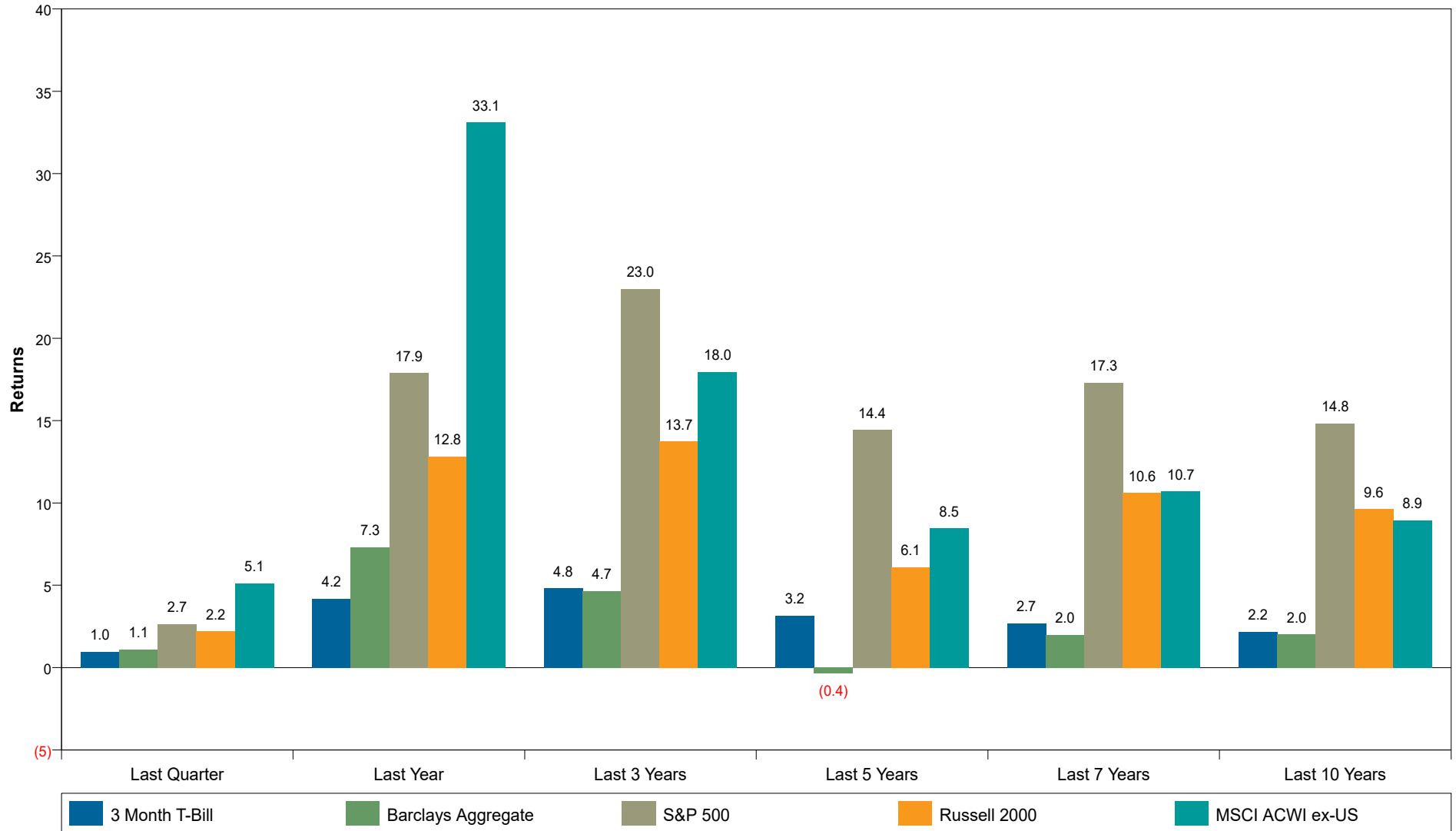
4th Quarter 2025
Capital Markets and Performance
Review

Greg Allen
CEO and Chief Research Officer

Steven Center, CFA
Senior Vice President

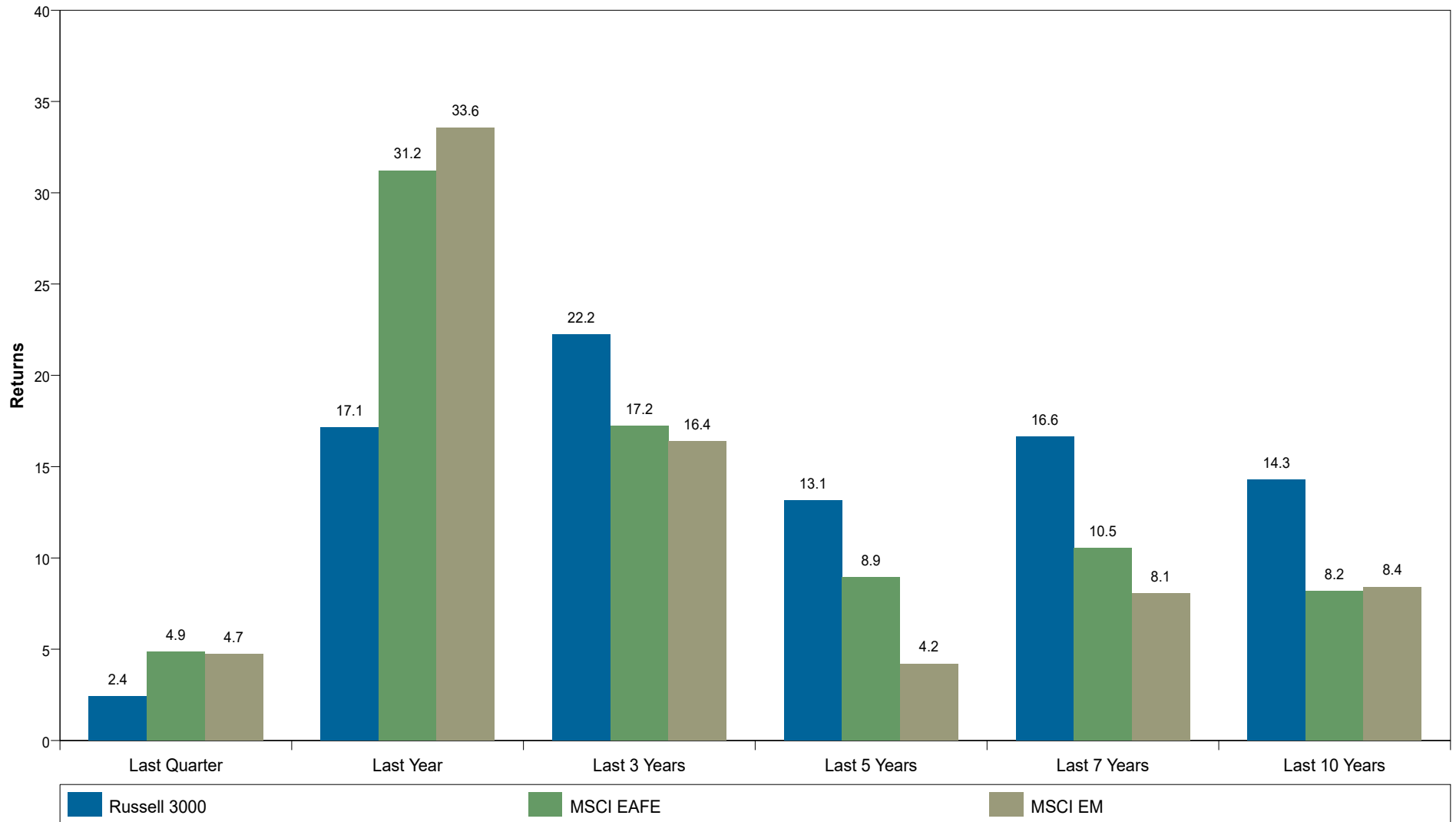
Broad Capital Market Performance

Periods Ended December 31, 2025



Public Equity Capital Market Performance

Periods Ended December 31, 2025



Callan Periodic Table of Investment Returns

Returns for Key Indices

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Russell 2000 21.31%	MSCI Emerging Markets 37.28%	Bloomberg Aggregate 0.01%	S&P 500 31.49%	Russell 2000 19.96%	S&P 500 28.71%	Bloomberg Corp High Yield -11.19%	S&P 500 26.29%	S&P 500 25.02%	MSCI Emerging Markets 33.57%
Bloomberg Corp High Yield 17.13%	MSCI ACWI ex USA SC 31.65%	Bloomberg Corp High Yield -2.08%	MSCI:ACWI IMI 26.35%	S&P 500 18.40%	MSCI:ACWI IMI 18.22%	Bloomberg Aggregate -13.01%	MSCI:ACWI IMI 21.58%	MSCI:ACWI IMI 16.37%	MSCI World ex USA 31.85%
S&P 500 11.96%	MSCI World ex USA 24.21%	Bloomberg Global Agg ex US -2.15%	Russell 2000 25.52%	MSCI Emerging Markets 18.31%	Russell 2000 14.82%	MSCI World ex USA -14.29%	MSCI World ex USA 17.94%	Russell 2000 11.54%	MSCI ACWI ex USA SC 29.26%
MSCI Emerging Markets 11.19%	MSCI:ACWI IMI 23.95%	S&P 500 -4.38%	MSCI World ex USA 22.49%	MSCI:ACWI IMI 16.25%	MSCI ACWI ex USA SC 12.93%	S&P 500 -18.11%	Russell 2000 16.93%	Bloomberg Corp High Yield 8.19%	MSCI:ACWI IMI 22.06%
MSCI:ACWI IMI 8.36%	S&P 500 21.83%	MSCI:ACWI IMI -10.08%	MSCI ACWI ex USA SC 22.42%	MSCI ACWI ex USA SC 14.24%	MSCI World ex USA 12.62%	MSCI:ACWI IMI -18.40%	MSCI ACWI ex USA SC 15.66%	MSCI Emerging Markets 7.50%	S&P 500 17.88%
MSCI ACWI ex USA SC 3.91%	Russell 2000 14.65%	Russell 2000 -11.01%	MSCI Emerging Markets 18.44%	Bloomberg Global Agg ex US 10.11%	Bloomberg Corp High Yield 5.28%	Bloomberg Global Agg ex US -18.70%	Bloomberg Corp High Yield 13.44%	MSCI World ex USA 4.70%	Russell 2000 12.81%
MSCI World ex USA 2.75%	Bloomberg Global Agg ex US 10.51%	MSCI World ex USA -14.09%	Bloomberg Corp High Yield 14.32%	MSCI World ex USA 7.59%	Bloomberg Aggregate -1.54%	MSCI ACWI ex USA SC -19.97%	MSCI Emerging Markets 9.83%	MSCI ACWI ex USA SC 3.36%	Bloomberg Global Agg ex US 8.85%
Bloomberg Aggregate 2.65%	Bloomberg Corp High Yield 7.50%	MSCI Emerging Markets -14.57%	Bloomberg Aggregate 8.72%	Bloomberg Aggregate 7.51%	MSCI Emerging Markets -2.54%	MSCI Emerging Markets -20.09%	Bloomberg Global Agg ex US 5.72%	Bloomberg Aggregate 1.25%	Bloomberg Corp High Yield 8.62%
Bloomberg Global Agg ex US 1.49%	Bloomberg Aggregate 3.54%	MSCI ACWI ex USA SC -18.20%	Bloomberg Global Agg ex US 5.09%	Bloomberg Corp High Yield 7.11%	Bloomberg Global Agg ex US -7.05%	Russell 2000 -20.44%	Bloomberg Aggregate 5.53%	Bloomberg Global Agg ex US -4.22%	Bloomberg Aggregate 7.30%

Source: Bloomberg, FTSE Russell, MSCI, Standard & Poor's

Callan Periodic Table of Investment Returns

Returns for Key Indices

Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 20 Years
MSCI World ex USA 5.20%	MSCI Emerging Markets 33.57%	S&P 500 23.01%	S&P 500 14.42%	S&P 500 17.29%	S&P 500 14.82%	S&P 500 11.00%
MSCI Emerging Markets 4.73%	MSCI World ex USA 31.85%	MSCI:ACWI IMI 19.98%	MSCI:ACWI IMI 10.75%	MSCI:ACWI IMI 13.64%	MSCI:ACWI IMI 11.45%	Russell 2000 8.20%
MSCI:ACWI IMI 3.22%	MSCI ACWI ex USA SC 29.26%	MSCI World ex USA 17.64%	MSCI World ex USA 9.46%	MSCI World ex USA 10.96%	Russell 2000 9.62%	MSCI:ACWI IMI 8.17%
MSCI ACWI ex USA SC 2.96%	MSCI:ACWI IMI 22.06%	MSCI Emerging Markets 16.40%	MSCI ACWI ex USA SC 6.91%	Russell 2000 10.60%	MSCI World ex USA 8.55%	Bloomberg Corp High Yield 6.74%
S&P 500 2.66%	S&P 500 17.88%	MSCI ACWI ex USA SC 15.61%	Russell 2000 6.09%	MSCI ACWI ex USA SC 10.03%	MSCI Emerging Markets 8.42%	MSCI ACWI ex USA SC 6.53%
Russell 2000 2.19%	Russell 2000 12.81%	Russell 2000 13.73%	Bloomberg Corp High Yield 4.51%	MSCI Emerging Markets 8.06%	MSCI ACWI ex USA SC 8.13%	MSCI Emerging Markets 5.99%
Bloomberg Corp High Yield 1.31%	Bloomberg Global Agg ex US 8.85%	Bloomberg Corp High Yield 10.06%	MSCI Emerging Markets 4.20%	Bloomberg Corp High Yield 6.23%	Bloomberg Corp High Yield 6.53%	MSCI World ex USA 5.69%
Bloomberg Aggregate 1.10%	Bloomberg Corp High Yield 8.62%	Bloomberg Aggregate 4.66%	Bloomberg Aggregate -0.36%	Bloomberg Aggregate 1.99%	Bloomberg Aggregate 2.01%	Bloomberg Aggregate 3.25%
Bloomberg Global Agg ex US -0.47%	Bloomberg Aggregate 7.30%	Bloomberg Global Agg ex US 3.29%	Bloomberg Global Agg ex US -3.59%	Bloomberg Global Agg ex US -0.53%	Bloomberg Global Agg ex US 0.56%	Bloomberg Global Agg ex US 1.82%

Source: Bloomberg, FTSE Russell, MSCI, Standard & Poor's

Global Equities Continue to Run in 2025

Non-U.S. markets lead U.S. markets by widest margin in last 15 years

Big gains for global stocks

- ▶ S&P 500 rose 17.9% in 2025, while U.S. small caps jumped 12.8%. Developed ex-U.S. stocks climbed 31.9% and emerging markets gained 33.6%.

Solid returns for fixed income

- ▶ The Bloomberg Aggregate rose 7.3% in the year. Long duration gained 6.6% as long rates fell more modestly than intermediate.
- ▶ Headline CPI-U rose 2.7% (year-over-year) through December. The core index rose by a similar amount, coming in at 2.6%. The headline and core numbers are down from 2.9% and 3.2%, respectively, at the end of 2024. Though inflation is moderating relative to the mid-2022 peak, it has been holding at levels above the Fed's 2% target for the last few years.

Dislocation in economic growth measures

- ▶ The job market stopped expanding after April while GDP growth surged in 2Q and 3Q and is expected to post a gain for all of 2025.
- ▶ Consumer spending has surprised on the upside; business spending has paused.

Returns for Periods ended 12/31/25

	Quarter	1 Year	3 Years	5 Years	10 Years	25 Years
U.S. Equity						
Russell 3000	2.40	17.15	22.25	13.15	14.29	8.86
S&P 500	2.66	17.88	23.01	14.42	14.82	8.83
Russell 2000	2.19	12.81	13.73	6.09	9.62	8.21
Global ex-U.S. Equity						
MSCI World ex USA	5.20	31.85	17.64	9.46	8.55	5.54
MSCI Emerging Markets	4.73	33.57	16.40	4.20	8.42	8.49
MSCI ACWI ex USA Small Cap	2.96	29.26	15.61	6.91	8.13	8.19
Fixed Income						
Bloomberg Aggregate	1.10	7.30	4.66	-0.36	2.01	3.77
90-day T-Bill	0.97	4.18	4.81	3.17	2.18	1.84
Bloomberg Long Gov/Credit	-0.02	6.62	3.06	-4.89	1.98	5.00
Bloomberg Global Agg ex-US	-0.47	8.85	3.29	-3.59	0.56	2.96
Real Estate						
NCREIF Property	1.15	4.91	-1.01	3.79	4.85	7.29
FTSE Nareit Equity	-1.56	2.88	8.36	6.63	5.70	8.94
Alternatives						
Cambridge Private Equity*	2.63	9.51	7.21	12.58	13.36	10.45
Cambridge Senior Debt*	1.06	7.78	10.11	8.33	7.95	4.97
HFRI Fund Weighted	2.66	12.41	10.08	7.09	6.61	5.86
Bloomberg Commodity	5.85	15.77	3.96	10.64	5.73	1.62
Gold Spot Price	12.08	64.37	33.46	18.03	15.14	11.69
Inflation: CPI-U	-0.23	2.68	2.97	4.46	3.20	2.52

*Cambridge Private Equity and Cambridge Senior Debt data as of 3Q25.

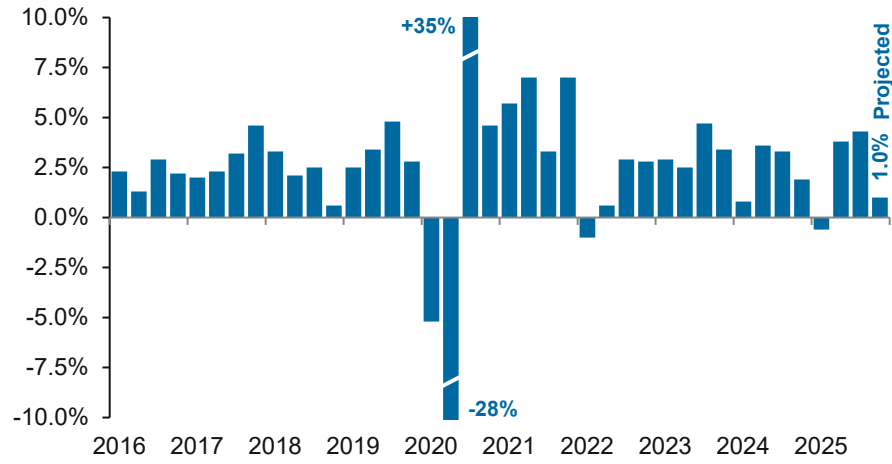
Returns greater than one year are annualized.

Sources: Bloomberg, Callan, Cambridge, FTSE Russell, HFRI, MSCI, NCREIF, S&P Dow Jones Indices

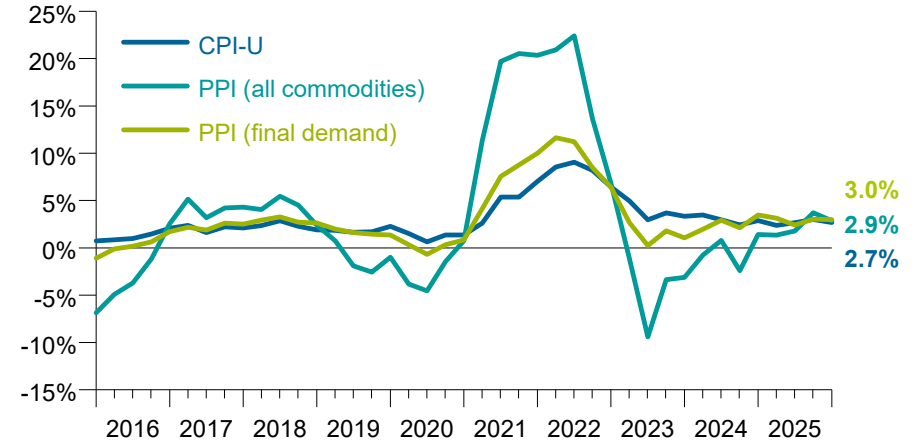
U.S. Economy—Summary

For periods ended 12/31/25

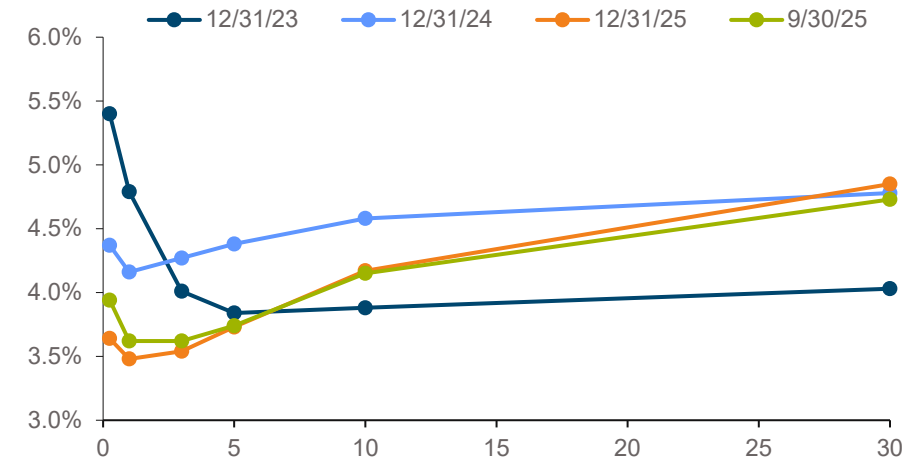
Quarterly Real GDP Growth



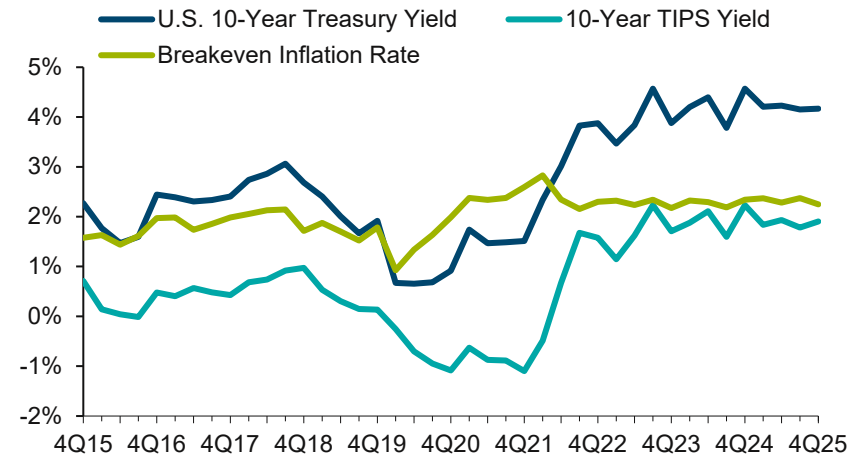
Inflation Year-Over-Year*



U.S. Treasury Yield Curves



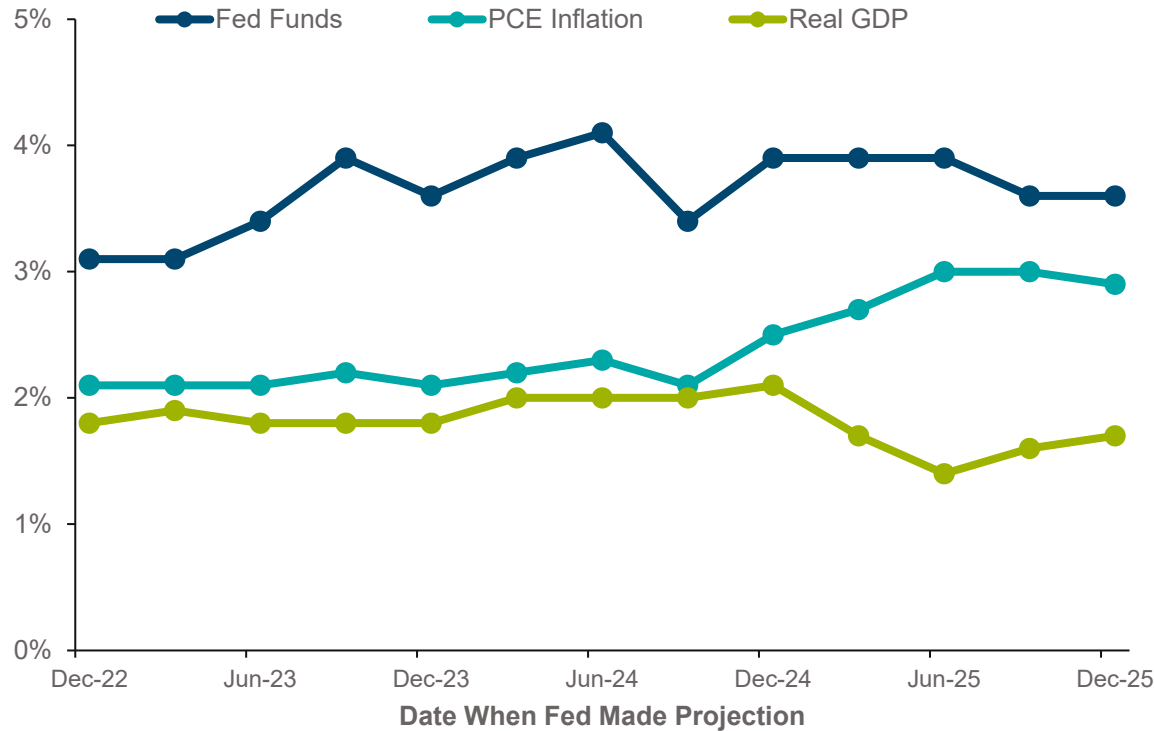
Historical 10-Year Yields



Sources: Bureau of Labor Statistics, Callan, Federal Reserve, Blue Chip consensus for projected GDP; *PPI data for 4Q25 not yet available.

The Shifting Mindset at the Fed

Consensus FOMC Economic Projections for 2025



The Fed Funds Rate received three 25 basis point cuts in 2025, ending in a range of 3.5%–3.75%.

The median projection among Federal Open Market Committee participants ranged from 2.9% when they made the prediction back in 2022 to 4.1% when they made the prediction in the middle of 2024.

Long-term neutral rate of 3.0% expected to be hit after 2028.

In the most recent release, the Fed increased its projection for GDP growth and lowered the projection for inflation.

Inflation is expected to reach Fed’s target of 2% in 2028.

Sources: Federal Reserve, Financial Times

The Fed's 'Dot Plot'

Federal Open Market Committee (FOMC) participants' assessments of appropriate monetary policy

Fed Funds Rate ended the year in a target range of 3.5%–3.75%.

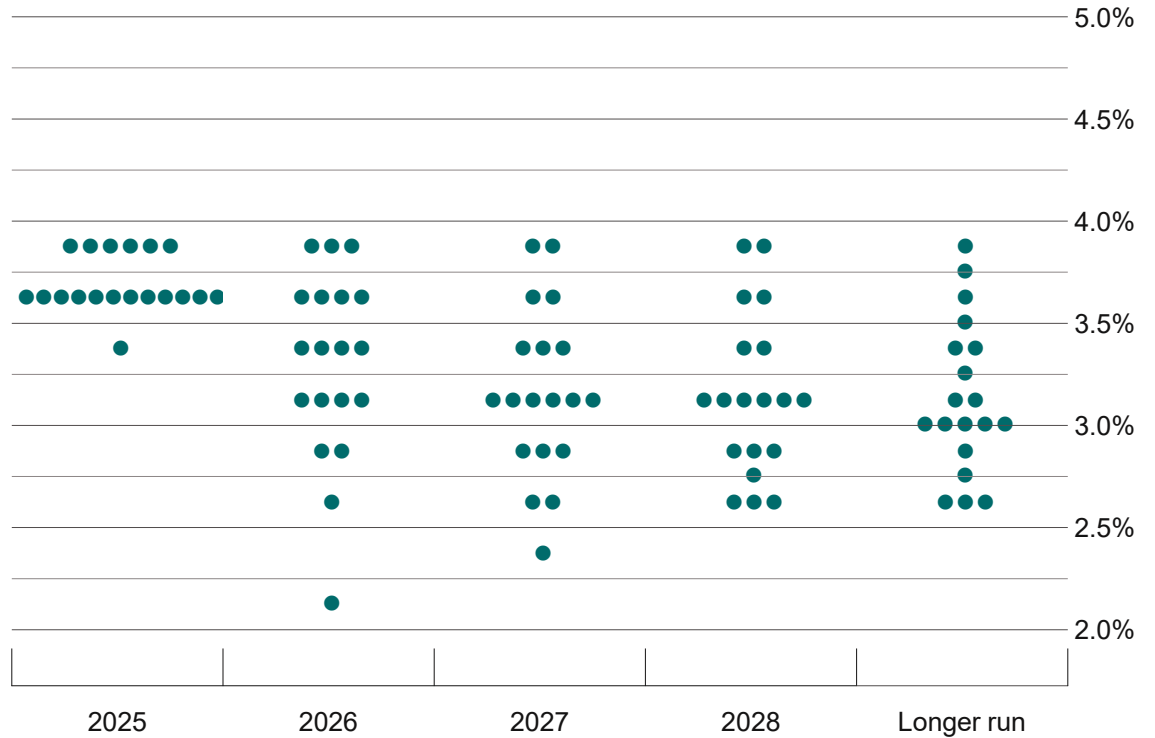
6 of 19 participants thought the rate should stay at 3.75%–4.0%.

1 participant thought the rate should have been lowered to 3.25%–3.5%.

Dispersion of views among all participants widens in 2026 and beyond.

“Longer run” median held at 3.0%

Bias is toward higher rates; lower bound is 2.6% but higher bound is 3.9%.



Source: Federal Reserve; as of 12/10/25

Bond Market Forecasts of Inflation

Market Implied Inflation Expectations



The 10-year breakeven inflation rate is the difference in yield between the nominal 10-year Treasury and the 10-year Treasury Inflation-Protected Security (TIPS).

- Includes current level of inflation
- Breakeven rate: the rate of inflation that would make an investor indifferent to holding nominal bonds vs. TIPS

The 5-year, 5-year forward rate is the bond market's estimate of the 5-year inflation rate 5 years from now.

- Excludes current levels of inflation

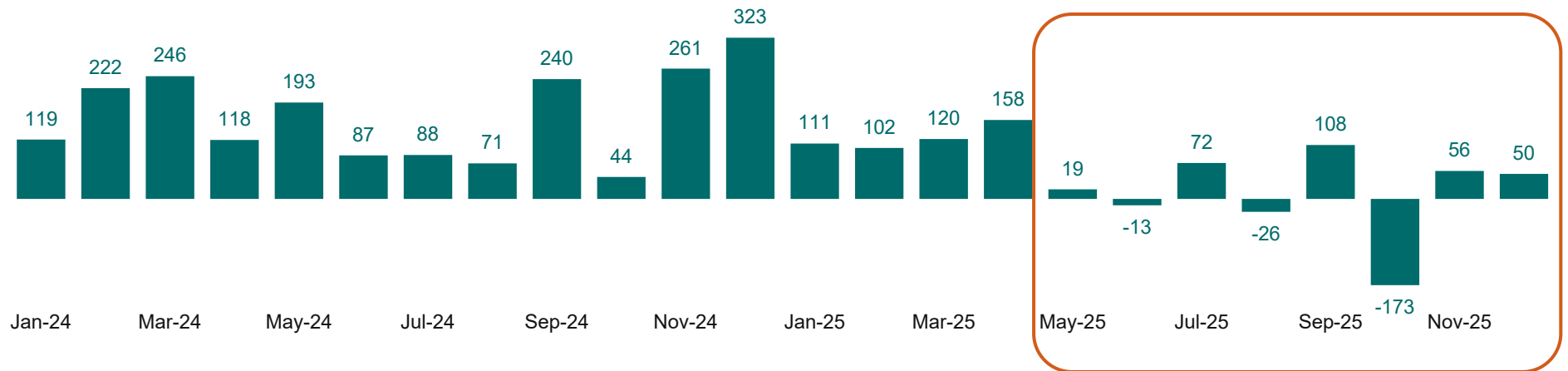
Source: Federal Reserve Bank of St. Louis

Key Macro Theme: The Job Market

Slowdown in hiring is a conundrum

The job market is showing the first sign of a crack in the U.S. economy; the run rate for new jobs through April 2025 had been in the 100,000-200,000 range per month; since April, the U.S. has created 93,000 jobs cumulatively over the eight months ended December.

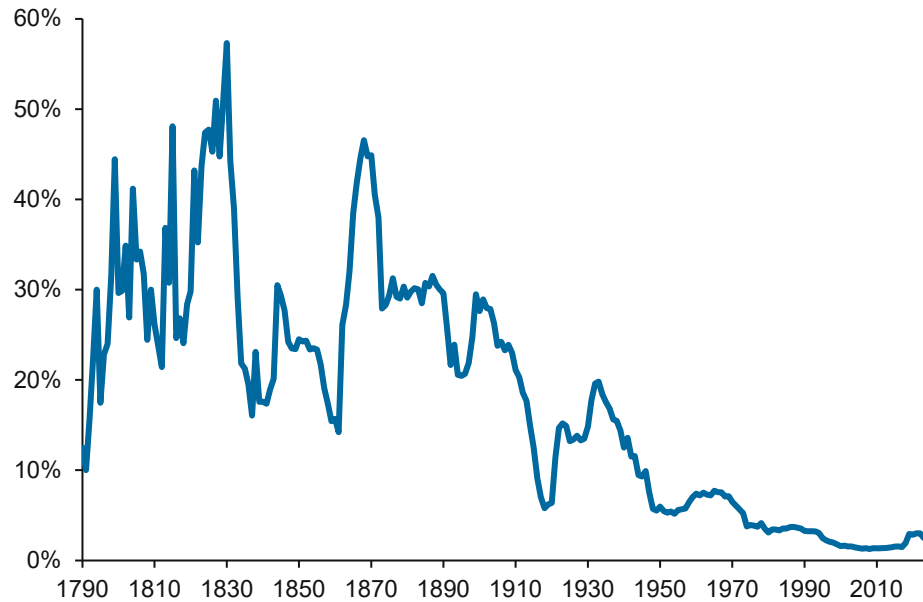
Non-Farm Employment Monthly Change (thousands)



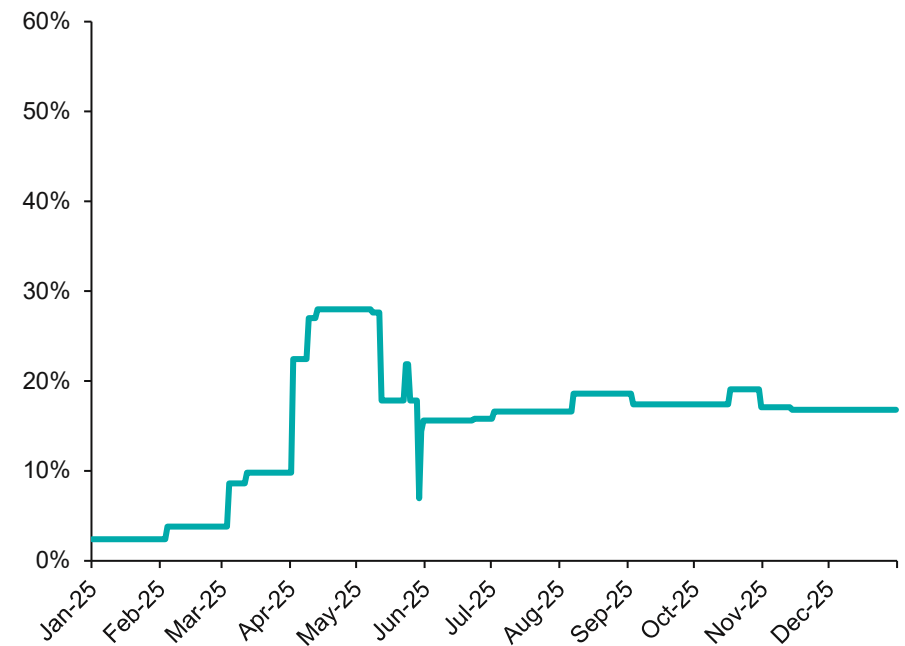
The unemployment rate remains low, but job turnover ground to a halt. Digging through the economic data has resulted in few clear signs of an impact from tariffs, whether inflation, GDP, or consumption. Hard economic data typically lags market responses, especially to policy changes, and the markets can overreact to sentiment.

Tracking the Effective Tariff Rate

Historical Effective Tariff Rate Through 2024



Estimated Average Effective Tariff Rate Since January 2025



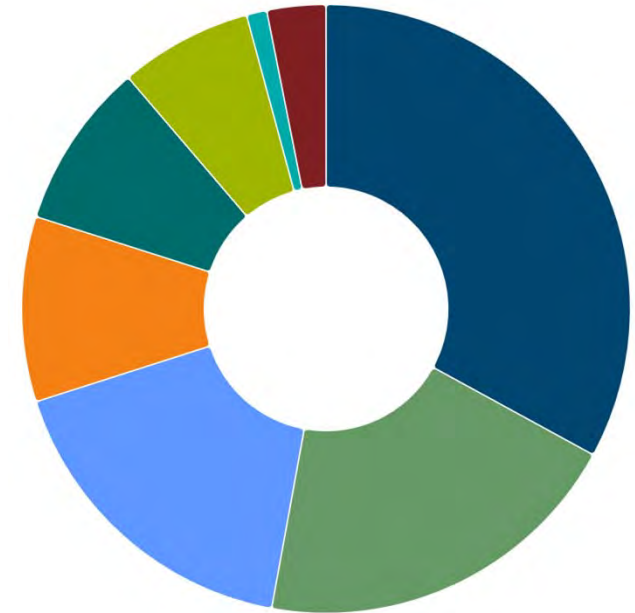
Big picture: The imposition of tariffs as they have currently evolved will likely raise prices for imported goods, adding to inflation pressures. The potential reduction in purchasing power from higher prices may slow demand and the economy. For goods with a ready domestic substitute, consumers and businesses can shift demand, but the prices paid for goods may still be higher.

- The charts compare the historical effective tariff rate in the United States through 2024 to the estimated average effective tariff rate in 2025 based on the shifting policies throughout the year.
- The current estimate puts the effective tariff rate at near the highest level since 1935.

Source: The Budget Lab at Yale

APFC Asset Allocation as of December 31, 2025

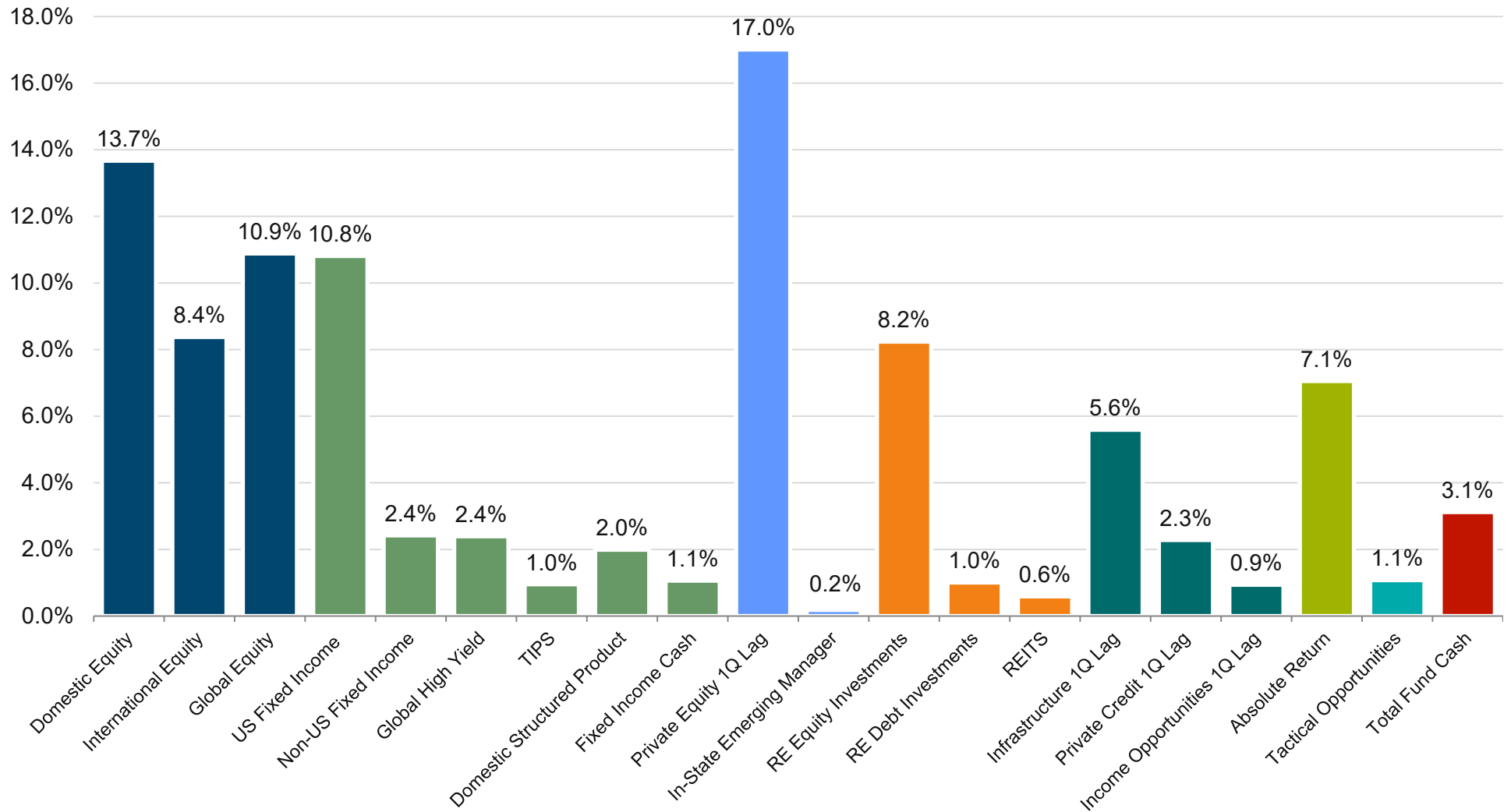
Asset Class	Assets	Actual Weight	Benchmark	Difference
Public Equity	\$29,776,003,635	32.95%	32.00%	\$859,622,393
Fixed Income	\$18,004,139,855	19.92%	20.00%	-\$68,598,421
Private Equity	\$15,539,309,384	17.20%	18.00%	-\$726,155,065
Real Estate	\$8,895,098,237	9.84%	11.00%	-\$1,044,907,814
Private Income	\$7,971,756,754	8.82%	10.00%	-\$1,064,612,384
Absolute Return	\$6,378,851,082	7.06%	7.00%	\$53,392,686
Tactical Opportunities	\$975,218,588	1.08%	1.00%	\$71,581,674
Total Fund Cash	\$2,823,313,845	3.12%	1.00%	\$1,919,676,931
Total Fund	\$90,363,691,380	100.00%	100.00%	-



- Using institutional standard asset class definitions, the portfolio is currently allocated 33% to public equity, 20% to fixed income, 44% to alternative investments and 3% cash.
- Compared to allocations in the third quarter, weight to public equity increased modestly while weight to alternatives decreased.
- Alternatives include private equity, real estate, private infrastructure, private credit, private income, absolute return, and tactical opportunities.
- Private Equity, Real Estate, and Infrastructure & Private Income are reported on a one-quarter lag.

Total Fund Asset Allocation

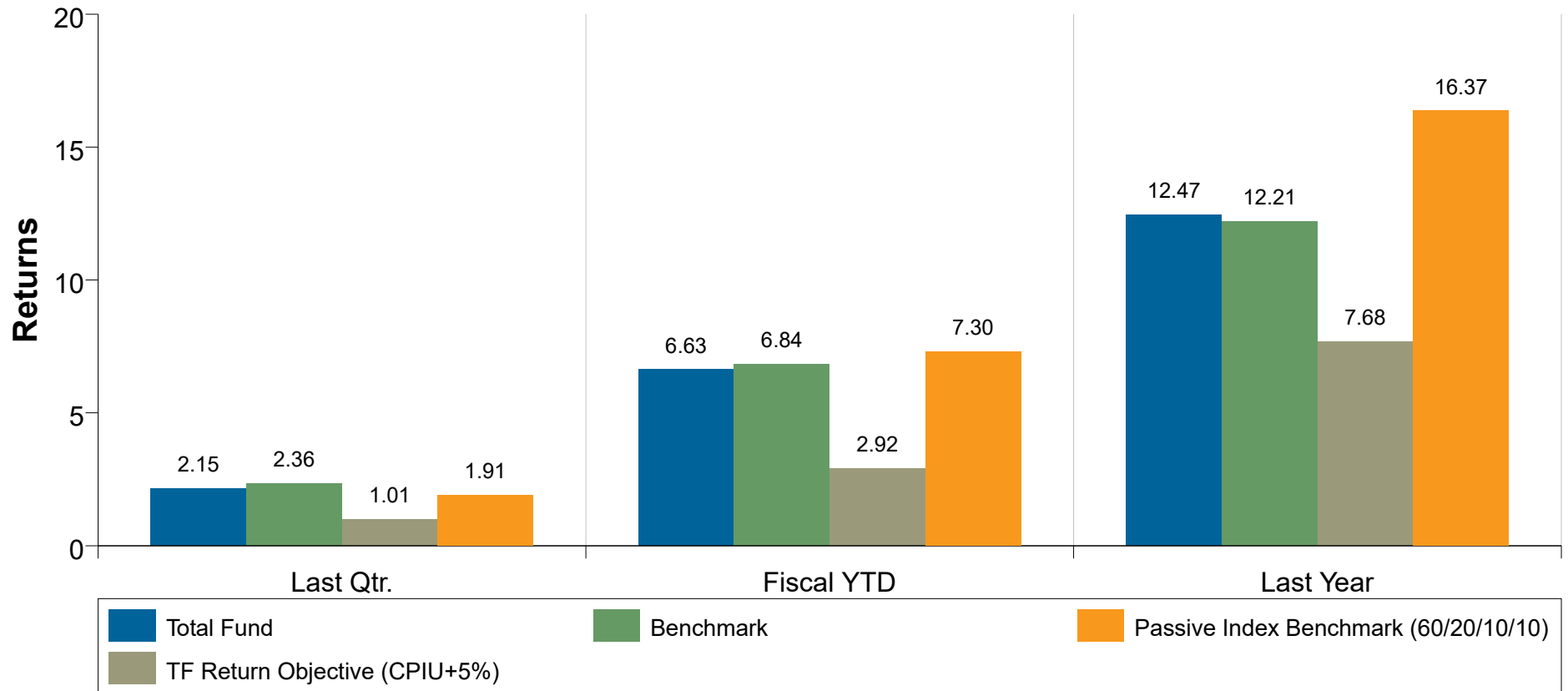
Periods Ended December 31, 2025



APFC Total Fund Cumulative Returns

Total Fund versus Total Fund Targets

Returns for Periods Ending December 31, 2025

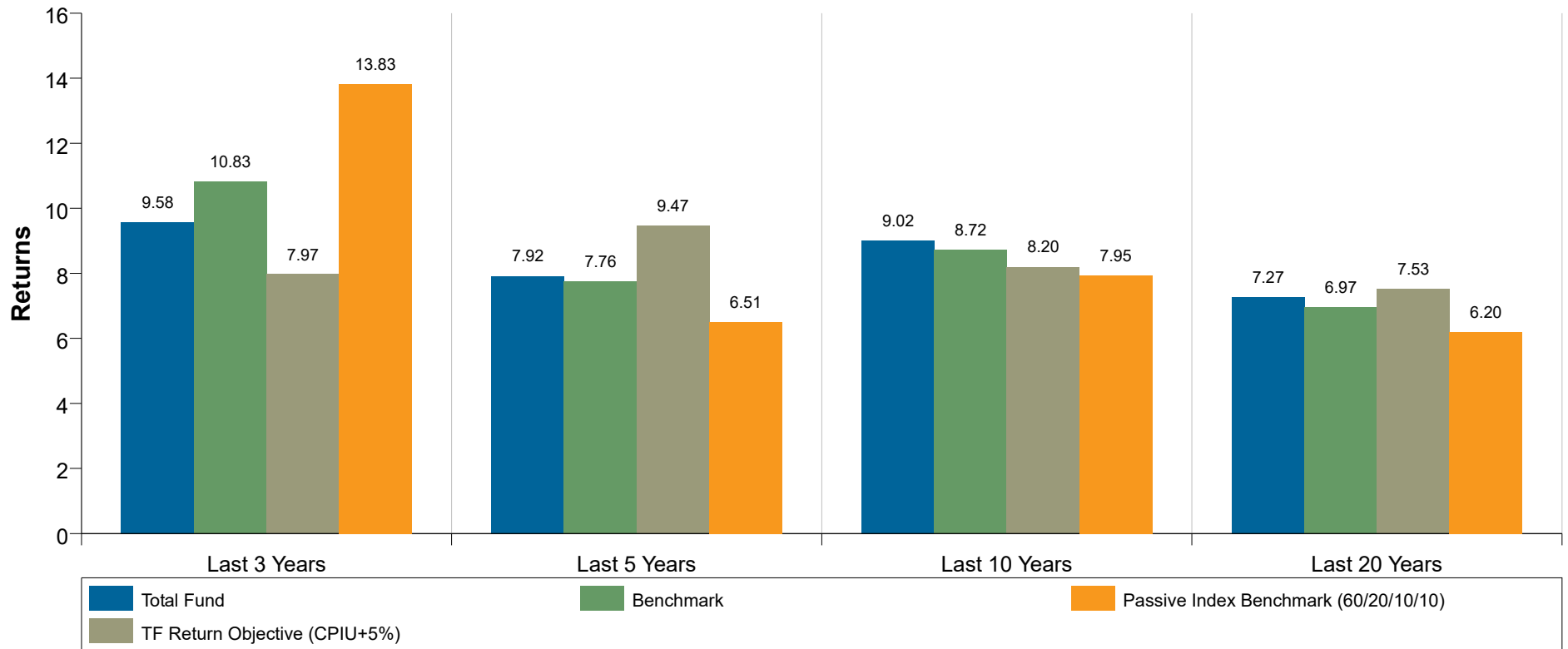


- Benchmark (FY25-FY26) = 32% MSCI ACWI IMI, 1.0% 90 Day T-Bills, 1.0% BB US TIPS, 5.5% BB Agg, 5.5% BB Corp IG, 3.0% BB Global Treasury xUS Hdgd, 2.0% BB US BB HY, 2.0% BB US Securitized, 18% Cambridge PE (lagged), 11% NCREIF Expanded Property Index (lagged), 6.0% Cambridge Global Pvt. Infrastructure (lagged), 4.0% Cliffwater Direct Lending TR (lagged), 3.5% HFRI EH Equity Market Neutral, 3.5% HFRI Macro, 1% 90 Day T-Bills, and 1% S&P 500 Index.

APFC Total Fund Cumulative Returns

Total Fund versus Total Fund Targets

Returns for Periods Ending December 31, 2025



- Benchmark (FY25-FY26) = 32% MSCI ACWI IMI, 1.0% 90 Day T-Bills, 1.0% BB US TIPS, 5.5% BB Agg, 5.5% BB Corp IG, 3.0% BB Global Treasury xUS Hdgd, 2.0% BB US BB HY, 2.0% BB US Securitized, 18% Cambridge PE (lagged), 11% NCREIF Total Index (lagged), 6.0% Cambridge Global Pvt. Infrastructure (lagged), 4.0% Cliffwater Direct Lending TR (lagged), 3.5% HFRI EH Equity Market Neutral, 3.5% HFRI Macro, 1% 90 Day T-Bills, and 1% S&P 500 Index.

APFC Total Fund Attribution

One Quarter Ended December 31, 2025

Asset Class	Effective Weight	Benchmark Weight	Return	Benchmark Return	Manager Effect	Allocation Effect	Relative Return
Public Equity	32.67%	32.00%	2.95%	3.22%	-0.09%	0.00%	-0.08%
Fixed Income	19.92%	20.00%	0.96%	0.96%	-0.00%	0.00%	0.00%
Private Equity	17.29%	18.00%	2.61%	2.58%	0.00%	-0.00%	0.00%
Real Estate	10.09%	11.00%	0.91%	1.22%	-0.03%	0.01%	-0.02%
Private Income	9.01%	10.00%	1.30%	2.94%	-0.15%	-0.01%	-0.15%
Absolute Return	6.97%	7.00%	4.06%	3.02%	0.07%	0.00%	0.07%
Tactical Opportunities	1.08%	1.00%	2.67%	2.66%	0.00%	0.00%	0.00%
Total Fund Cash	2.98%	1.00%	1.01%	0.97%	0.00%	-0.03%	-0.03%
Total Fund	100.00%	100.00%	2.15%	2.36%	-0.19%	-0.02%	-0.21%

- In the fourth quarter, the Total Fund underperformed the Performance Benchmark by 21 basis points.
- Manager effect in Private Income and Public Equity were the largest detractors of relative returns.
- In aggregate, active management deducted 19 basis points from relative performance and deviations from the Policy Target lost 2 basis points.

APFC Total Fund Attribution

One Year Ended December 31, 2025

Asset Class	Effective Weight	Benchmark Weight	Return	Benchmark Return	Manager Effect	Allocation Effect	Relative Return
Public Equity	32.14%	32.00%	22.08%	22.06%	-0.03%	-0.00%	-0.04%
Fixed Income	19.86%	20.00%	6.99%	6.75%	0.05%	0.03%	0.08%
Private Equity	17.51%	18.00%	8.68%	9.46%	-0.14%	0.01%	-0.13%
Real Estate	11.00%	11.00%	3.91%	3.62%	0.04%	-0.01%	0.03%
Private Income	9.03%	10.00%	11.14%	9.68%	0.13%	0.02%	0.16%
Absolute Return	7.16%	7.00%	13.28%	9.04%	0.31%	-0.01%	0.30%
Tactical Opportunities	0.97%	1.00%	15.96%	17.88%	-0.01%	-0.01%	-0.03%
Total Fund Cash	2.32%	1.00%	4.22%	4.18%	0.00%	-0.13%	-0.13%
Total Fund	100.00%	100.00%	12.47%	12.23%	0.34%	-0.10%	0.24%

- Over the last year, the Total Fund outperformed the Performance Benchmark by 24 basis points.
- Manager performance in Absolute Return and Private Income buoyed relative results. The largest loss came from Private Equity.
- Asset allocation, particularly an overweight in cash, detracted from relative performance.
- In aggregate, active management added 34 basis points to relative performance, while deviations from the Policy Target cost 10 basis points.

APFC Total Fund Attribution

Three Years Ended December 31, 2025

Asset Class	Effective Weight	Benchmark Weight	Return	Benchmark Return	Manager Effect	Allocation Effect	Relative Return
Public Equity	32.88%	33.33%	17.55%	19.98%	-0.76%	-0.11%	-0.87%
Fixed Income	19.13%	20.00%	5.96%	5.53%	0.08%	0.05%	0.13%
Private Equity	18.54%	17.17%	5.21%	7.30%	-0.41%	-0.08%	-0.49%
Real Estate	10.53%	10.33%	-0.99%	-0.50%	-0.06%	-0.04%	-0.10%
Private Income	8.80%	9.50%	9.84%	10.97%	-0.10%	-0.01%	-0.10%
Absolute Return	7.18%	6.83%	10.16%	6.56%	0.26%	-0.04%	0.23%
Tactical Opportunities	0.77%	1.17%	-	-	0.01%	-0.05%	-0.05%
Total Fund Cash	2.17%	1.50%	6.78%	4.81%	0.03%	-0.05%	-0.01%
Multi-Asset Risk Parity	0.00%	0.17%	-	-	0.00%	0.01%	0.01%
Total Fund	100.00%	100.00%	9.58%	10.83%	-0.94%	-0.31%	-1.26%

- Over the last three years, the Total Fund trailed the Performance Benchmark by 126 basis points.
- Manager performance in Fixed Income and Absolute Return buoyed relative results. The largest loss came from Public Equity.
- Asset allocation, particularly an underweight to Public Equity, detracted from relative performance.
- In aggregate, active management detracted 94 basis points from relative performance, while deviations from the Policy Target cost 31 basis points.

APFC Total Fund Relative to Callan's Large Public Fund Database

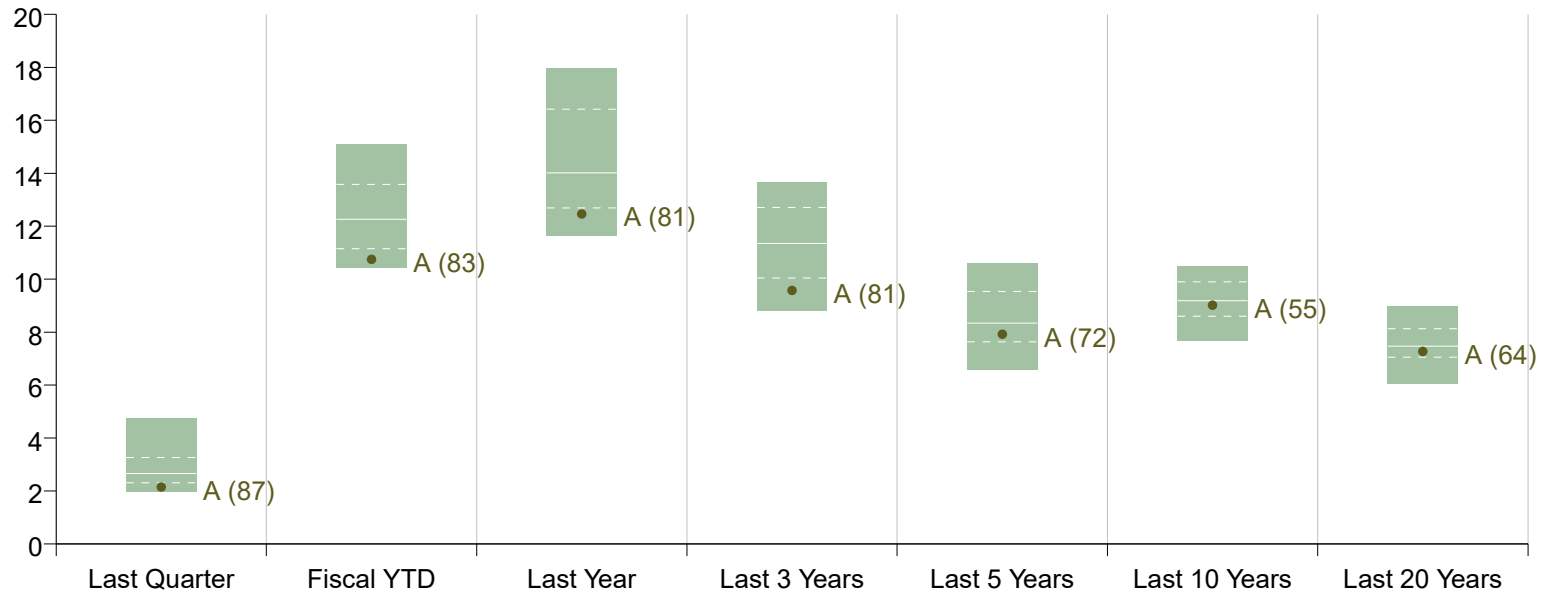
Returns for Periods Ended December 31, 2025
Group: Callan Public Fund Sponsor - Large (>1B)



	Last Quarter	Fiscal YTD	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years
10th Percentile	2.78	13.10	15.74	13.20	8.98	9.62	7.91
25th Percentile	2.48	12.47	14.70	12.42	8.43	9.16	7.58
Median	2.29	11.69	13.63	11.35	7.66	8.77	7.25
75th Percentile	2.03	10.76	12.52	10.38	6.87	8.12	6.76
90th Percentile	1.82	9.84	11.32	9.31	6.09	7.49	6.36
Member Count	129	128	128	128	125	123	110
APFC Total Fund (Net Default) • A	2.15	10.75	12.47	9.58	7.92	9.02	7.27

APFC Total Fund Relative to Callan's Large Endowment / Foundation Database

Returns
for Periods Ended December 31, 2025
Group: Callan Endow/Foundation - Large (>1B)

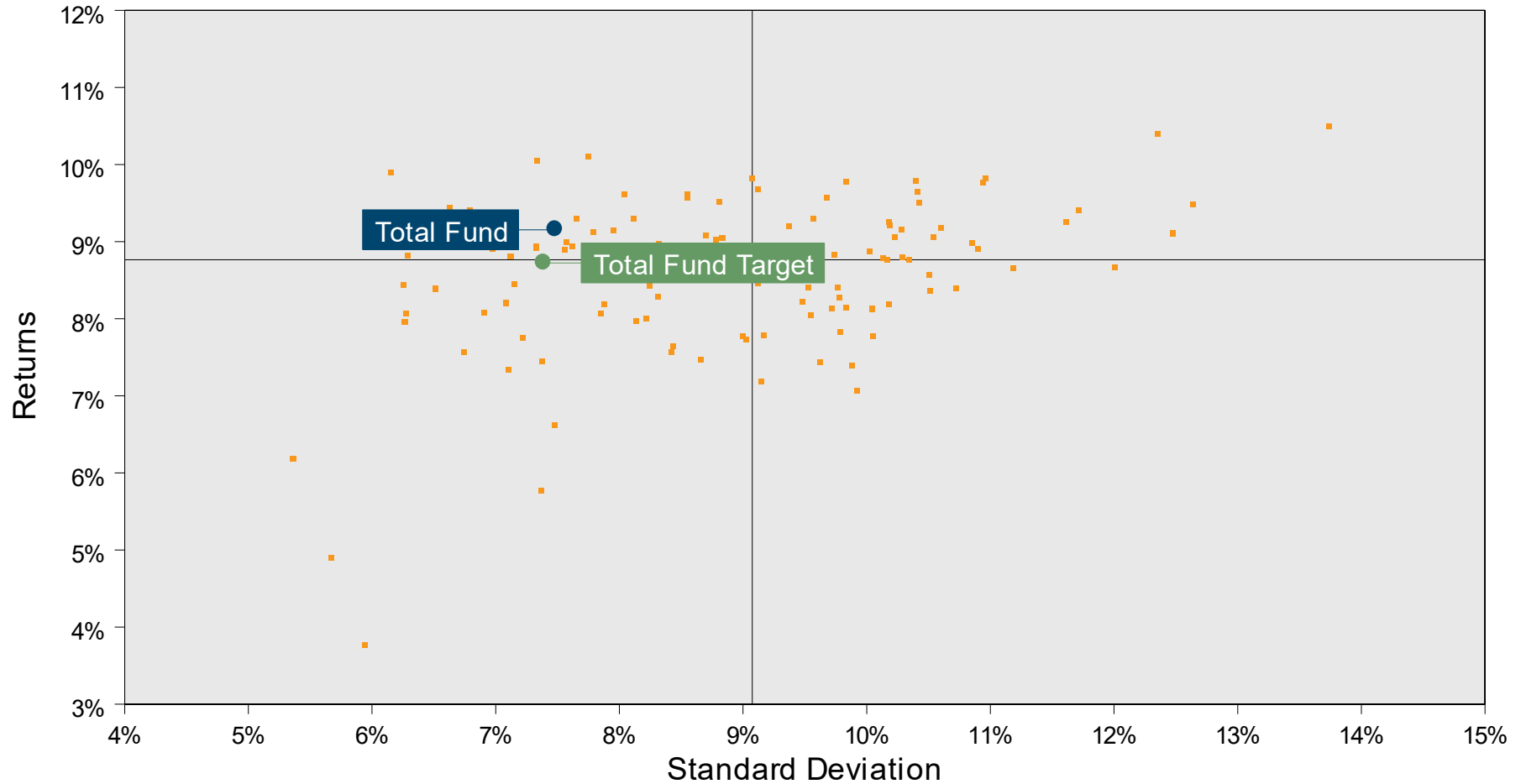


	Last Quarter	Fiscal YTD	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years
10th Percentile	4.73	15.08	17.96	13.67	10.60	10.51	8.99
25th Percentile	3.27	13.58	16.42	12.71	9.53	9.90	8.13
Median	2.66	12.27	14.02	11.35	8.35	9.19	7.47
75th Percentile	2.31	11.16	12.69	10.05	7.63	8.61	7.05
90th Percentile	1.97	10.43	11.64	8.82	6.57	7.69	6.04
Member Count	69	69	69	69	69	69	57
APFC Total Fund (Net Default) • A	2.15	10.75	12.47	9.58	7.92	9.02	7.27

APFC Total Fund Return versus Standard Deviations

Relative to Callan's Large Public Fund Database

Ten Year Annualized Risk v s Return



Squares represent membership of the Callan Public Fund Spons - Large (>1B)

APFC Total Fund Return versus Standard Deviations

Relative to Callan's Large Endowment / Foundation Database

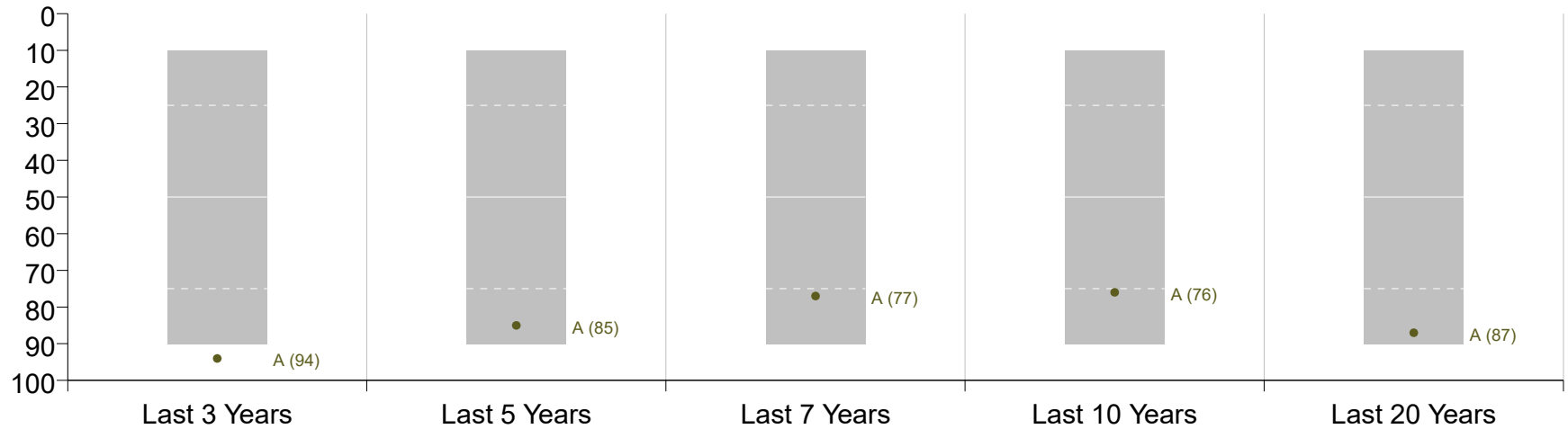
Ten Year Annualized Risk vs Return



Squares represent membership of the Callan Endow/Foundation - Large (>1B)

APFC Total Fund Standard Deviation Relative to Callan's Large Public Fund Database

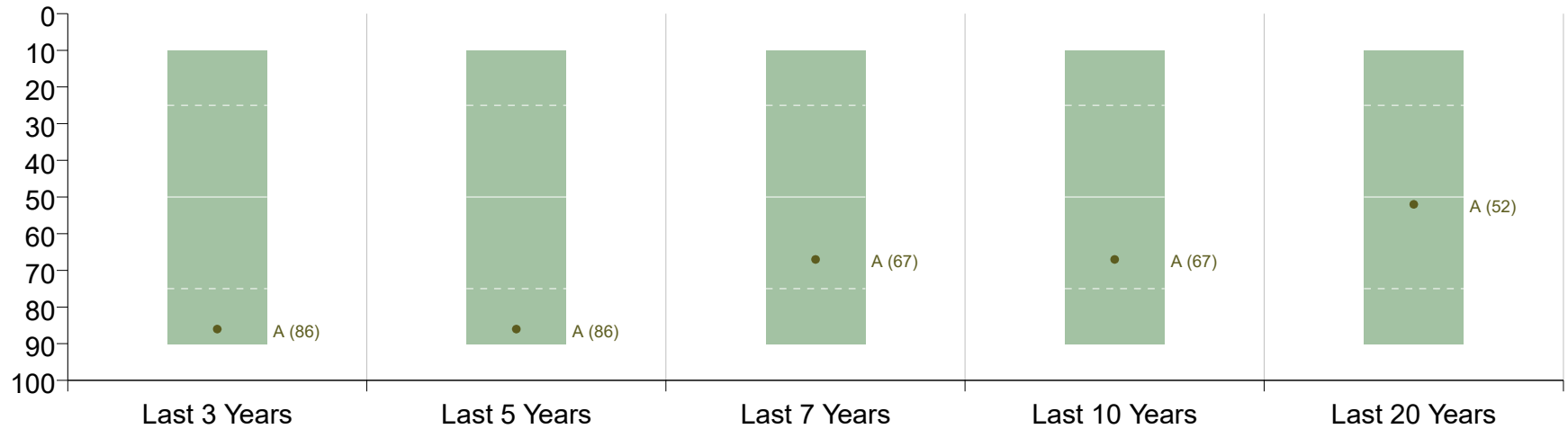
Standard Deviation for Periods Ended December 31, 2025
Group: Callan Public Fund Sponsor - Large (>1B)



	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 20 Years
10th Percentile	6.86	9.54	12.17	10.87	11.38
25th Percentile	6.16	8.84	11.31	10.12	10.70
Median	5.48	7.75	10.05	9.08	9.90
75th Percentile	4.56	6.54	8.38	7.63	9.14
90th Percentile	3.76	5.75	7.61	6.84	8.63
Member Count	128	125	124	123	110
Total Fund • A	3.37	6.09	8.33	7.49	8.77

APFC Total Fund Standard Deviation Relative to Callan's Large Endowment/Foundation Database

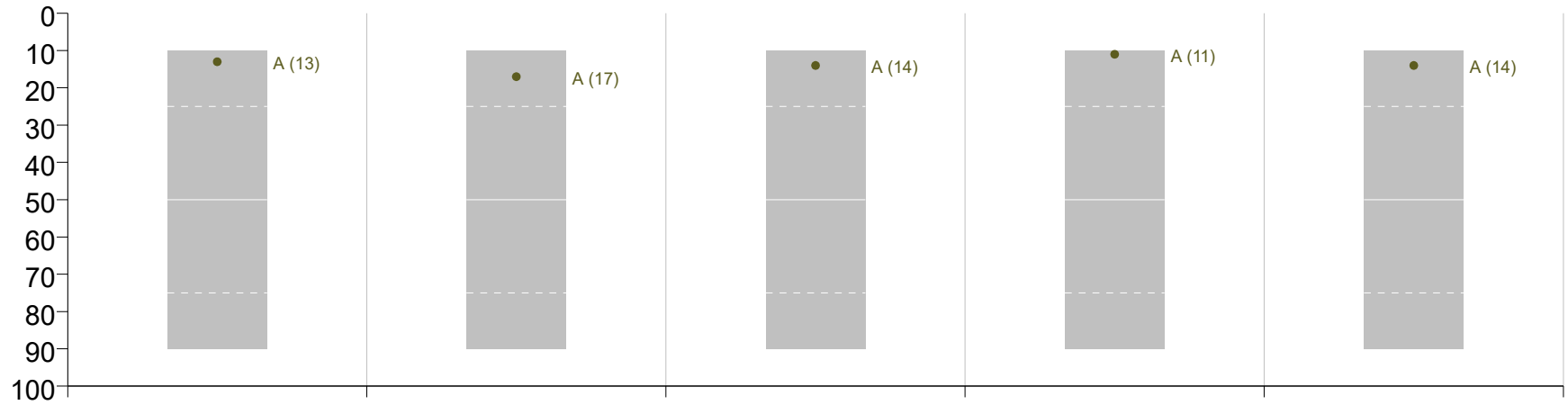
Standard Deviation for Periods Ended December 31, 2025
Group: Callan Endow/Foundation - Large (>1B)



	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 20 Years
10th Percentile	6.73	10.10	12.31	10.99	10.70
25th Percentile	5.74	8.70	11.37	10.21	9.99
Median	4.46	7.68	9.42	8.38	8.83
75th Percentile	3.63	6.49	8.02	7.10	8.05
90th Percentile	3.21	5.78	6.76	6.05	7.12
Member Count	69	69	69	69	57
Total Fund ● A	3.37	6.09	8.33	7.49	8.77

APFC Total Fund Sharpe Ratio Relative to Callan's Large Public Fund Database

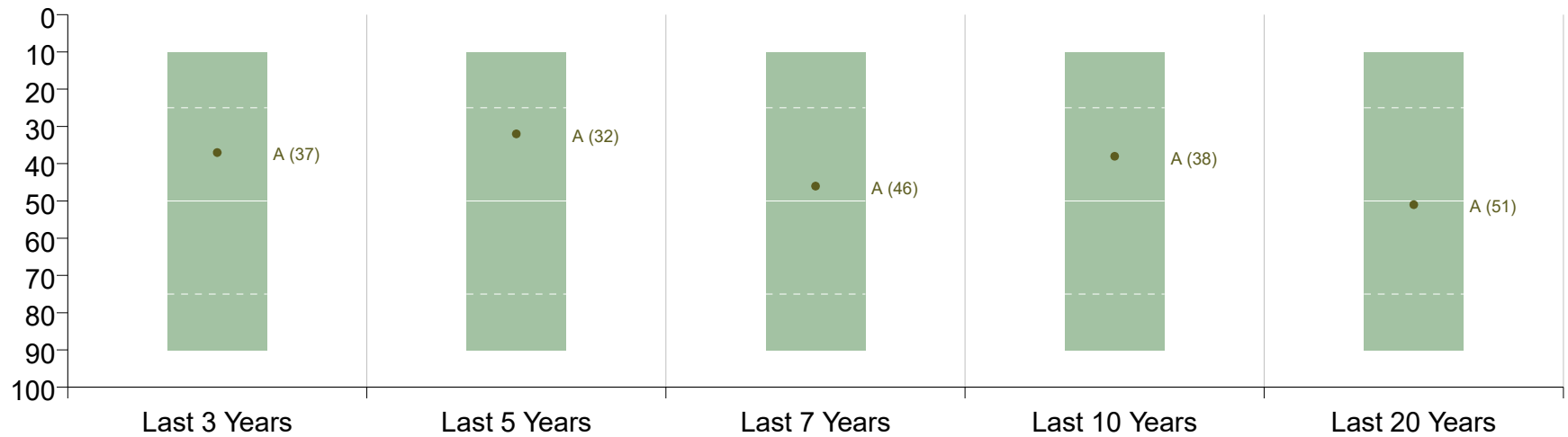
Sharpe Ratio for Periods Ended December 31, 2025
Group: Callan Public Fund Sponsor - Large (>1B)



	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 20 Years
10th Percentile	1.54	0.98	0.90	0.95	0.65
25th Percentile	1.37	0.72	0.81	0.84	0.61
Median	1.24	0.53	0.68	0.70	0.55
75th Percentile	1.10	0.43	0.59	0.62	0.50
90th Percentile	0.98	0.37	0.54	0.57	0.46
Member Count	128	125	124	123	110
Total Fund ● A	1.48	0.82	0.86	0.93	0.64

APFC Total Fund Sharpe Ratio Relative to Callan's Large Endowment/Foundation Database

Sharpe Ratio for Periods Ended December 31, 2025
Group: Callan Endow/Foundation - Large (>1B)



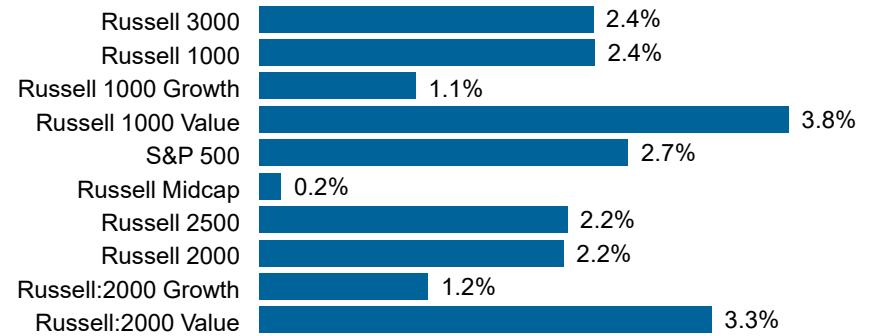
	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 20 Years
10th Percentile	1.99	1.11	1.13	1.19	0.96
25th Percentile	1.65	0.91	0.98	1.02	0.77
Median	1.37	0.74	0.82	0.81	0.65
75th Percentile	1.16	0.52	0.64	0.65	0.53
90th Percentile	0.93	0.36	0.55	0.56	0.47
Member Count	69	69	69	69	57
Total Fund ● A	1.48	0.82	0.86	0.93	0.64

U.S. Equity Performance: 4Q25

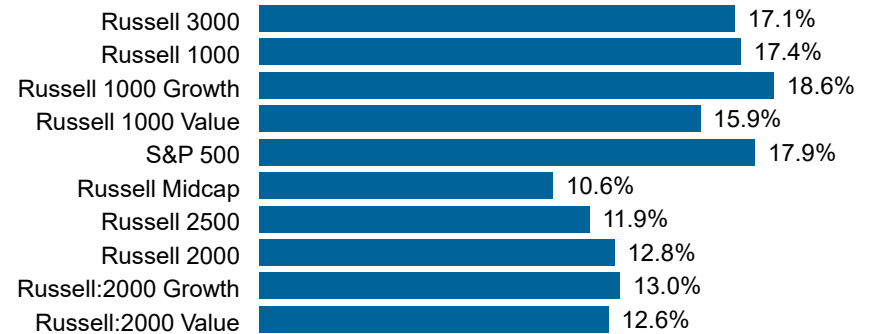
The S&P 500 Index hits all-time highs as investors turn more cautious

- The S&P 500 Index rose 2.7% in 4Q25, supported by a strong earnings season and continued enthusiasm around artificial intelligence.
- All S&P sectors posted gains except Real Estate and Utilities. Health Care (+11.7%) and Communication Services (+7.3%) were the top-performing sectors. Notably, the Technology sector underperformed the broad market amid rising concerns about the durability/trajectory of growth from some of the mega-cap stocks.
- Large cap indices outperformed small cap indices slightly. Value outperformed growth across the market-cap spectrum for the quarter.

