MINUTES

Meeting of the Investment Committee
of the Board of Trustees of the
State Universities Retirement System
Thursday, April 18, 2024, 10:30 a.m.
333 S. Wabash – 44th Floor - Chicago, IL
Optional Remote Connection for Members of the Public

This meeting was held in person at Northern Trust, Chicago, IL

The following trustees were present: Dr. Andriy Bodnaruk; Mr. Richard Figueroa; Ms. Jamie-Clare Flaherty; Dr. Fred Giertz; Mr. Scott Hendrie, chair; Mr. Pranav Kothari; Mr. John Lyons; Dr. Steven Rock; Mr. Collin Van Meter; and Mr. Mitch Vogel.

Others present: Ms. Suzanne Mayer, Executive Director; Mr. Michael Schlachter, Chief Investment Officer (CIO); Ms. Kim Pollitt, Ms. Jessica Pickens, Mr. Joe Duncan, Mr. Shane Willoughby, and Mr. Alex Ramos, Sr. Investment Officers; Mr. Brian Deloriea, Investment Officer; Ms. Stephany Brinkman, Ms. Stephanie Jeffries, Mr. Al Lund, and Mr. Darian Saracevic, Investment Analysts; Ms. Tracy Bennett, Investment Compliance Analyst; Ms. Bianca Green, General Counsel; Ms. Anna Dempsey, Investment Counsel; Ms. Heather Kimmons, Associate Legal Counsel; Ms. Kristen Houch, Director of Legislative and Stakeholder Relations; Ms. Alicia Route, Legislative Analyst; Ms. Kelly Carson, Ms. Chelsea McCarty and Ms. Annette Ackerman, Executive Assistants; Mr. David Sancewich and Mr. Colin Bebee, of Meketa; and Mr. Michael Calabrese of Foley.

Investment Committee roll call attendance was taken. Trustee Bodnaruk, present; Trustee Figueroa, present; Trustee Flaherty, present; Trustee Giertz, present; Trustee Hendrie, present; Trustee Kothari, present; Trustee Lyons, absent; Trustee Rock, present; Trustee Van Meter, present; Trustee Vasquez, absent; and Trustee Vogel, present.

Trustee Lyons physically joined the meeting at 10:32 a.m.

APPROVAL OF MINUTES

Trustee Hendrie presented the minutes from the Investment Committee meeting of February 29, 2024.

Trustee Figueroa made the following motion:

- That the minutes from the February 29, 2024, Investment Committee meeting be approved as presented.

Trustee Rock seconded the motion which passed with all trustees present voting in favor.

APPROVAL OF CLOSED SESSION MINUTES

Trustee Hendrie presented the closed session minutes from the Investment Committee meeting of February 29, 2024.

Trustee Rock made the following motion:

- That the minutes from the February 29, 2024, Investment Committee meeting be approved as presented and remain closed.

Trustee Figueroa seconded the motion which passed with all trustees present voting in favor.

CHAIRPERSON'S REPORT

Trustee Hendrie did not have a formal chairperson's report.

CHIEF INVESTMENT OFFICER'S REPORT

Mr. Michael Schlachter provided a staffing update and welcomed Ms. Jessica Pickens as a new Senior Investment Officer at SURS. Ms. Kim Pollitt discussed her upcoming retirement and thanked the trustees for all the support she received from them during her tenure at SURS.

Copies of the staff memorandums titled "Investment Contracts Approved" and "Report from the February 2024 Investment Committee Meeting" are incorporated as part of these minutes as **Exhibit 1** and **Exhibit 2**.

TRADITIONAL GROWTH ANNUAL REVIEW

Mr. Alex Ramos provided the annual review of the traditional growth asset class.

A copy of the presentation titled "Traditional Growth Asset Class Review" is incorporated as part of these minutes as **Exhibit 3**.

MARKET AND ECONOMIC OUTLOOK – (EDUCATIONAL SESSION)

Ms. Kim Pollitt introduced representatives from T. Rowe Price who provided an educational session regarding Artificial Intelligence and other relevant topics.

The educational session lasted 70 minutes and concluded at 12:05 p.m.

A copy of the presentation titled "T. Rowe Price SURS Board Presentation" is included as part of these minutes as **Exhibit 4**.

EQUITY SHORT EXTENSION STRATEGIES – (EDUCATIONAL SESSION)

Mr. Michael Schlachter provided an educational discussion regarding the possibility of implementing equity short extension strategies. At the end of his presentation, he discussed a Request for Proposals he plans to issue to identify potential managers in this space.

The educational session lasted 50 minutes and concluded at 1:23 p.m.

A copy of the presentations titled "2024 Education Short Extension", "Meketa 130-30 Final", and "2024 PI Article" are included as part of these minutes as **Exhibit 5**, **Exhibit 6** and **Exhibit 7**.

PRIVATE CREDIT EDUCATION (EDUCATIONAL TOPIC)

Mr. Joe Duncan introduced representatives from Ares Capital who provided an educational session on specialty finance.

The educational session lasted 45 minutes and concluded at 2:10 p.m.

A copy of the Ares presentation titled "Private Credit Education" is incorporated as part of these minutes as **Exhibit 8**.

PUBLIC COMMENT

There were no public comments presented to the Investment Committee.

ADJOURN

There was no further business brought before the committee and Trustee Vogel moved to adjourn the meeting. The motion was seconded by Trustee Kothari and it passed with all trustees present voting in favor.

Respectfully submitted,

Suzanne M. Mayer

Ms. Suzanne M. Mayer
Executive Director and Secretary, Board of Trustees

SMM:kc

Exhibit 1

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Investment Department

To: Suzanne Mayer
From: Michael C. Schlachter, CFA and Anna M. Dempsey
Date: April 3, 2024
Subject: Investment Contracts Approved

The following investment agreements were approved by the Executive Director subsequent to the mailing for the February 29, 2024, Investment Committee meeting.

Fairview – Lincoln Fund I

A consent regarding Lincoln Fund I, L.P. was executed on March 1, 2024.

Long Wharf VII

A consent to amend the Amended and Restated Limited Partnership Agreement of Long Wharf Real Estate Partners VII, L.P. to extend the fund-raising period was executed on March 5, 2024.

Cabot Industrial Value Fund VI

Amendment No. 1 to the Second Amended and Restated Limited Partnership Agreement of Cabot Industrial Value Fund VI, L.P. to extend the investment period was executed on March 26, 2024.

Crow X

A consent to the Fifth Amendment to the Amended and Restated Agreement of Limited Partnership of Crow Holdings Realty Partners X, L.P. was executed on March 26, 2024. The amendment contains a number of changes that are neutral or beneficial to limited partners.

Pantheon USA IX

A consent to extend the term of Pantheon USA Fund IX, L.P. was executed on March 26, 2024.

