Investment Board Meeting Agenda

Thursday, June 15, 2023
IPERS Board Room or
Conference Telephone #: 646-931-3860
Meeting ID: 885 5316 9685
8:30 a.m. – 11:30 a.m.

8:30 a.m.	**Call to Order**
8:30 a.m.	**Approval of March 24, 2023, Board Meeting Minutes**
8:35 a.m.	**CEO Report – Greg Samorajski**
8:45 a.m.	**Contribution Rate Funding Policy** Greg Samorajski, IPERS
9:30 a.m.	**Break**
9:40 a.m.	**IPERS Investment Staff Reports** • Beta Report – Keith Scholten • Alpha Report – Investment Team • Private Market Program – Investment Team • Risk Report – Sriram Lakshminarayanan • CIO Updates – Sriram Lakshminarayanan
10:00 a.m.	**Private Markets Overview and Outlook** Marc Friedberg, Wilshire
10:20 a.m.	**Private Markets Program Annual Review** Pat Reinhardt and Marcus Dong, IPERS
11:00 a.m.	**Private Market Co-Investment Programs** Sriram Lakshminarayanan and Pat Reinhardt, IPERS
11:20 a.m.	**Securities Litigation Report** Elizabeth Hennessey, IPERS
11:25 a.m.	**Public Comments**
11:30 a.m.	**Other Business** • Confirm Next Board Meeting Dates of September 27–28, 2023 • Next BAC Meeting is Monday, August 28, 2023
11:30 a.m.	**Adjourn**

IPERS

INVESTMENT BOARD MEETING MINUTES

IPERS Headquarters
7401 Register Drive, Des Moines, Iowa
March 24, 2023

The following people participated in the IPERS Investment Board meeting held on Friday, March 24, 2023.

Members of the Board – Present

Justin Kirchhoff, Chair
Bill Bemis, Vice Chair
Tami Loge
Treasurer Roby Smith
Kris Rowley
Lisa Stange
Senator Pam Jochum
Senator Mark Lofgren

Members of the Board – Absent

None

Administration

Greg Samorajski, CEO
Sriram Lakshminarayanan, CIO
John Fujiwara, Head of Strategy
Sheldon Lien, Senior Investment Officer
Pat Reinhardt, Senior Investment Officer
Keith Scholten, Senior Investment Officer
Marcus Dong, Investment Officer
Kevin Terdal, Investment Officer
Melinda McElroy, Executive Assistant
Elizabeth Hennessy, General Counsel
David Martin, Chief Benefits Officer
Tara Hagan, Chief Financial Officer
Rick Hindman, Chief Information Officer
Shawna Lode, Director of Communications

Consultants

Thomas Toth, Wilshire
Ali Kazemi, Wilshire
Blake Curtis, Wilshire

Call to Order

Chair Justin Kirchhoff called the meeting to order at 8:30 a.m.

Approval of Minutes from Previous Meeting

Kris Rowley made the motion to approve the December 1, 2022, Investment Board meeting minutes. Tami Loge seconded. The minutes were approved by unanimous voice vote.

CEO Report – Greg Samorajski

Greg Samorajski welcomed State Treasurer Roby Smith to the Investment Board and introduced Russ Trimble and Molly Widen, also of the Treasurer's office. Greg next introduced Linda Guffey, IPERS' new deputy chief operations officer. Greg concluded his report by saying Governor Reynolds' proposed budget includes a $2.5 million administrative budget increase for IPERS. The legislature is currently considering this request.

Legislative Session Update – Shawana Lode

Shawna Lode reported on the 2023 legislative session and bills impacting IPERS.

Actuarial Consulting Services Hiring Recommendation – Bill Bemis

Bill Bemis reported IPERS received four proposals in response to the Actuarial Consulting Services RFP. The evaluation committee recommended the Investment Board hire Cavanaugh Macdonald as the System's actuary, subject to final due diligence and successful contract and fee negotiations. Bill Bemis made the motion to approve the hiring recommendation. Kris Rowley seconded. The motion carried by unanimous roll call vote.

Ayes: Justin Kirchhoff, Bill Bemis, Tami Loge, Kris Rowley, Treasurer Smith and Lisa Stange
Nays: None

MOTION PASSED

Closed Session for CIO Performance Evaluation and CEO Compensation

Kris Rowley made the motion that the IPERS Investment Board go into a closed session of this public meeting to discuss the CIO's annual performance evaluation and the CEO's compensation as authorized by Iowa Code section 21.5(1)(i). Tami Loge seconded. The motion carried by unanimous roll call vote.

Ayes: Justin Kirchhoff, Bill Bemis, Tami Loge, Kris Rowley, Treasurer Smith and Lisa Stange
Nays: None

MOTION PASSED

Kris Rowley made the motion that the IPERS Investment Board end its closed session and resume the open session of this meeting. Tami Loge seconded. The motion carried by unanimous roll call vote. The Board took no action during its closed session.

Ayes: Justin Kirchhoff, Bill Bemis, Tami Loge, Kris Rowley, Treasurer Smith and Lisa Stange
Nays: None

MOTION PASSED

Lisa Stange made the motion to approve a CEO salary increase of 5% effective for the next pay period. Should the Governor provide a salary adjustment per usual practice mid-year, the CEO's salary will be adjusted to ensure the 5% increase is maintained. Kris Rowley seconded. The motion carried by roll call vote.

Ayes: Justin Kirchhoff, Bill Bemis, Tami Loge, Kris Rowley, and Lisa Stange
Nays: Treasurer Smith

MOTION PASSED

Calendar Year 2022 Investment Performance Review – Thomas Toth and Ali Kazemi

Wilshire reported, as of December 31, 2022, the Total Fund performance for the calendar year was –10.6%, outperforming the policy benchmark return of –10.9%. The presentation also included a return/risk ranking, sources of risk and a performance review of each publicly traded asset class and the managers within each class.

Investment Policy and Goal Statement – Sriram Lakshminarayanan

Staff recommended the Investment Board revise the Asset Allocation Policy contained in Appendix B of the IPGS to make the Bloomberg U.S. Aggregate Index the Policy Benchmark for the core-plus asset class, effective July 1, 2023. In addition, the core-plus fixed-income asset class should be renamed to the core fixed-income asset class. Tami Loge made the motion to approve the recommendation. Treasurer Smith seconded. The motion carried by roll call vote.

Ayes: Justin Kirchhoff, Tami Loge, Kris Rowley, Treasurer Smith and Lisa Stange
Nays: None
Absent: Bill Bemis

MOTION PASSED

IPERS Investment Staff Reports

CIO Updates

Sriram Lakshminarayanan updated the Board on several matters and reviewed a presentation on current market conditions.

Beta Report

Sriram Lakshminarayanan reviewed the beta report, noting the Fund's estimated market value of $39.789 billion as of March 17, 2023, the date of the report. All asset classes were within policy ranges.

Alpha Report

The investment staff reviewed the alpha report noting minor performance and process concerns with Columbia, an international equity manager.

Private Markets Program

Pat Reinhardt reviewed the investment managers in IPERS' private markets program noting minor concerns with Clarion Partners, Forest Investment Associates and UBS Farmland.

Risk Report

Sriram Lakshminarayanan presented IPERS' risk monitoring reports noting active risk remains well below the 1.5% target.

Public Comments

The Investment Board heard comments from former Senator Patrick Deluhery and Greg Jameson.

Confirm Next Meeting Date

The next regularly scheduled Investment Board meeting is Thursday, June 15, 2023, beginning at 8:30 a.m.

Other Business

The Board and IPERS staff thanked Lisa Stange for her years of dedicated service to the IPERS Investment Board.

Adjourn

With no further business to come before the Investment Board, the meeting adjourned at 11:51 a.m.

Contribution Rate Funding Policy

Background:

IPERS is charged with setting a “Required Contribution Rate” for each membership category within IPERS that will discharge its liabilities. Iowa Code §97B.11(3)(d) provides the basic framework for implementing this charge by stating:

> The Required Contribution Rate that is set by the system for a membership category shall be the contribution rate the system actuarially determines, based upon the most recent actuarial valuation of the system and using the actuarial methods, assumptions, and funding policy approved by the investment board, is the rate required by the system to discharge its liabilities as a percentage of the covered wages of members in that membership category. However, the Required Contribution Rate set by the system for members in regular service for a fiscal year shall not vary by more than one percentage point from the Required Contribution Rate for the prior fiscal year.

Goal:

To establish policy and procedures in setting contribution rates that combined with investment income will fund the benefits specified in Chapter 97B of the Iowa Code.

To move towards fully funding the benefits (100 percent or greater funded ratio) in as expeditious manner as is reasonable within the guidelines acknowledged herein.

Procedure:

The Investment Board shall retain a consulting actuary to conduct an annual actuarial valuation of assets and liabilities. The consulting actuary shall use the entry age normal cost method and all other actuarial assumptions and methods approved by the Investment Board.

In the annual valuation process, the consulting actuary shall calculate an Actuarial Contribution Rate and a Required Contribution Rate pursuant to this policy. Each shall be calculated as a level percent of pay.

There is a one-year lag between the completion of an annual actuarial valuation report and the fiscal year to which the contribution rates calculated therein are applied. Therefore, the Actuarial Contribution Rate and the Required Contribution Rate declared in the annual valuation process are applicable to the fiscal year immediately following the completion of the valuation report (for example the rates declared in the report presented to the Investment Board in December 2013 are applicable to the rates for the fiscal year beginning July 1, 2014).

Actuarial Contribution Rate (ACR):

1. ACR is the combined employer and employee contribution rate that is the minimum rate necessary to fund the benefits using the actuarial assumptions and methods approved by the Investment Board.

2. A separate ACR shall be determined for each membership group within IPERS according to this policy.

3. The ACR shall consist of:
    a. Normal cost and an amortization payment (not less than zero) of any unfunded actuarial liability.
    b. Normal cost may only be offset by a negative amortization payment after a membership group has attained a funded ratio of 110 percent or greater for 3 consecutive years.

Required Contribution Rate:

1. The Required Contribution Rate is the combined employer and employee rate payable pursuant to this policy and Iowa Code §97B.11(3)(d).

2. The Required Contribution Rate shall be determined by comparing the ACR determined in the annual valuation process to the Required Contribution Rate of the previous year.

a. If the ACR is less than the previous Required Contribution Rate by fewer than 50 basis points, then the Required Contribution Rate shall remain unchanged from the previous year.

b. If the ACR is less than the previous Required Contribution Rate by 50 basis points or more, then the Required Contribution Rate shall be lowered by 50 basis points provided the funded ratio of the membership group is 95 percent or higher.

c. If the ACR is greater than the Required Contribution Rate of the previous year, then the Required Contribution Rate shall be:

    i. Increased to be equal to ACR for Sheriffs and Deputies.

    ii. Increased to be equal to ACR for Protection Occupation Members.

    iii. Increased to be equal to ACR for Regular Members, or one percentage point greater than the prior year's Required Contribution Rate, whichever is smaller.

Favorable Experience Dividend ("FED") and Supplemental Account for Active Members ("SAAM") transfers.

For the purposes and only for the purposes of calculating potential transfers to the favorable experience dividend reserve account and to each member's supplemental account the term "fully funded" as specified in the relevant Iowa Code and Administrative Rules[1] shall mean:

The funding percentage, which shall not be less than 100 percent,[2] determined by the System's actuary at which calculated transfers to the favorable experience dividend reserve account and to the member's supplemental accounts will not result in a material probability that the System will fall below 100 percent funded.[3]

[1] §97B.49F(2)(c)(5); §97B.49H (3); IAC 495—15.2(1).
[2] §97B.1A(11A).
[3] As contemplated in §97B.4(4)(d) and §97B.65(2) the terms "fully funded" and "fully fund" shall reference a 100% funding ratio.

Policy Guidelines:

In adopting actuarial assumptions and methods to be used in setting contribution rates, the Investment Board shall strive to provide a balance among the following:

1. Stability in contribution rates (such as use of smoothing and amortization schedules that do not produce dramatic swings in the required contributions from year to year).

2. Disciplined funding approach (such as requiring full payment of normal cost and an amortization payment towards the unfunded actuarial liability and deferring decreases in contribution rates until strong funded ratios are attained).

3. Interperiod equity (such as shortening the amortization schedule when reasonable and amortization of retroactive benefit enhancements over a reasonable time period such as the average working lifetime for active members and the average life expectancy of retired members).

4. Support an affordable, sustainable plan (in consultation with the Benefits Advisory Committee review affordability of required contribution rates and/or the benefit provisions).

5. At a minimum, this policy will be reviewed in conjunction with the quadrennial experience study.

BETA REPORT
IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM PORTFOLIO
PRELIMINARY (Unreconciled) MARKET VALUES AT
6/9/2023

	Actual	Overlay	Total	Policy	Difference
PUBLIC MARKETS					
Domestic	$ 8,650,760,385	$ (293,204,004)	$ 8,357,556,381	$ 8,254,513,958	$ 103,042,423
International	$ 6,537,709,357	$ 65,851,443	$ 6,603,560,800	$ 6,486,271,580	$ 117,289,220
Global Smart Beta	$ 1,990,796,686		$ 1,990,796,686	$ 1,963,808,355	$ 26,988,331
Total Equities	**$ 17,179,266,428**		**$ 16,951,913,867**	**$ 16,704,593,893**	$ 247,319,974
Core Plus	$ 8,664,872,446	$ 193,585,350	$ 8,858,457,796	$ 9,040,852,158	$ (182,394,363)
Public Credit	$ 1,181,679,641		$ 1,181,679,641	$ 1,177,470,155	$ 4,209,486
Cash	**$ 476,965,456**	**$ 33,767,212**	$ 510,732,667	**$ 395,206,246**	$ 115,526,422
PRIVATE MARKETS	**$ 13,240,127,963**		$ 13,240,127,963	**$ 13,424,789,482**	$ (184,661,519)
Private Equity	$ 7,743,707,975		$ 7,743,707,975	$ 7,851,159,130	$ (107,451,155)
Private Credit	$ 2,135,964,399		$ 2,135,964,399	$ 2,151,225,750	$ (15,261,351)
Private Real Assets	$ 3,360,455,589		$ 3,360,455,589	$ 3,422,404,602	$ (61,949,013)
TOTAL FUND	**$ 40,742,911,934**			**$ 40,742,911,934**	**$ -**

	Actual	Overlay	Total	Policy	Difference
PUBLIC MARKETS					
Domestic	21.23%	-0.72%	20.51%	20.26%	0.25%
International	16.05%	0.16%	16.21%	15.92%	0.29%
Global Smart Beta	4.89%		4.89%	4.82%	0.07%
Total Equities	**42.17%**		41.61%	**41.00%**	0.61%
Core Plus	21.27%	0.48%	21.74%	22.19%	-0.45%
Public Credit	2.90%		2.90%	2.89%	0.01%
Cash	**1.17%**	0.08%	1.25%	**0.97%**	0.28%
PRIVATE MARKETS	**32.50%**		32.50%	**32.95%**	-0.45%
Private Equity	19.01%		19.01%	19.27%	-0.26%
Private Credit	5.24%		5.24%	5.28%	-0.04%
Private Real Assets	8.25%		8.25%	8.40%	-0.15%
TOTAL FUND	**100.00%**			**100.00%**	**0.00%**

BETA REPORT
IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM PORTFOLIO
PRELIMINARY (Unreconciled) MARKET VALUES AT
6/9/2023

PUBLIC PORTFOLIO	67.50%	$ 27,502,783,971

Manager Name	Manager % of Asset Class	Total Market Value
Blackrock R2000 SAE	2.58%	$ 223,303,346
Blackrock Russell 1000 Alpha Tilts	25.00%	$ 2,162,749,766
DOMESTIC EQUITY - ACTIVE		**$ 2,386,053,112**
Mellon - Russell 1000 Index	68.51%	$ 5,926,651,634
Mellon - Russell 2000 Index	3.17%	$ 274,461,201
Rhumbline Advisers	0.00%	$ 11
Parametric - Domestic Equity	0.73%	$ 63,499,645
NT Transition Manager	0.00%	$ 94,782
DOMESTIC EQUITY - PASSIVE	**71.68%**	**$ 6,264,707,273**
TOTAL DOMESTIC EQUITY	***21.23%***	**$ 8,650,760,385**
Blackrock - Canada	7.62%	$ 497,994,376
Passive - Blackrock EAFE	19.24%	$ 1,257,599,919
Parametric - Int'l Equity	1.29%	$ 84,522,008
Mellon Passive Emerging	12.86%	$ 841,004,539
INTERNATIONAL EQUITY - PASSIVE	**39.72%**	**$ 2,681,120,843**
Blackrock EAFE SAE	26.52%	$ 1,733,987,330
Blackrock EM SAE	7.74%	$ 506,042,499
Blackrock Europe Alpha Tilt	0.17%	$ 10,835,277
BMO EAFE	0.04%	$ 2,471,265
International Equity Transition	0.00%	$ 314,798
Oechsle	0.01%	$ 730,890
PanAgora Dynamic EAFE	9.49%	$ 620,257,451
Columbia EAFE Equity	8.71%	$ 569,358,647
Wellington EM	6.31%	$ 412,590,356
INTERNATIONAL EQUITY - ACTIVE	***58.99%***	**$ 3,856,588,514**
TOTAL INTERNATIONAL EQUITY	***16.05%***	**$ 6,537,709,357**

Manager Name	Manager % of Asset Class	Total Market Value
Western	0.07%	$ 6,465,611
Blackrock	0.00%	$ 158,468
Principal Global Investors	0.03%	$ 2,851,583
TCW	0.19%	$ 16,417,180
Prudential	0.09%	$ 7,840,040
BlackRock Universal Alpha	3.17%	$ 274,333,373
BlackRock Universal Beta	3.91%	$ 338,513,483
Mackay Shields	0.01%	$ 570,484
PGIM GLRV Alpha	2.88%	$ 249,627,878
PGIM GLRV Beta	2.91%	$ 252,519,498
CORE PLUS - ACTIVE	**13.26%**	**$ 1,149,297,598**
Parametric - Fixed Income	0.34%	$ 29,392,061
Mellon SLH Agg	86.40%	$ 7,486,182,787
CORE PLUS - PASSIVE	**86.40%**	**$ 7,515,574,848**
TOTAL CORE PLUS	**21.27%**	**$ 8,664,872,446**
Oaktree Capital Management	0.07%	$ 804,395
Aegon USA	33.23%	$ 392,655,556
Prudential EMD	33.33%	$ 393,868,002
PGIM High Yield	33.37%	$ 394,351,687
TOTAL PUBLIC CREDIT	***2.90%***	**$ 1,181,679,641**
UBS - US	56.42%	$ 1,123,295,337
UBS - Developed ex US	33.43%	$ 665,613,873
UBS - EM	10.14%	$ 201,887,475
TOTAL GLOBAL SMART BETA EQUITIES	**4.89%**	**$ 1,990,796,686**
Cash Account	54.66%	$ 260,703,415
LARS Liquid Assets	45.34%	$ 216,262,041
Parametric - Directed Trades	0.00%	$ -
Parametric - Synthetic Cash	0.00%	$ -
Public Real Assets Cash	0.00%	$ -
Pending Cash	0.00%	$ -
CASH ACCOUNT	**1.17%**	**$ 476,965,456**

Manager Name	Manager % of Asset Class	Total Market Value
Brookfield Super Core Infrastructure	9.20%	$ 309,203,797
Clarion Partners	15.64%	$ 525,474,812
Invesco	25.75%	$ 865,187,280
RREEF	24.12%	$ 810,414,337
UBS Realty	16.37%	$ 550,097,356
Forest Invest	6.35%	$ 213,499,291
UBS Farmland Investors	2.58%	$ 86,578,717
PRIVATE REAL ASSETS	**8.25%**	**$ 3,360,455,589**

PRIVATE PORTFOLIO	32.50%	$ 13,240,127,963

Manager Name	Manager % of Asset Class	Total Market Value
Legacy Portfolio	13.31%	$ 1,030,602,575
Pathway PE Fund XXV	86.69%	$ 6,713,105,400
PRIVATE EQUITY	**19.01%**	**$ 7,743,707,975**
Tennenbaum Capital	16.40%	$ 350,380,733
BREDS II	0.00%	$ -
Principal RE Debt	0.00%	$ -
Monroe Capital	22.02%	$ 470,333,070
Pathway XXV-B	4.54%	$ 97,051,145
Principal RE Debt II	0.60%	$ 12,907,474
PGIM RE Global Debt	8.37%	$ 178,864,292
KKR Goldfinch	13.36%	$ 285,418,973
Ares Private Credit Solutions II	2.71%	$ 57,840,853
Audax Mezzanine Coinvest IA	0.55%	$ 11,643,168
Audax Mezzanine Fund V	1.05%	$ 22,415,848
IFM USIDF	2.87%	$ 61,386,353
Crestline Opps Credit IA	8.47%	$ 180,991,287
Marathon SPS IA Fund, L.P.	4.13%	$ 88,295,990
ArrowMark	4.44%	$ 94,781,564
KARED IV	4.16%	$ 88,843,198
IPERS GTIF	4.68%	$ 100,000,000
Heitman Credit	1.63%	$ 34,810,451
PRIVATE CREDIT	**5.24%**	**$ 2,135,964,399**

GRAND TOTAL		**$ 40,742,911,934**

	PERCENT	**DOLLARS**
PUBLIC MARKET	67.50%	$ 27,502,783,971
PRIVATE MARKET	32.50%	$ 13,240,127,963
TOTAL	**100.00%**	**$ 40,742,911,934**

RECENT MARKET VALUES	
6/9/2023	$ 40,742,911,934
6/2/2023	$ 40,620,870,865
5/26/2023	$ 40,435,591,613
5/19/2022	$ 40,588,386,733
5/12/2023	$ 40,509,494,959
5/5/2023	$ 40,469,314,923
4/28/2023	$ 40,532,385,172
4/21/2023	$ 40,587,098,957
4/14/2023	$ 40,728,695,726

IPERS Portfolio Structure and Allocations
Quarter End March 31, 2023
$40.5 Billion

Public Markets – 68% of Total Fund (Equities 42%)				
Domestic Equity $8.2 Billion 20.3%		International Equity $6.5 Billion 16.0%		Global Smart Beta $2.0 Billion 4.9%
Active $2.3 Billion 27.9%	Passive $5.9 Billion 72.1%	Active $3.8 Billion 58.2%	Passive $2.7 Billion 41.8%	Passive $2.0 Billion 100.0%
BlackRock (R1000 SAE) $2.1 billion	BNY Mellon (R1000) $5.6 billion	BlackRock (EAFE SAE) $1.7 billion	BlackRock (EAFE) $1.3 billion	UBS (U.S. Equity Smart Beta) $1.1 billion
BlackRock (R2000 SAE) $219.2 million	BNY Mellon (R2000) $239.6 million	Columbia (EAFE) $561.9 million	BlackRock (Canada) $481.4 million	UBS (Developed ex U.S. Smart Beta) $682.8 million
	Parametric (Synthetic) $67.3 million	Panagora (Dynamic EAFE) $608.0 million	BNY Mellon (Emerging) $849.4 million	UBS (Emerging Market Smart Beta) $193.9 million
		BlackRock (Emerging SAE) $507.3 million	Parametric (Synthetic) $81.8 million	
		Wellington (Emerging) $399.3 million		

Terminated managers with residual amounts in their accounts are not included.

IPERS Portfolio Structure and Allocations
Quarter End March 31, 2023
$40.5 Billion

Public Markets – 68% of Total Fund (Fixed Income and Cash 26%)					
Core-Plus Fixed Income $9.0 Billion 22.2%			Public Credit $1.2 Billion 2.9%	Cash $501.0 Million 1.2%	
Active $4.9 Billion 54.2%		Passive $4.1 Billion 45.8%	Active $1.2 Billion 100.0%		
BlackRock (Core Plus) $396.9 million	Western Asset (Core Plus) $766.9 million	BNY Mellon Agg (Core) $4.1 billion	Aegon USA (High Yield) $381.8 million	BNY Mellon (Cash) $289.4 million	
Principal Global (Core Plus) $669.4 million	MacKay Shields (Core Plus) $678.6 million	Parametric (Synthetic) $36.4 million	PGIM (High Yield) $390.4 million	LARS Liquid Assets (Cash) $211.6 million	
PGIM (Core Plus) $512.8 million	TCW (Core Plus) $709.9 million		PGIM (Emerging Market Debt) $391.6 million		
BlackRock Universal (Relative Value) $619.9 million	PGIM Universal (Relative Value) $507.8 million				

 Terminated managers with residual amounts in their accounts are not included.