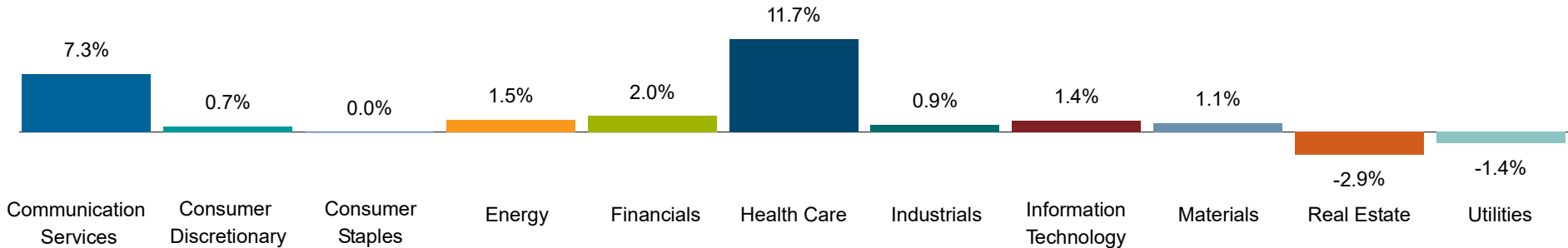
U.S. Equity: Quarter Ended 12/31/25



U.S. Equity: One Year Ended 12/31/25



Industry Sector Quarterly Performance (S&P 500) as of 12/31/25



Sources: FTSE Russell, S&P Dow Jones Indices

Early Signals of Increasing Market Breadth

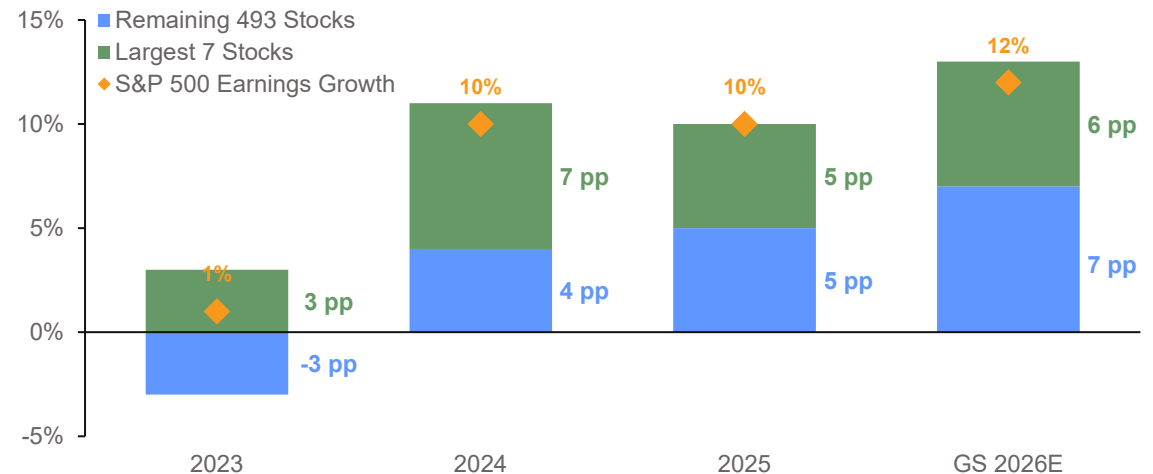
Artificial intelligence remains the dominant theme

- Concentration risk remains elevated, with the top 10 companies in the S&P 500 Index representing over 40% of the index’s total market capitalization.
- Market leadership has begun to broaden beyond the hyper-scalers; for example, only two of the Magnificent Seven stocks outperformed the S&P 500 Index in 2025.
- Earnings growth outside the Magnificent Seven has increased as a share of total S&P 500 Index EPS growth, which may position active managers that employ a more diversified approach in both holdings and alpha generation more favorably.

Only Two Mag 7 Stocks Have Outperformed the Broad Market

Mag 7	2025 Returns
GOOGL	66.0%
NVDA	38.9%
SPX	16.4%
MSFT	15.6%
META	13.1%
TSLA	11.4%
AAPL	9.0%
AMZN	5.2%

Earnings Growth Contributions to the S&P 500 Index



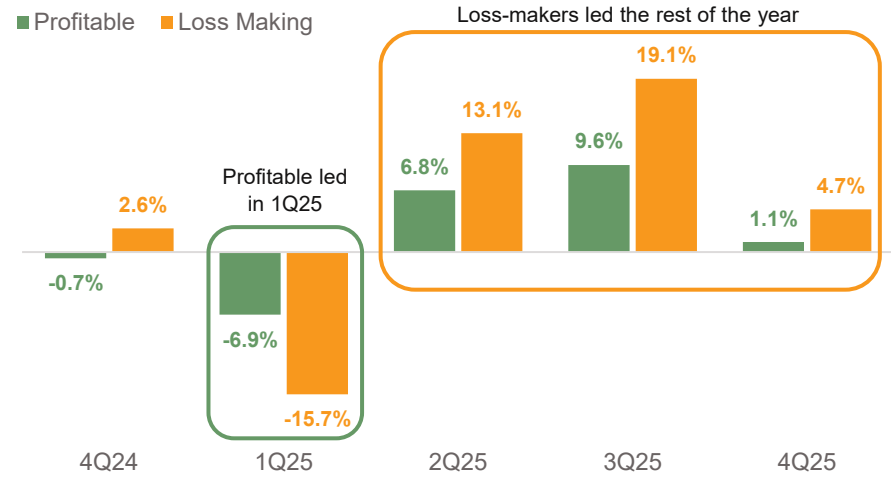
Source: Goldman Sachs

Quality Factor Headwinds Persist, Particularly With Small Cap Managers

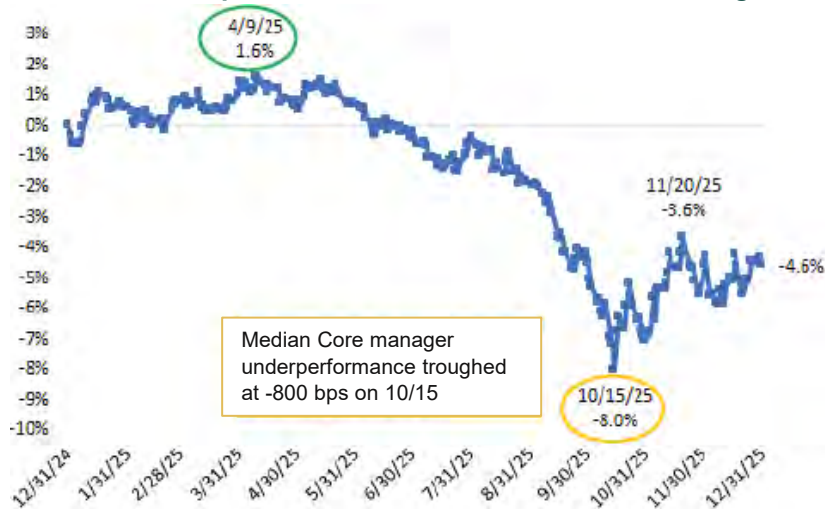
Low-quality stocks, including non-earners, outperformed high-quality equities

- Lower-quality stocks including unprofitable companies—those with low return on equity, high short interest, and negative free cash flow—outperformed in 2025.
- Most small-cap active managers were underweight non-earners, resulting in significant relative underperformance.
- Biopharma accounted for nearly one-third of the Russell 2000's annual return. Many managers held little to no exposure due to reluctance to invest in binary outcomes or a lack of in-house biopharma expertise.

Russell 2000 Index Profitable vs. Loss-Making Companies



Median Small Cap Core Fund Relative Performance During 2025



Average Non-Earner Exposure Among Small Cap Managers



Sources: Furey Research Partners, Morningstar, FactSet, PanAgora

Global/Global ex-U.S. Equity Performance: 4Q25

Best annual return for EAFE since 2009

Broad market

- Global ex-U.S. equities outpaced the U.S. in 4Q25 and for the full calendar year as well.
- MSCI EAFE index delivered its best annual return since 2009.
- The U.K. was the strongest region for the quarter, assisted by a second rate cut in December and a heavy weighting in mining and resource companies that benefit from a continued metals rally.
- In 4Q25, global ex-U.S. small caps trailed large caps, but were assisted by Canadian small caps and their large weight in mining companies.
- China reversed course following a strong 3Q. Investors were disappointed by below-expectation government stimulus, property-sector issues, and deflation fears.

Growth vs. value

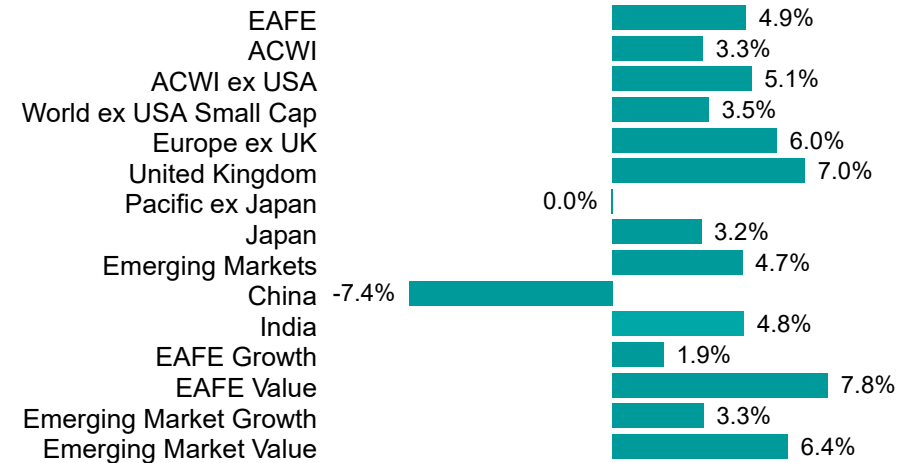
- EAFE Value's 2025 returns were its highest since 2003 and beat the EAFE Growth by the most since the index's inception.

U.S. dollar

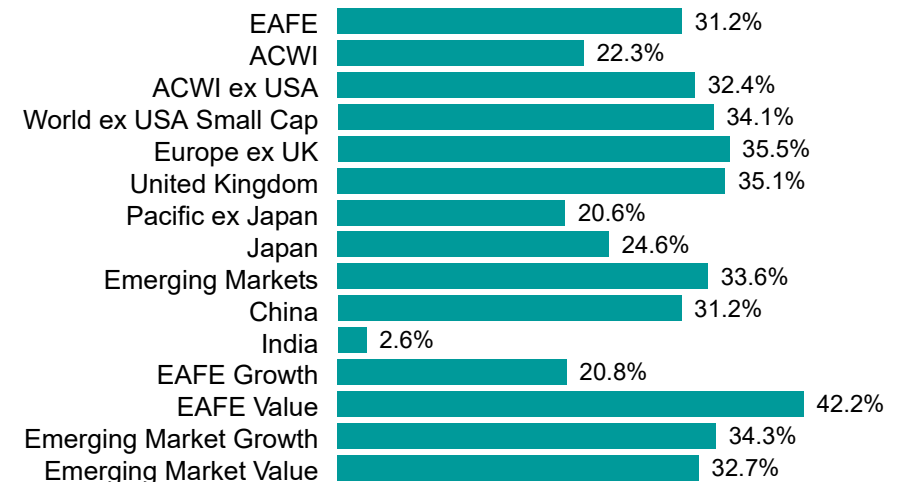
- The U.S. dollar stabilized in 4Q following a sharp decline in the first half of the year (-10%). For the full year, the dollar provided a substantial boost, accounting for around 11.5% of the EAFE Index's 31.2% gains, though its impact in the second half was negligible.

Source: MSCI

Global Equity Returns: Quarter Ended 12/31/25



Global Equity Returns: One Year Ended 12/31/25



Value vs. Growth

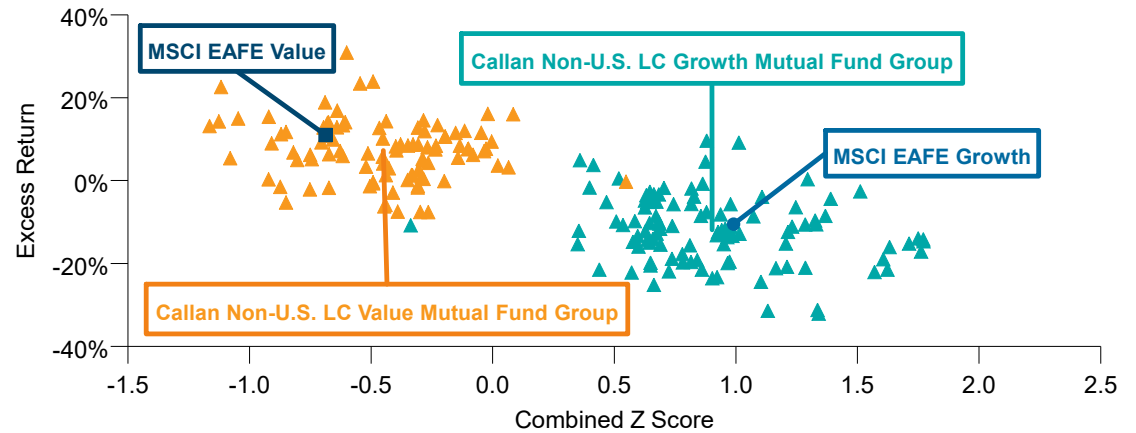
Value dominates, but active growth managers have more success against the benchmark

Value dominated outside the U.S. in 4Q25 and for the full calendar year.

However, growth managers had better success versus their respective benchmark given the concentration in the value index.

- 96% of growth managers underperformed the core benchmark, while 57% underperformed the growth benchmark.
- 15% of value managers underperformed the core benchmark, while 67% underperformed the value benchmark.

Scatter Chart for 1 Year Ended 12/31/25
Benchmark: MSCI EAFE for Excess Return



Average Financial Sector Allocation by Active Managers (MSCI EAFE Value Index held ~37%)

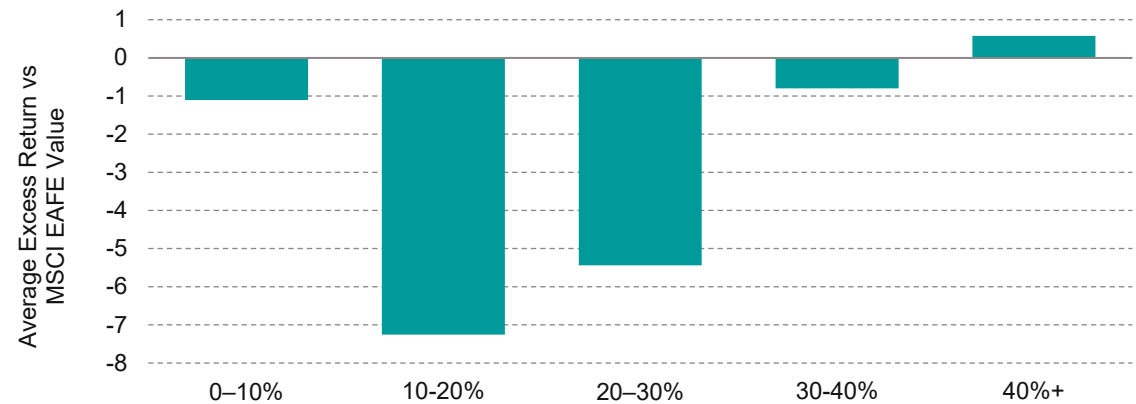


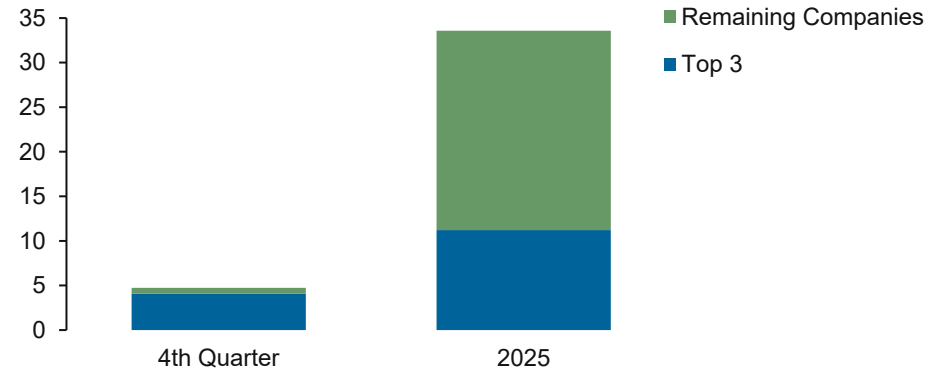
Chart show the average Financial sector weighting for active managers benchmarked to MSCI EAFE Value, by percentage buckets, on the horizontal scale, and the average excess return versus the benchmark in 2025 on the vertical scale. Managers with 10-20% in the Financial sector significantly underperformed.

Sources: J.P. Morgan, MSCI

Narrow Emerging Market Leadership: Still Room for Growth from Others?

- The top three names within emerging markets—Taiwan Semiconductor Manufacturing, Samsung Electronics, and SK Hynix—contributed 4% in 4Q and more than 11% for the full calendar year.
- The MSCI Emerging Markets Index is at a 40-year performance low vs. the MSCI USA Index.
- EM equity net flows, according to EPRF Global & J.P. Morgan, turned positive in May 2025 and moderately accelerated through year end 2025.

MSCI Emerging Markets Index Return



Emerging Markets at a 40-Year Low

Performance of MSCI Emerging Market measured against MSCI US Index

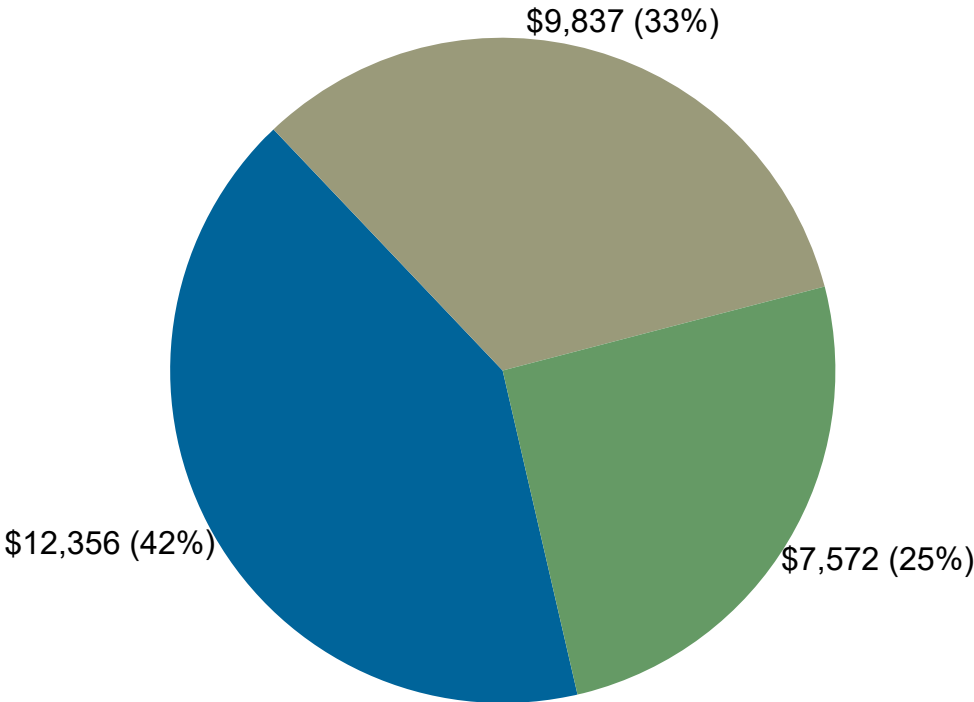
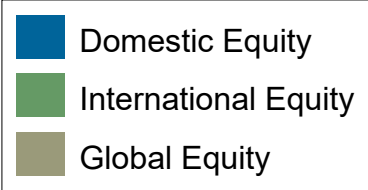


Sources: Acadian, Allspring, C WorldWide, MSCI

APFC Public Equity Structure

As of December 31, 2025

- APFC Public Equity portfolio is comprised of Domestic, International and Global Equity.

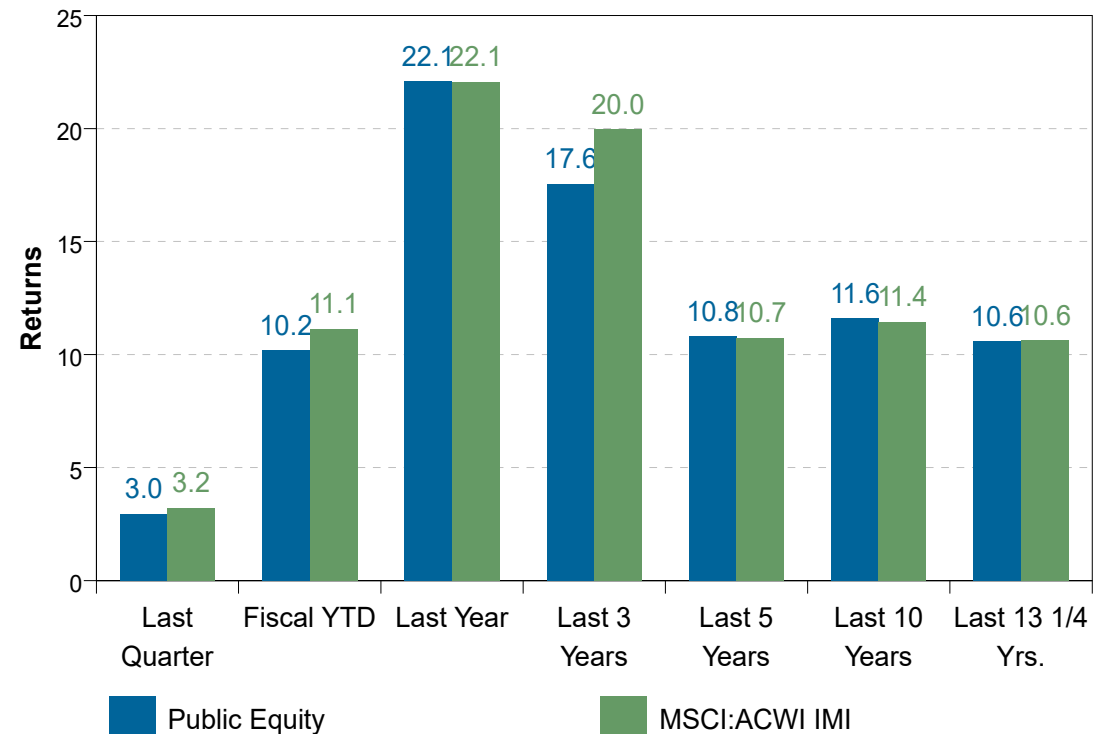


APFC Public Equity vs. MSCI ACWI-IMI

Periods Ended December 31, 2025

- APFC Public Equity portfolio trailed the MSCI ACWI IMI index for the quarter, fiscal YTD, and the trailing three-year periods. The portfolio modestly outperformed over the trailing five-year period.
- Domestic and Global Equity composites lagged their respective benchmarks for the quarter. For the trailing year, Global Equity returned in line with its benchmark and ranked above median. The International Equity composite exceeded its benchmark for all standard time periods.
- Overall, the portfolio is well diversified across regions, countries, and underlying strategies.

Returns for Various Periods
Current Quarter Ending December 31, 2025

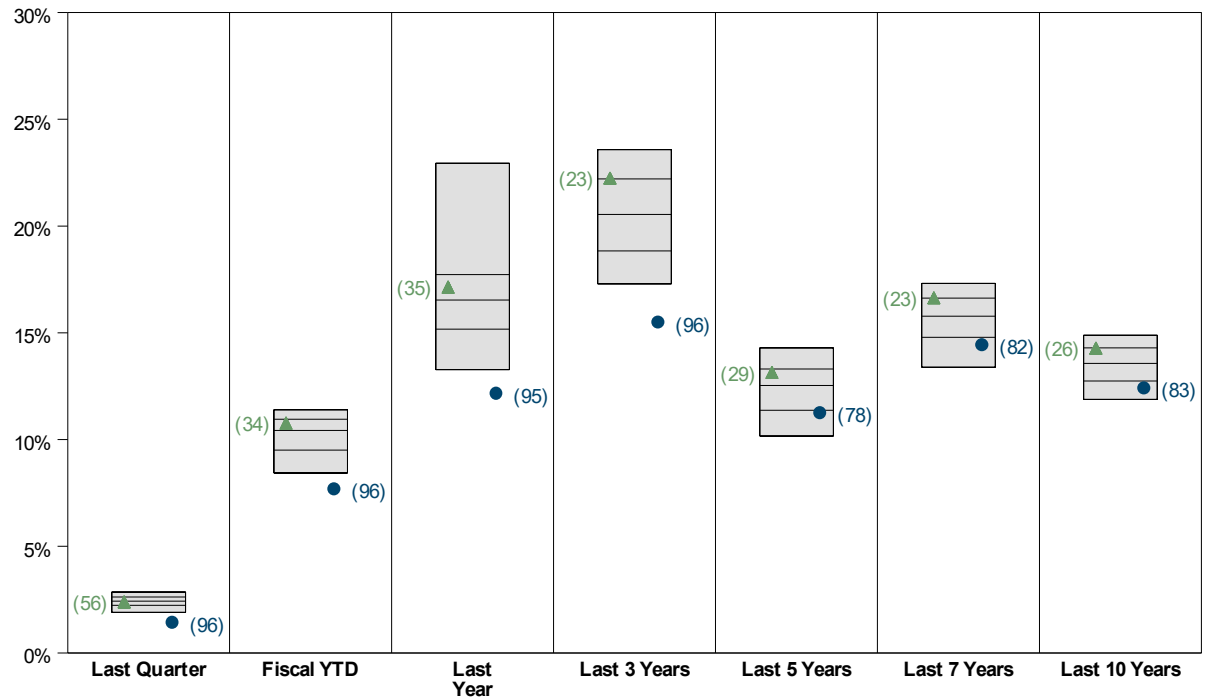


APFC US Equity Performance vs. Fund Sponsor US Equity

Periods Ended December 31, 2025

- The universe is comprised of total domestic equity portfolios of large institutional investors in Callan's Fund Sponsor Database.
- APFC US Equity portfolio lagged the Russell 3000 Index for all time periods shown.
- When compared to US Equity portfolios of other large institutional investors, APFC's US Equity composite ranked below median in all time periods shown.

Performance vs Callan Total Fund Sponsor Database-Domestic Equity (Gr)



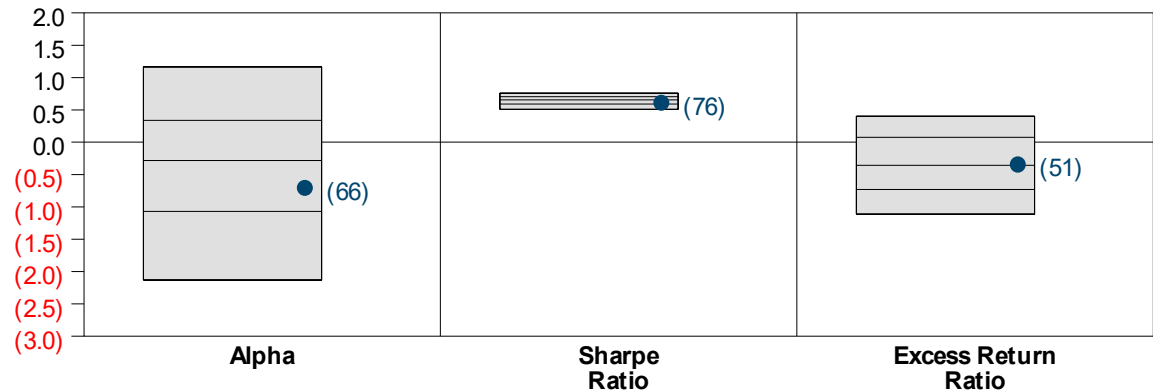
10th Percentile	2.86	11.40	22.95	23.59	14.30	17.32	14.89
25th Percentile	2.63	10.95	17.73	22.21	13.31	16.63	14.30
Median	2.43	10.43	16.54	20.54	12.54	15.79	13.56
75th Percentile	2.24	9.51	15.17	18.84	11.37	14.79	12.74
90th Percentile	1.92	8.44	13.27	17.30	10.17	13.39	11.89
Domestic Equity ●	1.38	7.63	12.11	15.45	11.20	14.39	12.37
Russell 3000 Index ▲	2.40	10.78	17.15	22.25	13.15	16.64	14.29

APFC US Equity Portfolio Risk Adjusted Return Rankings

Periods Ended December 31, 2025

- The universe is comprised of total domestic equity portfolios of large institutional investors in Callan's Fund Sponsor Domestic Equity Database.
- For the trailing five-year period, APFC portfolio ranked below median for alpha, Sharpe ratio, and excess return ratio.
 - Alpha measures contribution to performance – portfolio's return above index adjusted for risk.
 - Sharpe Ratio represents return gained per unit of risk taken (return/risk).
 - Excess Return Ratio measures alpha (return above benchmark) divided by tracking error (risk versus benchmark).

**Risk Adjusted Return Measures vs Russell 3000 Index
Rankings Against Fund Sponsor – Domestic Equity (Gross)
Five Years Ended December 31, 2025**

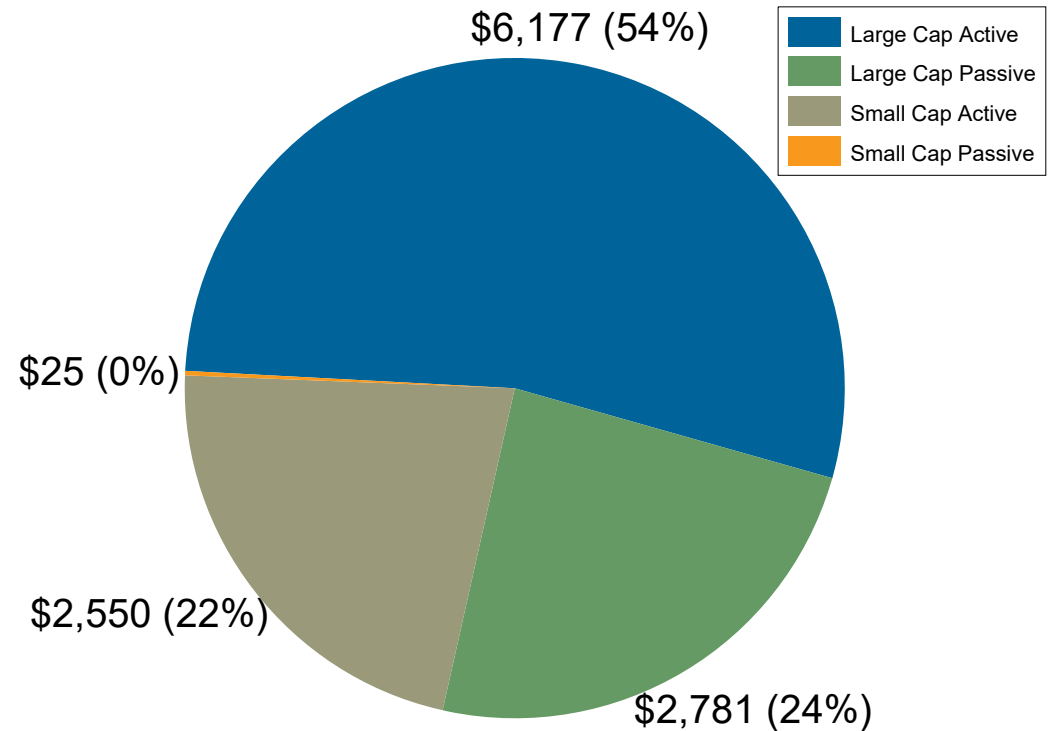


	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	1.17	0.76	0.40
25th Percentile	0.34	0.70	0.08
Median	(0.28)	0.66	(0.36)
75th Percentile	(1.07)	0.59	(0.73)
90th Percentile	(2.13)	0.51	(1.11)
Domestic Equity ●	(0.73)	0.59	(0.37)

APFC US Equity Structure

As of December 31, 2025

- US equity portfolio is roughly 76% actively managed and 24% passive (or quasi-passive).
- Roughly 69% of the large cap allocation is actively managed while 99+% of the small cap allocation is actively managed.



APFC Large & Small Cap Equity Relative to Peer Universe

Periods Ended December 31, 2025

- APFC's Large Cap and Small Cap portfolios both underperformed the benchmark for the quarter and trailing year.
- The Small Cap and Large Cap portfolios both ranked below their respective peer medians for the quarter and trailing year.

Performance vs Callan Large Capitalization (gross)

	Last Quarter	Fiscal YTD	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
Large Cap Equity	1.52 ⁽⁶⁴⁾	7.35 ⁽⁶⁵⁾	14.47 ⁽⁶⁷⁾	17.43 ⁽⁶⁶⁾	12.42 ⁽⁵⁰⁾	15.19 ⁽⁶¹⁾	12.94 ⁽⁵⁹⁾
S&P 500 Index	2.66 ⁽⁴⁰⁾	11.00 ⁽²⁸⁾	17.88 ⁽²⁷⁾	23.01 ⁽⁴⁵⁾	14.42 ⁽²³⁾	17.29 ⁽³⁷⁾	14.82 ⁽³⁹⁾
Russell 1000 Index	2.41 ⁽⁴⁷⁾	10.60 ⁽³¹⁾	17.37 ⁽³¹⁾	22.74 ⁽⁴⁶⁾	13.59 ⁽³³⁾	17.03 ⁽⁴⁰⁾	14.59 ⁽³⁷⁾
Callan Large Cap	2.40	9.71	16.43	22.40	13.13	16.95	14.72

Performance vs Callan Small Capitalization (gross)

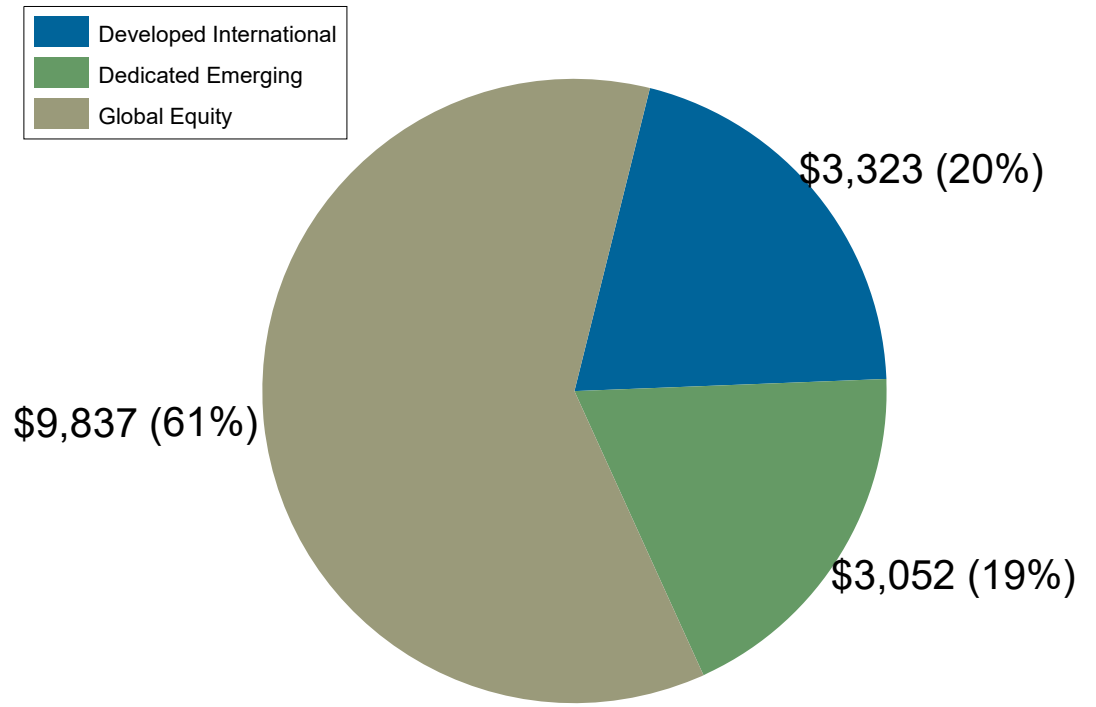
	Last Quarter	Fiscal YTD	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
Small Cap Equity	0.69 ⁽⁷⁰⁾	8.40 ⁽⁶¹⁾	3.40 ⁽⁷²⁾	10.63 ⁽⁶⁵⁾	6.64 ⁽⁴⁶⁾	11.47 ⁽⁴⁰⁾	10.35 ⁽³⁶⁾
Russell 2000 Index	2.19 ⁽⁴⁶⁾	14.86 ⁽¹³⁾	12.81 ⁽¹⁶⁾	13.73 ⁽²⁷⁾	6.09 ⁽⁵³⁾	10.60 ⁽⁵⁴⁾	9.62 ⁽⁵⁰⁾
Callan Small Cap	0.99	9.60	8.07	9.60	2.35	9.38	8.78

*Peer group returns reflect median

APFC Non-US and Global Equity Structure

As of December 31, 2025

- Portfolio is divided between global, non-US, and emerging markets mandates.
- Both global and non-US equity managers invest in emerging markets.
- Global managers invest in US markets as part of their mandate.

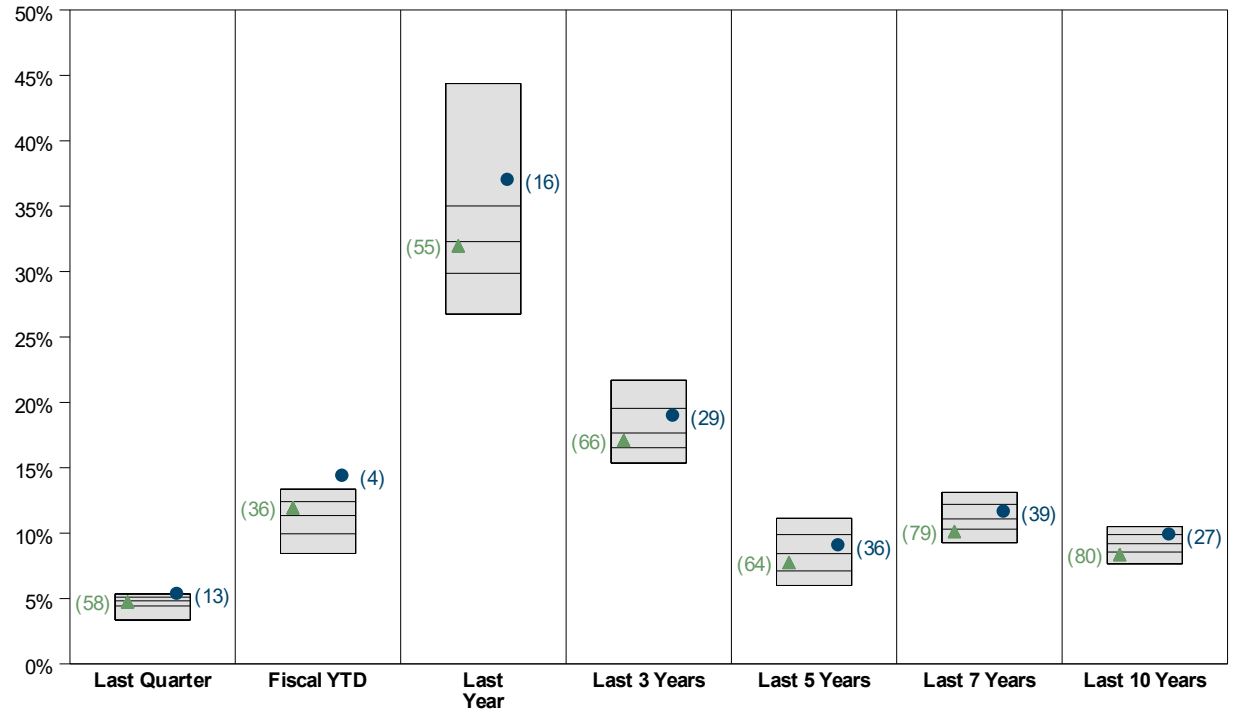


APFC International Equity Relative to Fund Sponsor Universe

Periods Ended December 31, 2025

- International Equity ended the quarter and last year ahead of its benchmark and in the top quartile of its peer group.
- The portfolio exceeded its benchmark over all measured time periods.
- Relative to other fund sponsor portfolios, International Equity ranked above median for all measured time periods.

Performance vs Callan Total Fund Sponsor Database-International Equity (Gr)



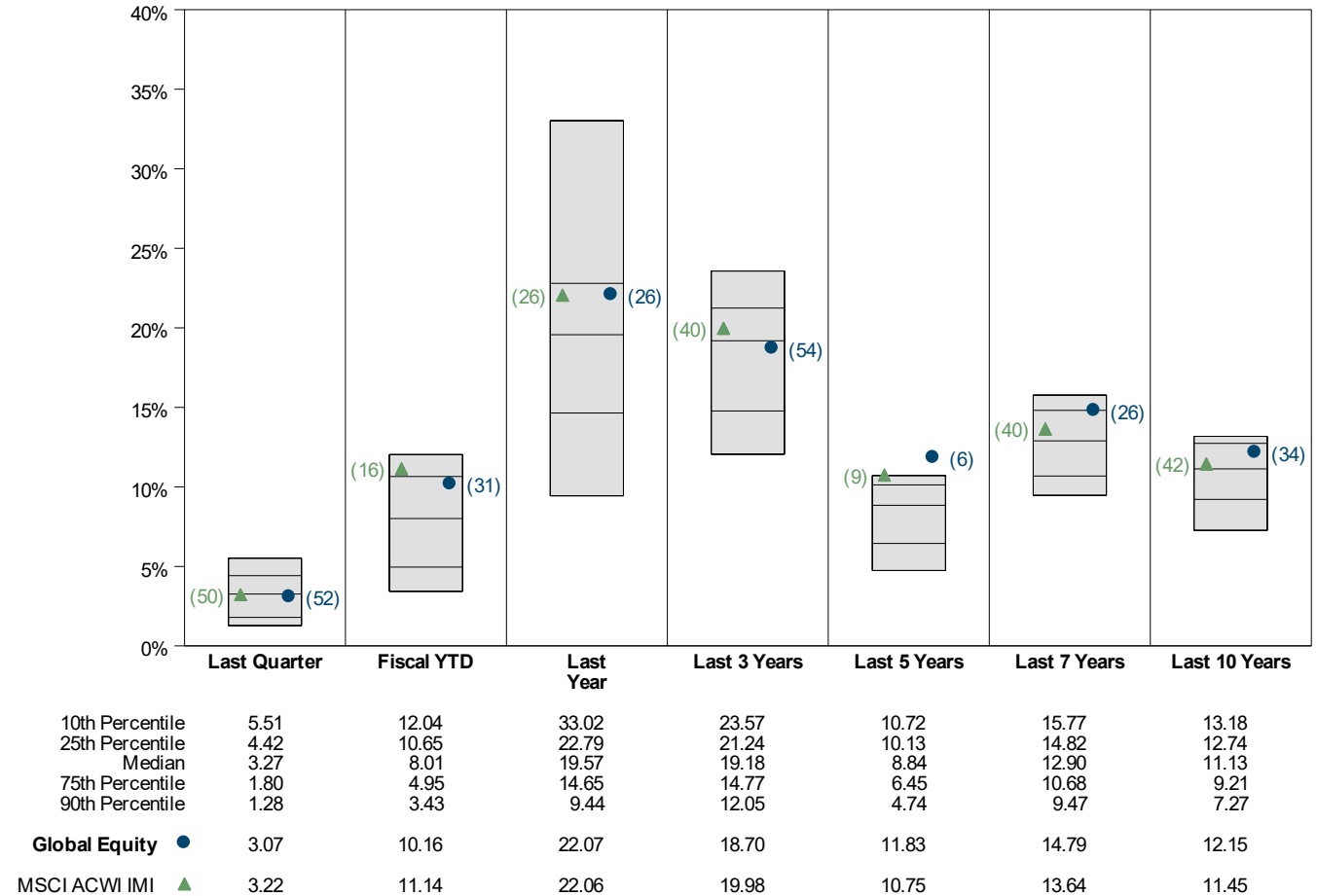
10th Percentile	5.35	13.36	44.38	21.69	11.14	13.11	10.49
25th Percentile	5.11	12.41	35.02	19.54	9.89	12.21	9.89
Median	4.83	11.35	32.28	17.67	8.44	11.09	9.20
75th Percentile	4.43	9.96	29.86	16.53	7.11	10.31	8.55
90th Percentile	3.37	8.45	26.75	15.36	6.01	9.27	7.65
International Equity ●	5.30	14.32	36.94	18.92	9.01	11.59	9.84
MSCI ACWI xUS IMI ▲	4.76	11.95	31.96	17.10	7.77	10.13	8.37

APFC Global Equity Relative to Global Universe

Periods Ended December 31, 2025

Performance vs Callan Global Equity MFs

- APFC Global Equity portfolio underperformed its benchmark and peers over the trailing quarter.
- Over the last year, the portfolio ended in line with the benchmark and ranked above the median of its peer group. For the trailing 3-year period, the portfolio ranked slightly below the median of the peer group.
- The portfolio was ahead of its benchmark and ranked above its peer group median over the trailing 5-, 7-, and 10-year periods.



APFC International & Global Equity Relative to Fund Sponsor Universe

Periods Ended December 31, 2025

Performance vs Callan Non-US Equity (gross)

	Last Quarter	Fiscal YTD	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
International Developed	4.61 ⁽⁵⁰⁾	11.45 ⁽³⁷⁾	35.46 ⁽³³⁾	18.69 ⁽⁴³⁾	10.24 ⁽³⁶⁾	11.97 ⁽³⁸⁾	9.59 ⁽³²⁾
MSCI ACWI xUS (net)	5.05 ⁽³⁸⁾	12.29 ⁽³⁰⁾	32.39 ⁽⁵¹⁾	17.33 ⁽⁵⁸⁾	7.91 ⁽⁶⁰⁾	10.15 ⁽⁷⁵⁾	8.41 ⁽⁶⁵⁾
Callan Non-U.S. (gr)	4.60	10.07	32.59	17.98	8.75	11.45	8.92

Performance vs Emerging Markets Equity Database (gross)

	Last Quarter	Fiscal YTD	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
Emerging Markets	5.57 ⁽³⁵⁾	17.69 ⁽³⁰⁾	34.65 ⁽³⁸⁾	16.99 ⁽⁴⁸⁾	5.65 ⁽¹⁹⁾	9.83 ⁽²¹⁾	9.57 ⁽²⁴⁾
MSCI EM	4.73 ⁽⁵⁵⁾	15.88 ⁽⁴⁷⁾	33.57 ⁽⁴⁵⁾	16.40 ⁽⁵¹⁾	4.20 ⁽³⁹⁾	8.06 ⁽⁴⁷⁾	8.42 ⁽⁴⁰⁾
EM Equity DB (gr)	5.14	15.63	32.77	16.57	3.72	7.91	7.93

Performance vs Global Equity Database (gross)

	Last Quarter	Fiscal YTD	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
Global Equity	3.07 ⁽⁵²⁾	10.16 ⁽³¹⁾	22.07 ⁽²⁶⁾	18.70 ⁽⁵⁴⁾	11.83 ⁽⁶⁾	14.79 ⁽²⁶⁾	12.15 ⁽³⁴⁾
MSCI ACWI IM Index	3.22 ⁽⁵⁰⁾	11.14 ⁽¹⁶⁾	22.06 ⁽²⁶⁾	19.98 ⁽⁴⁰⁾	10.75 ⁽⁹⁾	13.64 ⁽⁴⁰⁾	11.45 ⁽⁴²⁾
Global Equity DB (gr)	3.27	8.01	19.55	14.78	6.84	12.60	11.21

*Peer group returns reflect median

- APFC's International Developed lagged its benchmark for the quarter but exceeded it for the trailing year.
- The Emerging Markets portfolio outperformed its benchmark over all standard time periods.
- The Global Equity portfolio underperformed its benchmark for the quarter but ended in line with it for the trailing year.
- All three programs exceeded their respective benchmarks and ranked above their peer group medians over the trailing 5-, 7-, and 10-year periods.

U.S. Fixed Income Performance: 4Q25

The Fed cut rates again; Aggregate finishes the year strong

Macro environment: Hawkish policy expected

- The Fed cut rates at the December meeting, with long-end rates moving higher for the quarter.
- Sentiment around monetary policy changed toward the end of the year, with markets anticipating more hawkish policy early in 2026.
- The yield curve steepened modestly, with the 2s/10s spread ending at 70 bps, up from 56 bps at the end of 3Q.

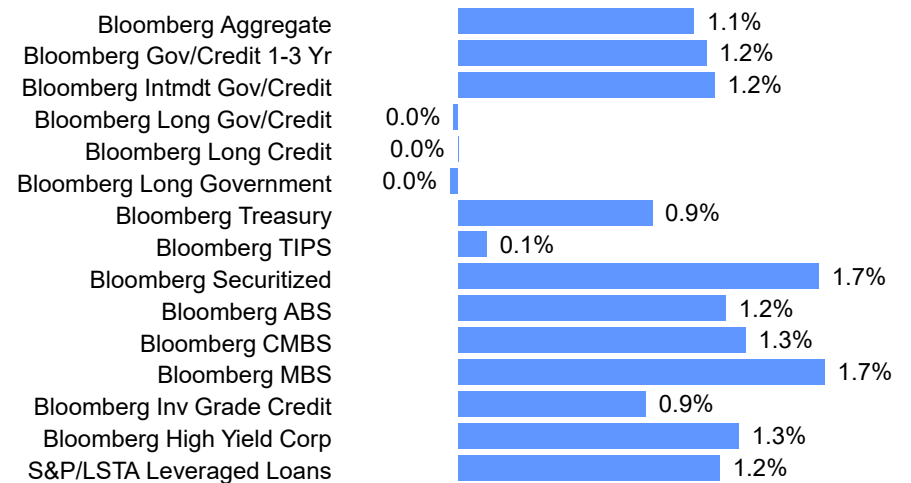
Performance and drivers: Falling short-term Treasury yields

- The Bloomberg US Aggregate Bond Index gained over 1%, supported by declining short-term Treasury yields.
- IG corporate returns matched Treasuries due to rate cuts and steady spreads in corporate markets.

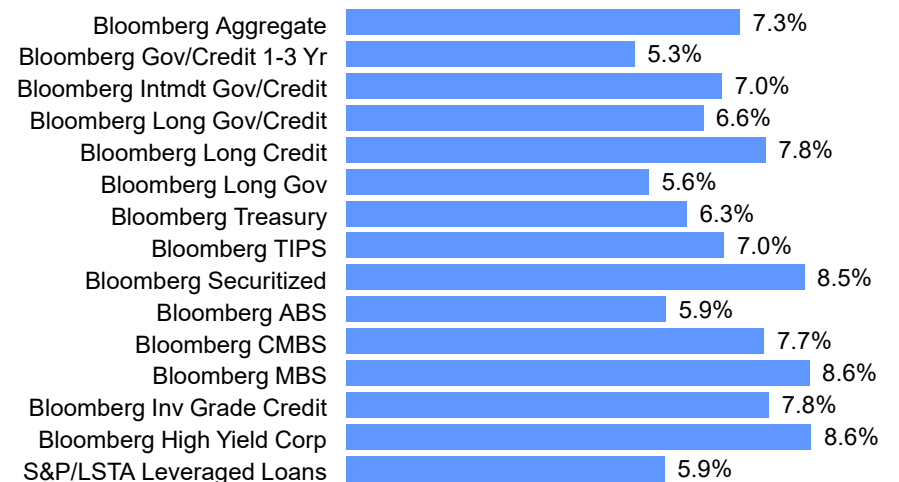
Valuations: Yields will drive returns

- Corporate credit spreads stayed relatively consistent versus 3Q but remain at tight levels, with value being in question.
- Overall, yield itself should be the primary driver of fixed income returns moving forward as yield curves have steepened, and the bulk of spread tightening appears to be behind us.

U.S. Fixed Income Returns: Quarter Ended 12/31/25



U.S. Fixed Income Returns: One Year Ended 12/31/25



Sources: Bloomberg, Callan, SIFMA Research, S&P Dow Jones Indices, U.S. Treasury

Global Fixed Income Performance: 4Q25

U.S. dollar strengthened as tariff shock settles

Macro environment: ECB holds steady; BOE cuts

- After multiple cuts early in the year, the ECB held rates steady in the second half of 2025. Guidance in December suggested inflation should stabilize near the 2% target over the medium term.
- The BOE cut in December, citing the progress made in easing inflation pointing toward less restrictive monetary policy.

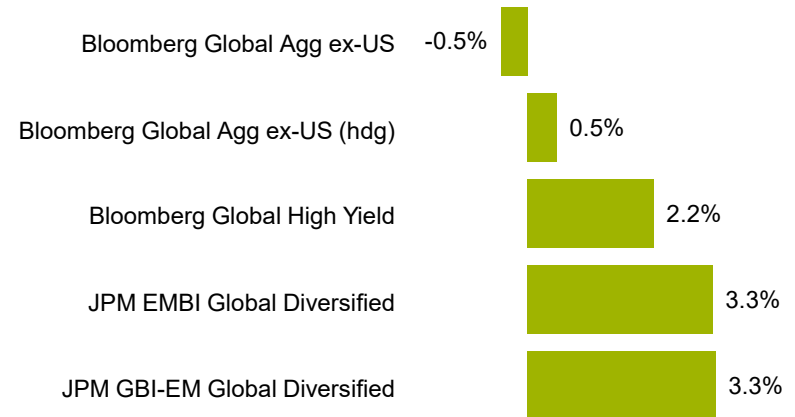
U.S. dollar remains front and center

- For the calendar year, the unhedged index substantially outperformed the hedged version amid a weaker dollar year over year.

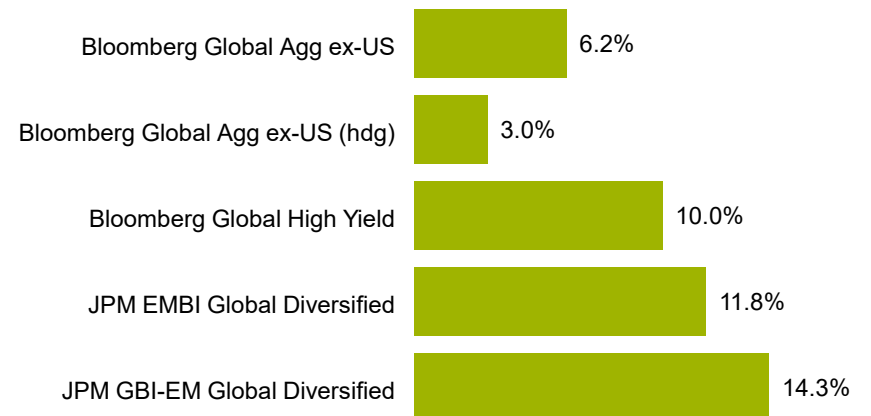
Emerging market debt delivers another strong quarter

- A similar dollar-weakness story was on display over the year for emerging market debt, with local currency debt outperforming hard currency.

Global Fixed Income Returns: Quarter Ended 12/31/25



Global Fixed Income Returns: One Year Ended 12/31/25

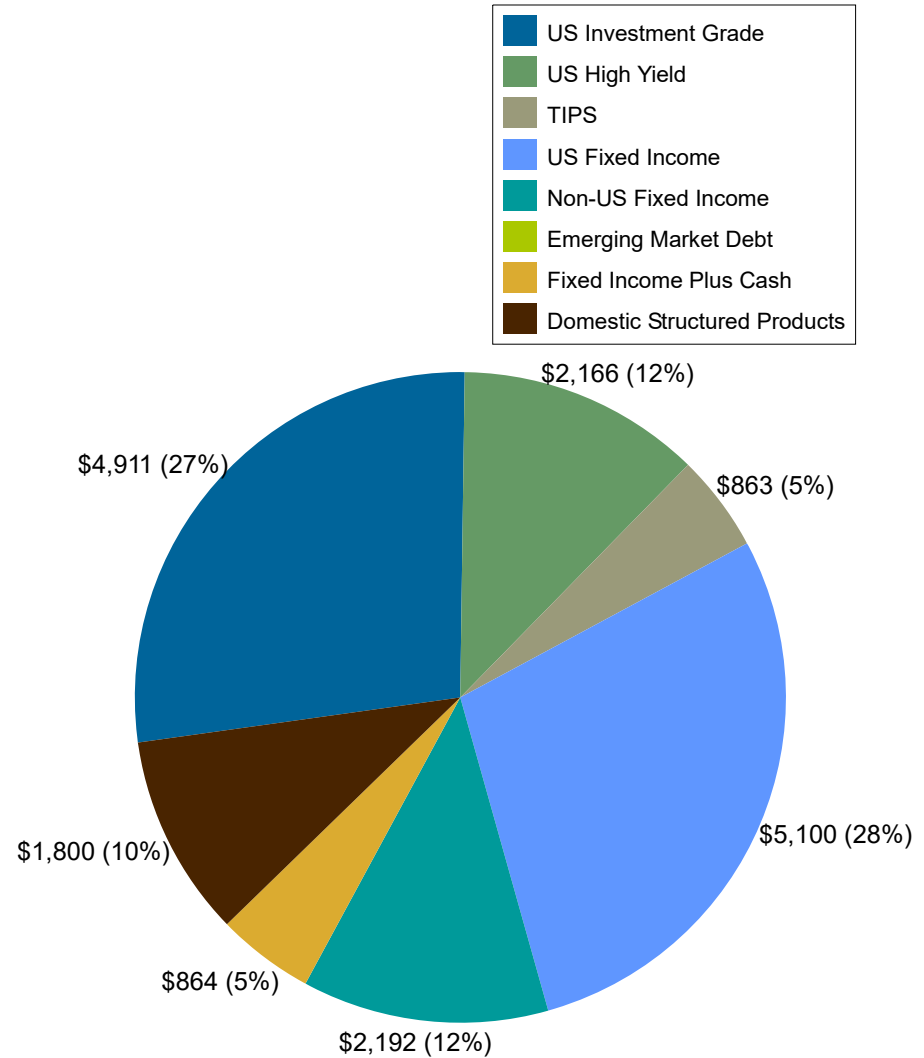


Sources: Bloomberg, ICE Data Indices, J.P. Morgan

APFC Fixed Income Structure

As of December 31, 2025

- The fixed income portfolio is now managed internally, including allocations within Fixed Income Plus Cash, US Fixed Income Aggregate, US Investment Grade Corporate, Non-US Fixed Income, Structured Products, Emerging Market Debt, US High Yield and TIPS.



Fixed Income Relative to Benchmarks

Periods Ended December 31, 2025

	Last Quarter	Fiscal YTD	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	
● Broader fixed income matched or outperformed the benchmark over all standard trailing time periods.	Fixed Income	0.96	3.08	6.99	5.96	0.76	3.08	--
	Fixed Income Benchmark	0.96	2.91	6.75	5.53	0.42	2.51	--
● Over the quarter, Non-US fixed income, US high yield, TIPS, and Structured outperformed their respective benchmarks.	US Fixed Income Aggregate	1.08	3.28	7.55	5.22	0.03	2.54	2.48
	Blmbg:Aggregate	1.10	3.15	7.30	4.66	(0.36)	1.99	2.01
	US Investment Grade Corporate	0.72	3.52	7.94	6.60	0.37	3.92	3.85
	Blmbg:Corporate	0.84	3.46	7.77	6.10	(0.09)	3.28	3.27
● US Fixed income and US Investment Grade Corporate missed their respective benchmarks for the quarter.	Non US Fixed Income	0.42	0.62	2.08	4.84	0.26	1.78	2.23
	Blmbg Global Treasury ex-US	0.35	0.54	2.03	4.71	0.28	1.76	2.28
	US High Yield	1.54	4.07	9.06	9.60	4.61	6.10	6.16
	US High Yield Benchmark	1.51	3.85	9.02	8.95	3.88	5.77	6.20
● Over the trailing year, most asset classes outperformed their respective benchmarks except Structured Products.	TIPS	0.17	2.33	7.20	4.47	1.48	3.82	3.34
	Blmbg TIPS	0.13	2.24	7.01	4.23	1.12	3.50	3.09
	Domestic Structured Products	1.71	4.13	8.46	4.91	0.07	--	--
	BB US Securitized	1.68	4.10	8.49	4.97	0.22	1.65	1.68

Fixed Income Benchmark components: 5% 90 Day T-Bills, 5% BB US TIPS, 25% BB US Agg, 25% BB US Corp Inv Grade TR, 10% GI Treas xUS Hdg, 2.5% JPM EMBI GI Div, 2.5% JPM GBI-EM GI Div, 10% BB US HY 2% Issuer, 10% S&P GI REIT & 5% S&P GI Listed Inf to 6/30/20.

5% 90 Day T-Bills, 5% BB US TIPS, 27.5% BB US Agg, 27.5% BB US Corp Inv Grade TR, 10% GI Treas xUS Hdg, 2.5% JPM EMBI GI Div, 2.5% JPM GBI-EM GI Div, 10% BB US HY 2% Issuer, and 10% BB US Sec Idx to 6/30/22.

5% 90 T-Bills, 27.5% BB US Corp Inv Gr TR, 15% GI Treas xUS Hdgd, 27.5% BB US Agg, 10% BB HY Corp Ba, 5% BB US TIPS, and 10% BB US Securitized Idx thereafter.