Parametric

Amendment No. 2 to the Investment Management Agreement with Parametric Portfolio Associates LLC was executed on March 26, 2024. The amendment revises the overlay strategy procedures and the fee schedule.

Blackstone Europe VII

Subscription Documents and a side letter for a € 50,000,000 investment in Blackstone Real Estate Partners Europe VII SCSp were executed on March 27, 2024.

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Investment Department

To: Investment Committee
From: Michael C. Schlachter, CFA
Date: April 2, 2024
Subject: Report from the February 29, 2024, Investment Committee Meeting

Enclosed are the Minutes of the February 29 Investment Committee Meeting. The purpose of this memorandum is to provide a status report on the action items for Investments.

Six motions were approved during the Investment Committee Meeting. These included the approval of the open and closed sessionminutes from the December 7, 2023, Investment Committee Meeting. The remaining motions approved by the Board of Trustees required further action by SURS staff. Open motions requiring further action by SURS Staff are listed below.

1. **That based on the recommendation of SURS staff and CAPTRUST, the Investment Committee adopt the proposed Resolution substantially in the form presented that adopts (1) the proposed auto-escalation schedule for the eligible contribution arrangement in the SURS Deferred Compensation Plan and (2) the Fourth Amendment to the State Universities Deferred Compensation plan.**

   Documents have been updated and the plan recordkeeper (Voya) has been instructed to increase the contribution rates for eligible participants by 1% on July 1, 2024, and on each subsequent July 1 by 1% to a maximum of 10%.

2. **That based on the recommendation of SURS staff and CAPTRUST, the Investment Committee approve the revised Investment Policy document for the defined contribution plan, as presented.**

   The Investment Policy statement has been updated as presented and discussed and posted to SURS' website.

3. **That based on the recommendation from SURS staff and Callan, the Investment Committee approved a commitment of €50 million to Blackstone Real Estate Partners Europe VII, subject to successful completion of contract negotiations.**

   Negotiations have completed and an executed agreement was sent to Blackstone on March 28, 2024.

4. **That based on the recommendation from SURS staff and Meketa, the SURS Executive Director have authority to sign any necessary consent documents on behalf of SURS for the Fairview Lincoln Fund I during the next 60 calendar days, as needed.**

A consent was executed by the Executive Director and sent on March 4, 2024.

Open item from December 7, 2023

5. **That based on the recommendation of SURS staff and Callan, a commitment of the lesser of $50 million or 10% of total fund commitments be made to Ember Infrastructure Fund II, subject to successful completion of contract negotiations.**

   The agreement to effect the investment were executed and delivered on February 8, 2024. *The final size of the SURS commitment to the fund is pending the aggregate commitments of other limited partners*.

Open item from June 2, 2022

6. **That based on the recommendation from SURS staff and Meketa, the Investment Committee approve the retention of Capstone Investment Advisors to serve as the back-up manager for the tail risk and long volatility mandates, subject to successful contract negotiations.**

   SURS staff is in the process of contract negotiations.

Please advise if you have any questions prior to the April 18, 2024, Investment Committee meeting.

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Traditional Growth Asset Class Review

April 2024

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Functional Asset Class Review Schedule

Meeting	Functional Asset Class	Strategies
September	Annual Review/Investment Plan	
October	Stabilized Growth, Principal Protection & Inflation Sensitive	Public Liquid Credit, Principal Protection & TIPS
December	Stabilized Growth, Non-Traditional Growth	Private Credit, Private Equity & Real Assets
March	Defined Contribution	
April	Traditional Growth	Public Equity
June	Crisis Risk Offset	Trend Following, Alternative Risk Premia

SURS Policy Targets

Classes/Strategies	Current Strategic Policy Target %	Long-Term Strategic Policy Target %
Broad Growth	**68%**	**68%**
Traditional Growth	36%	35%
Public Equity	36%	35%
Stabilized Growth	17%	17%
Core Real Assets	8%	8%
Liquid Credit	6.0%	4%
Private Credit	3.0%	5%
Non-Traditional Growth	15%	16%
Private Equity	11%	11%
Non-Core Real Assets	4%	5%
Inflation Sensitive	**5%**	**5%**
TIPS	5%	5%
Principal Protection	**10%**	**10%**
Crisis Risk Offset	**17%**	**17%**
Long Duration	2%	2%
Long Volatility	1.7%	1.7%
Tail Risk	0.3%	0.3%
Trend Following	10%	10%
Alt. Risk Premia	3%	3%
Total	**100%**	**100%**

The Current Strategic Policy Target % may change over time and reflects gradual shifting of assets to the Long-Term Strategic Policy Target %, due to practical implementation considerations and liquidity constraints.

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Investment Beliefs

- SURS believes that an **appropriately diversified strategic allocation policy is the primary policy tool** for maximizing the investment program's long-term return in light of its risk profile. The timing and magnitude of projected SURS's employer contributions and future benefit payments (i.e., its funding policy) can have significant cash flow implications and thus should receive explicit consideration during SURS's risk-framing and asset allocation decision-making process.
- SURS believes that, **in order to achieve its objectives, it must incur a certain amount of investment risk that is tied to economic performance**. Exposure to economic growth comes about primarily through the equity risk premium which, while highly variable, produces a significantly positive long-term return.
- SURS believes that **diversification within strategic classes helps to mitigate the risks of the class**. Appropriate manager diversification helps to maximize the breadth of capturing alpha after accounting for the major biases in a portfolio. As a result, added value consistency should improve.
- SURS believes **disciplined allocation of capital is necessary to manage the systematic risk** of the portfolio and maximize the likelihood of achieving its long-term expectations. Key examples of maintaining disciplined capital allocation includes consistently rebalancing back to strategic targets where appropriate and dollar-cost averaging (and/or pacing) new capital allocations over time into both public-market and private-market portfolios.
- SURS believes that **utilization of passive approaches in highly-efficient publicly-traded markets** should take priority because it is extremely difficult to add consistent value, net of fees, in these markets. In addition, passive management typically provides for rapid, relatively liquid, low-cost exposure to the major risk premiums of the global investment markets.

Investment Beliefs

- SURS believes **active management can prove beneficial in certain market segments** when there is evidence that active management can produce consistent significantly-positive, net of fee performance over various market cycles.
- SURS believes that **investment costs (fees, expenses and frictional costs) directly impact investment returns and should be monitored and managed carefully**. Such costs should be evaluated relative to both expected and realized returns and take into account appropriate alignment of interest considerations.
- SURS believes that the **private markets should produce higher returns than public markets** due to exposure to the illiquidity risk premium. While illiquidity risk can cause a portfolio's risk to increase, over the long-term the illiquidity risk premium is positive and material.
- SURS is **committed to enhancing diversity** by incorporating emerging (minority, woman-owned and disability-owned) investment managers into the portfolio.
- SURS believes that **addressing material environmental, social and governance-related (ESG) issues can lead to positive portfolio and governance outcomes**. To integrate ESG issues into its investment process SURS may apply certain investment and/or engagement strategies/approaches to its portfolio investments. In addition, proxy rights attached to shareholder interests in public companies are also "plan assets" of SURS and represent a key mechanism for expressing SURS's positions relating to specific ESG issues.