IPERS Portfolio Structure and Allocations
Quarter End March 31, 2023
$40.5 Billion

Private Markets – 32% of Total Fund				
Private Equity $7.8 Billion 19.2%	**Private Real Assets $3.4 Billion 8.3%**	**Private Credit $2.0 Billion 4.9%**		
Pathway Capital (Private Equity) $7.8 billion	Clarion Partners (RE Equity) $527.8 million	Tennenbaum Capital (Direct Lending) $345.4 million	Principal Global II (Real Assets Credit) $12.9 million	Audax Mezz Coinvest (Opportunistic Credit) $10.2 million
	Invesco (RE Equity) $877.2 million	Monroe Capital (Direct Lending) $480.4 million	PGIM RE Global Debt (Real Assets Credit) $172.9 million	Audax Mezz V (Opportunistic Credit) $19.0 million
	RREEF (RE Equity) $810.4 million	Pathway Capital (Direct Lending) $83.0 million	Kayne Anderson IV (Real Assets Credit) $79.8 million	Arrowmark (Opportunistic Credit) $95.3 million
	UBS Realty (RE Equity) $553.1 million		Heitman Credit (Real Asset Credit) $35.5 million	Crestline Opp Credit (Opportunistic Credit) $166.8 million
	Forest Investment (Timber) $213.5 million		IFM USIDF (Real Asset Credit) $62.8 million	Marathon SPS IA (Opportunistic Credit) $78.3 million
	UBS Farmland Investors (Farmland) $86.6 million			ARES PCS II (Opportunistic Credit) $58.7 million
	Brookfield (Infrastructure) $309.2 million			KKR Goldfinch (Opportunistic Credit) $263.5 million

Alpha Report

For periods ending March 31, 2023

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IPERS' Active Manager Alpha Scorecard

Net of Fees as of 1Q23	1Q23	1 Year	3 Year	5 Year	SI	Perf	Org	People	Process
Domestic Equity									
BlackRock - Russell 1000 SAE	0.26%	NA	NA	NA	0.31%				
BlackRock - Russell 2000 SAE	0.30%	1.75%	1.67%	NA	1.93%				
International Equity									
BlackRock – EAFE SAE	0.28%	2.57%	1.79%	NA	0.99%				
Columbia - EAFE	-0.59%	-1.76%	-1.91%	NA	-2.10%				
PanAgora - Dynamic EAFE	-0.03%	0.97%	2.04%	NA	0.14%				
Wellington - Emerging Markets	-2.78%	-1.01%	1.12%	0.81%	-0.03%				
BlackRock - Emerging Markets SAE	1.38%	0.42%	-0.11%	NA	-0.36%				
Core Plus Fixed Income									
Western Asset	0.21%	-1.29%	0.88%	0.16%	0.83%				
BlackRock	0.03%	-0.01%	0.82%	0.18%	0.29%				
Principal Global Investors	-0.36%	-1.02%	0.90%	0.44%	0.08%				
TCW	0.35%	-0.17%	0.86%	0.62%	0.44%				
PGIM	0.17%	-0.55%	1.44%	0.40%	0.63%				
Mackay Shields	0.08%	-0.72%	1.61%	0.43%	0.56%				
BlackRock - Universal	-0.28%	0.15%	NA	NA	1.15%				
PGIM - Universal	1.67%	2.71%	NA	NA	-0.15%				
Public Credit									
PGIM - High Yield	-0.63%	-0.99%	1.63%	NA	0.73%				
Aegon USA - High Yield	-1.09%	-0.81%	0.65%	-0.18%	0.32%				
PGIM - Emerging Market Debt	-0.11%	0.38%	2.02%	-0.27%	0.61%				
LARS									
Aspect Capital	-3.19%	NA	NA	NA	0.92%				
Graham Capital Management	-4.78%	2.71%	9.13%	0.44%	4.30%				
P/E Global	-0.57%	11.44%	0.88%	0.72%	4.16%				
PIMCO	6.22%	NA	NA	NA	9.08%				
PGIM Wadhwani	-10.51%	-1.92%	9.51%	0.57%	6.57%				
Welton Global	-4.74%	-4.42%	NA	NA	1.95%				
ARP	-0.66%	NA	NA	NA	-2.85%				

No Concerns   Minor Concerns   Material Concerns

IPERS' Active Manager Listing

MANAGER	INCEPTION DATE	MANDATE	BENCHMARK
Domestic Equity			
BlackRock - Russell 1000 SAE	May 2022	Large Cap	Russell 1000
BlackRock - Russell 2000 SAE	May 2019	Small Cap	Russell 2000
International Equity			
BlackRock – EAFE SAE	May 2019	Developed EAFE	MSCI EAFE Index (net)
Columbia - EAFE	May 2019	Developed EAFE	MSCI EAFE Index (net)
PanAgora - Dynamic EAFE	May 2019	Developed EAFE	MSCI EAFE Index (net)
Wellington - Emerging Markets	February 2009	Global Emerging Markets	MSCI Emerging Markets (net)
BlackRock - Emerging Markets SAE	May 2019	Global Emerging Markets	MSCI Emerging Markets (net)
Core-Plus Fixed Income			
Western Asset	October 1999	Core Plus	Bloomberg Barclays U.S. Universal
BlackRock	October 1999	Core Plus	Bloomberg Barclays U.S. Universal
Principal Global Investors	May 2005	Core Plus	Bloomberg Barclays U.S. Universal
TCW	July 2015	Core Plus	Bloomberg Barclays U.S. Universal
PGIM	July 2015	Core Plus	Bloomberg Barclays U.S. Universal
Mackay Shields	November 2011	Core Plus	Bloomberg Barclays U.S. Universal
BlackRock - Universal	November 2020	Relative Value	Bloomberg Barclays U.S. Universal
PGIM - Universal	March 2021	Relative Value	Bloomberg Barclays U.S. Universal
Public Credit			
PGIM - High Yield	June 2019	High Yield	Bloomberg US HY 2% Capped Index
Aegon USA - High Yield	February 2012	High Yield	High Yield Policy Index
PGIM - Emerging Market Debt	April 2016	Emerging Market Debt	JP Morgan EMBI Global
LARS			
Aspect Capital	March 2022	Diversified Trend	Absolute Return
Graham Capital Management	December 2016	Tactical Trend	Absolute Return
P/E Global	December 2016	FX Strategy	Absolute Return
PIMCO	July 2022	Commodity Alpha	Absolute Return
PGIM Wadhwani	March 2017	Keynes Leveraged Quantitative Strategy	Absolute Return
Welton Global	June 2021	Welton Global	Absolute Return
ARP	November 2022	Alternative Risk Premium	Absolute Return

Private Market Program Manager Updates

For periods ending March 31, 2023

IPERS' PMP Manager Scorecard

	1 Year	5 Year	10 Year	SI	Performance	Organization	People	Process
Private Equity								
Multi-Strategy								
Pathway	-9.1%	19.7%	17.9%	13.1%				
Private Credit								
Direct Lending								
BlackRock	3.8%	7.1%	N/A	7.1%				
Monroe	5.7%	7.1%	N/A	7.4%				
Pathway	4.9%	N/A	N/A	4.5%				
Opportunistic								
Arrowmark	4.4%	N/A	N/A	3.5%				
Ares Private Credit Solutions II	-4.2%	N/A	N/A	-1.2%				
Audax Mezzanine Fund V	N/A	N/A	N/A	27.3%				
Audax Mezzanine Co-Invest Fund	13.8%	N/A	N/A	10.1%				
Crestline	11.0%	N/A	N/A	7.5%				
KKR	4.1%	N/A	N/A	7.3%				
Marathon	6.5%	N/A	N/A	6.0%				
Real Assets								
Heitman CREDIT	N/A	N/A	N/A	-0.3%				
IFM USIDF	N/A	N/A	N/A	N/A				
PGIM Global Real Estate Debt	5.6%	N/A	N/A	6.1%				
Principal Real Estate Debt II	-0.9%	5.9%	N/A	6.4%				
Kayne Anderson Real Estate Debt IV	N/A	N/A	N/A	4.6%				
Private Real Assets								
Real Estate								
Clarion Partners	1.2%	4.0%	7.6%	6.8%				
Invesco	12.3%	17.0%	15.5%	11.3%				
RREEF	3.1%	11.7%	12.1%	10.1%				
UBS Realty	6.1%	14.9%	13.2%	10.7%				
Other Real Assets								
Brookfield	6.0%	N/A	N/A	6.0%				
Forest Investment Associates	8.3%	5.2%	4.8%	5.6%				
UBS Farmland	7.8%	3.9%	N/A	6.9%				

No Concerns   Minor Concerns   Material Concerns

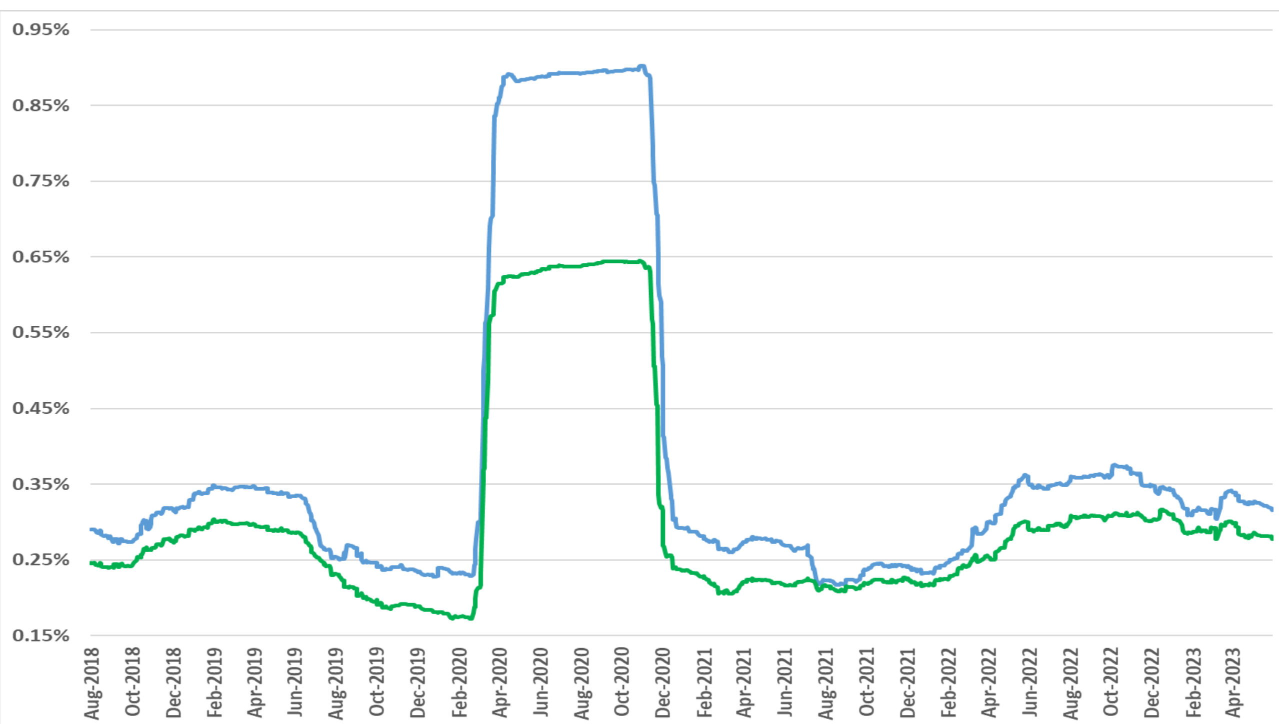
Active Risk – 180 Days (May 2023)

	Active	Passive	Misfit	Total
Equities				
Domestic Equities	0.07%	0.03%	0.00%	0.08%
International Equities	0.12%	0.02%	0.00%	0.13%
Global Smart Beta Equities	-	0.01%	0.00%	0.01%
Fixed Income				
Core-Plus Fixed Income	0.21%	0.09%	0.01%	0.23%
Public Credit	0.04%	-	0.00%	0.04%
Cash/LARS	0.08%	-	-	0.08%
Asset Allocation	-	0.15%	-	0.15%
Total Public Markets	**0.28%**	**0.18%**	**0.00%**	**0.32%**

Target	1.50%
Upper Limit	3.00%

- Plan-level Total Active Risk remained unchanged at 0.32%
- Active risk expected to remain range bound for the next few months
- Core-Plus Fixed Income active risk is ticking down and will be for the next few months.

External Active Risk – 180 Days (May 2023)



Wilshire

Prepared For

Private Markets Overview

What is Private Markets?

- Private markets refers to investments in non-publicly traded assets covering three main areas:

Private Markets

Private Equity
(return target: 15-20%)

- Buyout
- Growth Equity
- Venture Capital
- Special Situations

Private equity is an asset class in which capital is invested in private companies in exchange for equity or ownership.

Private Credit
(return target: 8-15%)

- Direct Lending
- Opportunistic / Alt Yield
- Distressed Debt / Special Situations

Private credit is the provision of debt finance to companies from funds, rather than banks, bank-led syndicates, or public markets.

Private Real Assets
(return target: 5-15%)

- Real Estate
- Infrastructure
- Energy
- Natural Resources
- Timber/Agri

Private real assets are private, direct investments in tangible assets that have an inherent value due to their physical attributes

Private Markets Investment Structures

- Private Markets are accessed by investors through four main mechanisms:

Primary Fund Investing (aka "Primaries")	– Invest in the fund of a manager, or GP, as a non controlling partner, or LP – Provides exposure to (typically) 8-15 underlying private portfolio companies
Co-Investments (aka "Co's" or "Coinvs")	– Invest alongside a GP in one of their deals – Provides exposure to (typically) 1 private portfolio company – Typically lower fees, more of a "narrower focus" approach
Secondaries → solves for the illiquidity of private markets investments	– Buy "pre-owned" positions in any of the above sometime after the initial investments have been made (may be years, even a decade+) – Typically can be bought at a discount, or sell existing positions to other buyers
Direct Investing (aka "Directs")	– Invest directly in a private company (w/o a GP) – Only the GPs are typically capable of this due to complexity → *Not offered by Wilshire*

Partnership Structures & Fees

- Structure
  - The primary vehicle is the private limited partnership that is not registered with the SEC.
  - Limited partnership is managed by the general partner.
  - Partnerships are long lived, ranging from 10–12 years.
  - The partnership draws capital from LPs to fund investments over a specified investment period, then distributes capital back to LPs as investments are liquidated or sold.
- Fees
  - Typically, the manager charges the limited partner an annual management fee along with performance fees, or "carried interest" which represents a portion of the profits above a stated hurdle rate.
  - Management fees on direct fund investments typically range from 1.0-2.0%[1] annually, and are charged on committed capital. Fees are reduced after the investment phase.
  - Hurdle rates can range from 6-10%[2] with carry ranging from 5-20%.

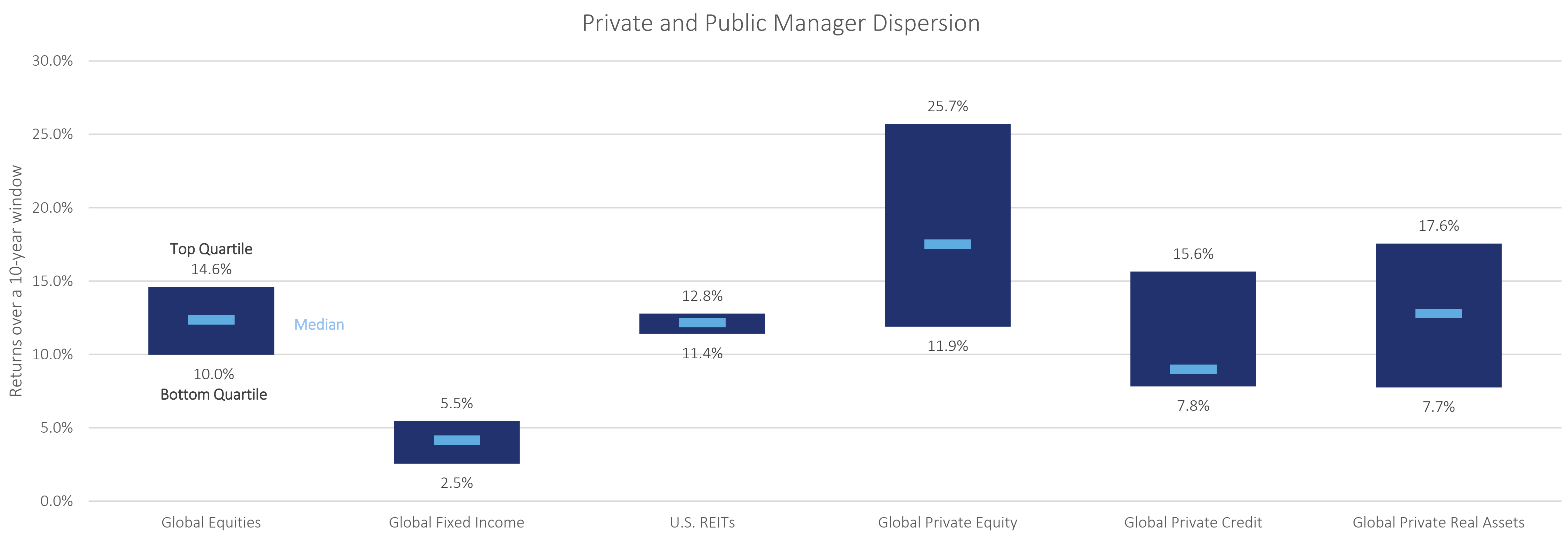
[1]2022 Preqin Private Capital Fund Terms Advisor, Average management fee during investment period by fund type (funds raising & vintage 2021/2022 funds closed).

[2]2022 Preqin Private Capital Fund Terms Advisor, Hurdle rate used by direct private capital funds (funds raising & vintage 2021/2022 funds closed).

Key Considerations

Low Transparency	The information on the underlying holdings, plans, and strategies of the general partner may not be available in detail. Audited financials exist, but may not be accessible by all investors depending on their access
Long-Term Investment Horizon	Private equity funds are generally set up as 10–12 year investments with little or no provision for investor redemptions. *Note there are also more liquid products now.*
Difficult Valuation Assessment	Portfolio holdings may be difficult to value, as they are not usually quoted or traded on any financial market or exchange
Early Low Performance	Private markets funds are notoriously slow (1-2+ years) to show meaningful positive returns (the "J-Curve" effect)
Leverage	Some private markets funds may use leverage in connection with certain investments or participate in investments with highly leveraged capital structures

Manager Selection is Critical



Source: Preqin, Wilshire Compass (June 30, 2022).

*Wilshire Compass quartile ratings comprised of global equity, global fixed income, and U.S. REIT manager separate account universes for the period 2Q 2012 – 2Q 2022. Global private equity, global private credit and global real assets manager dispersion data from Preqin for the period 2Q 2012 - 2Q 2022. Past performance is not indicative of future results.

Private Equity

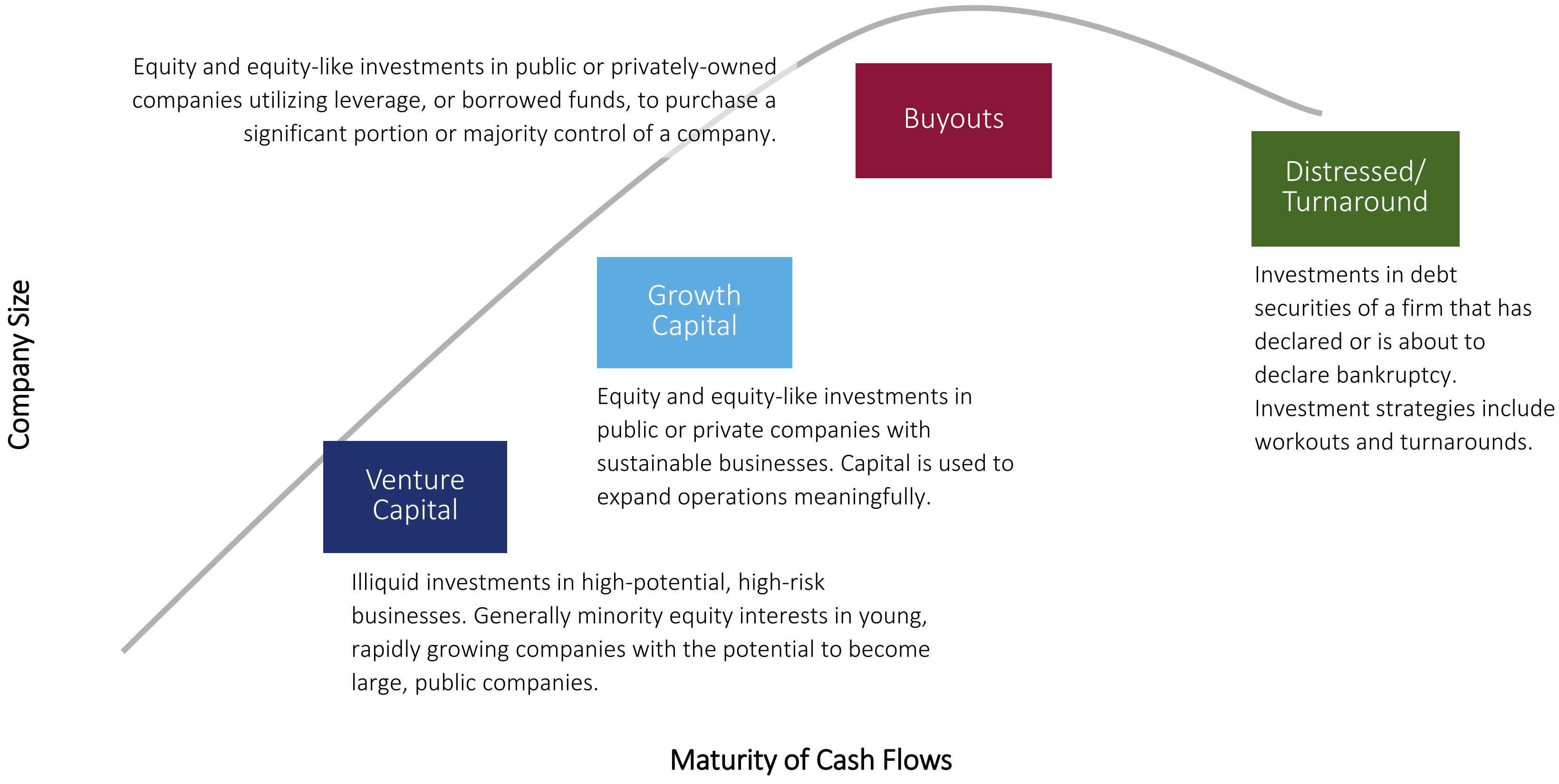
What is Private Equity?

Private equity is any investment representing an ownership interest where there is no readily tradable or public market.