U.S. Private Real Estate Performance: 4Q25

Sector appreciation mostly turns positive, outside of Office and Hotel

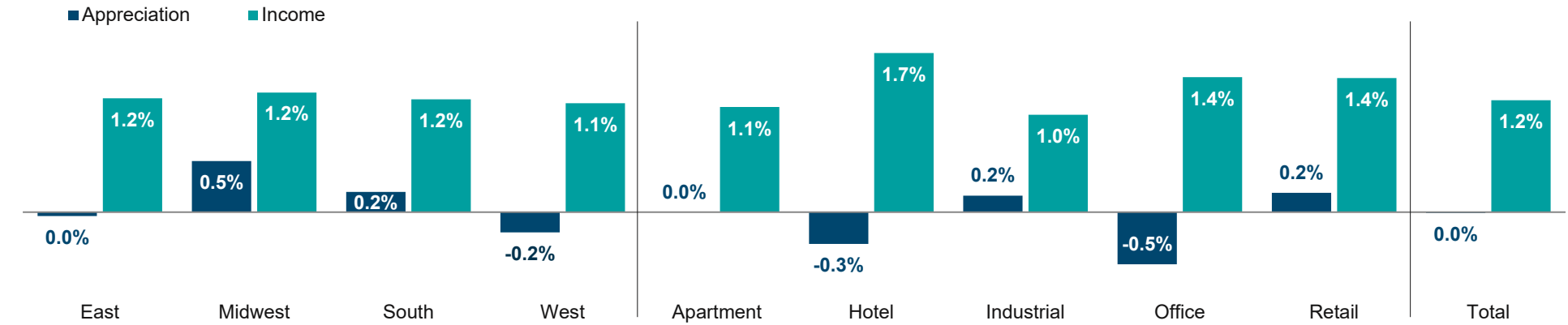
Real estate recovers but results are mixed

- Valuations appear to have bottomed and are in the early stages of a recovery.
- Income returns were positive across sectors and regions.
- Property sector results were mixed; Office and Hotel experienced negative appreciation, while the remaining sectors had positive or flat appreciation.
- The West region lagged in performance, largely due to softening industrial fundamentals in Southern California.
- Manager return dispersion within the ODCE Index was driven by underlying portfolio composition.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
NCREIF ODCE	0.7%	2.9%	-4.3%	2.5%	3.9%
Income	0.8%	3.2%	3.1%	3.0%	3.1%
Appreciation	-0.1%	-0.3%	-7.2%	-0.5%	0.7%
NCREIF Property Index	1.2%	4.9%	-1.0%	3.8%	4.8%
Income	1.2%	4.8%	4.6%	4.4%	4.5%
Appreciation	0.0%	-0.1%	-5.4%	-0.6%	0.4%

Returns are geometrically linked

NCREIF Property Index Quarterly Returns by Region and Property Type

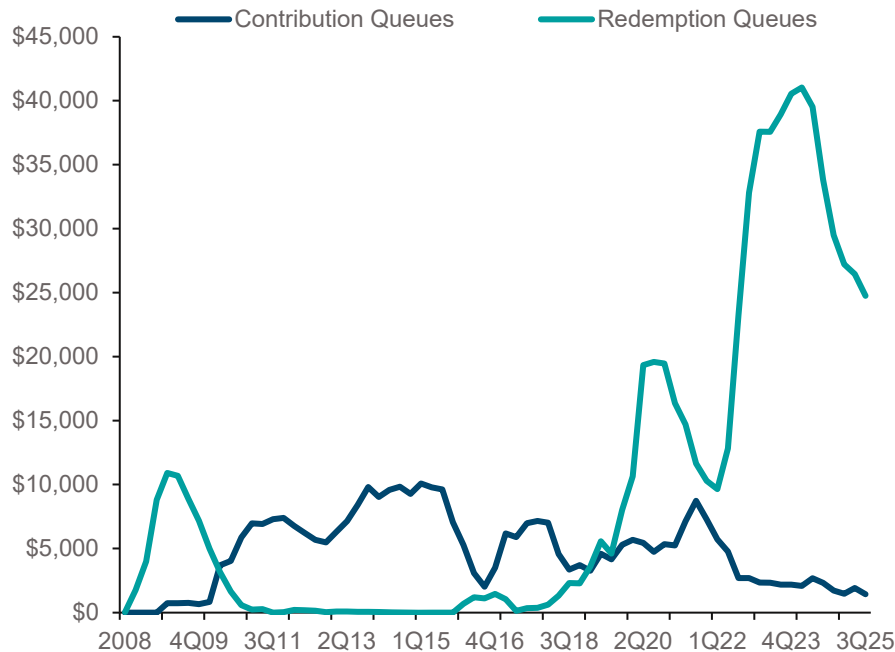


Source: NCREIF; ODCE return is net

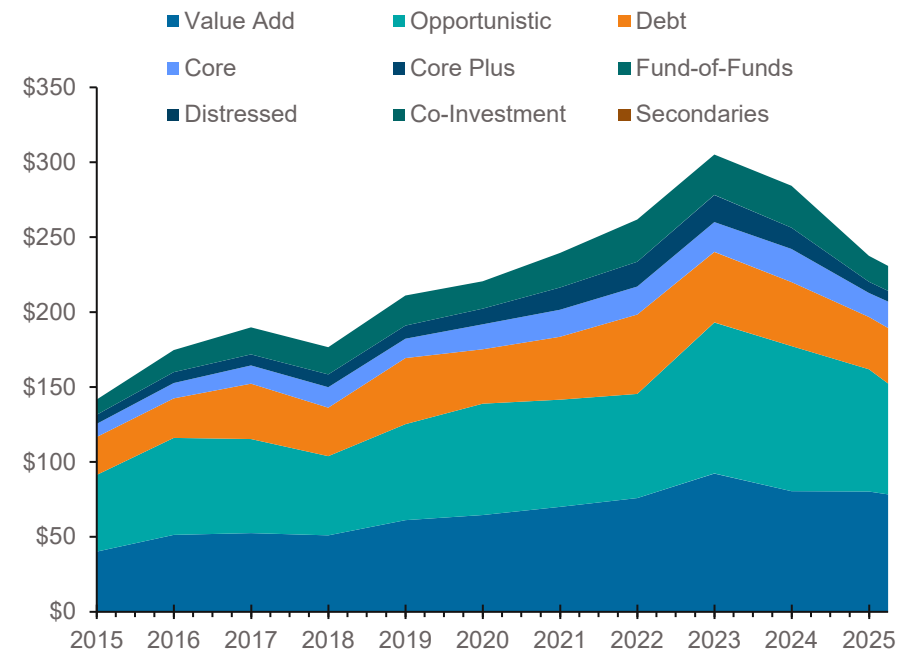
U.S. Private Real Estate Market Trends

Over \$230 billion of dry powder

Core Fund Contribution/Redemption Queues (\$mm)^



Dry Powder for CRE Investment in North America (\$bn)



- ODCE redemption queues are approximately 10.8% of net asset value (NAV) with a median queue of 8.3%. This compares to the Global Financial Crisis, when queues peaked at approximately 15% of NAV.
- Outstanding redemption requests for most large ODCE funds are approximately 0% to 52% of NAV.
- Redemption queues are now sharply decreasing after having peaked at 19.3% of NAV in 1Q24. This has been driven primarily by rescissions of redemption requests within a handful of managers with large queues and increased redemption payments due to increasing transactions.

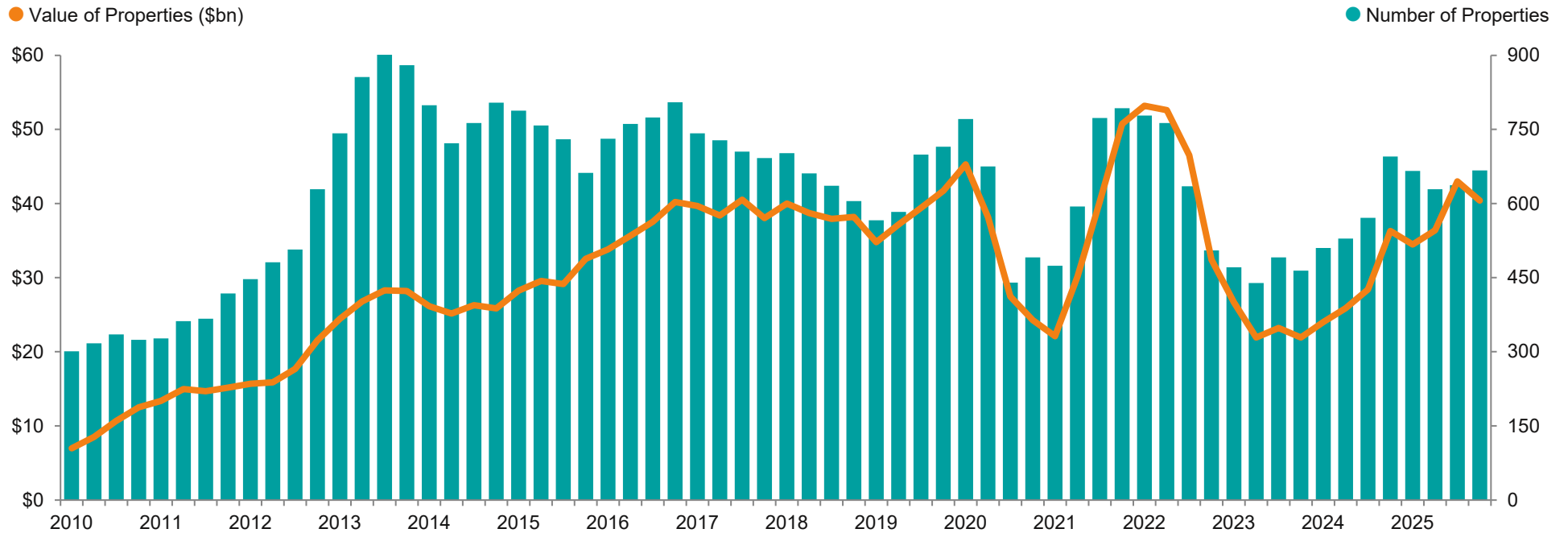
Sources: AEW, NCREIF, Prequin

^Queue data as of 3Q25 the latest available at time of publication

U.S. Private Real Estate Market Trends

Pricing and transaction volumes are increasing after bottoming

NCREIF Property Index Rolling 4-Quarter Transaction Totals

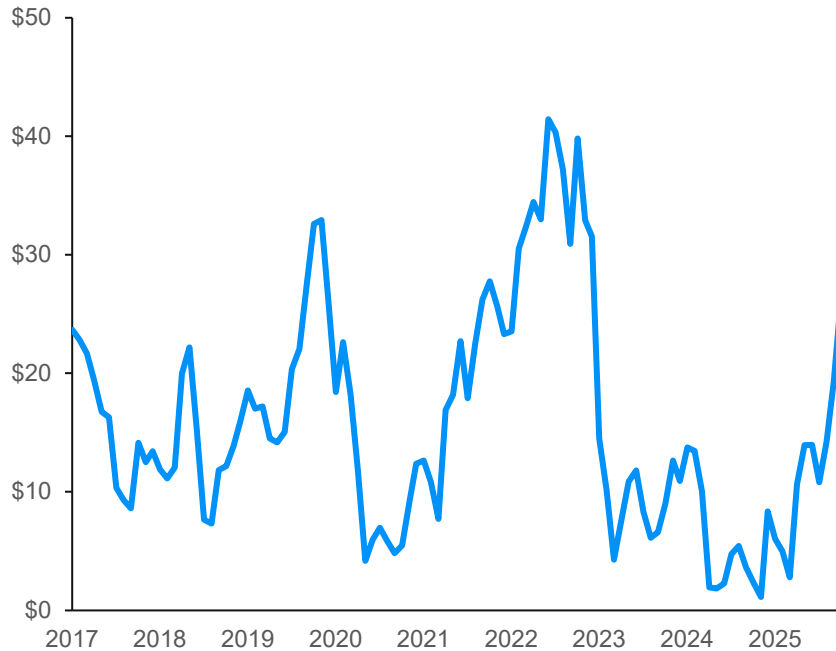


- Transaction volume is increasing on a rolling four-quarter basis yet remains below five-year averages.
- In 4Q25, transaction volume increased by number on a quarter-over-quarter basis, though slightly decreased on overall transaction value. Transaction volume remains lower compared to 2022.
- The volatile rise in interest rates was the driving force behind the slowdown in transactions between 2022 and 2024. Activity has since rebounded as valuations have largely adjusted to increased borrowing costs.

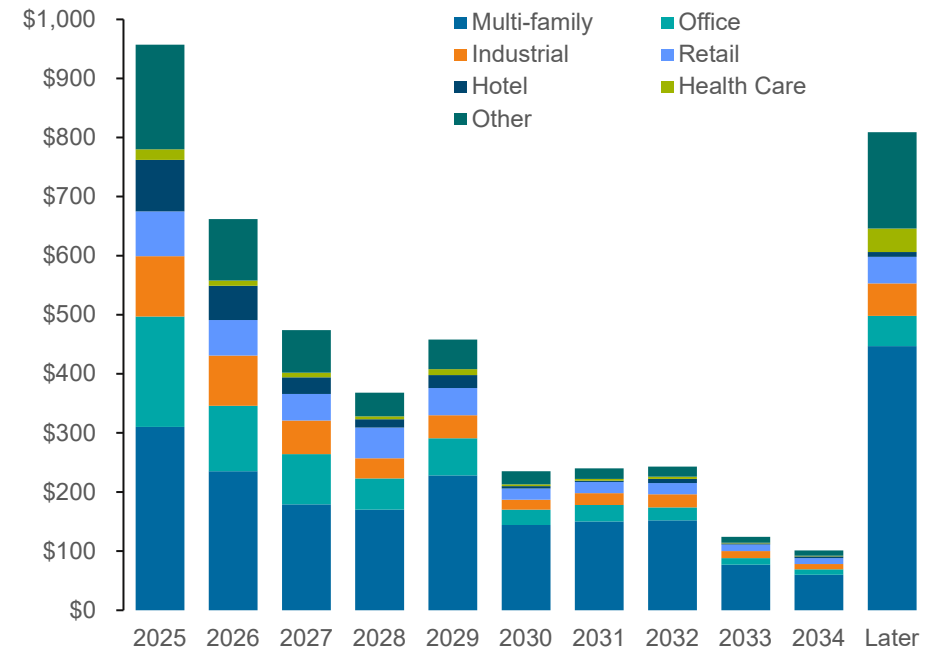
Source: NCREIF

Real Estate Capital Markets

Bank CRE Net issuance (Rolling 3 Months) \$bn



Loan Maturities by Sector (\$bn)



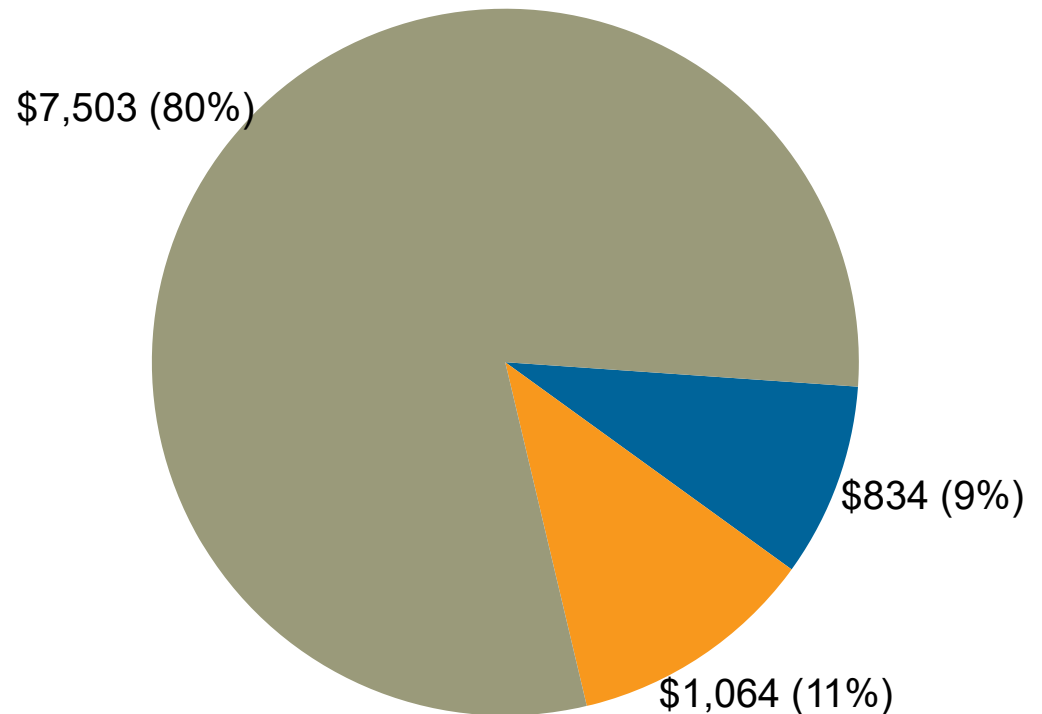
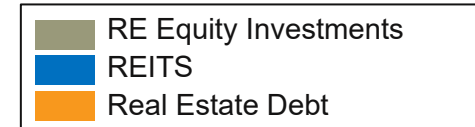
- Rising bank issuance at reduced leverage ratios is creating a capital gap and a need for private debt.
- Extension-driven maturities have pushed refinancing further out—particularly in multi-family and office—amid tighter spreads and supportive lender appetite; while rates appear to have peaked, conditions are more accommodative, though challenges remain.

Sources: FDIC, JP Morgan Asset Management, MBA, Moody's

APFC Real Estate Structure (1Q LAG)

As of September 30, 2025

- The real estate portfolio is comprised of Real Estate Equity Investments, REITS, and Real Estate Debt Investments.
- Real Estate Debt Funds moved from Real Estate Separate Accounts and Direct Investments, and REITS from Fixed Income Plus.

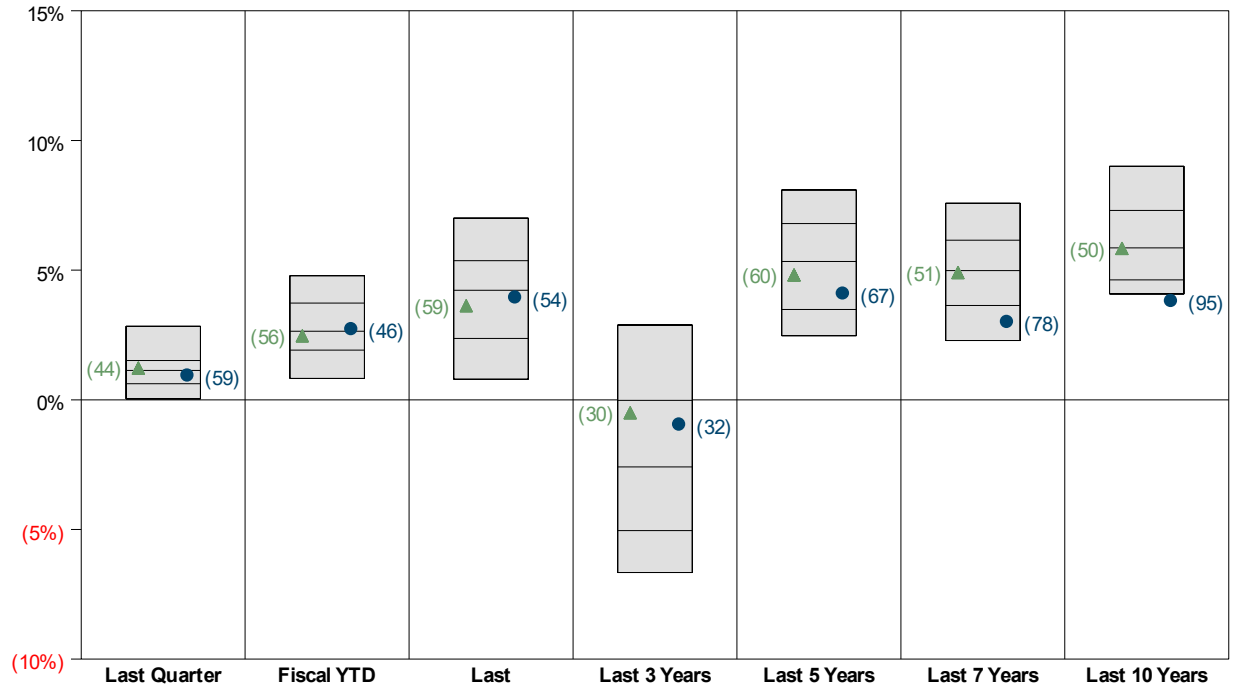


Real Estate Relative to Callan's Total Real Estate Database (1Q LAG)

Periods Ended September 30, 2025

Performance vs Callan Public Fund Sponsor Database-Real Estate (Gr)

- APFC Real Estate portfolio performance is shown net of fees for all investments.
- The real estate portfolio lagged its benchmark for the quarter but outperformed over the trailing year.
- The portfolio ranked above median in the Real Estate peer group for the trailing 3-year period. Over the last quarter and year, the portfolio ranked slightly below median.



	Last Quarter	Fiscal YTD	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
10th Percentile	2.83	4.78	7.00	2.88	8.09	7.58	9.01
25th Percentile	1.51	3.73	5.37	(0.02)	6.80	6.16	7.30
Median	1.13	2.64	4.22	(2.59)	5.33	4.98	5.85
75th Percentile	0.62	1.92	2.37	(5.04)	3.48	3.64	4.63
90th Percentile	0.03	0.82	0.79	(6.66)	2.47	2.28	4.08
Real Estate ●	0.91	2.70	3.91	(0.99)	4.07	2.97	3.78
Real Estate Target ▲	1.22	2.46	3.62	(0.50)	4.81	4.91	5.84

Real Estate Target components: Real Estate Custom: NCREIF Total Index through 6/30/20, then 85% NCREIF Total Index and 15% MSCI US REIT through 6/30/25, and 100% NCREIF Expanded Property Index thereafter

Real Estate Performance (1Q LAG)

Periods Ended September 30, 2025

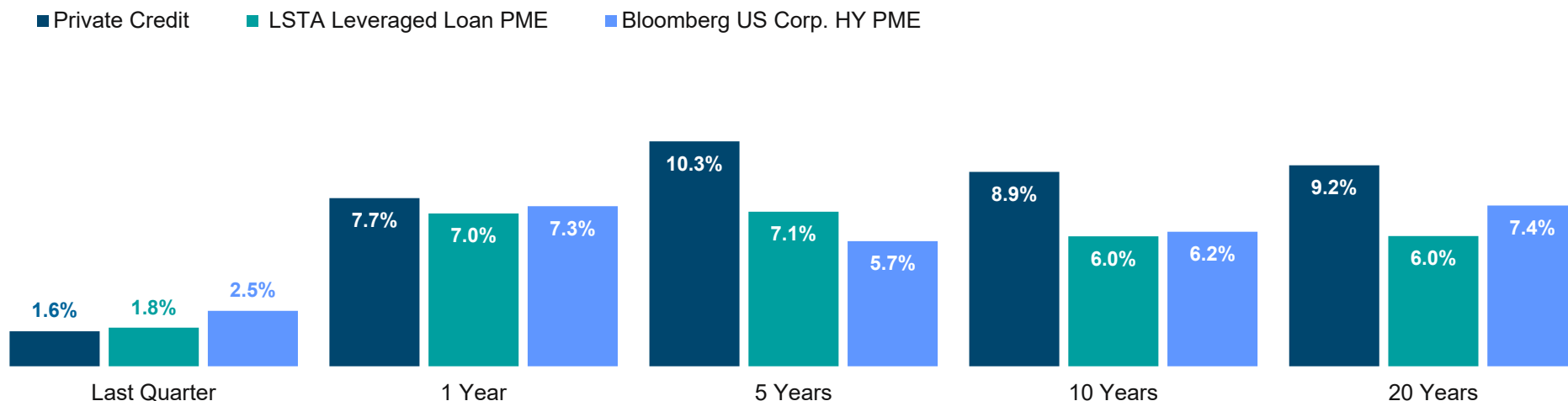
	Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
RE Equity Investments	0.59	4.05	-3.37	2.73	--
RE EQ Separate Accts & Direct	1.23	3.32	-5.50	0.68	1.57
RE EQ Funds & Co-Invest	0.63	5.84	0.98	10.67	--
RE EQ Development	-3.49	3.94	1.43	--	--
<i>NCREIF Index</i>	1.22	4.71	-2.53	3.81	--
RE Debt Investments	2.34	8.47	9.00	10.32	--
RE Debt Separate Accounts	2.41	8.57	9.21	9.60	--
RE Debt Funds & Co-Invests	1.68	7.38	7.96	10.23	--
<i>NCREIF Monthly</i>	1.22	4.71	-2.53	3.81	5.03
REITS	2.88	-2.81	10.26	9.46	--
<i>MSCI:US REIT Index</i>	4.81	-1.69	10.87	9.30	6.61
Real Estate Composite	0.91	3.91	-0.99	4.07	3.78
<i>Real Estate Custom</i>	1.22	3.62	-0.50	4.81	5.76

- For the last quarter and year, Real Estate Equity and REITS underperformed their respective benchmarks.
- Over the trailing quarter and year, the Real Estate Debt portfolio exceeded its benchmark.
- Overall, the Real Estate Composite lagged its custom benchmark over the quarter but outperformed over the trailing year period.

Private Credit Market Overview

Outperformed leveraged loans and high yield over last 1, 5, 10, and 20 years ended 3Q25

Pooled Horizon Net IRRs as of 9/30/25



Pooled Horizon Net IRRs by Strategy as of 9/30/25

Strategy	Last Quarter	1 Year	5 Years	10 Years	20 Years
Senior Debt	1.1	7.7	8.3	7.9	7.8
Subordinated	2.0	9.9	12.1	11.0	10.9
Credit Opportunities	1.8	7.0	10.6	8.5	9.0
Total Private Credit	1.6	7.7	10.3	8.9	9.2

- Over the past 10 years the asset class has generated a net IRR of 8.9%, outperforming leveraged loans and high yield as of Sept. 30, 2025. Higher-risk strategies have performed better than lower-risk strategies.

Source: Cambridge

Private Credit Fundraising Landscape

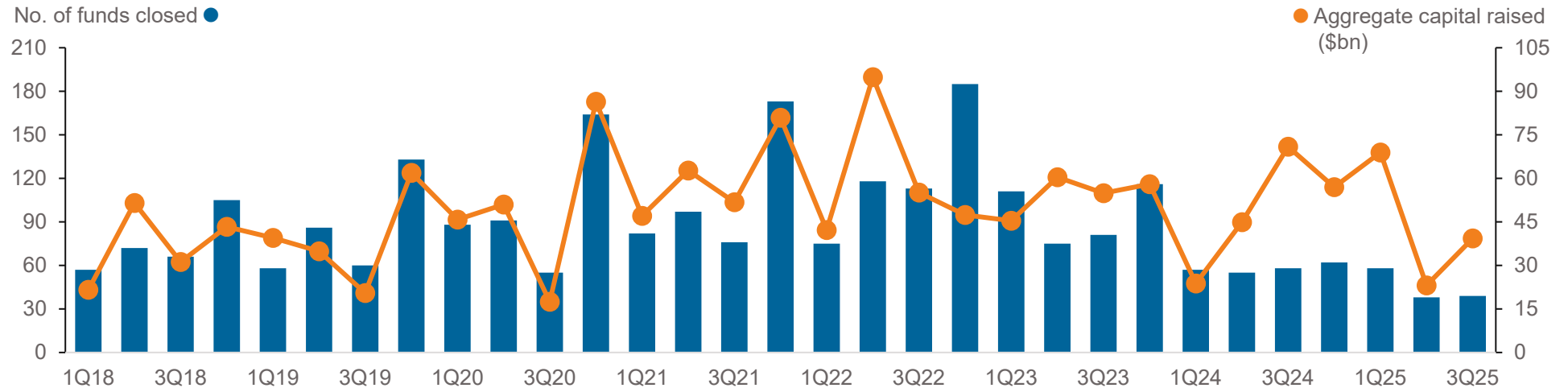
Activity slowly picked up in 3Q25

- The top four funds raised in 3Q25 were across various verticals of private credit.
- In 3Q25, secondaries strategies led capital formation, followed by opportunistic funds, with distressed debt trailing.
- Private credit stayed in high demand among Callan clients, and most LPs look to maintain or increase their target allocation.
- We continue to notice increased interest in specialty finance and asset-backed lending strategies.

Largest Funds Holding Closes in 3Q25

Name	Amount (\$millions)	Strategy
Coller Credit Opportunities II	\$6,800	Secondaries
Strategic Value Special Situations Fund VI	\$4,030	Opportunistic
Five Arrows Debt Partners IV	\$2,829	Opportunistic
Strategic Value Capital Solutions Fund II	\$2,675	Distressed Debt

Quarterly Private Debt Fundraising

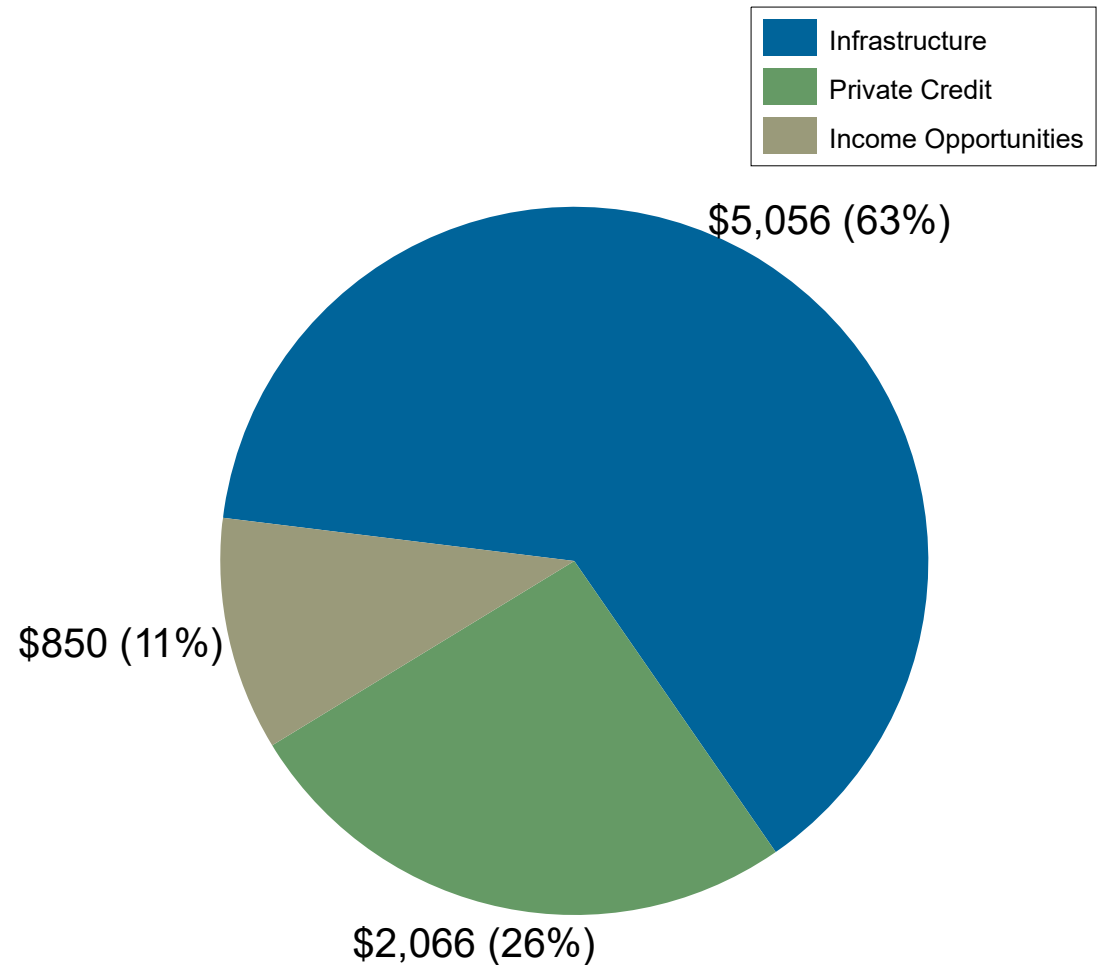


Source: Preqin

APFC Private Income Structure (1Q LAG)

As of September 30, 2025

- 63% of the structure is invested in infrastructure funds, which includes a diversified portfolio of infrastructure, energy, and generation assets. Listed Infrastructure makes up just 7.8% of this allocation.
- 26% of the structure was invested in private credit mandates including mezzanine debt, opportunistic credit, and direct lending strategies.
- 11% of the structure was invested in income opportunities including structured credit, alternative credit, AH4R2, APFC ADAC and timber.



Private Income Performance (1Q LAG)

Periods Ended September 30, 2025

	Quarter	Last Year	Last 3 Years	Last 5 Years
Private Income	1.30	11.14	9.84	11.24
Private Income Custom	2.94	9.68	10.97	11.62
Infrastructure	1.42	14.07	11.40	14.68
Cambridge Global Pvt Infrastructure	3.30	9.59	11.02	11.35
Private Credit	2.35	8.40	8.78	9.78
Cliffwater Direct Lending TR	2.41	9.80	10.89	12.01
Income Opportunities	-1.85	2.68	4.16	4.40
Private Income Custom	2.94	9.68	10.97	11.62

- APFC's Private Income composite underperformed its benchmark (60% Cambridge Global Private Infra and 40% Cliffwater Direct Lending TR) over the quarter by 164 basis points.
- Infrastructure, Private Credit, and Income Opportunities all lagged their respective benchmarks for the quarter.
- Over the last year, Private Credit and Income Opportunities missed their respective benchmarks. Infrastructure exceeded its benchmark of 9.6% by returning 14.1%. The overall portfolio gained 11.1% vs. its benchmark return of 9.7% for the trailing year.

Private Income Custom Benchmark components: 60% FTSE Dev Core Infr and 40% BB US Corp HY 2% to 6/30/20, 60% Cambridge Global Pri Inf and 40% Cambridge Pri Cdt

Hedge Fund Performance: 4Q25

Managers ended 2025 with strong overall results

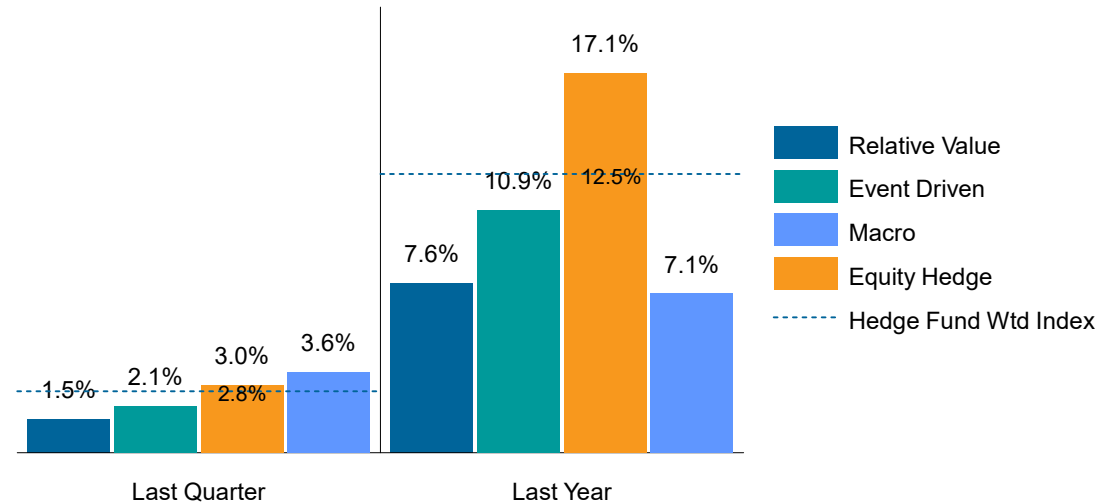
Tech drove hedge fund gains

- Macro strategies ended 2025 with continued strong performance, as managers were able to profit from interest rate, FX, and commodities trading.
- Equity hedge strategies saw momentum going into year-end, as long exposure to large-cap Technology and Industrial sectors drove performance.
- Event-driven strategies wrapped up the year in positive territory, as M&A deals continued to pick up during 4Q25.
- Relative value strategies also ended higher, as managers profited from arbitrage opportunities across fixed income securities.

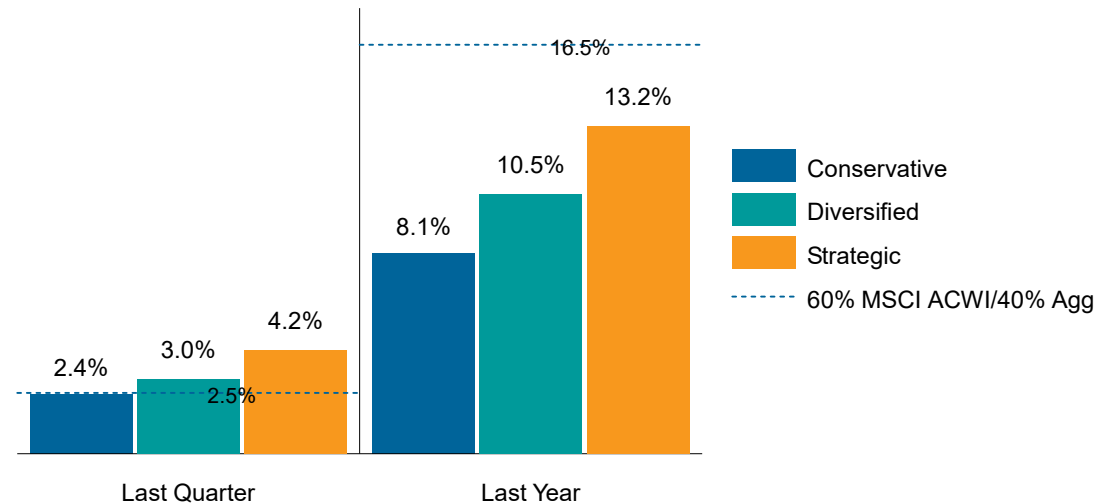
FOFs wrapped up a strong year

- Fund-of-funds (FOFs) with more equity beta saw outperformance compared to those with less.
- FOFs with more diversification across credit strategies, in addition to more defensive equity managers, saw performance that slightly lagged.

HFRI Strategy Index Returns vs. Broad Hedge Fund Universe as of 12/31/25



HFRI Fund-of-Funds Returns vs. 60% Stock/40% Bond Mix as of 12/31/25



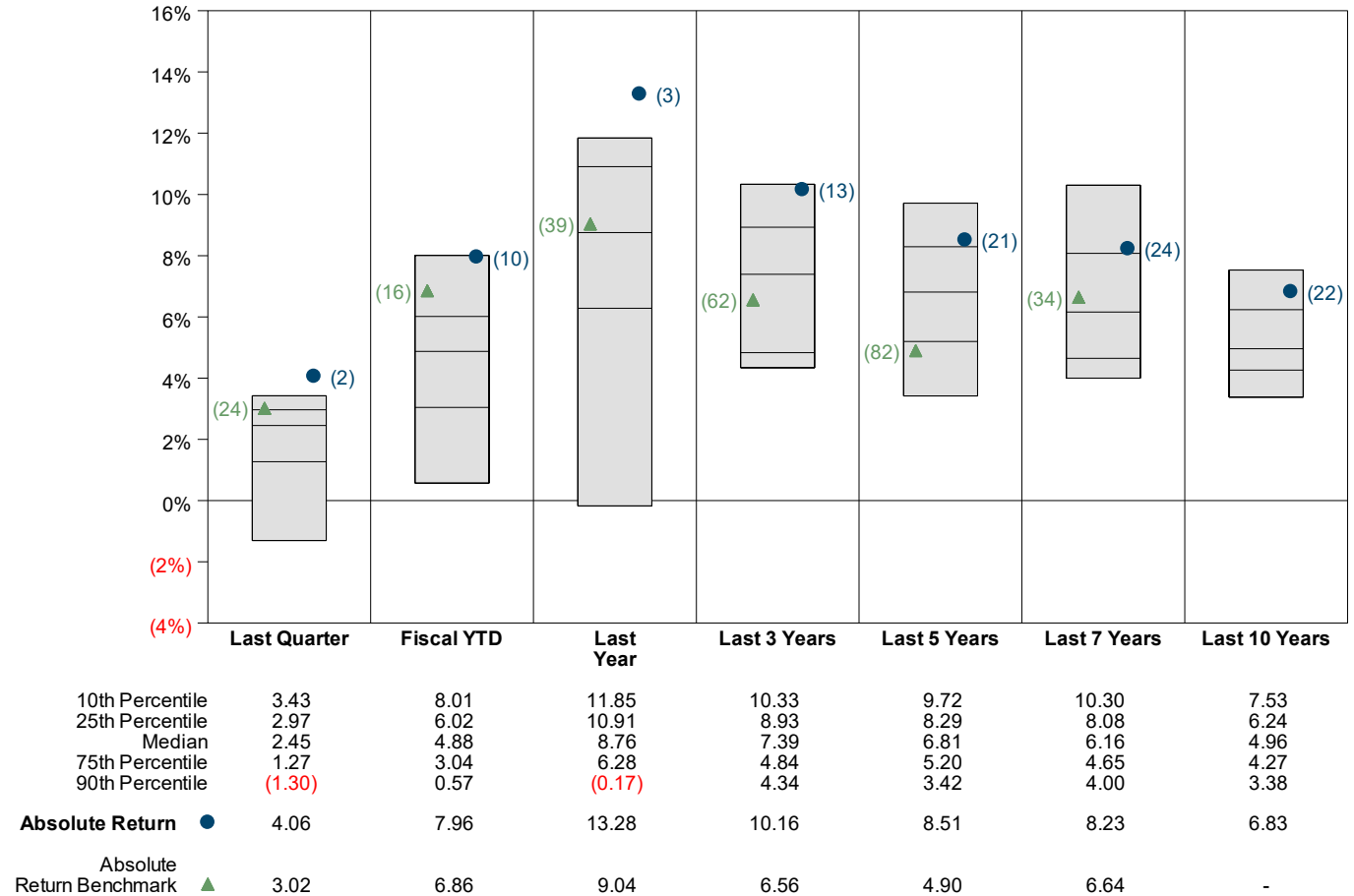
Source: Hedge Fund Research

Absolute Return Portfolio Relative to HFOF Universe

Periods Ended December 31, 2025

Performance vs Callan Absolute Rtn Hedge Fund of Funds (Net)

- The Absolute Return portfolio outperformed its benchmark for the quarter and trailing year. Compared to peers, the portfolio ranked in the top decile for the last quarter and year.
- The portfolio ranked above the median of its peer group for all standard time periods.



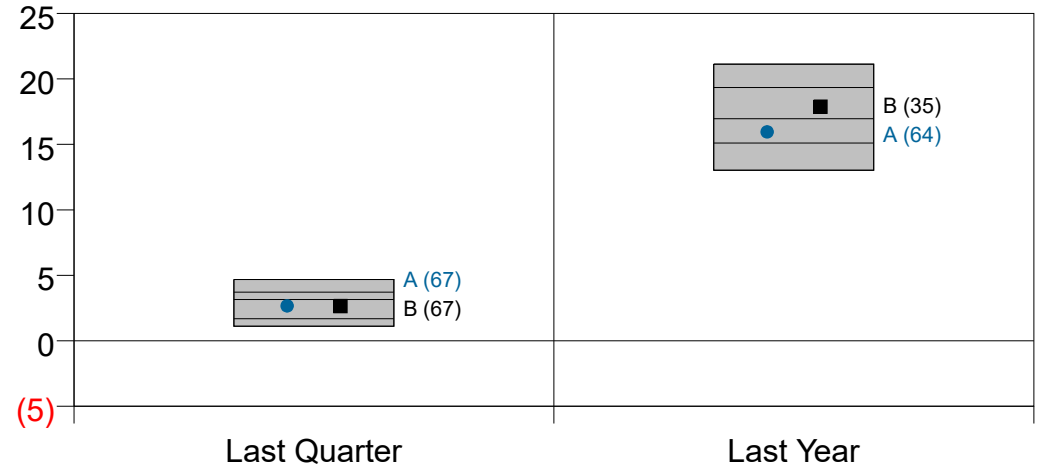
Absolute Return Benchmark components: LIBOR + 4% to 6/30/13, LIBOR + 6% to 6/30/15, LIBOR + 5% to 9/30/16, HFRI Total HFOF Universe to 6/30/22, and 50% HFRI EH Equity Market Neutral and 50% HFRI Macro thereafter

Tactical Opportunities Relative to S&P 500 Index

Periods Ended December 31, 2025

- The Tactical Opportunities portfolio is managed internally to complement the bottom-up stock selection strategies employed by external managers and achieve excess returns from top-down selection decisions emphasizing sectors/industries, countries/regions, and style factors.
- The Tactical Opportunities portfolio returned in line with its benchmark for the trailing quarter but underperformed it over the last year.
- Compared to its peer group, the portfolio ranked below median for the quarter and trailing year.

Performance vs Callan Large Cap Core (Gross)



	Last Quarter	Last Year
10th Percentile	4.68	21.14
25th Percentile	3.71	19.34
Median	3.16	16.97
75th Percentile	1.69	15.11
90th Percentile	1.12	13.02
Member Count	35	34
Tactical Opportunities ● A	2.67	15.96
S&P:500 ■ B	2.66	17.88

Private Equity Trends

Private equity sees steady gains quarter to quarter

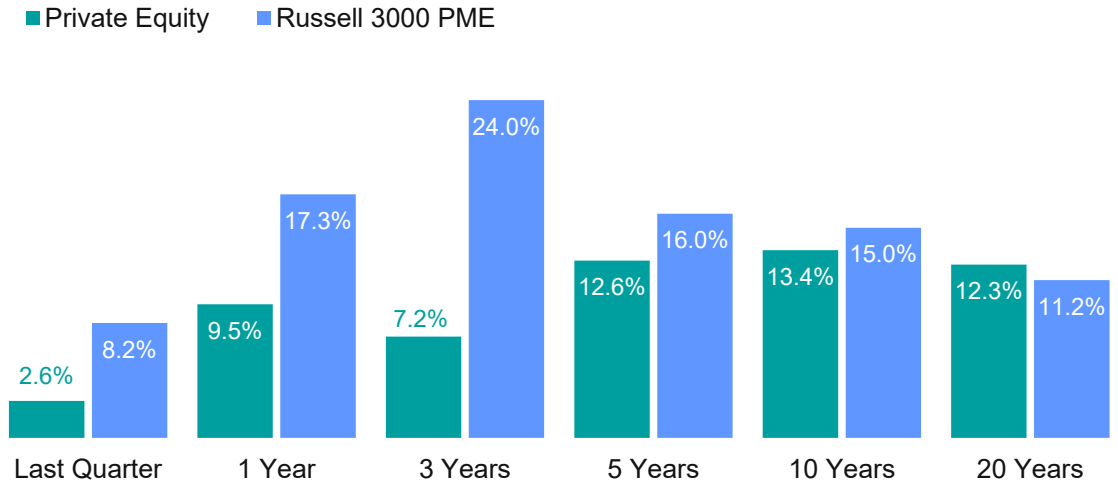
Returns that lag public equity

- Private equity posted steady gains of 2.6%, although lagging public equity’s strong returns.
- Over the short-term, private equity’s often more conservative valuation policies means that the asset class does not keep up when public equity posts such outsized returns.
- By strategy type, venture capital led performance, reflecting improved market conditions for growth assets and strong valuations within late-stage.

Long-term performance

- Over the 3-year period, private equity returns remain pressured by the 2022-23 drawdown, resulting in a meaningful gap versus public equity.
- Over the 10-year period, private equity exhibited a 67% dispersion between the top and the bottom funds, highlighting significant opportunities for outperformance not reflected in the headline returns.

Net IRRs as of 9/30/25



Net IRRs by Strategy as of 9/30/25

Strategy	Last Quarter	1 Year	3 Years	5 Years	10 Years	20 Years
Venture Capital	5.4%	14.4%	2.6%	12.2%	13.6%	12.4%
Growth Equity	3.0%	10.9%	6.3%	11.1%	13.6%	12.9%
Buyouts	1.7%	8.3%	9.5%	13.6%	14.2%	12.8%
Private Equity	2.6%	9.5%	7.2%	12.6%	13.4%	12.3%

Source: Cambridge. PME: Public Market Equivalent

Private Equity Trends

A barbelled fundraising environment

Fundraising

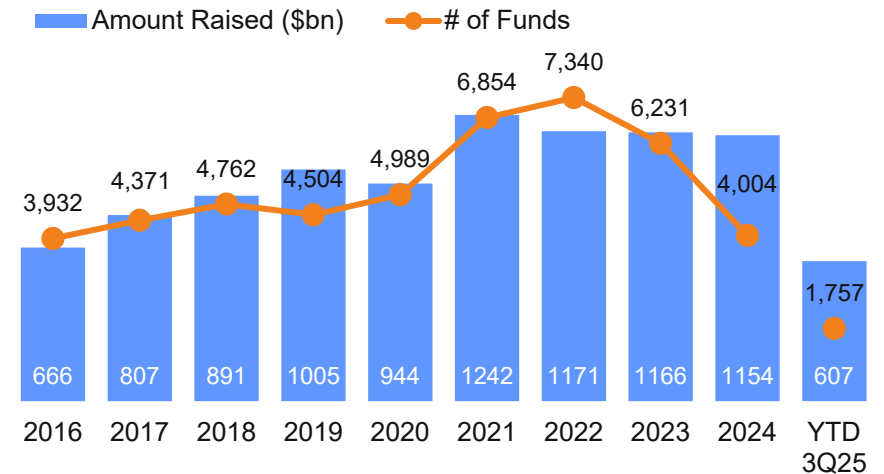
- Fundraising for YTD 3Q25 declined by ~30% versus YTD 3Q24, across both volume and count. Persistent exit backlogs and limited distributions have constrained LP capacity for new commitments.
- Fundraising conditions have become barbelled: top-tier funds are significantly oversubscribed, while the rest of the market faces a challenging environment.
- Stronger deal activity and improved exit tailwinds (including lower borrowing costs and less market uncertainty) may support a recovery in fundraising, though impacts may not be seen until later in the year.

Deal Activity

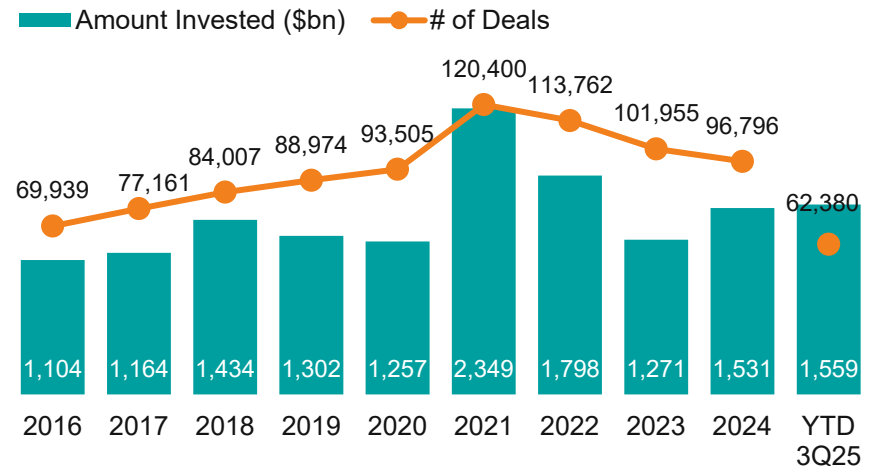
- Deal volume rebounded sharply during the quarter, rising 80% versus 2Q25 and returning to levels last seen in 2021.
- Deal activity is sensitive to interest rates; the Fed rate cuts during the quarter, combined with strong public markets performance, resulted in greater optimism and confidence in deal execution.
- Deal count continues to drop, however, falling an additional 6% this quarter. The divergence between rising deal volume and declining deal count has persisted throughout the year, reflecting the continued concentration of capital in larger transactions.

Source: PitchBook

Annual Fundraising



Annual Deal Activity

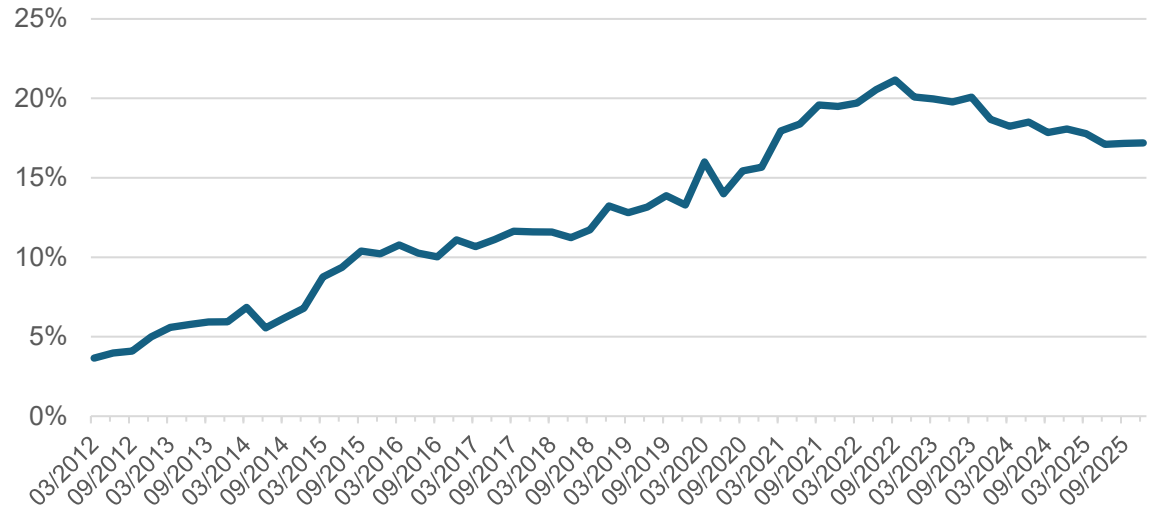


APFC Private Equity Allocation Growth (1Q LAG)

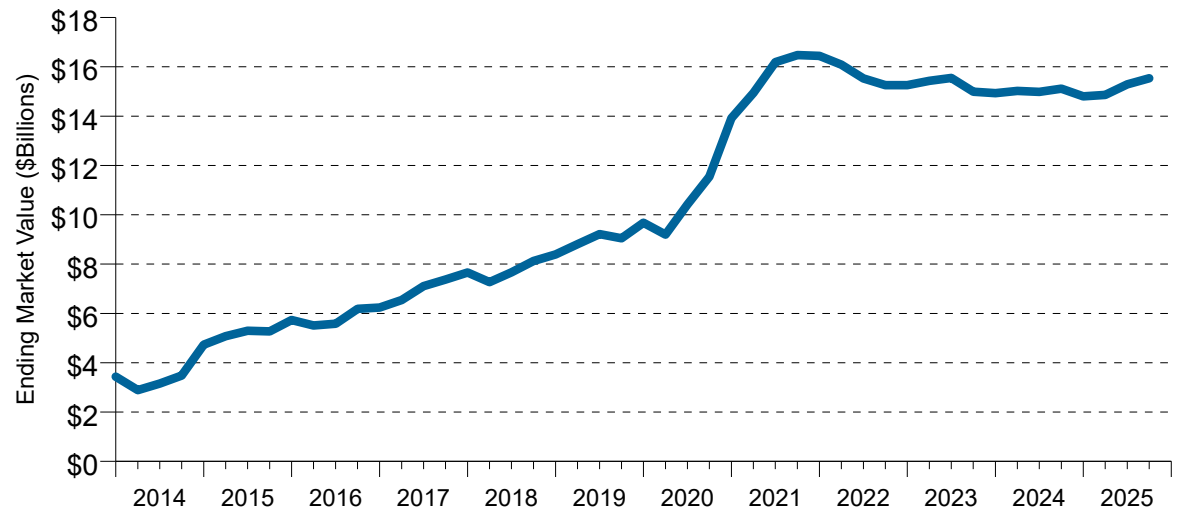
As of December 31, 2025

- For the fourth quarter 2025 period, 17.2% of the total fund was allocated to Private Equity.
- Allocation to the Private Equity portfolio has grown ~7% over the last ten years.

Private Equity Allocation



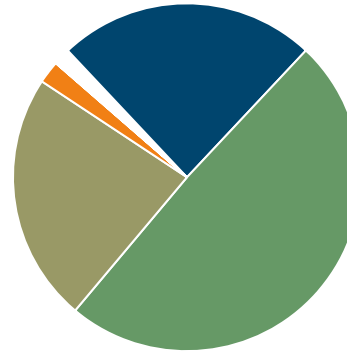
Ending Market Value Through December 31, 2025



APFC Private Equity Structure *(As of June 30, 2025)*

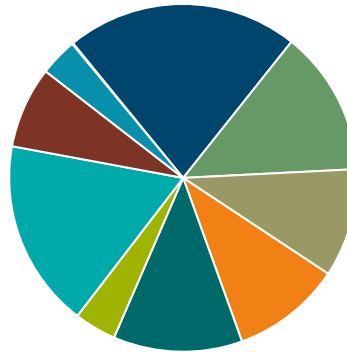
As of June 30, 2025

- APFC's Total Private Equity Portfolio continues to be well-diversified by strategy, geography, and industry.
- Buyouts, Venture Capital and Special Situations remained the largest strategy allocations.
- The largest non-U.S. geographic exposure was Europe. The largest industry exposure was in Technology.



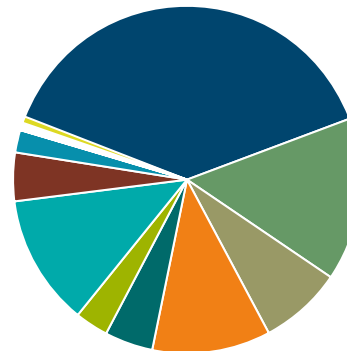
Strategy Mix by Net Asset Value

Venture Capital	23.98%
Buyout	49.11%
Special Situations	23.22%
Distressed for Control	2.15%
Mezzanine	0.13%



Geographic Mix by Net Asset Value

West/Pacific Northwest	21.64%
North Atlantic	13.53%
Southeast	10.10%
Mid-West	10.17%
Southwest/Rockies	11.99%
Mid-Atlantic	3.90%
Europe	17.50%
Other	7.62%
Asia/Pacific	3.54%



Industry Mix by Net Asset Value

Technology	38.55%
Financial	15.15%
Consumer Discretionary	7.71%
Health Care	10.99%
Communication Services	4.48%
Consumer Staples	3.07%
Industrials	12.17%
Energy	4.51%
Materials	2.12%
Other/Misc	0.25%
Real Estate	0.46%
Utilities	0.55%

APFC Private Equity Performance (1Q LAG)

Periods Ended September 30, 2025

	Last Quarter	FYTD	Last Year	Last 3 Years	Last 5 Years
Private Equity	2.61	7.08	8.68	5.21	11.97
Cambridge Private Equity	2.58	6.73	9.46	7.30	12.48

- APFC's Private Equity portfolio outperformed the Cambridge Private Equity benchmark over the last quarter.
- The portfolio underperformed its benchmark over the trailing 1-, 3-, and 5-year periods.

Total Fund Cash

Periods Ended December 31, 2025

	Quarter	Last Year	Last 3 Years	Last 5 Years
TOTAL FUND CASH	1.01	4.22	6.78	4.06
3 Month T-Bill	0.97	4.18	4.81	3.17
APF Operating Cash	0.96	3.99	4.42	3.07
APF Internal Cash	1.03	4.38	4.86	3.21

- APFC's cash accounts were within expectations relative to the 3-month Treasury Bill Index.
- Funded in the first quarter of 2022 and included in the Total Fund Cash composite, the allocation to Gold was liquidated during the second quarter of 2023 (approximately \$320M).

Closing Remarks

- Total Fund ended the fourth quarter of 2025 with \$90.4 billion in assets up from \$89.1 billion in the prior quarter. The trailing quarter performance placed the Total Fund below the median relative to other large public funds and the large endowments/foundations peer group.
- For the quarter, the Total Fund underperformed its Performance Benchmark but outperformed the Passive Index Benchmark and the allocation and CPI + 5% Benchmark. Over the trailing 5-, 7-, and 10-year periods, the Fund outperformed both the passive and performance benchmarks.
- The Public Equity portfolio missed its benchmark for the quarter but outperformed over the trailing year. Domestic and Global Equity composites underperformed their respective benchmarks for the quarter. International Equity bested its benchmark for the quarter and trailing year and ranked in the first quartile among peers. Public Equity longer-term performance remains positive.
- The Fixed Income portfolio finished ahead of its benchmark for the quarter and trailing year. In the quarter, Non-US Fixed Income, US High Yield, TIPS, and Domestic Structured products posted returns above their respective benchmarks. Most strategies exceeded their benchmarks for the trailing year, with the exception of Structured Products.
- In the Alternatives portfolio, the Private Equity and Absolute Return portfolios each outperformed their respective benchmarks over the quarter. The Absolute Return, Real Estate, and Private Income portfolios also exceeded their targets for the trailing year.
- Prudent asset allocation with appropriate levels of diversification and a long-term perspective remain Callan's recommended course.

Callan

Callan Update

Published Research Highlights: 4Q25

The Callan Periodic Table of Investment Returns: Year-End 2025



Research Café: Private Equity Secondary Funds



Callan 2025 Investment Management Fee Study



2025 Asset Manager Sustainable Investment Practices Study



Recent Blog Posts

Putting the 'Frankenstein' of Indices Back in the Lab

Weston Lewis

Corporate DB Plan Risk: What We Know—and Think We Know

Corporate DB Plan Focus Group

You Spent That Much!? How Spending Policies Shape Endowment Sustainability

Adam Lozinski

Additional Reading

- Active vs. Passive quarterly charts
- Capital Markets Review* quarterly newsletter
- Monthly Updates to the Periodic Table
- Market Pulse Flipbook* quarterly markets update
- Market Intelligence (clients-only)
- Real Estate Indicators* market outlook

Callan Institute Events

Upcoming conferences, workshops, and webinars

2026 National Conference

Registration opened in January for this event in Scottsdale on April 20-22, 2026!

Our annual conference will feature mainstage speakers and Callan-led workshops on a variety of topics.

This year we welcome General Stanley McChrystal, Mark Blythe, and other amazing speakers to the stage! We will continue to update our website as we add additional information regarding this event.

Learn more about this event at:
callan.com/events/2026national



Mark Your Calendar

2026 Regional Workshops

June 16, 2026 – Denver

June 18, 2026 – Chicago

October 20, 2026 – Atlanta

October 22, 2026 – San Francisco

Watch your email for further details and an invitation.

Upcoming Webinars

February 25, 2026

Research Café: Sustainable Investment Interview Series

March 27, 2026

STAR Webinar

March 31, 2026

DC Trends Study Webinar

April 24, 2026

Market Intel Webinar

Introducing Callan On-Demand Education (CODE)

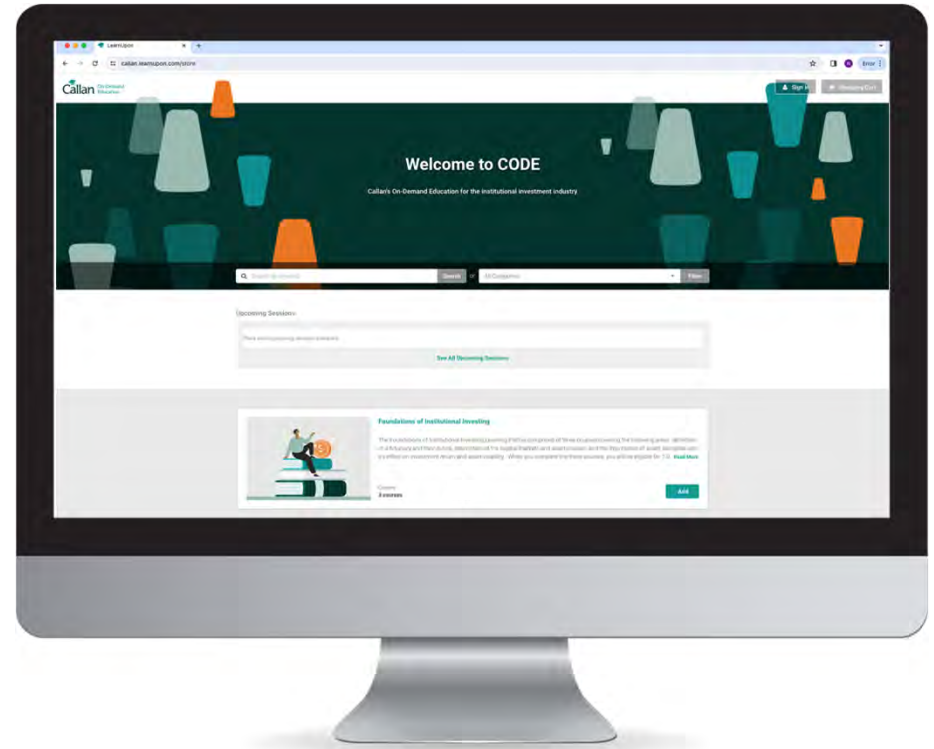


- ▶ Variety of educational courses
- ▶ Interactive and engaging
- ▶ Self-guided modules
- ▶ Eligible for continuing education credits
- ▶ Learning at your own pace

CODE courses are designed for investment professionals of all levels—and they're self-guided. Access them anytime, from anywhere, and get continuing education credits for each completed course.

CODE is for you, your colleagues, your new hires, and your interns. It's for anyone interested in learning about institutional investing.

callan.com/code



3 Reasons to Take CODE Courses

- 1 Become a better fiduciary
- 2 Showcase your skills and knowledge
- 3 Learn from Callan's investment experts

Callan Updates

Firm updates by the numbers, as of December 31, 2025

Total Associates: ~205

Company Ownership:

- ▶ 100% employee ownership
- ▶ ~70% of employees are equity owners
- ▶ Well-diversified ownership

Total Investment Consultants: 50+

Total Specialty and Research Consultants: 65+

Total CFA/CAIA/FRMs: 60+

Total Institutional Investor Clients: 475+

Provides advisory services to institutional investor/asset owner clients with more than \$4+ trillion

“Our study shows continued pressure on actual fees paid for active management, but the pace of fee compression seems to be slowing and may be approaching a practical lower limit for quality institutional products in some asset classes. Although the rate of decrease in active fees appears to be slowing, passive management market share has grown in some areas like U.S. small cap equity and core fixed income, where traditionally active management has been dominant.”

— Ivan “Butch” Cliff, EVP, director of research, about Callan’s recently released *2025 Investment Management Fee Study*



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Callan's performance measurement service reports estimated returns for a portfolio and compares them against relevant benchmarks and peer groups, as appropriate; such service may also report on historical portfolio holdings, comparing them to holdings of relevant benchmarks and peer groups, as appropriate ("portfolio holdings analysis"). To the extent that Callan's reports include a portfolio holdings analysis, Callan relies entirely on holdings, pricing, characteristics, and risk data provided by third parties including custodian banks, record keepers, pricing services, index providers, and investment managers. Callan reports the performance and holdings data as received and does not attempt to audit or verify the holdings data. Callan is not responsible for the accuracy or completeness of the performance or holdings data received from third parties and such data may not have been verified for accuracy or completeness.

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Unless Callan has been specifically engaged to do so, Callan does not conduct background checks or in-depth due diligence of the operations of any investment manager search candidate or investment vehicle, as may be typically performed in an operational due diligence evaluation assignment and in no event does Callan conduct due diligence beyond what is described in its report to the client.

Any decision made on the basis of this document is sole responsibility of the client, as the intended recipient, and it is incumbent upon the client to make an independent determination of the suitability and consequences of such a decision.

Callan undertakes no obligation to update the information contained herein except as specifically requested by the client.

Past performance is no guarantee of future results.

SUBJECT: Annual Asset Allocation Study
Greg Allen, Callan CEO & Chief Research Officer
Steve Center, Callan Senior VP

ACTION:

DATE: February 23, 2026

INFORMATION: X

BACKGROUND:

Callan is currently under contract to perform APFC's core general consulting services of 1) Investment policies and procedures review; 2) annual preparation of an asset allocation plan; 3) performance reporting and analysis; 4) risk analysis; 5) statistical modeling, manager searches, selection, and oversight; and 6) other special consulting services as needed.

STATUS:

At every quarterly board meeting or as requested, Callan provides an extensive review of the Fund's performance as well as updates on market conditions. Greg Allen, Chief Executive Officer and Chief Research Officer, and Steven Center, Senior Vice President, will be the presenters at this meeting.

An alternate presentation was used during the meeting and has been added to the back of the meeting packet.



ALASKA PERMANENT
FUND CORPORATION

WORKING FOR THE BENEFIT OF ALL CURRENT AND
FUTURE GENERATIONS OF ALASKANS

February 2026

A decorative graphic consisting of two vertical bars, one orange and one green, with horizontal lines extending from their ends to form a bracket-like shape.

**Fiscal Year 2026 Capital Market
Projections and Asset Allocation
Review**

Gregory C. Allen
CEO, Chief Research Officer

Steven J. Center, CFA
Senior Vice President

Outline

- Recap and highlights of Callan's 2026 capital market projection process.
 - Fixed Income
 - Equities
 - Private Markets
- Callan's 2026 capital market projections (return, risk, correlation).
- Impact on APFC FY 2026 target asset allocation.
- Summary observations

Callan Capital Market Projection Process

Process Overview

- Callan updates long term capital market projections each year in January and uses them for the full year with all clients for strategic planning purposes.
- Projections reflect long term relationships informed by current market conditions.
- Consensus expectations (central banks, economists, asset managers, consultants, etc.) are incorporate.
- Each number – **return, risk, correlation** – must be defensible on its own and coherent as a full set for portfolio construction.
- Projections evolve gradually and are not designed to inform tactical decisions.
- Produced by Callan’s Capital Markets Research group; peer-reviewed by the Client Policy Review Committee and informed by broad client use.
- Battle-tested process—refined over decades without fundamental change.