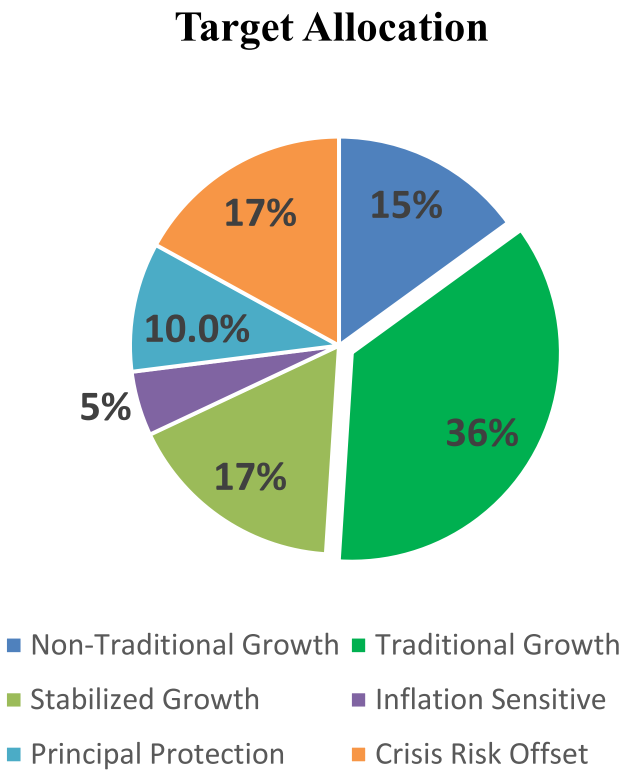
Traditional Growth

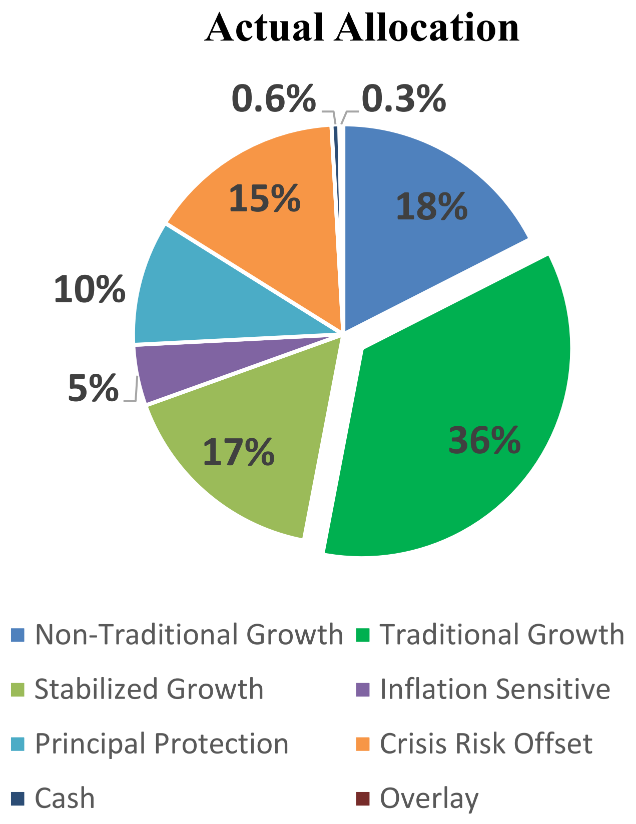
The role of the Traditional Growth asset class is to provide growth through public market equity strategies

Key Takeaways

- Traditional Growth has undergone significant changes over the last four years.
- 2020 = restructuring to align with adopted long-term strategic allocation policy. Reduced and consolidated manager lineup while expanding allocation to Global Equity strategies.
- 2023 = reduced structural over/underweights such as in emerging markets.
- Combination of changes have resulted in lower fees, increased MWDBE utilization, and outperformance relative to the MSCI ACWI IMI index over the last three years.
- Portfolio is continually monitored for both manager issues and factor biases.
- Current portfolio is well constructed and has been producing positive excess returns for SURS.

Traditional Growth
Target vs. Actual Allocation





Traditional Growth was in-line with its target allocation

Data as of December 31, 2023

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Review of 2020 Restructuring

- Reduced Traditional Growth Exposure to fund the Crisis Risk Offset asset class and private equity asset class.
- Reduced and consolidated strategies to streamline portfolio towards a global equity benchmark. The equity portfolio was reorganized as follows:

45% US	→	23% US
45% Non-US		25% Non-US
10% Global		52% Global

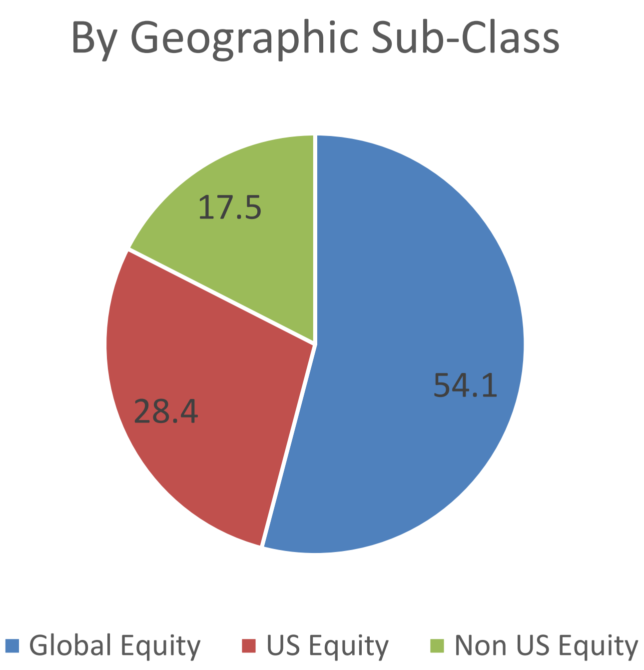
- As a result of the completed global equity manager search, SURS added two global managers, converted one U.S. equity mandate to global, and added a global mandate to a current International equity manager. As part of the restructuring, two International mandates and five U.S. equity mandates were eliminated.