	PUBLIC EQUITY	PRIVATE EQUITY
AVAILABLE INVESTMENTS	• Approximately 63,000 public companies worldwide (Bloomberg).	• 65,000,000 private companies worldwide (Hoovers).
INVESTMENT SECURITY	• Minority equity participation with limited control or influence.	• Often control or influential minority equity ownership, with greater ability to effectuate change, manage risk and create value.
ACCESS	• Typically larger, more mature companies are eligible to be public.	• Ability to invest in any phase of the company life cycle (seed investments through distressed).
BARRIER TO ACCESS	• Can be accessed through a registered broker.	• Invitation only (available only to qualified investors as defined by the relevant regulation
LIQUIDITY	• Often provide for daily liquidity options.	• Return of capital investment and returns over 10-12 year period, with no discretionary interim liquidity option.
VALUATIONS	• Daily valuations based on market pricing.	• Quarterly valuations on unrealized investments.
RETURNS	• Expected return of 4.5%[1].	• Expected return of 8.1%[1].
FEES	• 15-70 bps on average[2]	• Typically 200 bps management fee, 20% carried interest

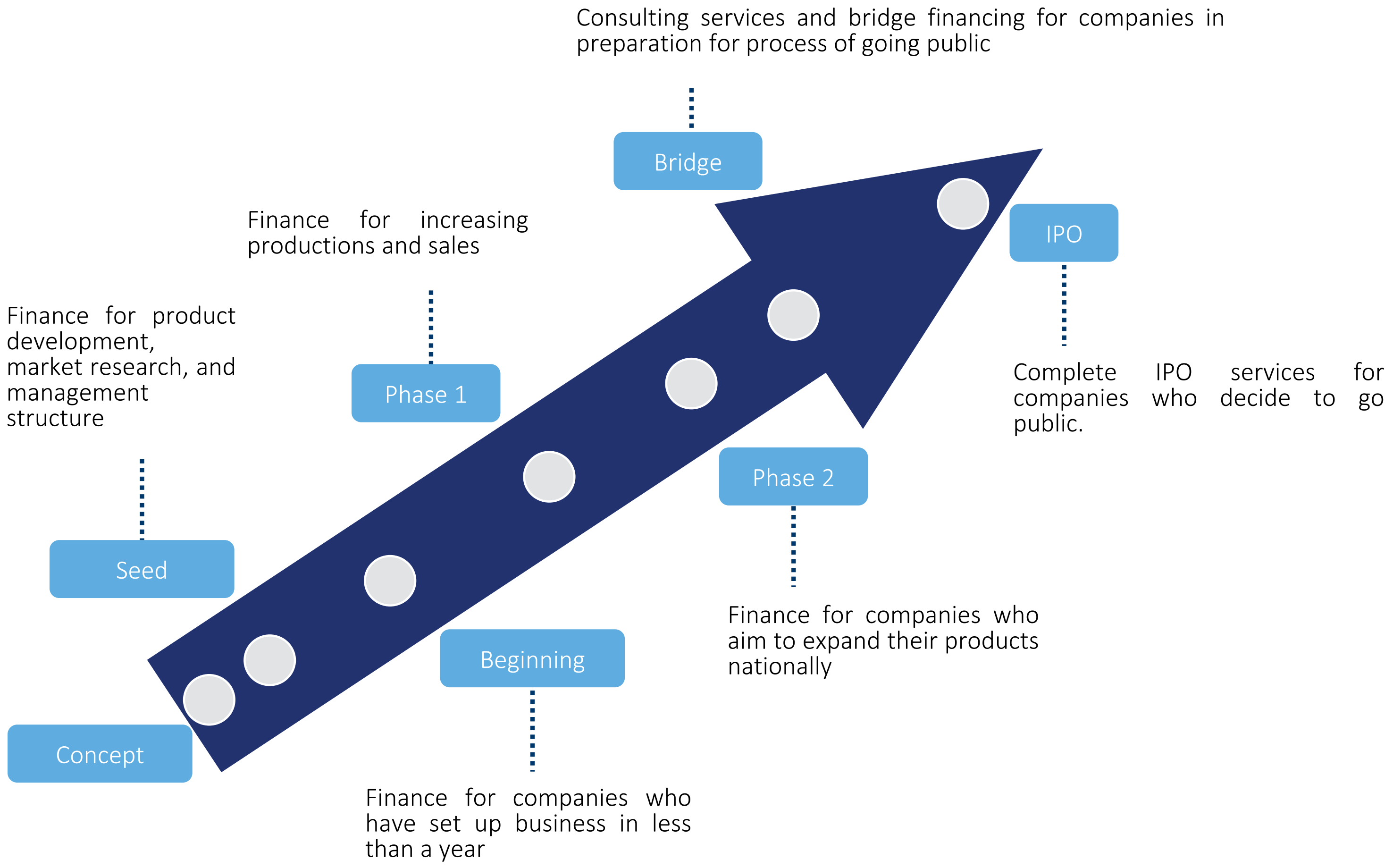
[1]Based on Wilshire's 2022 Risk and Return Assumptions. These assumptions are forward-looking and there is no guarantee these returns will be realized.
[2]Source: Morningstar, asset-weighted average fees for active and passive mutual and exchange-traded funds
Incorporating alternative investments, such as private equity and debt into a portfolio presents the opportunity for losses as well as gains, including, in some cases, loss of the entire principal. Some alternative investments have experienced periods of extreme volatility which may not be reflected in the valuation of the investment and in general, are not suitable for all investors. Asset allocation and diversification strategies do not ensure profit or always protect against loss.

Private Equity Investments During Company Lifecycle



Venture Capital Financing Stages

Investment Stages and Consulting Services for SMEs



Different Characteristics

	VENTURE CAPITAL	GROWTH EQUITY	BUYOUT	SPECIAL SITUATIONS
Portfolio Company Stage	Early-Late	Expansion	Mature	Little to no growth
Revenues	None / low but growing	Substantial growth	Self-sustaining	Flat or eroding
Number of Fund Investors	Multiple	One or multiple	One or multiple	One or multiple
Manager Involvement	Moderate	Moderate	Heavy	Heavy
Financing Rounds by Investors	3 -5	1-3	Often 1	Often 1
Use of Debt	Rarely	Rarely	Almost always	Rarely
Source of Quarterly Valuations	New financing rounds, Fair market value (FMV)	New financing rounds, Comparables, FMV	Comparables, FMV	Comparables, FMV
Failure Rate	Moderate	Sometimes	Infrequent	Moderate

Investment Themes – North America

	REGIONAL CONTEXT	LOCAL OPPORTUNITIES
Innovation	• Digital Economy • Financial Products • Life Science	• Ecommerce • Democratization of Alternatives • Healthcare and Pharmaceuticals
ESG	• Environmental Initiatives • Diversity and Inclusion • Geopolitical Tensions	• Sustainable Products • Energy Transition • Education and Housing
Geopolitics	• Supply Chain Challenges • Deglobalization • Currency and Commodities	• Industrial Onshoring • Security and Defense • Increasing Uncertainty
Inflation	• Interest Rates • Valuations • Income and Financial Inequality	• Real Assets • Special Situations • Floating Rate and Alt Yield

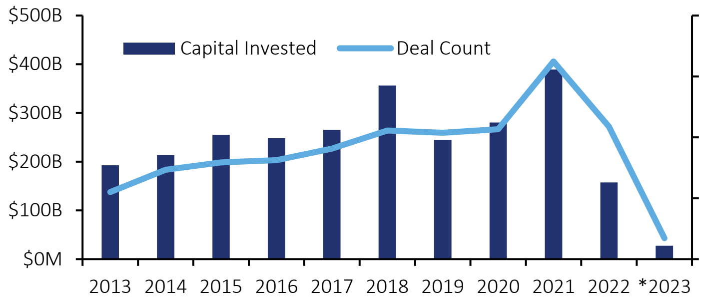
North America Alternatives	
Buyout	◐
Growth	◔
Venture	◐
Senior Direct Lending	◐
Distressed Credit	◕
Opportunistic Credit	●
Alt Yield	●
Real Estate	◐
Natural Resources	◕
Infrastructure	◕
Macro / CTA	◕
Equity Hedge	◐
Marketable Credit	◐
Event Driven	◐
Relative Value	◐

● Highly Favorable ◐ Neutral ○ Unfavorable
◕ Favorable ◔ Cautious

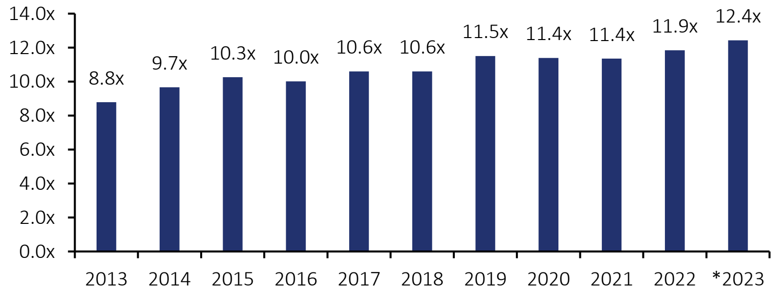
Represents the current opinion of Wilshire as of the date of preparation and is subject to change without notice. Wilshire assumes no duty to update any such statements.

U.S. Buyout Outlook: Neutral

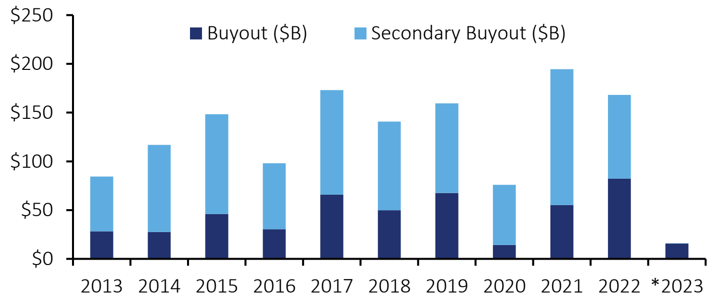
U.S. Buyout Investment Activity[1]



Purchase Price Multiples[2]



U.S. Buyout Exit Environment By Exit Type[3]



Regional Influences

- \+ Strong labor market (3.5% unemployment as of December 2022) and healthy consumer balance sheets
- \+ Local abundant energy resources
- ± Wealth disparity
- ± Increased dry powder from robust fundraising in recent years & increased interest in non-traditional, illiquid investments
- ± Continuing secular COVID-19 impact on sectors
- \- Elevated purchase price multiples
- \- High interest rates expected to persist through 2023
- \- Increases in debt financing costs
- \- Real GDP growth slowing
- \- High but slowing inflation
- \- Potential corporate tax rates hike & rising minimum tax rate
- \- Global geopolitical tensions
- \- Increased regulatory scrutiny

Local Considerations

- Proportion of exits to strategic buyers and sponsor to sponsor exits remains high as IPOs remain challenged
- Favor shifting towards companies with predictable, recurring revenue with profitability and ability to withstand volatile market conditions
- Onshoring to provide resiliency to supply chains
- Shifting retail spending habits including shift to e-Commerce
- Health awareness and healthcare access trends in post-pandemic "new normal"
- Increased adoption of technology and automation across numerous sectors
- Digital content, entertainment and online collaboration, and content moderation

Industry / Sector Outlook

Sector	Investment Opportunity
Industrial	
Consumer	
Healthcare	
Financials	
Technology	
Diversified	

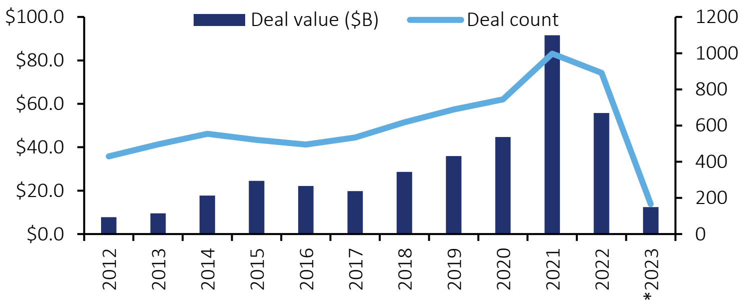
[1] Source: Pitchbook, US Investment Activity by Year *as of April 12, 2023.

[2] Source: S&P LBO Review, Purchase Price Multiples *as of Q1 2023.

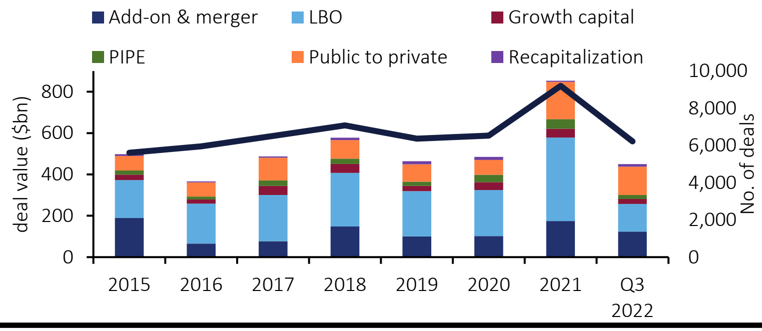
[3] Source: Pitchbook, US Buyout (PE-backed) exits (per invested capital) *as of March 31, 2023.

U.S. Growth Equity Outlook: Cautious

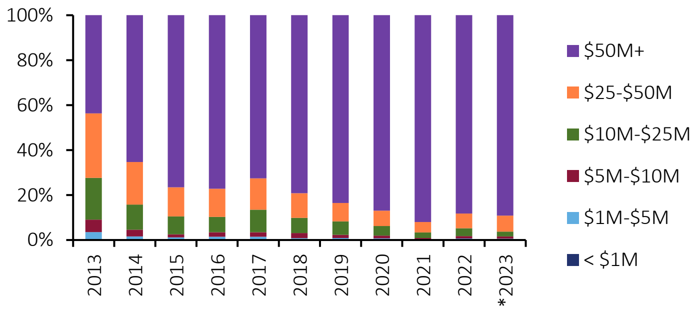
Investment Activity[1]



Aggregate Value of PE Deals by Strategy[2]



U.S. Growth Equity Deal Value ($B) by Size[3]



Regional Influences

- \+ Continued pipeline of venture activity
- \+ Continuation of tech-driven sector disruption long-term tech tailwinds
- \+ Increased need for manager selection to discern between luck vs skill
- \+ Larger and more mature companies staying private longer
- \+ Larger addressable technology markets
- \+ Emphasis on cash/profitability over strict growth
- \+ Repricing of valuations for unprofitable, high-growth companies
- \+ Non-traditional investors shifting focus outside growth sector
- ± Elevated levels of dry powder from strong fundraising in recent years
- \- Lengthened exits and difficulty closing funds
- \- Unfavorable IPO environment
- \- Increased interest rate risk exposure for public and private growth tech companies
- \- Longer stretches between raises & smaller funding rounds

Local Considerations

- Prioritizing capital efficiency and unit economics for robust revenue-based business models
- Data privacy and antitrust concerns
- Sustainability and ESG focus across industries
- Energy transition supply chain risk shifting upstream
- Increased exposure to the volatile geopolitical environment
- Energy transition and renovated climate tech investment focus
- Supply chain technology & tech-enabled services
- Healthcare technology & consumer wellness
- Fintech innovation centralized around blockchain and DeFi infrastructure resiliency
- Cybersecurity and industry-agnostic security focus (i.e. energy security, consumer privacy protection)
- Business model innovation (e.g., D2C, omnichannel, Substack)

Industry / Sector Outlook

Sector	Investment Opportunity
Industrial	◑
Consumer	◔
Healthcare	◕
Financials	◑
Technology	●
Diversified	◑

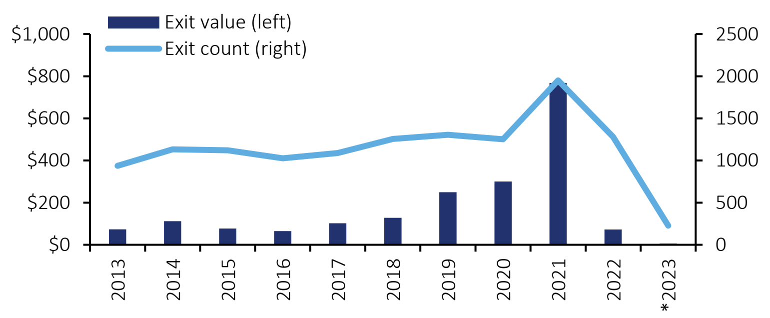
[1] PitchBook/NVCA Venture Monitor – Growth Equity, *as of Q1 2023.

[2] Preqin Global Private Equity Report 2023 as of December 14, 2022.

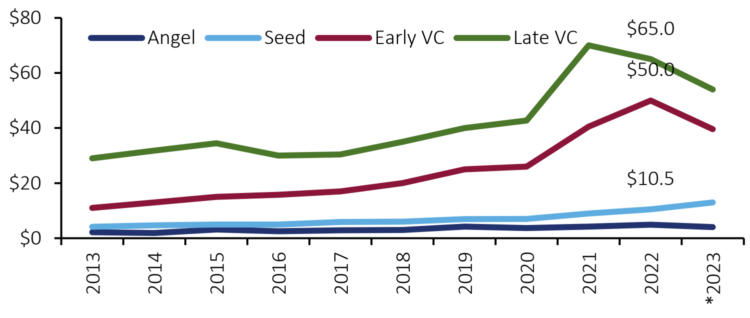
[3] PitchBook/NVCA Venture Monitor – Growth Equity, *as of Q1 2023.

U.S. Venture Capital Outlook: Neutral

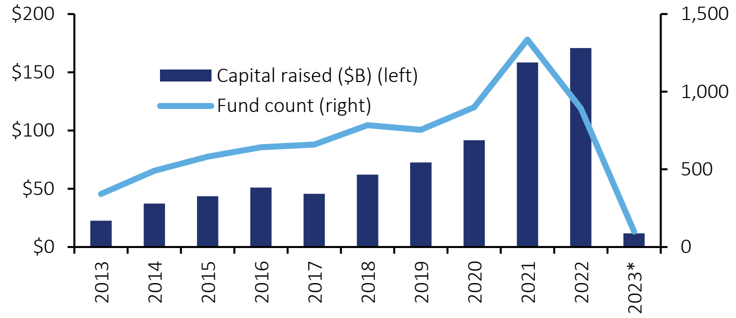
U.S. Exit Activity ($B)[1]



U.S. Median Pre-money Valuations ($M)[1]



U.S. Fundraising Activity[1]



Regional Influences

+ Acceleration of tech-driven sector disruption and long-term tech tailwinds
+ Resilience of venture as an asset class during the last few years and relative insulation in early-stage venture vs late-stage
+ Companies focusing on capital efficiency and unit economics
+ Improving transaction and pricing dynamics
± Dry powder from strong fundraising in recent years
- Weak exit environment and IPO window closed
- Bid-ask spread

Local Considerations

- Focus on business models (unit economics; sources of revenue – e.g. ads)
- Supply chain tech including last-mile delivery services and e-commerce
- Emergence of technology “hubs” outside of Silicon Valley
- Cybersecurity, AI, Big Data and analytics, launch of ChatGPT
- Biotechnology and healthcare tech
- Baby boomers, millennials and gen Z
- Fintech: losers and winners, evolving regulations
- ESG-focused funds and administration’s favorable policy towards sustainable investing; climate tech reaching an inflection point
- Shifting consumer preferences and innovation in consumer products
- Blockchain, digital assets, and buildout of Web 3.0.

Industry / Sector Outlook

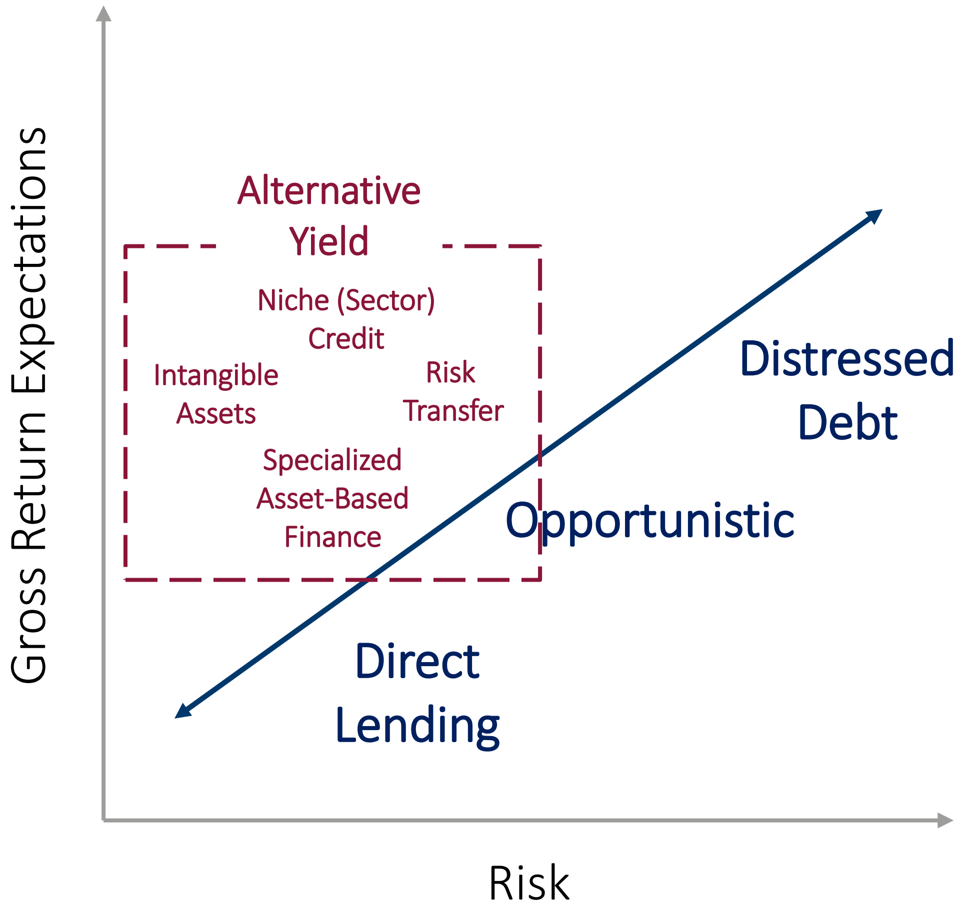
Sector	Investment Opportunity
Industrial	◑
Consumer	◔
Healthcare	◕
Financials	◑
Technology	●
Diversified	◑

[1] Pitchbook NVCA Monitor as of Q1 2023.

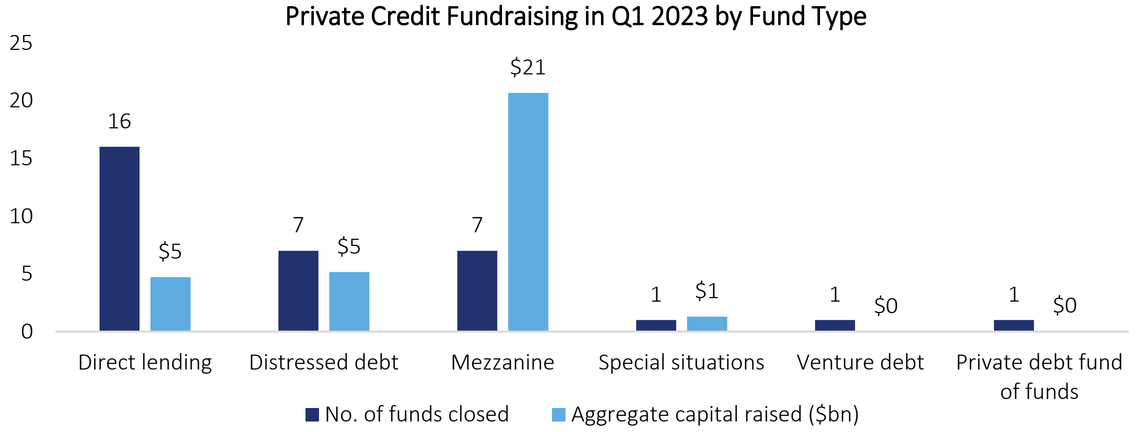
Private Credit

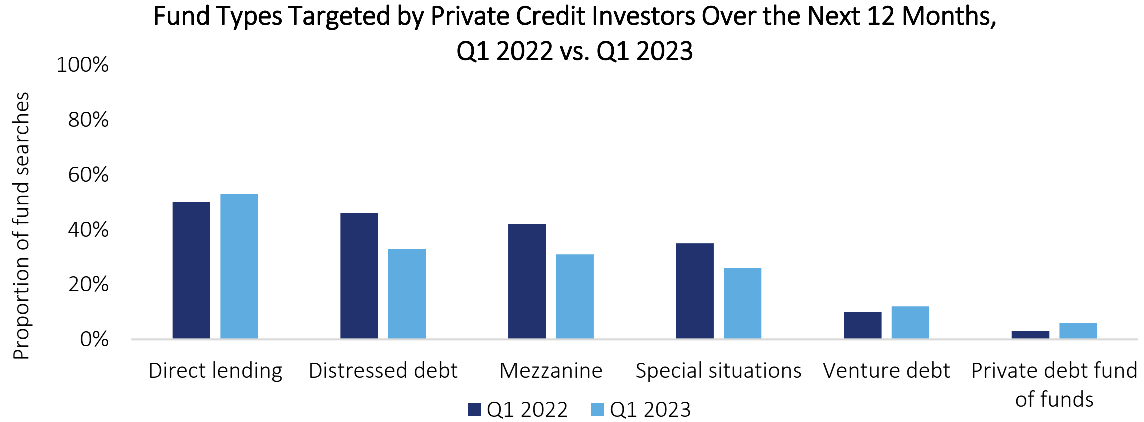
Private Credit Market Overview

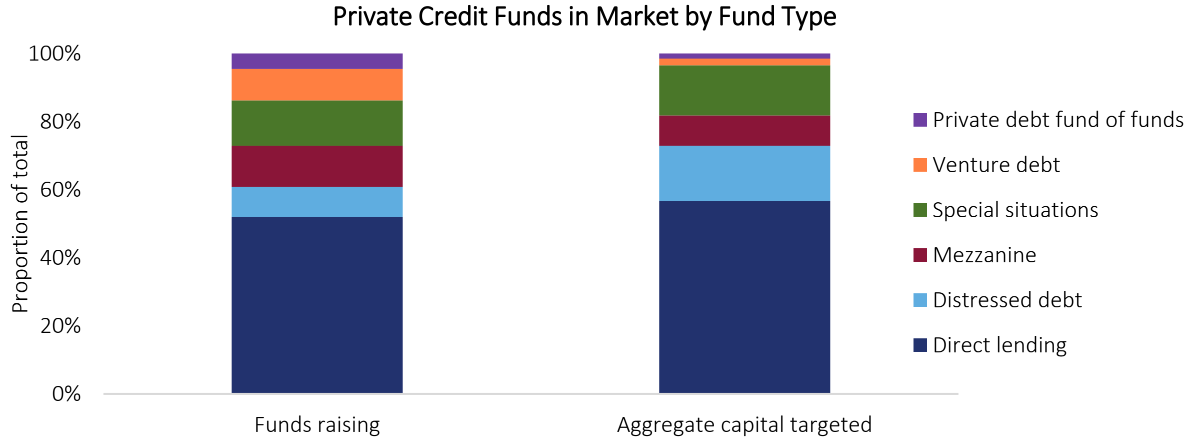
Strategy	Products/Features
Direct Lending	• Senior secured term debt (1st lien) • Uni-tranche debt (1st and 2nd lien) • Generalist & specialist • Primarily sponsored deals • Floating rate
Opportunistic	• Mezzanine & unsecured subordinated debt • Bespoke solutions with equity and/or warrant upside • Complex and special situations • 2nd lien term debt • Fixed or floating rate
Distressed Debt	• Distressed for influence/control & turnarounds • Distressed debt trading • Primarily secondary transactions

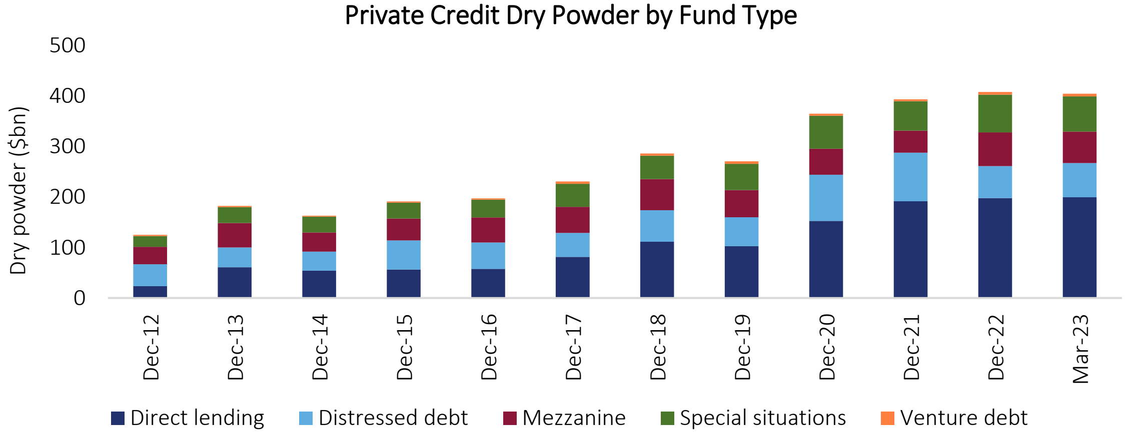


Current Private Credit Market









Source: Private Debt Q1 2023: Preqin Quarterly Update

Yield & Liquidity

Yield Spectrum

- Trade & Receivables Factoring
- Asset-Based Loans
- Corporate Cash Flow Loans
- Sector Specialists
- Risk Transfer
- Asset Leases & Licensing
- IP/Royalties

4% ⟷ *15%*

Liquidity Spectrum

- Trade & Receivables Factoring
- Asset-Based Loans
- Corporate Cash Flow Loans
- Sector Specialists
- Risk Transfer
- Asset Leases & Licensing
- IP/Royalties

90 days ⟷ *5+ years*

The Yield and Liquidity ranges and values reflect expectations based on Wilshire's estimates.