Highlights of 2026 Capital Market Projections

Changes and Observations

- Headline asset class projections largely unchanged from 2025.
- This reflects the long run nature of the process, with a deliberate bias towards stability in the absence of large structural moves in markets.
- Equities: U.S. and global ex-U.S. returns unchanged; equity risk premium vs. bonds remains near the low end of Callan history (~2.5%).
- Fixed income: core and long Gov/Credit held at 4.75% and 5.20%; minor reductions to high yield and EM debt reflecting tighter spreads, minor increases in securitized, non-US bonds, and investment grade credit.
- Private markets expectations unchanged.
- Inflation unchanged at 2.5%

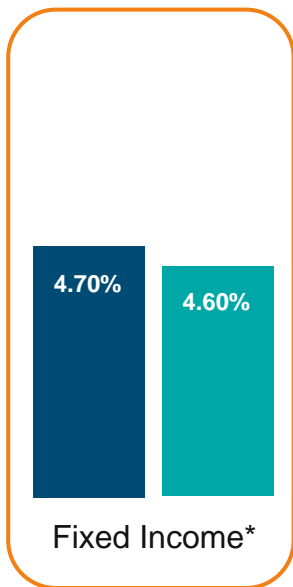
Fixed Income



Public Fixed Income Projections

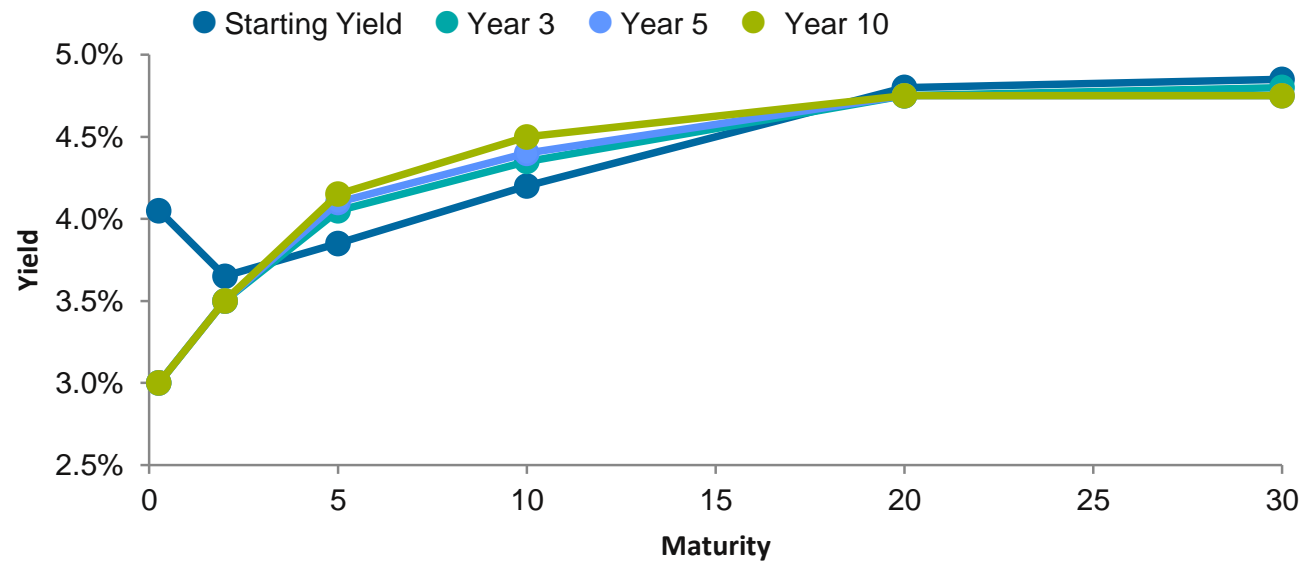
Modest increase in expected return

Return Projections



● 2025 ● 2026

Yield Curve Forecasts



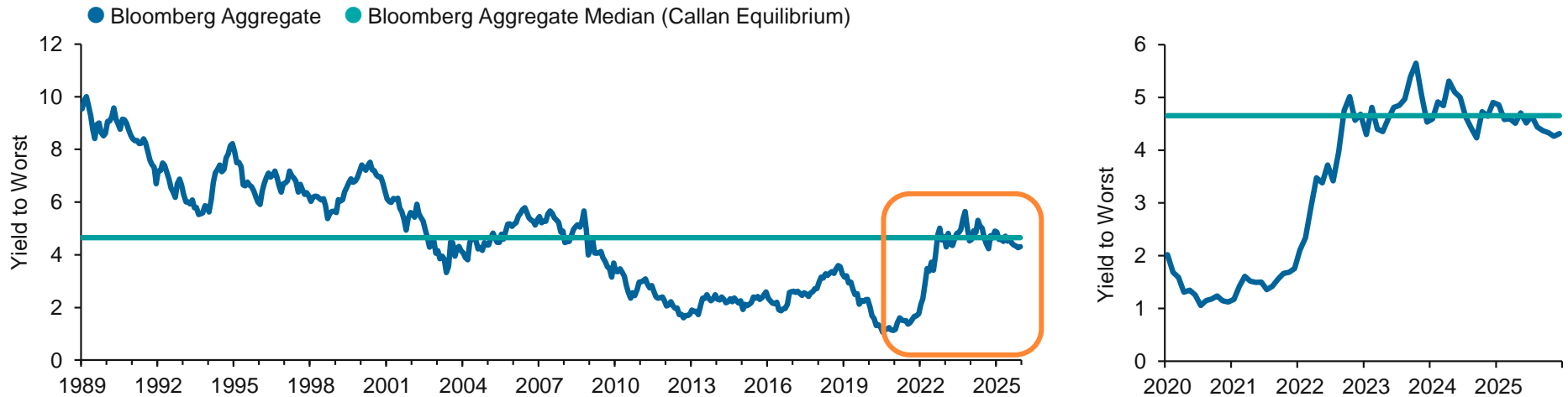
	3 Month	2 Year	5 Year	10 Year	20 Year	30 Year
Starting Yield	4.05	3.65	3.85	4.20	4.80	4.85
Forecast Year 3	3.00	3.50	4.05	4.35	4.75	4.80
Forecast Year 5	3.00	3.50	4.10	4.40	4.75	4.75
Forecast Year 10	3.00	3.50	4.15	4.50	4.75	4.75

- 10 basis point increase in APFC fixed income projections compared to last year
- Driven by modest increases in US securitized, US IG Credit, and Non-US return projections.
- Yield curve outlook, projected decline on the short end over the ten-year projection period, long end is in line with long-term equilibrium projections.

Fixed Income Projections

Drowning Out the Noise in the Projection Process

Core Fixed Income Historical Yield

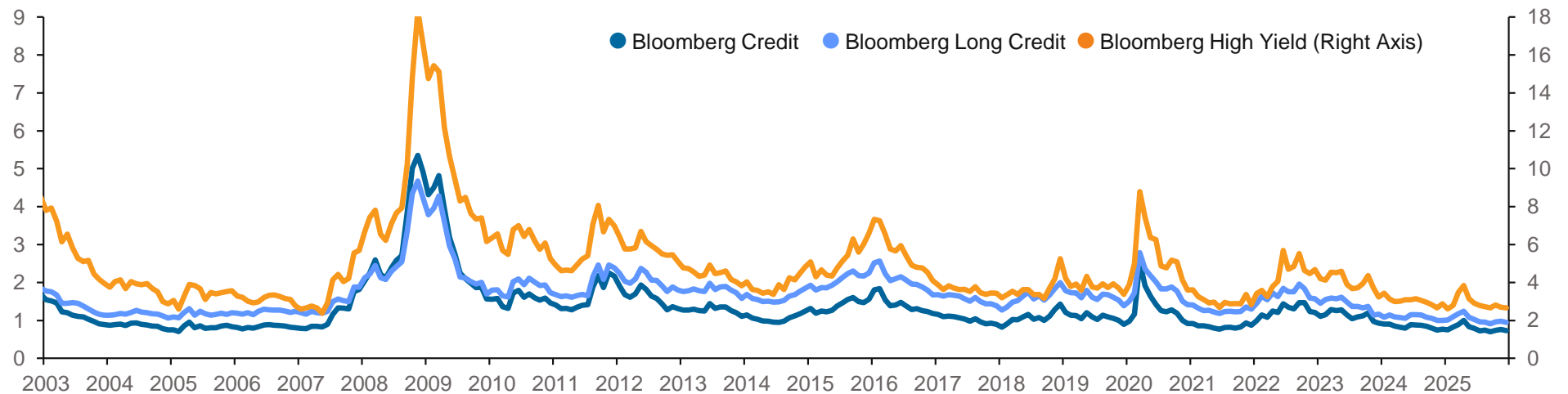


- There has been a lot of rate volatility, but rates have been range-bound around our equilibrium since the end of 2022.
- We have been updating our bond assumptions to drown out the short-term noise and focus more on the longer-term trends.

Fixed Income Projections

Credit Spreads are a Headwind

Historical Option Adjusted Spreads (OAS)



- Spreads for high yield are at some of the tightest levels they have been in the last 20+ years as the risk-on mentality in the stock market has carried over into bonds.
- We assume spreads will widen to levels consistent with long-term history, which is a headwind to returns, reducing the expected premium to Treasuries.
- This is akin to a valuation adjustment for equities.

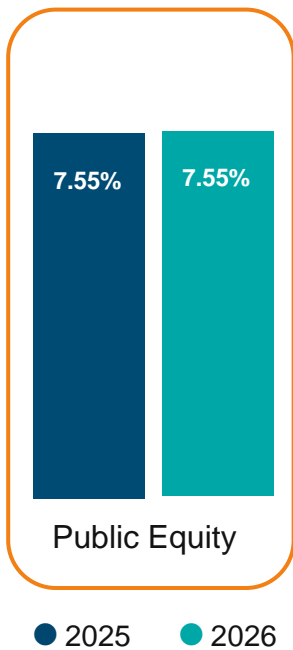
Equities



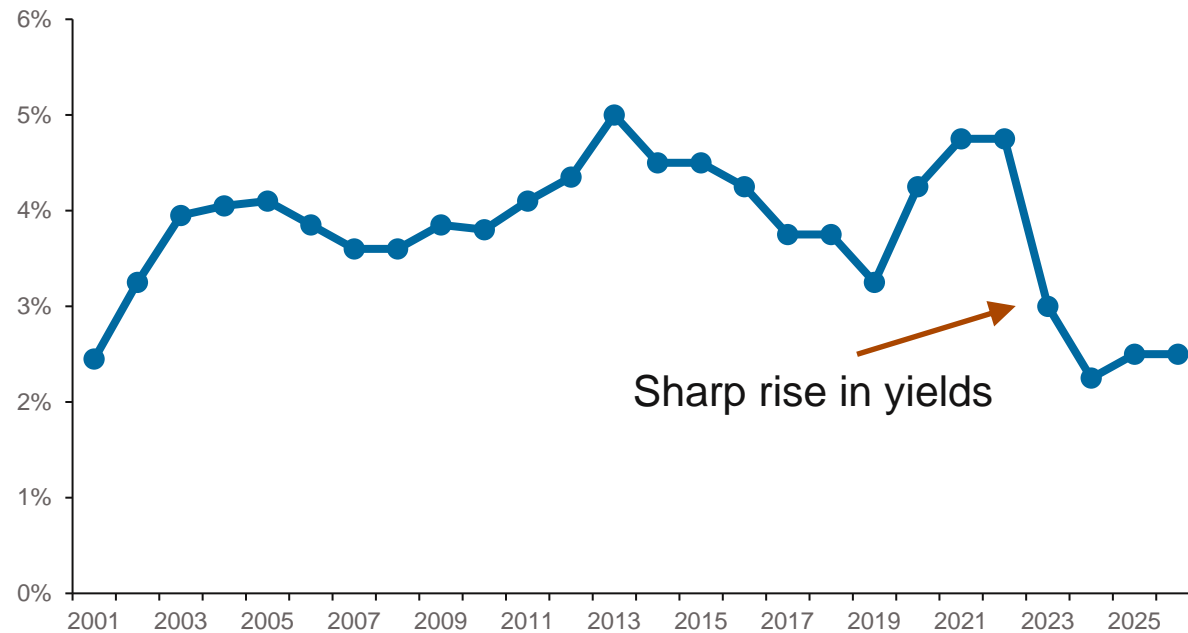
Public Equity Projections

No Change in Public Equity Forecast

Return Projections



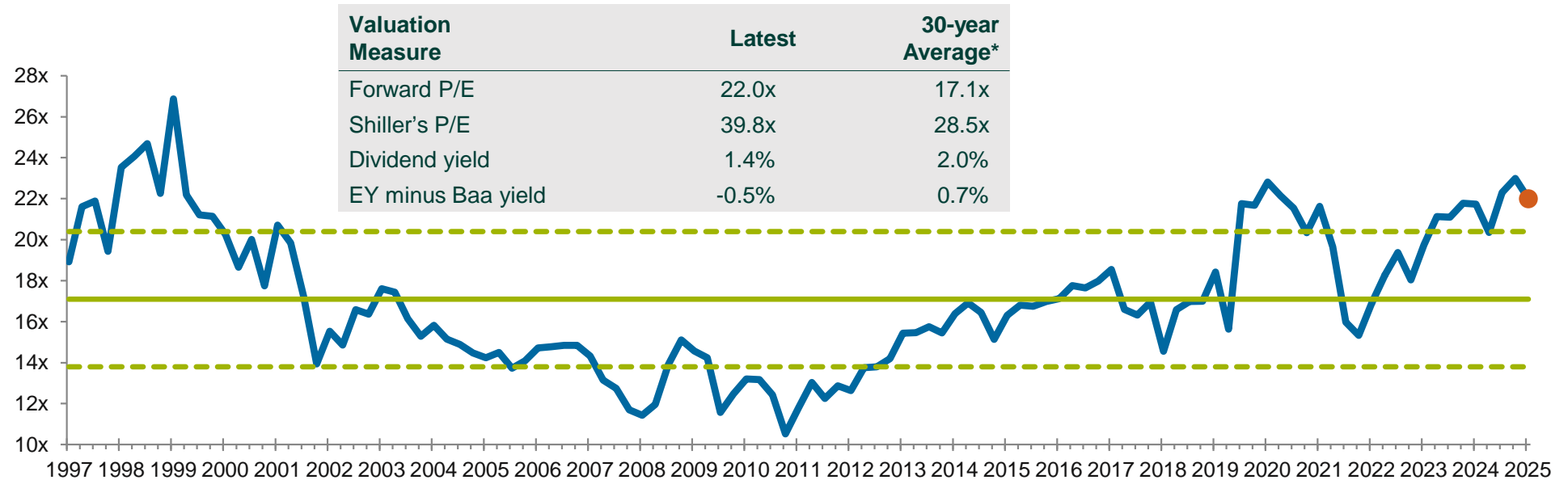
Forecasted US Equity Risk Premium vs. Bonds



- No change in public equity projections compared to last year.
- Projected risk premium (equity return minus fixed-income return) has declined to roughly 2.5%, at the low end of Callan's historical projections.
- Higher bond yields since 2022 have been the largest source of the reduction, but relatively high equity valuations have also contributed.

Public Equity Projections

US Equity Valuations and Market Concentration are at 20-year Highs



- Forward P/E (22) is more than one standard deviation above its long-term average (17), but lower than last year.
- Most U.S. valuation measures are elevated relative to historical averages.
- This is in large part driven by the concentration in the US equity market in growth sectors.
- AI Enthusiasm continues to also drive concentration and valuations in US.

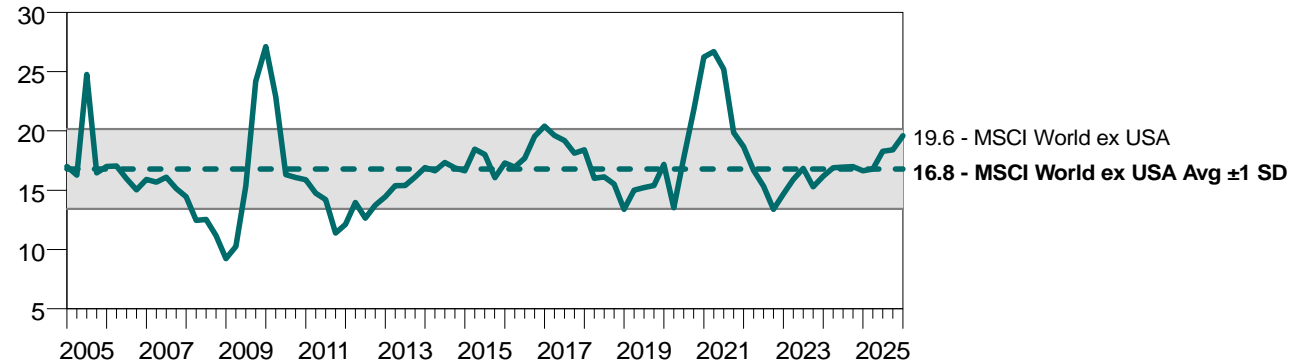
Sources: FactSet, FRB, Refinitiv Datastream, Robert Shiller, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management Guide to the Markets.

Public Equity Projections

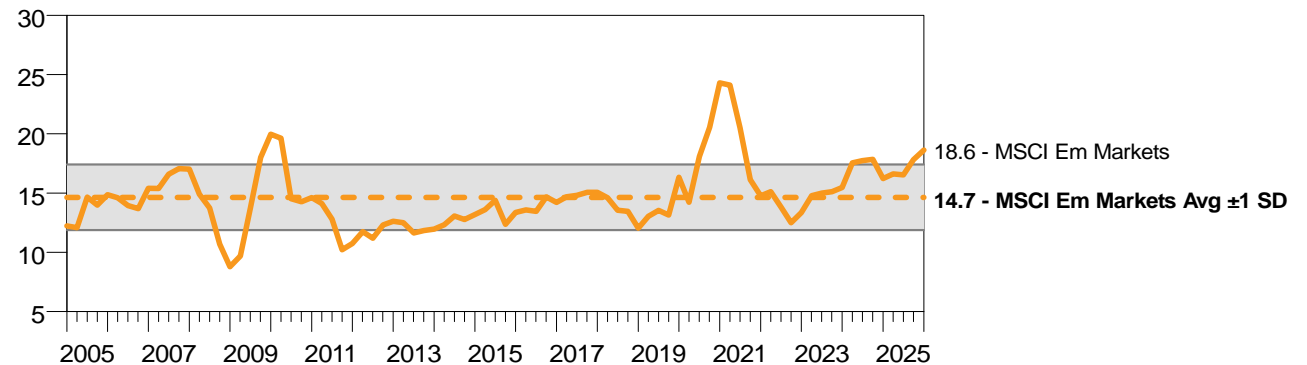
Non-US Equity Markets Valuations

- In contrast, global ex-U.S. equity market valuations appear less stretched relative to historical averages.
- Non-US markets are also significantly less concentrated.
- China continues to introduce volatility into the emerging markets index.
- China's weight in the index began and ended the year at 27.6%, down from 40% in 2020.

Developed Markets ex-U.S. Price/Earnings Ratio (inc neg)



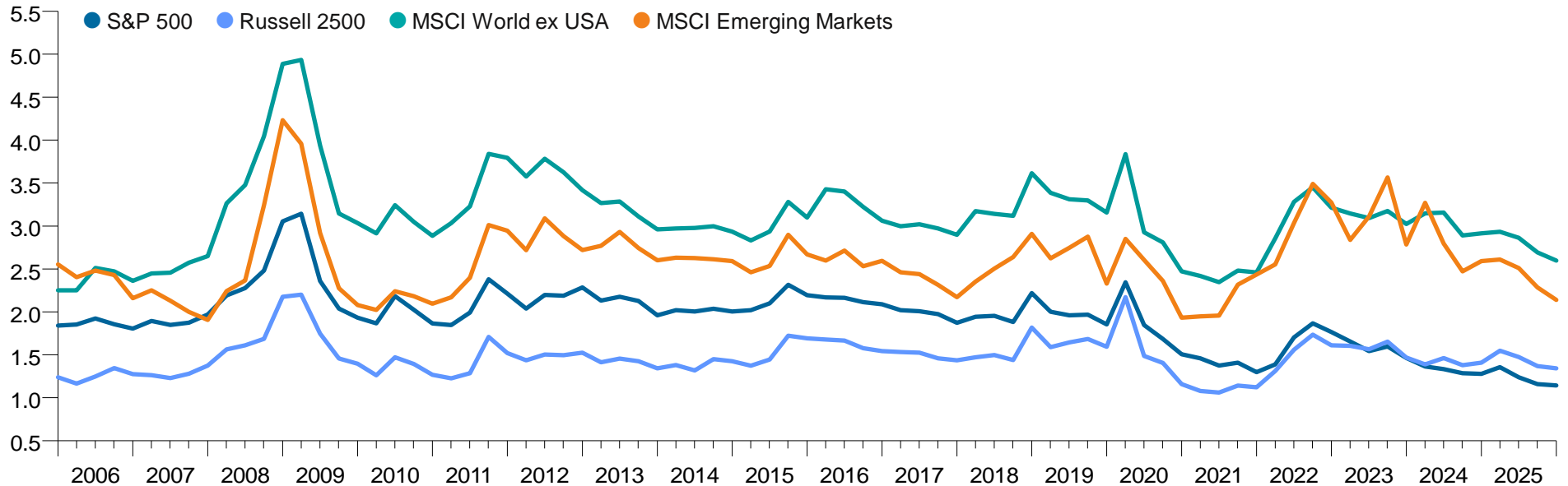
Emerging Markets Price/Earnings Ratio (inc neg)



Public Equity Projections

Historical Dividend Yields across Equity Markets

Dividend Yield for 20 Years Ended December 31, 2025



- Global ex-U.S. equity has consistently provided higher dividend yields than U.S. equity.
- Dividend yields in the US continue to decline, partly driven by the concentration in companies that have shifted to stock buy-backs as a more flexible mechanism for returning capital to shareholders.

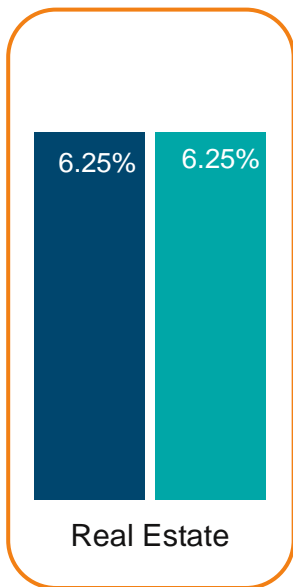
Private Markets



Real Estate Projections

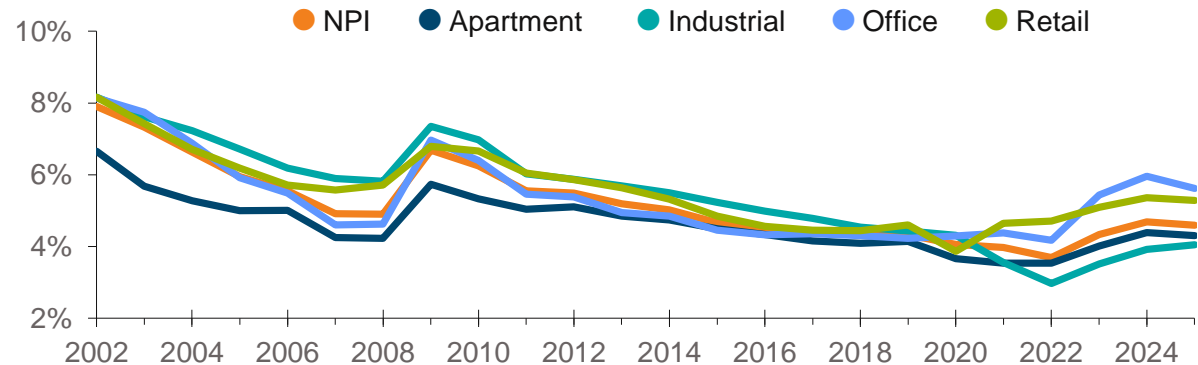
Recent price declines may offer more attractive entry points

Return Projections



● 2025 ● 2026

Annual Cap Rates (through September 30, 2025)



Callan Return Assumptions (unlevered property returns)

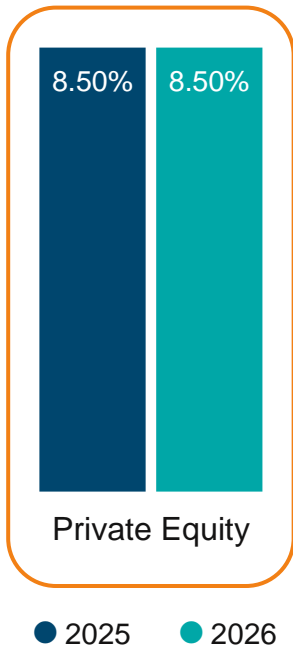
	Office	Retail	Industrial	Apartments	Other	NPI Index
Income	5.6%	5.6%	4.2%	4.6%	6.1%	4.9%
Appreciation	1.1%	0.7%	2.1%	0.9%	1.0%	1.3%
Total Return	6.7%	6.3%	6.3%	5.5%	7.1%	6.2%

- No change in real estate expectations.
- Office continues to face headwinds but is a smaller percentage of the ODCE index (17% down from 38% in 2020).
- Return calculations assume 5.2% cost of leverage and 0.5x debt-to-equity (33% loan-to-value).

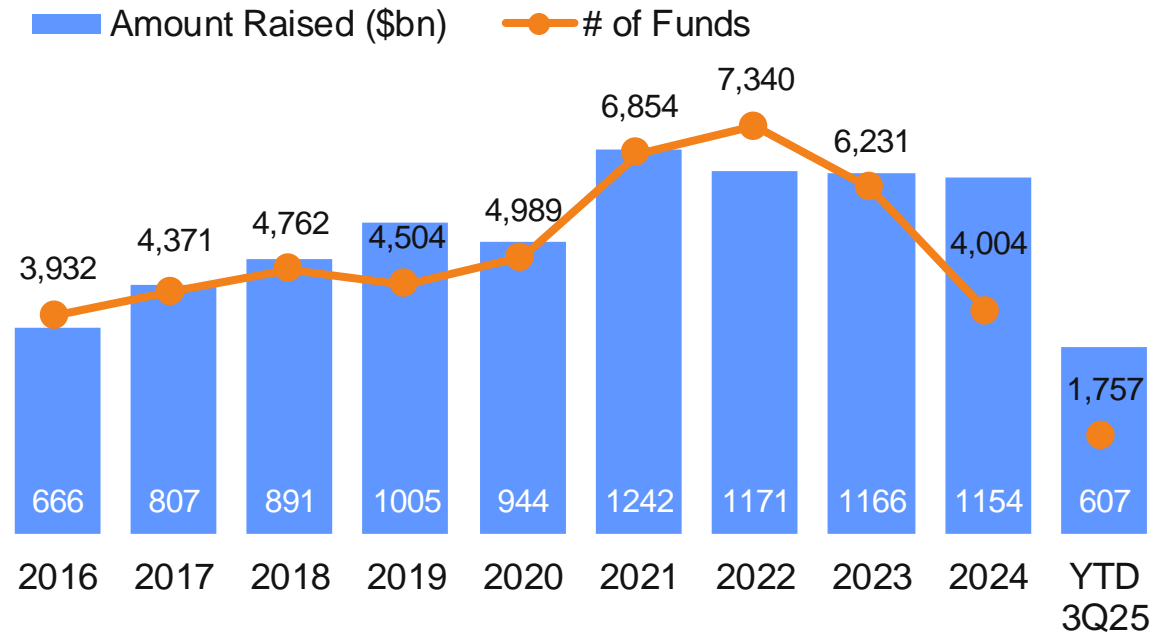
Private Equity Projections

Performance Depends on Public Markets and Execution

Return Projections



Private Equity Fundraising

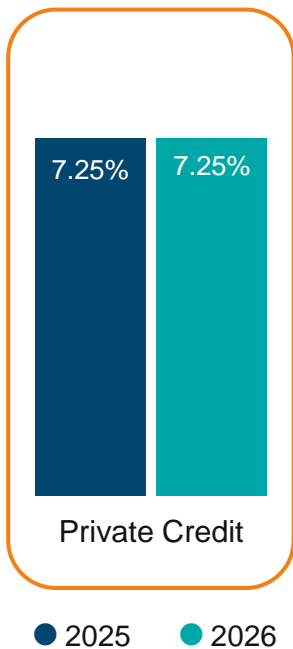


- No change in private equity expectations (premium to public equity remained constant).
- Fundraising and deal flow has slowed significantly since 2022.
- Large disparity between the best-performing and median-performing funds. Well executed programs are expected to outperform these projections.

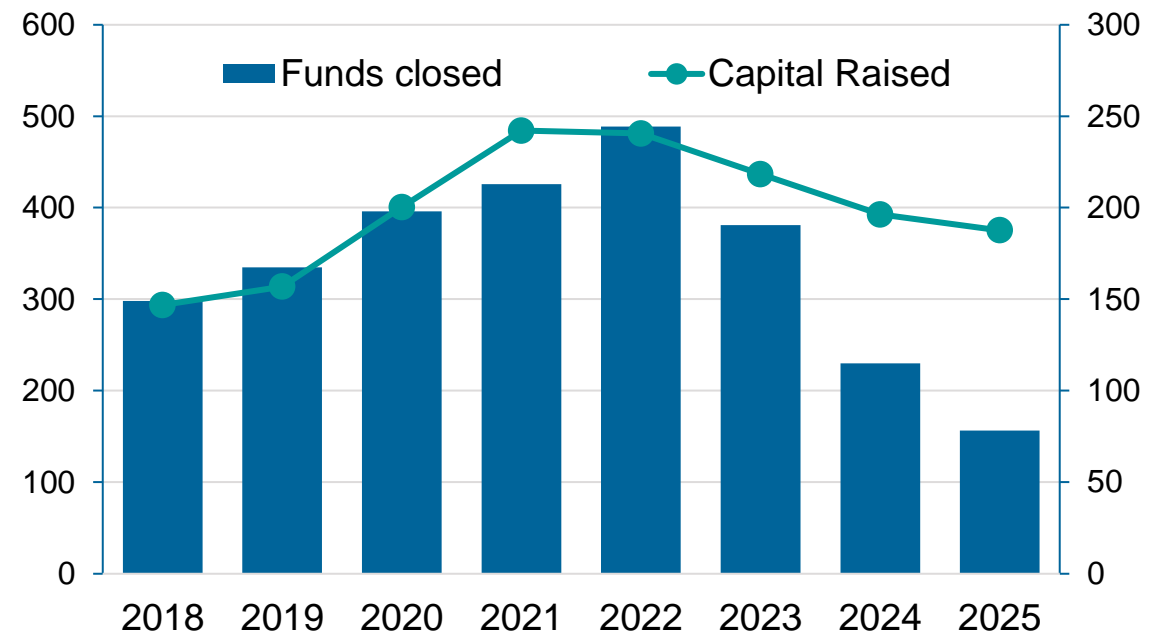
Private Credit Projections

Fundraising has Declined off of Highs

Return Projections



Annual Private Credit Fundraising

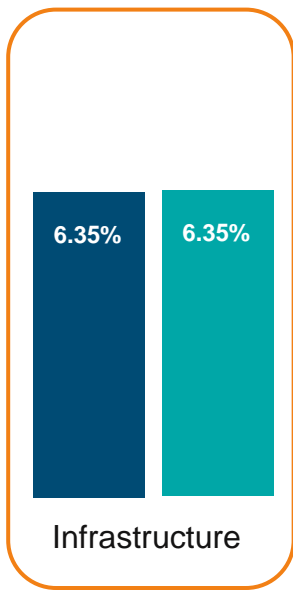


- No change in private credit return expectations.
- Anchored on middle market direct lending.
- Number of funds have declined faster than total capital raised, indicating market consolidation.
- US focused funds still growing as percentage of total private credit.

Infrastructure Projections

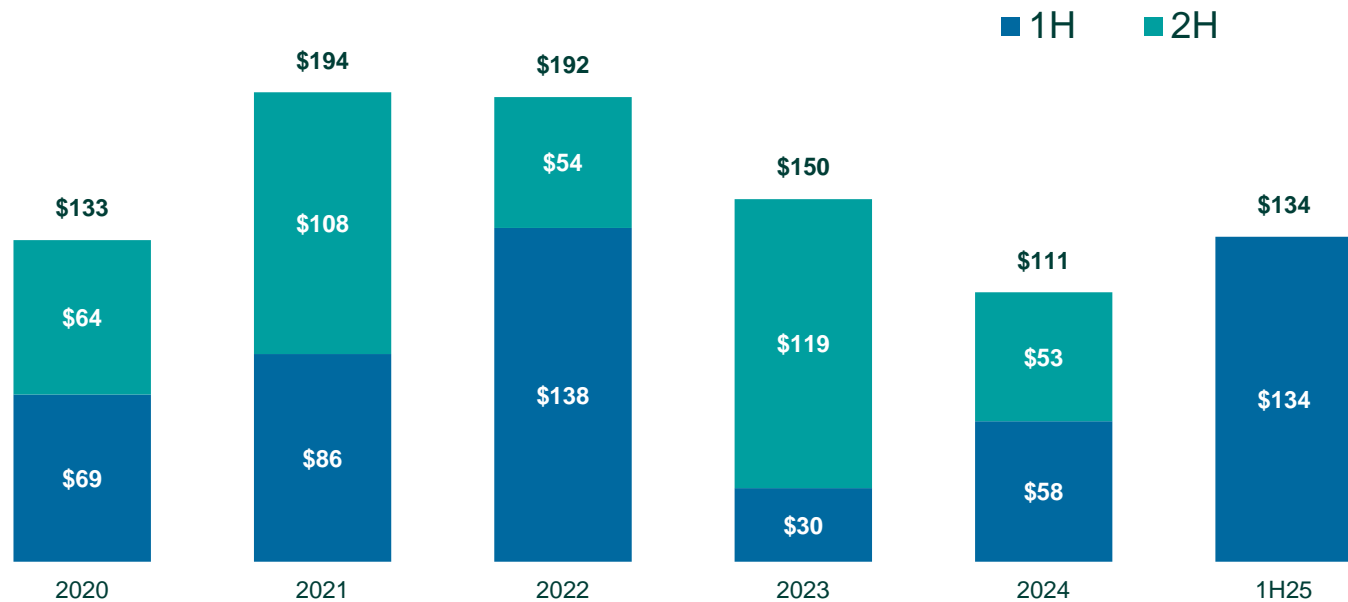
Uptick in Fundraising, Growth of the Mega Funds

Return Projections



● 2025 ● 2026

Infrastructure Fundraising Volume (\$B)



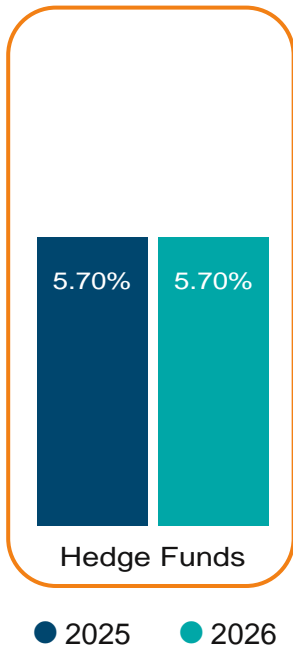
■ 1H ■ 2H

- No change in infrastructure projections.
- Headwinds: global tariffs, higher interest rates, regulatory/policy changes.
- Tailwinds: Growth in AI investment, energy transition, supply chain expansion, aging infrastructure.

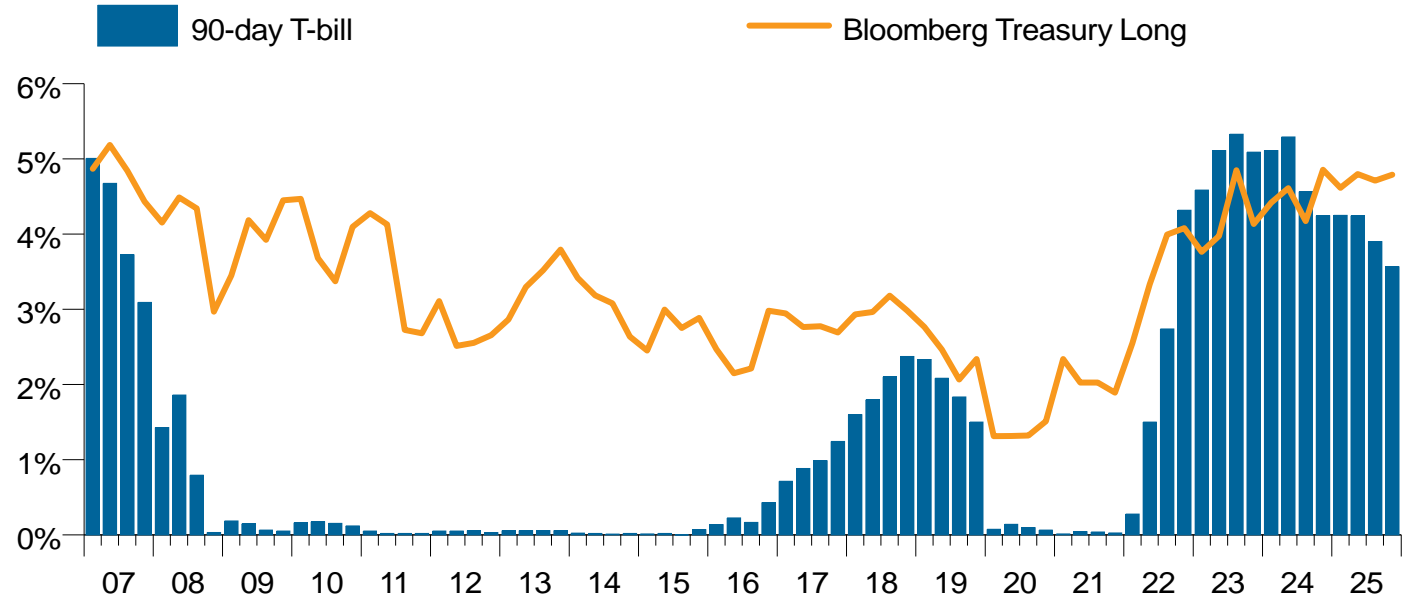
Hedge Fund Projections

Recent price declines may offer more attractive entry points

Return Projections



Yield of 90-day T-bills vs. Long Treasuries



- No change in hedge fund projections.
- Higher cash yields support hedge fund returns.
- Expected Return = Cash + Equity Beta x (Equity-Cash) + Exotic Beta + Net Alpha
- 5.70% = 3.0% + 0.4 x (7.25% - 3.00%) + 0.5% + 0.5%

Projections



Callan Capital Market Projections 2026 – 2035

Summary of Callan's Long-Term Capital Market Projections for APFC Asset Allocation Model (FY 2026 - 2035)

Asset Class	Performance Index	PROJECTED RETURN		PROJECTED RISK	
		1-Year Arithmetic	10-Year Geometric Return	Annualized Standard Deviation	Projected Yield
APFC Public Equities		8.90%	7.55%	17.45%	2.10%
Global Equity	MSCI ACWI - IMI	8.90%	7.55%	17.45%	2.10%
APFC Public Fixed Income		4.75%	4.70%	4.35%	4.60%
Cash Equivalents	90-Day T-Bill	3.00%	3.00%	0.90%	3.00%
TIPS	Bloomberg TIPS	4.65%	4.50%	5.40%	4.20%
US Fixed Income	Bloomberg Aggregate	4.85%	4.75%	4.45%	4.55%
US Investment Grade Credit	Bloomberg Credit	5.00%	4.95%	4.80%	4.80%
Non-US Fixed Income	Bloomberg Global Treasury ex-US Hedged	3.35%	2.90%	9.80%	2.85%
High Yield	Bloomberg US High Yield 2% Issuer Cap	6.55%	5.90%	11.75%	8.05%
US Securitized	Bloomberg US Securitized	5.10%	5.05%	3.00%	4.45%
Private Equity		11.80%	8.50%	27.60%	0.00%
Private Equity	Cambridge Private Equity (lag)	11.80%	8.50%	27.60%	0.00%
Private Real Estate		7.15%	6.25%	14.00%	4.00%
Real Estate	NCREIF Total Index (lag)	7.15%	6.25%	14.00%	4.00%
Private Infrastructure/Credit		7.80%	7.10%	12.40%	5.85%
Private Infrastructure	Cambridge Global Private Infra (lag)	7.40%	6.35%	15.20%	4.90%
Private Credit	Bloomberg US High Yield (lag)	8.35%	7.25%	15.70%	7.25%
Absolute Return		6.00%	5.70%	8.20%	0.00%
Hedge Funds	HFRI Total HFOF Universe	6.00%	5.70%	8.20%	0.00%
Tactical Opportunities		8.50%	7.25%	17.00%	1.50%
Tactical Opportunities	S&P 500	8.50%	7.25%	17.00%	1.50%
Cash Equivalents		3.00%	3.00%	0.90%	3.00%
Cash Equivalents	90-Day T-Bill	3.00%	3.00%	0.90%	3.00%
Total Fund	APFC Total Fund Target	8.00%	7.30%	12.65%	2.65%
Inflation	CPI-U		2.50%	1.60%	

Callan Capital Markets Assumptions Correlations

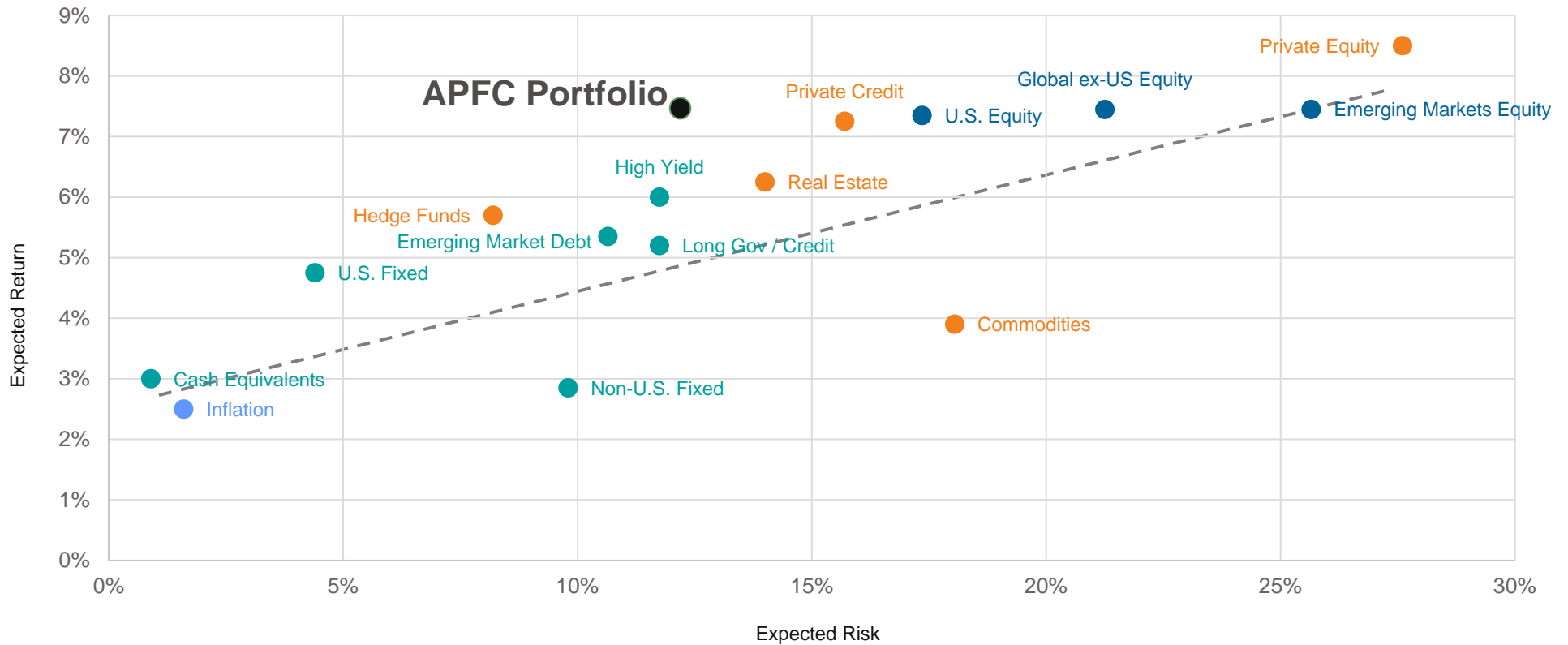
Correlation Matrix	PE	FI	RE	PC	PE	HF	TO	CE
APFC Public Equity	1.000	0.468	0.379	0.712	0.830	0.618	0.950	-0.051
APFC Public Fixed Income	0.468	1.000	0.300	0.401	0.265	0.545	0.447	0.117
Core Real Estate	0.379	0.300	1.000	0.610	0.455	0.195	0.375	0.020
Private Credit/Infra	0.712	0.401	0.610	1.000	0.709	0.466	0.669	-0.050
Private Equity	0.830	0.265	0.455	0.709	1.000	0.399	0.785	-0.040
Hedge Funds	0.618	0.545	0.195	0.466	0.399	1.000	0.600	0.000
Tactical Ops	0.950	0.447	0.375	0.669	0.785	0.600	1.000	-0.020
Cash Equivalents	-0.051	0.117	0.020	-0.050	-0.040	0.000	-0.020	1.000

- Low correlations between asset classes indicate that combining them can reduce total portfolio risk.
- Green highlighted cells indicate correlations below 0.4, indicating especially effective diversification pairs.
- Low correlation of fixed income with private equity, for example, is attractive in an overall portfolio diversification context.
- Hedge funds and real estate are also an effective diversification pair.

● Source: Callan

Relationship Between Expected Return and Economic Risk

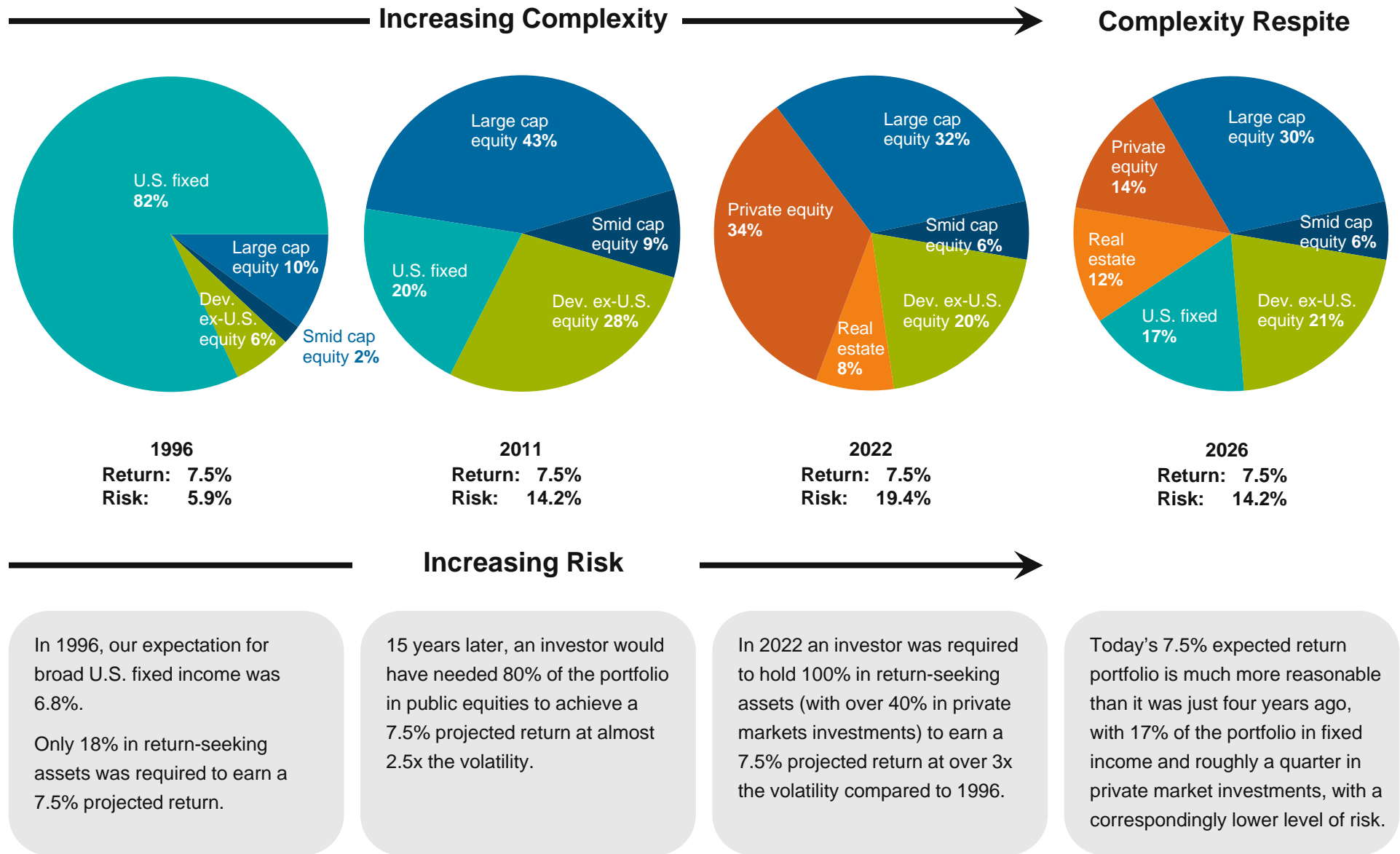
Visualizing Callan's Capital Markets Assumptions



Expected Return Increases with Increased Economic Risk

- For example, investors demand a greater return from private equity than public equity as compensation for higher implementation risk, greater leverage, and less liquidity
- Lower correlation asset classes can fall below the capital markets line and still be efficient components of a diversified portfolio (e.g. Non-US Fixed income)

7.5% Expected Returns over Last 30 Years

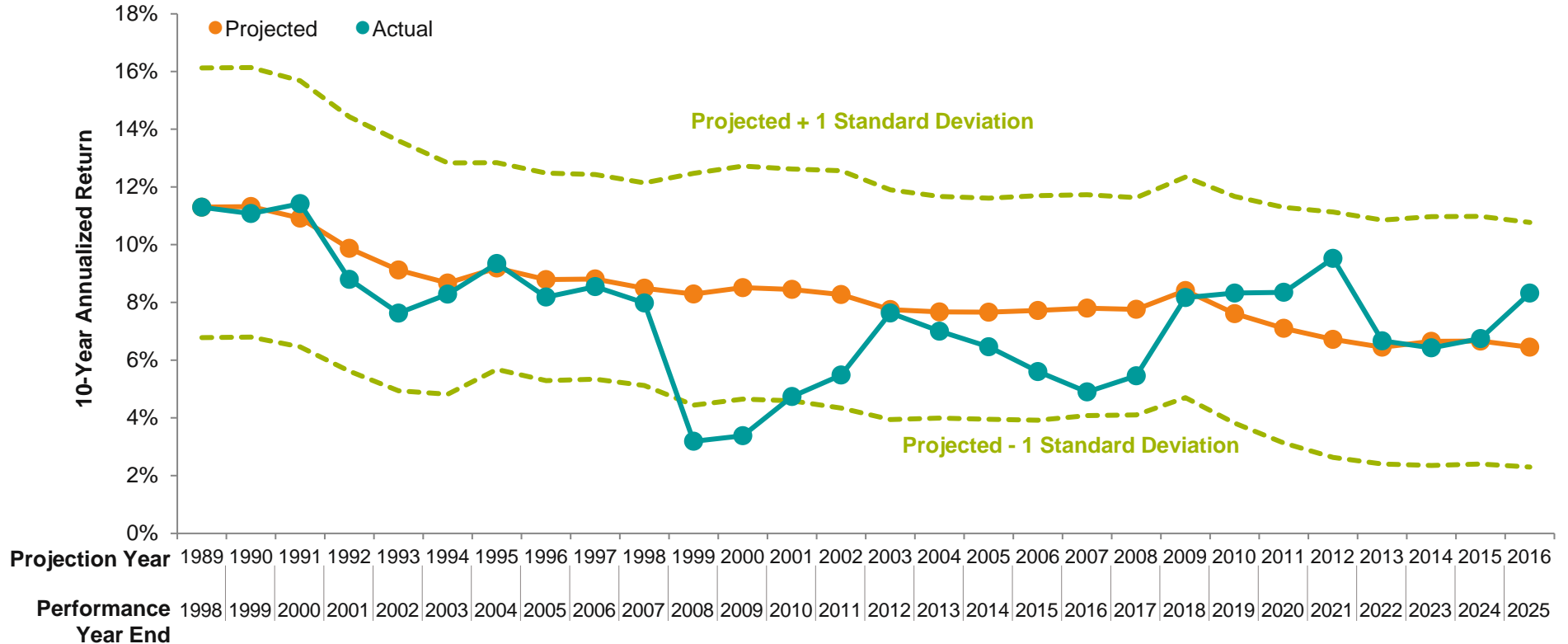


Actual Returns versus Callan Projections

Projection Years 1989 - 2016

Historical Comparison: Actual Returns vs. Callan Capital Markets Projections

Portfolio (60% Equity, 30% Fixed, 10% Real Estate)



- Our projections for a diversified portfolio have generally been within one standard deviation of the future actual return
- The glaring exceptions are the 10-year periods ended in 2008 and 2009 which contained two major collapses in the equity market: the Dot-Com Bubble in 2001-02 and the Global Financial Crisis in 2008

Asset Allocation

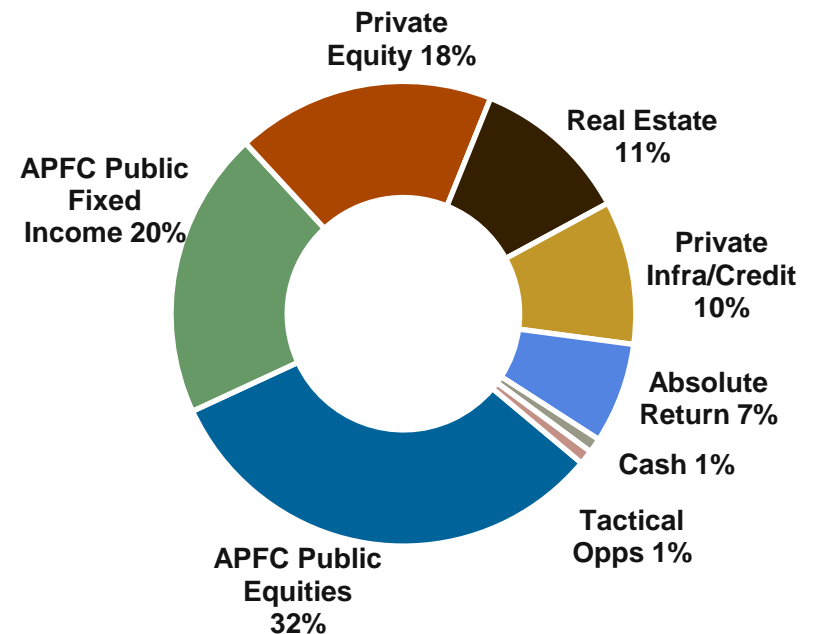


APFC FY 2026 Total Fund Policy Target

Projected Return and Standard Deviation

- Projected median 10-year annualized return of **7.30%** is the same as last year.
- Inflation expectation remained the same at **2.50%**.
- Projected median 10-year annualized real return of **4.8%** is the same as last year.
- Projected standard deviation of **12.65%** is 5 basis points lower than last year.
- Percent probability of exceeding 7.5% annualized return over 10-year horizon is estimated to be **47.4%**.
- Percent probability of exceeding 7.1% (median effective payout) is estimated to be roughly **52%**.

FY 2026 Total Fund Target

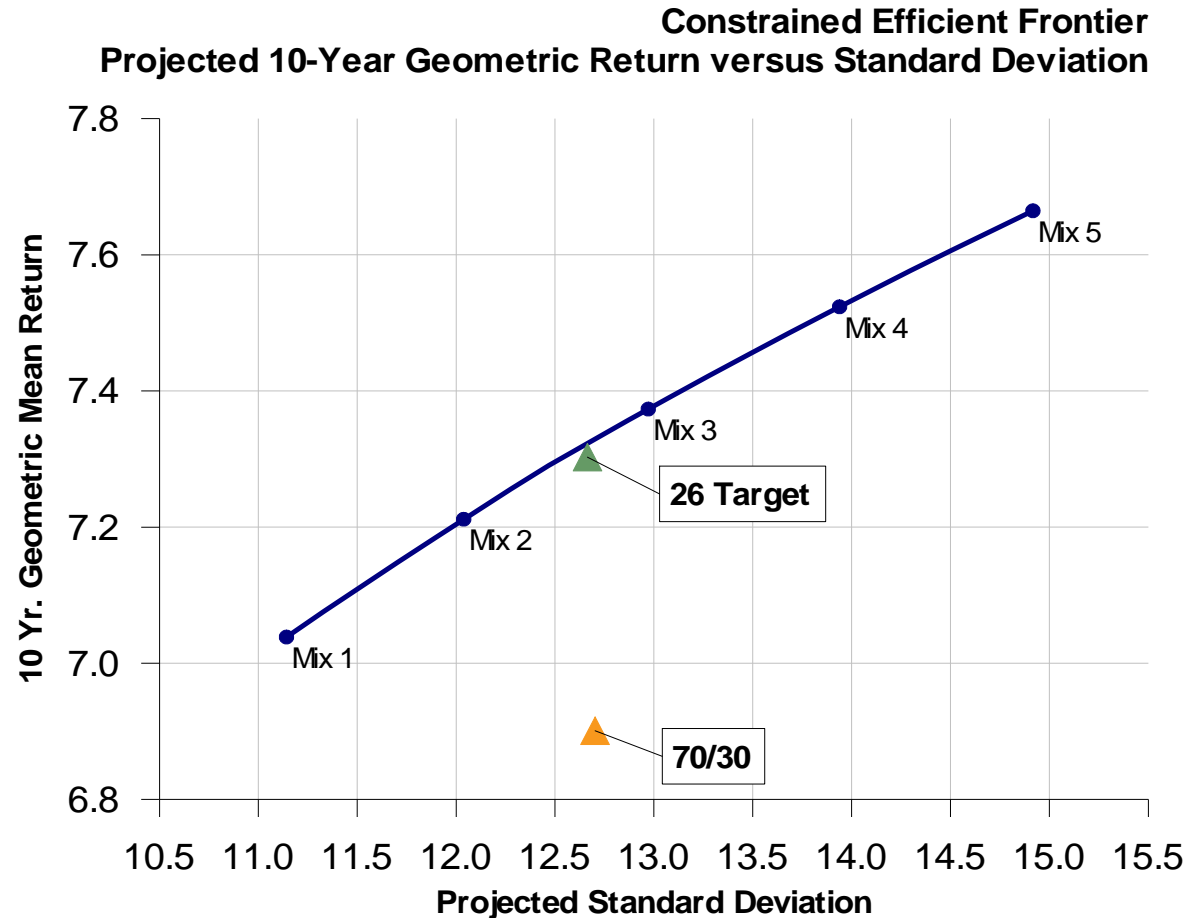


Expected 10-year Geometric Return:	7.30%
Expected Standard Deviation:	12.65%
Expected Inflation:	2.50%
Expected Real Return:	4.80%

Constrained Efficient Frontier Analysis (50% Private Assets)

FY 26 Target Portfolio Close to Constrained Efficient Frontier

- Efficient frontier with 50% private markets constraint.
- FY26 Target portfolio is essentially on the constrained efficient frontier hindered modestly by 1% cash allocation and private markets allocation of 48%.
- 70/30 Equity/Fixed portfolio is pure public markets portfolio with same risk as FY26 Target, and roughly 40 basis points lower return.



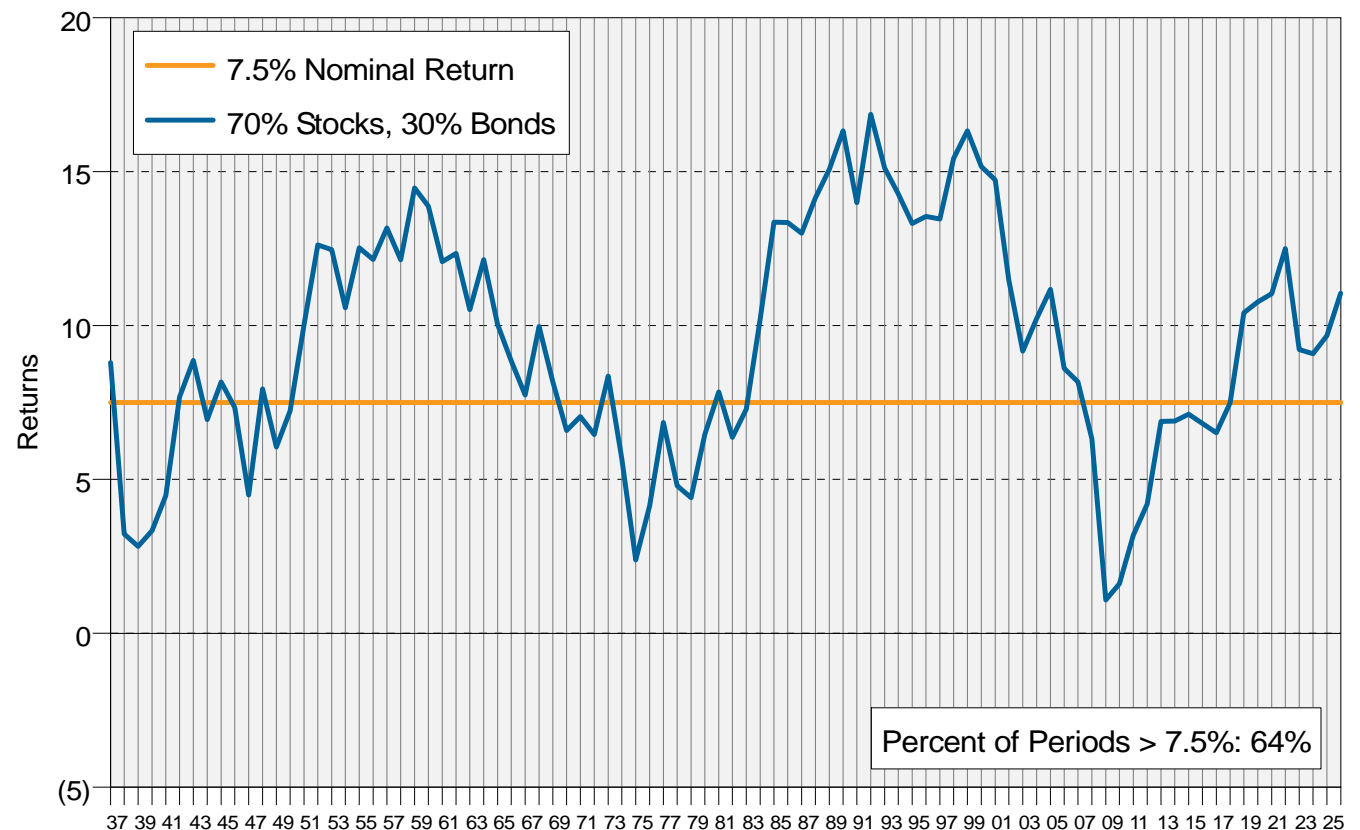
*70/30 Equity/Fixed portfolio assumes 70% allocation to APFC Public Equity benchmark and 30% allocation to APFC Fixed Income benchmark

Rolling 10-Year Nominal Returns

70% US Stocks (S&P 500), 30% US Bonds (Aggregate)

- Historically a 70/30 mix generated a **nominal** 10-year annualized return above **7.5%** in **64%** of periods.
- Periods that did not meet the mark included at least one of the following:
 - The Great Depression
 - The 73-64 Oil Crisis
 - The Dot.com Bubble
 - The 2008 GFC
- Average inflation over this period was 3.3%

Rolling 10-Year Nominal Return
for 89 Years Ended December 31, 2025

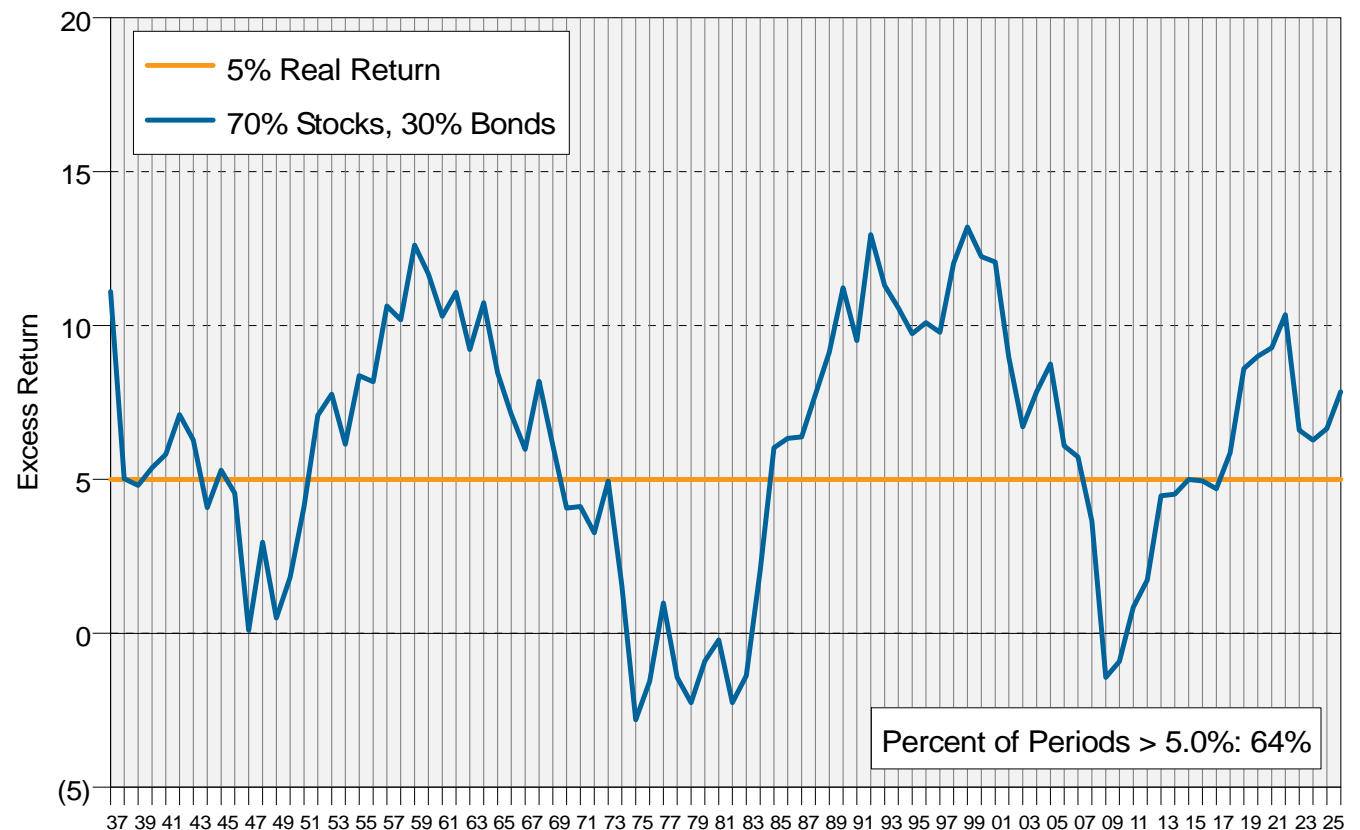


Rolling 10-Year Real Returns

70% US Stocks (S&P 500), 30% US Bonds (Aggregate)

- Historically a 70/30 mix generated a **real** 10-year annualized return above **5%** in **64%** of periods.
- While the top-line number looks the same the pattern is different.
- High inflation periods made it more challenging to meet the bogey:
 - WW II
 - 70's Stagflation
- Deflation during the Depression helped real return in early rolling periods.

Rolling 10-Year Real Return
for 89 Years Ended December 31, 2025

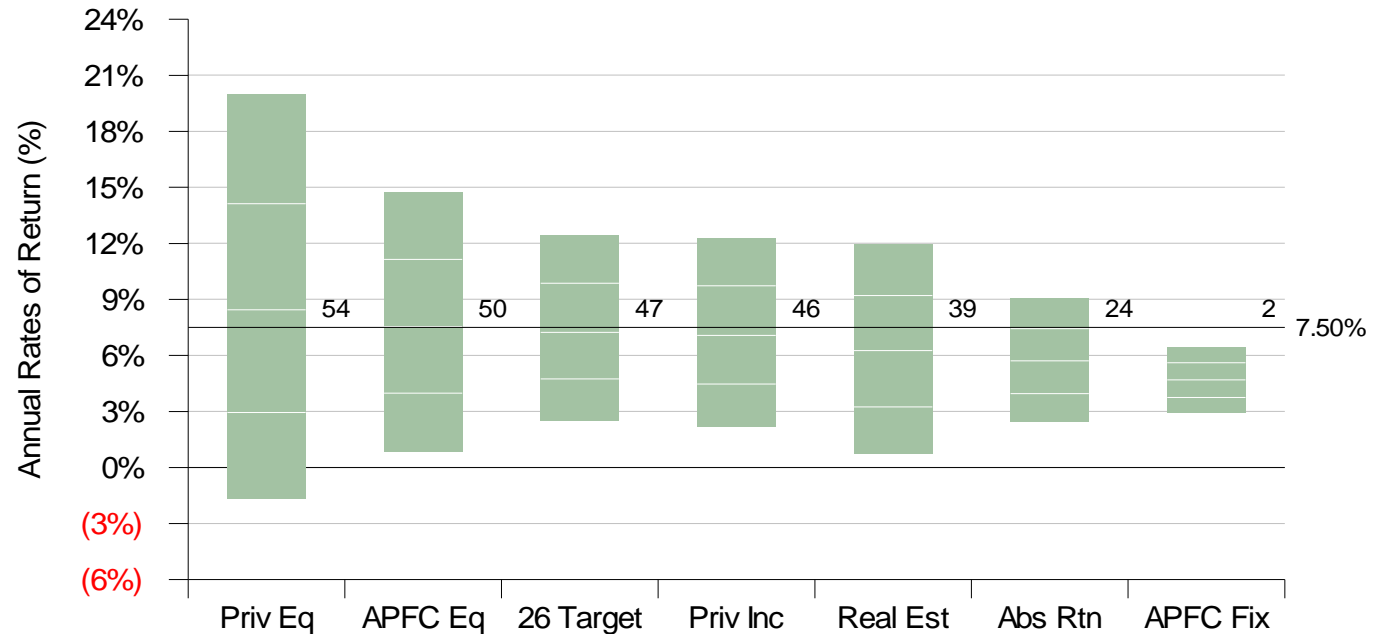


Range of Projected Returns

10th through 90th Percentile

- Projected probability of FY26 Target Mix exceeding 7.5% annualized real return over 10 years is roughly 47.5%
- Only Public and Private equity have 50% or greater probability of achieving 7.5% return.
- The projected 90th percentile worse-case ten-year annualized return for the FY26 target is 2.5%.
- This is better than for any of the individual asset classes except fixed income, illustrating the power of diversification.