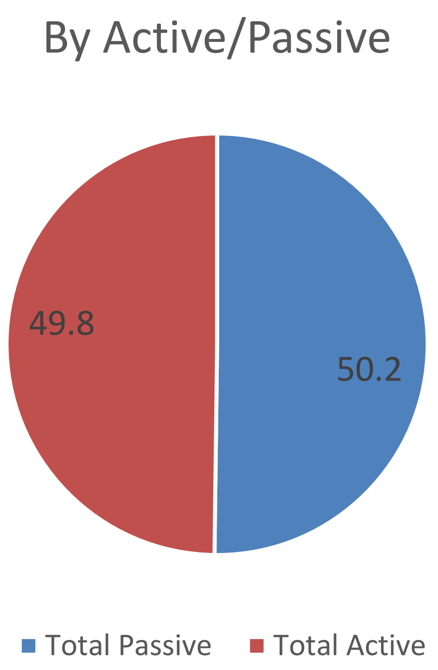
Accomplishments & Initiatives

- **Fiscal Year 2023 / 2024 to date Accomplishments:**
  - Completed the allocation to the Emerging Markets strategies from the 2022 search.
  - Continue to monitor managers with Meketa, conduct periodic calls, and annual manager reviews.
  - The Neuberger Berman quant team reviewed the Traditional Growth portfolio for any factor, style, or market biases. The portfolio is tilted defensively to low volatility and is expected to outperform in falling equity markets and perform in-line with rising equity markets. There is a small underweighting to small cap.

- **Fiscal Year 2025 Initiatives:**
  - Continue to monitor managers with Meketa, conduct periodic calls, and annual manager reviews.
  - Review Extended Equity strategies and possibly issue RFP. A presentation on extended equity follows this one.
  - Review underlying managers in the Xponance program for possible graduation.
  - Examine small cap underweight from multiple perspectives (structural vs active, holdings vs factor behavior, etc.)

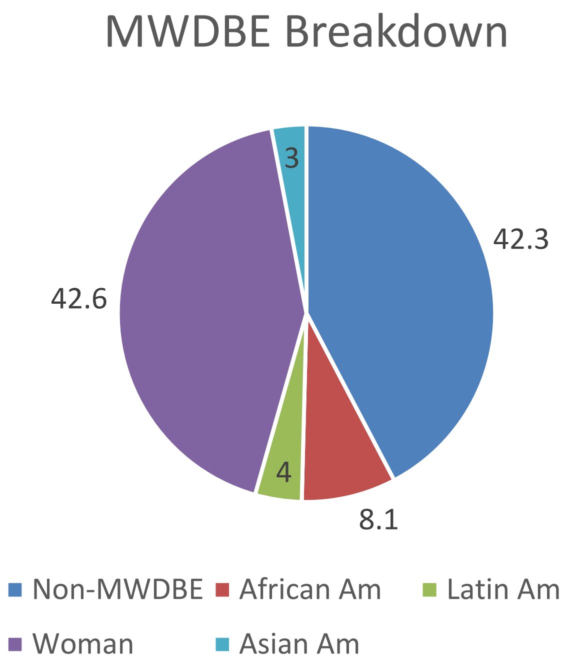
Traditional Growth Portfolio Breakdown





Data as of December 31, 2023

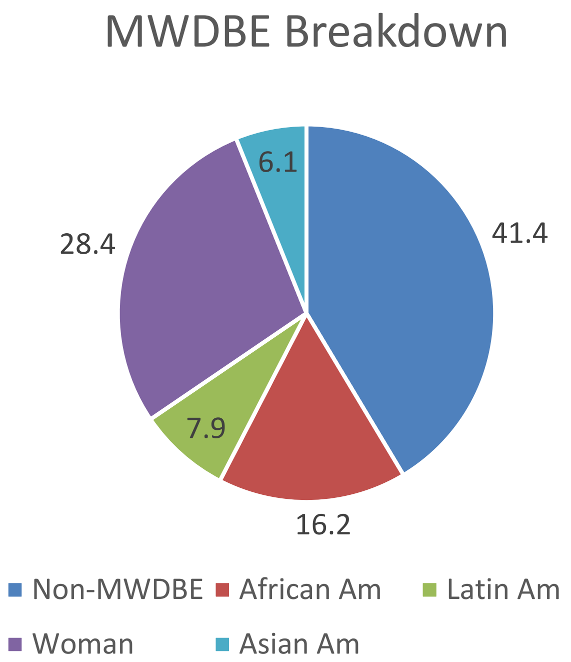
Minority/Woman Firm Exposure



Percentage	Category
42.3%	Non-MWDBE
8.1%	African American
4.0%	Latin American
42.6%	Non-Minority Woman
3.0%	Asian American
57.7%	**Total MWDBE**

Data as of December 31, 2023

Active Minority/Woman Firm Exposure



Percentage	Category
41.4%	Non-MWDBE
16.2%	African American
7.9%	Latin American
28.4%	Non-Minority Woman
6.1%	Asian American
58.6%	**Total Active MWDBE**

Data as of December 31, 2023

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Performance Summary

As of December 31, 2023	1 Year (Net)	3 Year (Net)	5 Year (Net)	10 Year (Net)
Traditional Growth Portfolio	**22.0%**	**6.5%**	**12.2%**	**8.6%**
MSCI ACWI IMI/Blend	21.6%	5.5%	11.6%	8.1%
Global Equity Sub-Portfolio	**21.8%**	**6.4%**	**13.8%**	**9.8%**
MSCI ACWI IMI/Blend	*21.6%*	*5.5%*	*11.6%*	*7.9%*
U.S. Equity Sub-Portfolio	**25.6%**	**9.4%**	**15.0%**	**11.1%**
Dow Jones U.S. Total Stock	*26.1%*	*8.4%*	*15.1%*	*11.4%*
Non-U.S. Equity Sub-Portfolio	**16.7%**	**2.9%**	**7.0%**	**4.0%**
MSCI ACWI Ex U.S. IMI/Blend	*15.6%*	*1.5%*	*7.2%*	*3.9%*

Performance Attribution

- **Global Equity sub-category:**
  - Slight outperformance in the Global Equity portion was led by managers T. Rowe Price Growth, Strategic Global Advisors, and Mondrian.
  - The Xponance manager of managers program had a few strong performing managers of note including Maytech, Frontier Global, and Arga Investments. Maytech was able to return 60.5% in 2023 participating in growth companies such as the top holding, Nvidia.

- **U.S. Equity sub-category:**
  - The U.S. portion of the portfolio slightly underperformed in 2023.
  - SURS removed one active manager in early 2023.

- **Non-U.S. Equity sub-category:**
  - The Non-U.S. portion of the portfolio outperformed returning 16.7% vs 15.6% in 2023.
  - The best relative performers included Strategic Global Advisors, Nipun, and Ativo.
  - In Nipun’s first full year as a dedicated Emerging Markets allocation, the strategy returned 13.5% versus 9.8% for the EM benchmark.

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Past Year Environment Review/Outlook

- With the context of 2022 being a difficult year for equity markets, the global benchmark rebounded returning 21.6% for the MSCI ACWI IMI benchmark that SURS utilizes.