Risk exposure

Alternative yield strategies with risk profiles that are generally uncorrelated with the broader credit markets, and returns that are equal or superior to other public and private credit options.

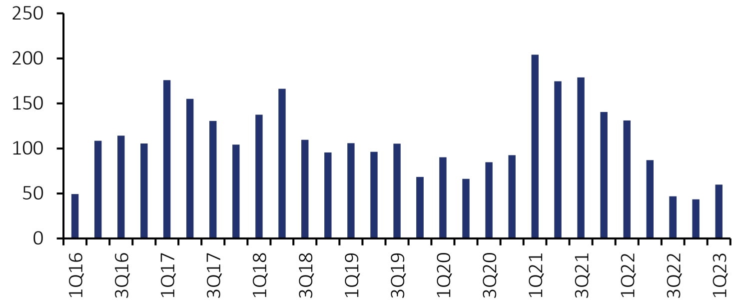
RISK EXPOSURE	CONTROLLABLE RISKS			NON-CONTROLLABLE RISKS		
	Capital Structure	Credit Spread	Structural Protections	Macro-economic	Industry-Specific	Interest Rates
Traditional Strategies						
Direct Lending	Medium/High	Medium/High	Medium/High	Medium	Low	Medium
Mezzanine	Medium/High	Medium/High	Medium/High	Medium	Low	Medium
Distressed Debt	Medium	Medium	Medium	High	Medium	Medium
Non-Traditional Strategies (Wilshire Alternative Yield focus)						
Music Royalties	None	None	None	Low	Medium	Low
Water Rights	None	None	None	Low	Medium	Low
PE Portfolio Finance	Low	Low	Low	Low	Low	Low
Stretch ABL	Low	Low	Low	Medium	High	Medium
Aircraft Leasing	None	None	None	Medium	High	Low
Insurance Run-off	None	None	None	Low	Medium	Low
Litigation Finance	Low	Low	Low	Low	Low	Medium
Software Debt	Medium	Medium	Medium	Low	High	Medium
Healthcare Lending	Low	Low	Low	Low	High	Medium
Franchise Finance	Medium	Medium	Medium	Low	High	Medium

Target Net Returns are based on forecast assumptions by Wilshire's Research team over an assumed 5 year horizon. Assumptions are preliminary and are subject to change.

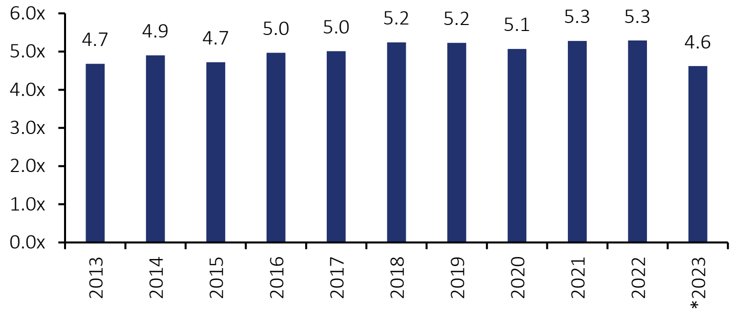
Representative controllable and non-controllable risk factors are not an exhaustive list. Alternative Yield sub-strategies may include additional risk factors not listed, including but not limited to manager and strategy specific factors.

U.S. Senior Direct Lending Outlook: Neutral

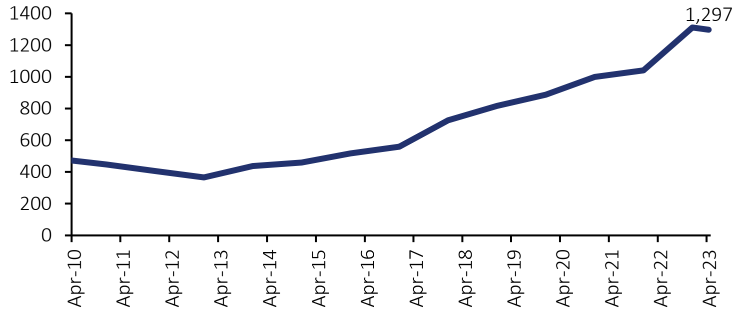
Highly Leveraged Loan Volume (B)[1]



Highly Leveraged Loan Average Debt Multiples[1,2]



Private Equity Dry Powder[3]



Regional Influences

- \+ Continued bank retrenchment
- \+ Private equity dry powder and robust M&A activity further enhanced by multiple compression
- \+ We are currently experiencing a rising rate environment
- ± Uncertain macro-outlook and potential risk of downturn
- \- Increased competition and lack of differentiation weighs negatively on risk/return, further impacted by inability to generate real return in most public credit markets
- \- Middle market managers moving up market because of a lack of deal flow in their space

Local Considerations

- Favorable complexity premium
- Fixed versus floating rate debt
- Increase in non-sponsored versus sponsored direct lending
- Sector-focused lending versus generalist approach
- Defensive-oriented sectors should exhibit resilience in the event of a downturn
- Continued upstream movement of traditional middle-market lenders
- Transition away from LIBOR to SOFR reference rate

Industry / Sector Outlook

Sector	Investment Opportunity
Senior Direct Lending	

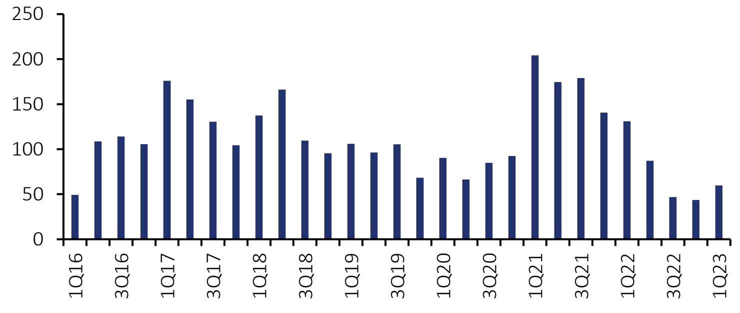
[1] S&P LCD, as of March 31, 2023.

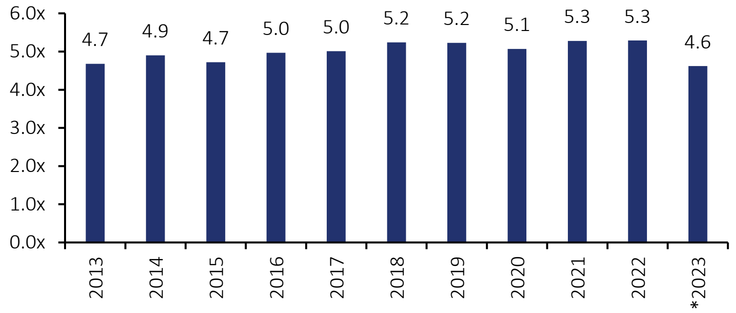
[2] SOFR+225 and higher

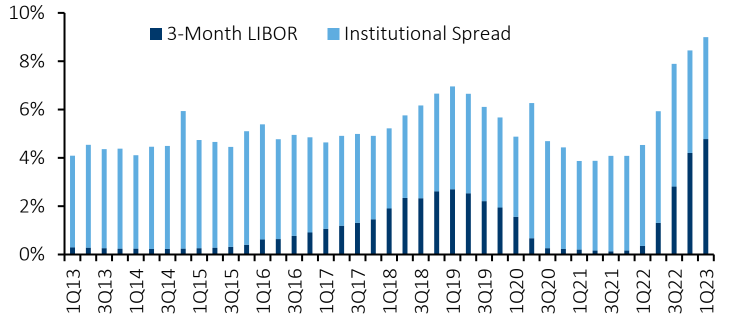
[3] Preqin Private Equity Dry Powder, as of April 13, 2023.

U.S. Opportunistic Credit Outlook: Highly Favorable

Highly Leveraged Loan Volume (B)[1]	Highly Leveraged Loan Average Debt Multiples[1]	Weighted Average Absolute Institutional Rate[1]







Regional Influences

- \+ Continued bank retrenchment and negative net interest margin in the CLO market
- \+ Specialization as prerequisite for traditionally non-banked or otherwise overlooked sectors and assets.
- \+ Pockets of market dislocation creating attractive secondary credit opportunities
- \+ COVID-19 disruption highlighting the need for flexible capital solutions
- ± Rising rate and inflationary environment potential headwind for cash interest borrowers unable to adequately service debt
- \- Increased competition in primary market from large AUM lenders and secondary market from large hedge fund managers
- \- Velocity of treasury yield increases outpacing floating rate loan structures (i.e., spread duration risk)

Local Considerations

- Favorable complexity premium for tailored solutions; interest, fees, and upside optionality facilitating multiple return sources
- Floating rate debt structures mitigating interest rate sensitivity
- Specialty finance opportunities capitalizing on tech-enabled asset originators
- Short-duration strategies and high amortization features mitigating interest rate and credit (i.e., repayment) risk
- Government-focused financing solutions to facilitate Inflation Reduction Act capital deployment goals
- Less competitive non-sponsored market
- Defensive-oriented sectors where defaults and correlations are low relative to broad credit markets

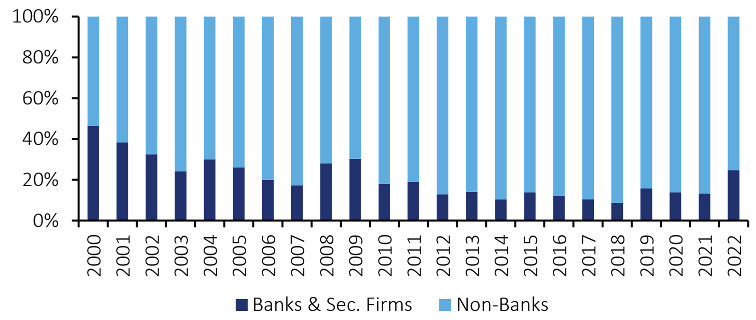
Industry / Sector Outlook

Sector	**Investment Opportunity**
Opportunistic	●

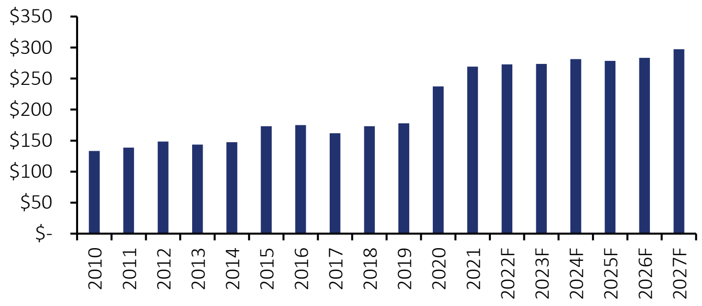
[1] S&P LCD, *as of March 31, 2023.

U.S. Distressed Credit Outlook: Favorable

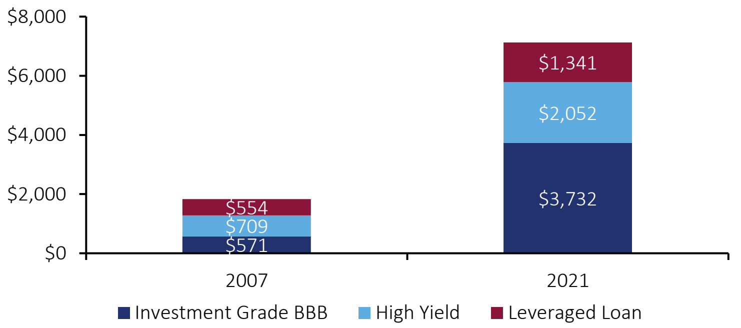
Highly Leveraged Loans[1]



Global Distressed Debt Assets Under Management[2]



Lower Rated Corporate Credit Market Size ($B)[3]



Regional Influences

- + Attractive historical risk-adjusted returns
- + Unprecedented leverage levels and outstanding debt
- + Deterioration of credit quality in loan issuance
- + Higher cost of capital due to interest rate hikes and pull back of liquidity from the Federal Reserve.
- + Increase in spreads across the rating spectrum, with significant moves in the both leverage loan and high yield market
- + Loan issuance are decreasing however the proportion of covenant-lite loans is still increasing
- + Tough leveraged loan issuance market as some recent large poor performing loans have reduced underwriting appetite.
- + Ongoing disruption in supply chains
- + Slowing US GDP growth
- ± Default rates are likely to increase towards long-term average, but should remain below prior recessionary default peaks
- ± Substantial fiscal stimulus, strong labor market and strong consumer balance sheets lowering odds of a deep recession.
- ± Substantial levels of illiquid credit since GFC, with little historical precedent from a credit cycle standpoint

Local Considerations

- Favorable complexity premium
- Fixed versus floating rate debt
- Short-term and long-term distressed debt opportunities
- Broad market stress as opposed to sectors in secular decline
- Large cap issuers vs. middle market
- Liquid versus illiquid distressed debt opportunities
- Distressed trading opportunities versus loan-to-own
- Non-performing loan opportunities
- Industrial and manufacturing sectors placing a significant emphasis on supply chain resiliency through onshoring and digitalization
- Pullback in tech valuations and discretionary spending creates discounted opportunities
- Corporate profit growth turned negative in Q3 2022
- Large shortfall in 2022 credit supply could suggest demand bottomed out in 2022

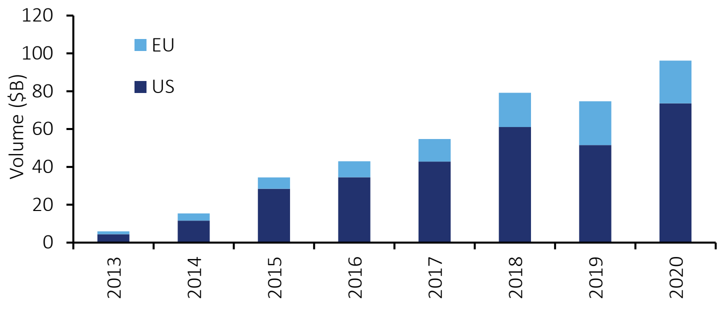
Industry / Sector Outlook

Sector	Investment Opportunity
Non-Control Distressed Debt	
For-Control Distressed Debt	

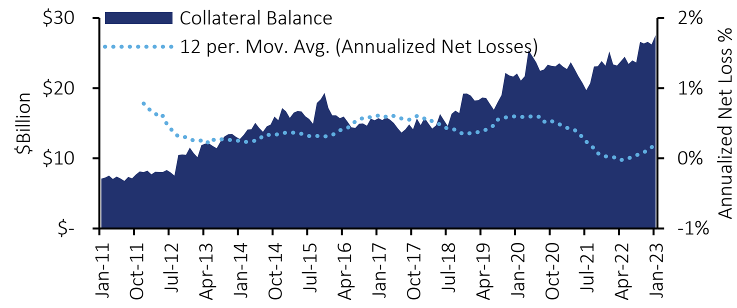
[1] Source: S&P LCD, as of December 31, 2022. [2] Source: Preqin, as of December 2022. [3] Source: Investment grade per JP Morgan (represents the par amount of the JULI Index); high yield per BAML (represents global issuers of USD denominated debt); leveraged loan per S&P LCD (represents the S&P/LSTA index; includes BBB rated loans).

U.S. Alternative Yield Outlook: Highly Favorable

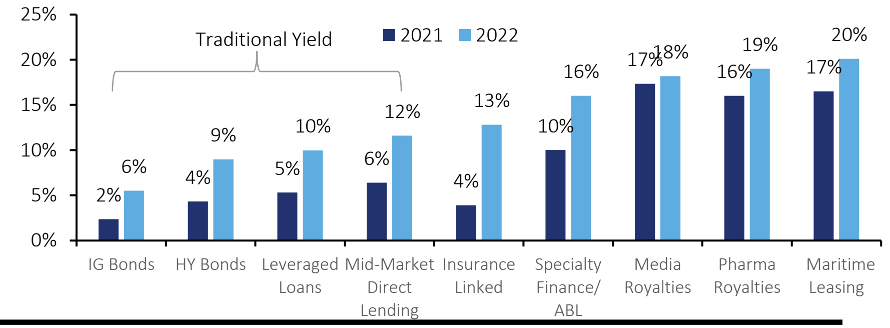
FinTech Annual Origination Volumes [1]



C&I Equipment Leasing Growth & Loss Rate[2]



Yield YoY Comparison [3]



Regional Influences

- \+ Lack of meaningful compensation on a spread basis after accounting for inflation vs. traditional yield credit/duration risk
- \+ Correlations across asset classes driving demand for uncorrelated risk/return profiles
- \+ Rising interest rates and regulatory pressure leading to more challenging access to traditional capital sources
- \+ Broad based inflation impacting corporate profit margins; operational flexibility initiatives supporting commercial & industrial asset leasing (vs buying assets outright)
- \+ Growth of intangible assets and digital economy influence how consumers shop, pay for goods/services, access credit, create and consume content
- \+ Favorable supply-demand dynamics driven by low-cost tech-enabled originations, pre-requisite for specialization and higher margins of safety relative to traditional yield
- ± Historically low loss rates and high recovery rates relative to traditional debt markets

Local Considerations

- Intangible asset heavy sectors facing valuation headwinds look to alternative financing solutions linked to their intellectual property (patent, copyright, trademark, etc.) assets
- Nontraditional real asset opportunities where both asset and contractual cash flow/monetization mechanism benefit from sustained elevated inflation (beef/cattle farming, water rights, commodity streaming, etc.)
- Nondirectionally sensitive financing solutions benefiting from transaction volumes including asset servicing rights and royalty/licensing agreements.
- Risk transfer in litigation and/or re/insurance markets where risk drivers have little to no sensitivity to public and private capital markets; life-contingent structured settlements, insurance premium finance, life settlements, and IP litigation finance and medical malpractice.

Industry / Sector Outlook

Sector	Investment Opportunity
Niche (Sector) Credit	
Sp. Asset-Based Lending	
Risk Transfer Strategies	
Intangible Assets	

[1] Source: 2nd Biannual Global Alternative Finance Benchmarking Report, Cambridge Centre for Alternative Finance, June 2022 [2] Source: KBRA All Equipment Index

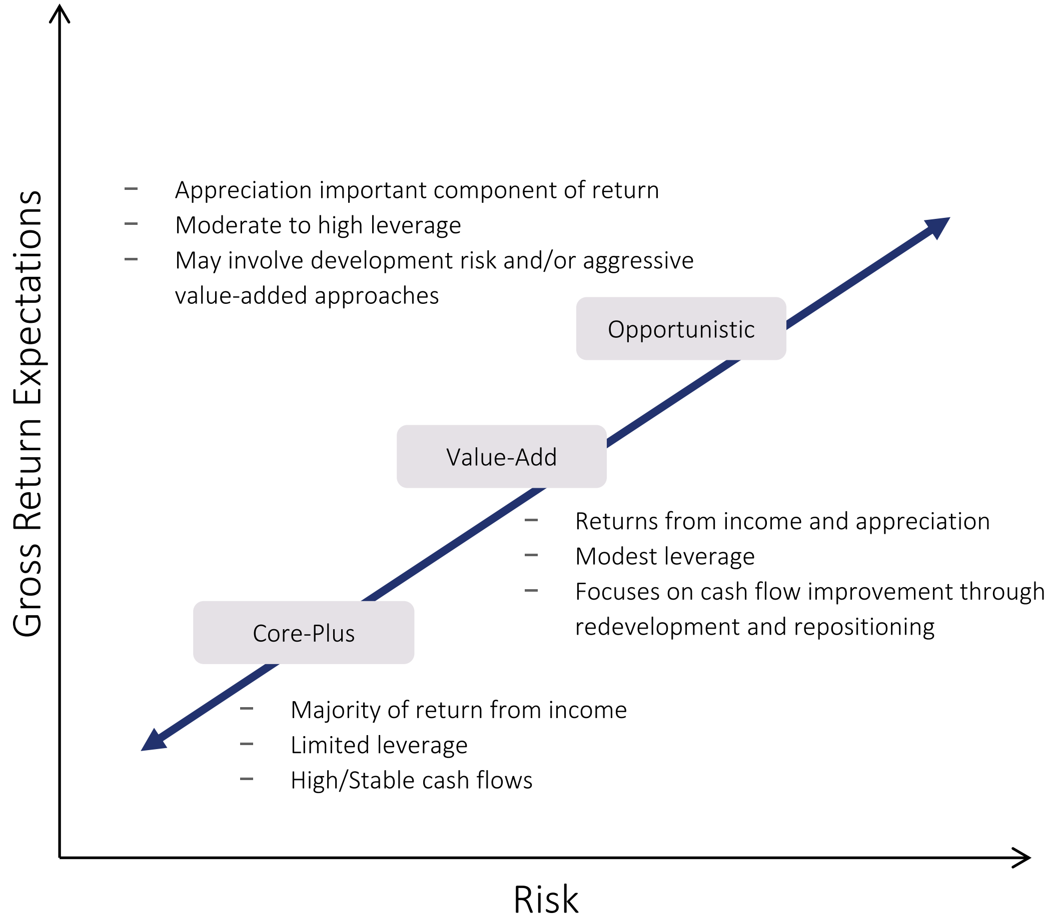
[3] Traditional Liquid Opportunities is presented as yield to maturity as at year end 2021 and 2022. Alternative Yields are qualitative forecast assumptions made by Wilshire's Research team over an assumed 5-year horizon. Assumptions are preliminary and are subject to change.