Range of Projected Rates of Return
Projection Period: 10 Years



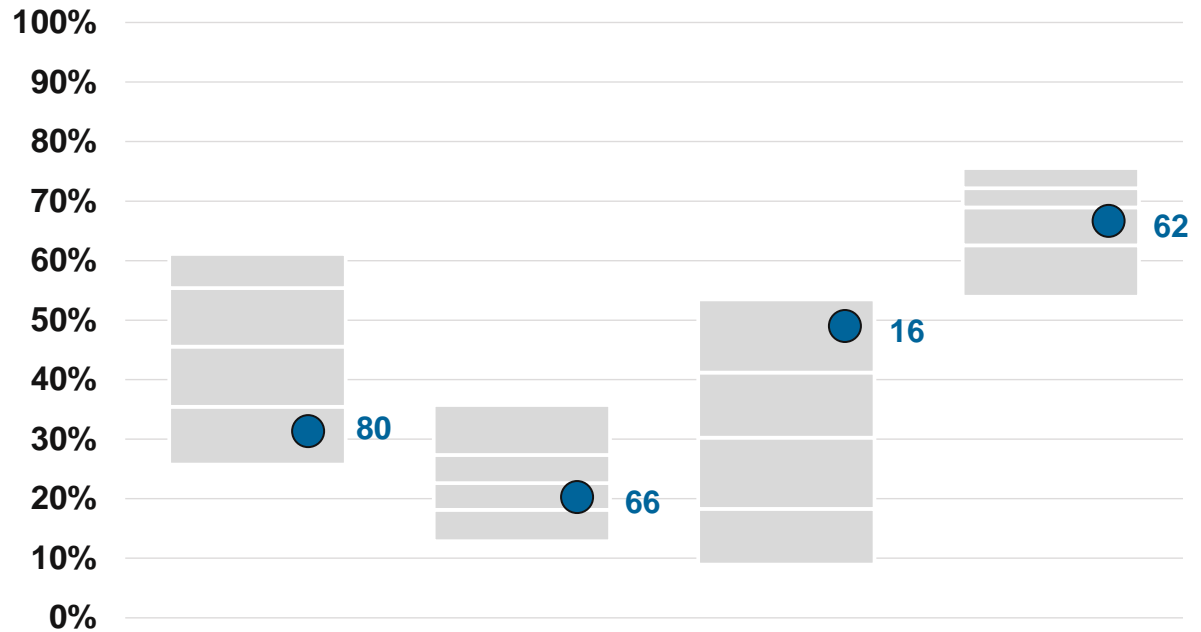
	Priv Eq	APFC Eq	26 Target	Priv Inc	Real Est	Abs Rtn	APFC Fix
10th Percentile	20.0%	14.7%	12.4%	12.3%	12.0%	9.1%	6.4%
25th Percentile	14.1%	11.1%	9.9%	9.7%	9.2%	7.4%	5.6%
Median	8.4%	7.5%	7.2%	7.1%	6.3%	5.7%	4.7%
75th Percentile	2.9%	4.0%	4.7%	4.5%	3.3%	4.0%	3.7%
90th Percentile	(1.7%)	0.8%	2.5%	2.2%	0.8%	2.4%	2.9%
Prob > 7.50%	54.3%	50.3%	47.4%	45.8%	39.0%	24.1%	2.2%

APFC FY 2026 Target versus Large Public Funds

Target Asset Allocation Comparison

- **Low Public Equity**
 - Lower allocation to public equities than 80% of Public Funds.
 - Median is 46%, APFC is 32%.
- **Below Median Public Fixed Income**
 - Slightly below median allocation to public fixed income.
 - Median is 23%, APFC is 20%.
- **High Private Markets**
 - Higher allocation to private markets than 76% of Public Funds.
 - Median is 30%, APFC is 48%
- **Below Median Growth Assets**
 - Slightly below median allocation to Growth Assets
 - Median is 69%, APFC is 66%

Asset Allocation Distribution as of September 30, 2025
Callan Large Public Fund (> \$1 billion)



	Public Equity	Public Fixed Income	Private Markets	Growth Assets*
APFC	32%	20%	48%	66%
Median	46%	23%	30%	69%
Rank	80%	66%	16%	62%

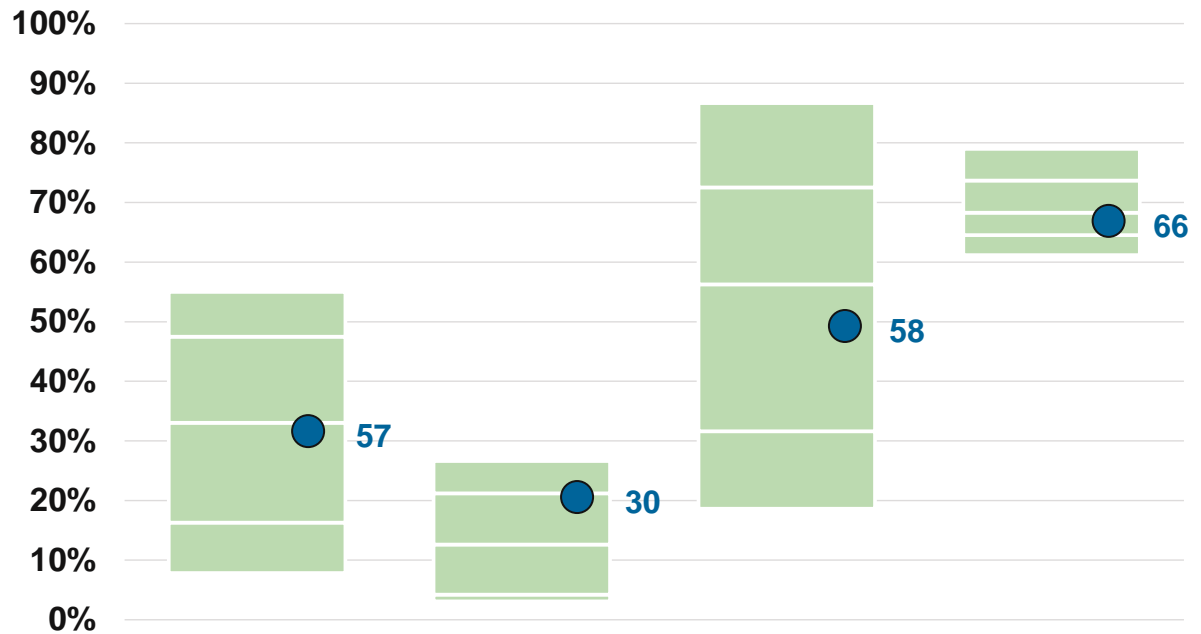
*Growth Assets include public equity, private equity, tactical opportunities, 70% of private real estate, 70% of private infrastructure/credit.

APFC FY 2026 Target versus Large Endowment/Foundation

Target Asset Allocation Comparison

- Median Public Equity
 - Roughly median allocation to public equities.
 - Median is 33%, APFC is 32%.
- High Public Fixed Income
 - Higher allocation to public fixed income than 70% of E&F's.
 - Median is 13%, APFC is 20%.
- Below Median Private Markets
 - Lower allocation to private markets than 58% of E&F's.
 - Median is 56%, APFC is 48%
- Median Growth Assets
 - Roughly median allocation to Growth Assets
 - Median is 68%, APFC is 66%

Asset Allocation Distribution as of September 30, 2025
Callan Large Endowment/Foundation (> \$1 billion)



	Public Equity	Public Fixed Income	Private Markets	Growth Assets
APFC	32%	20%	48%	66%
Median	33%	13%	56%	68%
Rank	57%	30%	58%	66%

*Growth Assets include public equity, private equity, tactical opportunities, 70% of private real estate, 70% of private infrastructure/credit.

Summary Observations

APFC Portfolio and FY 2026 Projections

- FY 2026 Target asset allocation is an efficient mix, minimizing risk per unit of expected return based on Callan's 2026 capital market projections.
- Expected annualized 10-year geometric mean return for the portfolio is 7.30%, with a projected annualized standard deviation of 12.65%.
- This is the same projected return as in 2025 with a 5 basis point reduction in risk.
- The portfolio is estimated to have a 47% probability of achieving a 7.5% annualized return over the next ten years (5% real return).
- The portfolio is estimated to have a 52% probability of achieving a 7.1% annualized return (4.6% real) which is the effective annual draw given the lag in the formula.
- Execution by APFC investment team can increase this probability, particularly in the private market portfolios.
- Short-term market volatility and spending constraints imposed by the Earnings Reserve framework create the potential for years where the Fund cannot support the POMV draw, despite sufficient long-run returns.
- Appropriations to Principle from the Earnings Reserve increase the probability of this outcome by reducing the Earnings Reserve buffer.

Spending Rule “Draw” Analysis

Response to Question From Senate Finance Committee

“We would like to have a discussion on draw rate. We were told by the Mental Health Trust that Callan advised a 4.5% draw. What do they think about the 5% draw rate for the APF?”

- Review of current formula
- Impact on effective draw
- Historical returns versus 5% draw
- Analysis of different projected draw rates under current two account system
 - Impact on annual dollar draw, market value, principle, earnings reserve
 - Probability and magnitude of draw shortfall
 - Probability and magnitude of inflation proofing shortfall

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SUBJECT: Private Markets Overview

ACTION:

DATE: February 24, 2026

INFORMATION: X

BACKGROUND:

The presentation provides an overview of APFC's Private Markets portfolios, including Private Equity, Private Income and Real Estate.

STATUS:

Allen Waldrop, Deputy CIO-Private Markets, will present an update on the performance, liquidity, recent investment activity and pacing of the various Private Markets portfolios.



APFC

ALASKA PERMANENT
FUND CORPORATION

Private Markets Update

Contents

- I. **Private Equity**
- II. Private Income
- III. Real Estate
- IV. Appendix – Strategy Summaries

Highlights

- Allocation of 16.7% under target of 18% as total asset continue to increase (NAV remains at ~\$15bn)
- Deployment target remains consistent at \$1.5bn annually
- Short-term performance continues to improve (FYTD and 1-year) while long-term performance (3- and 5-year) under pressure
- Executed on 18 opportunities totaling \$810m of commitments in FY26
- Liquidity position continues to be strong – 5th consecutive calendar year of distributions exceeding contributions
- Team is fully staffed

Performance

Portfolio Performance	FYTD	1-year	3-year	5-year
Private Equity	7.08	8.68	5.21	11.97
Benchmark	6.73	9.46	7.30	12.48
Over / (Under) performance	0.35	(0.78)	(2.09)	(0.51)

Sub-Portfolio Performance	FYTD	1-year	3-year	5-year
Private Equity Total	7.08	8.68	5.21	11.97
Private Equity	8.56	12.09	7.79	14.93
Special Opportunities	2.78	(0.56)	(1.29)	5.50
In State Emerging Managers	2.73	0.11	(1.87)	2.73

SOURCE: Callan Monthly Performance report for December 31, 2025

NOTES: Returns and benchmarks are time-weighted and lagged by one quarter

- Short-term performance (FYTD and 1-year) continues to improve on an absolute basis but lags the benchmark on the 1-year
- Underperformance driven by the Special Opportunities and In State portfolios which significantly underperformed the benchmark in all periods

Portfolio Composition

Strategy	Commit. Amount ^a	Total Contrib.	Total Distrib.	Market Value	% of MV	Total Value	Gain/Loss	TVPI	DPI	IRR
Buyouts	\$13,982.9	\$11,901.8	\$11,579.0	\$8,712.3	56%	\$20,291.3	\$8,389.6	1.70x	0.97x	13.8%
Venture Capital	4,832.6	4,376.3	5,924.4	4,103.8	26%	10,028.2	5,651.9	2.29x	1.35x	21.7%
Growth Equity	2,129.3	1,744.4	1,818.9	1,612.0	10%	3,431.0	1,686.6	1.97x	1.04x	20.7%
Energy	1,859.3	1,765.7	1,643.6	742.7	5%	2,386.3	620.6	1.35x	0.93x	5.8%
Debt	1,299.1	1,329.3	1,394.4	387.5	2%	1,781.9	452.6	1.34x	1.05x	9.8%
Total	\$24,103.2	\$21,117.4	\$22,360.3	\$15,558.3	100%	\$37,918.7	\$16,801.2			

NOTES: Represents since-inception returns (2004 through September 30, 2025). Amounts may not foot due to rounding.

3.0% of the portfolio's market value reflects roll-forward values, and therefore, market value is subject to change.

^aCommitments to non-USD-denominated investments are calculated using exchange rates at the time of commitment by calendar year.

Annual Commitments (\$ millions)



Benchmark Comparison

Asset Class	APFC Total Commitments	Cambridge Total Capitalization	OW/UW	APFC Market Value	Cambridge Market Value	OW/UW
Buyout	57.9%	53.7%	4.2%	55.9%	49.8%	6.2%
Venture Capital	20.1%	14.3%	5.7%	26.4%	20.1%	6.3%
Growth Equity	8.9%	12.3%	-3.4%	10.4%	15.6%	-5.2%
Energy	7.7%	0.0%	7.7%	4.8%	0.0%	4.8%
Debt	5.4%	19.6%	-14.2%	2.5%	14.6%	-12.1%

NOTES: Investment strategies reflect APFC's custom classifications. APFC and Cambridge values are based on net fund-level data. 8.5% of the portfolio's market value reflects roll-forward values and is subject to change. Cambridge Global Private Equity benchmarks (based on Callan's classification) as of September 30, 2025.

Region	APFC Total Cost	Cambridge Total Capitalization	OW/UW	APFC Market Value	Cambridge Market Value	OW/UW
U.S.	72.1%	75.2%	-3.1%	71.6%	70.9%	0.7%
Europe	16.2%	13.0%	3.2%	16.7%	16.5%	0.2%
Asia	4.5%	7.5%	-3.0%	5.0%	9.1%	-4.1%
Other	7.2%	4.2%	3.0%	6.7%	3.6%	3.2%

NOTES: APFC values are based on gross company-level data while Cambridge values are based on net fund-level data. Cambridge Global Private Equity benchmarks (based on Callan's classification) as of September 30, 2025.

- Strategy classifications differences driven by Energy (included in our strategy but excluded from the benchmark and Debt (excluded from our strategy but included in the benchmark)
- Regional differences driven by an under allocation to Asia and a higher allocation to Latin America (in "Other")

Cash Flows

CONTRIBUTIONS

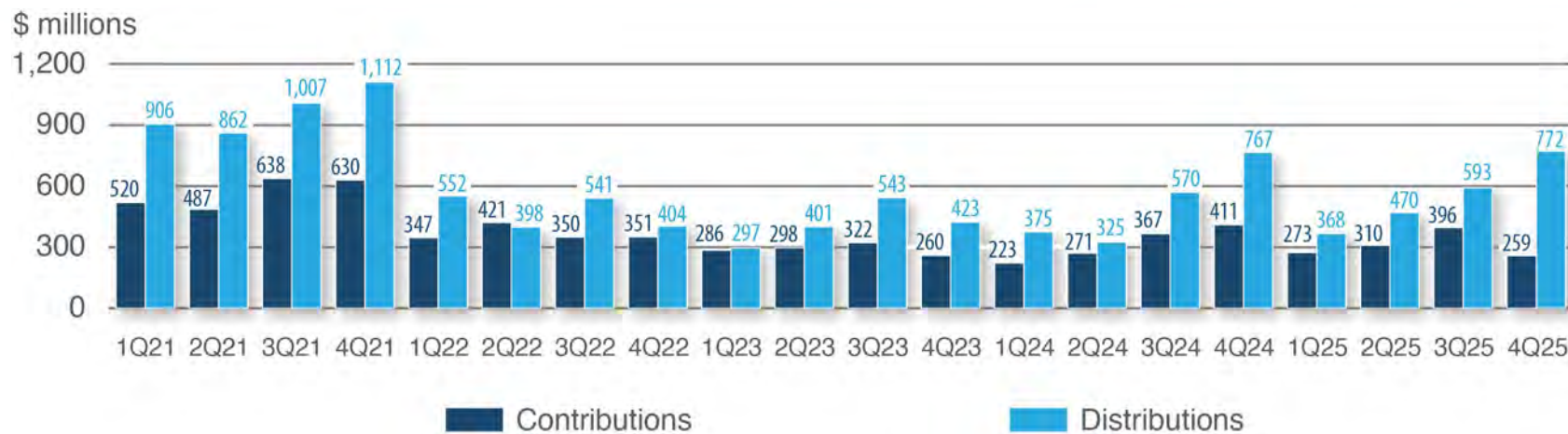


DISTRIBUTIONS



NOTE: As of December 31, 2025. Amounts may not foot due to rounding.

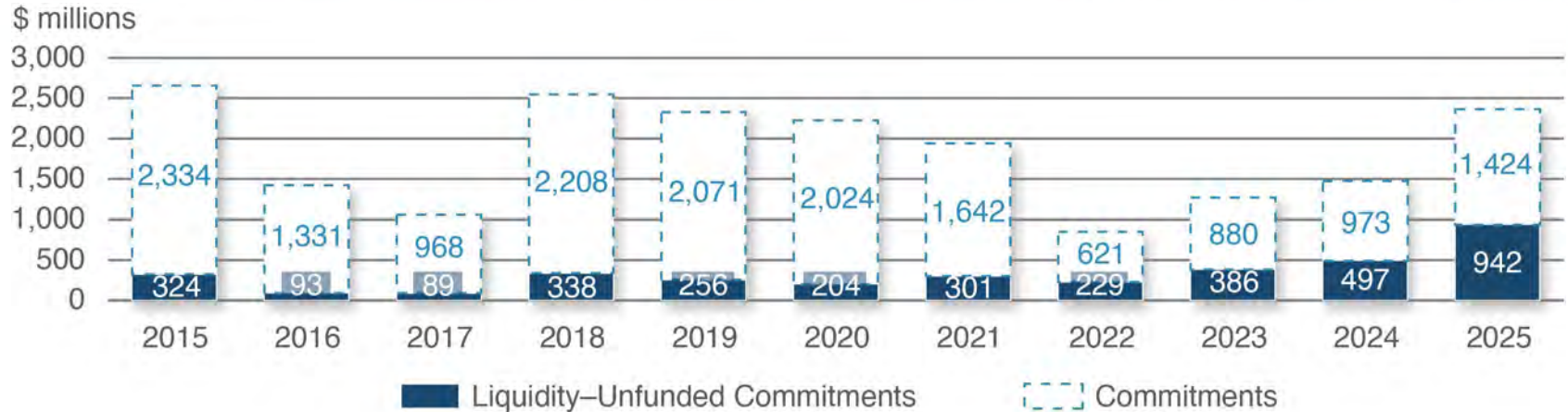
Cash Flows - Quarterly



NOTE: As of December 31, 2025.

- Portfolio has been cash flow positive (more distributions than contributions) in each of the past five years (2021 - 2025) and in 19 of the past 20 quarters.
- Cash flow position should remain strong given the moderate commitment pace offset by continued strong distribution activity.

Unfunded Commitments



NOTE: As of December 31, 2025. Commitments and unfunded shown by fiscal year.

- Unfunded commitments (“dry powder”) represent the remaining amount to be contributed to the underlying funds / investments (commitment less contributions).
- Unfunded commitments totaled \$4.4bn across the Private Equity portfolio as of September 30, 2025.

Investment Activity and Pacing

FY 2026 COMMITMENTS

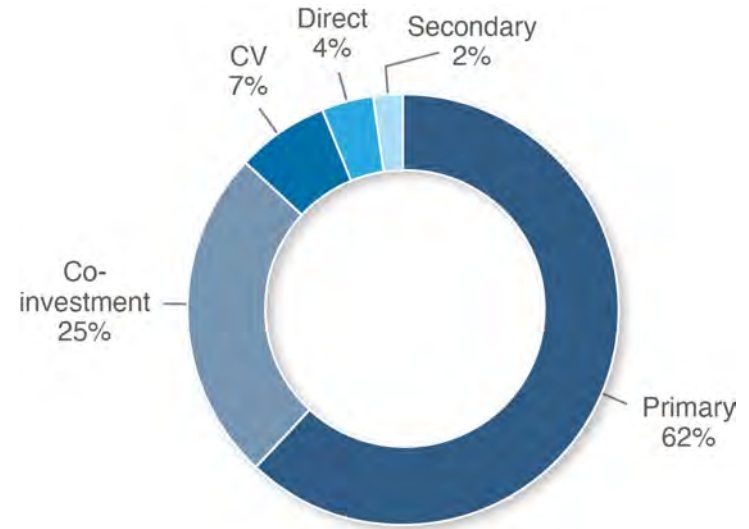
(\$ in millions)

Category	Closed	Target	Percentage
APFC	\$708	\$1,200	59%
APFC-PCM	103	300	34%
Total	\$810	\$1,500	54%

NOTES: Represents activity from July 1, 2025, through December 31, 2025.
Amounts may not foot due to rounding.

- Activity includes 9 primary funds, 6 co-investments, 1 CV, 1 secondary, and 1 direct investment.

FY 2026 COMMITMENT ACTIVITY BY INVESTMENT TYPE



Contents

- I. Private Equity
- II. Private Income**
- III. Real Estate
- IV. Appendix – Strategy Summaries

Highlights

- Allocation fell to 8.4% from 8.9% last quarter, under target of 10%
- Deployment target remains consistent at \$1.3bn annually, but will likely come in under target due to a slower market and in anticipation of a reduced allocation
- Overall performance is lagging benchmarks on most time periods, driven by weakness in the Private Credit and Income Opportunities portfolios partially offset by strong performance in Infrastructure
- Quarterly net cash flows are lumpy, but remain positive on an annual basis
- Recruiting process is underway for an Analyst / Associate position

Performance

Portfolio Performance	FYTD	1-year	3-year	5-year
Private Income	5.78	11.14	9.84	11.24
Benchmark	6.49	9.68	10.97	11.62
Over / (Under) performance	(0.71)	1.46	(1.13)	(0.38)
Sub-Portfolio Performance	FYTD	1-year	3-year	5-year
Infrastructure	7.00	14.07	11.40	14.68
Benchmark	7.62	9.59	11.02	11.35
Over / (Under) performance	(0.62)	4.48	0.38	3.33
Private Credit	6.04	8.40	8.78	9.78
Benchmark	4.81	9.80	10.89	12.01
Over / (Under) performance	1.23	(1.40)	(2.11)	(2.23)
Income Opportunities	(1.41)	2.68	4.16	4.40
Benchmark	6.49	9.68	10.97	11.62
Over / (Under) performance	(7.90)	(7.00)	(6.81)	(7.22)

SOURCE: Callan Monthly Performance report for December 31, 2025
 NOTES: Returns and benchmarks are time-weighted and lagged by one quarter

- Outperformance on the 1-year driven by Infrastructure (64% of Private Income assets), which saw significant gains in Power Generation assets.
- Income Opportunities which include a broad range of strategies (mineral royalties, agricultural, timber, aircraft leasing and other yield focused) has underperformed significantly but is smallest component (~10%) of Private Income assets.

Portfolio Composition

Strategy	Commit. Amount ^a	Total Contrib.	Total Distrib.	Market Value	% of MV	Total Value	Gain/Loss	TVPI	DPI	IRR
Private Credit	\$6,271.7	\$5,570.0	\$5,126.9	\$2,065.2	26%	\$7,192.1	\$1,622.1	1.29x	0.92x	7.2%
Infrastructure	7,832.2	7,154.1	6,116.9	5,047.3	63%	11,164.2	4,010.1	1.56x	0.86x	11.0%
Income Opps	1,501.3	2,253.7	1,857.5	850.2	11%	2,707.7	454.0	1.20x	0.82x	5.5%
Total	\$15,605.1	\$14,977.8	\$13,101.3	\$7,962.7	100%	\$21,064.0	\$6,086.2			

NOTE: Amounts may not foot due to rounding.

^aCommitments to non-USD-denominated investments are calculated using exchange rates at the time of commitment. Commitments to AK Credit Co-Investment Fund represent underlying asset-level commitments.

Annual Commitments
(\$ millions)

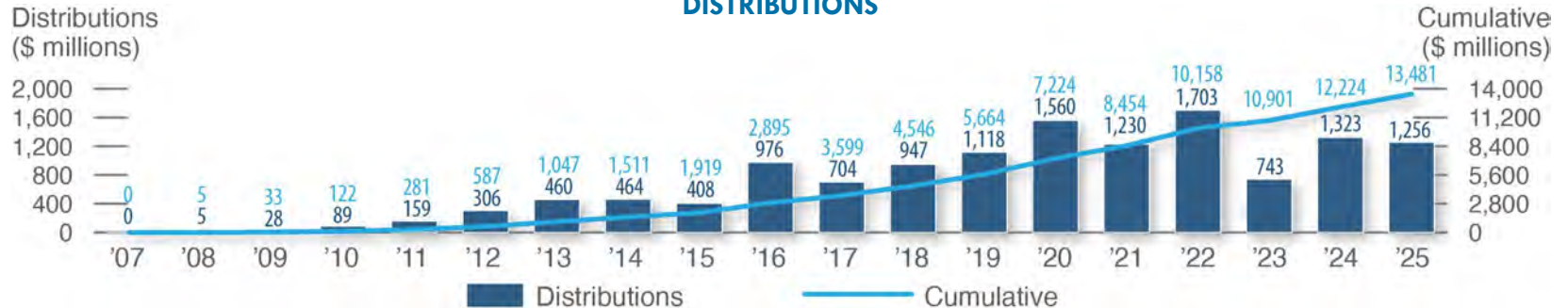


Cash Flows

CONTRIBUTIONS

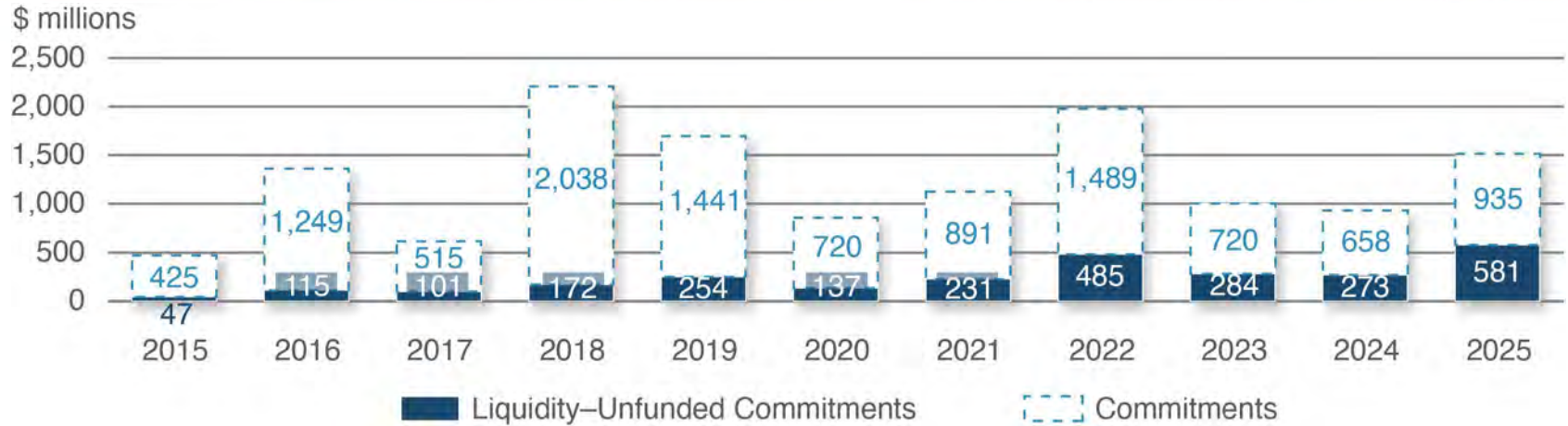


DISTRIBUTIONS



NOTE: Represents cash-flow activity at the investment level and excludes investments that have been terminated or transferred out of AK Credit Opportunities.

Unfunded Commitments



NOTE: As of December 31, 2025. Commitments and unfunded amounts shown on a fiscal year basis.

- Unfunded commitments (“dry powder”) represent the remaining amount to be contributed to the underlying funds / investments (commitment less contributions).
- Unfunded commitments totaled \$2.8bn across the Private Income portfolio as of September 30, 2025.

Investment Activity and Pacing

FY 2026 COMMITMENTS

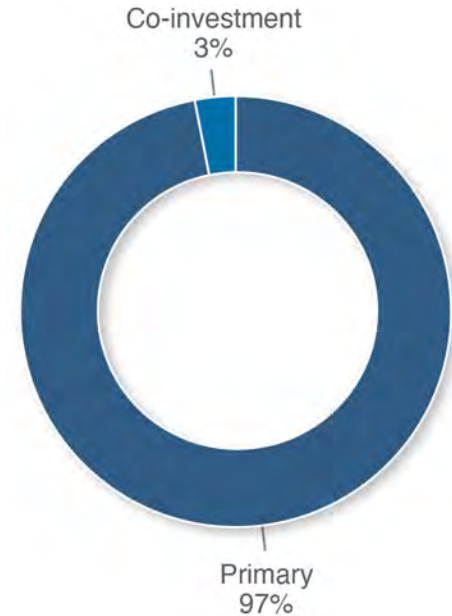
(\$ in millions)

Category	Closed	Target	Percentage
Private Credit	\$80	\$520	15%
Infrastructure	100	780	13%
Total	\$180	\$1,300	14%

NOTE: Represents activity from July 1, 2025, through December 31, 2025.

- Activity includes 2 primary investments and 1 co-investment.
- While the first half of the year was slower than expected, there remains ~\$900m in the active pipeline targeted for completion over the next two quarters.

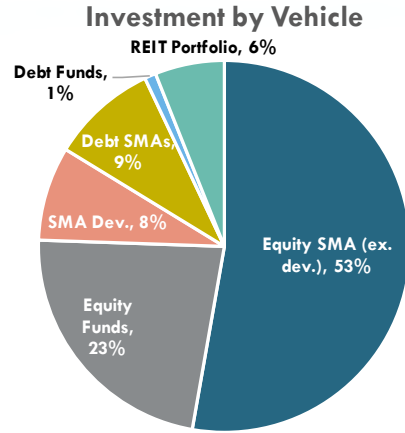
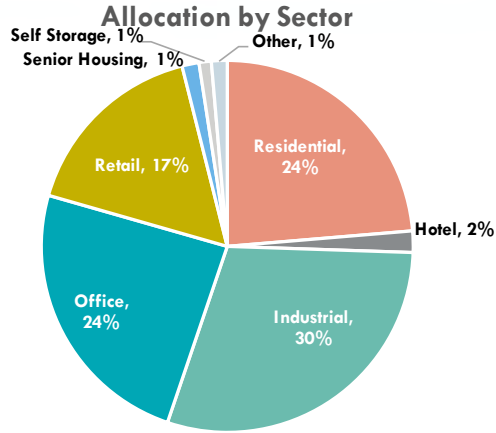
FY 2026 COMMITMENT ACTIVITY BY INVESTMENT TYPE



Contents

- I. Private Equity
- II. Private Income
- III. Real Estate**
- IV. Appendix – Strategy Summaries

Portfolio Overview



Allocation

- 9.8% actual versus target of 11%

Equity Investments

- 71 direct investments managed by 8 advisors (7 external and 1 internal)
- 5 development partners
- 12 fund investments (4 open-ended and 8 closed-end)
- Added 4 closed-end fund investments

Debt Investments

- 3 funds (1 open-ended and 2 closed-end)
- Added 1 closed-end fund investment (Q4-25)
- 2 separately managed accounts

REITs

- 6% vs. target of $\pm 5\%$ (hard cap of 10%)

Key Portfolio Metrics

Portfolio	NAV (\$M)
Equity SMA (incl. dev.)	5,422
Equity Funds	2,025
Debt (Funds & SMAs)	910
REIT Portfolio	537
Total	8,895

Equity SMA Metrics	
SMA GAV (\$M)	7,276
SMA Leverage	25.5%
# SMA Assets	74
SMA Occupancy	85%

*Portfolio figures are as of 3Q-25

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Performance

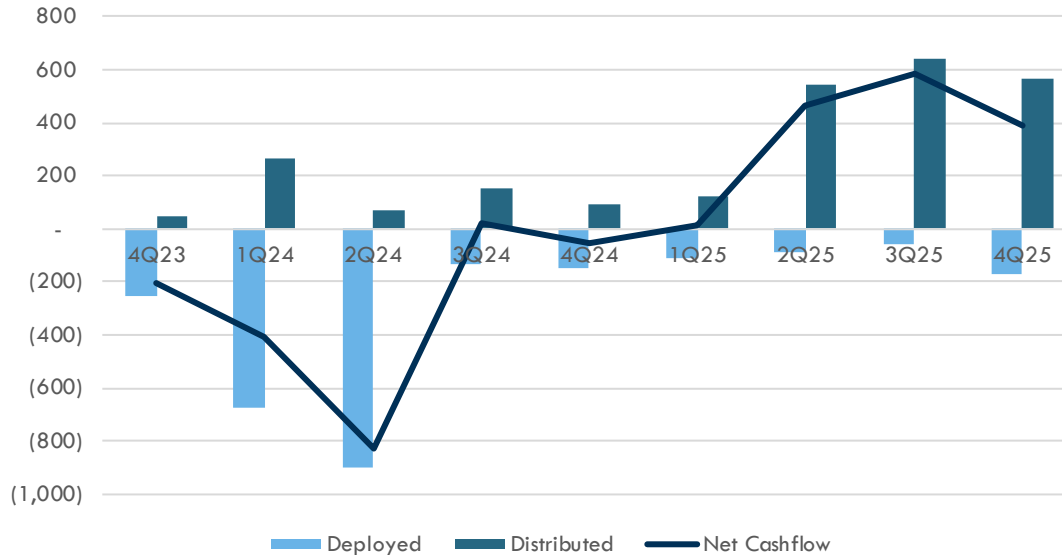
	NAV (\$M)	Returns					Over / (Under) Performance				
		1 Quarter	1 Year	3 Year	5 Year	10 Year	1 Quarter	1 Year	3 Year	5 Year	10 Year
Total Portfolio											
Benchmark	-	1.22%	3.62%	-0.50%	4.81%	5.76%	-	-	-	-	-
APFC Real Estate	8,895	0.91%	3.91%	-0.99%	4.07%	3.78%	-0.31%	0.29%	-0.49%	-0.74%	-1.98%
APFC Vehicle vs. NCREIF NPI											
REITs Portfolio	537	2.88%	-2.81%	10.26%	9.46%	7.32%	1.66%	-7.52%	12.79%	5.65%	2.20%
Equity Funds Portfolio	2,025	0.63%	5.84%	0.98%	10.67%		-0.59%	1.13%	3.51%	6.86%	
Debt Funds / SMA Portfolio	910	2.34%	8.47%	9.00%	10.32%		1.12%	3.76%	11.53%	6.51%	
SMA Portfolio	4,694	1.23%	3.32%	-5.50%	0.68%	1.57%	0.01%	-1.39%	-2.97%	-3.13%	-3.55%
Development Portfolio	728	-3.49%	3.94%	1.43%			-4.71%	-0.77%	3.96%		
APFC SMA vs. NCREIF Sector Benchmark¹											
SMA Industrial Portfolio (incl. dev.)	993	0.61%	4.55%	0.13%	20.38%	16.09%	-0.42%	0.01%	0.78%	8.62%	3.98%
SMA Residential Portfolio (incl. dev.)	1,151	-1.34%	5.46%	-1.17%	6.24%	5.62%	-2.78%	0.14%	0.46%	1.30%	0.30%
SMA Retail Portfolio (incl. dev.)	1,360	0.15%	-1.97%	-4.70%	-3.49%	-0.47%	-1.16%	-9.01%	-7.29%	-6.45%	-3.47%
SMA Office Portfolio (incl. dev.)	1,853	2.14%	5.58%	-5.26%	-1.24%	-0.56%	1.24%	3.67%	3.69%	2.58%	-1.50%
SMA Hotel Portfolio (incl. dev.)	66	-0.98%	0.18%	4.06%	3.97%	5.89%	-3.10%	-3.37%	-3.62%	-2.27%	3.09%

*1Q lag; periods ended 9/30/2025

¹ Calculated internally

Liquidity

CASHFLOW ACTIVITY



- The real estate portfolio has been partially repositioned and continues to generate steady cash flow to the fund
- Direct investments, listed real estate, and open-end funds provide flexibility to access liquidity (asset sales, refinance, and redemptions)
- Upon adjustment of the multiyear increase plan initiated in 2020, new deployment has fallen substantially
- Net cashflow became positive again in 3Q-24, and has remained so for 5 of the last 6 quarters

Benchmark Comparison

RE Portfolio Sector Allocation ¹					
	Total Portfolio Exposure		NCREIF	Difference (+/-)	Upper Limit
Residential	2,104,223,174	23.7%	29.1%	(5.5%)	43.7%
Hotel	165,241,379	1.9%	0.4%	1.4%	5.0%
Industrial	2,639,564,417	29.7%	33.7%	(4.0%)	50.6%
Office	2,152,919,030	24.2%	18.0%	6.2%	27.0%
Retail	1,481,081,288	16.7%	12.8%	3.9%	19.2%
Senior Housing	131,274,878	1.5%	1.4%	0.1%	5.0%
Self Storage	94,732,152	1.1%	2.6%	(1.5%)	5.0%
Other	121,825,252	1.4%	1.9%	(0.6%)	5.0%
Total	\$8,890,861,571	100.0%	100.0%		

Key Considerations

- Sector underweight to Residential (-5.5%), Industrial (-4.0%), and Self Storage (-1.5%); overweight Office (6.2%), Retail (3.9%), and Hotel (1.4%) with Senior Housing and Other roughly equivalent to the NCREIF Expanded NPI benchmark
- Progress has been made closing the underweight to Residential, increasing 1.4% quarter-on-quarter

¹Calculated internally

Key Initiatives / Activity

New Investments

- \$150M into net lease-focused fund to increase defensive exposure and exposure to the industrial sector
- \$50M investment into an attainable housing fund with a long-term partner
- \$150M into US real estate debt fund, further diversifying GP exposures, and providing sector allocations to attractive housing and industrial lending opportunities

Direct Dispositions

- There are eight assets currently in the disposition process that are anticipated to generate \$~400M in sale proceeds
- The team continues to evaluate the portfolio, seeking to opportunistically transact on accretive asset sales

Portfolio Initiatives & Key Achievements

- Two more retail dispositions and a land sale closed in December and January, returning \$36M in net sale proceeds
- APFC's debt program received two loan repayments in December:
 - ~\$140M from repayment of student housing and industrial construction loans
 - There are ~\$250M of further loan repayments expected through the end of the fiscal year

Team

- Continued development of junior staff via technical training programs, collaboration with existing partners, and continued involvement in asset dispositions, new investments, and portfolio management assignments

Contents

- I. Private Equity
- II. Private Income
- III. Real Estate
- IV. Appendix – Strategy Summaries**

Private Markets – Overview

Allen Waldrop
Deputy CIO – Private Markets
(Sacramento)

Allen Waldrop
Director
(Sacramento)

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Senior Portfolio Mgr
(Juneau)

Eric Ritchie
Senior Portfolio Mgr
(Juneau)

Josh Ungar
Senior Portfolio Mgr
(Boston)

Steven Gagliardo
Portfolio Manager
(Anchorage)

Vacant
Portfolio Manager
(TBD)

Ed Rime
Portfolio Manager
(Juneau)

Steve Adams
Senior Portfolio Mgr
(Temecula)

Lara Pollock
Associate
(Anchorage)

Ian Horwood
Associate
(Juneau)

Terek Rutherford
Associate
(Anchorage)

Henry Lloyd
Analyst
(Juneau)

Matt Sykes
Analyst
(Juneau)

Lillie Haggard
Analyst
(Anchorage)

Private Equity – Strategy Summary

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(Anchorage)

Lara Pollock
Associate
(Anchorage)

Ian Horwood
Associate
(Juneau)

Lillie Haggard
Analyst
(Anchorage)

- Team includes six professionals
- Focus primarily on fund investments, but also covers co-investments and other projects

- New hires have enhanced our in-house capabilities
- Current deployment pace is \$1.5bn annually, consistent with prior year
- Target 50% - 75% of annual capital deployment into funds annually, focusing on our best existing relationships and select new relationships
- Increase co-investment activity to get capital deployed in a more attractive investment environment, drive stronger returns / asset growth and reduce fees
- Targeted 200 bps outperformance of median Cambridge benchmarks on a rolling 5-year basis
- PE team leverages several third-parties for market research, deal sourcing, deal evaluation / due diligence, legal assistance, financial and tax accounting, distribution management and post investment monitoring and reporting

Private Income – Strategy Summary

Ross Alexander
Senior Portfolio Mgr
(Juneau)

Vacant
Portfolio Manager
(TBD)

Terek Rutherford
Associate
(Anchorage)

- Current team includes two professionals with one vacancy

- Focus is on fund investments and co-investments
- Current deployment pace is \$1.3bn annually, consistent with prior year
- Target 60% - 75% of annual capital deployment into funds annually
- Team is working to increase co-investment deal flow and commitments to enhance returns from best ideas in lower fee structures
- Across PI, targeting 50 bps outperformance versus composite benchmark consisting of 60% Cambridge Global Private Infra (lagged) and 40% Cliffwater Direct Lending Index
- PI team leverages several third-parties to supplement deal sourcing, due diligence, and post-investment monitoring and reporting

Private Income – Strategy Summary (2)

- Private Credit

- US-focused, with selective investments in Europe and Rest of World
- Portfolio is concentrated in senior loans to mid-sized companies with returns primarily from current yield
- Continuing to back top-tier managers focused on capital preservation and low loss ratios across cycles
- Concentrating fund commitments to generate increased co-investment deal flow
- Building co-investment book to 25-35% of private credit to generate enhanced returns from reduced fee drag; currently at ~15%

- Infrastructure

- Diversified across strategy, sector, and geography
- Primarily invest through funds in core-plus and value-add strategies to achieve attractive returns mainly from capital appreciation
- OECD bias with limited emerging market exposure
- Continuing to back top-tier managers for funds
- Focusing on mid-market and specialist funds for new commitments
- Proactively increasing co-investment deal flow and commitments to enhance returns
- Co-investments are in best ideas across sectors and geographies

- Income Opps

- Opportunities that have similar characteristics to infra or private credit, but do not fit those mandates
- High bar for new commitments
- Likely to remain less than 15% of Private Income NAV + unfunded going forward
- Focused on opportunities that primarily provide significant current yield and return enhancement due to market inefficiencies and niche strategies

Real Estate – Strategy Summary

Eric Ritchie
Senior Portfolio Mgr
(Juneau)

Ed Rime
Portfolio Manager
(Juneau)

Steve Adams
Senior Portfolio Mgr
(Temecula)

Henry Lloyd
Analyst
(Juneau)

Matt Sykes
Analyst
(Juneau)

- Current focus on fund investments, co-investments, and strategic direct / SMA portfolio dispositions (reduction target of 50%)
- New investments focused on high cash yield (4% to 6%) and total risk adjusted returns (8%-10%)
- Staff development through industry / technical trainings as well as development of specific goals and objectives
- Will add new debt managers to diversify the debt investment program with the aim to continue to generate outsized returns throughout all market cycles
- The RE team leverages, several third-parties for market research, deal sourcing, deal evaluation / due diligence, legal assistance, financial, property, and tax accounting
- APFC's Real Estate portfolio is comprised of over 100 different investment vehicles and ~2,000 assets across the globe

Real Estate – Strategy Summary (2)

Direct Investments

- Focus direct investments on stabilized core and core+ assets in major markets with stable fundamentals and growth tailwinds
- Increase reliance on SMAs for property-level decisions such as leasing, maintenance, improvements
- Routine evaluation of asset performance and business plan progress to optimize exit timing and returns
- Sale of non-strategic assets to reduce risk positions and optimize portfolio composition

Development Projects

- Limit development as a percent of total RE portfolio and through annual commitment limits
- Focus development on certain sectors and markets (e.g. Develop to Core, Multi-Family)

Fund Investments

- Focus fund commitments on higher-risk strategies (value-added and opportunistic) and international markets
- Utilize a mix of closed-end and open-ended funds to balance capital flows across different market environments
- Provide co-investment opportunities to gain additional exposures and manage capital flows and reduce fee impacts^{376 of 446}

Debt

- Maintain the sizing of the debt program at ~10% of RE NAV and tranche it over a longer periods to diversify across different economic and interest rate environments, and to smooth cash flow demands
- Increase the use of specialized real estate debt managers (via SMAs or commingled funds) to reduce staff burden
- Improve alignment with managers through GP commitments and refined fee structures

REITs

- Shifted from completion to tactical strategy
- Leveraging strategy to gain access to high quality managers and assets in the public market

The logo for APFC (Alaska Permanent Fund Corporation) is a dark teal rectangle containing the letters 'APFC' in a white, serif font.

APFC

ALASKA PERMANENT
FUND CORPORATION

Integrity • Stewardship • Passion



SUBJECT: Public Markets Overview

ACTION:

DATE: February 24, 2026

INFORMATION: X

BACKGROUND:

The Public Markets presentation provides information on the APFC Public Equities, Fixed Income, and Cash Portfolio.

STATUS:

At this meeting, Deputy CIO/Director of Fixed Income, Jim Parise, will present key elements of APFC Public Markets allocation and performance.



ALASKA PERMANENT
FUND CORPORATION

Public Markets Board Presentation

February 2026

Public Equities

- \$29.8 billion portfolio
- Nearly 100% of Portfolio is externally managed
- External managers have added ~40bps/yr in outperformance historically.

Fixed Income

- \$18.0 billion portfolio
- 100% of Portfolio is internally managed
- Primary strategies are relative value and reversion to the mean.

Public Equities FY26 Q2 Performance

Attribution (bps)	FY26 Q2	FY26
Active Selection	-14	-92
External Active Managers	-14	-92
Active Allocation	-13	-2
Factor-based External and Internal strategies	-8	-29
Positioning across External Managers *	-5	+27
Performance	-27	-94

* Plug figure

Allocation positives from overweights to international value, small caps, and emerging markets were more than offset by detracting low-volatility strategies.

Public Equities FY26 Q2 Overview

Factor	Positioning
Market Cap	Overweight to Small and Mid
Value vs Growth	Overweight to Value
Developed vs Emerging Market (EM)	Overweight to Emerging Market

Market Cap

Large cap outperformed mid and small caps.

	FY26 Q2	1 Yr
S&P 500	2.7%	17.9%
Mid Cap Core	0.2%	10.6%
Small Cap Core	2.2%	12.8%

Value vs Growth

Value outperformed growth.

	FY26 Q2	1 Yr
Large Cap Value	3.8%	15.9%
Large Cap Growth	1.1%	18.6%
Mid Cap Value	1.4%	11.0%
Mid Cap Growth	-3.7%	8.7%
Small Cap Value	3.3%	12.6%
Small Cap Growth	1.2%	13.0%

Developed vs Emerging

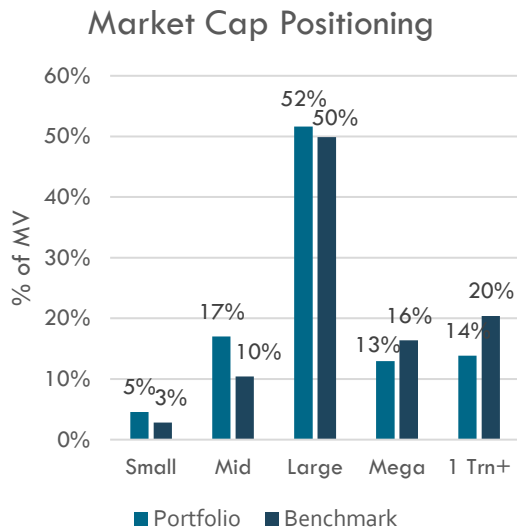
EM outperformed DM.

	FY26 Q2	1 Yr
S&P 500	2.7%	17.9%
MSCI EM	4.7%	33.6%

Public Equities Factor Positioning

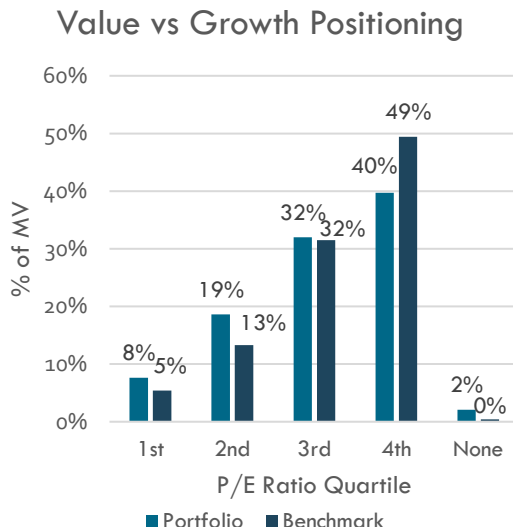
Market Cap

Large cap outperformed mid and small.



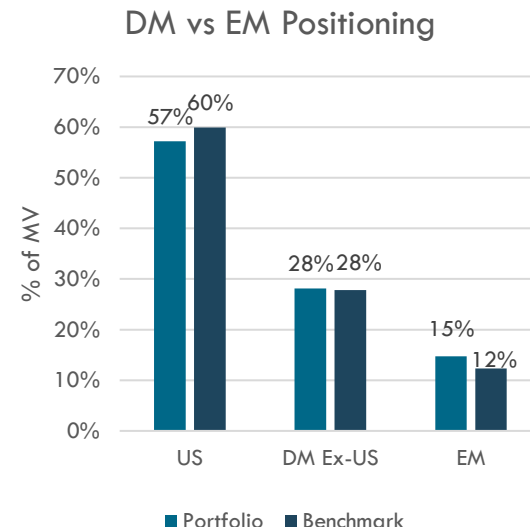
Value vs Growth

Value outperformed growth.

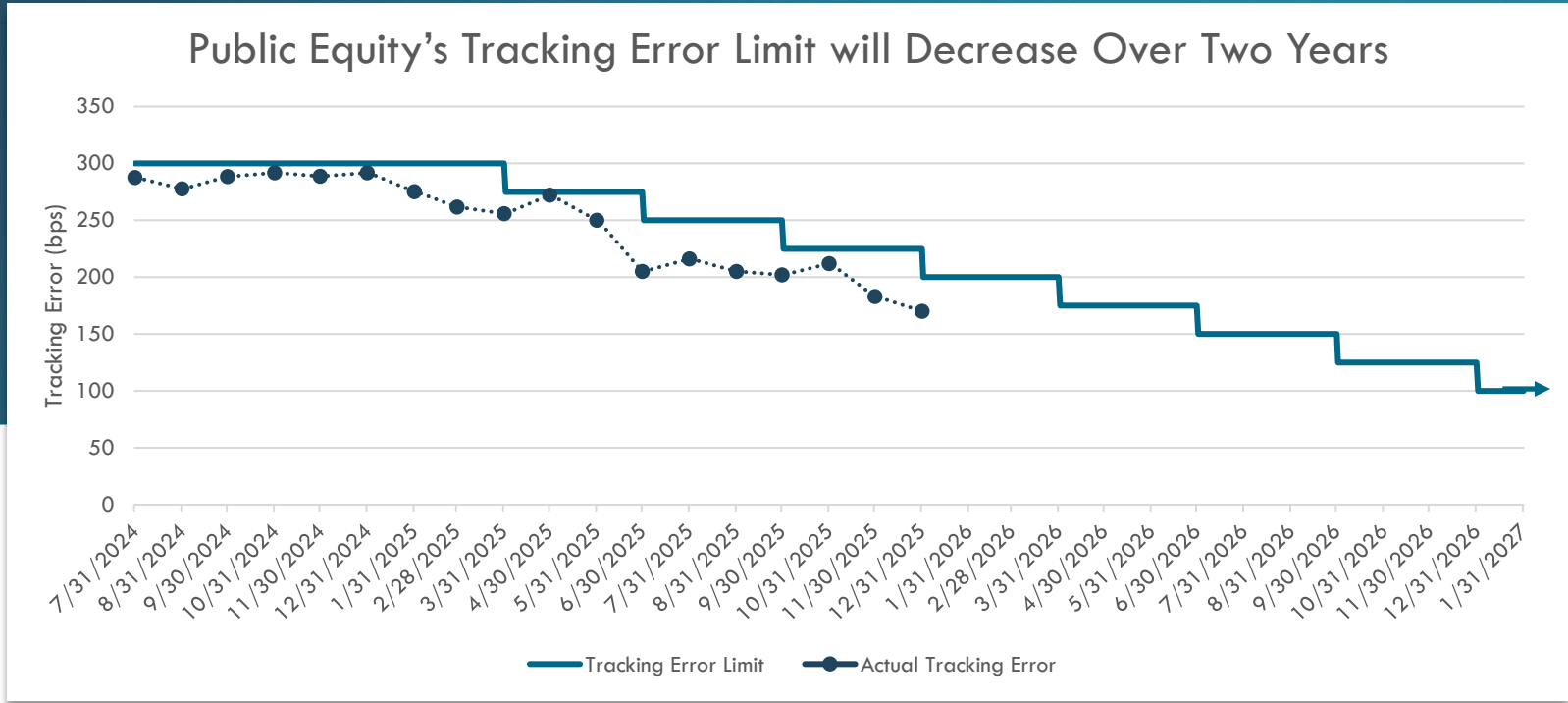


Developed vs Emerging

EM outperformed DM.

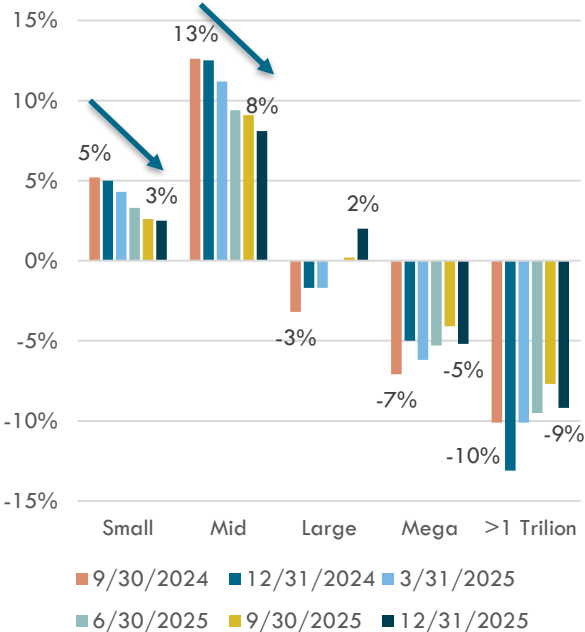


Public Equity Tracking Error

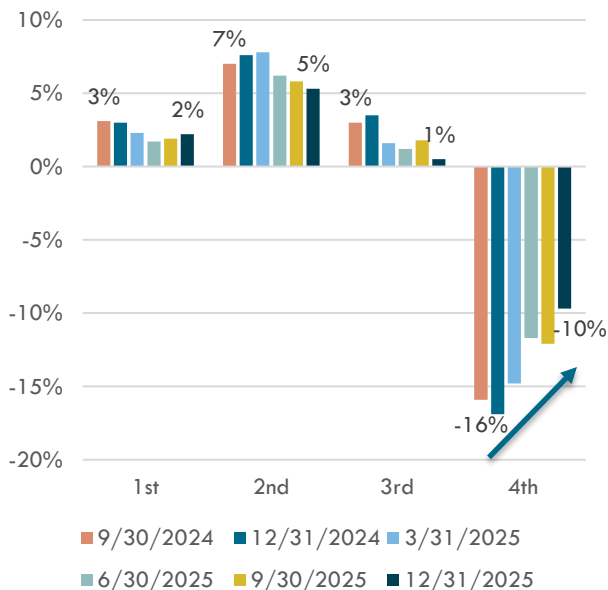


Positioning Trending Closer to Benchmark

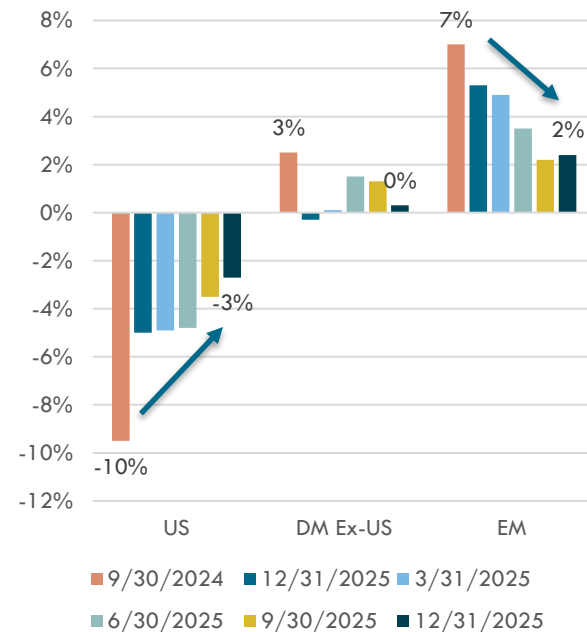
Active Market Cap Positioning (%MV)



Active Value vs Growth Positioning by Price/Earnings Quartile (%MV)

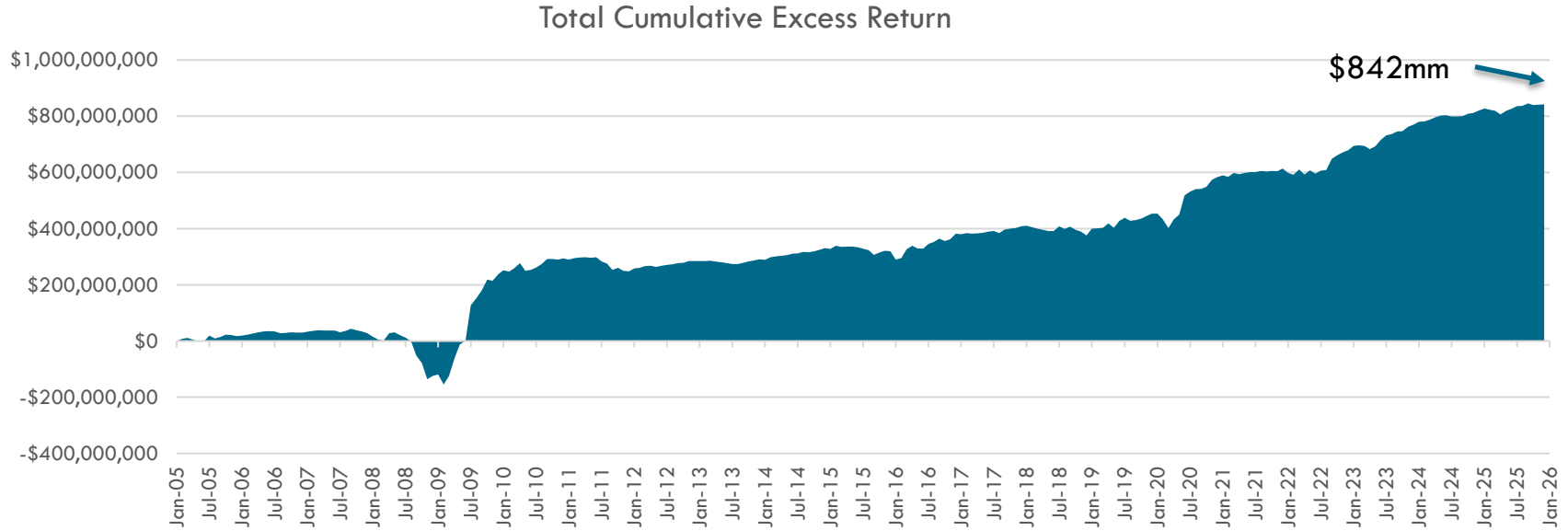


Active US, DM, and EM Positioning (%MV)



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Fixed Income Dollars Added over Benchmark



Internal Fixed Income team has beaten its primary benchmark every year since 2013.

Fixed Income Returns

	FY26 Q2	1yr	3yr	5yr
Fixed Income Plus (\$18,004mm)	0.96%	6.99%	5.96%	0.76%
<i>Custom Index</i>	0.96%	6.75%	5.53%	0.42%
US Aggregate (\$5,100mm)	1.08%	7.55%	5.22%	0.03%
<i>Bloomberg US Aggregate Bond Index</i>	1.10%	7.30%	4.66%	-0.36%
US Corporate (\$4,911mm)	0.72%	7.94%	6.60%	0.37%
<i>Bloomberg Investment Grade Corporate Index</i>	0.84%	7.77%	6.10%	-0.09%
High Yield (\$2,166mm)	1.54%	9.06%	9.60%	4.61%
<i>Bloomberg Corporate High Yield BB (Ba) Index</i>	1.51%	9.02%	8.95%	3.88%
Non-US Rates (\$2,192mm)	0.42%	2.08%	4.84%	0.26%
<i>Bloomberg Global Treasury ex-US (USDH) Index</i>	0.35%	2.03%	4.71%	0.28%
Securitized (\$1,800mm)	1.71%	8.46%	4.91%	N/A
<i>Bloomberg US Securitized Index</i>	1.68%	8.49%	4.97%	0.22%
TIPS (\$863mm)	0.17%	7.20%	4.47%	1.47%
<i>Bloomberg US Treasury: US TIPS Index</i>	0.13%	7.01%	4.23%	1.12%
Cash (\$962mm)	1.02%	4.40%	4.99%	3.29%
<i>90 Day T-Bills Index</i>	0.97%	4.18%	4.81%	3.17%

As of 12/31/2025

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Fixed Income FY26 Q2 Performance

Portfolio	Portfolio Weights	Portfolio Returns	Benchmark Returns	Portfolio		Total Return Contribution
				Allocation Excess Contribution	Portfolio Return Excess Allocation	
US Aggregate	28.3%	1.08%	1.10%	0.00%	-0.01%	-0.01%
US Corporate	27.3%	0.72%	0.84%	0.00%	-0.03%	-0.03%
High Yield	12.0%	1.54%	1.51%	0.01%	0.00%	0.01%
Securitized	10.0%	1.71%	1.68%	0.00%	0.00%	0.00%
Non-US Rates	12.2%	0.42%	0.35%	0.02%	0.01%	0.03%
TIPS	4.8%	0.17%	0.13%	0.00%	0.00%	0.00%
Cash	5.4%	1.02%	0.97%	0.00%	0.00%	0.00%
Total		0.96%	0.96%	0.03%	-0.03%	0.00%

Fixed Income Overview

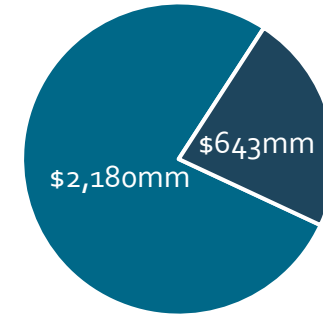
	Portfolio		Benchmark		Active		Alloc Change
	%	Market Value	%	Market Value	%	Market Value	FY25 Q4E to FY26 Q2E
US Aggregate	28.3%	\$ 5,099,795,319	27.5%	\$ 4,951,138,460	0.8%	\$ 148,656,859	0.3%
US Corporate	27.3%	\$ 4,911,010,113	27.5%	\$ 4,951,138,460	-0.2%	\$ (40,128,347)	-0.6%
High Yield	12.0%	\$ 2,166,143,143	10.0%	\$ 1,800,413,986	2.0%	\$ 365,729,158	1.3%
Securitized	10.0%	\$ 1,800,374,167	10.0%	\$ 1,800,413,986	0.0%	\$ (39,819)	0.1%
Non-US Rates	12.2%	\$ 2,191,520,392	15.0%	\$ 2,700,620,978	-2.8%	\$ (509,100,586)	-1.1%
TIPS	4.8%	\$ 862,653,400	5.0%	\$ 900,206,993	-0.2%	\$ (37,553,593)	-0.2%
Cash	5.3%	\$ 961,592,377	5.0%	\$ 900,206,993	0.3%	\$ 61,385,384	0.2%

	FY26 Q2 1 Year		Spread (bps)			Change in Spread (bps)				
	FY26 Q2	1 Year	12/31/2025	11/30/2025	6/30/2025	12/31/2024	12/31/2023	12/31/2022	12/31/2021	
US Aggregate	1.08%	7.55%	27	-3	-5	-7	-15	-24	-9	
US Corporate	0.72%	7.94%	78	-2	-5	-2	-21	-52	-14	
High Yield	1.54%	9.06%	163	4	-5	-16	-38	-135	-30	
Securitized	1.71%	8.46%	11	-1	-2	-6	-8	-10	-5	
Non-US Rates	0.42%	2.08%	25	-7	-15	-20	-26	-31	-9	
TIPS	0.17%	7.20%	52	-3	-5	8	-16	-24	14	
Cash	1.02%	4.40%	22	-7	-15	-21	-25	-29	-9	
			CMBS	75	-1	-9	-5	-51	-45	7

Cash Management Overview

\$2.823 Billion Cash at Q2E

- Internal Cash (\$2,180mm)
 - Internally managed
 - Short-dated bills, treasuries, commercial paper, repo, and asset-backed securities
 - Most assets held to maturity
- Operational Cash (\$643mm)
 - Invested in overnight STIF (short-term investment fund)
 - 100% of portfolio is immediately liquid
- Liquidity enables the Fund to meet operational needs, capital calls, and appropriations to the State.



■ Internal Cash ■ Operational Cash

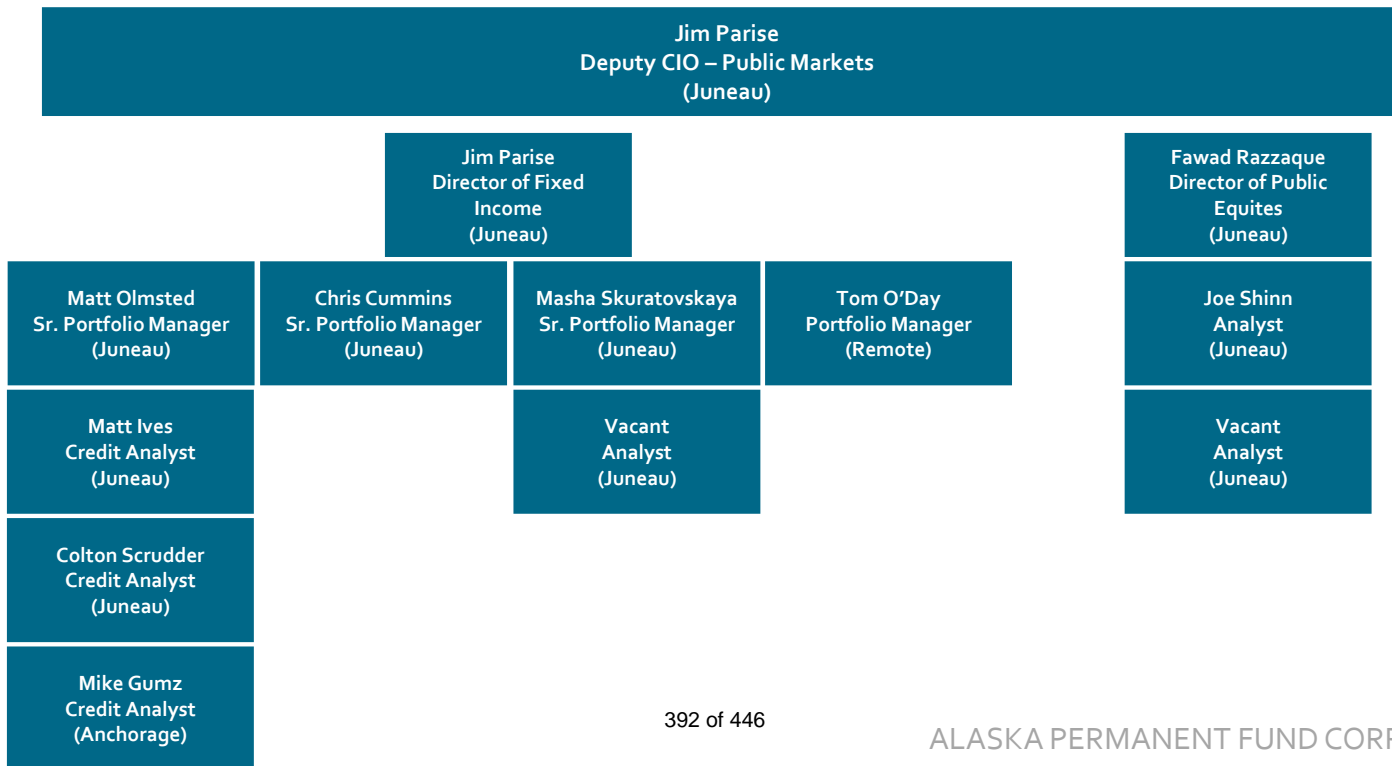
FY26 Q2 Transfers

- \$690mm transferred to State
- \$104mm DNR Royalties received
- \$949mm net positive cash flow from private markets



Appendix

Public Markets – Overview



Public Equity – Strategy Summary

Fawad Razzaque
Director of Public
Equities
(Juneau)

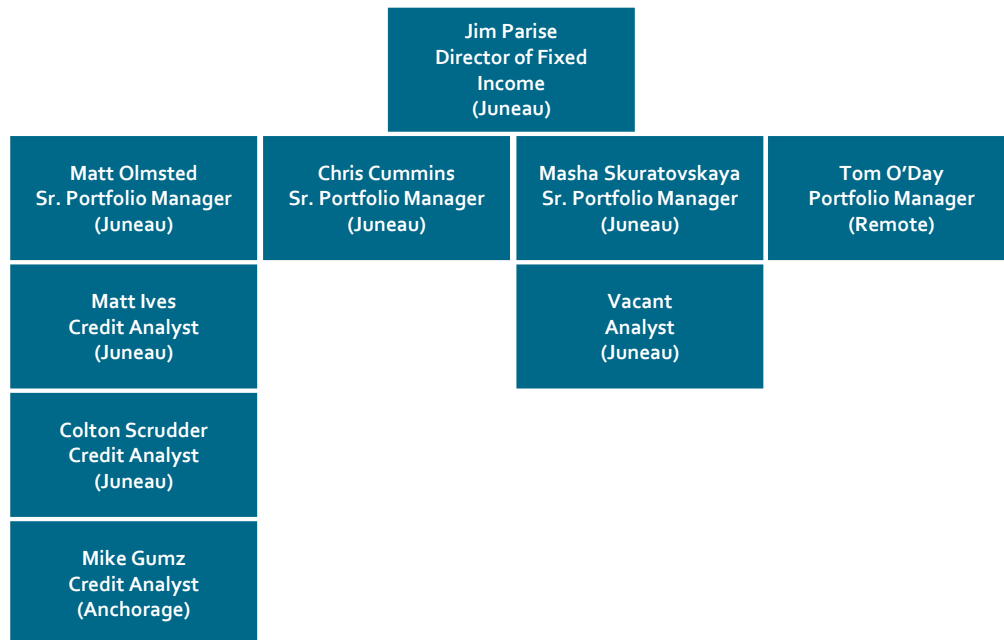
Joe Shinn
Analyst
(Juneau)

Vacant
Analyst
(Juneau)

- Current team includes 3 professionals (1 Vacancy)
- \$28.9 billion portfolio
- 98% of Portfolio is outside managers
- 2% of Portfolio is managed in-house across various strategies

- Current Strategy
 - Long-standing Value and Country tilt toward EM
 - Internal accounts are factor-based and/or best ideas.
 - Outside managers historically have add ~40 bps/yr in outperformance.
- Future Strategy
 - Reduce tracking error closer to industry standard
 - Tracking error reduced over time to allow for tilts to manifest
 - Eliminate internally managed portfolio to focus on outside managers
 - Align overall benchmark to match mandate and portfolio structure

Fixed Income – Strategy Summary



- Current Strategy
 - 100% internally managed across seven portfolios
 - Relative value and reversion to the mean are primary strategies
- Future Strategy
 - Reduce tracking error closer to industry standard
 - Recruit analyst for Global Rates Portfolio



SUBJECT: APFC Fixed Income
Asset Class Update

ACTION:

DATE: February 24, 2026

INFORMATION: X

BACKGROUND:

The Public Markets presentation outlines the Structured Product portfolio within the Fixed Income asset class.