Market performance total returns	Total return (%)
	31-Dec-23
Equities	1 Yr.
MSCI ACWI IMI	21.6%
S&P 500	26.3%
Russell 1000 Growth	42.7%
Russell 1000 Value	11.5%
S&P Mid Cap 400	16.4%
Russell 2000	16.9%
MSCI EAFE	18.9%
MSCI Emerging Markets	10.3%

- U.S. equities outperformed the rest of the world led by large growth technology firms boosted by the AI narrative and a rebound in earnings growth.
- Emerging markets lagged as China’s equities continue to struggle due to a variety of economic and regulatory issues. Outside of China, Latin American and Indian equities performed well.

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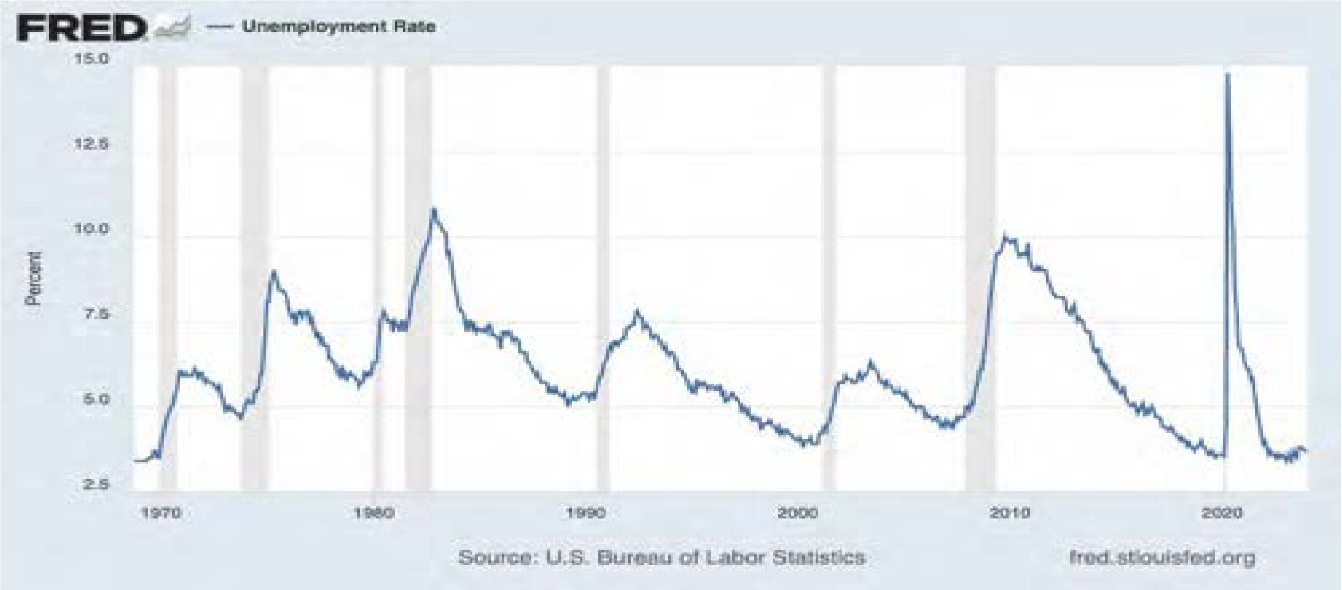
Past Year Environment Review/Outlook

- Markets reacted to the halt of interest rate increases by the U.S. Federal Reserve due to the easing inflationary environment.
- Equity markets are pricing in several cuts in interest rates by the Federal Reserve in 2024.
- GDP grew at a 3.4% rate in Q4 2023.
- At 3.9%, the unemployment rate is near its 50-year lows.



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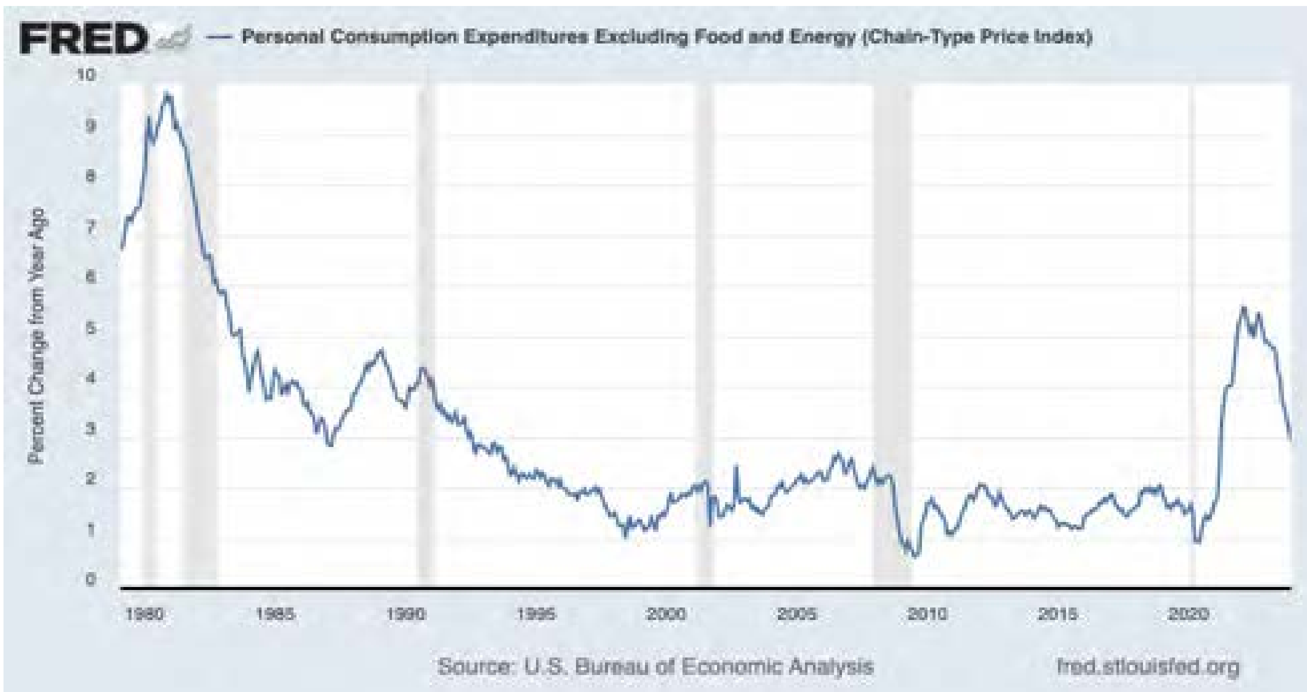
Past Year Environment Review/Outlook

- Hotter than expected inflation reports could delay anticipated rate cuts and cause equity market corrections as the Fed's focus is on preventing another spike in inflation.



- Stronger than expected GDP and unemployment reports may also delay rate cuts.