Real Assets

Private Real Assets – Sector Overview

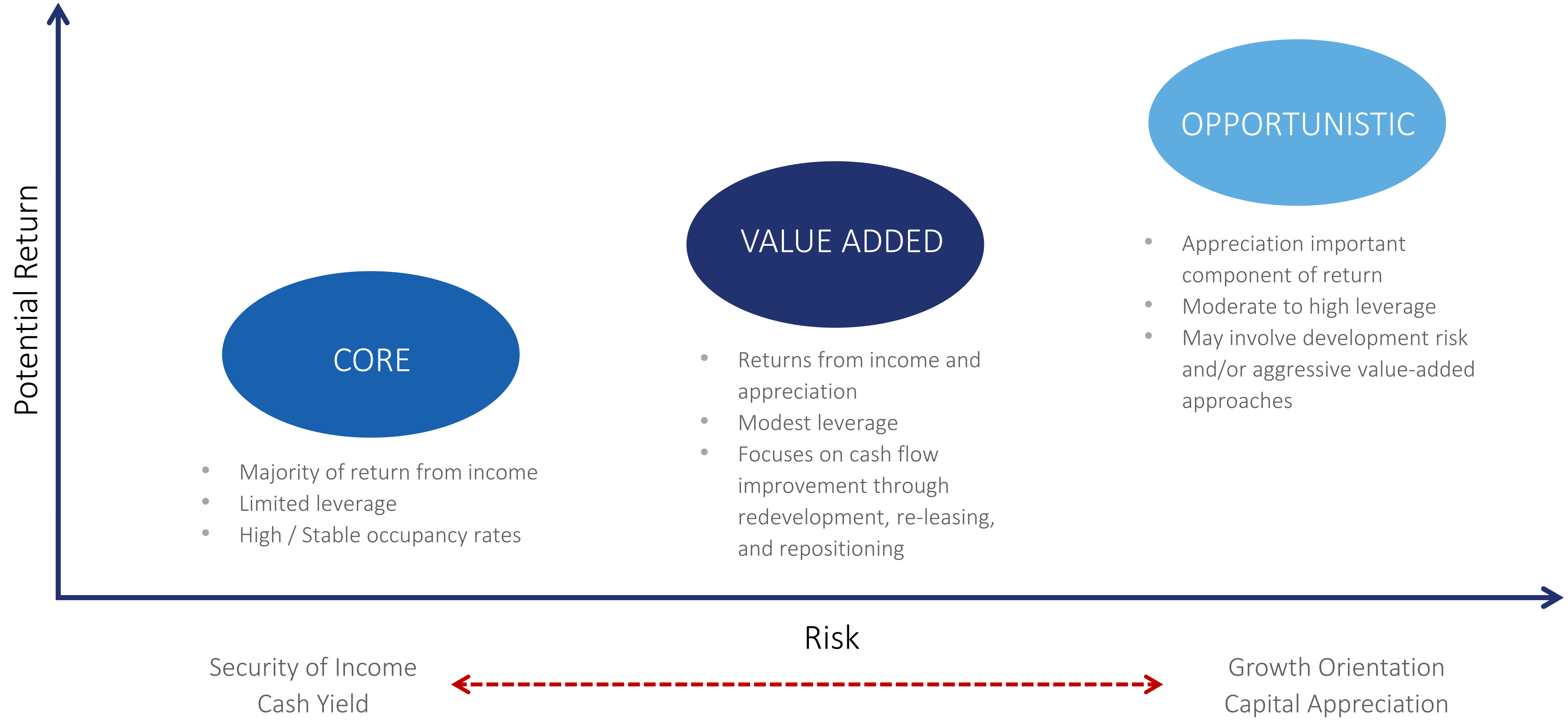
Sector
Real Estate
Infrastructure
Natural Resources Energy Timber/Ag Renewables Other

Risk/Return Target



Real Estate – Opportunity Set

PRIVATE REAL ESTATE STRATEGIES FALL INTO THREE CATEGORIES:



Real Estate – Opportunity Set

	APARTMENT	HOTEL	INDUSTRIAL	OFFICE[1]	RETAIL
SUBTYPES	High-Rise Elevator Projects Low-Rise Projects Garden-Type Projects	Hotel and Hospitality Properties	Flex Space R&D Warehouse Manufacturing Office Showroom	Central Business District ("CBD") Suburban	Neighborhood Center Community Center Regional Center Super Regional Center Fashion/Specialty Power Center Theme/Festival Center Outlet Center
SPECIALTY	Student Housing Senior Housing		Self Storage	Medical Office	

[1] Geographic classifications as defined by zip code areas

Data source: National Council of Real Estate Investment Fiduciaries

Infrastructure Overview

- Investment Merits
  - Low sensitivity to macro-economic swings
  - Low correlation with other asset classes
  - High income yield
  - Stable and predictable cash flows
  - Good inflation protection
  - Long-term return potential with limited downside risk
  - Diversification

- Return Drivers
  - Steady population growth
  - Long-term economic growth
  - Increased trade and business activity

Private Infrastructure Strategies

POTENTIAL RETURN

CORE -> CORE +

- Majority of return from income
- Limited leverage
- High/Stable cash flows

VALUE ADDED

- Returns from income and appreciation
- Modest leverage
- Focuses on cash flow improvement through redevelopment and repositioning

OPPORTUNISTIC

- Appreciation important component of return
- Moderate to high leverage
- May involve development risk and/or aggressive value-added approaches

RISK

Security of Income
Cash Yield

Growth Orientation
Capital Appreciation

Infrastructure Assets

TRANSPORTATION

- Airports
- Ports
- Train stations
- Toll roads
- Train lines

UTILITIES

- Power generation
- Power distribution
- Water treatment
- Transmission pipelines

ENERGY

- Power generation
- Renewables
- Mid-stream operations

OTHER

- Transmission towers
- Cell towers
- Cable networks
- Waste management
- Industrial infrastructure

Infrastructure assets

- Typically long-lived and capital intensive projects with a relatively inelastic demand

Key characteristics

- Essential services
- High barriers to entry (capital expenditure requirement, regulation)
- Long duration
- High operating margins and inflation linked cash flows

Infrastructure Drivers of Return

INFRASTRUCTURE CATEGORY	EXAMPLES	RETURN DRIVERS	RETURN PROFILE*
Regulated - Return stipulated by a regulatory authority	• Utilities (e.g. water and electricity supply) • Airports • Telecommunication	• Ability to operate within regulatory parameters • Market movements in cost of equity which are reflected by regulator	• 5% – 12% p.a. • Significant cash yield • Limited upside
Contracted – Long-term contractual arrangement with a purchaser of the services	• Contracted power generation • Water treatment • Waste management • Energy infrastructure	• Ability to meet service levels in the contract • Inflation escalation • Re-contracting opportunities • Midstream development	• 8% – 20% p.a. • Significant cash yield • Moderate upside • May be additional return from investing pre-construction and/or pre-contract
Market – Performance linked to the economy or specific market	• Ports • Toll roads • Freight rail	• Economic growth • Trade • Business activity	• 8% – 16% p.a. • Moderate cash yield • Strong capital gains • Significant upside • May be additional return from investing pre-construction or prior to established market position

*Nominal equity returns assuming typical leverage. Figures shown represent projected performance range post project-tax, pre investor tax and fees. Estimate based on recent market transactions. Will vary over time due to movements in bond rates, jurisdiction and asset risk profile.

Natural Resources – Timber/Farmland Investment Drivers

GROWING DEMAND

- By 2050, 70% more food will be required to feed 2.1 billion more individuals.
- Meat and protein consumption is expected to more than double by 2050 with rising GDP per capita.
- Biofuels mandates are expected to utilize 13% of all global cereal production.
- Demand from larger, more urban and richer population will require annual gross investment of $209 billion*.

→ Land scarcity will lead to increased valuations of productive land. Water scarcity will increase even more than land.

PRODUCTION INNOVATION

- Global farm productivity must increase by 75% by 2050.
- Yield improvements through technological advancements, improved fertilizers and efficient irrigation methods.
- Marginal acreage expansion through use of technology, improved farming practices and crop shift to most productive regions.
- Value chain efficiency via packaging, storage and transportation improvements.

→ Placing more land into production and improving yield are the only two levers to increase supply.

ASSET VOLATILITY

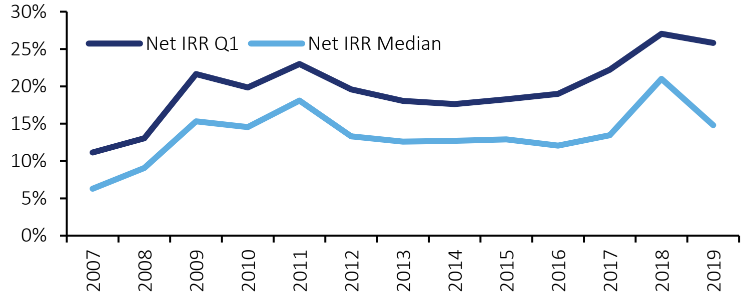
- Climate change including shift in precipitation patterns and weather severity.
- Diminishing supply and quality of water in most regions.
- Environmental degradation prompting limits on nitrogen runoff, sanitation, pesticides.
- Increased demand and limited local production capacity drives prices higher over long-term.

→ Patient, opportunistic capital can exploit short-term volatility and capitalize on long-term trend.

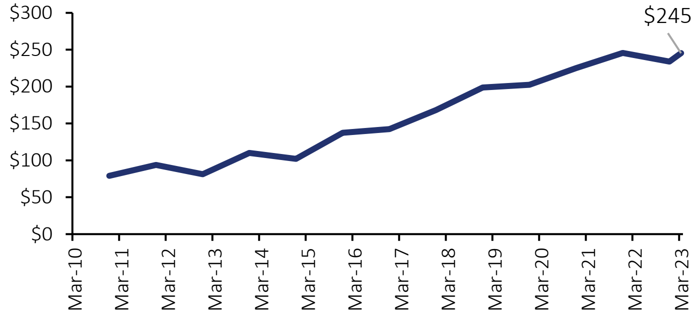
*Food and Agriculture Organization of the United Nations 2009 estimate

U.S. Real Estate Outlook: Neutral

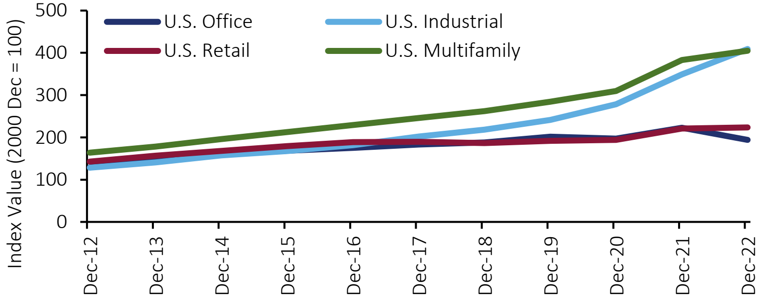
Vintage Year Performance[1]



Real Estate Dry Powder ($B)[2]



U.S. Property Type Pricing Indices[3]



Regional Influences

+ Demographic shifts due to growth of millennial population and aging baby boomers
+ Positive attributes during a higher inflationary period
+ Increasing emphasis on meeting ESG standards
± Debt maturities and higher interest rates generating possible growing distressed opportunity set
- Renewed price discovery period amidst macroeconomic backdrop and rising interest rate env.
- Elevated labor and construction costs and current workforce trends
- Pullback of lenders / financing for certain sectors and deals
- Moderating rent growth expectations

Local Considerations

- Less competitive lower middle market opportunities
- Flexible portfolio construction and investment structuring
- Historical resiliency of multifamily and demand for industrial
- Select deep distressed opportunities in office
- Increased outpatient care and aging population creating demand for medical properties
- Growth in single family rental opportunities amidst supply / demand imbalance and record high cost of homeownership
- Highest quality grocery-anchored retail assets or big box conversions to logistics or mixed-use assets
- Niche sub-sectors with short-term leases (including self-storage and student housing) in high inflationary environment
- Capital stack solutions for borrowers given current limitations of traditional debt providers
- Net lease investments with high credit-quality tenants

Industry / Sector Outlook

Sector	Investment Opportunity
Core	◐
Core Plus	◐
Value-Added	◐
Opportunistic	◕
Debt	●

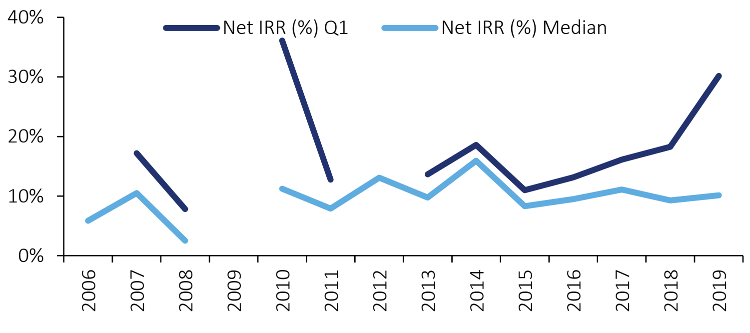
[1] Preqin North America Real Estate benchmark, as of most up-to-date (March 9, 2023). Note: inadequate number of funds prevents quartile analysis in certain vintage years.

[2] Preqin Real Estate Quarterly Update. Data as of Match 2023.

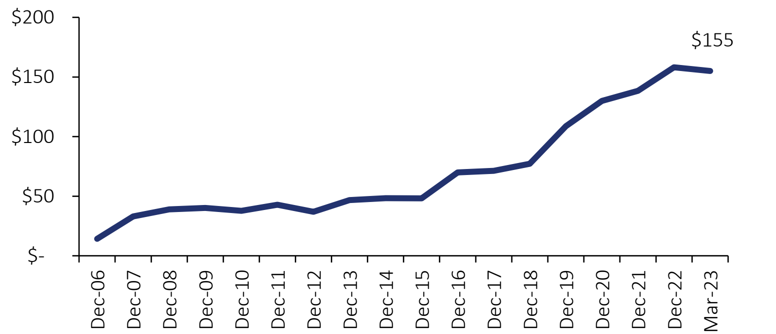
[3] CoStar Commercial Repeat-Sale Indices (CCRSI), CoStar Group. Value weighted data. Data through February 2023.

U.S. Infrastructure Outlook: Favorable

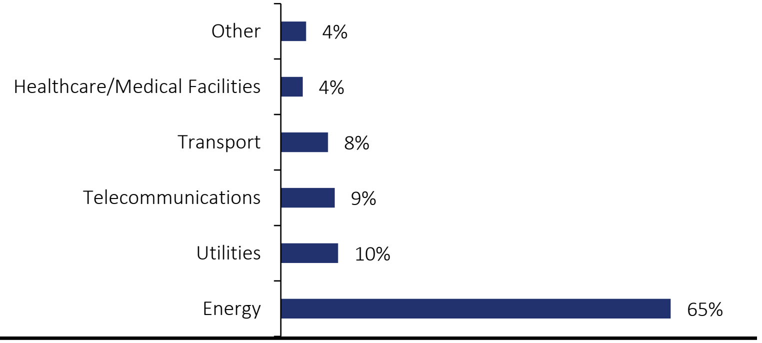
Vintage Year Performance[1]



Historical Dry Powder, at Month ($B)[2]



Completed Infrastructure Deals (in 2022)[3]



Regional Influences

+ Large gap between long term infrastructure capital needs and current investment levels
+ U.S. government's infrastructure spending plan and increasing public prioritization
+ Greater demand for private capital due to government budget constraints
+ Increasing significance of renewables and energy transition sector
+ Tailwinds caused by an inflationary environment
± Growing interest in infrastructure debt
- Robust fundraising environment and elevated levels of dry powder
- Rising interest rate environment

Local Considerations

- Increased need for digital infrastructure
- Continuing transition to renewable energy
- Ongoing electrification of economy
- Deteriorating transportation infrastructure
- Growing market for public-private partnerships

Industry / Sector Outlook

Sector	Investment Opportunity
Core	
Core Plus	
Value-Added	
Opportunistic	
Debt	

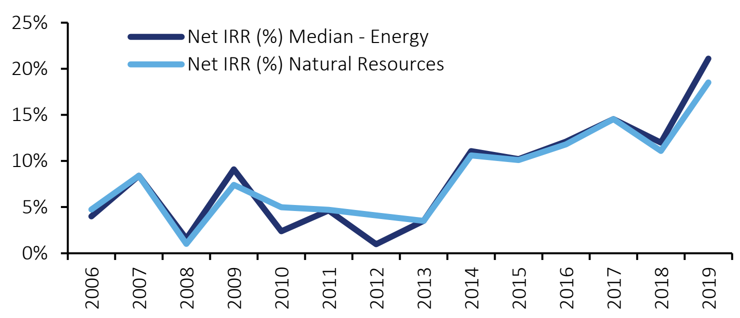
[1] Preqin North America Infrastructure benchmark, as of most up-to-date (March 7th, 2023) Note: inadequate number of funds prevents quartile analysis in certain vintage years.

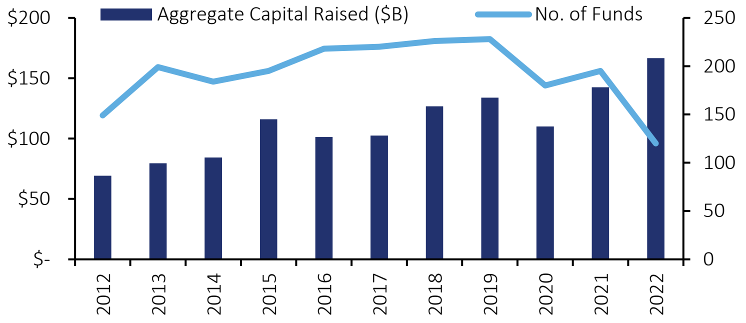
[2] Preqin North America Infrastructure funds, as of March 7th, 2023.

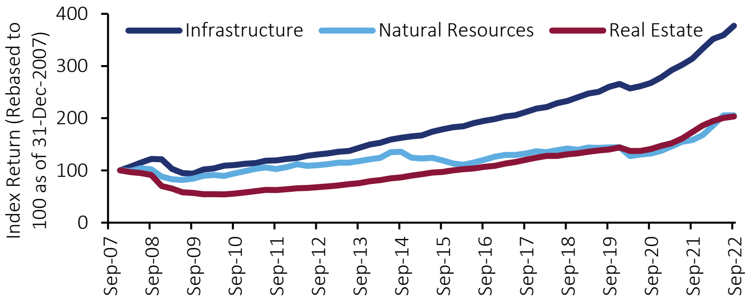
[3] Preqin North American completed Infrastructure deals, as of March 7th, 2023.

U.S. Natural Resources Outlook: Favorable

Vintage Year Performance[1]	Natural Resources Fundraising ($B)[2]	Index Returns – NR Vs. Re & Infra[3]







Regional Influences

+ Rising interest rate & inflationary environment
+ Increased expenditures in green initiatives, which are metal-intensive
+ Increased growth in natural gas and renewables
+ Reduction in global gas supply a result of Ukraine/Russia war
± Technological advances are impacting both the demand for and supply of energy
± Limited capital supply in traditional energy markets
± Increased emphasis from Biden administration on energy transition & decarbonization
± Volatility in commodity prices

Local Considerations

- Growing global population
- Capital constraints on natural resources businesses
- ESG questions surrounding metals & mining and oil & gas
- Natural gas to play important role in energy transition
- Continued geopolitical tensions impacting all sectors
- Increasing consumption of water and ongoing global drought
- Divestitures of non-core energy assets
- Ongoing consolidation in energy production companies
- Decarbonization across all aspects of society
- Various factors increasing commodity prices

Industry / Sector Outlook

Sector	Investment Opportunity
Carbon-Based Energy	
Sustainable Energy	
Agriculture/Farmland	
Metals/Mining	
Timberland	
Water	

[1] Preqin North America Natural Resources benchmark, as of most up-to-date (February 6th, 2023). Note: inadequate number of funds prevents quartile analysis in certain vintage years.

[2] Preqin Private Capital Fundraising Update as of February 6th, 2023.

[3] Preqin Quarterly Index , most up to date as of February 6th, 2023.

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MM-354298 E0623

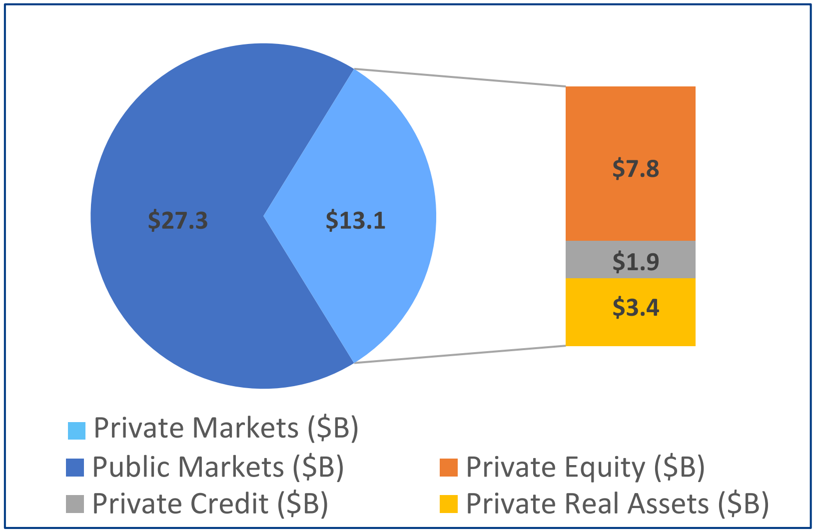
Private Markets Program – Annual Review

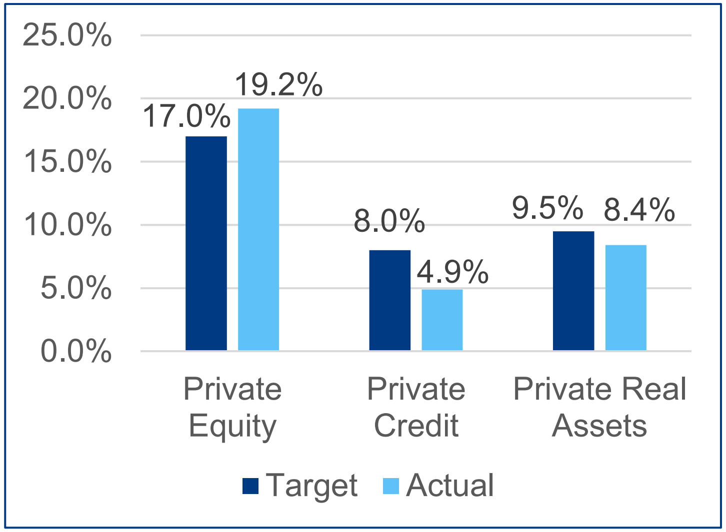
IPERS Investment Board

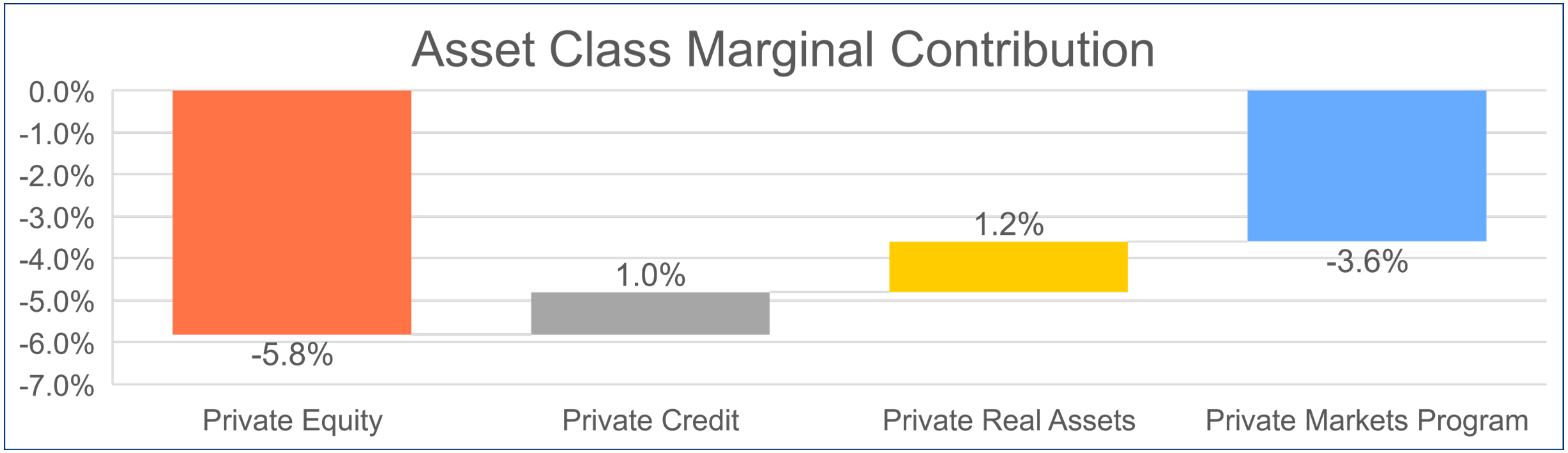
Pat Reinhardt, SIO - Alternatives
Marcus Dong, RIO - Alternatives

June 15, 2023

Private Market Program *(as of 3/31/23)*







2023 Investment Plan and Progress to Date

At May 31, 2023 • ($ in millions)

	Planned
Commitments	$1,950
Target Size by Portfolio	Private Equity $700; Private Credit $850; Private Real Assets $400