STATUS:

At this meeting, Senior Portfolio Manager Tom O'Day will present the core components of APFC's Structured Product strategy.



ALASKA PERMANENT
FUND CORPORATION

Structured Product

February 24th, 2026

What is Structured Product

- Structured Product consists of bonds backed by specific pools of assets, whereas corporate and government bonds represent unsecured promises to pay.
- The primary risk of Structured Product is driven by the performance and value of the underlying collateral, rather than the issuer's balance sheet.
- APFC invests in Structured Product for steady income, liquidity, and diversification.

Structured Product Asset Classes

Mortgage-Backed Securities (MBS)

- Bonds backed by pools of residential home mortgages, structured and guaranteed by government agencies.
- Primary risk is cash-flow timing uncertainty, driven by borrowers' ability to prepay or refinance.
- Agency backing (Fannie Mae, Freddie Mac, Ginnie Mae) largely eliminates credit risk.

Asset-Backed Securities (ABS)

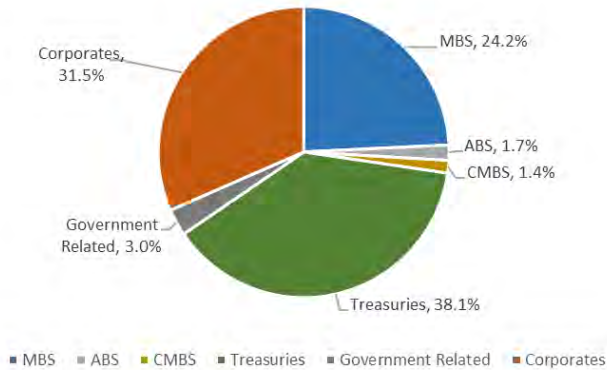
- Bonds backed by pools of loans or leases on various collateral types (auto loans, equipment, credit cards, etc.).
- Primary risks are borrower payment performance and collateral weakening over time.
- Risk is mitigated by the underlying collateral support and deal structure (seniority/credit enhancement).

Commercial Mortgage-Backed Securities (CMBS)

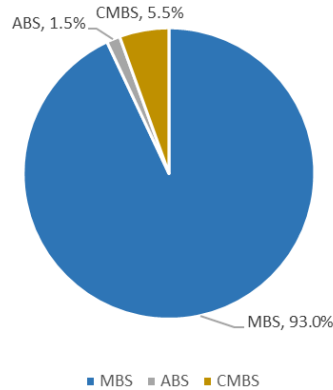
- Bonds backed by loans on commercial properties (office, retail, hotels, industrial, multifamily, etc.).
- Primary risks are property cash-flow stability (rent/tenants), collateral value, and refinancing risk at loan maturity.
- Risk is mitigated by the underlying property acting as collateral and deal structure (seniority/credit enhancement).

Structured Product Exposure

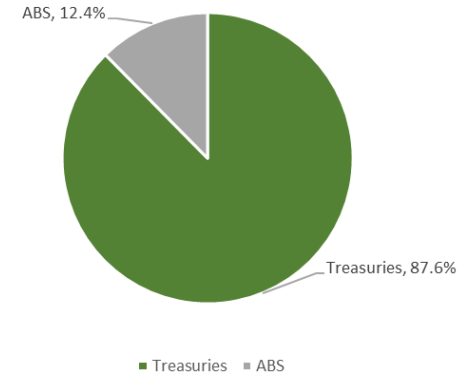
US Aggregate Portfolio
\$5.1 Billion



Structured Product Portfolio
\$1.8 Billion



Cash Portfolios
\$3.8 Billion



The background of the slide is a solid teal color. Overlaid on this background is a close-up photograph of a pine branch with several clusters of small, light-colored pine cones. The image is semi-transparent, allowing the teal background to show through.

Mortgage-Backed Securities

What is a Mortgage

- **What it is** – A loan to buy a house secured by the property.
- **Structure** – The most common mortgage structure is a 30-year loan with monthly payments that include interest and principal, where the borrower can prepay at any time.
- **Underwriting** – The lender reviews the borrower's finances and FICO score, the loan size relative to the home's value, and other key risk factors.
- **Interest Rate** – If the loan is approved, the lender sets the interest rate based on the loan's risk and prevailing government interest rates.



Mortgage Securitization Process

- **Standards set** – Fannie Mae, Freddie Mac, and Ginnie Mae set conforming loan limits and underwriting rules.
- **Loans Purchased** – Banks and servicers sell loans that meet these standards to the government agencies.
- **Specified Pools Created** – The agencies pool the individual mortgages into mortgage-backed securities and, for a fee, guarantee the loans.



Prepayment Risk

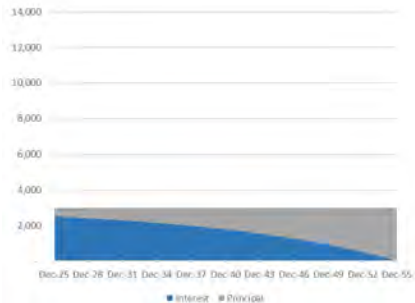
- **Payment Timing** – Mortgage borrowers can fully or partially prepay their loans at anytime, so the timing of cash flows is uncertain.
- **CPR (Conditional Prepayment Rate)** – The annualized percent of the remaining mortgage balance expected to prepay early over the next year.
- **Investor Compensation** – Mortgage-backed securities typically trade at a discount to treasuries to compensate investors for taking this cash-flow timing risk.

Loan Size	1,000,000
Coupon	6.50%
Term	30 Years

Market Interest Rate	Loan Value
3.50%	\$1,551,761
4.00%	\$1,432,301
4.50%	\$1,325,778
5.00%	\$1,230,587
5.50%	\$1,145,337
6.00%	\$1,068,824
6.50%	\$1,000,000
7.00%	\$937,955
7.25%	\$909,223
7.50%	\$881,896
7.75%	\$855,892
8.00%	\$831,133
8.25%	\$807,546

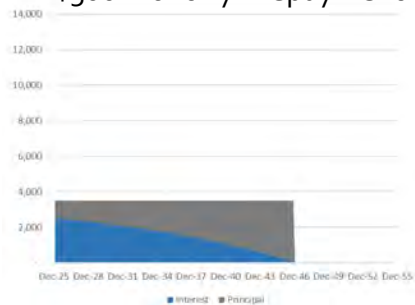
Example - \$500k, 6%, 30 Year Mortgage

No Prepayment



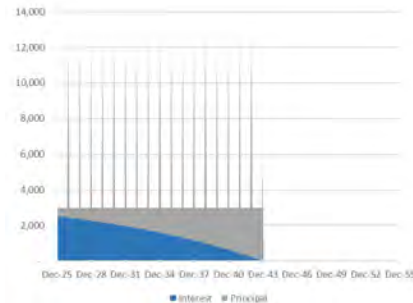
Interest Received: \$580k
Final Payment: 1/1/2056

\$500 Monthly Prepayment



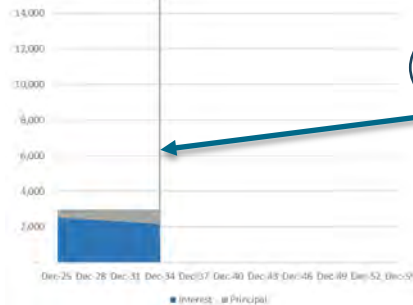
Interest Received: \$380k
Final Payment: 1/1/2047

\$10,000 Annual Prepayment



Interest Received: \$320k
Final Payment: 1/1/2044

Refinances in 8 Years



Interest Received: \$252k
Final Payment: 1/1/2035

Example – CPR Impact on Spread

100% FNCL 6.5 M		7.379(320)31		CUSIP 31418EUH1		Pool Level		As of 01/2026												
1/26	530P 31.8C 1.3B	Traits		CL, 30/360	Coupon	6.50%	Maturity	07/01/53	CA 14% 2023 99%											
3Mo	572 34.0 1.4	06/01/2023		881,559,625	LTV/HLTV	80/73	Accrual	02/01-02/28	TX 10% 2022 1%											
6Mo	497 28.2 1.1	01/25/2026		502,156,101	MAXLS	1,100,000	Next Pay	03/25/26	FL 8%											
12Mo	459 23.3 1.4	Factor		0.56962239	WAOLS	472,303		AZ	5%											
Life	583 18.7 0.9	# Loans		1,335																
Price-to-Yield																				
Settle	02/12/26	H1M	H3M	H6M	CF	CF	CF	CF												
Vary	0	31.81 CPR	33.95 CPR	28.18 CPR	0 CPR	50 CPR	60 CPR	20 CPR												
Price	103-17 ⁷ / ₈	4.8191	4.7030	5.0088	6.1843	3.7111	2.9457	5.4056												
Avg Life		2.59	2.40	2.96	17.45	1.49	1.15	4.20												
Mod Duration		2.27	2.13	2.54	9.81	1.40	1.10	3.38												
Prin Win	Date	3/26-9/52	3/26-9/52	3/26-9/52	3/26-9/52	3/26-9/52	3/26-5/51	3/26-9/52												
I Spread		119	109	136	149	17	-57	164												
Jan26	Dec	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	GOVT(I)	6M	1Y	2Y	3Y	5Y	7Y	10Y	30Y
530P	574	613	404	398	415	420	389	586	412	189	378	13:13	3.64	3.50	3.58	3.65	3.84	4.04	4.25	4.87
31.8C	34.5	35.5	22.6	21.5	21.6	21.0	18.7	27.0	18.1	7.9	15.1	Disc	30/360	2Y	99-27	3Y	99-18 ¹ / ₂			

Market Price

Spread

CPR Shocks

Specified Pools – Prepayment Protection

- **Low Loan Balance** – Smaller mortgages tend to prepay more slowly when they are in-the-money because closing costs are a bigger hurdle and it often takes a larger rate drop to make refinancing worthwhile.
- **Low FICO Score** – Borrowers with lower FICO scores often have fewer refinance options and may face higher rates, which can slow prepayments.
- **Geography** – Prepayment behavior varies by region due to local dynamics. For example, New York charges a mortgage recording tax that makes refinancing more costly and can reduce prepayments.
- **Age of Loan (Burnout)** – Loans that have been in-the-money for an extended period without refinancing tend to be less rate-sensitive than loans that are newly in-the-money.

Prepayment Models

- Models use past prepayment behavior and bond features to project cash flows under many interest-rate scenarios and estimate the option-adjusted spread.
- OAS models rely on many assumptions, so different models can produce different results.
- APFC has access to models provided by BlackRock, JP Morgan, and Bloomberg

Example Model Output

	Bond A	Bond B	Difference
Coupon	6.5	6.5	0
Price	103-177	103-177	0
Projected CPR	23	35	-12
OAS Difference Breakdown			
Loan Size	241,933	376,147	21
Coupon	6.97	7.38	10
FICO	765	738	-13
Loan Age	29	31	-1
% Second Home	0%	7%	-4
Geography	GA 41%	CA 14%	3
OAS	75	60	15

Portfolio Positioning and Modeling

- APFC uses BlackRock Aladdin, a market-leading mortgage cash flow analytics platform built and maintained by BlackRock to manage our risk relative to the benchmark.
- We continuously monitor our exposure to each coupon and to each story within each coupon.
- We can respond quickly to market dislocations, applying the same disciplined mean-reversion framework used across APFC's corporate portfolios.

Security Description 1	Market Value %			OAS		
	Portfolio	Benchmark	Active	Portfolio	Benchmark	Active
Entire Portfolio - Structured	100.0%	100.0%	0.0%	36	31	6
> Cash Equivalents	0.5%	0.1%	0.4%	-7	42	-50
> Securitized	99.5%	99.9%	-0.4%	37	31	6
> MBS	92.9%	92.8%	-0.1%	29	28	1
> Hybrids						
> CMOs	0.3%	0.1%	0.3%	49	40	-40
> Conventional 15 YR	4.5%	4.3%	0.2%	18	14	4
> Conventional 20 YR	2.0%	2.3%	-0.3%	21	25	-4
> Conventional 30 YR	61.5%	61.8%	-0.3%	29	27	2
> Coupon <-1.5%	1.6%	1.6%	-0.0%	35	38	-3
> Coupon 2.0%	12.9%	13.2%	-0.3%	32	27	5
> Coupon 2.5%	9.9%	10.1%	-0.2%	29	27	2
> Coupon 3.0%	5.9%	6.0%	-0.0%	28	24	4
> Coupon 3.5%	4.4%	4.4%	0.0%	15	17	-2
> Coupon 4.0%	3.8%	3.8%	-0.0%	19	22	-3
> Coupon 4.5%	3.0%	2.9%	0.1%	17	20	-3
> Coupon 5.0%	4.5%	4.3%	0.2%	21	22	-0
> Coupon 5.5%	4.6%	4.5%	0.2%	31	29	2
> Coupon 6.0%	6.3%	6.1%	0.2%	35	37	-2
> AHP	0.1%	0.1%	-0.1%	60	60	0
> Cheapest/TBA	1.6%	2.8%	-1.1%	35	35	-0
> FICO	0.3%	0.3%	-0.3%	44	44	-44
> Florida	0.3%	0.3%	0.0%	30	33	-3
> Investor	0.2%	0.2%	-0.2%	45	45	-45
> LB 110K	0.1%	0.1%	-0.1%	48	48	-48
> LB 125K	0.4%	0.0%	0.4%	40	48	-8
> LB 150K		0.1%	-0.1%		46	-46
> LB 175K	1.3%	0.2%	1.2%	39	42	-3
> LB 200K	0.7%	0.2%	0.5%	34	39	-5
> LB 225K	1.1%	0.2%	0.8%	37	36	1
> LB 250K	0.5%	0.3%	0.2%	25	33	-8
> LB 275K	0.1%	0.2%	-0.1%	35	33	2
> LB 300K	0.2%	0.2%	-0.2%	37	37	-37
> LB 325K		0.1%	-0.1%		35	-35
> LB 350K	0.1%	-0.1%	-0.1%	24	24	-24
> LB 85k		0.0%	-0.0%		51	-51
> LTV High	0.1%	0.4%	-0.3%	36	40	-4
> New York	0.1%	0.2%	-0.1%	25	34	-9
> Texas	0.1%	-0.1%	0.2%	43	43	-43
> Outgun 4.5%	2.6%	2.5%	0.1%	40	41	8
> Outgun 7.0%	0.5%	-0.5%	1.0%	42	42	-42
> Outgun 7.5%		0.0%	-0.0%		42	-42
> GNMA 30 YR	22.2%	22.2%	-0.0%	33	34	-1
> CMBS	5.5%	5.5%	-0.0%	135	73	62
> ABS	1.5%	1.4%	-0.1%	154	49	108
> Other	0.0%	0.0%	-0.0%	54	54	-54
> Derivatives	0.0%	0.0%	0.0%	0	0	0

Sourcing New Bonds

- We review dealer inventories to identify bonds that offer value.
- Each bond is evaluated using our models to project cash flows, prepayment behavior, and spread.
- Similar bonds are compared side-by-side across dealers to identify the most attractive option on a risk-adjusted basis.
- This disciplined and repeatable process allows us to selectively add bonds that offer value while maintaining the portfolio's overall risk profile.

Dealer	Pool Story	Coupon	Face Value	Ask Price	1 Month CPR	3 Month CPR	6 Month CPR	Aladdin OAS	Aladdin Yield	JPM OAS	JPM Yield
JPM	FICO700	6.5	17,677,471	103-23	0.42	52.18	51.18	58	4.64	75	5.09
BAML	FICO700	6.5	9,816,783	104-06	46.36	19.00	32.52	63	4.85	72	5.16
JPM	FL	6.5	117,594,952	104-19	22.55	27.73	25.08	54	4.74	46	5.12
JPM	FL	6.5	108,092,014	104-22	11.45	5.94	9.10	66	4.95	52	5.20
BNP	FL	6.5	98,241,308	104-18	21.04	25.35	25.39	58	4.77	48	5.05
JPM	LB175	6.5	8,210,534	104-20	24.42	17.03	26.30	76	5.02	79	5.27
BNP	LB200	6.5	32,197,430	105-04+	26.48	24.20	25.33	47	4.65	55	5.02
MZHO	LB200	6.5	24,912,009	105-11+	0.63	5.75	13.15	61	4.87	61	5.14
CG	LB200	6.5	20,800,000	104-23+	33.05	19.32	24.12	64	4.86	72	5.22
MZHO	LB200	6.5	15,849,151	105-13	13.98	14.22	12.95	61	4.91	61	5.19
MZHO	LB225	6.5	41,304,190	105-06	12.81	20.16	15.86	62	4.89	62	5.16
JPM	LB225	6.5	27,493,465	104-22	24.41	22.77	23.62	45	4.60	56	5.05
CG	LB225	6.5	26,800,000	104-18+	21.07	20.23	26.36	63	4.84	66	5.13
CG	LB225	6.5	20,000,000	104-21+	32.23	25.44	23.31	51	4.69	61	5.11
BARC	LB225	6.5	17,952,614	104-11	14.45	17.54	24.67	67	4.89	71	5.20
MZHO	LB225	6.5	17,405,106	105-09	15.67	15.70	15.01	61	4.87	62	5.16
MZHO	LB225	6.5	11,601,058	104-26+	18.22	25.59	21.81	48	4.67	51	5.00
MZHO	LB225	6.5	7,513,267	104-12	31.35	29.66	20.84	59	4.73	68	5.19
BSNT	LB225	6.5	6,203,713	104-04	8.81	3.86	20.07	57	4.76	64	5.13
MS	LB225	6.5	5,535,771	104-04+	0.27	0.17	0.17	74	4.90	74	5.21
BAML	NY	6.5	10,016,877	105-25	0.04	0.04	0.04	66	5.11	47	5.12
MZHO	NY	6.5	4,926,867	106-17	13.30	23.24	22.47	59	5.18	40	5.17
BAML	NY	6.5	4,343,557	106-02	0.00	0.00	0.03	34	4.69	33	4.97
BAML	NY	6.5	2,595,716	106-02	0.43	0.26	0.29	55	4.98	27	4.89
BMUR	NY	6.5	1,449,805	103-31	0.37	0.36	0.32	107	5.53	96	5.52
PNC	NY	6.5	1,109,335	106-04	0.12	4.04	2.51	67	5.24	60	5.38
MS	W2DMULTI	6.5	2,036,490	103-17 3/4	45.15	30.58	28.32	67	4.88	50	5.07
MZHO	W2DMULTI	6.5	1,752,719	103-15+	50.37	43.13	34.71	49	4.59	41	4.98

A teal-colored background featuring a close-up, slightly blurred image of a pine branch with needles and a small, textured pine cone or bud. The text 'ABS & CMBS' is centered in white.

ABS & CMBS

Structured Product Asset Classes

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- Primary risk is cash-flow timing uncertainty, driven by borrowers' ability to prepay or refinance.
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- Primary risks are borrower payment performance and collateral weakening over time.
- Risk is mitigated by the underlying collateral support and deal structure (seniority/credit enhancement).

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- Bonds backed by loans on commercial properties (office, retail, hotels, industrial, multifamily, etc.).
- Primary risks are property cash-flow stability (rent/tenants), collateral value, and refinancing risk at loan maturity.
- Risk is mitigated by the underlying property acting as collateral and deal structure (seniority/credit enhancement).

ABS Example – Auto Loan

- **What it is** – A bond backed by pools of auto loans where the vehicles are the collateral.
- **Underwriting** – Lenders assess borrower FICO scores, loan-to-value ratios, and income to underwrite the loan; interest rates are set at origination and, for subprime borrowers, can often exceed 20%.
- **Structure** – Loans are typically around five years, which limits prepayment risk; because there is no government or agency backing, the primary risk is borrower default, which is mitigated through tranching and credit enhancement.



Auto ABS Deal Structure

Auto Loan
Receivables
\$500 Million

<u>Class</u>	<u>Size</u>	<u>Rating</u>	<u>Credit Support</u>	<u>Duration</u>	<u>Coupon</u>
A1	\$40mm	A1	92%	0.20 Yrs	4.50%
A2	\$150mm	AAA	42%	0.60 Yrs	4.75%
A3	\$100mm	AAA	42%	1.55 Yrs	4.75%
B	\$60mm	AA	30%	2.40 Yrs	4.90%
C	\$50mm	A+	20%	3.00 Yrs	5.05%
D	\$55mm	BBB	9%	3.75 Yrs	5.50%
E	\$25mm	BB	4%	4.40 Yrs	7.05%
Equity	\$20mm	Not Rated	N/A		N/A

413 of 446

Payment Priority

Loss Allocation



Collateral Look Through

Loan ID	Current Balance	Original Balance	APR	Original LTV	Amortized LTV	Credit Score	Original Amortization Term	Geogra...	Vehicle Manufacturer	Vehicle Model	Vehicle Model Year	Vintage	Account Status
	380,976,194.96	444,997,862.02	24.0880	116.79	103.90	582	>20	72 CA 10.5				2024 97.7	C 71.5
001) 27569021	68,513.71	70,216.41	22.0400	139.24	135.87	556		77 CA	DODGE	Ram 1500	2024	2024	6
002) 27475860	59,671.05	67,227.47	20.4900	118.99	105.61	591		73 TX	MERCEDES-BENZ	Sprinter	2020	2024	C
003) 27305581	54,763.78	63,807.10	21.0000	122.82	105.42	607		72 AL	JEEP	Wagoneer	2022	2024	C
004) 27516751	62,007.04	63,653.03	21.0100	111.09	108.21	541		75 IL	CHEVROLET TRUCKS	Tahoe	2022	2024	6
005) 27457698	56,792.21	61,924.18	23.5300	119.90	109.97			61 CA	FORD	F250 Super Duty	2021	2024	6
006) 27534501	57,734.63	61,744.91	24.9000	120.71	112.87	519		74 WI	JEEP	Wagoneer	2022	2024	C
007) 27608205	58,339.48	61,320.00	23.1200	140.00	133.20	642		72 OH	DODGE	Ram 3500	2020	2024	6
008) 27452970	57,743.74	58,710.50	22.0900	136.06	133.82	642		74 AL	CHEVROLET TRUCKS	Tahoe	2021	2024	6
009) 27480867	49,709.12	58,152.00	20.2100	131.94	112.78	692		72 TX	FORD	F250 Super Duty	2019	2024	C
010) 27150043	51,300.91	57,484.18	20.5700	116.25	103.74	575		77 NJ	BMW	5 Series	2023	2024	C
011) 27498530	53,147.39	57,164.29	21.7400	117.38	109.13	602		77 VA	MERCEDES-BENZ	GLE	2022	2024	C
012) 27518859	48,684.25	56,901.04	20.6000	127.44	109.04	603		72 TX	FORD	F350	2020	2024	C
013) 27546572	45,873.93	56,777.48	20.0400	139.03	112.33	563		75 GA	CADILLAC	XT4	2024	2024	C
014) 27563070	51,834.81	56,706.61	20.4900	119.89	109.59	656		75 TX	GMC	Yukon	2021	2024	3
015) 27470212	49,985.55	56,449.12	21.4500	139.68	123.69	645		72 NM	CHEVROLET TRUCKS	Suburban	2021	2024	C
016) 27495546	47,821.77	56,167.11	20.9400	118.62	101.00	681		72 IL	JEEP	Wagoneer	2022	2024	C
017) 27514852	47,956.36	56,085.82	21.2400	123.54	105.63	685		72 TX	FORD	F350	2017	2024	C
018) 27284505	49,249.48	56,053.20	21.9600	116.99	102.79	637		74 CA	MERCEDES-BENZ	GLS	2020	2024	C
019) 27350127	49,320.39	55,949.70	20.2300	129.77	114.40	489		75 NJ	DODGE TRUCKS	Durango	2023	2024	C
020) 27555466	54,956.90	55,530.14	21.5000	119.87	118.63	544		77 IN	JEEP	Grand Cherokee L	2023	2024	6
021) 27484068	51,976.16	54,835.60	22.3100	123.53	117.09	673		73 CA	JEEP	Wagoneer	2022	2024	3
022) 27605374	48,671.40	54,002.16	21.0000	118.04	106.39	590		75 LA	FORD	F350	2022	2024	C
023) 27492245	52,017.68	53,899.59	22.8200	129.73	125.20	631		74 UT	DODGE COMMERCIAL	ProMaster	2023	2024	C
024) 27522610	45,086.60	52,886.44	20.3400	125.55	107.03	614		72 FL	PORSCHE	Macan	2021	2024	C
025) 27600004	48,368.12	52,715.75	20.9300	118.26	108.51	533		72 NY	CHEVROLET TRUCKS	Suburban	2020	2024	C
026) 27496562	45,039.86	52,640.85	20.0300	133.24	114.00	625		72 NM	FORD	F150	2022	2024	C
027) 27499217	45,963.04	52,552.00	23.4300	132.54	115.92	587		72 MO	CHEVROLET	Silverado 1500	2020	2024	C

CMBS Example – Conduit

- **What it is** – Bonds backed by pools of loans on multiple commercial properties (office, retail, industrial, multifamily, hotels), rather than a single building.
- **Structure** – Like ABS, CMBS use tranching and credit enhancement, but the loans are typically non-amortizing balloon loans, creating refinancing and extension risk.



Collateral Look Through

Count	Loan Name	Loan Status	Stat. Hist	LTV Curr	DSCR Curr	Largest Tenant	Ppty State	Ppty City	Tenant 2nd Largest	Tenant 3rd Largest	Tenant 4th Largest
1)	☆ Mall at Bay Plaza	Perform	CC-----...	56.90%	1.42	JC Penney	NY	The Bronx	Macy's	Zara	H&M Hennes & Maur...
2)	☆ Koreatown Plaza	Perform	CC-----...	58.30%	1.80	H Mart	CA	Los Angeles	K Golf USA	Sleek Fitness	PCB Bank
3)	☆ Westyn Village Apartments	Perform	CC-----...	66.70%	1.29	N/A	VA	Forest	N/A	N/A	N/A
4)	☆ Badger Portfolio	Perform	CC-----...	72.00%	1.35	N/A	WI	VR	N/A	N/A	N/A
5)	☆ Overture Apartments	Perform	CC-----...	64.00%	1.32	N/A	VA	Lynchburg	N/A	N/A	N/A
6)	☆ The Hub	Perform	CC-----...	60.00%	1.43	Home Depot	NY	Hempstead	Bogopa Hempstead...	Old Navy	Five Below Inc
7)	☆ 205 East 42nd Street	Perform	CC-----...	61.20%	1.75	The City University...	NY	New York	FedCap Rehabilitati...	New Visions for Pu...	United Way of New ...
8)	☆ Capital Storage Portfolio	Perform	CC-----...	62.70%	1.41	N/A	VR	VR	N/A	N/A	N/A
9)	☆ I-5 Self Storage	Perform	CC-----...	62.20%	1.32	N/A	CA	Tustin	N/A	N/A	N/A
10)	☆ Infinity Park Apartments	Perform	CC-----...	70.60%	1.66	N/A	MI	Detroit	N/A	N/A	N/A
11)	☆ Haven Park	Perform	CC-----...	69.80%	1.39	N/A	CA	San Bernardino	N/A	N/A	N/A
12)	☆ Renaissance Philadelphia Dow...	Perform	CC-----...	58.20%	2.21	N/A	PA	Philadelphia	N/A	N/A	N/A
13)	☆ Pinnacle Retail Portfolio	Perform	CC-----...	67.00%	1.46	Action Behavior Ce...	TX	VR	Cheeky Monkeys	Advance Auto Parts	Einstein Learning C...
14)	☆ Cambridge Beaches Resort an...	Perform	CC-----...	39.00%	2.87	N/A	NY	Somerset Village	N/A	N/A	N/A
15)	☆ Commerce Plaza	Perform	CC-----...	56.90%	2.29	DaVita Medical Man...	CA	Commerce	County of Los Ange...	County of Los Ange...	Hanna's House
16)	☆ International Plaza	Perform	CC-----...	42.70%	2.51	Dick's House of Sp...	FL	Tampa	RH	Zara	Crate & Barrel
17)	☆ Hilton Daytona Beach Oceanfr...	Perform	CC-----...	53.90%	2.01	N/A	FL	Daytona Beach	N/A	N/A	N/A
18)	☆ Morningside and The Bungalo...	Perform	CC-----...	65.20%	1.35	N/A	FL	VR	N/A	N/A	N/A
19)	☆ Franklin 4-Pack MHC Portfolio	Perform	CC-----...	67.20%	1.32	N/A	VR	VR	N/A	N/A	N/A
20)	☆ Blue and Celtic Apartments	Perform	CC-----...	68.70%	1.47	N/A	TX	Houston	N/A	N/A	N/A
21)	☆ The Garden City Hotel	Perform	CC-----...	61.50%	2.09	N/A	NY	Garden City	N/A	N/A	N/A
22)	☆ Huntington Park Shopping Cen...	Perform	CC-----...	54.40%	1.36	Vons (Superior Gro...	CA	Huntington Park	Pep Boys	Bella Zone	Socal Wash & Fold

Conclusion

- Structured Product is a core fixed income asset class comprised of bonds backed by pools of collateral, rather than unsecured issuer obligations.
- APFC invests in Structured Product to capture incremental spread while maintaining liquidity and enhancing diversification within the broader Fixed Income portfolio.
- Risk is actively managed through detailed collateral analysis, structural protections, and cash-flow modeling.

SUBJECT: Legislative Update

ACTION:

DATE: 2/24/2026

INFORMATION: X

We are honored to welcome the presiding officers of the 34th Alaska State Legislature:

- ***Senate President Gary Stevens***
- ***Speaker of the House Bryce Edgmon***

They will join us in recognizing the 50th Anniversary of the Alaska Permanent Fund and reaffirming our shared commitment to its long-term stewardship.

Staff is also prepared to provide an update on APFC's legislative priorities:

- Educating stakeholders to support informed policy decisions
- Securing resources to support APFC's investment management capabilities
- Forwarding Board Initiatives
 - Constitutional amendment for a single-fund endowment
 - Rules-based inflation proofing under the two-account structure
 - Executive Director recruitment and personnel record confidentiality legislation
- Monitoring and responding to legislation that impacts the Fund and the Corporation

We always welcome discussion and input from the Trustees.



SUBJECT: Digital Assets
George Zinn, APFC Investment Advisor

ACTION: _____

DATE: February 24, 2026

INFORMATION: _____ X _____

BACKGROUND:

George Zinn is under contract with APFC to act as a member of the Investment Advisory Group (IAG) for the Board of Trustees. Mr. Zinn’s presentation at this meeting is in fulfillment of the contractual requirement to annually present a topic for the Board’s consideration on best practices in the management of large institutional funds.

Collaborating with George on this presentation will be an introduction by John Skjervem with a presentation titled the Digital Asset Ecosystem followed by a presentation by Matt Jones CFA and Mike Reed with Franklin Templeton further discussing digital assets in the financial markets.

The Digital Asset Ecosystem: A Review

John D. Skjervem, CFA
February 24, 2026

The Digital Asset Ecosystem: A (Very Quick) Review

Section I: Review of September 2021 Conclusions

Section II: Assessment circa Feb 2027

The Digital Asset Ecosystem: A (Very Quick) Review

Section I: Review of September 2021 Conclusions

Review of September 2021 Conclusions

- Digital assets, and Bitcoin in particular, a) *did* realize exponential market capitalization growth and b) *did* transcend initial investment demand from individuals to now include various albeit still select institutional investors.



BTC price on 09/29/21 = 41,125

BTC price on 02/10/26 = 69,530

for an approximately 69.1%
total return or 12.8%
annualized.

Review of September 2021 Conclusions



Gold price on 09/29/21
= 1,726.4

Gold price on 02/10/26
= 5,025.7

for an approximately
191.5% total return or
27.4% annualized.

Review of September 2021 Conclusions

Digital Tokens

- *Utility Tokens*: Exchangeable for digital goods and services (e.g., Filecoin).
- *Security Tokens*: Represent an ownership interest in a tangible asset (e.g., real estate). Subject to SEC's "investment contract" Howey Test.
- *Governance Tokens*: Entitle owner to vote on policies and practices within a decentralized network or platform (e.g., the issuance of additional tokens).
- *Non-Fungible Tokens (NFTs)*: Convey unique and non-interchangeable rights to tangible assets or digital property.

Review of September 2021 Conclusions

NFTs

EVERYDAYS: THE FIRST 5000 DAYS



For illustrative purposes only, no copyright infringement intended.

- In March, 2021, Beeple's *Everydays* sold for \$69.3 million.
- In that same year, NFT trading volume rose to over \$25B, but has since crashed by 93% leaving most collections completely worthless.
- OpenSea, the largest NFT trading site, was valued at \$13.3B in January 2022 and today has an estimated market capitalization of \$223.8K (i.e., a **99.998%** collapse in value).

A Review of September 2021 Conclusions

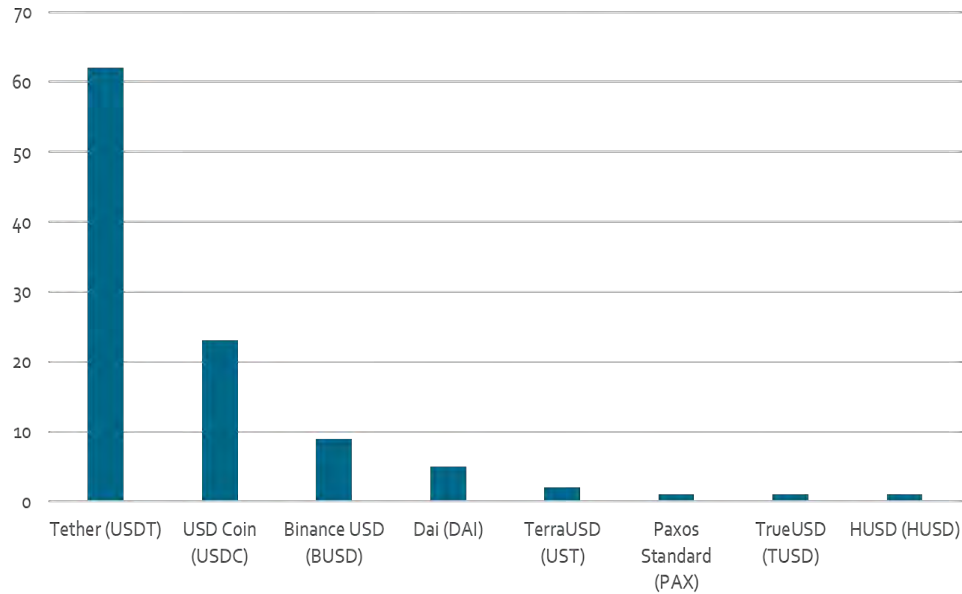
Stable Coins

More than 3x growth in USDT and USDC facilitated in large part by last year's passage of the **GENIUS Act**.

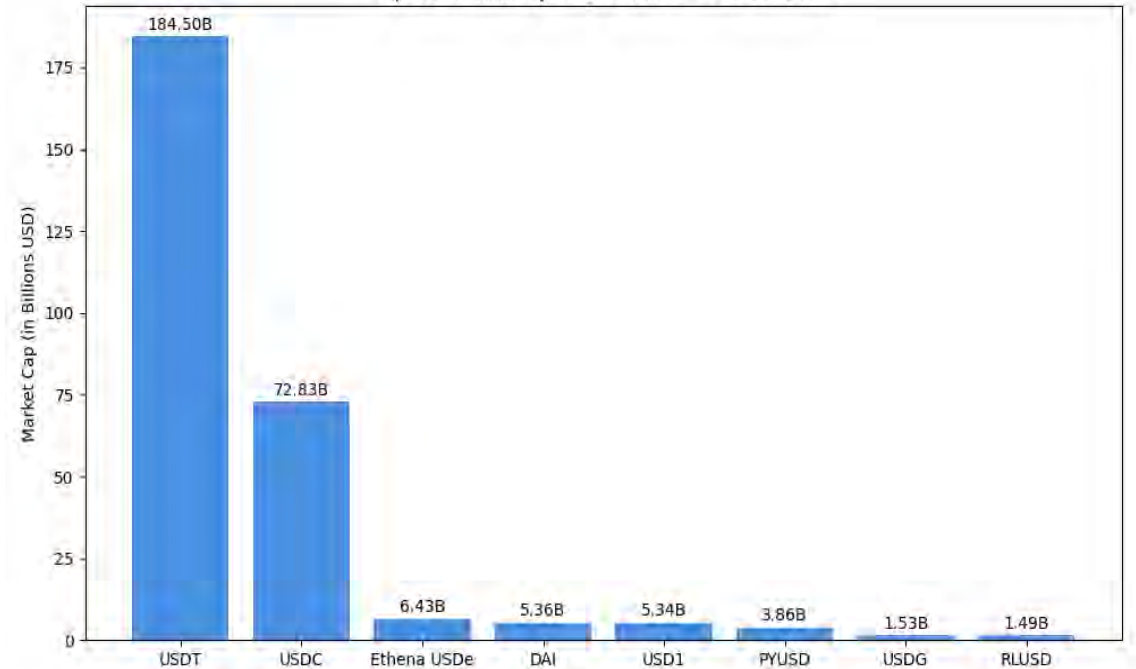
September 2021

February 2026

Top 8 US Dollar Stablecoins by Market Cap
(US \$ billions)



Top Stablecoins by Market Value — Feb 10, 2026



Review of September 2021 Conclusions

Blockchains

- Digital Ledger Technology in which transactions are assembled in blocks and **validated** to preclude the “double spending” problem.
- Following validation, the transaction block is added to the chain to update and extend an **immutable** transaction history.
- **Permissioned** (e.g., Hyperledger, R3 Corda and Quorum) and **Permissionless** (e.g., Bitcoin, Ethereum and Solana).

The Digital Asset Ecosystem: A (Very Quick) Review

Section II: Assessment circa Feb 2027

Assessment circa Feb 2027

- **Bitcoin:** same as it ever was
 - Hugely volatile
 - High beta
 - Pro cyclical
- **Stable Coins:** **GENIUS Act** unlock, utility becoming clearer
- **Tokenization:** NFTs a very predictable disaster but other tokenization use cases (e.g., financial markets) compelling
- **Blockchains:** the biggest surprise/disappointment

The Digital Asset Ecosystem: A (Very Quick) Review

Questions?



FRANKLIN
TEMPLETON

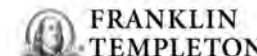
digital assets

An Introduction to Blockchain, Digital Assets & Stablecoins

APFC Board Meeting

Not FDIC Insured | No Bank Guarantee | May Lose Value

Global Financial Markets' Adoption of Blockchain Infrastructure



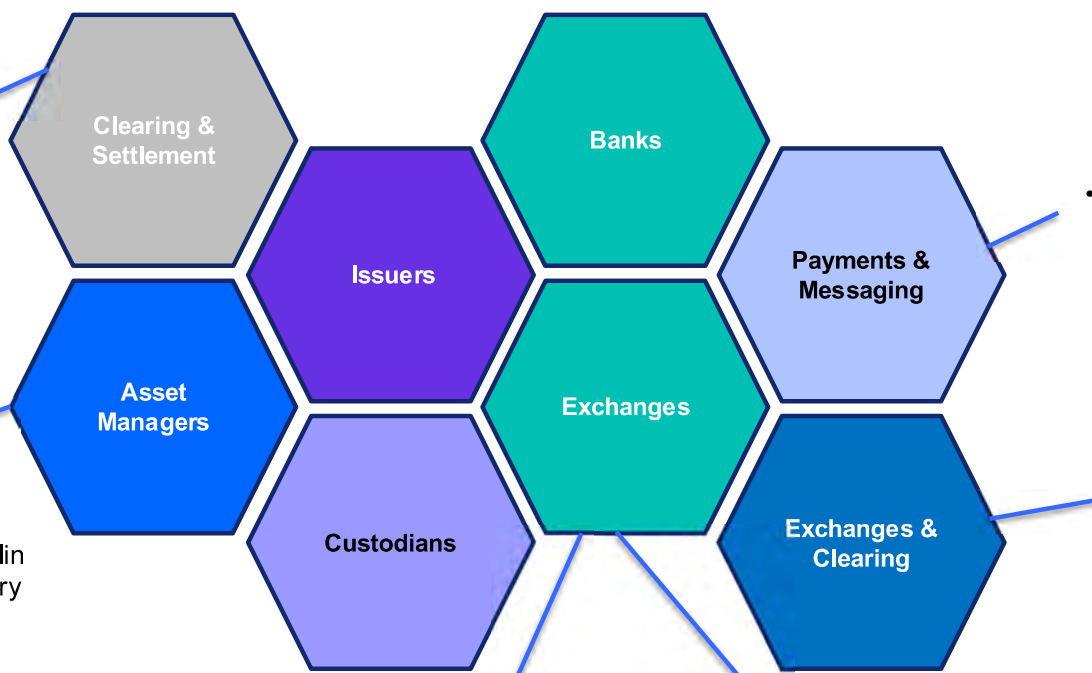
Major financial market participants have moved beyond experimentation, deploying enterprise-grade blockchain infrastructure to address long-standing frictions in global liquidity and settlement.

- **DTCC:** Following its acquisition of Securrency, the Depository Trust & Clearing Corporation (DTCC) is **embedding digital asset infrastructure** into its services to support a pilot program for tokenized securities entitlements authorized by the SEC.

Franklin Templeton: As part of its broader digital assets strategy, Franklin Templeton has developed a proprietary blockchain-integrated stack that facilitates the trading, management, and administration of token-based investments, including the world's first U.S.-registered money market fund to utilize blockchain technology.

Sources: SEC.gov, Ledgerinsights.com, BNY.com, TheIc.com, NASDAQ.com, MarketsMedia.com, SWIFT.com, JPMorgan.com

Companies referenced are for illustrative purposes and are not investment recommendations.



- **SWIFT:** In 2025, SWIFT announced its most significant technological shift in decades: the addition of a **blockchain-based shared ledger** to its core infrastructure.

- **CME Group:** CME Group announced blockchain-based tokenized cash initiatives to support **24/7 crypto futures trading**, continuous margining, and institutional collateral mobility.

- **NYSE:** On **January 19, 2026**, the **New York Stock Exchange (NYSE)**, owned by Intercontinental Exchange (ICE), revealed its plan to develop a dedicated platform for **tokenized securities**.

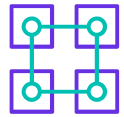
- **Nasdaq:** In 2025 the Nasdaq has filed a major proposal with the SEC to permit the trading of **tokenized securities** alongside traditional stocks.



Decoding blockchain:

The new era of trust, transparency and efficiency

What is Blockchain Technology?



Blockchain is a type of distributed ledger technology (DLT) that records transactions across multiple computers in a secure and transparent way.

Characteristics of blockchain:



Digital

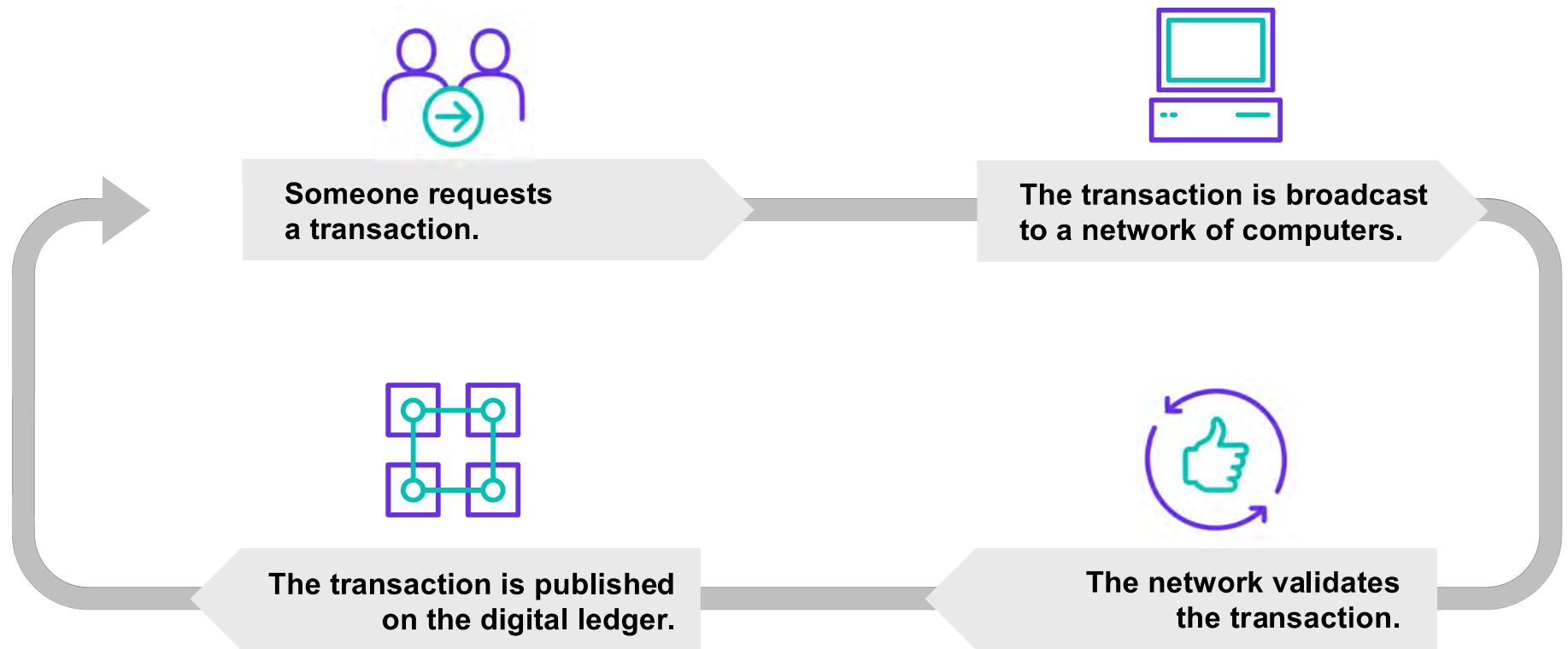


Public

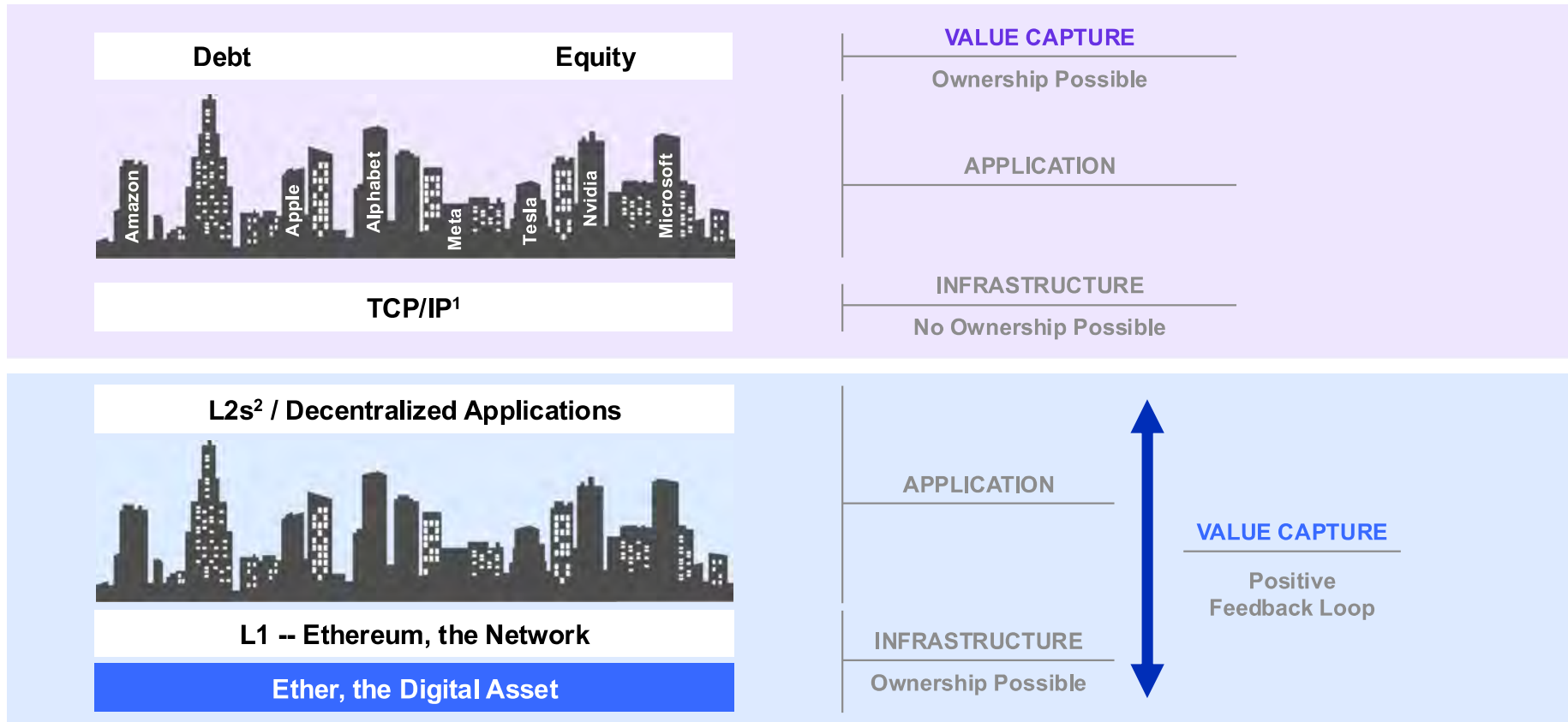


Secure

How does Blockchain Technology work?



Blockchain is a revolutionary platform for both innovation and value capture








1. TCP/IP, an open-source protocol, is a set of rules for communication that enables the creation of various applications and content, such as the internet.

2. Layer 2 blockchain (L2) is a secondary framework or protocol built on top of a Layer 1 blockchain (like Ethereum) to improve scalability, speed and cost-efficiency.

Largest Tokens

As measured by Market Capitalization

		Market Cap (Approx.)	Primary Use Case
	1. Bitcoin (BTC)	~\$1.4T	Currency/Payment
	2. Ethereum (ETH)	~\$246B	Smart Contracts/DeFi
	3. Ripple (XRP)	~\$87B	Cross-border Payments
	4. Binance (BNB)	~\$85M	Exchange Utility/Ecosystem
	5. Solana (SOL)	~\$48B	High-speed dApps/Retail

Source: CoinMarketCap as of February 10, 2026.

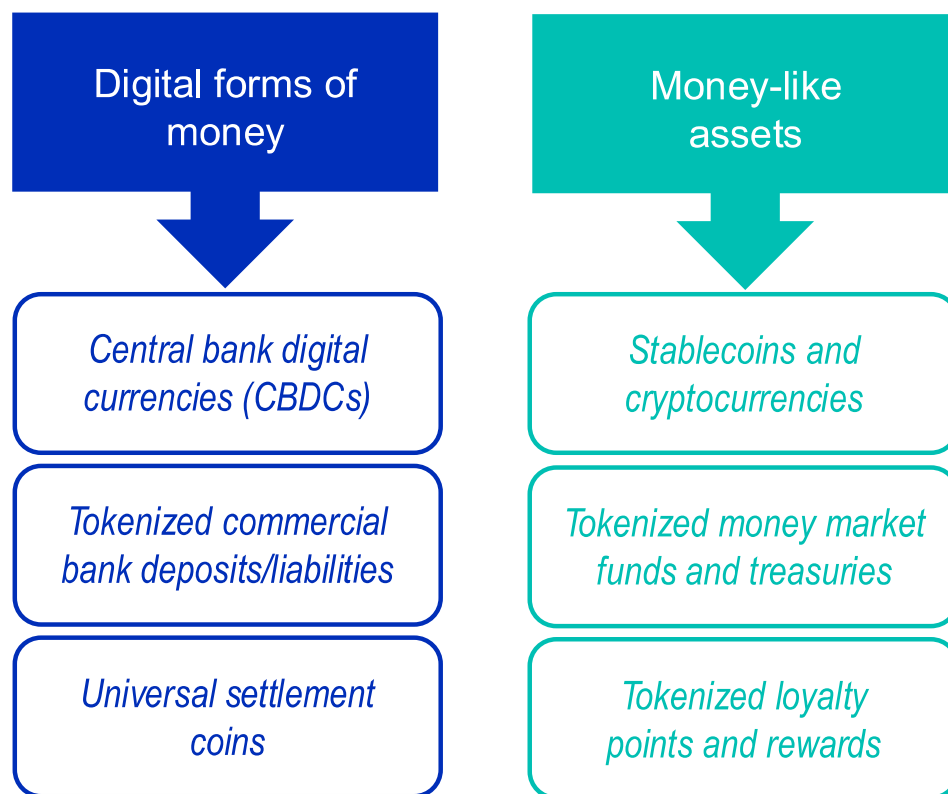


Stablecoins

Expansion of money and money-like instruments

Digitalization and tokenization are extending the forms of fiat currency, allowing for the emergence of permissionless, money-like assets.

Expanding forms of “digital money”



Stablecoin Approaches: Cash vs. Synthetic



Feature	Cash Stablecoins (USDC/USDT)	Synthetic Stablecoins ¹ (USDe)
Backing	USD/Treasuries/Cash	Not Backed by Collateral - rely on financial derivatives, mechanisms to obtain exposure
Storage	Banks/Custodians	Smart Contracts/Exchanges
Yield	~0% (issuer captures yield)	Higher yields (often 5%-20%)
Primary Risk	Regulatory or bank failure	Smart-contract failure or market stress
Transparency	Monthly/quarterly audits	Real-time on-chain data

1. A synthetic stablecoin (often called a "synthetic dollar") is a digital asset that maintains a stable value relative to a fiat currency (like the U.S. dollar) through financial engineering and on-chain derivatives rather than by holding cash or short-term cash equivalents in an account.

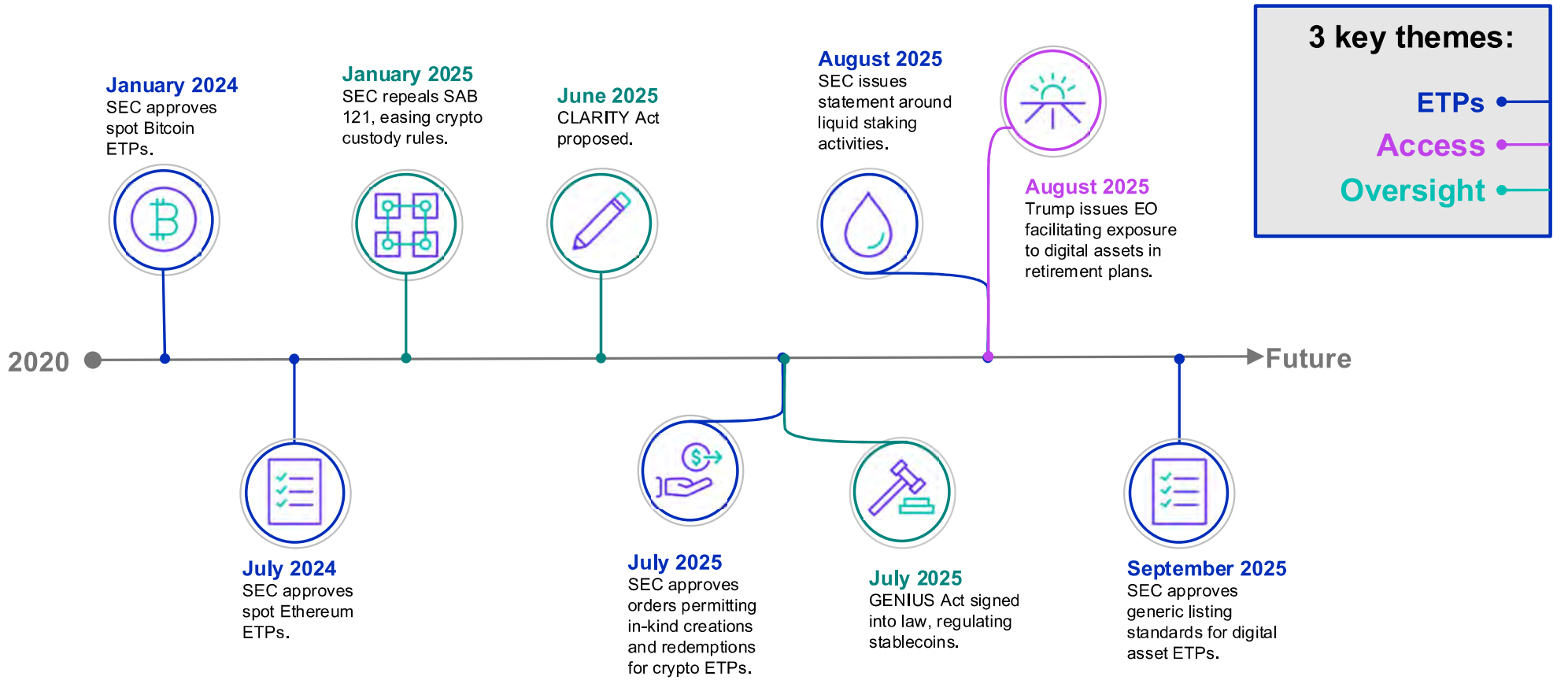


Regulation in motion:

Digital assets on Capitol Hill

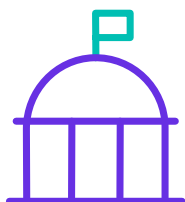
Regulation in motion

The evolution of digital assets regulation



Source: Franklin Templeton Internal Lobbyists

The U.S. Regulatory Environment is Shifting



Guiding and Establishing National Innovation for U.S. Stablecoin (*GENIUS*) Act

A federal law that establishes a comprehensive U.S. regulatory framework for payment stablecoins, setting clear requirements for issuer eligibility, supervisory oversight, and reserve management to protect consumers and support financial stability.

- Signed into law by the President in July 2025
- Regulators are expected to propose and finalize implementing regulations over the next year.

The Digital Asset Market *CLARITY* Act

Defines regulatory jurisdiction between the SEC and the CFTC by establishing a framework under which certain digital assets are treated as “digital commodities” subject primarily to CFTC oversight, while preserving SEC authority over securities.

- The CLARITY Act passed the U.S. House of Representatives in July 2025 with bipartisan support.
- It has been received by the Senate and referred to the Senate Banking Committee, where it has not yet advanced to a floor vote

Source: Franklin Templeton Internal Lobbyists



Questions/Comments

Important legal information

Stablecoins represent a new and rapidly evolving technological development which may be subject to regulatory uncertainty, competitive pressures, security risk, limited performance history and potential volatility.

There may be risks associated with the issuance, redemption, transfer, custody, and record keeping of tokens maintained and recorded primarily on a blockchain.

All investments involve risks, including possible loss of principal.

Synthetic stablecoins carry elevated risk because their stability depends on financial engineering rather than fully backed reserves. In stressed market conditions, structural failures, liquidity shortages, or loss of confidence could cause depegging and potential capital loss. These instruments therefore present higher volatility and systemic risk than traditional fiat-backed stablecoins.

Blockchain and cryptocurrency investments are subject to various risks, including inability to develop digital asset applications or to capitalize on those applications, theft, loss, or destruction of cryptographic keys, the possibility that digital asset technologies may never be fully implemented, cybersecurity risk, conflicting intellectual property claims, and inconsistent and changing regulations. Speculative trading in bitcoins and other forms of cryptocurrencies, many of which have exhibited extreme price volatility, carries significant risk; an investor can lose the entire amount of their investment. Blockchain technology is a new and relatively untested technology and may never be implemented to a scale that provides identifiable benefits. If a cryptocurrency is deemed a security, it may be deemed to violate federal securities laws. There may be a limited or no secondary market for cryptocurrencies.

Digital assets are subject to risks relating to immature and rapidly developing technology, security vulnerabilities of this technology, (such as theft, loss, or destruction of cryptographic keys), conflicting intellectual property claims, credit risk of digital asset exchanges, regulatory uncertainty, high volatility in their value/price, unclear acceptance by users and global marketplaces, and manipulation or fraud. Portfolio managers, service providers to the portfolios and other market participants increasingly depend on complex information technology and communications systems to conduct business functions. These systems are subject to a number of different threats or risks that could adversely affect the portfolio and their investors, despite the efforts of the portfolio managers and service providers to adopt technologies, processes and practices intended to mitigate these risks and protect the security of their computer systems, software, networks and other technology assets, as well as the confidentiality, integrity and availability of information belonging to the portfolios and their investors.

Any companies and/or case studies referenced herein are used solely for illustrative purposes; any investment may or may not be currently held by any portfolio advised by Franklin Templeton. The information provided is not a recommendation or individual investment advice for any particular security, strategy, or investment product and is not an indication of the trading intent of any Franklin Templeton managed portfolio.



The following materials were added to the packet on 2/23/2026

Callan

February 2026

**Senate and House Finance
Committees
Alaska State Legislature**

Permanent Fund Performance
Review, Asset Allocation Review,
and Annual Draw Analysis

Gregory C. Allen

Chief Executive Officer, Chief Research Officer

Steven J. Center, CFA

Senior Vice President

Outline

- Performance Review for Quarter ended December 31, 2025.
- Capital Markets Projection and Asset Allocation
- Perspectives on Draw Rates.
 - Historical Simulation.
 - Future Projection.
 - Two Account Model vs Endowment Model.



**Alaska Permanent Fund
Corporation**

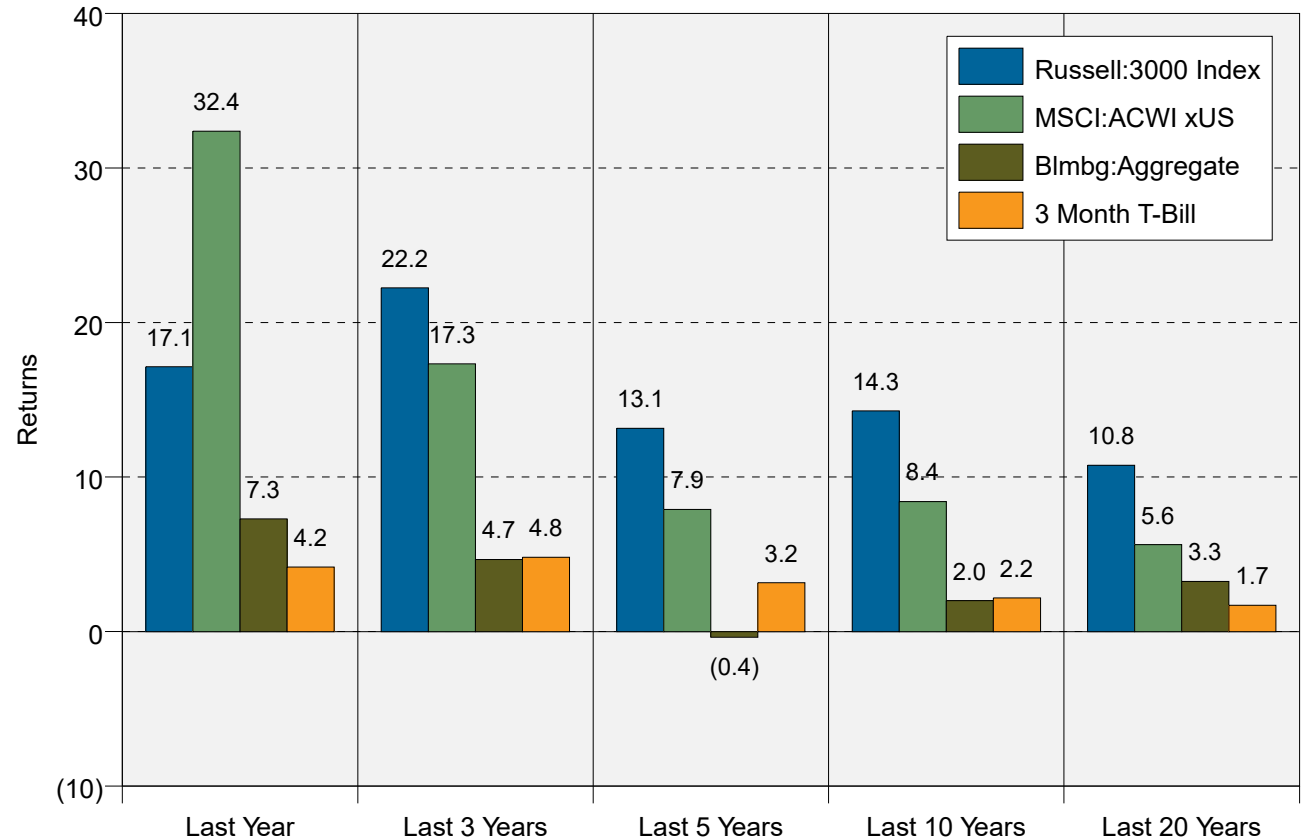
Performance Review for Quarter
ended December 31, 2025

Public Market Returns

Periods Ending December 31, 2025

- 2025 was a very strong year for non-US equities (MSCI:ACWI xUS).
- Performance was helped by a weak dollar which increases the return for non-US investments.
- Over longer periods US equities have significantly outperformed all other asset classes.
- US Bonds (Aggregate Index) produced a negative return for the 5-year period

Returns for Periods Ending December 31, 2025

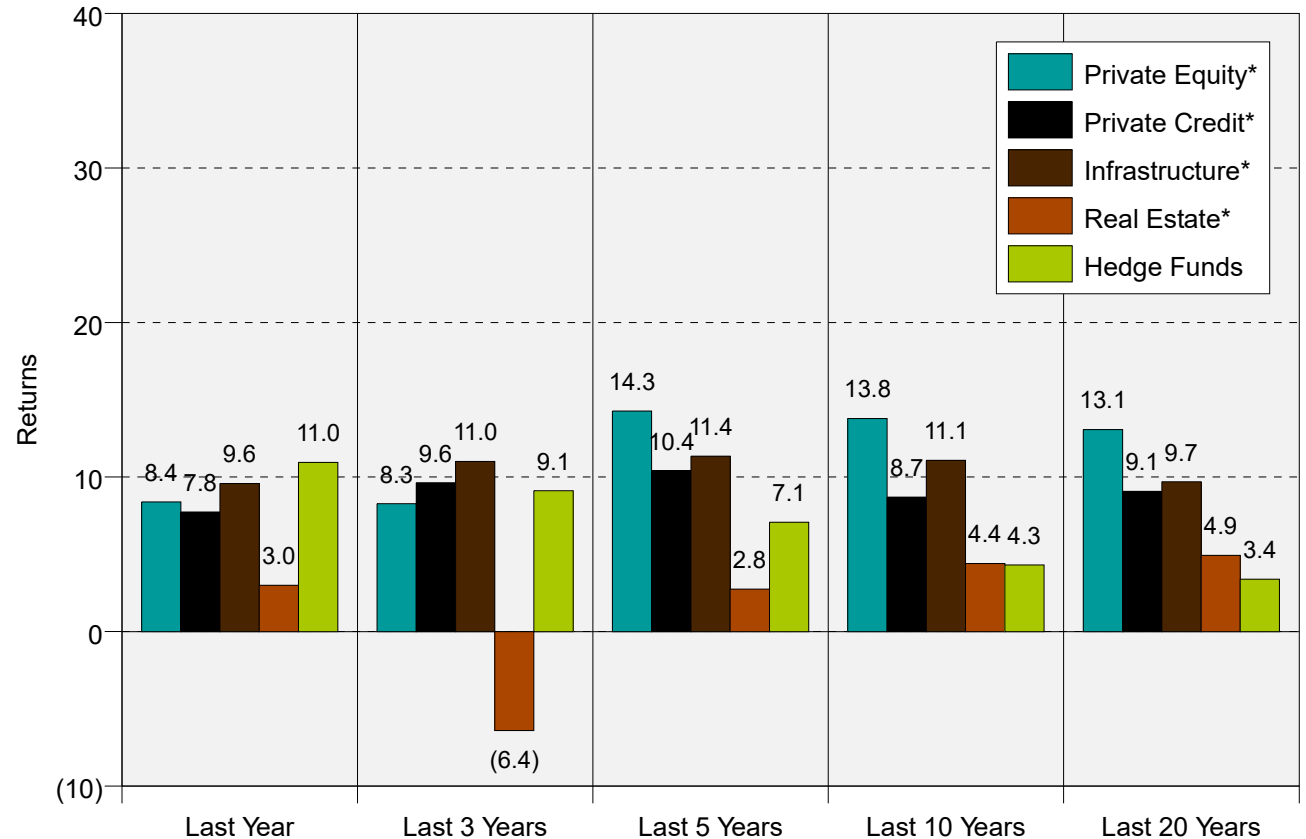


Private Market Returns

Periods Ending December 31, 2025

- Private market returns were more muted in 2025 relative to public equities.
- Over the 20-year period private equity has outperformed public equity.
- Long term returns for real estate still lagging due to recent impacts of COVID on office and retail.
- Strong recent performance in infrastructure from energy transition, logistics, and data centers.