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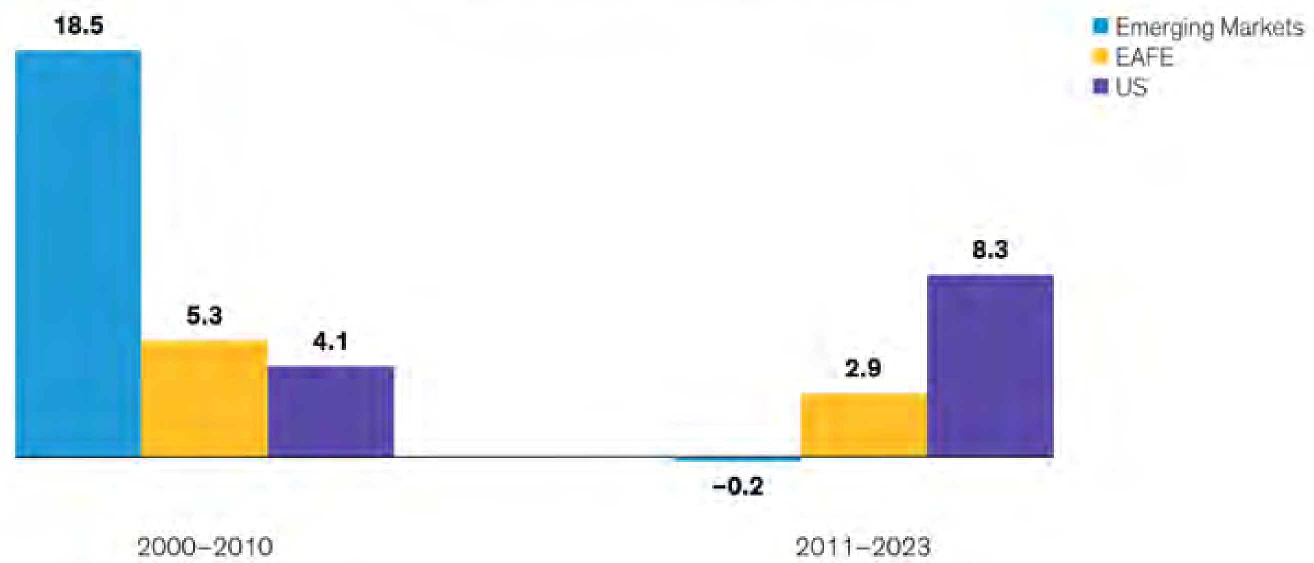
Earnings Growth by Geography

Long-Term Earnings-per-Share Growth

Compound Annual Growth Rates, USD (Percent)



Past performance does not guarantee future results.

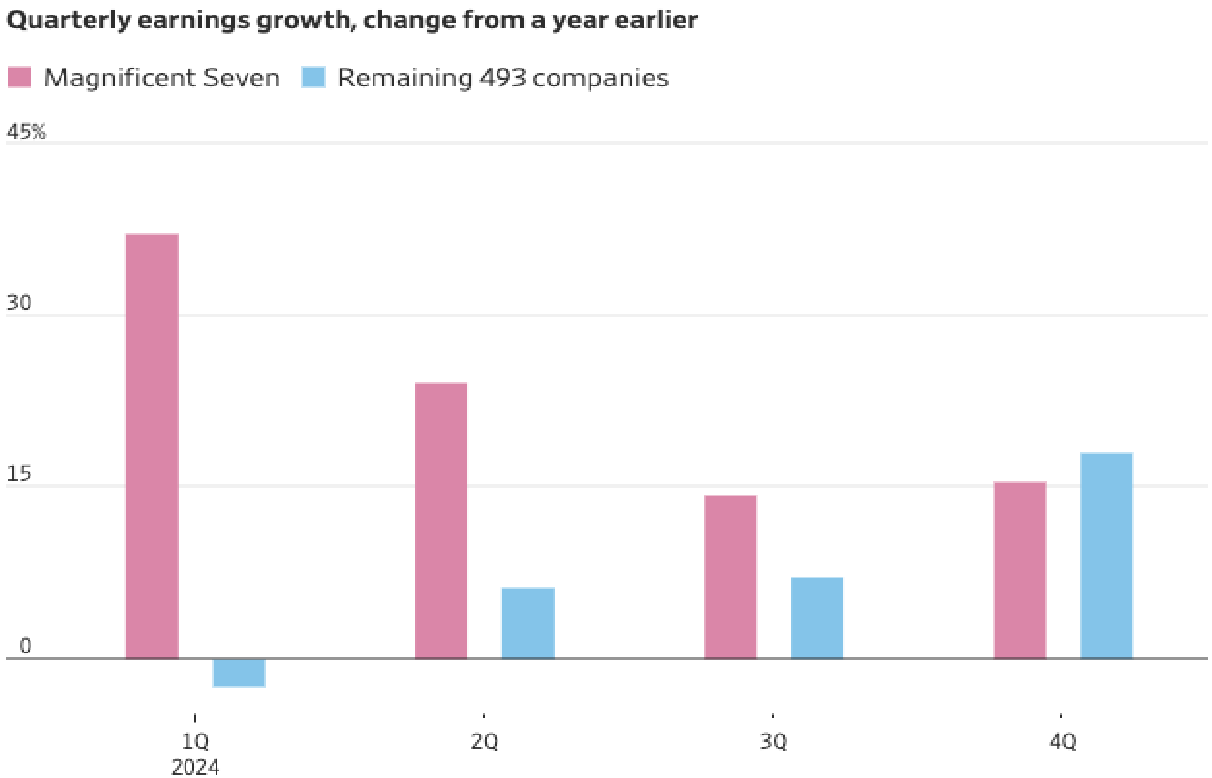
Earnings growth shown for constituents of the MSCI Emerging Markets, MSCI EAFE and S&P 500 indices. EAFE is Europe, Australasia and the Far East.