Actual Commitments to Date and Potential Near-Term Commitments

Portfolio	2023 Investment Plan	Commitments to Date	Uncommitted Capital	Commitment Status
Private Equity	$700	$393	$307	**On Pace**
Private Credit	$850	$100	$750	**Slow**
Private Real Assets	$400	$0	$400	**Contingent**
Total	**$1,950**	**$493**	**$1,457**	

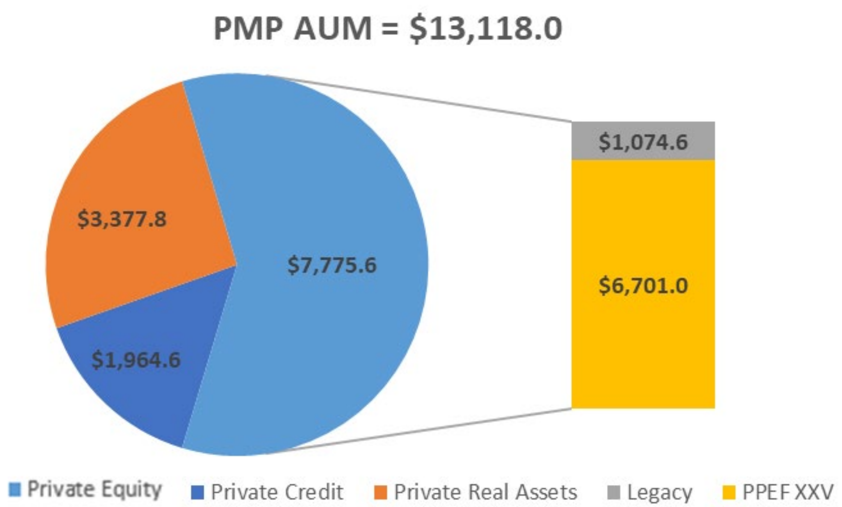
IPERS

Updates and Priorities

- **Private Equity over target allocation**
  - **Manage commitment pacing**
- **Private Credit on-boarding update**
  - **On track to slowing**
- **Other Real Assets Performance**
  - **Inflation, Idiosyncratic Assets, Investment Pacing**
- **Private Real Assets Equity search**
  - **Clarity on path forward by end of the year**
- **Internal co-investment program**

Private Equity
Portfolio Review

Private Equity Portfolio Structure *(in $m; as of 3/31/23)*



- Legacy portfolio should go away in the next four years
- Investments since 2014 made through a Fo1 structure. The fund makes primary fund investments, co-investments and secondary investments

Private Equity Portfolio Performance (Inception 1985)

IRR Performance*

	1-Yr	3-Yr	5-Yr	10-Yr	Inception (3Q85)
Private Equity Portfolio	-9.2%	21.9%	20.4%	18.0%	14.6%
Program Objective**	-5.9%	24.6%	14.9%	16.0%	14.8%
Excess Returns	- 3.3%	- 2.7%	5.5%	2.0%	-0.2%

- Lagged valuations are catching up over the last year
- Wait a quarter - assuming 2Q23 returns of 0% for Private Equity and 4.75% for the Program Objective, the 3-year excess returns turn positive by ~ 900 bps

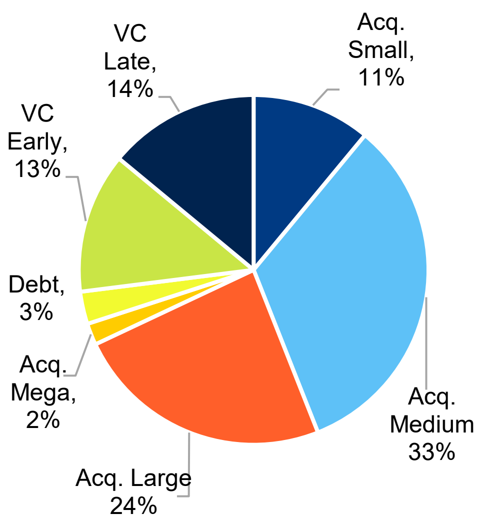
NOTE: Additional performance information for the private equity portfolio and Pathway are available in Appendix B and Appendix C.

*All calculations are based on final partnership valuations through 12/31/2022 and cash activity through 3/31/23.
**Program Objective is currently Russell 3000 + 300 bps.

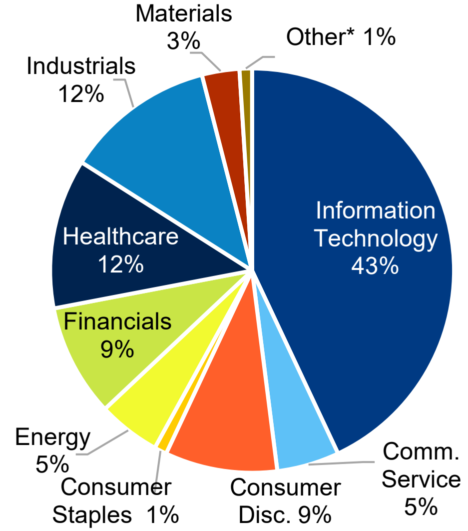
Private Equity Portfolio[1]

# of Managers	# of Partnerships	Total Commitments	Unfunded Commitments
1	442	$15.1 Billion	$2.3 Billion

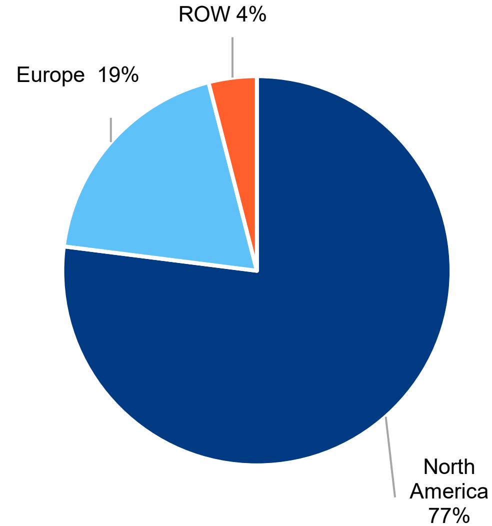
Strategy



Sector



Geography



1. Summary data is since the inception of the Private Equity program and as of 1Q23

* Other in the sector pie chart includes real estate and utilities

IPERS

Private Equity Over Allocated to Target

- We were over allocated at 20% in Mar 2022 versus 19% today
  - Continued strong distribution pace
  - Denominator effects reversing
- Factors that ultimately impact the relative allocation of private equity
  - Level of commitments and sequence of commitments
  - Pace of distributions
  - Growth of private equity versus the total fund (return differentials)
  - It's art, not science

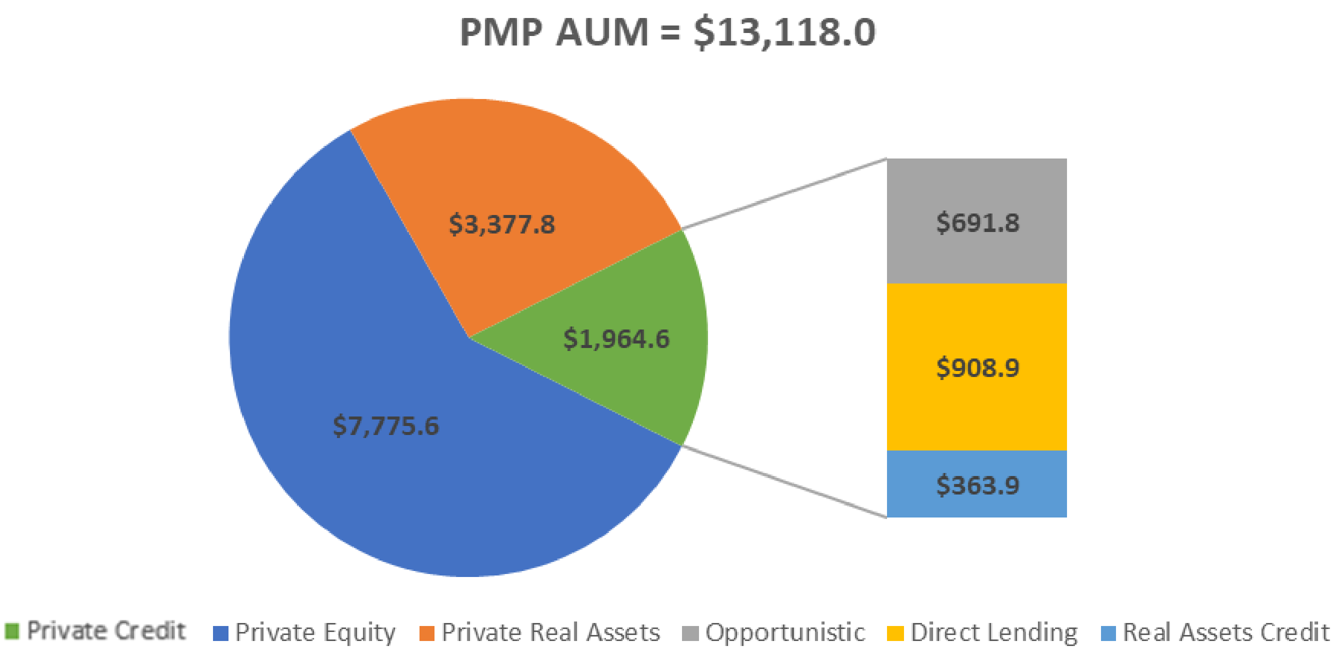
Private Equity Outlook

Dates	Period	Rate Increase / Decrease	IPERS Average Quarterly Return
3Q92 – 2Q00	Pre-Dot Com Bubble	3.0% up to 6.5%	5.9%
3Q00 – 2Q03	Post-Dot Com Bubble	6.5% down to 1.0%	-4.6%
3Q03 – 2Q07	Pre-GFC	1.0% up to 5.25%	6.2%
3Q07 – 3Q15	Post GFC	5.25% down to 0.25%	2.8%
4Q15 – 2Q19	Pre Covid	0.25% up to 2.5%	3.7%
3Q19 – 4Q21	Post Covid	2.5% down to 0.25%	8.2%
1Q22 - ?	Higher Rates for Longer	0.25% up to 5%	-1.1%

- We may be entering an environment of sustained higher interest rates. What will be the impact on Private Equity?
- Sponsors that can leverage their operational expertise to maintain revenue and EBITDA margins should outperform.

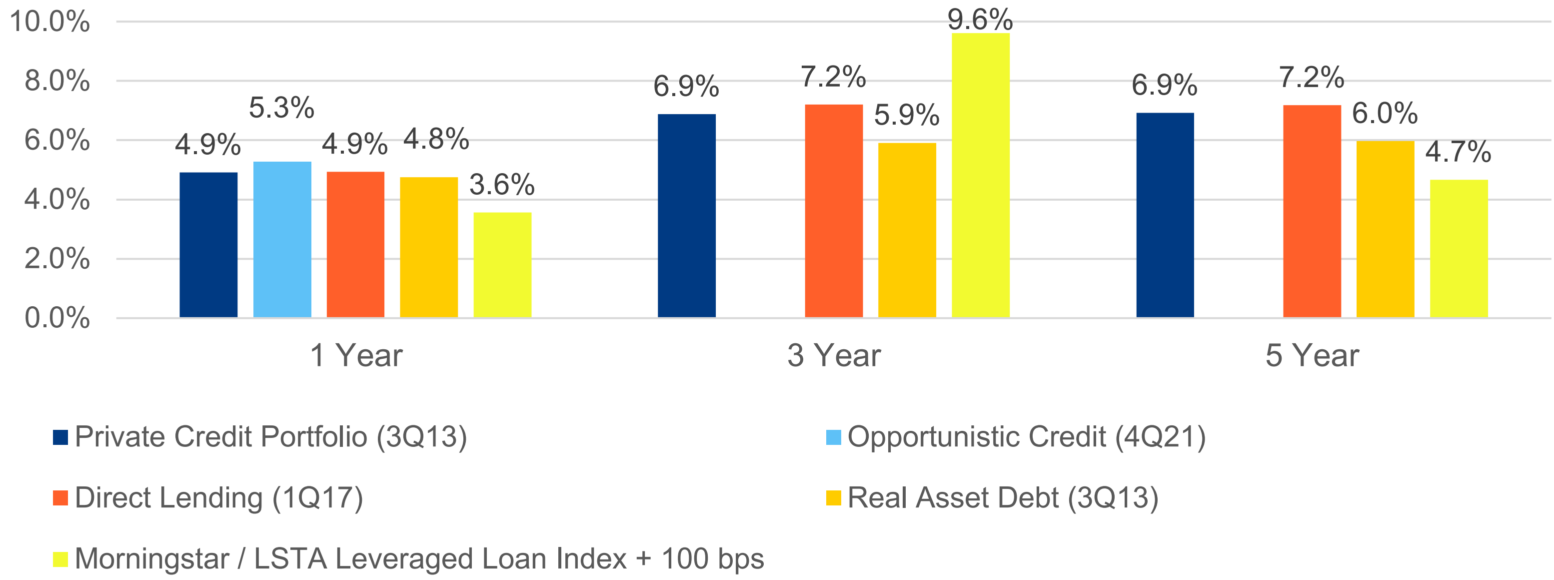
Private Credit
Portfolio Review

Private Credit Portfolio Structure *(in $m; as of 3/31/23)*



- Progressing towards near equal mix

Private Credit Performance *(as of 3/31/23)*



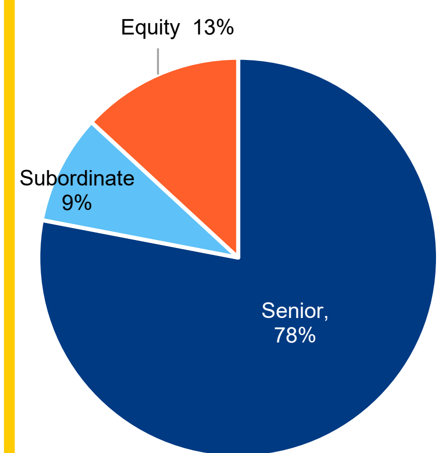
- Inception to date, Private Credit has generated an 8.0% net return versus the Policy objective return of 5.0%
- Private credit outperformed its benchmark for all time periods measured, except for 3-years

IPERS

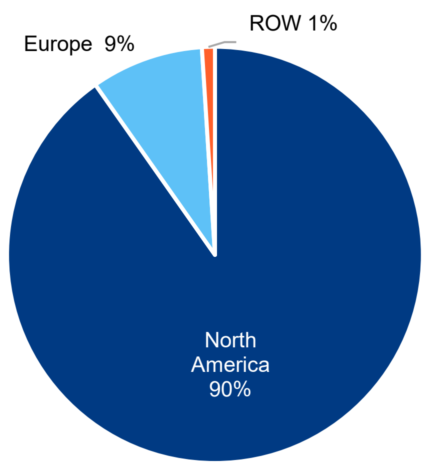
Corporate Debt Portfolio[1]

# of Managers	# of Investments	Commitments	Unfunded Commitments
9	601	$2.3 Billion	$712.8 Million

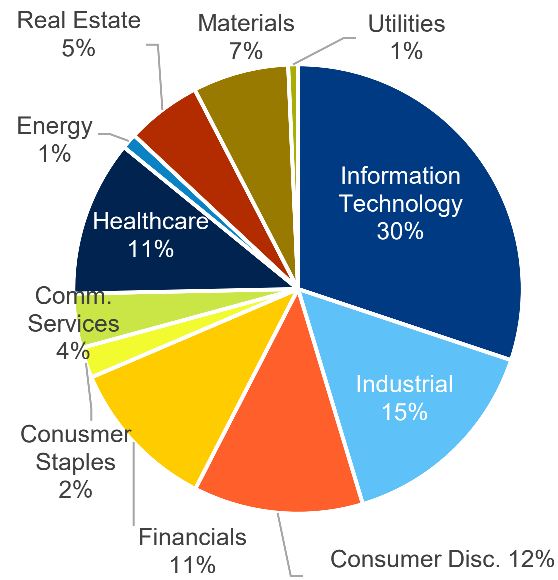
Seniority



Geographic



Sector

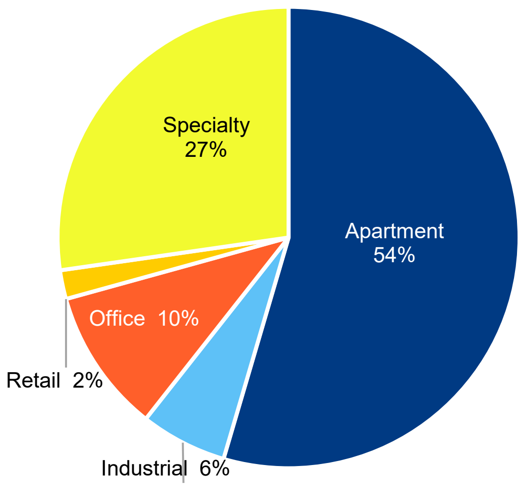


1. The Corporate Debt portfolio includes Direct Lending and Opportunistic mandates. All data presented is for active mandates as of 1Q23.

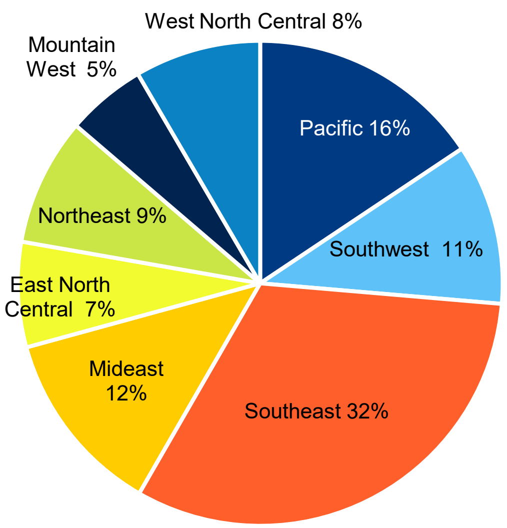
Real Assets Credit Portfolio[1]

# of Managers	# of Investments	Commitments	Unfunded Commitments
7	562	$900 Million	$506.7 Million

Property Type *



Geographic *



1. All data presented is for active mandates as of 1Q23.

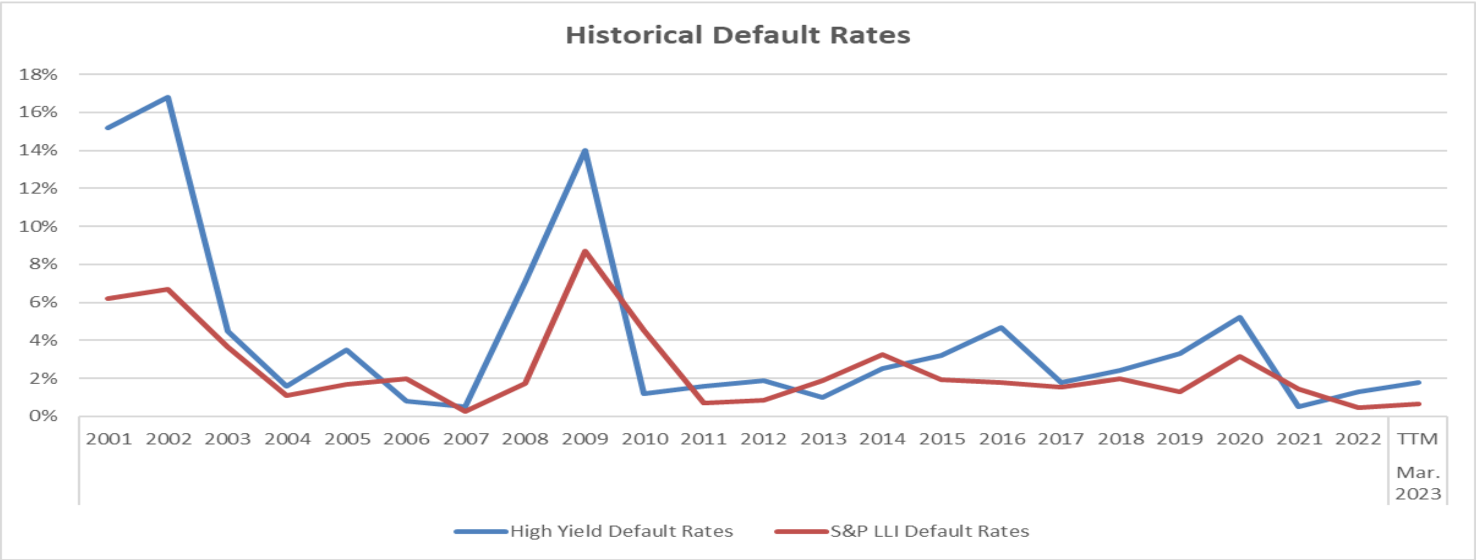
* Pie Charts do not include IFM's Infrastructure Debt Portfolio.

Private Credit On-Boarding Update (as of May 2023)

Manager	Status	Note
Opportunistic Credit		
Ares	HOLD	Internal co-investment program
Kartesia	HOLD	Closed-end fund structure being contemplated
Direct Lending		
Raven	HOLD	Met-Life acquisition
Real Assets Credit		
HPS Investment Partners	HOLD	Personnel change
Oak Street	HOLD	Monitoring real estate correction
Oaktree	Delayed Closing	Denominator effect
Principal	Delayed Closing	Denominator effect

- Measured approach with the remaining mandates
  - Market environment
  - Potential capacity considerations
  - Manager specific issues

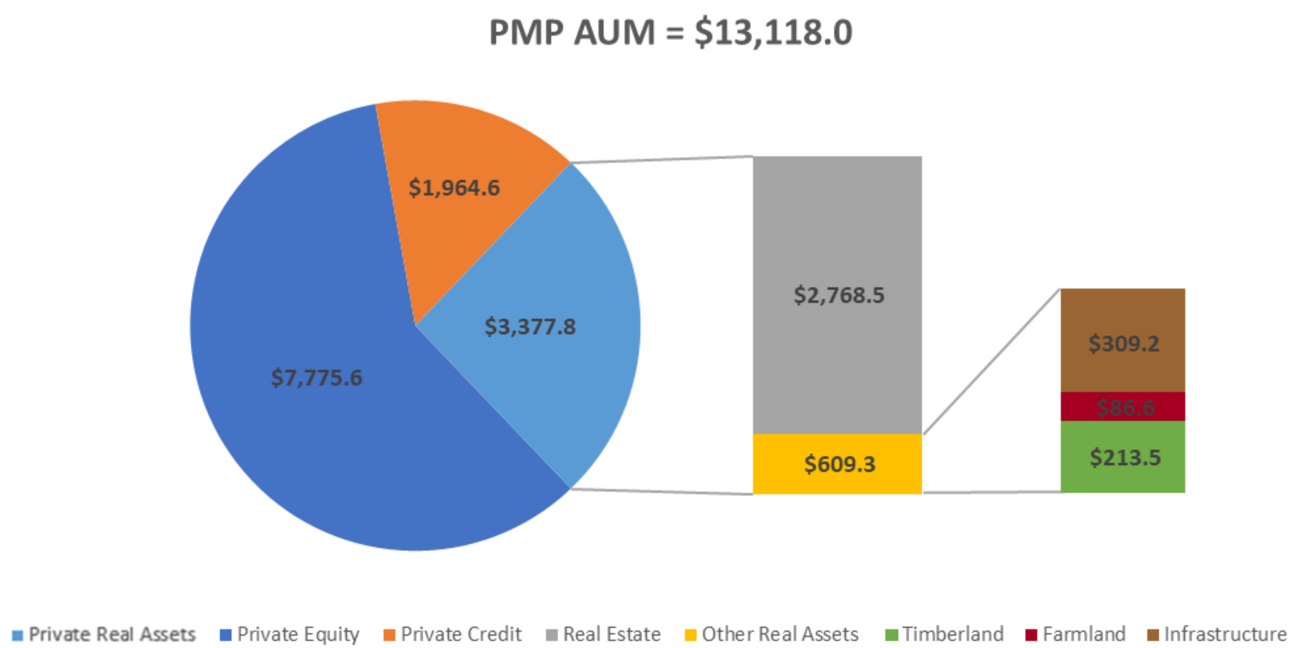
Private Credit Outlook



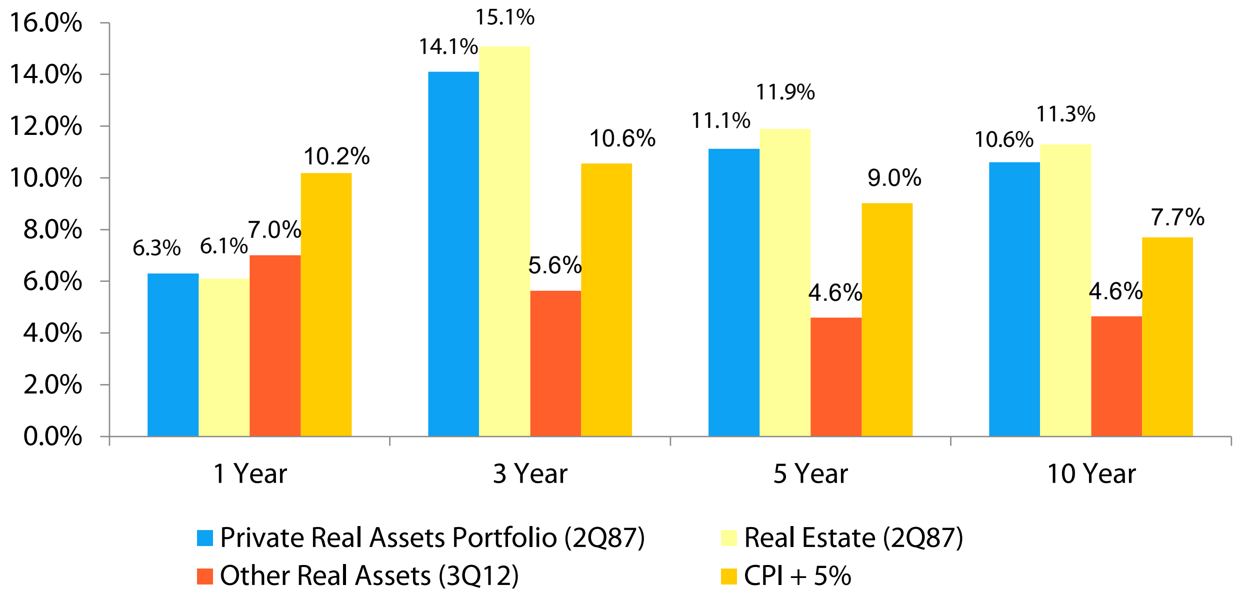
- Given higher rates and margin pressures in a slowing economy, we are anticipating higher default rates
- Downside Protection:
  - Upfront economics, enhanced call protection and broader lender protections
  - Higher equity positions, lower LTVs
  - Portfolio diversification by sponsor and strategy