Returns for Periods Ending December 31, 2025



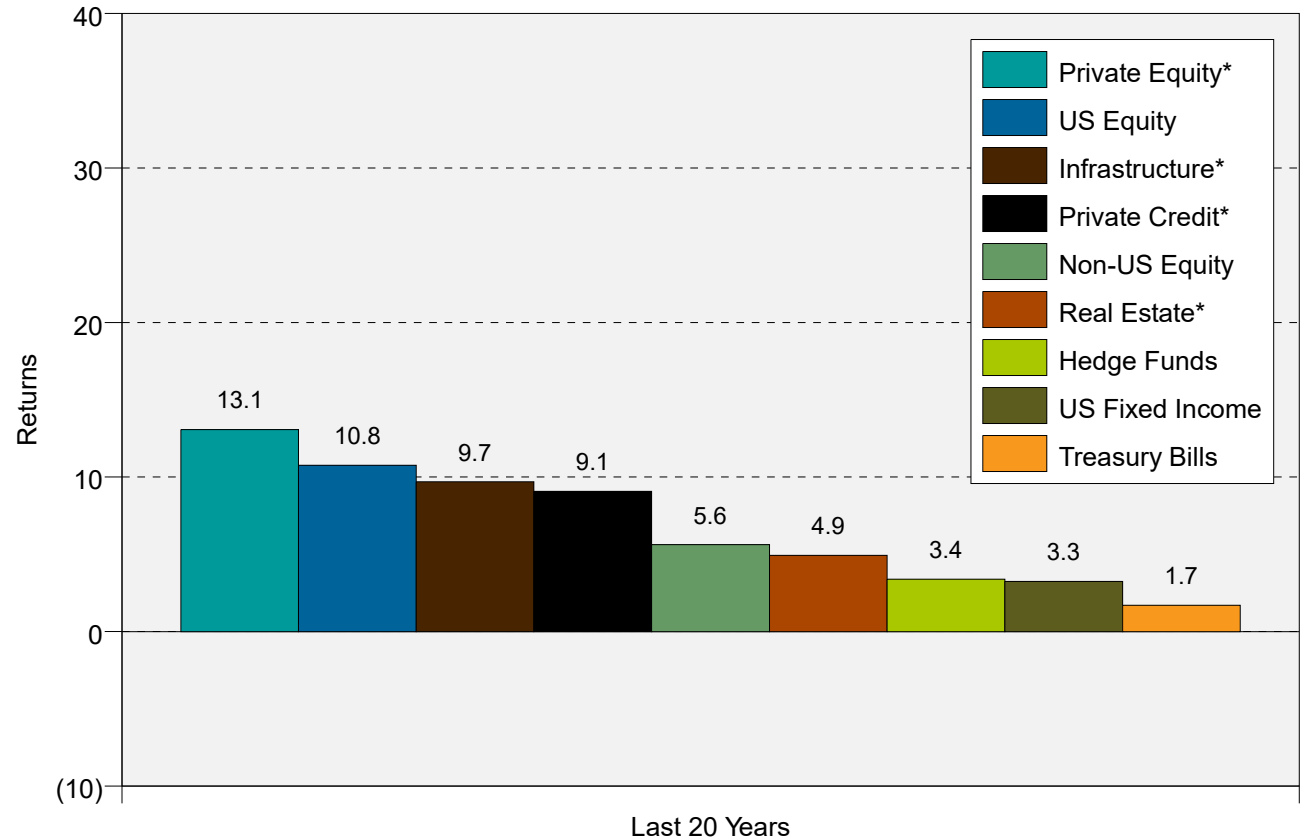
*Return series lagged one quarter

Twenty-Year Returns

Periods Ending December 31, 2025

- Over the 20-year period returns have largely been in line with long-term expectations.
- Private equity outperformed public equity.
- Private credit outperformed public credit.
- Market neutral hedge funds have outperformed fixed income.
- Real estate and non-US equity have lagged expectations.

Returns for Periods Ending December 31, 2025



*Return series lagged one quarter

Periodic Table of Market Returns

Ranking of Asset Class Returns over Last Ten Calendar Years

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Infrastructure*	Non-US Equity	Private Equity*	US Equity	US Equity	Private Equity*	Real Estate*	US Equity	US Equity	Non-US Equity
13.8%	27.2%	18.8%	31.0%	20.9%	49.6%	21.7%	26.0%	23.8%	32.4%
US Equity	US Equity	Infrastructure*	Non-US Equity	Private Equity*	US Equity	Infrastructure*	Non-US Equity	Infrastructure*	US Equity
12.7%	21.1%	10.0%	21.5%	13.2%	25.7%	8.7%	15.6%	12.6%	17.1%
Real Estate*	Private Equity*	Private Credit*	Infrastructure*	Non-US Equity	Private Credit*	Private Credit*	Infrastructure*	Private Credit*	Hedge Funds
9.7%	17.7%	9.9%	9.3%	10.7%	20.8%	3.1%	10.8%	10.6%	11.0%
Private Equity*	Infrastructure*	Real Estate*	US Fixed Income	US Fixed Income	Infrastructure*	Private Equity*	Private Credit*	Hedge Funds	Infrastructure*
9.3%	14.4%	7.9%	8.7%	7.5%	15.1%	2.6%	10.6%	10.5%	9.6%
Private Credit*	Private Credit*	Treasury Bills	Private Equity*	Infrastructure*	Real Estate*	Treasury Bills	Private Equity*	Private Equity*	Private Equity*
6.9%	12.2%	1.9%	8.0%	6.8%	14.8%	1.5%	7.4%	9.1%	8.4%
Non-US Equity	Real Estate*	US Fixed Income	Real Estate*	Private Credit*	Non-US Equity	Hedge Funds	Hedge Funds	Non-US Equity	Private Credit*
4.5%	6.9%	0.0%	5.3%	3.3%	7.8%	1.2%	6.0%	5.5%	7.8%
US Fixed Income	Hedge Funds	Hedge Funds	Private Credit*	Real Estate*	Hedge Funds	US Fixed Income	US Fixed Income	Treasury Bills	US Fixed Income
2.6%	4.9%	(1.0%)	3.2%	0.9%	7.1%	(13.0%)	5.5%	5.3%	7.3%
Hedge Funds	US Fixed Income	US Equity	Hedge Funds	Treasury Bills	Treasury Bills	Non-US Equity	Treasury Bills	US Fixed Income	Treasury Bills
2.2%	3.5%	(5.2%)	2.3%	0.7%	0.0%	(16.0%)	5.0%	1.3%	4.2%
Treasury Bills	Treasury Bills	Non-US Equity	Treasury Bills	Hedge Funds	US Fixed Income	US Equity	Real Estate*	Real Estate*	Real Estate*
0.3%	0.9%	(14.2%)	2.3%	(0.1%)	(1.5%)	(19.2%)	(13.1%)	(8.4%)	3.0%

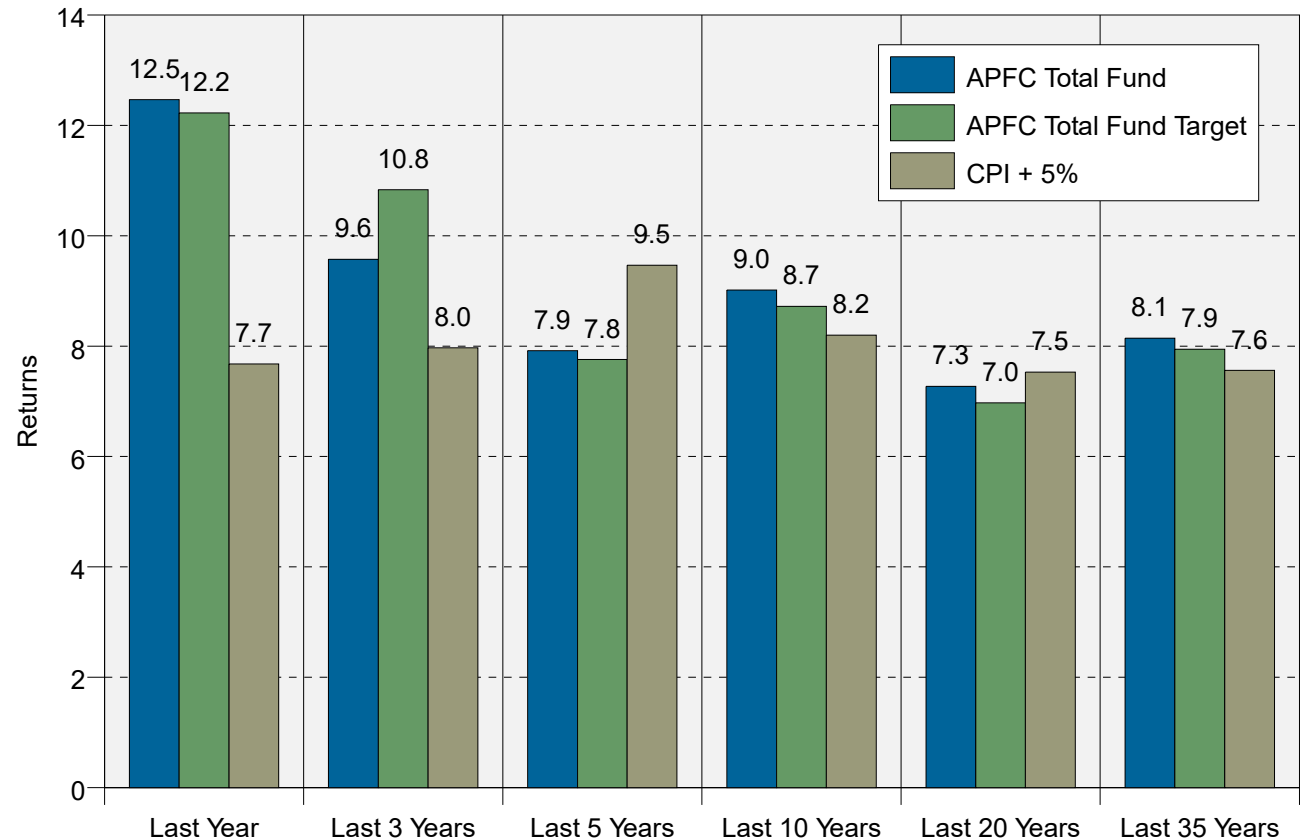
*Return series lagged one quarter

APFC Total Fund Historical Returns

Total Fund versus Total Fund Targets

- The Permanent Fund experienced strong absolute performance in 2025.
- Total Fund is ahead of the performance benchmark for the 1, 5, 10, and 20-year periods, only trailing for the 3-year period.
- Total Fund is ahead of CPI + 5% for 1, 3, and 10-year periods, trails for the 5-year and 20-year periods.
- Total Fund is ahead of both benchmarks for the 35-year period since 1990.

Net of Fee Returns for Periods Ending December 31, 2025

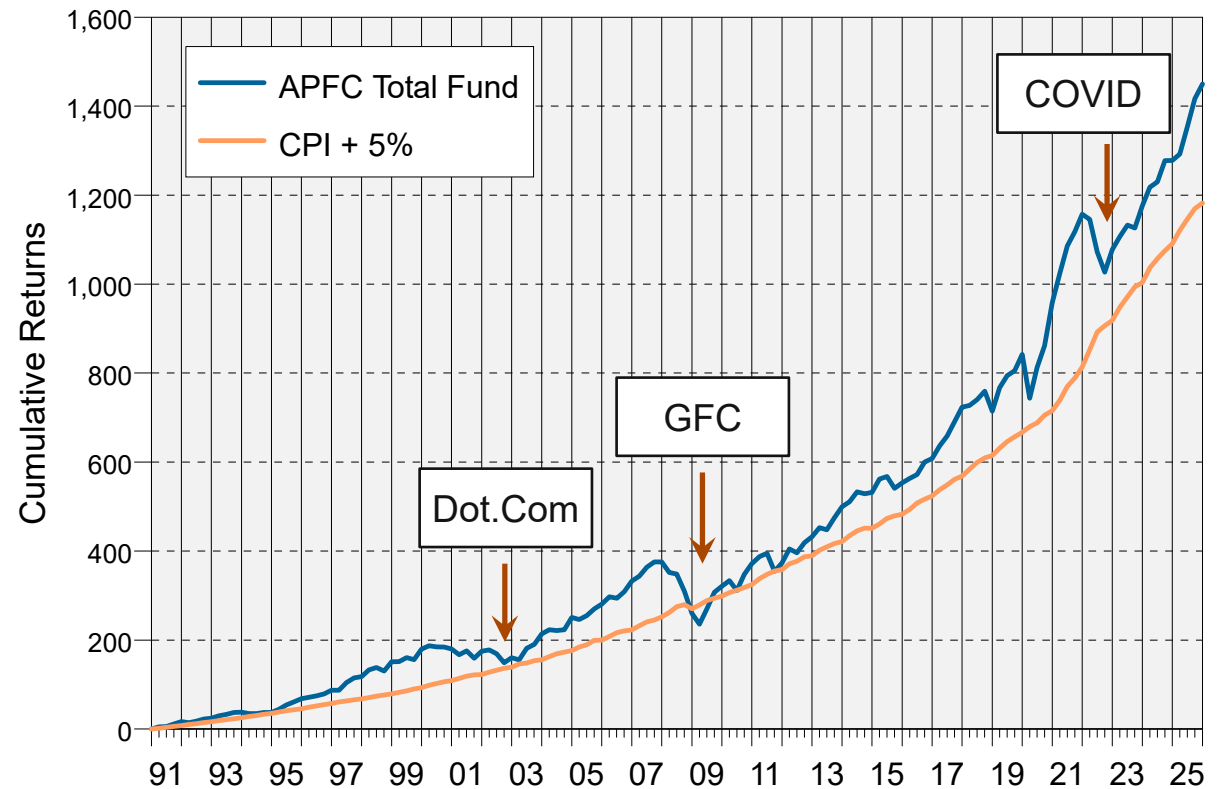


APFC Total Fund Cumulative Return vs CPI + 5%

Total Fund versus Return Objective

- Chart shows the path of Total Fund returns versus the long-term return objective of CPI + 5%.
- Over the long term the Total Fund has kept pace with the objective.
- The volatility of an investment strategy that can keep pace with this objective over the long term will result in periods of underperformance.

**Net of Fee Cumulative Returns
for 35 Years Ended December 31, 2025**

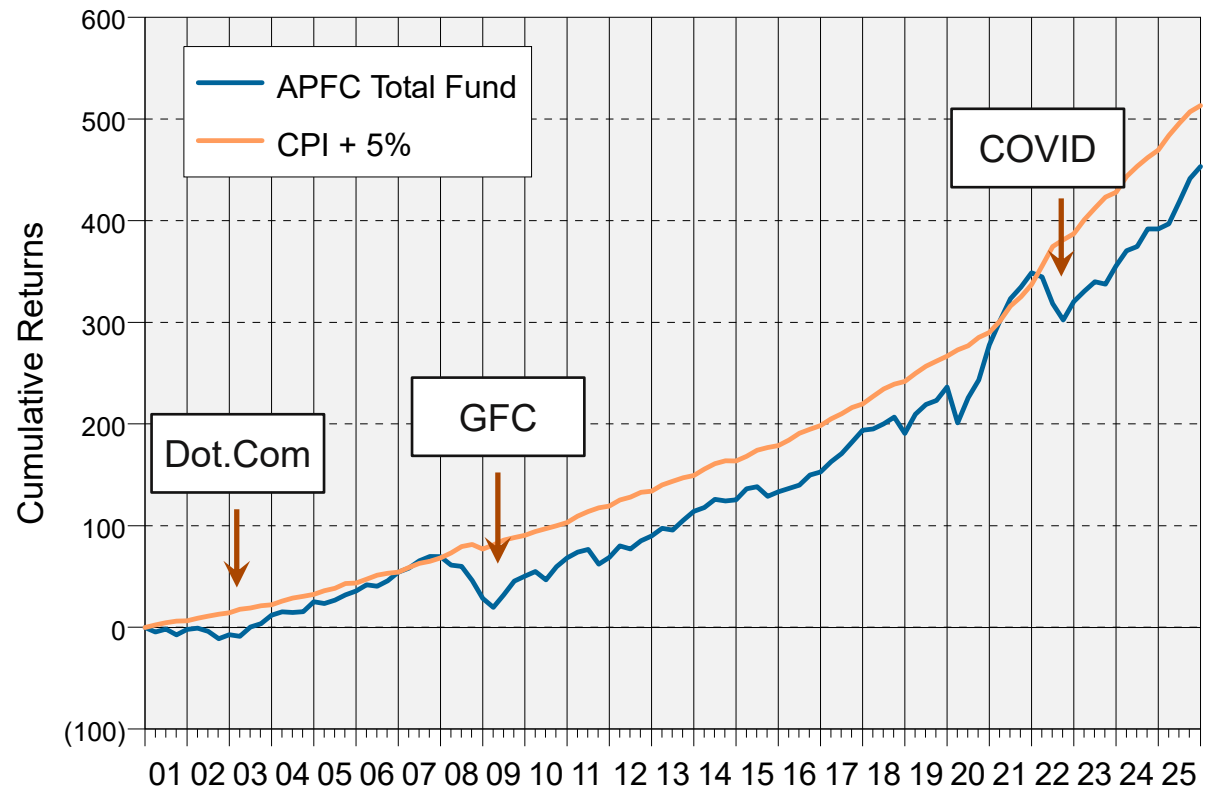


APFC Total Fund Cumulative Return vs CPI + 5%

The Impact of Changing Time Periods

- Looking at the 25-year time period, the Fund has spent most of its history behind the CPI+5% target.
- This stems from the starting point, the Dot.Com bubble burst happening right at the beginning of the period.
- A 25-year period with three major market dislocations, one right at the beginning, makes the CPI+5% target challenging.
- This also illustrates the power of “cherry picking” time periods when using performance to make your point.

**Net of Fee Cumulative Returns
for 25 Years Ended December 31, 2025**

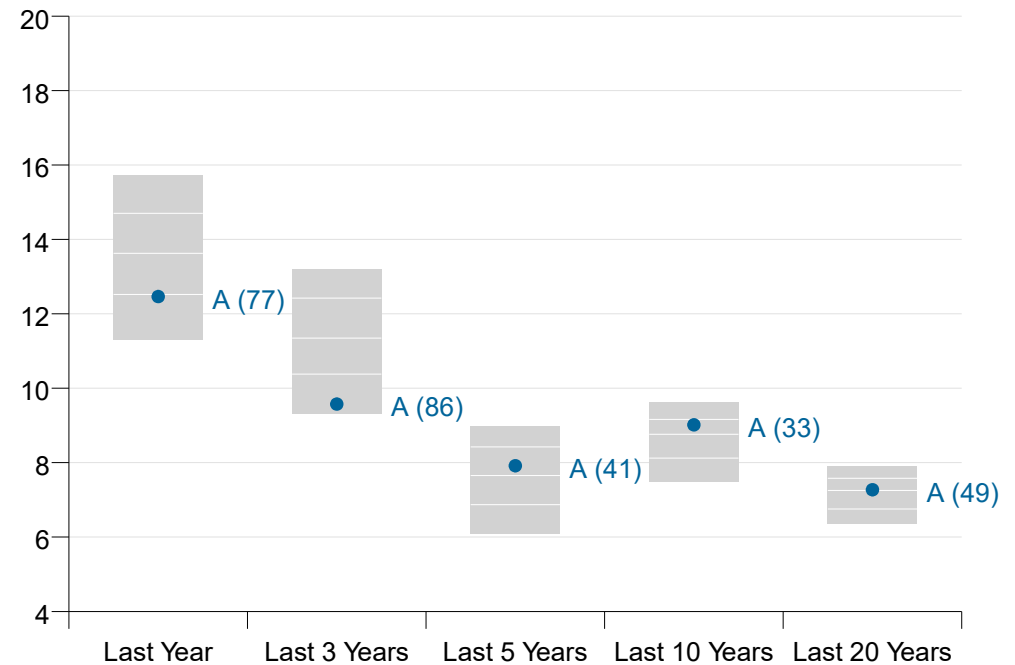


APFC Total Fund Ranking versus Large Public Funds

Total Fund versus Large Public Fund Peer Group

- Total Fund ranks competitively versus large public funds over 5, 10, and 20-year time periods.
- Over the 1 and 3-year periods large public funds have primarily benefited from a greater weight to US equities.
- The Fund's equity portfolio has maintained a modest underweight to the Magnificent Seven relative to the index.

Returns for Periods Ended December 31, 2025
Group: Callan Public Fund Sponsor - Large (>1B)



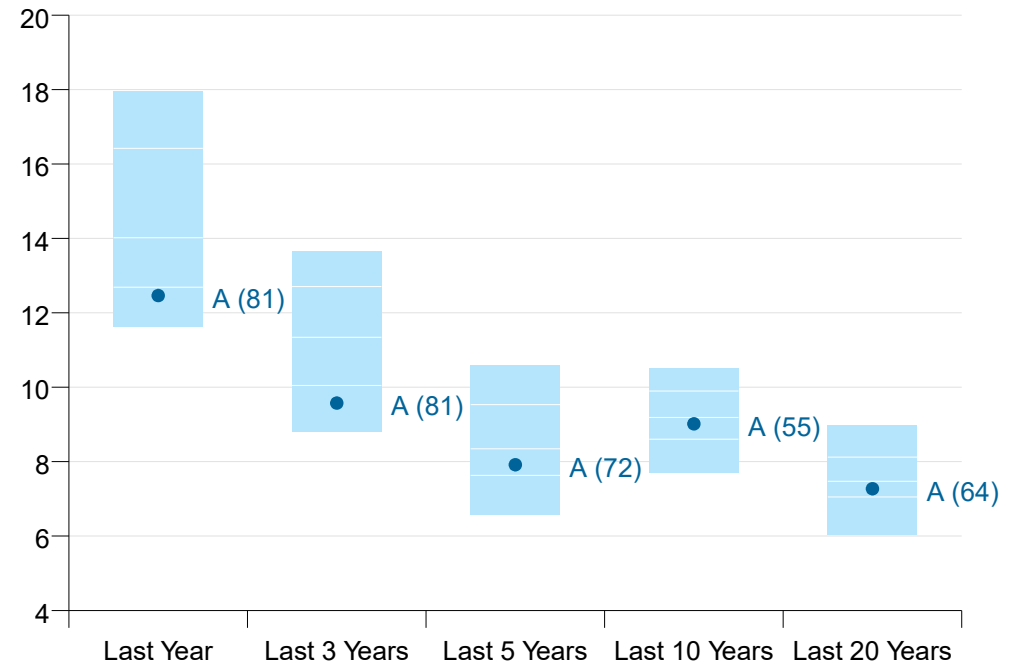
	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years
10th Percentile	15.74	13.20	8.98	9.62	7.91
25th Percentile	14.70	12.42	8.43	9.16	7.58
Median	13.63	11.35	7.66	8.77	7.25
75th Percentile	12.52	10.38	6.87	8.12	6.76
90th Percentile	11.32	9.31	6.09	7.49	6.36
APFC Total Fund ● A	12.47	9.58	7.92	9.02	7.27

APFC Total Fund Ranking versus Large Endowments

Total Fund versus Large Endowment and Foundation Group

- The Fund has a higher allocation to fixed income (20%) than the typical Large Endowment which largely explains the low rankings over the last 3 years.
- Total Fund ranks closer to median for 10 years.
- This is due to the fact that APFC asset allocation has evolved to look increasingly like that of a large endowment.

Returns for Periods Ended December 31, 2025
Group: Callan Endow/Foundation - Large (>1B)



	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years
10th Percentile	17.96	13.67	10.60	10.51	8.99
25th Percentile	16.42	12.71	9.53	9.90	8.13
Median	14.02	11.35	8.35	9.19	7.47
75th Percentile	12.69	10.05	7.63	8.61	7.05
90th Percentile	11.64	8.82	6.57	7.69	6.04
APFC Total Fund ● A	12.47	9.58	7.92	9.02	7.27

APFC Total Fund Risk Ranking versus Large Public Funds

Total Fund Risk versus Large Public Fund Peer Group

- Chart shows rankings versus Large Public Funds for 10-years ended December 31, 2025.
- Standard Deviation is a measure of return volatility or risk experienced over the time period (lower is better).
- Sharpe Ratio is a measure of risk-adjusted return or return per unit of risk.
- The Fund's Sharpe Ratio ranks in the 14th percentile over this period versus large public funds.

Return and Risk Statistic Rankings for 10-Years Ended December 31, 2025
Group: Callan Public Fund Sponsor - Large (>1B)



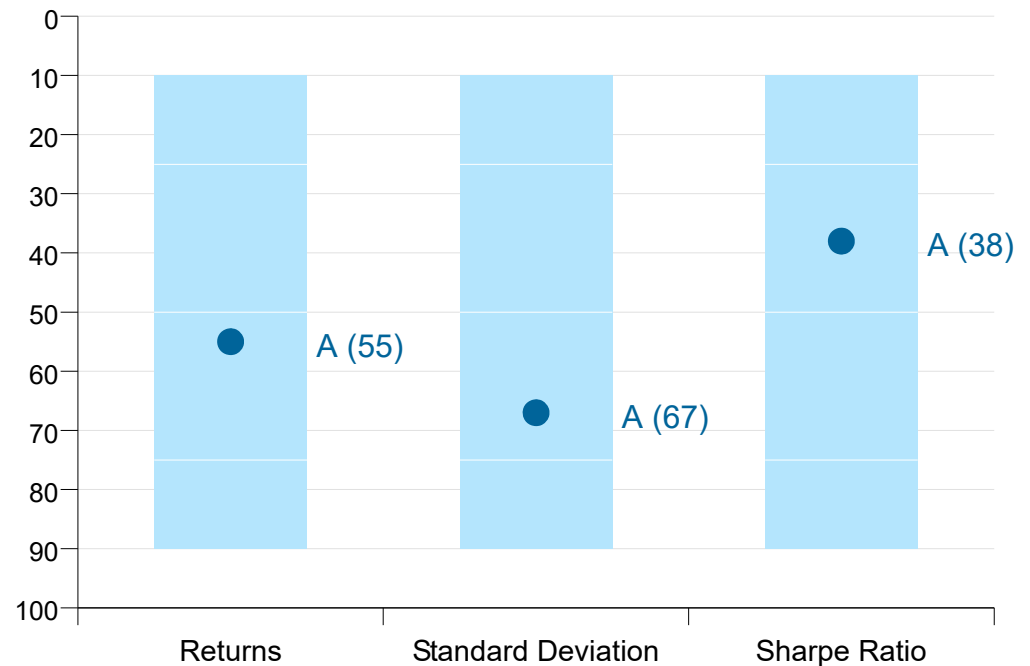
	Returns	Standard Deviation	Sharpe Ratio
10th Percentile	9.62	10.73	0.96
25th Percentile	9.16	9.99	0.85
Median	8.77	8.96	0.71
75th Percentile	8.12	7.54	0.62
90th Percentile	7.49	6.75	0.58
APFC Total Fund ● A	9.02	7.38	0.93

APFC Total Fund Ranking versus Large Endowments

Total Fund versus Large Endowment and Foundation Group

- Total Fund's return ranks close to median versus Large Endowment and Foundation universe for 10-years ended December 31, 2025.
- Standard deviation ranks in the lower third of the universe (67th percentile).
- The Fund's Sharpe Ratio over this period was superior to 62% of the Large Endowments and Foundations in this universe.

Return and Risk Statistic Rankings for 10-Years Ended December 31, 2025
Group: Callan Endow/Foundation - Large (>1B)



	Returns	Standard Deviation	Sharpe Ratio
10th Percentile	10.51	10.85	1.20
25th Percentile	9.90	10.08	1.04
Median	9.19	8.27	0.82
75th Percentile	8.61	7.01	0.66
90th Percentile	7.69	5.97	0.57
APFC Total Fund ● A	9.02	7.38	0.93



**Alaska Permanent Fund
Corporation**

Capital Market Projections and
Permanent Fund Asset Allocation

Callan Capital Market Projection Process

Long Term Capital Market Projections

- Callan updates long term capital market projections each year in January and uses them for the full year with all clients for strategic planning purposes.
- Projections take into account long term relationships balanced with current market conditions.
- Consensus expectations (central banks, economists, asset managers, consultants, etc.) are carefully considered as an integral part of the process.
- Each number – **return, risk, correlation** – for every asset class must be individually defensible, and the numbers collectively need to work together as a set to generate reasonable portfolios during strategic planning exercises.
- Projections change slowly over time and are not designed to provide tactical insights.
- Process is executed by Callan's capital markets research group and projections are peer reviewed by Client Policy Review Committee as well as the hundreds of the clients that use them every year.
- Process is battle proven – it has evolved and improved, but hasn't fundamentally changed over the last four decades.

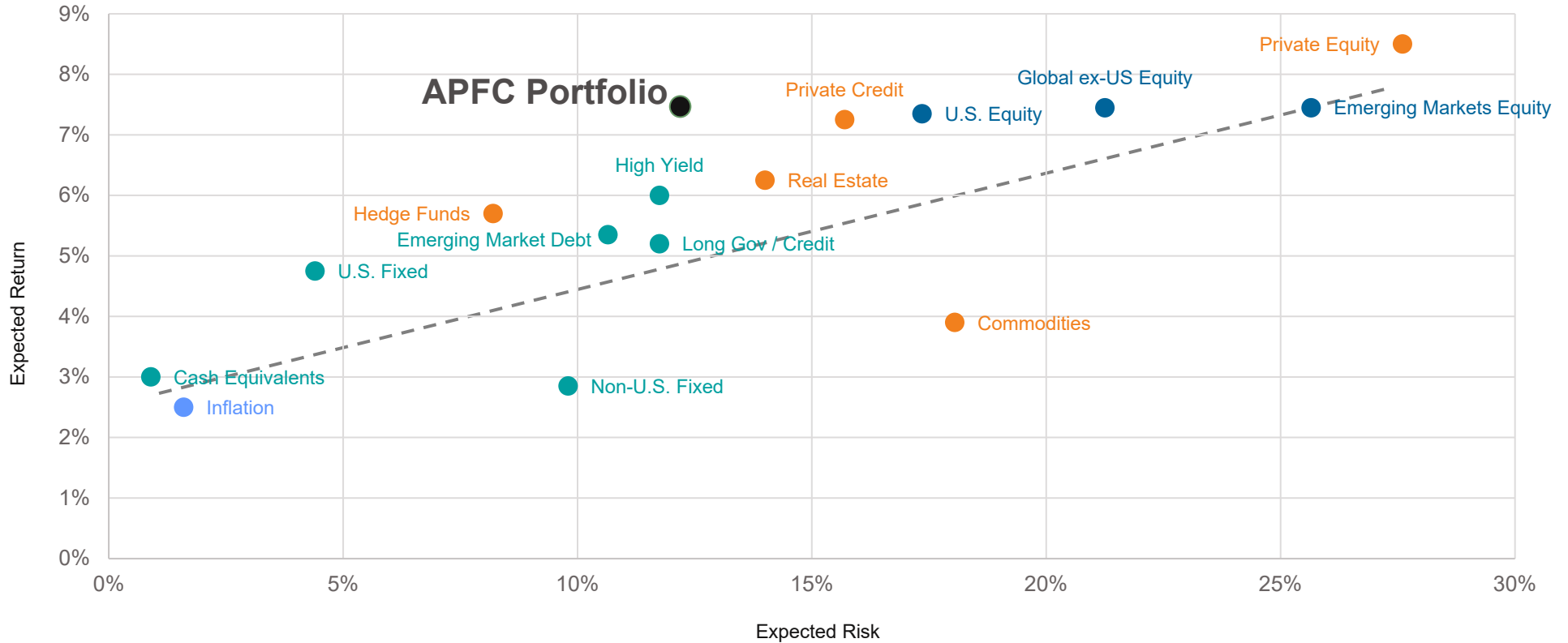
Callan Capital Market Projections 2026 – 2035

Summary of Callan's Long-Term Capital Market Projections for APFC Asset Allocation Model (FY 2026 - 2035)

Asset Class	Performance Index	PROJECTED RETURN		PROJECTED RISK	
		1-Year Arithmetic	10-Year Geometric Return	Annualized Standard Deviation	Projected Yield
APFC Public Equities		8.90%	7.55%	17.45%	2.10%
Global Equity	MSCI ACWI - IMI	8.90%	7.55%	17.45%	2.10%
APFC Public Fixed Income		4.75%	4.70%	4.35%	4.60%
Cash Equivalents	90-Day T-Bill	3.00%	3.00%	0.90%	3.00%
TIPS	Bloomberg TIPS	4.65%	4.50%	5.40%	4.20%
US Fixed Income	Bloomberg Aggregate	4.85%	4.75%	4.45%	4.55%
US Investment Grade Credit	Bloomberg Credit	5.00%	4.95%	4.80%	4.80%
Non-US Fixed Income	Bloomberg Global Treasury ex-US Hedged	3.35%	2.90%	9.80%	2.85%
High Yield	Bloomberg US High Yield 2% Issuer Cap	6.55%	5.90%	11.75%	8.05%
US Securitized	Bloomberg US Securitized	5.10%	5.05%	3.00%	4.45%
Private Equity		11.80%	8.50%	27.60%	0.00%
Private Equity	Cambridge Private Equity (lag)	11.80%	8.50%	27.60%	0.00%
Private Real Estate		7.15%	6.25%	14.00%	4.00%
Real Estate	NCREIF Total Index (lag)	7.15%	6.25%	14.00%	4.00%
Private Infrastructure/Credit		7.80%	7.10%	12.40%	5.85%
Private Infrastructure	Cambridge Global Private Infra (lag)	7.40%	6.35%	15.20%	4.90%
Private Credit	Bloomberg US High Yield (lag)	8.35%	7.25%	15.70%	7.25%
Absolute Return		6.00%	5.70%	8.20%	0.00%
Hedge Funds	HFRI Total HFOF Universe	6.00%	5.70%	8.20%	0.00%
Tactical Opportunities		8.50%	7.25%	17.00%	1.50%
Tactical Opportunities	S&P 500	8.50%	7.25%	17.00%	1.50%
Cash Equivalents		3.00%	3.00%	0.90%	3.00%
Cash Equivalents	90-Day T-Bill	3.00%	3.00%	0.90%	3.00%
Total Fund	APFC Total Fund Target	8.00%	7.30%	12.65%	2.65%
Inflation	CPI-U		2.50%	1.60%	

Relationship Between Expected Return and Economic Risk

Visualizing Callan's Capital Markets Assumptions



Expected Return Increases with Increased Economic Risk

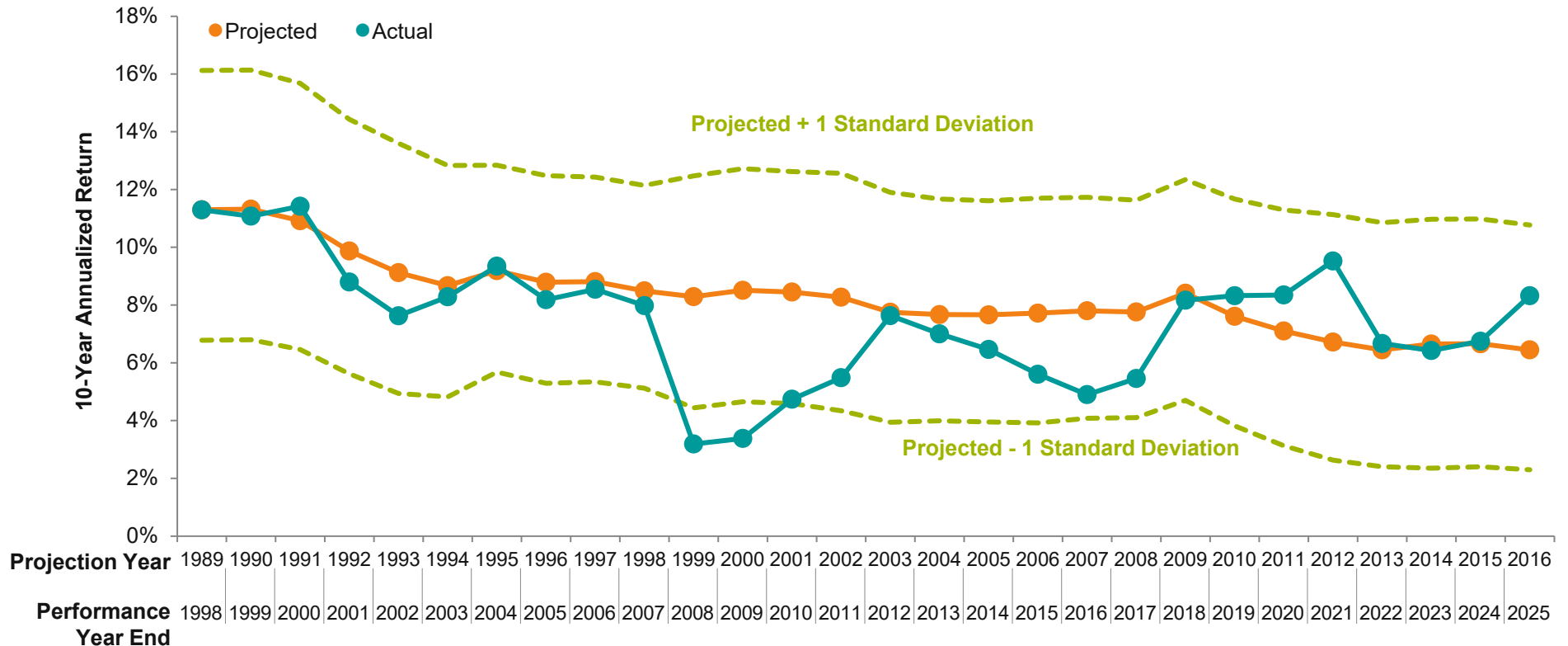
- For example, investors demand a greater return from private equity than public equity as compensation for higher implementation risk, greater leverage, and less liquidity
- Lower correlation asset classes can fall below the capital markets line and still be efficient components of a diversified portfolio (e.g. Non-US Fixed income)

Actual Returns versus Callan Projections

Projection Years 1989 - 2016

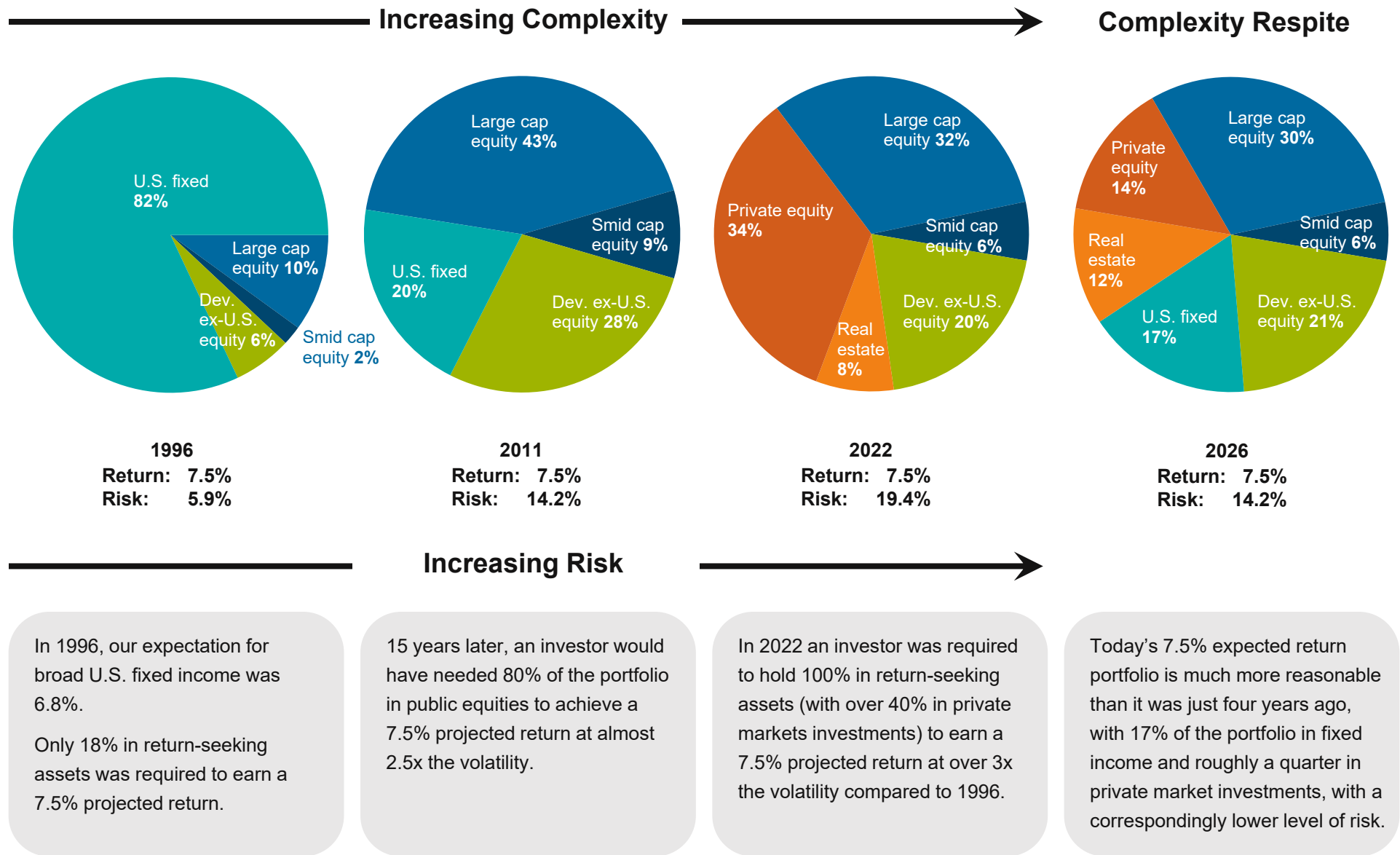
Historical Comparison: Actual Returns vs. Callan Capital Markets Projections

Portfolio (60% Equity, 30% Fixed, 10% Real Estate)



- Our projections for a diversified portfolio have generally been within one standard deviation of the future actual return
- The glaring exceptions are the 10-year periods ended in 2008 and 2009 which contained two major collapses in the equity market: the Dot-Com Bubble in 2001-02 and the Global Financial Crisis in 2008

7.5% Expected Returns over Last 30 Years

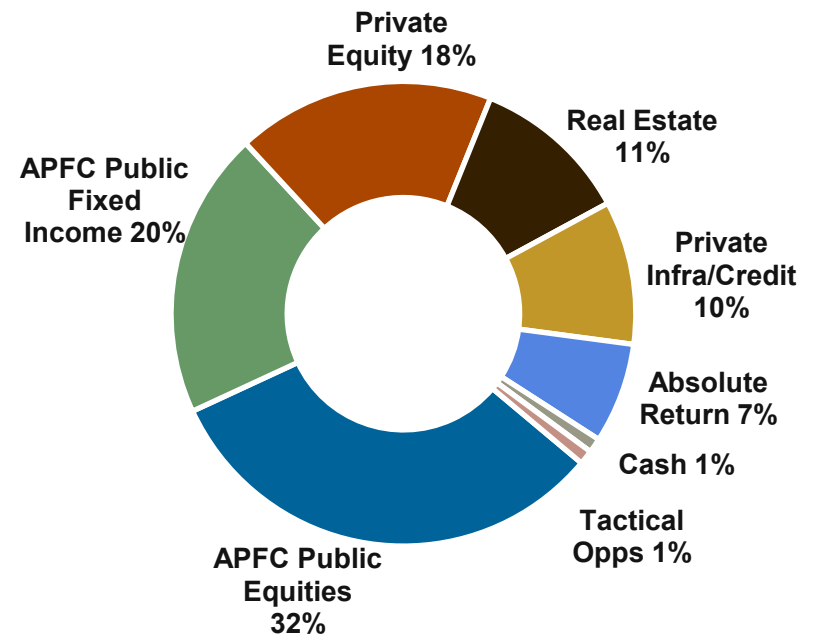


APFC FY 2026 Total Fund Policy Target

Projected Return and Standard Deviation

- Projected median 10-year annualized return of **7.30%** is the same as last year.
- Inflation expectation remained the same at **2.50%**.
- Projected median 10-year annualized real return of **4.8%** is the same as last year.
- Projected standard deviation of **12.65%** is 5 basis points lower than last year.
- Percent probability of exceeding 7.5% annualized return over 10-year horizon is estimated to be **47.4%**.
- Percent probability of exceeding 7.1% (median effective payout) is estimated to be roughly **52%**.

FY 2026 Total Fund Target

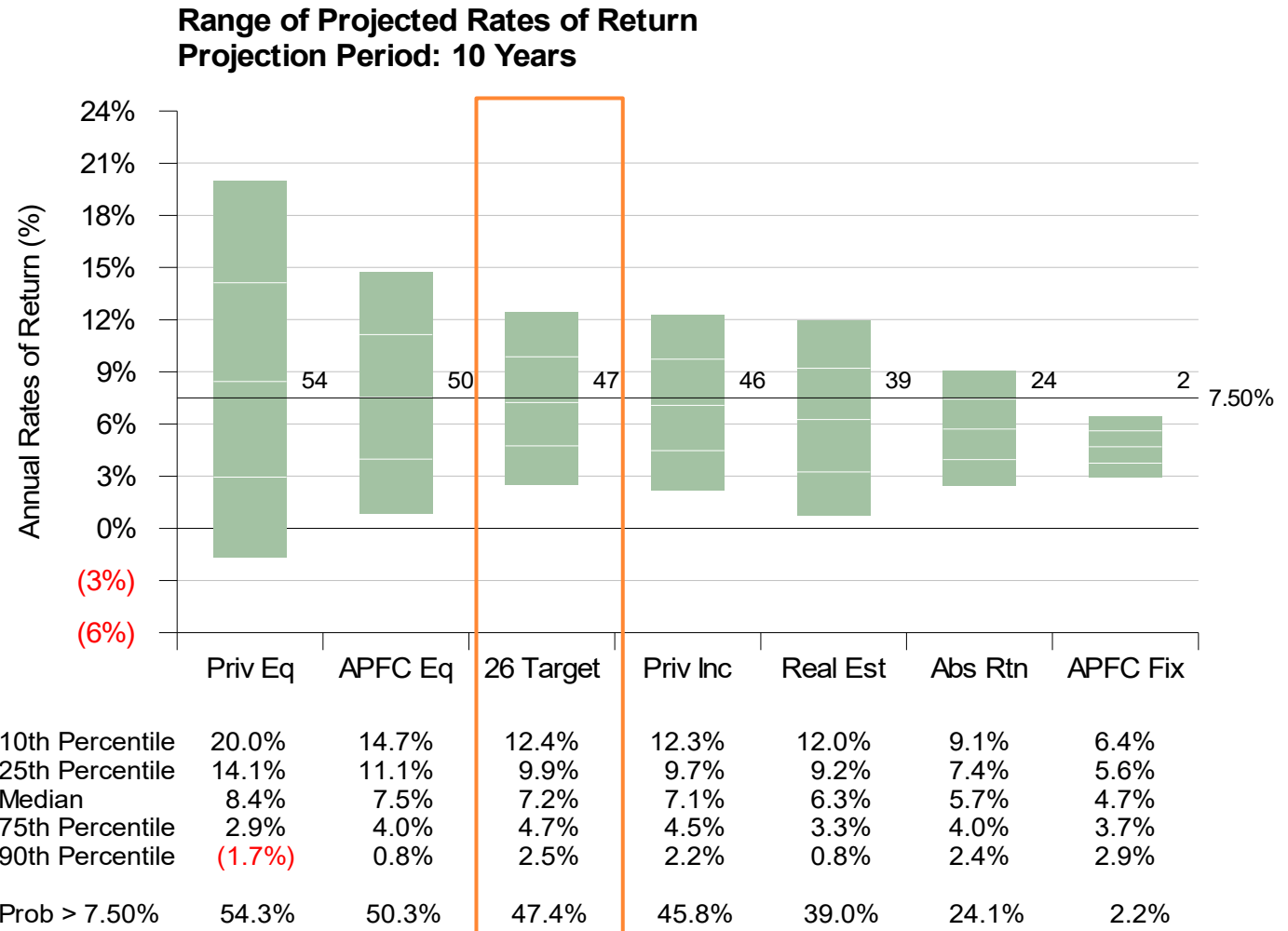


Expected 10-year Geometric Return:	7.30%
Expected Standard Deviation:	12.65%
Expected Inflation:	2.50%
Expected Real Return:	4.80%

Range of Projected Returns

10th through 90th Percentile

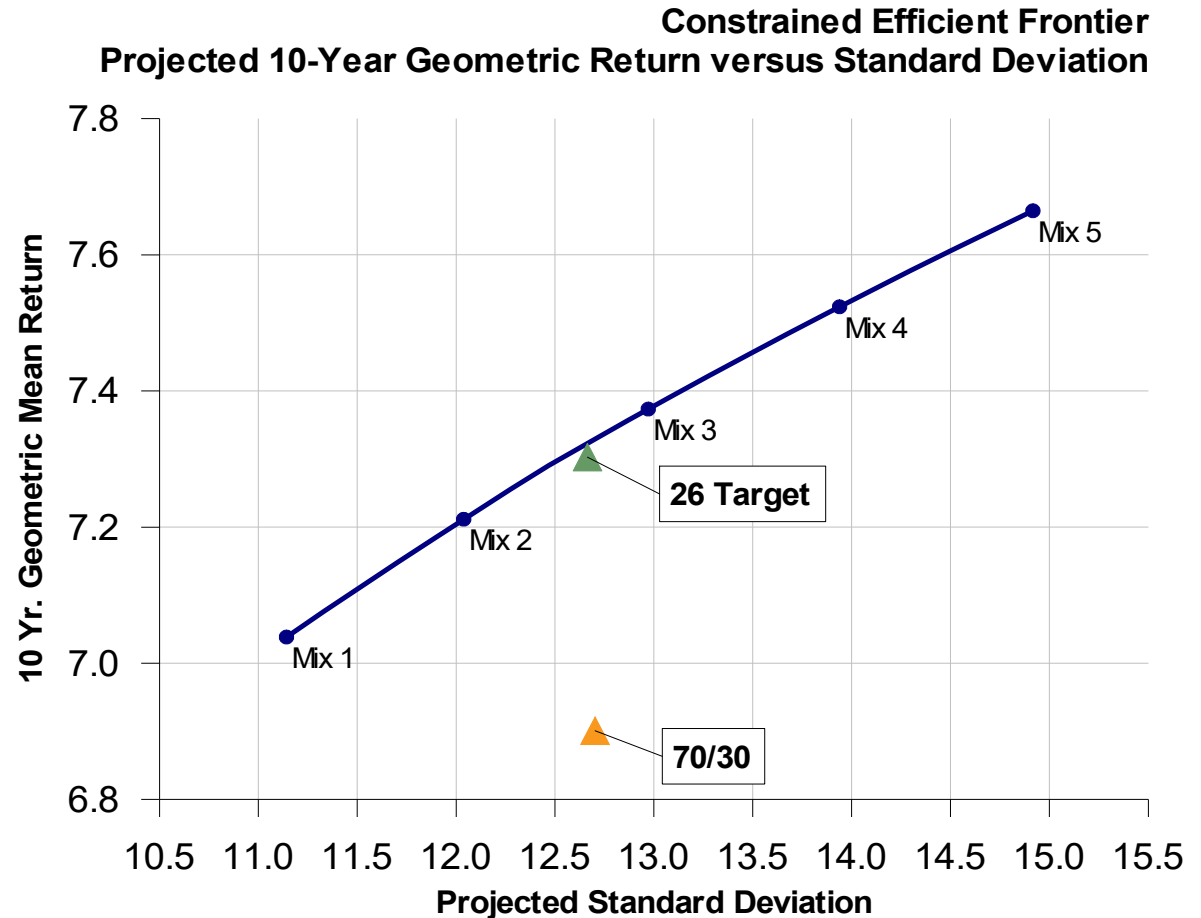
- Projected probability of FY26 Target Mix exceeding 7.5% annualized real return over 10 years is roughly 47.5%
- Only Public and Private equity have 50% or greater probability of achieving 7.5% return.
- The projected 90th percentile worse-case ten-year annualized return for the FY26 target is 2.5%.
- This is better than for any of the individual asset classes except fixed income, illustrating the power of diversification.



Constrained Efficient Frontier Analysis (50% Private Assets)

FY 26 Target Portfolio Close to Constrained Efficient Frontier

- Efficient frontier with 50% private markets constraint.
- FY26 Target portfolio is essentially on the constrained efficient frontier hindered modestly by 1% cash allocation and private markets allocation of 48%.
- 70/30 Equity/Fixed portfolio is pure public markets portfolio with same risk as FY26 Target, and roughly 40 basis points lower return.



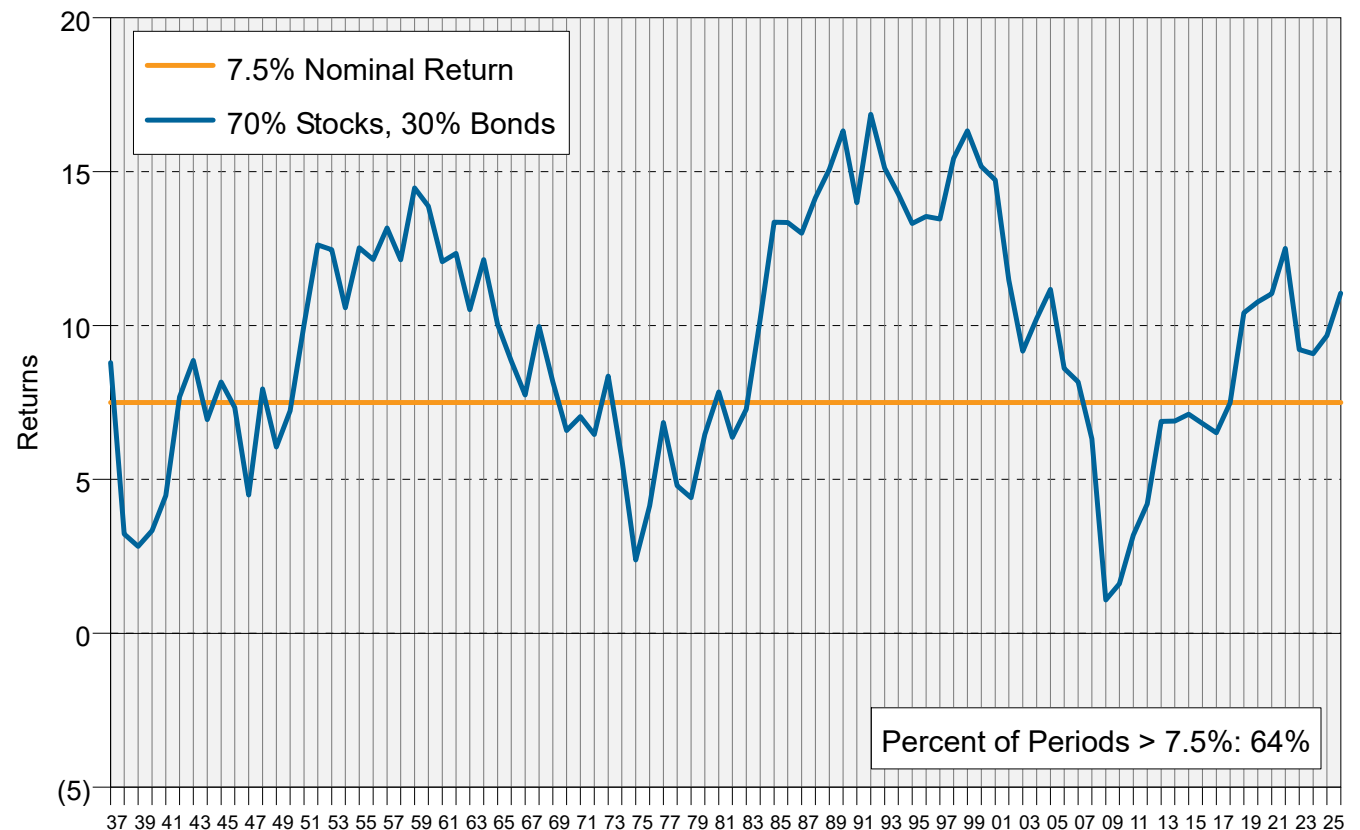
*70/30 Equity/Fixed portfolio assumes 70% allocation to APFC Public Equity benchmark and 30% allocation to APFC Fixed Income benchmark

Rolling 10-Year Nominal Returns

70% US Stocks (S&P 500), 30% US Bonds (Aggregate)

- Historically a 70/30 mix generated a **nominal** 10-year annualized return above **7.5%** in **64%** of periods.
- Periods that did not meet the mark included at least one of the following:
 - The Great Depression
 - The 73-64 Oil Crisis
 - The Dot.com Bubble
 - The 2008 GFC
- Average inflation over this period was 3.3%

Rolling 10-Year Nominal Return
for 89 Years Ended December 31, 2025

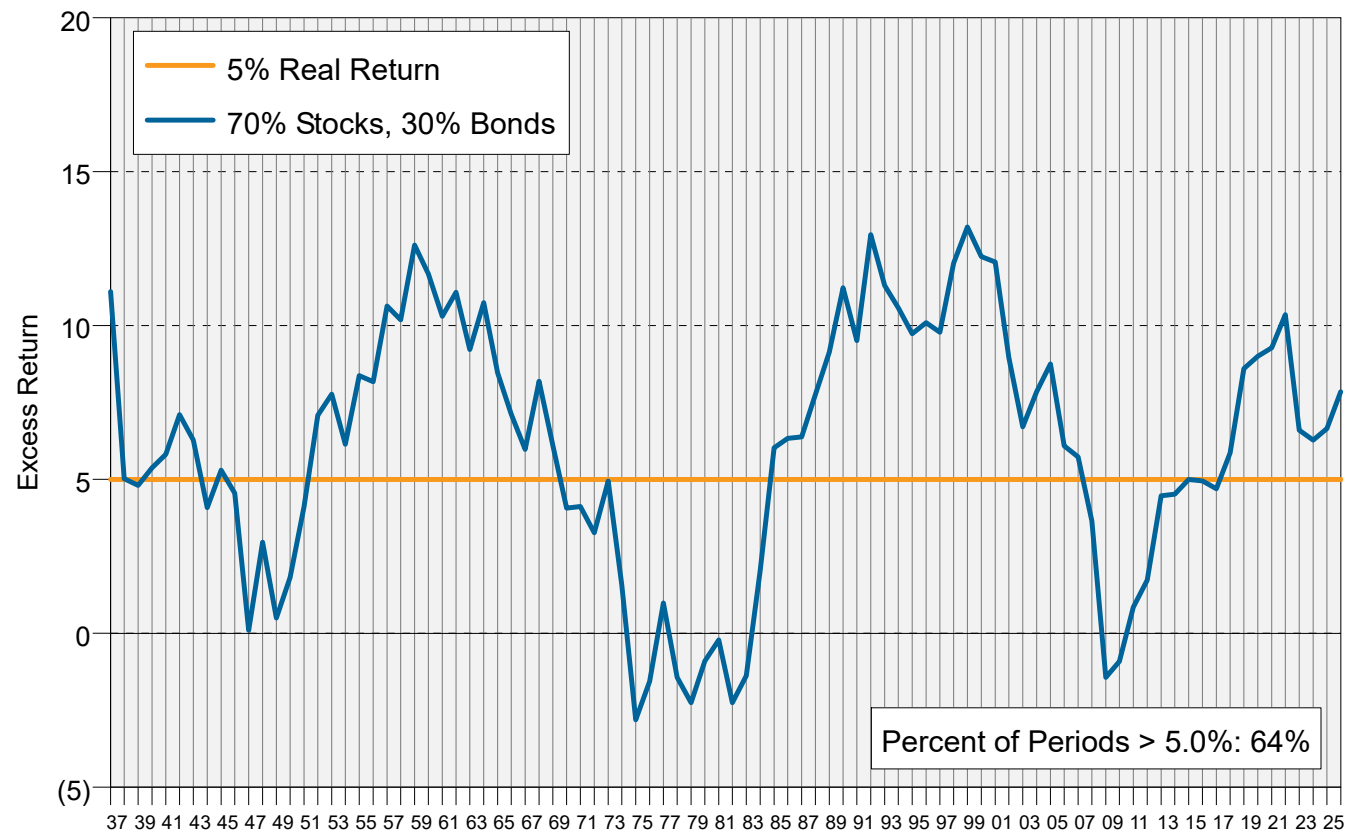


Rolling 10-Year Real Returns

70% US Stocks (S&P 500), 30% US Bonds (Aggregate)

- Historically a 70/30 mix generated a **real** 10-year annualized return above **5%** in **64%** of periods.
- While the top-line number looks the same the pattern is different.
- High inflation periods made it more challenging to meet the bogey:
 - WW II
 - 70's Stagflation
- Deflation during the Depression helped real return in early rolling periods.

Rolling 10-Year Real Return
for 89 Years Ended December 31, 2025

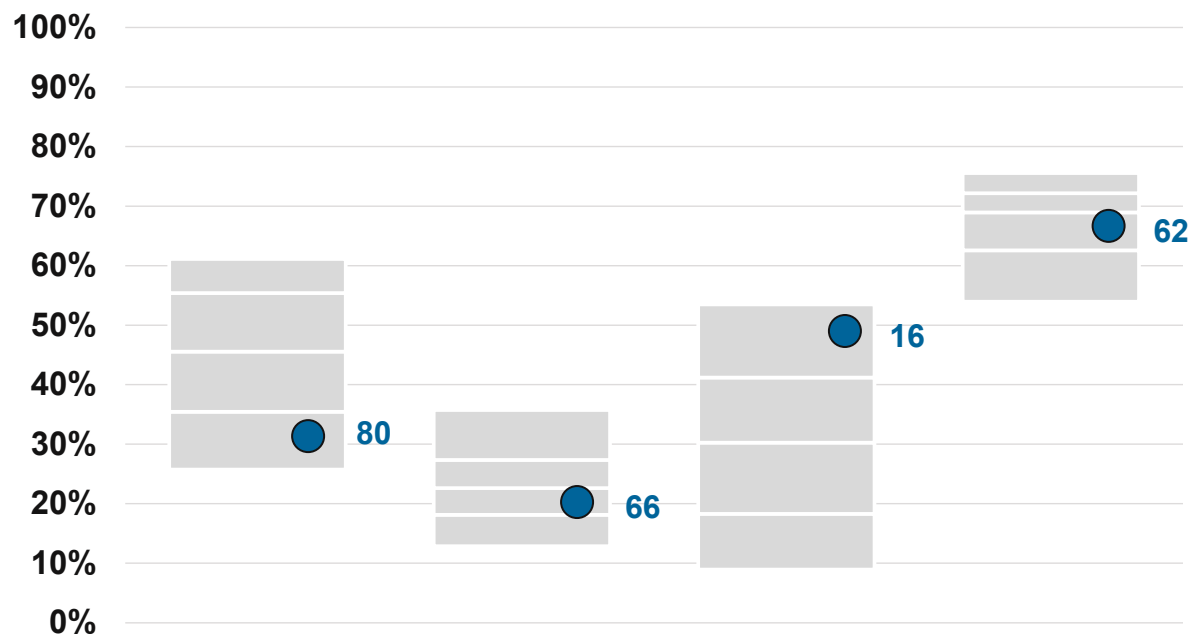


APFC FY 2026 Target versus Large Public Funds

Target Asset Allocation Comparison

- Low Public Equity
 - Lower allocation to public equities than 80% of Public Funds.
 - Median is 46%, APFC is 32%.
- Below Median Public Fixed Income
 - Slightly below median allocation to public fixed income.
 - Median is 23%, APFC is 20%.
- High Private Markets
 - Higher allocation to private markets than 76% of Public Funds.
 - Median is 30%, APFC is 48%
- Below Median Growth Assets
 - Slightly below median allocation to Growth Assets
 - Median is 69%, APFC is 66%

Asset Allocation Distribution as of September 30, 2025
Callan Large Public Fund (> \$1 billion)



	Public Equity	Public Fixed Income	Private Markets	Growth Assets*
APFC	32%	20%	48%	66%
Median	46%	23%	30%	69%
Rank	80%	66%	16%	62%

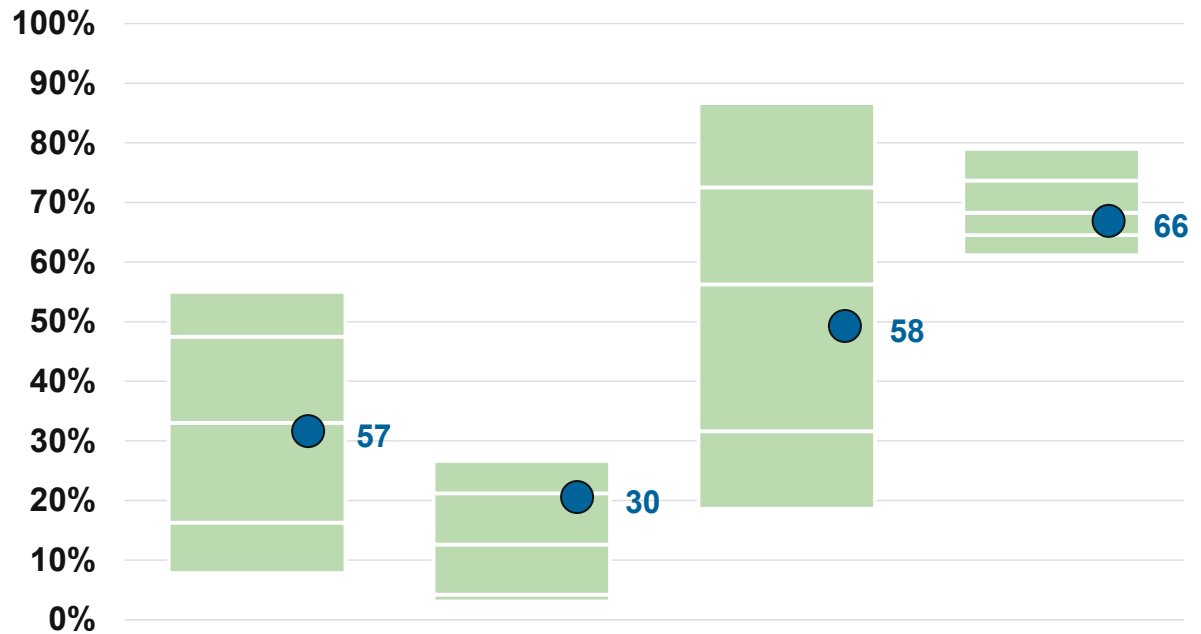
*Growth Assets include public equity, private equity, tactical opportunities, 70% of private real estate, 70% of private infrastructure/credit.

APFC FY 2026 Target versus Large Endowment/Foundations

Target Asset Allocation Comparison

- Median Public Equity
 - Roughly median allocation to public equities.
 - Median is 33%, APFC is 32%.
- High Public Fixed Income
 - Higher allocation to public fixed income than 70% of E&F's.
 - Median is 13%, APFC is 20%.
- Below Median Private Markets
 - Lower allocation to private markets than 58% of E&F's.
 - Median is 56%, APFC is 48%
- Median Growth Assets
 - Roughly median allocation to Growth Assets
 - Median is 68%, APFC is 66%

Asset Allocation Distribution as of September 30, 2025
Callan Large Endowment/Foundation (> \$1 billion)



	Public Equity	Public Fixed Income	Private Markets	Growth Assets
APFC	32%	20%	48%	66%
Median	33%	13%	56%	68%
Rank	57%	30%	58%	66%

*Growth Assets include public equity, private equity, tactical opportunities, 70% of private real estate, 70% of private infrastructure/credit.