As of May 31, 2023

Source: Bloomberg, MSCI, S&P and AllianceBernstein (AB)

Data as of December 31, 2023

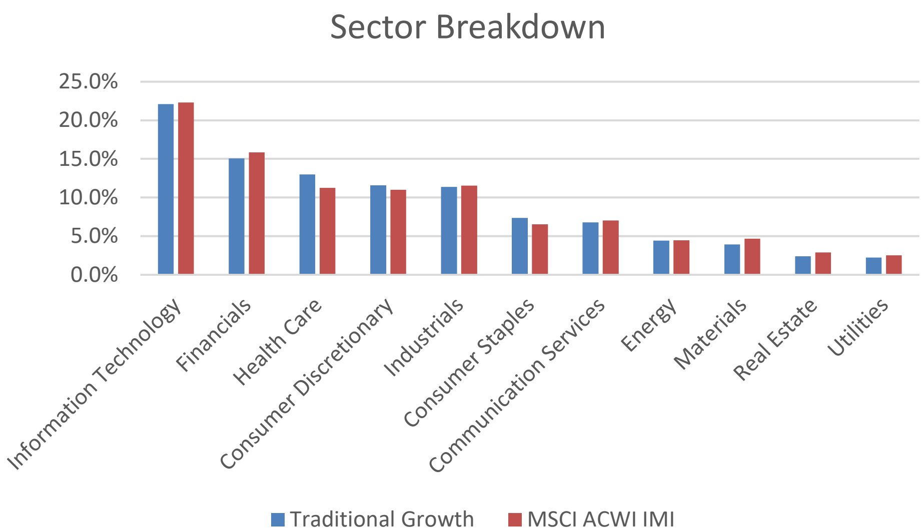
Projected S&P 500 Earnings Growth



Note: First quarter 2024 data is estimates and the rest are projections.
Source: John Butters, senior earnings analyst at FactSet

Data as of December 31, 2023

Sector Exposure



Sector	Traditional Growth	MSCI ACWI IMI
Information Technology	22.1%	22.3%
Financials	15.1%	15.8%
Health Care	13.0%	11.2%
Consumer Discretionary	11.6%	11.0%
Industrials	11.4%	11.5%
Consumer Staples	7.4%	6.6%
Communication Services	6.8%	7.0%
Energy	4.3%	4.5%
Materials	4.0%	4.7%
Real Estate	2.3%	2.9%
Utilities	2.1%	2.5%

Data as of December 31, 2023

Exhibit 3

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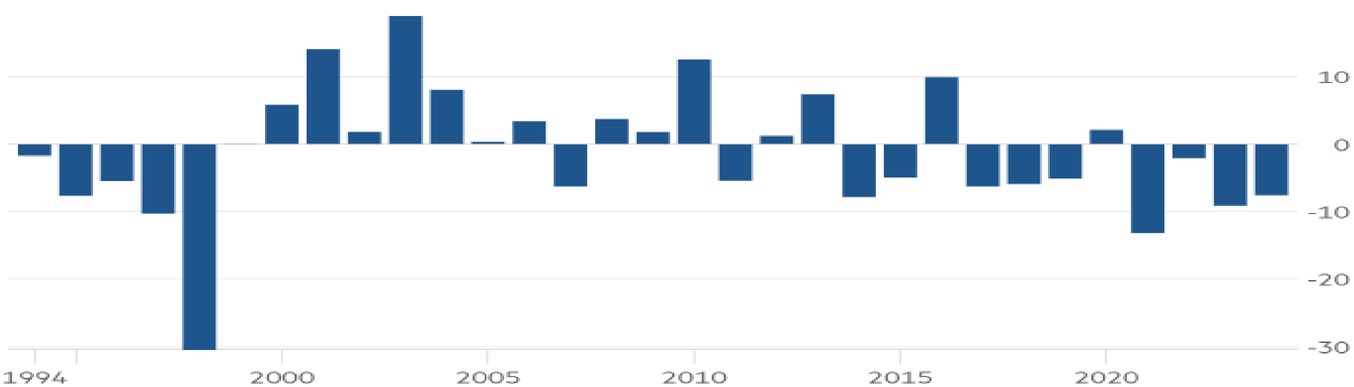
Market Cap Exposure

Market Cap Range	SURS %	MSCI ACWI IMI %	Difference	
Traditional Growth Portfolio	100.0%	100.0%	0.0%	
> 200 Billion	31.7%	32.4%	-0.7%	
10 - 200 Billion	56.5%	52.4%	4.1%	**Overweight**
6 - 10 Billion	5.2%	5.0%	0.2%	
2 - 6 Billion	5.4%	6.7%	-1.3%	
300 Million - 2 Billion	1.3%	3.4%	-2.0%	**Underweight**
0 - 300 Million	0.1%	0.0%	0.1%	
Cash/Currencies/Options	-0.3%	0.0%	-0.3%	

SURS Portfolio Weighted Average	$422.4 Billion
MSCI ACWI IMI Weighted Average	$442.9 Billion

Small-caps endure worst run relative to large-caps since the late 1990s

Russel 2000 - S&P 500 (annual percentage change)



Source: Bloomberg
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Data as of December 31, 2023

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Geographic Breakdown

Country	SURS %	MSCI ACWI IMI %
United States	58.5%	59.9%
Japan	6.6%	6.2%
United Kingdom	4.6%	3.9%
France	3.2%	2.5%
Switzerland	2.6%	2.6%
China	2.6%	2.0%
Netherlands	2.1%	1.4%
Germany	2.1%	1.9%
Canada	2.0%	3.0%
Taiwan	1.7%	1.8%
Australia	1.3%	1.9%
India	1.1%	2.0%
Korea (South), Republic of	1.1%	1.3%
Italy	1.1%	0.6%
Ireland	1.0%	1.3%
Denmark	0.9%	0.8%
Spain	0.8%	0.6%
Brazil	0.8%	0.6%
Hong Kong	0.6%	0.6%
Israel	0.6%	0.3%
Sweden	0.5%	0.9%
Singapore	0.4%	0.4%
Mexico	0.3%	0.3%

Data as of December 31, 2023

Exhibit 3

Traditional Growth Portfolio Top Holdings

Security	Market Value %	MSCI ACWI IMI %
MICROSOFT CORP	3.8%	3.7%
APPLE INC	3.1%	3.8%
AMAZON COM INC	2.2%	1.9%
NVIDIA CORP	1.7%	2.0%
META PLATFORMS INC CLASS A	1.2%	1.1%
ALPHABET INC CLASS A	1.1%	1.1%
UNITEDHEALTH GROUP INC	0.8%	0.6%
ELI LILLY	0.8%	0.7%
ALPHABET INC CLASS C	0.7%	1.0%
BERKSHIRE HATHAWAY INC CLASS B	0.7%	0.7%
EXXON MOBIL CORP	0.7%	0.5%
VISA INC CLASS A	0.7%	0.6%
ASML HOLDING NV	0.6%	0.5%
JPMORGAN CHASE & CO	0.6%	0.7%
NOVO NORDISK CLASS B	0.6%	0.5%
TAIWAN SEMICONDUCTOR	0.6%	0.7%
NOVARTIS AG	0.5%	0.3%
WALMART INC	0.5%	0.3%
MASTERCARD INC CLASS A	0.5%	0.5%
ABBVIE INC	0.5%	0.4%

Data as of December 31, 2023

T.RowePrice

State Universities Retirement System of Illinois

18 APRIL 2024

A global asset management firm focused on client success

As of 31 December 2023

Global Research Platform

- Rigorous, proprietary research
- Diverse perspectives, differentiated insights
- Collaboration across asset classes, sectors, regions

Alignment of Interests

- Pursuing performance with principle
- Firm success follows from client success

Culture Drives Long-term Success

- Collaborative and performance-driven
- Engaging, developing, supporting diverse associates
- Culture of empowerment and appreciation

Independent Organization

- Focused on active investment management and related services
- Full range of products to meet client needs

Long-tenured Portfolio Management

- Portfolio managers average 17 years of tenure
- Weathered many market cycles

Financial Strength

- Strong balance sheet
- Continual investment in capabilities and deliberate innovation

Founded in **1937**

1.4 trillion USD Assets Under Management[1]

800+ investment professionals worldwide

Local presence in **17** markets

7,800+ associates worldwide

[1] Firmwide AUM includes assets managed by T. Rowe Price Associates, Inc., and its investment advisory affiliates.
T. Rowe Price Associates, Inc.'s (TRPA) research platform is global, T. Rowe Price Investment Management, Inc.'s (TRPIM) is not. TRPA and TRPIM are separate investment advisor entities and do not collaborate on research.