Private Real Assets
Portfolio Review

Private Real Assets Equity Portfolio Structure *(in $m; as of 3/31/23)*

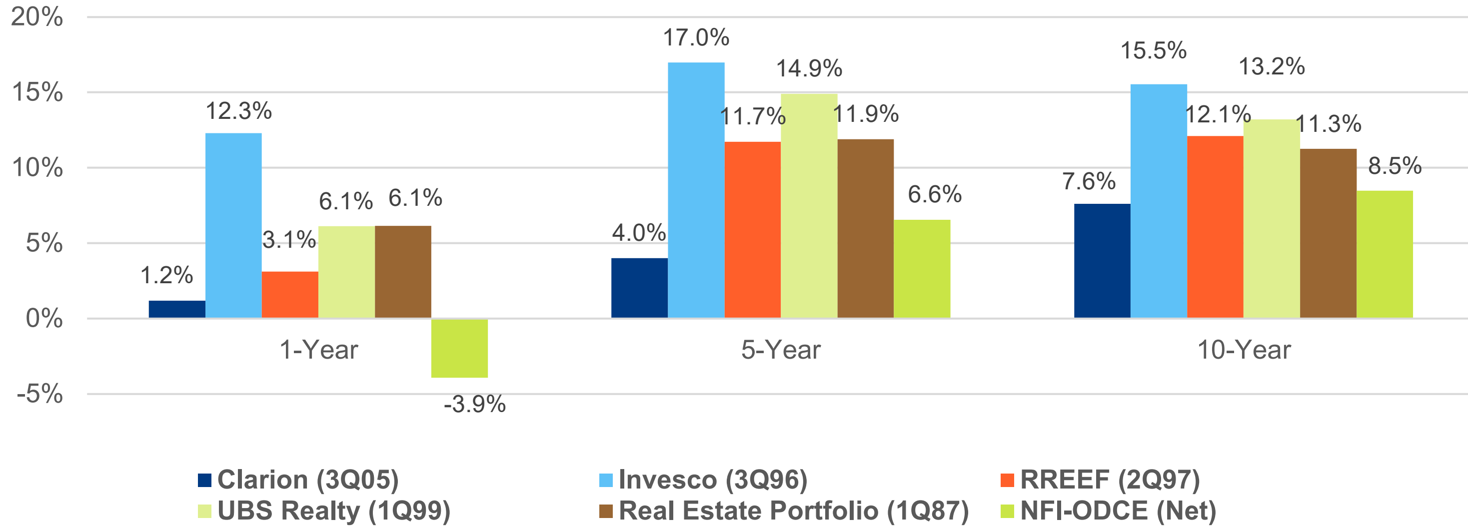


Private Real Assets Performance *(as of 3/31/23)*



- Longer-term performance validates the real estate thesis
- Other Real Assets – has not met objectives
  - Added infrastructure recently to diversify performance experience
  - Re-evaluating Trees and Crops
  - Real assets equity search is ongoing

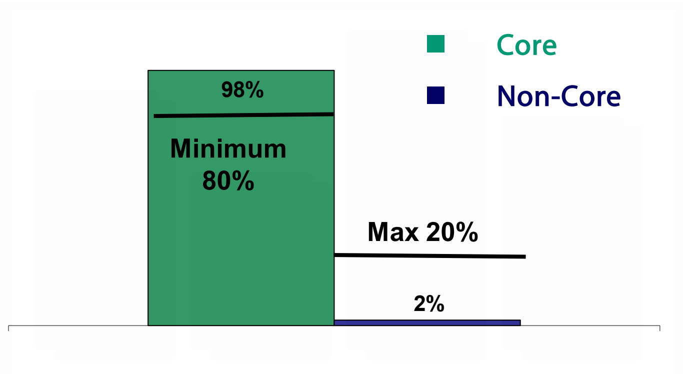
Private Real Estate Performance (as of 3/31/23)

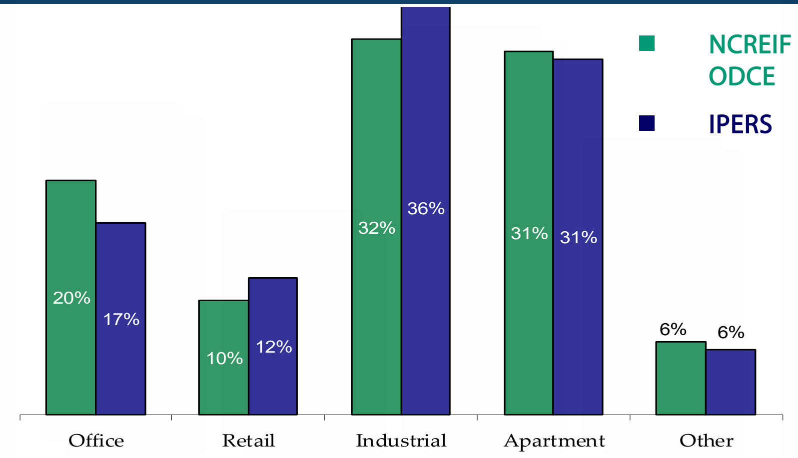


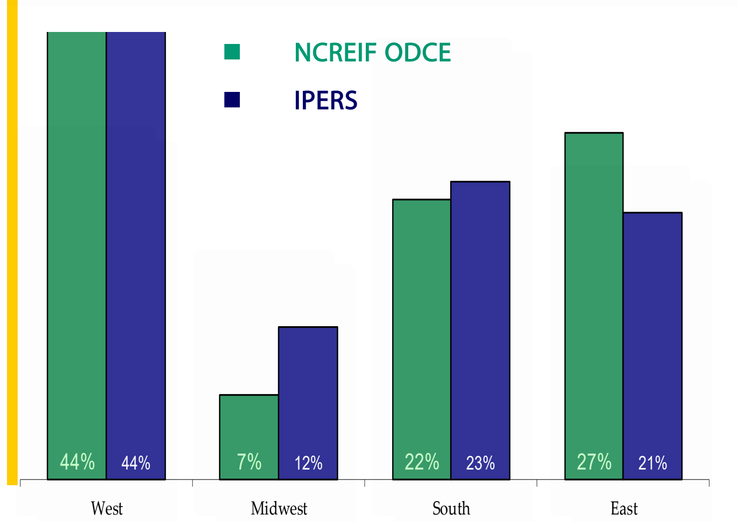
- Since inception real estate has generated a net return of 7.4% versus the Private Real Estate Policy Index* return of 8.8%
- 5-year real estate portfolio ranks in the top quartile relative to NCREIF ODCE underlying funds
- Clarion exposure to office and hotels still a drag

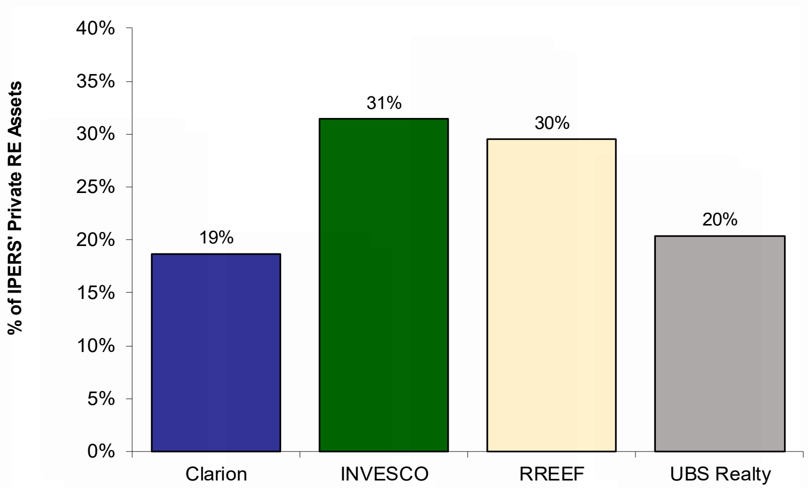
* The Private Real Estate Policy Index has changed over time: CPI + 6% (3/31/87 thru 6/30/04); NCREIF Property Index (9/30/04 thru 9/30/12); NCREIF ODCE Index, Net of Fees (12/31/12 thru Present)

Private Real Estate Policy Compliance



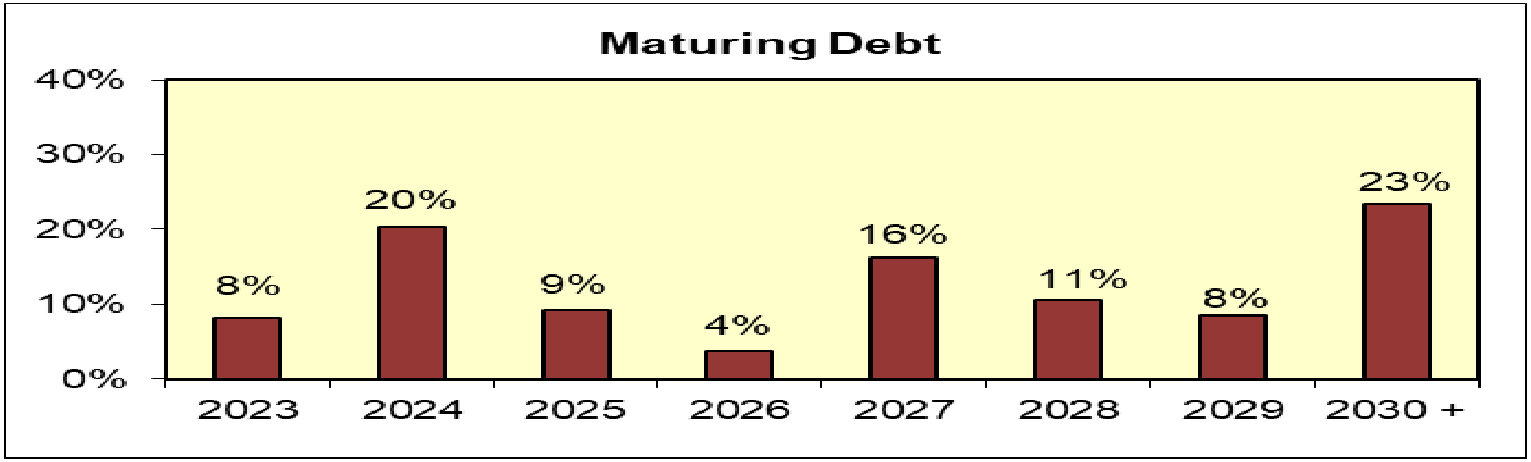






NOTE: Percentages are based on the net investment value as of 1Q22.

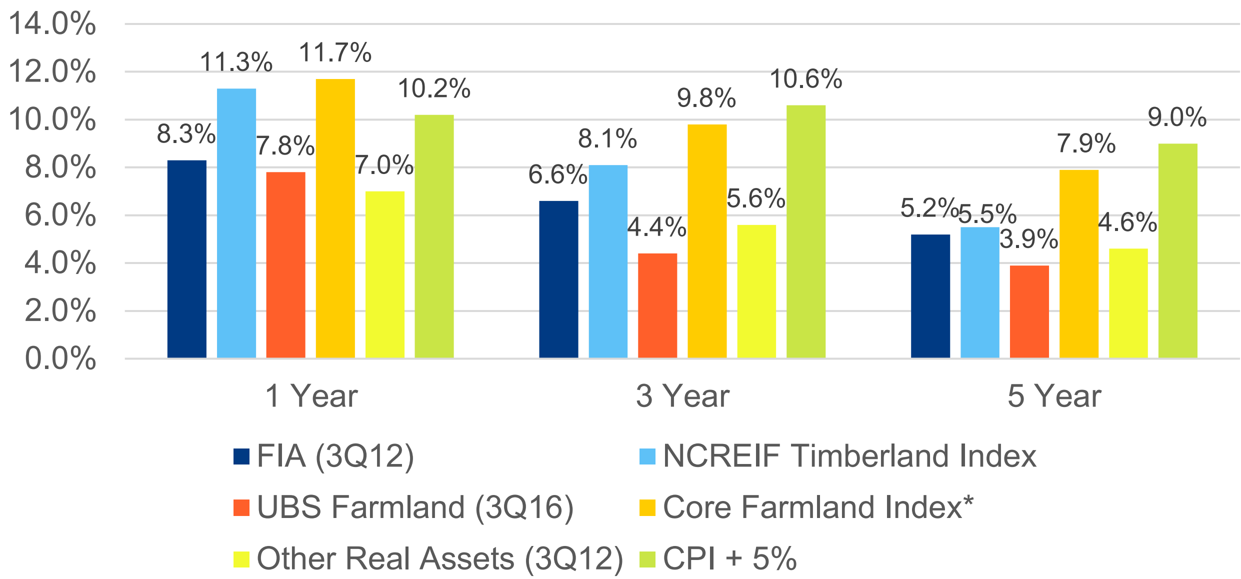
Private Real Estate Leverage



% of Debt Maturing by Calendar Year as of 3/31/23

- Total portfolio debt - $973 million LTV of 26.1% (1Q23).
- 68% Fixed Rate, 32% Floating Rate – Some structures have built in rate hedge.
- Financing core real estate has become expensive.
- Potential de-leveraging expected and judicious new leverage
- Preliminary equity infusions of over $90 million for 3Q23 to 2Q24

Other Real Assets Performance (as of 3/31/23)



- IPERS' made its initial core infrastructure investment on April 1, 2022. The net return since inception was 6.0%
- The timber and farmland mandates have not kept pace with the policy objective, CPI + 5%, over the last five years. The objective proved difficult over the last several years given record levels of inflation

* Core Farmland Index is comprised of all leased properties within the NCREIF Farmland Index and weighted 80% annual cropland and 20% permanent cropland.

Other Real Assets – Farmland Attribution

Region	Corn Belt	Lake States	N. Plains	Delta States	Mountain	S. Plains	SE	PNW	Pacific West	CFI*	UBS Farmland
Return	22.9%	15.5%	13.6%	12.0%	10.4%	10.3%	8.2%	7.6%	6.6%	**11.7%**	7.8%
IPERS' Relative Weight	-18.8%	-5.3%	-3.6%	-13.9%	41%	19.2%	-5.7%	-0.1%	-12.3%		

- Multiple reasons for the portfolio's relative underperformance:
  - Little to no exposure in the top performing regions
  - Concentrated exposure to the Mountain region, which lagged the broader index
  - Capital improvement projects have not paid back yet e.g., apple orchard partial redevelopment
  - Lagged valuations - The portfolio is only valued at fiscal year end

* CFI is the Core Farmland Index. It is comprised of all leased properties within the NCREIF Farmland Index and weighted 80% annual cropland and 20% permanent cropland.

Other Real Assets – Timber Attribution

Region	South	Lake States	Northwest	Northeast	NCREIF Timberland Index	FIA
Return	12.8%	11.9%	9.3%	4.2%	**11.3%**	8.3%
IPERS' Relative Weight	-21.3%	-4.2%	16.3%	9.1%		

- South region is 66% of the NCREIF Timberland Index and the top performing region over the last year
- Lagged valuations should address some of the underperformance
- Potential asset sales being considered e.g., solar project in South region

Other Real Assets Considerations

- Timber and farmland derive intrinsic value from their utility. As the global population continues to grow and land availability becomes scarcer, both asset classes should benefit and generate attractive risk adjusted returns.
- The role of Private Real Assets is to provide income, diversification and an inflation hedge, while earning a 5% real return. Based on our experience to date, both Timber and Farmland have had mixed results.

Other Real Asset Classes	Income	Diversification	Inflation Hedge
Timber	Low	High	Low
Farmland	Medium	High	Low

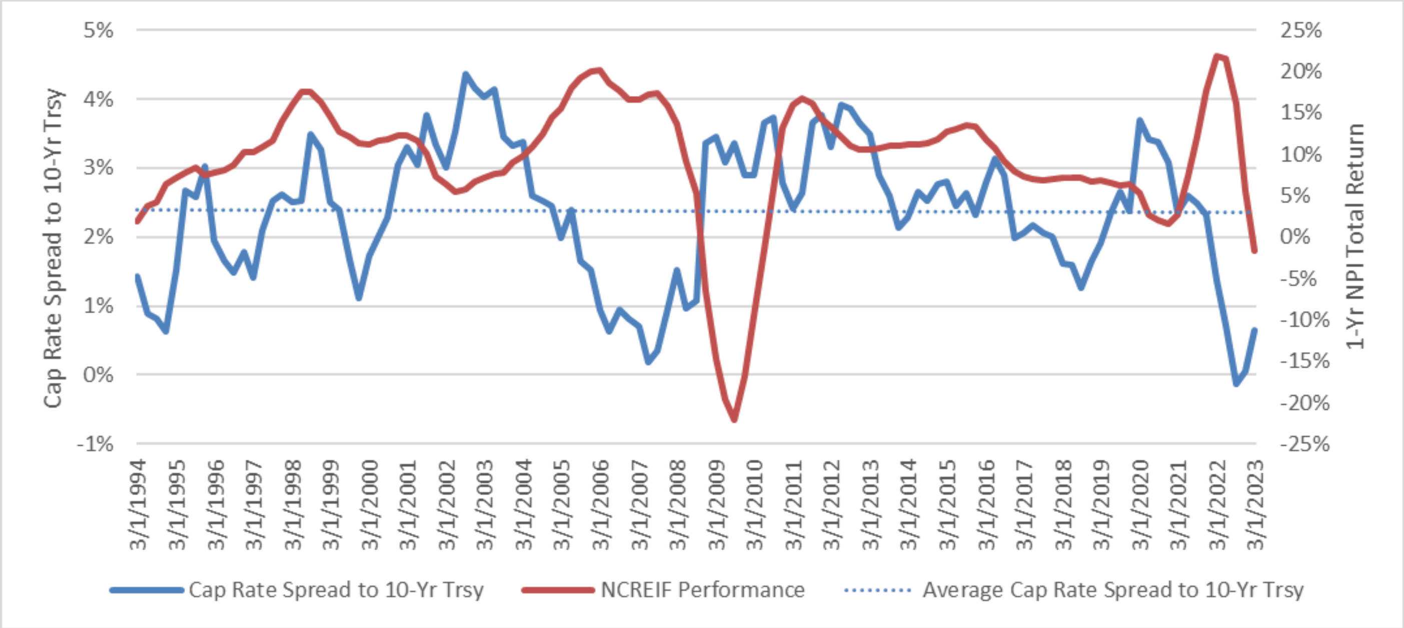
- Cost of secondary sale is prohibitive for both asset classes. Should we decide to eliminate the asset classes, the exposure should be liquidated over time.
- Allow time to incorporate Real Assets Equity search into final portfolio structure decisions

Private Real Assets Equity Search Update

Categories	Responses	Did not meet MQ's	Not a Portfolio Fit	Reviewed & Scored
Infrastructure	48	9	7	32
Real Estate	90			
Other	16			
Total	154			

- The evaluation committee has completed the review and scoring of the infrastructure responses.
- Will begin evaluating Real Estate and Other categories in 2H23.
- Staff plans to provide recommendations at the December Board meeting, as part of the CY 2024 investment plan.
- Potential capacity issues around the search: real estate de-leveraging and denominator effect.

Private Real Assets Outlook



- Real Estate will likely reprice over the next year
- Long-term average spread of real estate cap rates to 10-year Treasuries is ~237 basis points since 1994. Today the spread is at 64 basis points.
- Real Estate fundamentals as measured by the NCREIF index are still strong. Vacancies just over 5% and rolling 4-quarter NOI growth is 7.4% - property type and location matter

Summary

PRIVATE EQUITY

- There are no recommended changes to the current portfolio

PRIVATE CREDIT

- Progress has been made toward Board's allocation target of 8%.
- Private Credit total exposure with just current mandates is ~ 7.3%. On-boarding mandates will continue at a measured pace
- No recommended changes to the current portfolio

PRIVATE REAL ASSETS

- Policy objective outperformance over 3-, 5-, and 10-years has been driven by the real estate sub-portfolio
- The evaluation of responses to the private real asset equity search are on-going.
- Portfolio structuring decisions around the Private Real Assets portfolio will be part of the CY 2024 investment plan presented to the Board in December.

Appendix A – Pathway Capital Management

Mandate – To create and maintain for IPERS a diversified portfolio of high-quality private equity partnerships. Responsibilities include the screening and selection of partnerships, negotiation of partnership agreements, the monitoring of partnership investments, decisions regarding partnership amendments and liquidation of stock distributions.

Portfolio Objective – Achieve an internal rate of return, net of all fees, that exceeds the internal rate of return of a custom benchmark over a rolling 10-year period. (The custom benchmark is calculated using IPERS' contribution cash flows and assumes that contributions invested within the most recent 3 years earned 91-day T-bill returns, while contributions invested for longer periods earned Russell 3000 Index plus 300 basis points returns.)