**Alaska Permanent Fund
Corporation**

Historical and Projected Draw
Analysis

Outline

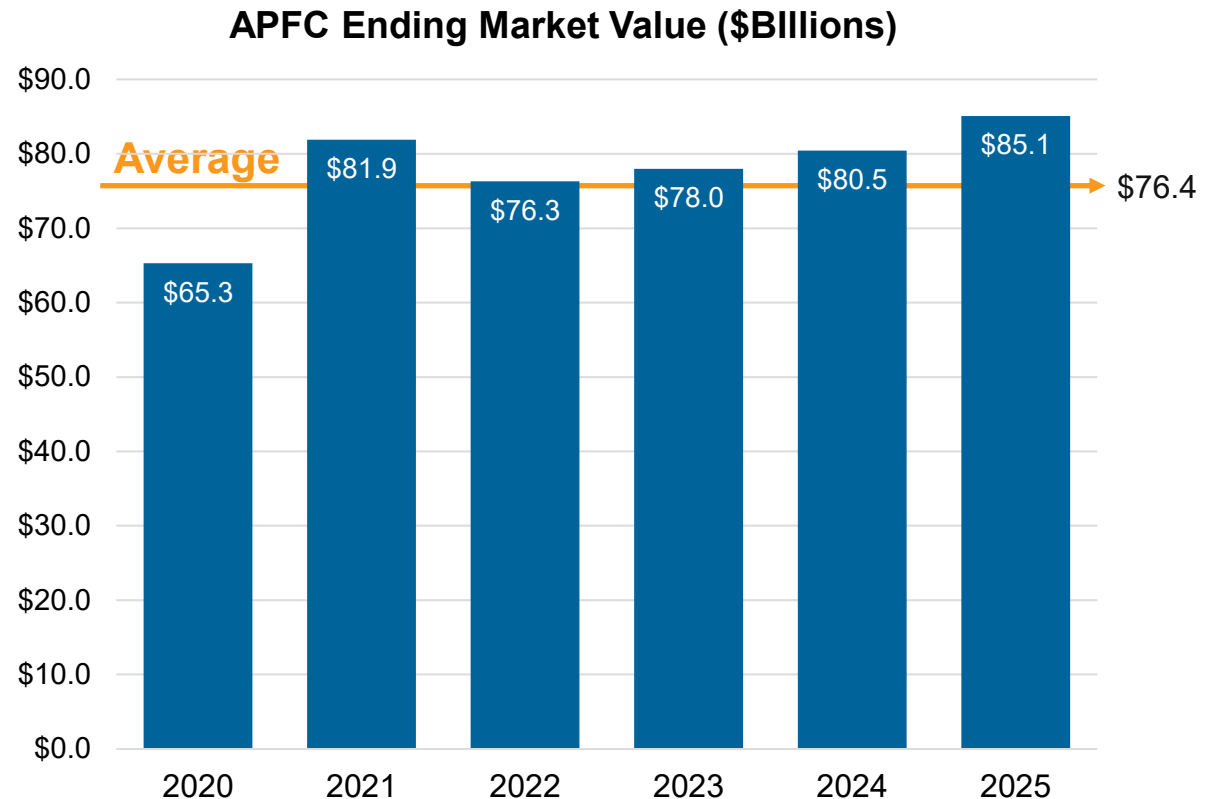
Analysis of Draw Rate

- Current Draw Formula
- Historical Draw
- Overlaying Different Draw Rates and Current Formula on History of Fund
- Projected Simulations of Future Results
- Impact of Draw Limitation Rules

Current 5% Draw Formula

Converting Formula to Average Draw Rate

- Current formula uses the average market value for the first five of the previous six fiscal year-ends.
- Payout, or “Draw” is equal to 5% of that average.
- For 2026 Draw this translates to \$3.8B, or 4.5% of beginning market value of 85.1B.
- On average given a 7.3% expected return, this translates to an average draw of **4.6%** of BMV.
- In years with large negative returns, the relationship is reversed resulting in a larger draw than 5% relative to beginning value.



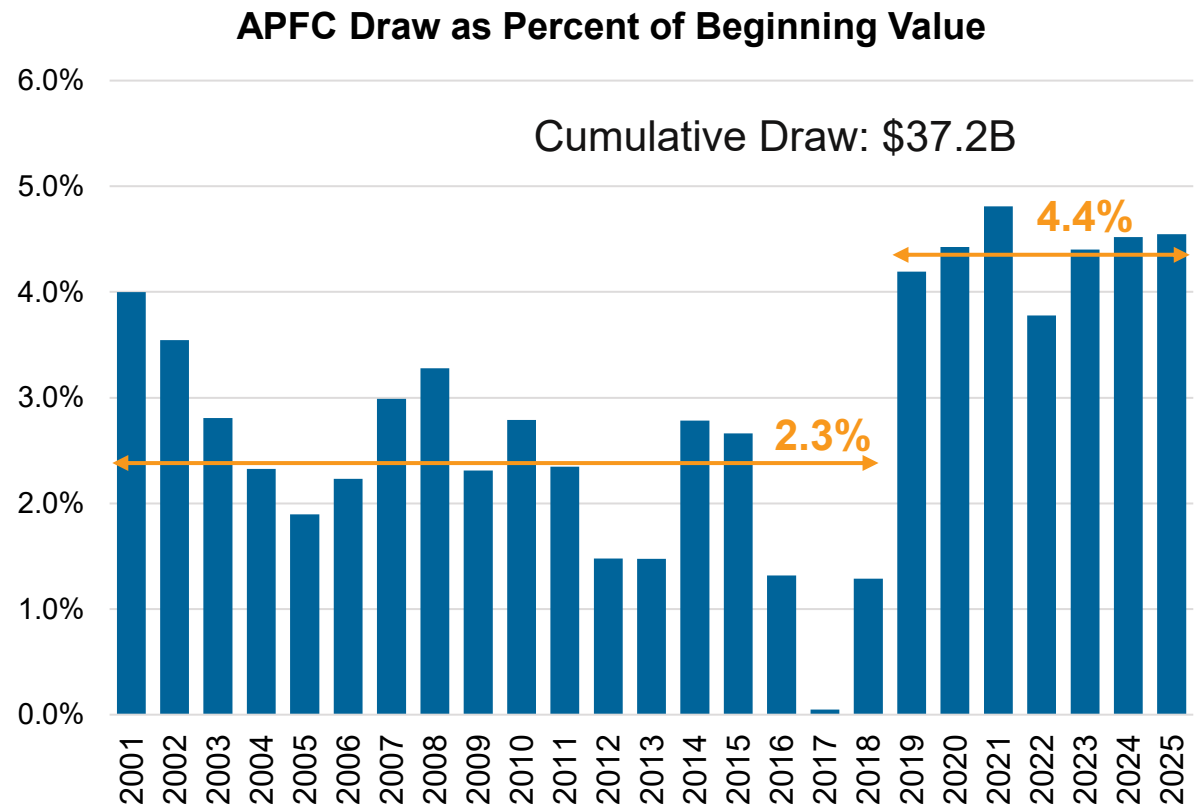
A) $5\% * \$76.4\text{B Average} = \3.8B Draw

B) $\$3.8\text{B Draw} / \$85.1\text{B Ending Value} = 4.5\%$ Draw Rate

Historical Draw

History of Permanent Fund Draw

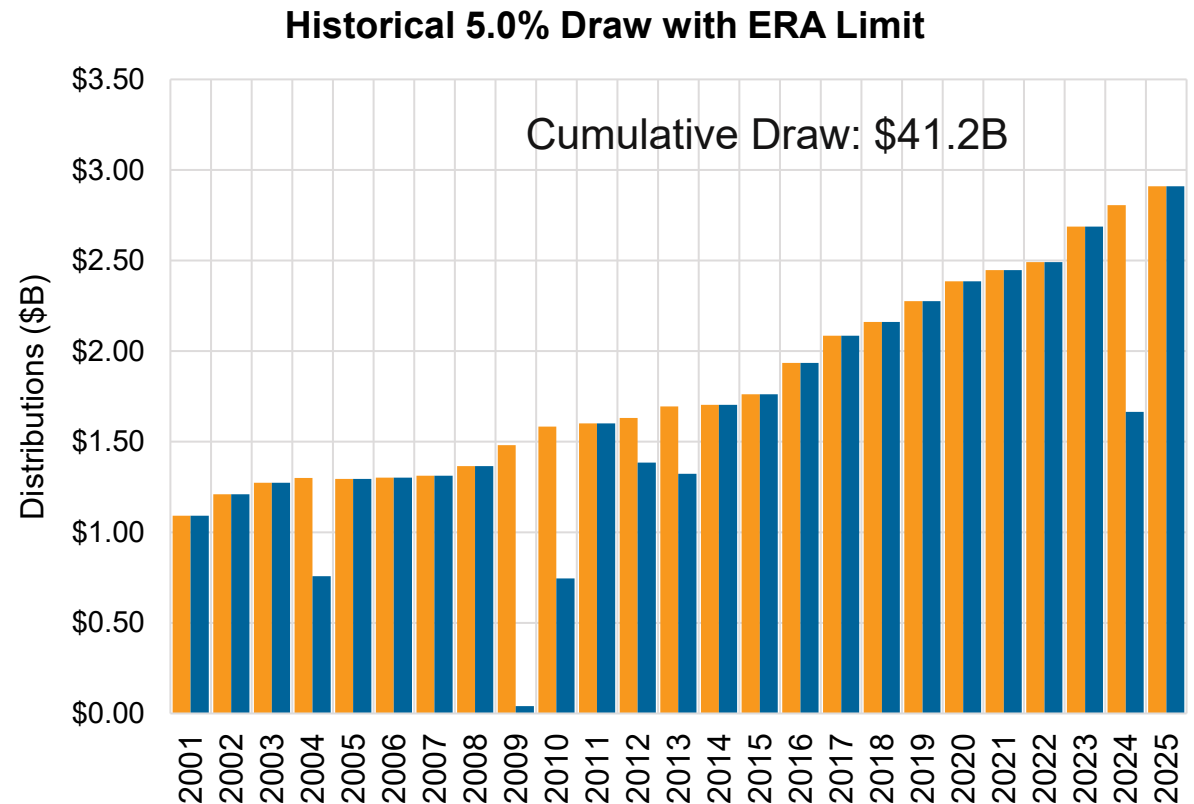
- 2001-2018, the average annual draw from the Permanent Fund was 2.3% of beginning value.
- 2019-2025, the average annual draw has been 4.4% of beginning value.
- The formula during both regimes was based on an average of the previous five years (SNI and EMV) which smooths year-to-year volatility.
- Predictably this results in higher percentage payouts after negative return years ('01, '02, '08, etc.).



Historical Simulation – 5.0% Draw Rule with ERA Limits

History versus 5.0% Rule

- Orange bars show what the historical draw would have been using a 5.0% draw formula without the ERA limit.
- Blue bars show draws under the 5.0% rule with the ERA limit.
- ERA would have limited draw in multiple years ('04, '09, '10, '12, '13, '14, and '24).
- In 2009, the ERA limit would have wiped out almost the entire draw.
- This was due to a low starting ERA and realized losses resulting in negative SNI.
- Inflation proofing is zero in years where draw is limited.



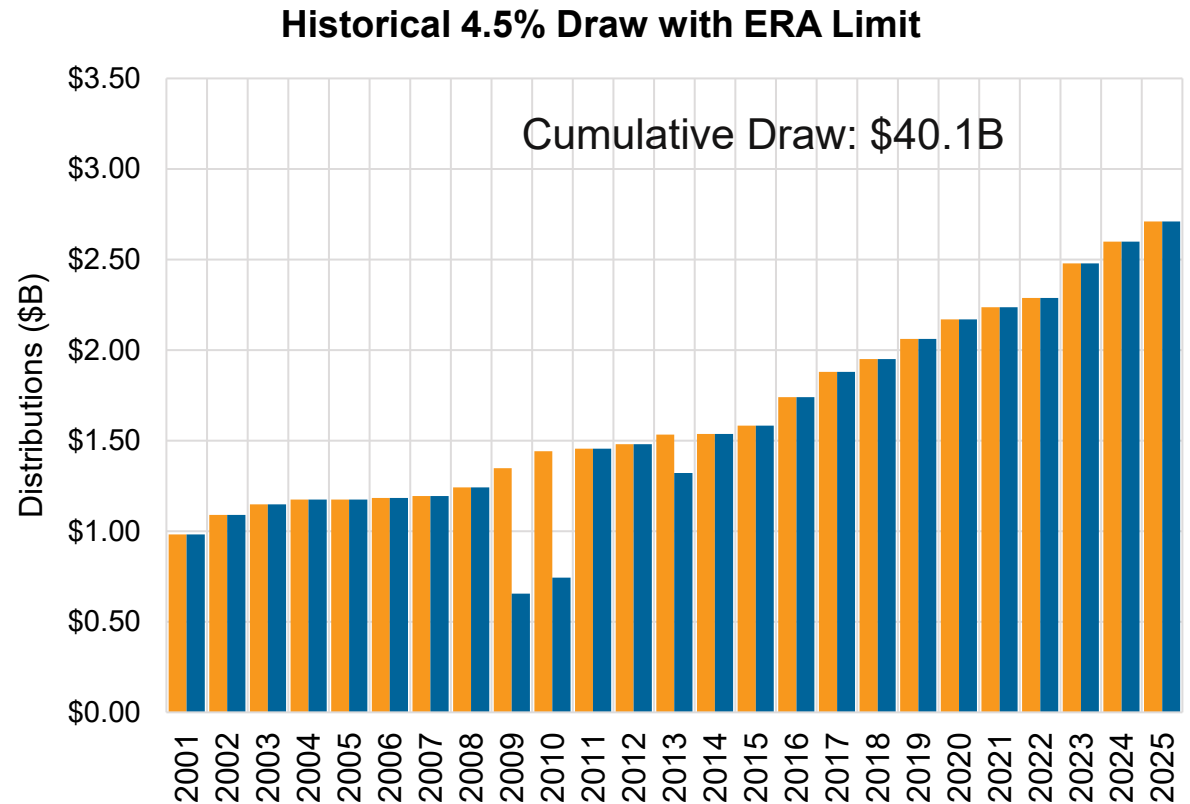
What happened in 2009?

- A) Beginning ERA balance was low.
- B) Statutory Net Income was negative due to the realization of losses from 2008.

Historical Simulation – 4.5% Draw Rule with ERA Limits

History versus 4.5% Rule

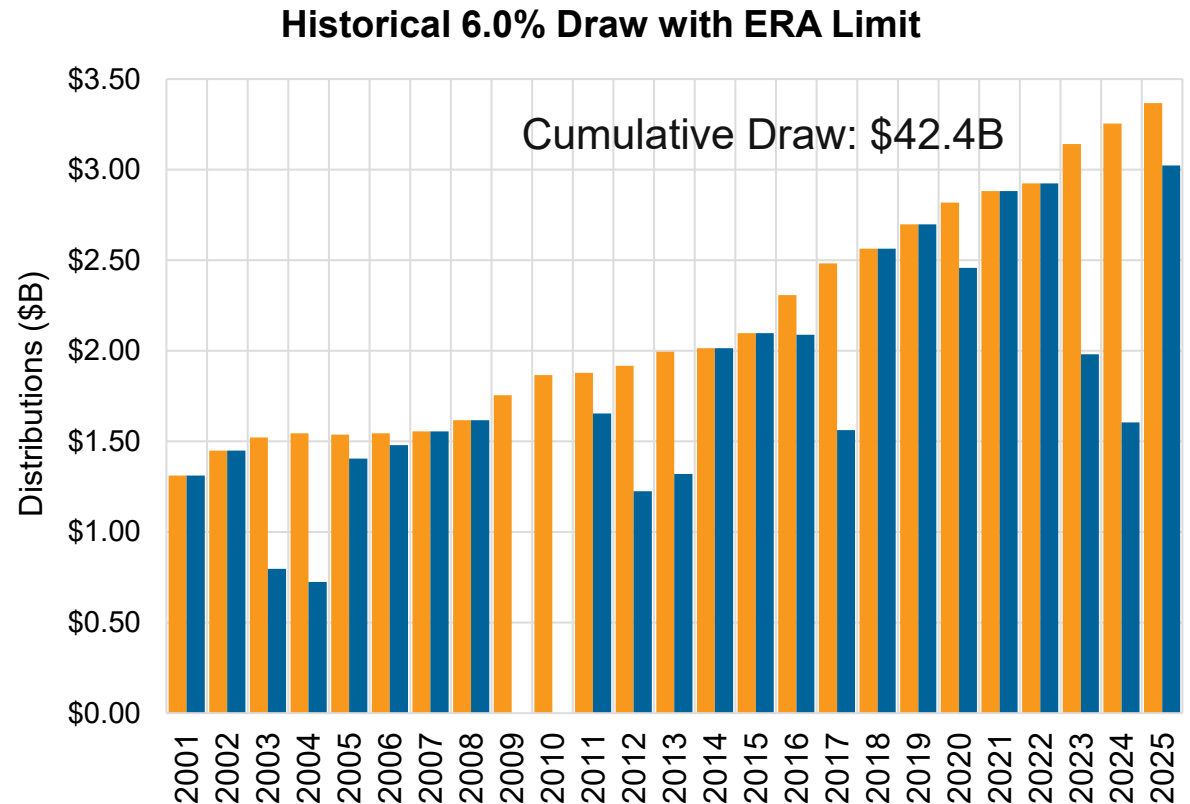
- Orange bars show what the historical draw would have been using a 4.5% draw formula without the ERA limit.
- Blue bars show draws under a 4.5% rule with the ERA limit.
- The ERA would have reduced the draw in '09, '10, and '13.
- The draw target would have been met in all other years.
- Cumulative draw was \$1.1B less than 5% rule.
- Draw was less volatile relative to 5% rule.



Historical Simulation – 6.0% Draw Rule with ERA Limits

History versus 6.0% Rule

- Orange bars show what the historical draw would have been using a 6.0% draw formula without the ERA limit.
- Blue bars show draws under a 6.0% rule with the ERA limit.
- The ERA limit would have been binding for the 6% draw in 12 of the 25 years.
- The draw would have been zero in '09 and '10.
- The cumulative draw was \$1.2B higher than under the 5% rule with more volatility.



Historical Simulation Comparing Draw Rates

Output for Key Financial Variables

- Table compares actual historical financial variables to simulated values under various assumed draw rates.
- Higher draw rates result in lower market values, lower inflation proofing appropriations, and lower ending principal balance.
- All of the formulas generate higher historical draws which reduces current market value relative to history.
- This results in a lower draw in 2025 relative to the current draw for all of the draw rates.

Draw	Historical	4.50%	5.00%	6.00%
2025 Ending Market Value	\$85,099,871	\$71,280,573	\$68,988,253	\$66,304,580
2025 Ending ERA Balance	\$10,231,525	\$3,891,336	\$1,212,601	\$970,535
2025 Ending Principal Balance	\$58,854,467	\$54,417,531	\$53,483,828	\$51,124,181
2025 Distribution	\$3,657,263	\$2,709,418	\$2,910,669	\$3,023,737
2025 Inflation Proofing	\$0	\$1,402,455	\$1,378,173	\$1,316,809
Cumulative Draw	\$37,195,397	\$40,085,355	\$41,211,972	\$42,428,860
Cumulative Inflation Proofing	\$25,332,327	\$21,216,804	\$20,283,101	\$17,923,454

Monte Carlo Simulation

Projecting a Range of Potential Future Outcomes

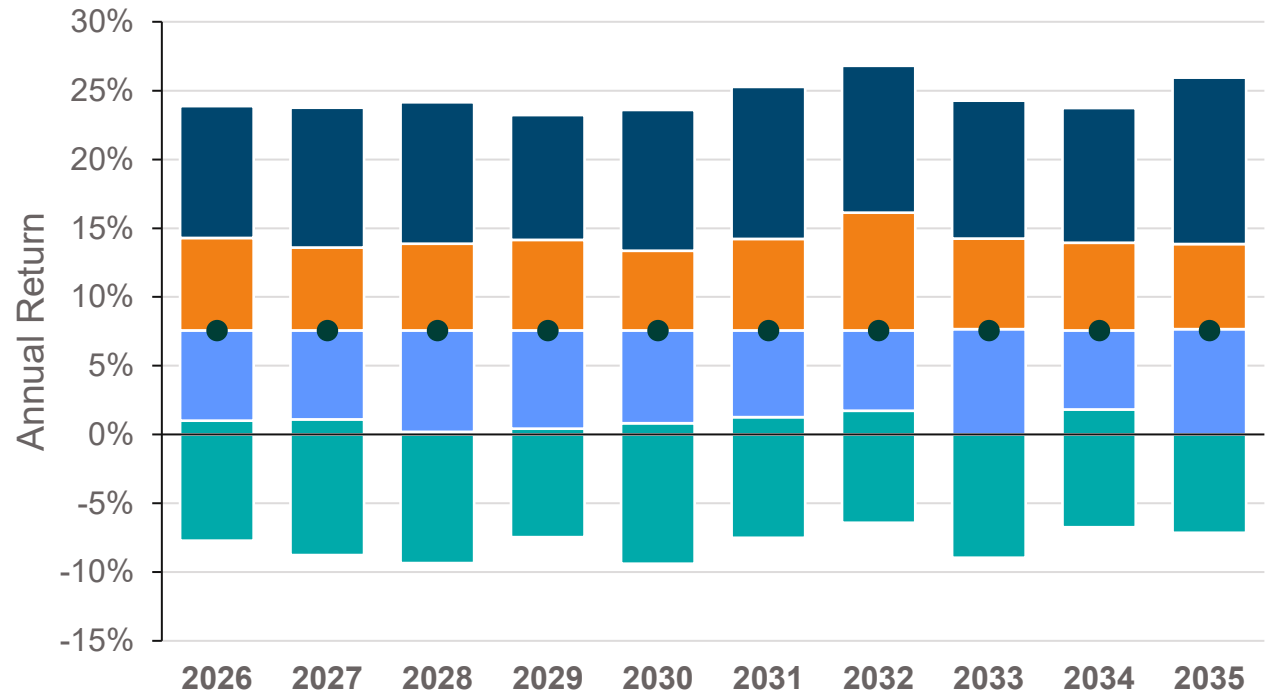
- Uses Callan's 2026 Capital Market Projections.
- Assumes 2026 Target Asset Allocation.
- Uses July 1, 2025, starting values for all key Permanent Fund financial variables.
 - Market Value.
 - Distribution.
 - ERA balance.
 - Principal balance.
- Simulates 2,000 different 10-year capital market scenarios ranging from 5th percentile best case (fabulous equity markets) to 95th percentile worst case (multiple market dislocations).
- Examines range of outcomes for key financial variables under 5% draw and 4.5% draw.
- Key Assumptions
 - Draw rate subject to ERA limitation.
 - Inflation proofing zero in FY26, follows standard formula thereafter.
 - Draw takes precedence over inflation proofing.
 - No inflation proofing deficit account.
 - First three quarters of current year SNI can be used to fund distribution.
- Examined projections for 5% (baseline), and 4.5% assumed draw rates.

Simulation Output – 5% Draw

Range of Projected Returns

- This first chart shows the range of projected returns for each year in the projection.
- The model is tuned so that 10-year return (7.30%) matches Callan’s capital market expectations.
- This range of returns drives the behavior of all of the other financial variables for the Fund.
- In any given year there is approximately 25% chance of a negative return.

Range of Nominal Return
(5th through 95th Percentiles)



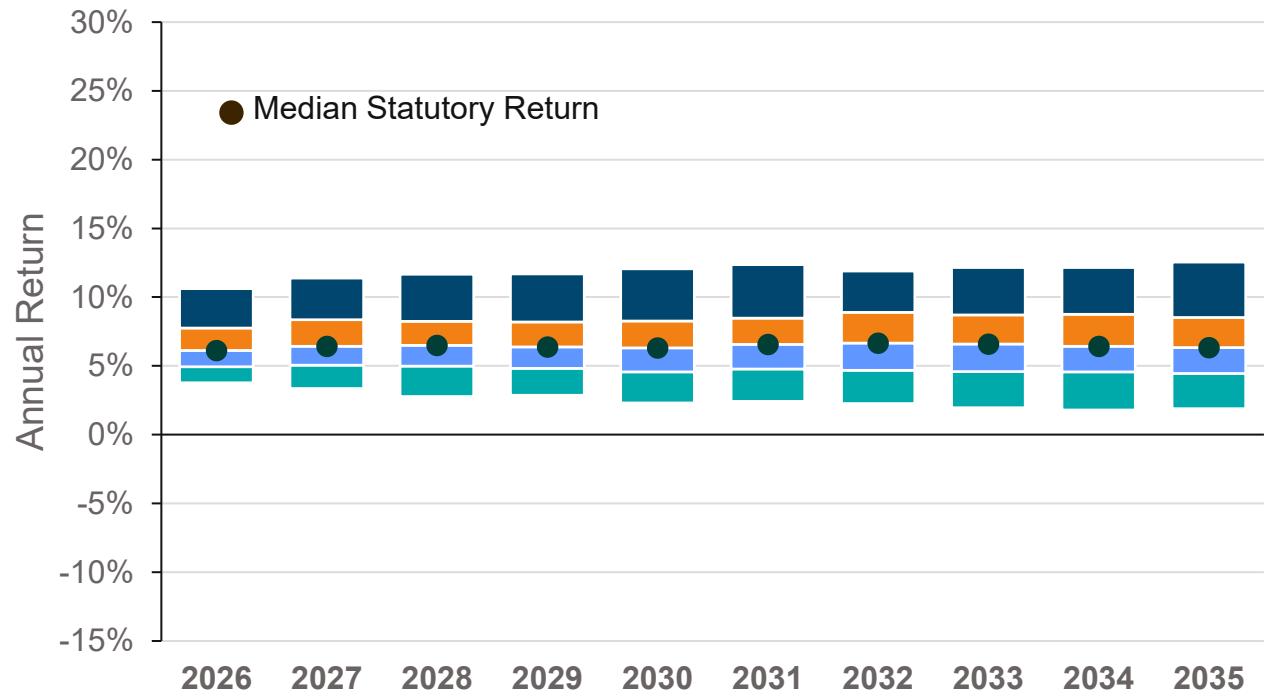
5th Percentile	23.89%	23.77%	24.17%	23.23%	23.61%	25.28%	26.82%	24.19%	23.75%	25.87%
25th Percentile	14.28%	13.59%	13.88%	14.16%	13.36%	14.22%	16.14%	14.15%	13.93%	13.75%
50th Percentile	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.56%	7.57%	7.57%	7.57%
75th Percentile	1.01%	1.10%	0.19%	0.43%	0.82%	1.26%	1.73%	-0.09%	1.81%	-0.09%
95th Percentile	-7.72%	-8.78%	-9.35%	-7.46%	-9.40%	-7.51%	-6.43%	-8.98%	-6.75%	-7.17%

Simulation Output – 5% Draw

Range of Statutory Return

- The range of Statutory Return is much narrower than the range of Total Return for the Fund.
- Statutory Return is driven by income (bond yields, dividends, etc.) and realized capital gains.
- 95th percentile outcomes are associated with multiple negative or low return years in a row which erode unrealized gains.
- Low-interest-rate scenarios also contribute to lower statutory returns

Range of Statutory Return
(5th through 95th Percentiles)



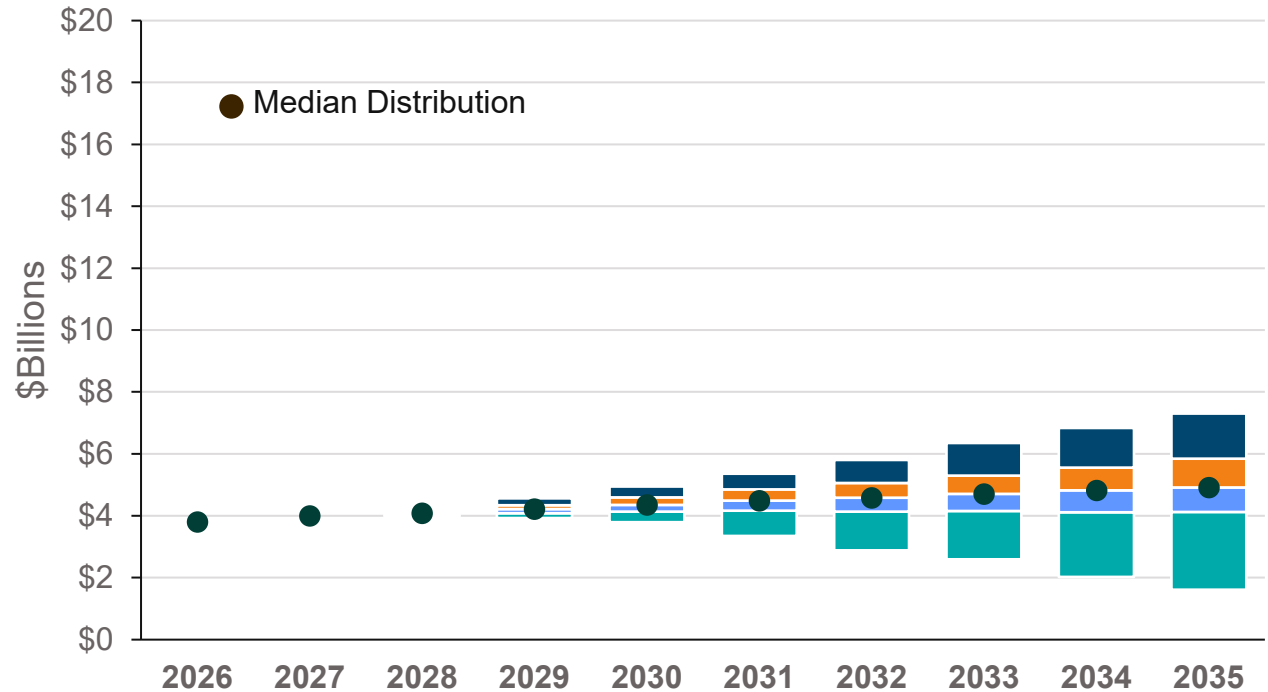
5th Percentile	10.62%	11.38%	11.66%	11.68%	12.05%	12.37%	11.91%	12.16%	12.16%	12.56%
25th Percentile	7.74%	8.37%	8.23%	8.21%	8.25%	8.48%	8.88%	8.70%	8.75%	8.52%
50th Percentile	6.13%	6.42%	6.49%	6.38%	6.31%	6.56%	6.65%	6.60%	6.43%	6.32%
75th Percentile	4.94%	5.06%	4.99%	4.83%	4.56%	4.77%	4.69%	4.59%	4.57%	4.44%
95th Percentile	3.78%	3.37%	2.77%	2.86%	2.31%	2.42%	2.26%	1.96%	1.79%	1.89%

Simulation Output – 5% Draw

Range of Projected Distributions

- This chart shows the range of distributions for each year under the 5.0% draw.
- The first two years are known based on the formula and there is less than a 5% chance of an ERA limitation.
- Beginning in 2030 there is a 5% chance that the ERA limitation will limit the draw.
- The magnitude of the 5th percentile limitation increases each year thereafter.
- By 2034 there is a 10% chance the limitation kicks in.

**Range of Distribution
(5th through 95th Percentiles)**



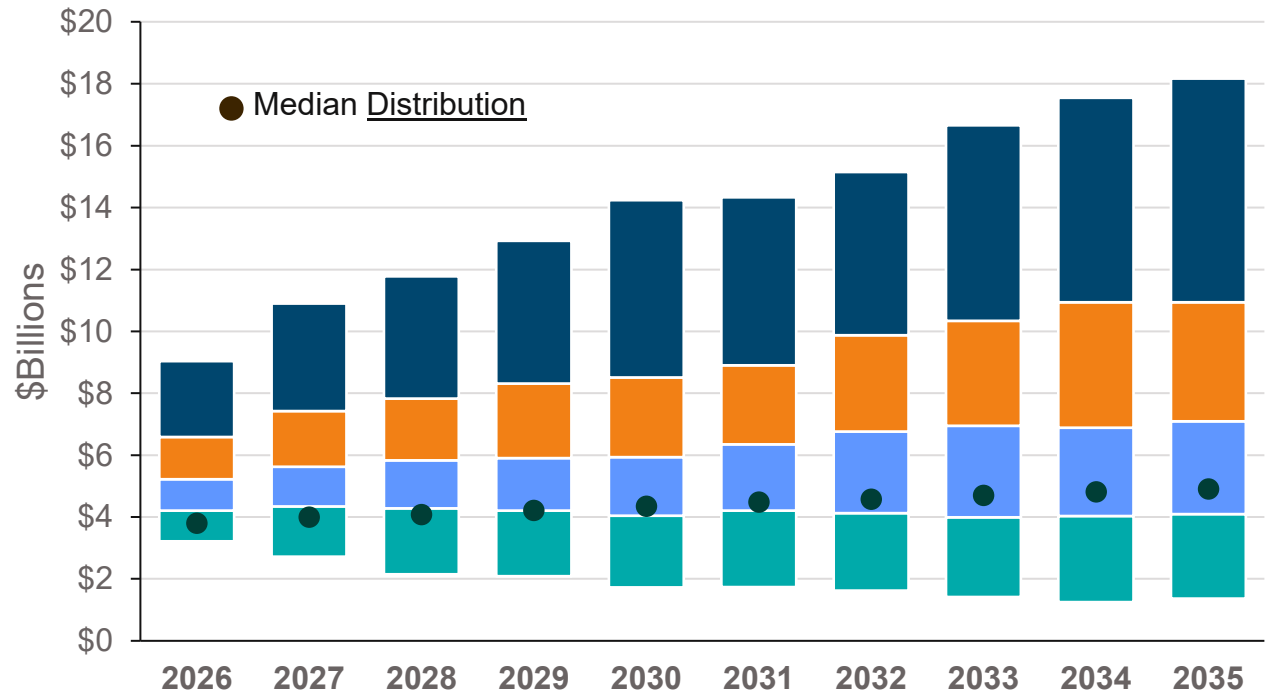
	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
5th Percentile	3.80	4.00	4.22	4.56	4.94	5.35	5.80	6.35	6.83	7.30
25th Percentile	3.80	4.00	4.13	4.34	4.59	4.84	5.06	5.30	5.55	5.84
50th Percentile	3.80	4.00	4.08	4.22	4.36	4.49	4.58	4.70	4.81	4.91
75th Percentile	3.80	4.00	4.02	4.08	4.13	4.17	4.14	4.15	4.11	4.12
95th Percentile	3.80	4.00	3.95	3.93	3.79	3.35	2.88	2.59	2.02	1.61

Simulation Output – 5% Draw

Range of Projected Statutory Net Income

- This chart shows the range of statutory net income in each year of the projection.
- The dots show the median projected distribution in each year.
- SNI exceeds the median distribution in 70-75% of outcomes each year across the projection period.
- If the distribution is first call on SNI (before inflation proofing) the fund should be able to meet the draw in most scenarios.

Range of Statutory Net Income
(5th through 95th Percentiles)



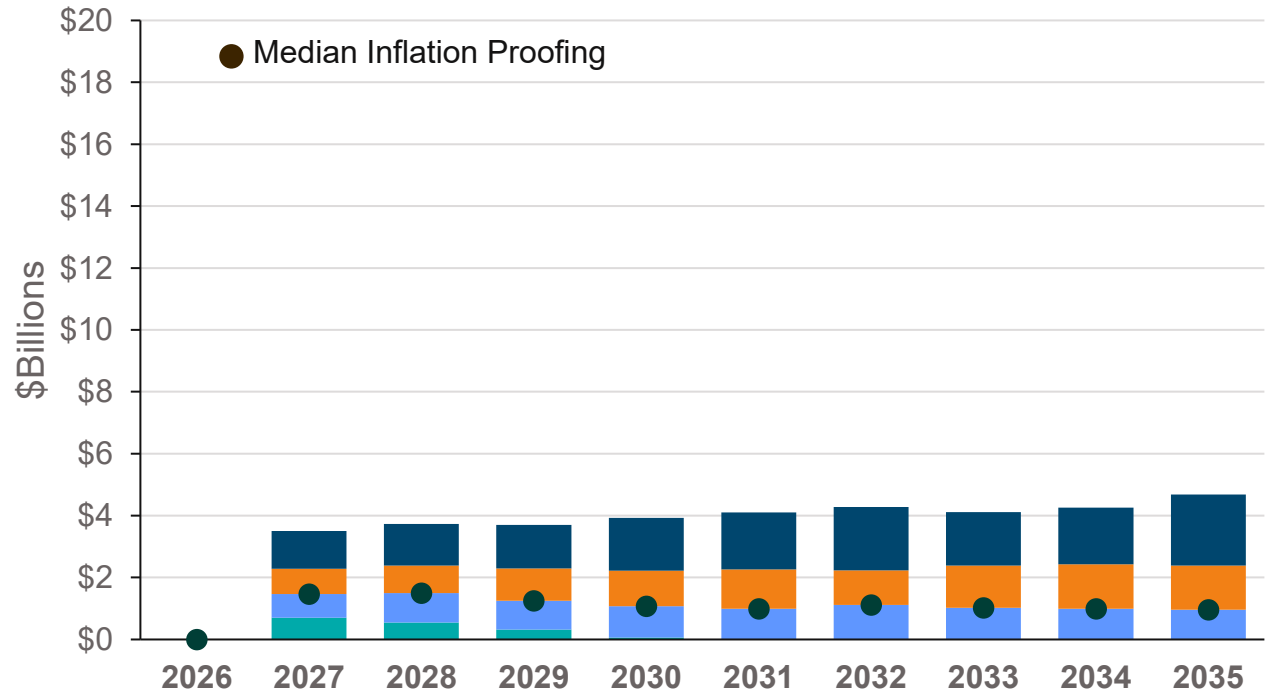
5th Percentile	9.03	10.89	11.78	12.92	14.24	14.33	15.15	16.66	17.55	18.17
25th Percentile	6.59	7.42	7.82	8.31	8.51	8.90	9.87	10.34	10.94	10.94
50th Percentile	5.22	5.63	5.84	5.90	5.93	6.35	6.76	6.95	6.89	7.09
75th Percentile	4.20	4.34	4.28	4.20	4.04	4.21	4.12	3.99	4.03	4.09
95th Percentile	3.21	2.71	2.15	2.09	1.72	1.73	1.62	1.41	1.25	1.37

Simulation Output – 5% Draw

Range of Projected Inflation Proofing Appropriations

- This chart shows the range of inflation proofing appropriations for each year.
- No inflation proofing appropriation assumed in 2026.
- Model assumes distributions have priority over inflation proofing.
- It assumes no inflation proofing “catch-up” after years of shortfalls.
- By 2031 there is at least a 25% chance that the ERA will limit inflation proofing to zero.

Range of Inflation Proofing Appropriations (5th through 95th Percentiles)



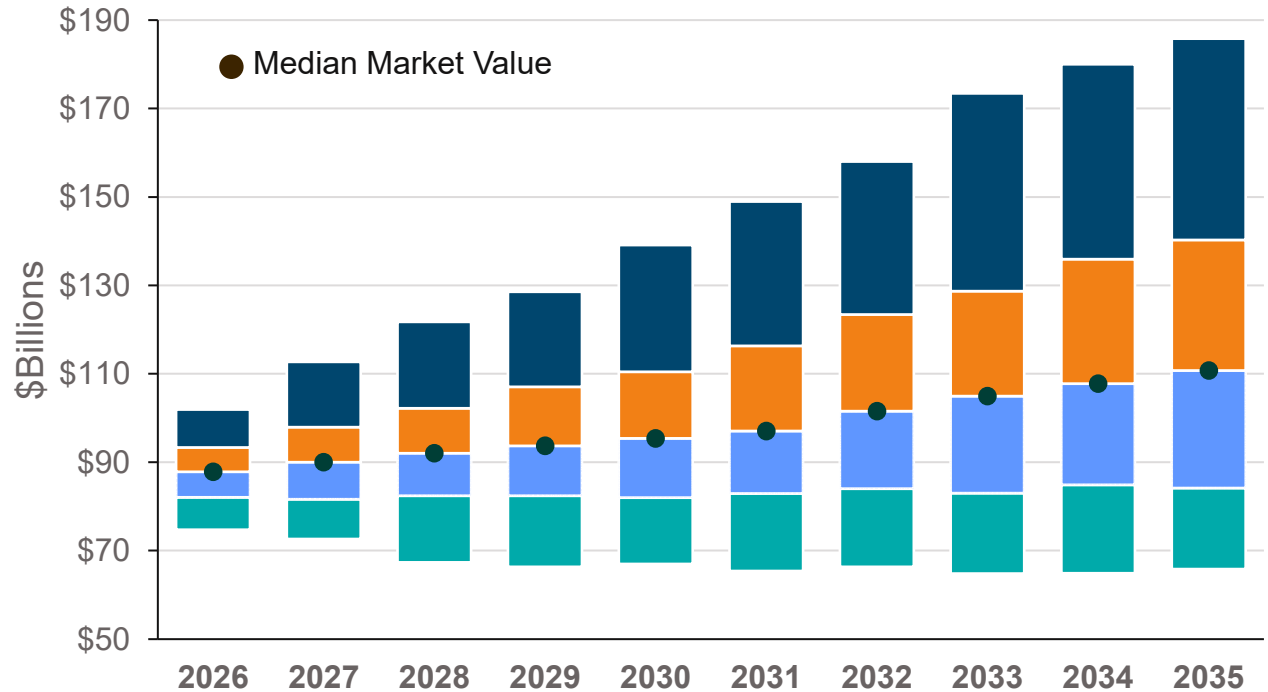
	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
5th Percentile	0.00	3.50	3.74	3.70	3.93	4.11	4.28	4.12	4.26	4.68
25th Percentile	0.00	2.28	2.38	2.30	2.22	2.27	2.23	2.39	2.43	2.38
50th Percentile	0.00	1.47	1.50	1.25	1.07	0.99	1.11	1.02	0.99	0.96
75th Percentile	0.00	0.70	0.54	0.31	0.06	0.00	0.00	0.00	0.00	0.00
95th Percentile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Simulation Output – 5% Draw

Range of Projected Ending Market Value

- This chart shows the range of ending market value for each year.
- The median grows steadily over time, projected to eclipse \$100B in 2032.
- 5th percentile results are associated with strong cumulative returns in equity markets.
- 95th percentile returns are associated with weak cumulative returns in equity markets.

Range of Ending Market Value
(5th through 95th Percentiles)



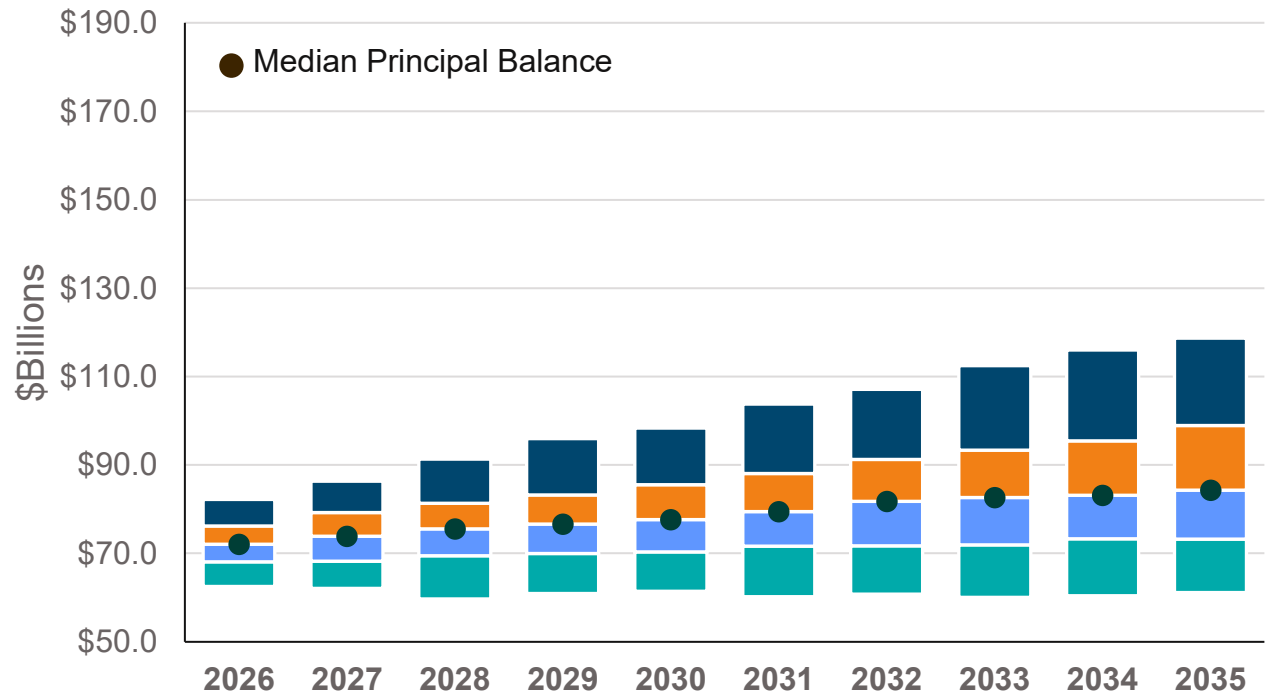
	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
5th Percentile	101.9	112.7	121.7	128.5	139.1	148.9	158.0	173.4	180.0	185.8
25th Percentile	93.3	97.9	102.2	107.0	110.4	116.3	123.4	128.7	135.9	140.2
50th Percentile	87.9	90.0	92.0	93.7	95.4	97.1	101.5	104.9	107.8	110.7
75th Percentile	82.1	81.6	82.4	82.4	82.0	82.9	84.0	83.0	84.9	84.2
95th Percentile	74.7	72.6	67.3	66.3	67.0	65.4	66.3	64.8	64.9	65.8

Simulation Output – 5% Draw

Range of Projected Ending Principal Balance

- This chart shows the range of ending principal balance for each year.
- Model assumes no inflation proofing appropriation in 2026.
- Model assumes statutory formula is followed in future years.
- Model assumes distributions have priority over inflation proofing.
- It assumes no inflation proofing “catch-up” after years of shortfalls.

**Range of Principal Balance
(5th through 95th Percentiles)**

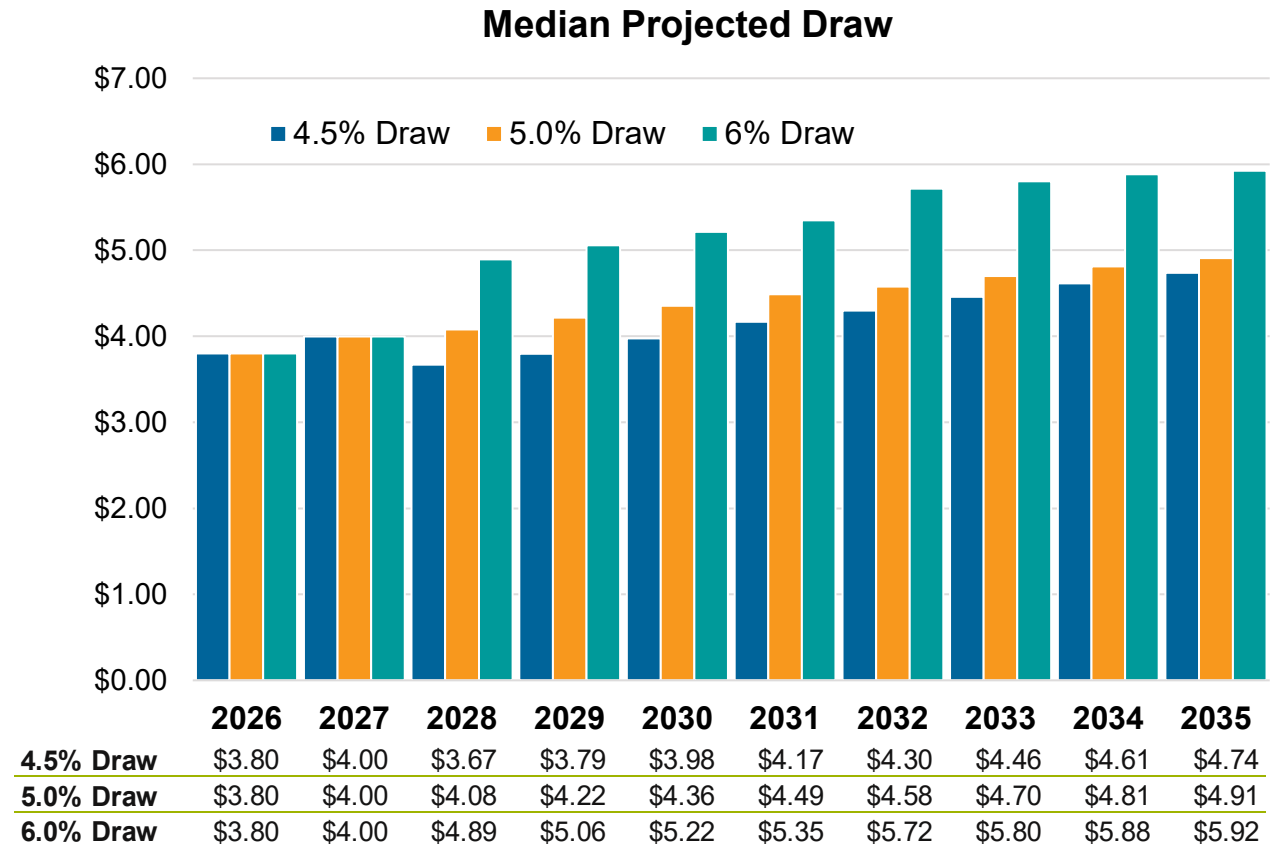


	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
5th Percentile	82.19	86.29	91.35	95.96	98.32	103.78	107.11	112.44	115.99	118.68
25th Percentile	76.16	79.20	81.32	83.20	85.56	88.08	91.25	93.38	95.47	98.92
50th Percentile	72.06	73.87	75.52	76.63	77.64	79.44	81.79	82.64	83.13	84.31
75th Percentile	68.11	68.22	69.42	69.98	70.31	71.60	71.72	71.90	73.28	73.23
95th Percentile	62.48	62.04	59.67	60.91	61.41	60.22	60.78	60.04	60.41	61.10

Simulation Output – Comparing Draw Rates

Median Projected Distributions under 4.5%, 5.0%, and 6.0% Draw Assumptions

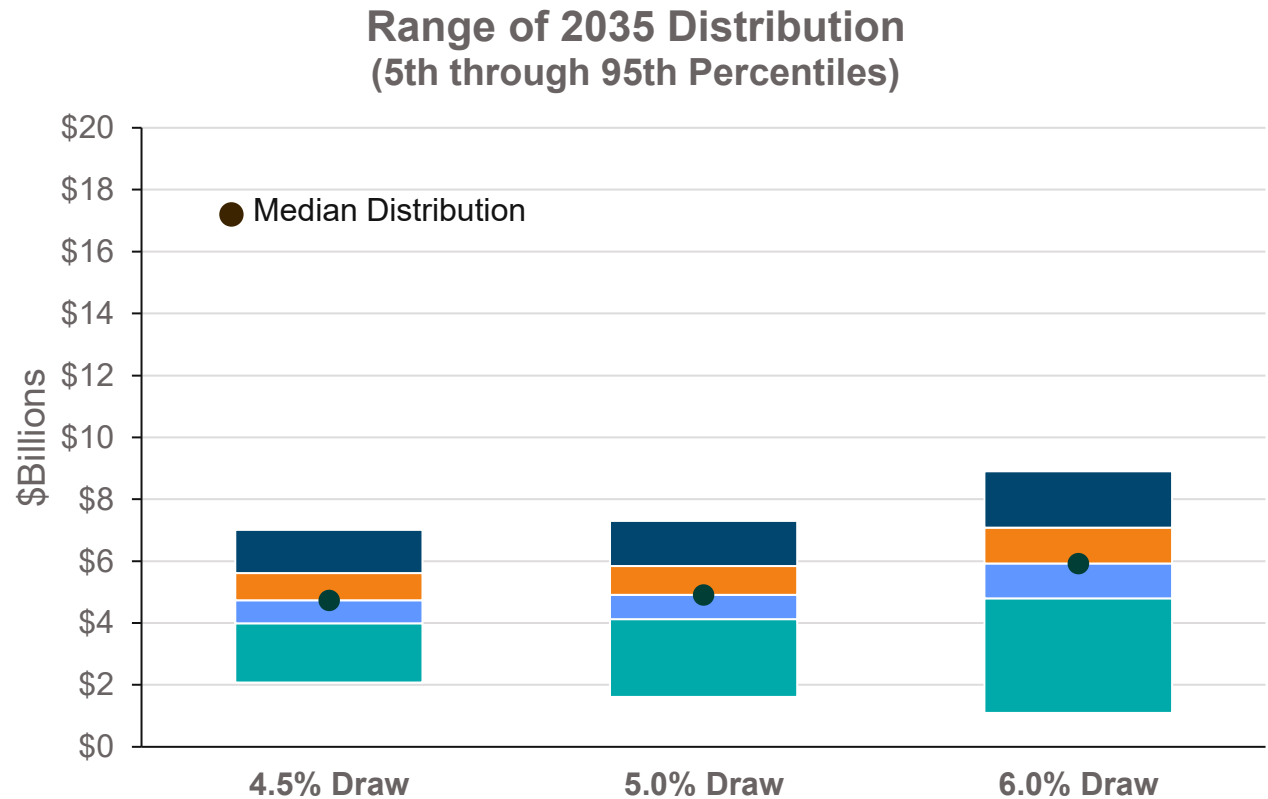
- This chart compares the median projected distributions under the three draw rates.
- The first two years were assumed to be the same.
- The 4.5% draw starts out lower than the 5.0% draw but eventually begins to catch up.
- Catch up accelerates after 2032 when EMV's in 5-year average diverge.
- 6% draw growth decelerates faster as EMV is eroded due to higher draw rate.



Simulation Output – 2035 Distributions

Range of 2035 Distribution under 4.5%, 5.0%, and 6.0% Draw Assumptions

- This chart compares the range of projected distributions in FY 2035 based on 4.5%, 5.0% and 6.0% draw assumptions.
- The median distribution increases as the draw rate increases.
- The range of outcomes also increases.
- The 95th percentile worst-case distribution is lowest under the 6% draw rate.

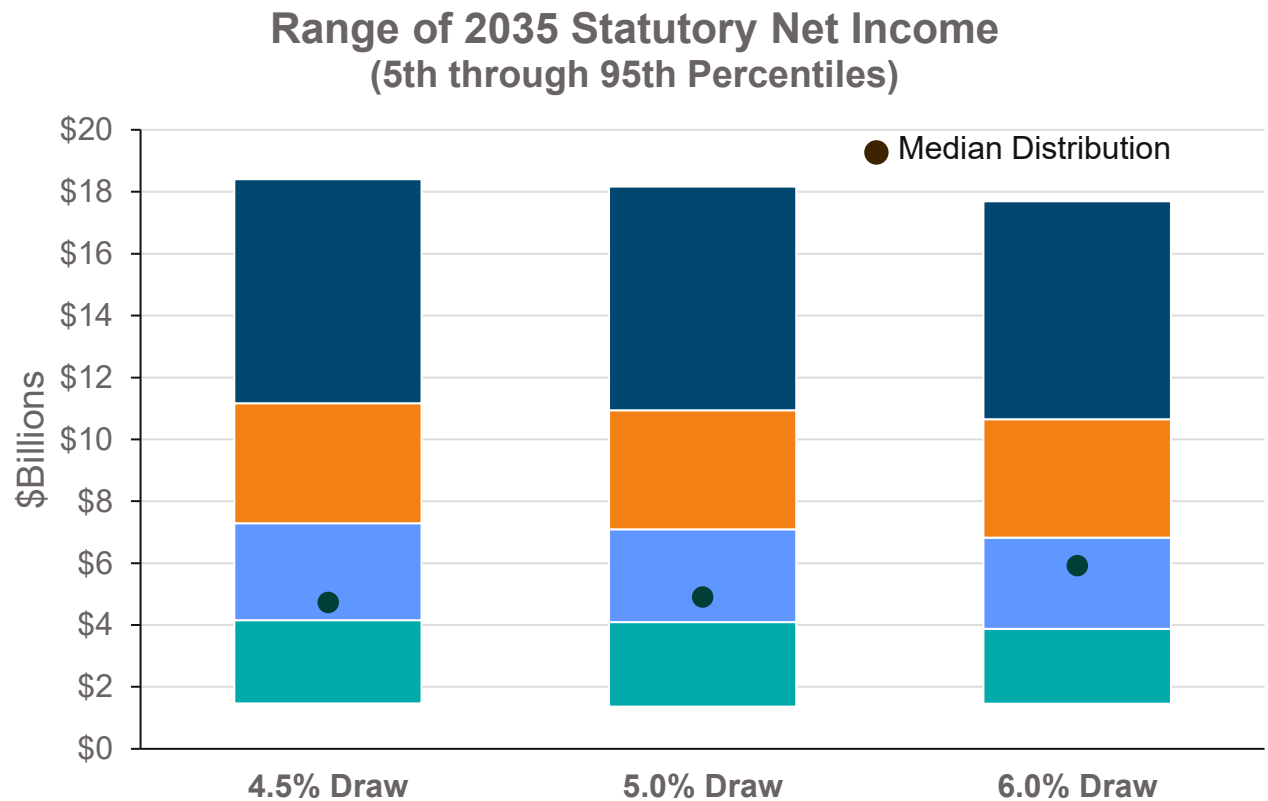


	4.5% Draw	5.0% Draw	6.0% Draw
5th Percentile	7.0	7.3	8.9
25th Percentile	5.6	5.8	7.1
50th Percentile	4.7	4.9	5.9
75th Percentile	4.0	4.1	4.8
95th Percentile	2.1	1.6	1.1

Simulation Output – 2035 Statutory Net Income

Range of 2035 SNI under 4.5%, 5.0%, and 6.0% Draw Assumptions

- This chart compares the range of projected SNI in FY 2035 based on 4.5%, 5.0% and 6.0% draw assumptions.
- The median SNI decreases as the draw rate increases.
- The range of outcomes also decreases modestly.
- The 95th percentile worst-case is approximately the same across the three draw rates.



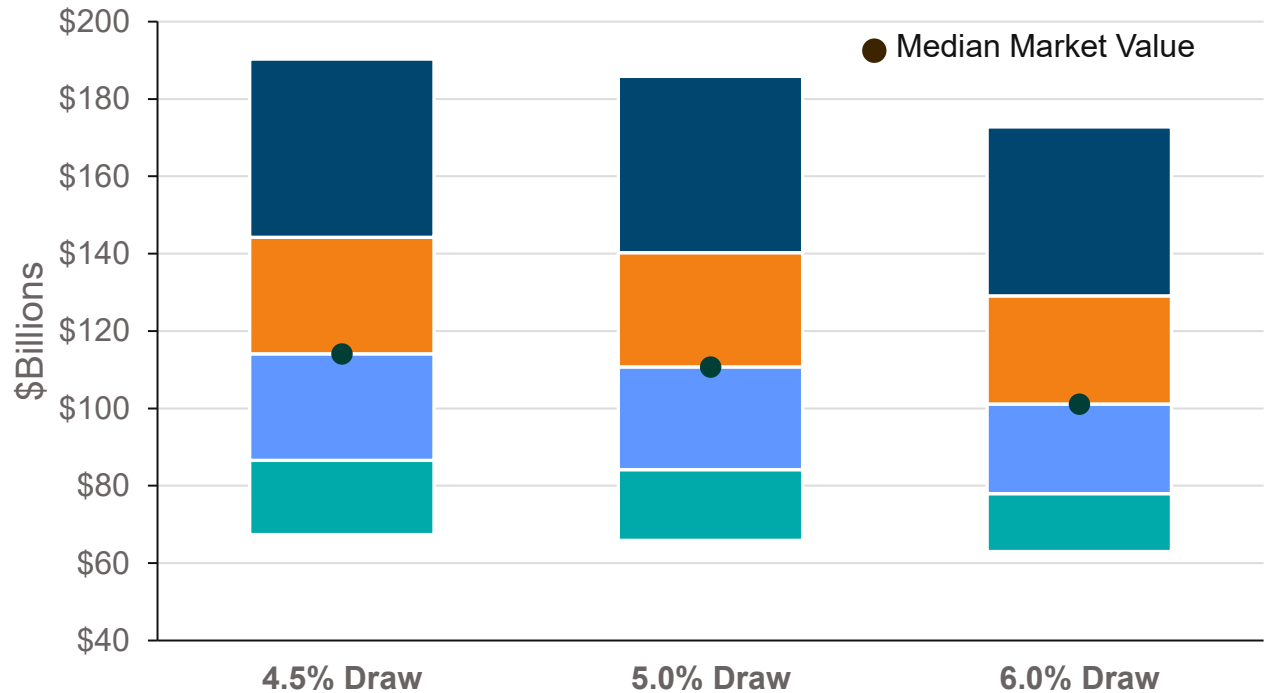
Percentile	4.5% Draw	5.0% Draw	6.0% Draw
5th Percentile	18.4	18.2	17.7
25th Percentile	11.2	10.9	10.6
50th Percentile	7.3	7.1	6.8
75th Percentile	4.2	4.1	3.9
95th Percentile	1.5	1.4	1.5

Simulation Output – 2035 Ending Market Value

Range of 2035 Market Value under 4.5%, 5.0%, and 6.0% Draw Assumptions

- This chart compares the range of projected market values at the end of FY 2035 based on 4.5%, 5.0% and 6.0% draw assumptions.
- The reduced draw rate results in higher market values across all scenarios.
- The median difference is roughly \$13 billion between the 4.5% draw and the 6% draw.
- The differences are larger at the top of the distribution and smaller at the bottom.

Range of 2035 Ending Market Value
(5th through 95th Percentiles)



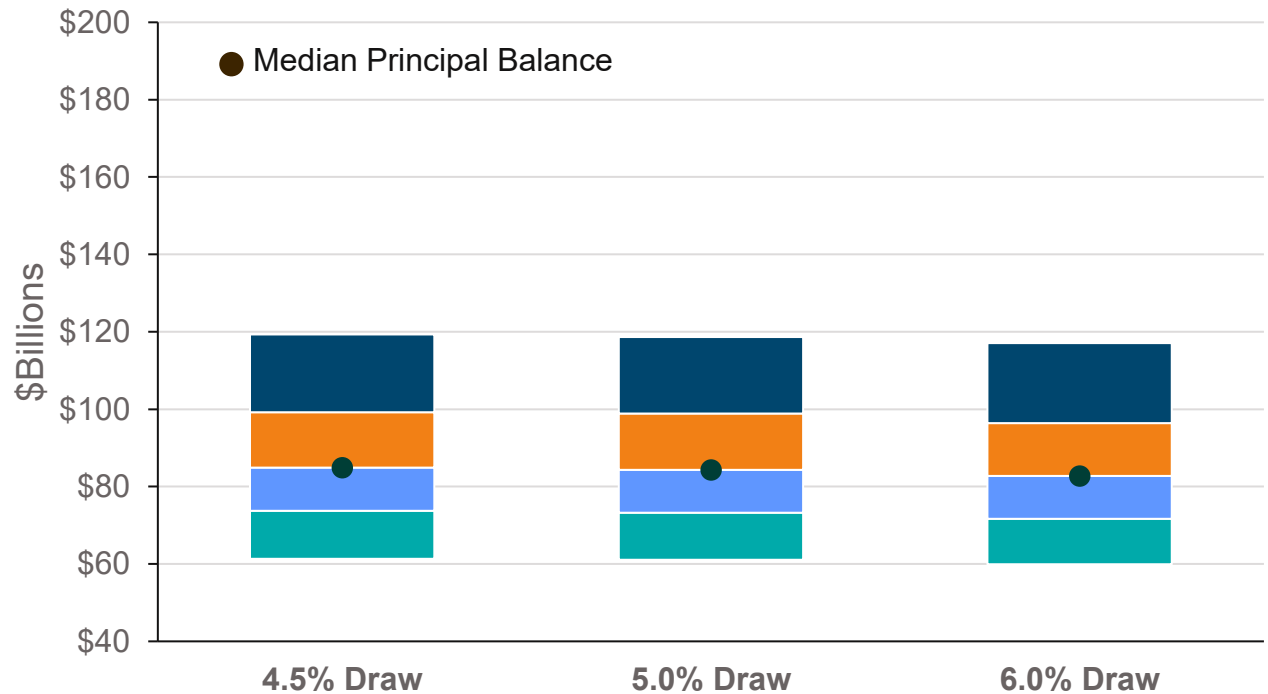
Percentile	4.5% Draw	5.0% Draw	6.0% Draw
5th Percentile	190.3	185.8	172.8
25th Percentile	144.2	140.2	129.1
50th Percentile	114.1	110.7	101.1
75th Percentile	86.6	84.2	78.0
95th Percentile	67.4	65.8	62.9

Simulation Output – 2035 Principal Balance

Range of 2035 Market Value under 4.5%, 5.0%, and 6.0% Draw Assumptions

- This chart compares the range of projected principal balance at the end of FY 2035 based on 4.5%, 5.0% and 6.0% draw assumptions.
- A higher draw reduces the projected principal balance.
- Most of the variation in principal balance is caused by the variation in inflation.
- High balances are associated with high inflation regimes.
- Higher draw balances are also reduced by a higher incidence of inflation proofing shortfalls.

Range of 2035 Principal Balance
(5th through 95th Percentiles)



	4.5% Draw	5.0% Draw	6.0% Draw
5th Percentile	119.3	118.7	117.1
25th Percentile	99.2	98.9	96.4
50th Percentile	84.9	84.3	82.8
75th Percentile	73.7	73.2	71.7
95th Percentile	61.3	61.1	59.9

Simulation Output – Probability of Shortfalls

Probability of Shortfalls 4.5%, 5.0%, and 6.0% Draw Assumptions

- Tables show the projected probability of distribution and inflation shortfalls.
- Shortfalls occur when ERA cannot support spending or appropriations to principal.
- Model assumes distributions have priority call on ERA and SNI.
- The higher the draw rate the higher the probability of shortfalls in both variables.

Probability of Distribution Shortfall

Year	4.5% Draw	5.0% Draw	6.0% Draw
2026	0%	0%	0%
2027	0%	0%	0%
2028	0%	0%	0%
2029	0%	0%	0%
2030	0%	0%	5%
2031	0%	5%	10%
2032	5%	5%	10%
2033	5%	5%	15%
2034	5%	10%	15%
2035	5%	10%	20%

Probability of Inflation Proofing Shortfall

Year	4.5% Draw	5.0% Draw	6.0% Draw
2026	0%	0%	0%
2027	0%	0%	0%
2028	0%	0%	5%
2029	5%	10%	15%
2030	15%	15%	25%
2031	15%	20%	30%
2032	15%	20%	35%
2033	15%	20%	35%
2034	20%	25%	35%
2035	20%	25%	35%

Draw Limitation Rules – Historical Analysis

5.0% Nominal Return Limitation – Various Roll Lengths

- This chart shows the historical nominal returns for the Fund over the last 30 years for the 1, 3, 5 and 10-year periods ended June 30 (fiscal year).
- The objective is to understand the potential impact of various rules to limit the draw during periods of low returns.
- The red cells indicate periods where the trailing return is less than 5.0%.
- The longer the roll the less frequently the limitation rule is binding.
- The longer the roll the smaller the impact on the draw when the limitation rule becomes binding.

Roll	1 Year	3 Year	5 Year	10 Year
Periods < 5%:	9	7	8	2
6/30/1995	14.49	9.41	9.75	10.54
6/30/1996	13.43	9.63	10.61	9.65
6/30/1997	17.03	14.97	11.69	10.57
6/30/1998	16.37	15.60	12.41	11.67
6/30/1999	9.48	14.24	14.13	11.39
6/30/2000	9.20	11.63	13.05	11.39
6/30/2001	-3.26	4.97	9.51	10.06
6/30/2002	-2.24	1.08	5.64	8.63
6/30/2003	4.45	-0.41	3.38	7.80
6/30/2004	14.23	5.26	4.26	9.09
6/30/2005	10.43	9.63	4.50	8.69
6/30/2006	10.99	11.87	7.41	8.46
6/30/2007	17.74	13.00	11.48	8.52
6/30/2008	-3.38	8.08	9.76	6.52
6/30/2009	-17.49	-2.09	2.84	3.55
6/30/2010	11.18	-3.94	2.98	3.74
6/30/2011	20.40	3.37	4.67	6.03
6/30/2012	0.27	10.31	1.36	6.30
6/30/2013	10.43	10.06	4.11	6.89
6/30/2014	15.52	8.55	11.35	7.01
6/30/2015	5.44	10.39	10.18	6.52
6/30/2016	0.65	7.03	6.30	5.48
6/30/2017	12.89	6.21	8.85	5.04
6/30/2018	10.84	7.99	8.93	6.49
6/30/2019	6.34	9.99	7.15	9.23
6/30/2020	2.06	6.36	6.45	8.30
6/30/2021	29.93	12.14	12.03	9.13
6/30/2022	-1.17	9.44	9.09	8.97
6/30/2023	5.17	10.53	7.95	8.44
6/30/2024	7.87	3.89	8.26	7.70
6/30/2025	9.31	7.43	9.75	8.09

Draw Limitation Rules – Historical Analysis

5.0% Real Return Limitation – Various Roll Lengths

- This chart shows the historical real returns for the Fund over the last 30 years for the 1, 3, 5 and 10-year periods ended June 30 (fiscal year).
- A 5.0% real return limitation would be significantly more binding than a nominal limitation.
- This reinforces the observation that achieving a 5% real return is difficult more than 50% of the time.
- Even under the 10-year roll the limitation would have been binding in 11 of the last 30 years.
- A real return limitation model would place significant emphasis on beating inflation.
- High inflation periods would significantly impact the draw.

Roll	1 Year	3 Year	5 Year	10 Year
Periods < 5%:	12	13	14	11
6/30/1995	11.44	6.57	6.49	6.99
6/30/1996	10.68	6.87	7.73	6.00
6/30/1997	14.73	12.27	8.98	7.06
6/30/1998	14.69	13.35	9.95	8.38
6/30/1999	7.52	12.26	11.78	8.43
6/30/2000	5.47	9.18	10.57	8.52
6/30/2001	-6.50	1.99	6.93	7.33
6/30/2002	-3.31	-1.59	3.31	6.10
6/30/2003	2.34	-2.55	0.96	5.36
6/30/2004	10.96	3.12	1.58	6.57
6/30/2005	7.90	6.99	2.06	6.23
6/30/2006	6.67	8.50	4.76	5.84
6/30/2007	15.05	9.83	8.50	5.87
6/30/2008	-8.40	4.08	6.20	3.53
6/30/2009	-16.06	-4.15	0.24	0.91
6/30/2010	10.13	-5.46	0.68	1.37
6/30/2011	16.84	2.33	2.52	3.63
6/30/2012	-1.39	8.22	-0.59	3.84
6/30/2013	8.67	7.74	2.80	4.47
6/30/2014	13.44	6.72	9.34	4.71
6/30/2015	5.32	9.07	8.35	4.45
6/30/2016	-0.49	5.92	4.95	3.73
6/30/2017	11.26	5.25	7.51	3.40
6/30/2018	7.97	6.11	7.37	5.06
6/30/2019	4.69	7.94	5.67	7.48
6/30/2020	1.42	4.64	4.87	6.59
6/30/2021	24.54	9.60	9.60	7.24
6/30/2022	-10.23	4.46	5.21	6.37
6/30/2023	2.20	4.76	4.05	5.71
6/30/2024	4.89	-1.08	4.09	4.88
6/30/2025	6.64	4.56	5.17	5.01

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