Appendix B

IPERS PRIVATE EQUITY PORTFOLIO
Vintage Year Analysis as of Dec. 31, 2022

VINTAGE YEAR	CAPITAL COMMITTED[a]	PAID-IN CAPITAL	VALUE DISTRIBUTED	UNREALIZED VALUE	GAIN / (LOSS)	IPERS' SINCE INCEPTION IRR	*Burgiss* LOWER QUARTILE IRR	*Burgiss* MEDIAN IRR	*Burgiss* TOP QUARTILE IRR	IPERS' TVPI *	*Burgiss* MEDIAN TVPI *	*Burgiss* TOP QUARTILE TVPI *	IPERS' DPI **	*Burgiss* MEDIAN DPI **	*Burgiss* TOP QUARTILE DPI **
1985	11,500,000	11,500,000	31,002,575	0	19,502,575	14.52%	2.78%	8.86%	16.17%	2.70	1.84	2.54	2.70	1.84	2.54
1986	33,513,482	37,756,465	314,074,192	0	276,317,727	26.06%	5.77%	7.99%	13.44%	8.32	1.68	2.11	8.32	1.68	2.11
1987	398,479,847	419,695,102	888,859,819	30,211	469,194,928	9.58%	3.93%	13.32%	19.50%	2.12	2.10	2.76	2.12	2.10	2.76
1988	18,000,000	17,600,000	70,815,733	0	53,215,733	36.21%	7.32%	12.22%	20.71%	4.02	1.90	2.65	4.02	1.90	2.65
1989	20,000,000	20,000,000	34,905,055	0	14,905,055	8.43%	5.48%	14.71%	27.46%	1.75	2.11	3.30	1.75	2.11	3.30
1990	32,275,000	19,311,250	81,175,891	0	61,864,641	45.02%	9.97%	16.54%	22.36%	4.20	2.11	2.69	4.20	2.11	2.69
1991	NA	NA	NA	NA	NA	NA	13.11%	22.91%	34.30%	NA	2.63	3.42	NA	2.63	3.42
1992	20,000,000	20,000,000	42,495,842	0	22,495,842	13.35%	10.63%	18.67%	38.63%	2.12	1.95	3.02	2.12	1.88	3.02
1993	136,000,000	134,884,892	325,626,272	0	190,741,381	29.33%	10.11%	19.11%	40.82%	2.41	1.98	3.40	2.41	1.98	3.40
1994	59,000,000	62,627,202	151,537,629	0	88,910,427	23.45%	6.76%	20.56%	37.99%	2.42	1.98	3.45	2.42	1.98	3.45
1995	100,861,278	95,837,807	255,694,360	0	159,856,553	28.82%	2.66%	13.57%	33.91%	2.67	1.79	2.67	2.67	1.79	2.67
1996	49,000,000	48,907,148	89,401,638	0	40,494,490	13.66%	2.83%	10.13%	27.86%	1.83	1.62	2.30	1.83	1.62	2.30
1997	178,000,000	184,377,042	418,864,969	0	234,487,927	33.89%	0.81%	8.30%	25.30%	2.27	1.43	2.14	2.27	1.43	2.14
1998	246,000,000	239,557,428	331,812,057	16,291	92,270,920	6.58%	-2.00%	7.16%	15.19%	1.39	1.40	1.80	1.39	1.40	1.80
1999	255,000,000	248,406,717	303,857,533	10,079	55,460,896	4.19%	-9.06%	-0.52%	9.47%	1.22	0.97	1.53	1.22	0.97	1.53
2000	438,262,562	440,472,988	824,951,338	2,875,696	387,354,046	15.94%	-4.76%	4.05%	13.13%	1.88	1.22	1.76	1.87	1.21	1.74
2001	371,106,959	385,614,223	766,697,037	3,296,540	384,379,355	24.98%	-0.16%	8.09%	21.22%	2.00	1.53	2.03	1.99	1.51	2.01
2002	40,000,000	40,700,701	99,180,009	0	58,479,308	16.97%	3.20%	12.98%	25.83%	2.44	1.58	2.04	2.44	1.57	2.04
2003	345,781,146	361,374,420	777,617,921	1,601,171	417,844,672	23.25%	2.75%	9.85%	20.24%	2.16	1.51	1.99	2.15	1.50	1.97
2004	354,442,658	352,312,540	658,591,912	2,757,529	309,036,901	16.29%	-1.61%	8.16%	15.33%	1.88	1.48	1.89	1.87	1.45	1.87
2005	507,049,500	532,970,394	825,154,989	6,135,281	298,319,876	8.04%	0.20%	6.36%	11.85%	1.56	1.38	1.85	1.55	1.34	1.79
2006	901,431,547	935,589,477	1,495,439,637	15,898,678	575,748,839	8.69%	-0.65%	5.45%	11.94%	1.62	1.39	1.85	1.60	1.32	1.71
2007	668,225,728	745,554,209	1,184,172,982	60,034,449	498,653,222	11.42%	1.48%	8.42%	13.71%	1.67	1.48	2.03	1.59	1.42	1.91
2008	610,162,706	609,523,214	1,034,165,323	37,679,451	462,321,561	12.37%	1.71%	8.38%	15.21%	1.76	1.45	1.86	1.70	1.36	1.72
2009	105,292,500	104,411,913	215,453,773	12,661,476	123,703,336	16.00%	6.66%	13.09%	22.52%	2.18	1.75	2.37	2.06	1.56	2.21
2010	195,176,827	194,902,476	354,863,045	66,520,453	226,481,022	15.22%	5.34%	10.52%	18.45%	2.16	1.54	2.10	1.82	1.42	1.82
2011	399,904,565	438,805,853	749,945,995	162,658,830	473,798,973	15.93%	6.18%	12.61%	20.94%	2.08	1.75	2.37	1.71	1.35	1.84
2012	406,475,256	390,414,925	650,868,582	163,903,393	424,357,051	18.27%	6.58%	12.07%	19.84%	2.09	1.67	2.43	1.67	1.26	1.70
2013	500,022,830	530,229,288	767,493,279	334,201,746	571,465,737	16.82%	6.62%	12.99%	19.87%	2.08	1.64	2.42	1.45	1.17	1.55
2014	786,562,014	784,606,660	1,068,545,403	726,993,369	1,010,932,112	19.71%	8.10%	14.44%	22.50%	2.29	1.76	2.45	1.36	1.03	1.42
2015	732,141,408	781,150,006	811,986,898	787,757,977	818,594,869	19.04%	9.10%	15.19%	22.62%	2.05	1.74	2.28	1.04	0.77	1.15
2016	773,988,774	779,357,847	866,319,730	904,796,182	991,758,066	25.50%	10.71%	16.90%	25.57%	2.27	1.72	2.25	1.11	0.64	1.07
2017	584,581,846	586,252,484	406,131,098	684,654,750	504,533,365	21.39%	10.49%	19.19%	29.29%	1.86	1.70	2.22	0.69	0.51	0.86
2018	773,865,976	727,085,686	378,867,579	1,012,242,160	664,024,053	25.90%	11.66%	19.76%	30.33%	1.91	1.51	1.92	0.52	0.22	0.52
2019	847,801,177	759,047,540	290,962,932	970,667,592	502,582,983	27.63%	8.46%	17.86%	31.15%	1.66	1.35	1.66	0.38	0.09	0.30
2020	745,521,750	628,518,927	68,359,923	755,383,953	195,224,949	17.62%	4.83%	15.62%	28.72%	1.31	1.21	1.41	0.11	0.00	0.11
2021	1,194,347,746	706,936,803	24,228,080	772,168,354	89,459,631	11.77%	-8.01%	4.36%	17.40%	1.13	1.04	1.15	0.03	0.00	0.02
2022	580,643,565	248,739,174	3,125,028	247,776,057	2,161,911	1.77%	-22.79%	-11.26%	-1.83%	1.01	0.91	0.99	0.01	0.00	0.00
Totals:	**14,420,418,647**	**13,625,032,800**	**17,663,246,060**	**7,732,721,671**	**11,770,934,931**										

KEY:	
Meets or exceeds Top Quartile:	
Between Median and Top Quartile:	
Below Median:	

NOTES: Amounts may not foot due to rounding. NA = Not applicable.

[a]Commitments to non-USD-denominated investments are accounted for by multiplying unfunded commitments by the quarter-ending exchange rate, then adding the result to cumulative capital contributions, causing commitments to non-USD-denominated partnerships to fluctuate quarterly.

Benchmarks for vintage years 1985–1994 based on Burgiss Private iQ US all private equity returns, as of December 31, 2022, as produced using Burgiss data.

Benchmarks for vintage years 1995-2022 based on Burgiss Private iQ global all private equity returns, as of December 31, 2022, as produced using Burgiss data.

* TVPI is (Value Distributed + Unrealized Value) divided by Paid-In Capital.

** DPI is Value Distributed divided by Paid-In Capital.

NOTES: Performance is based on underlying partnership market values updated through December 31, 2022, which are preliminary and therefore subject to change.

Data for vintage years 2019-2022 should be interpreted with caution. It is too early to make meaningful conclusions for such recent investments.

Table does not include any 2023 vintage year funds to which commitments had been made but not funded as of 12/31/22.

Table does not include contributions to or from the Warburg Pincus stock distribution account utilized from 1997 to 2001.

Appendix C - Pathway Portfolio Performance *(Inception 1993)*

IRR Performance*	5-Year	10-Year	Inception (Since 1Q93)
Pathway Capital Management	20.4%	18.0%	16.6%
Program Objective**	14.9%	16.0%	12.2%
Excess Returns	5.5%	2.0%	4.4%
Custom Benchmark***	14.4%	15.7%	12.0%
Excess Returns	6.0%	2.2%	4.6%

Financial Summary (At December 31, 2022)

Inception: 1993

Total Investments: 578

Total Managers: 104

Since-Inception Net-Net IRR: 16.6% (1993-2022)

DPI:[1] 1.2x

TVPI:[2] 1.8x

Manager Evaluation: ↑ Organization ↑ Personnel ↑ Investment Process ↑ Performance

*All calculations are based on final partnership valuations through 12/31/2022 and cash activity through 3/31/23.
**Program Objective is Russell 3000 + 300 bps.
***For an explanation of the Custom Benchmark see the second bullet in Appendix A.

[1]Distributions to paid-in capital.
[2]Total value to paid-in capital (DPI + RVPI).

Appendix D – Private Real Estate Glossary of Terms

- NCREIF – The National Council of Real Estate Investment Fiduciaries is an association of institutional real estate professionals that collect performance data, address industry issues and promote research.
- NPI – The NCREIF Property Index is a U.S. unlevered, capitalization weighted, time weighted return index that reports quarterly and annual returns consisting of income and appreciation components for properties acquired on behalf of tax-exempt institutions and held in a fiduciary environment.
- NFI-ODCE – The NCREIF Fund Index – Open End Diversified Core Equity is a fund level capitalization weighted, time-weighted return index and includes property investments at ownership share, cash balances and leverage. The ODCE index is net of fees charged by fund managers.
- Core Investments – Commercial and residential properties which derive their value primarily from current income production, and therefore represent lower-risk profiles than non-core properties. Core investments are stabilized, substantially leased properties in the four major property types: office, retail, industrial and apartments.
- Non-Core Investments – These investments represent a higher-risk profile than core properties and consist of properties acquired primarily for high appreciation potential, properties with identifiable and correctable deficiencies such as lease-up, renovation, or property conversion or development adjacent to an existing owned property.

Private Markets Program – Co-Investment Program

IPERS Investment Board

Pat Reinhardt, SIO - Alternatives
Sriram Lakshminarayanan, CIO

June 15, 2023

What is a Co-Investment ?

- Investments made alongside a manager in a company as either an equity or credit
- Co-investments - made in the same securities as the main fund
- GPs offer co-investments for diversification, control, relationships with LPs
- GP controls investment disposition and terms
- Co-investments span various private market strategies

Why Co-Investments Exist?

- Manager "A" finds a Company "B" that needs a $150M for growth capital
- A likes B and would like to loan $150M, but has only $100M capacity
- A doesn't want B to look for other capital sources
- So, A offers the $50M to their existing investors (selectively) for cheap

Co-Investments - Advantages

- Attractive economics (e.g., no fee/carry (almost) and pass through on upfront fees)
- Leverage relationships to generate high-quality co-investment opportunities
- Increased control over portfolio construction – Multiple GPs
- Deal flow facilitates diversification
- Greater insight into the investment process and strategies of the underlying General Partners

Sets the stage for greater control and improved deal sourcing

IPERS

Tips for a Successful Co-Investment Program

- Investment Process – Clearly stated and consistently applied
- Learn from the best – Inside look into best-in-class GP deal underwriting
- Diversification – Avoid pin risk and adverse selection
- Avoid – dependence on event-driven or market-driven exits
- Risk Control – Diversify across various risk factors

Plan - Prepare - Execute

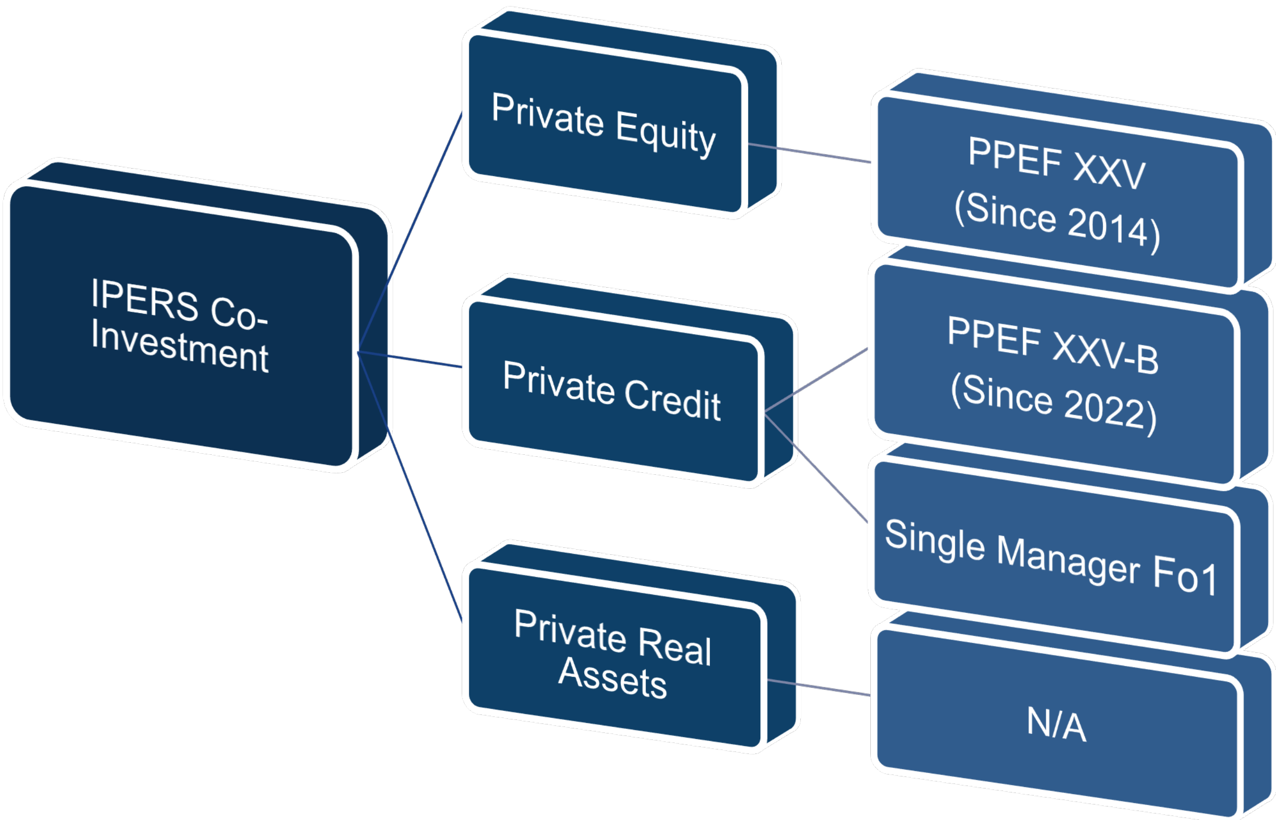
Near Term Considerations

- Co-Investment Structure & Legal Due Diligence – various options

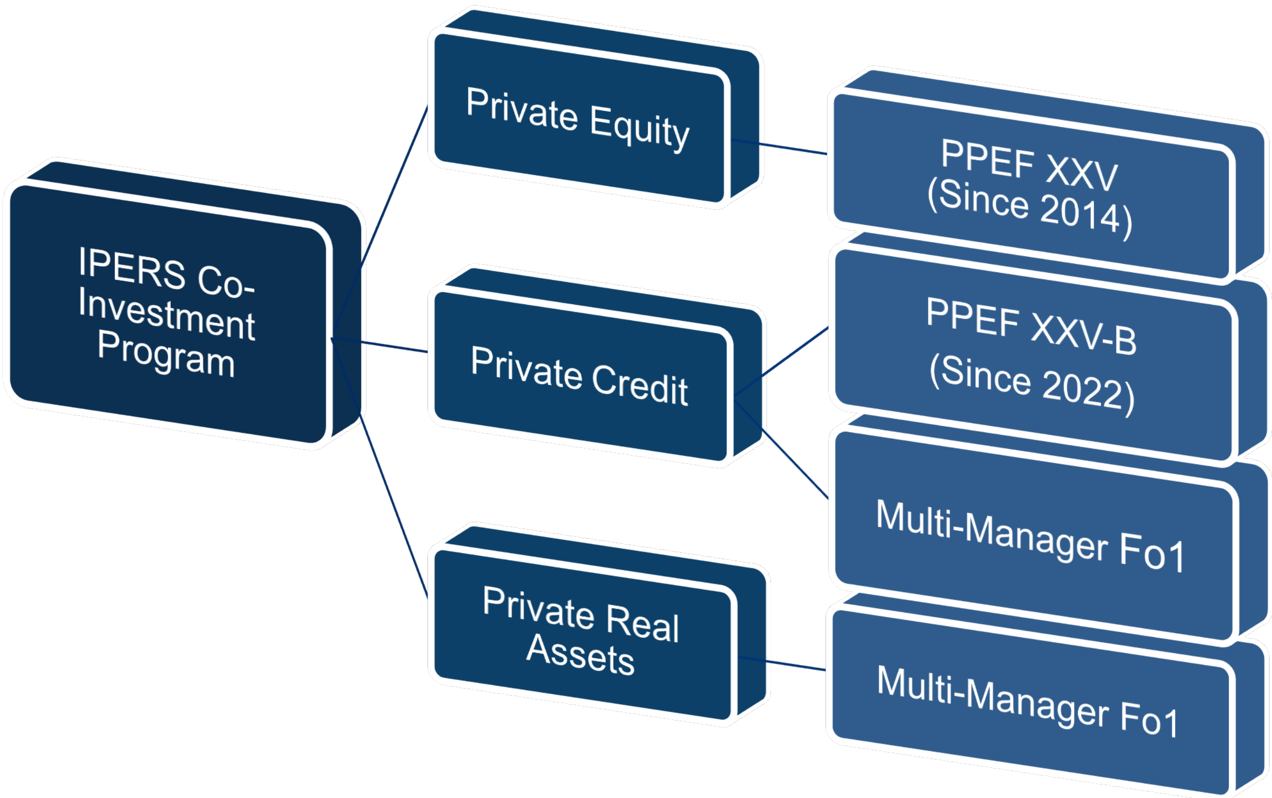
- Investment Due Diligence
  - Investment memos, financial reports, market reports, legal reports, manager meetings etc…

- Platform administration
  - Multiple investments across underlying fund managers
  - Expenses, sourcing, accounting, cash-flow management, valuation, audits, monitoring, and reporting

IPERS Co-Investment Program - Today



IPERS Co-Investment Program - Tomorrow



IPERS Co-Investment Program – Next Steps

- Staff finalizes Investment Process to ensure consistent evaluation of co-investment opportunities
- Investment Structure - Identify the most cost-efficient structure to hold multiple co-investments across multiple fund managers
- **September Board Meeting** – Recommend changes to the Private Markets Investment Policy
  - Policy guidelines will have to be established for the program and memorialized in the Policy (e.g., size of the program, diversification, investment limits)
- **December Board Meeting** – If everything goes well, incorporate a small internal co-investment allocation into CY 2024 commitments

<u>Aggressive schedule</u> - securing service providers and additional resources

IPERS

SECURITIES LITIGATION AND MONITORING REPORT

I. Status of Cases that IPERS is Serving in an Active Role

A. Allegheny County Employees' Retirement System vs. Energy Transfer

On January 13, 2020, the Investment Board authorized IPERS to seek an active role in this litigation. In February 2020, the United States District Court for the Eastern District of Pennsylvania appointed the IPERS-led group as the Lead Plaintiff in a case involving the common units of Energy Transfer LP. On June 15, 2020, the Lead Plaintiff's operative complaint was filed. On August 14, 2020, the defendants moved to dismiss the complaint. Following full briefing and oral argument held in late February 2021, the Court substantially upheld the complaint in a decision issued on April 6, 2021. Motion for class certification was filed on September 17, 2021. IPERS' employees were deposed in November 2021 and January 2022. Defendants filed their opposition to the class certification motion on March 1, 2022. Deposition of the Defendants class certification expert took place on March 30, 2022. On August 23, 2022 the class certification motion was granted in substantial part. Depositions and Discovery are ongoing.

B. IPERS vs. BANA

IPERS' employees were deposed August 11, 2020, and remaining Plaintiffs, shortly thereafter. Fact discovery is complete. IPERS' counsel filed a motion for class certification several months ago, seeking to have IPERS appointed as a class representative. Our experts who filed reports in support of class certification all have been deposed. Defendants' opposition to class certification is due June 29, 2021, after which our counsel will depose their experts before filing a reply brief on October 5, 2021. All depositions have been taken. On February 25, 2022 the Court granted preliminary approval of an $81 million dollar settlement with Defendant, Credit Suisse. Oral argument on Plaintiffs' class certification as to the remaining defendants took place on April 28, 2022. On June 30, 2022, Magistrate recommended class certification. On August 15, 2022, Defendants filed objections to class certification. Plaintiffs filed one objection to the class period. The objections are pending before the court. Mediation was held on March 8-9, 2023.

C. NovaStar

This case was filed in 2008. It has a long procedural history, including appeals to the Second Circuit. In March 2019, the district court judge granted final approval of a $165 million settlement. There were objectors to the settlement—several entities wanted to pursue their own claims directly but missed the opt-out deadline. That appeal is fully briefed and pending before the Second Circuit. IPERS will have no further obligations but the appeal prevents the distribution of settlement proceeds until it has resolved. On March 24, 2022 the Second Circuit Court of Appeals denied the pending appeal sending the matter back to District Court to confirm judgment. On April 29, 2022, the appellants petitioned for a hearing for additional review of the denial of their appeal. On June 2, 2022 the appellants petition for hearing was denied. No further appeal was pursued. This case settled for $165 million. IPERS received a distribution in the amount of $78,766.90 on April 17, 2023.

D. Other Litigation

PG&E Corporation Bankruptcy Proceeding

PG&E Corporation, the California utility company whose operations were blamed for starting the wildfires in Northern California in 2017, filed bankruptcy. IPERS authorized the law firm of Barrack, Rodos & Bacine (BR&B) to submit a securities claim on the fund's behalf in this matter. On April 15, 2020, BR&B filed the claim on IPERS behalf in the bankruptcy proceedings. Information about IPERS' claims was provided to the administrator. The deadline to object to claims has been extended several times. PG&E filed a motion to extend the deadline again to December 18, 2023. That motion is pending review by the Court.

II. Funds Recovered from Monitored Cases*

Company Name	Claim Filing Deadline	Most Recent Recovery Received Date	Total Recovery Received To Date
DaVita, Inc	03/20/2021	06/14/2022	$13,440.23
Alibaba Group Holding Limited	05/02/2019	07/12/2022	$46,308.62
Santander Consumer USA Holdings, Inc.	01/04/2021	07/15/2022	$192.521.54
Universal Health Services	07/08/2021	07/21/2022	$4,036.55
Hewlett-Packard II Securities Litigation	10/31/2005	08/03/2022	$47,454.08
MetLife, Inc.	02/26/2021	08/22/2022	$17,543.94
Qurate Retail, Inc.	10/25/2019	08/23/2022	$4,835.50
Cendant Corporation	10/31/2000	09/02/2022	$1,848,965.25
Petroleo Brasileiro S.A. Petrobras	06/09/2018	09/20/2022	$2,680,942.59
United Rentals Inc. SEC Fair Fund	03/31/2011	10/03/2022	$159.38
CenturyLink, Inc.	08/13/2021	10/05/2022	$1,737.82
PPG Industries, Inc.	12/20/2019	10/27/2022	$7,548.18
Diplomat Pharmacy, Inc.	09/23/2019	10/28/2022	$28,868.14
Allergan, Inc.	08/07/2018	10/31/2022	$788,174.83
J.P. Morgan Chase & Co.	12/16/2015	11/10/2022	$1,223,659.74
Allergan, Inc.	08/07/2018	11/22/2022	$788,174.83
DaVita, Inc.	03/20/2021	12/09/2022	$13,440.23
TreeHouse Foods, Inc.	12/15/2021	12/15/2022	$25,328.34
SCANA Corporation	07/25/2020	12/19/2022	$18,357.42
EchoStar Corporation	11/27/2021	12/19/2022	$447.63
Puma Biotechnology, Inc.	01/28/2020	01/05/2023	$689.04
21Vianet Group, Inc.	10/31/2018	01/19/2023	$16,268.02
Nu Skin Enterprises	10/06/2016	01/20/2023	$9,867.06
Universal Health Services	07/08/2021	03/03/2023	$4,036.55

Bed Bath & Beyond, Inc.	06/06/2022	03/08/2023	$3,893.33
Bridgestone Corporation	04/21/2009	03/09/2023	$175,036.00
Spectrum Brands Legacy, Inc.	01/25/2022	03/15/2023	$2,088.57
Diplomat Pharmacy, Inc.	04/27/2022	04/18/2023	$40,118.08
Honeywell International, Inc.	04/04/2022	04/24/2023	$4,188.38
Total:			**$8,008,129.87**

Of the total funds recovered, as set forth above, **$518,780.06** was received during the period of June 2, 2022 through April 30, 2023.

*Additional Funds received:
1. Signet Securities Litigation: $4,063.45 received November 2022; and
2. NovaStar Securities Litigation: $78,766.90 received April 2023.

Total Recovered through April 30, 2023: $601,610.41

2023

JANUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

FEBRUARY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

MARCH

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

APRIL

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

MAY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

JUNE

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

JULY

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

AUGUST

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

SEPTEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

OCTOBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

NOVEMBER

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

DECEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Board Meetings

March 24, 2023
CY2022 Investment Performance

June 15, 2023
Private Markets Program Review

September 27-28, 2023
Continuing Education Session
FY2023 Investment Performance Review
Asset Allocation
Investment Policy and Goal Statement

December 7, 2023
Investment Board and BAC Meeting
Actuarial Valuation Presentation