202306-2989031

Our strong financial position allows us to steadily invest in our global team of investment professionals

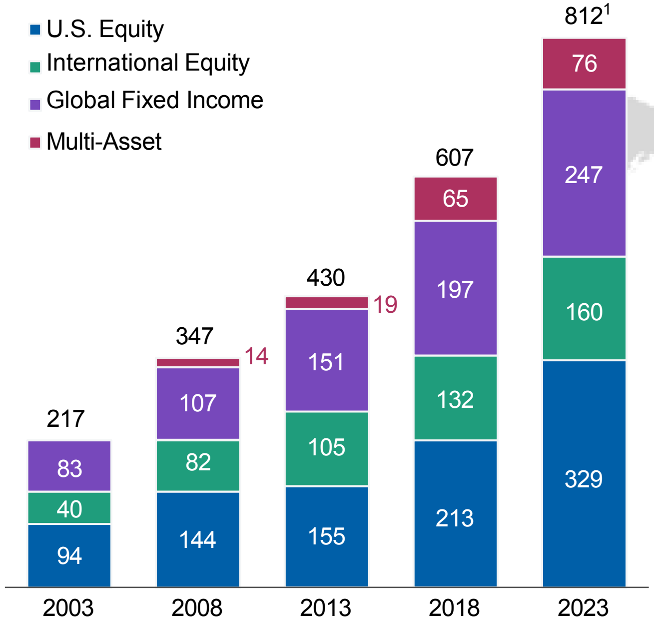
As of 31 December 2023

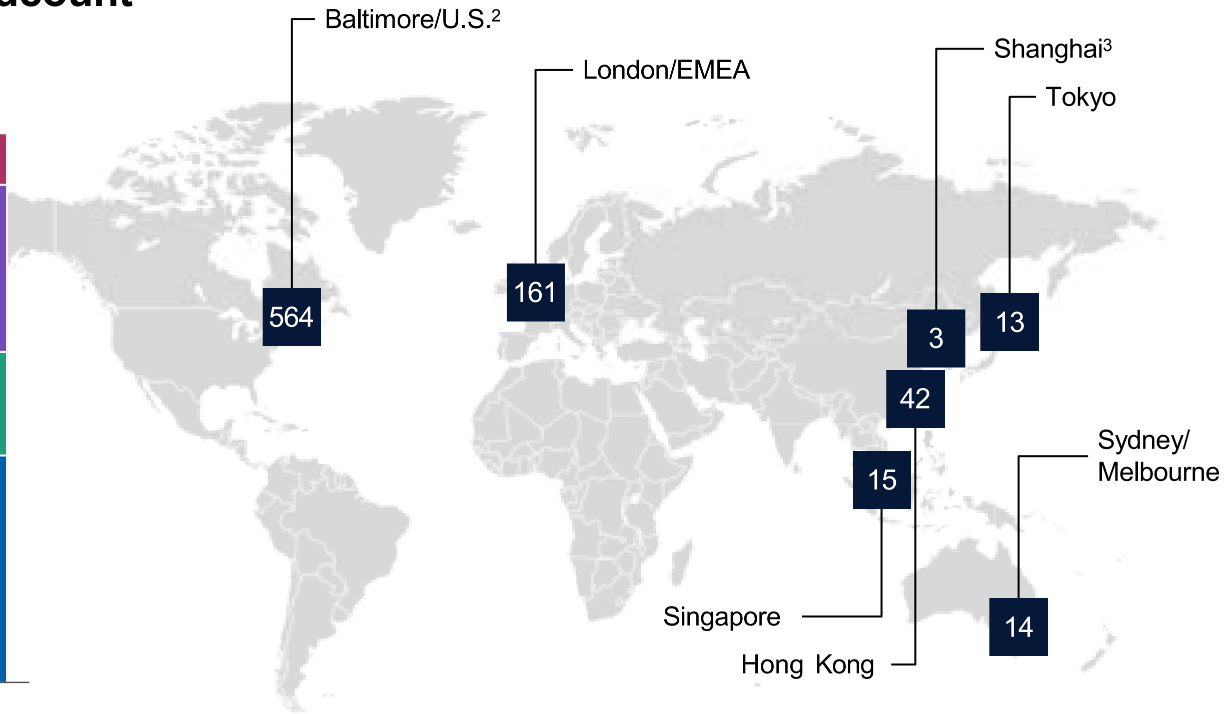
812

investment professionals **worldwide.**

Investment professional headcount

2003–2023





[1] 109 portfolio managers, 33 associate portfolio managers, 11 regional portfolio managers, 18 sector portfolio managers,196 investment analysts/credit analysts, 54 quantitative analysts, 9 solutions associates, 69 associate analysts, 45 portfolio specialists/generalists, 42 specialty analysts, 84 traders, 13 trading analysts, 4 economists, 84 portfolio modeling associates, and 41 management associates.

[2] Count includes 496 Baltimore-based associates, 8 New York-based associates, 13 San Francisco-based associates, 36 Washington, DC-based associates, and 11 Philadelphia-based associates.

[3] Research only.

202206-2260973

Relationship history: State Universities Retirement System of Illinois

As of 31 December 2023

Objective

- Manage a focused portfolio consisting of our best investment ideas located throughout the world.
- Achieve superior performance relative to passive index and manager peer group.

Mandate

- Global Focused Growth Equity Strategy Assets as of 31 December 2023: 29.9 Billion USD1

Benchmark

- MSCI All Country World Index

Total Assets in USD

398,706,868

Inception Date: 31 October 2008

[1] The total Global Focused Growth Equity Strategy assets managed by T. Rowe Price Associates, Inc. and its investment advisory affiliates. Please see the Additional Disclosures page for sourcing information.

Performance

State Universities Retirement System of Illinois

Periods Ended 31 March 2024
Figures are Calculated in U.S. Dollars

	Three Months	One Year	Annualized Three Years	Five Years	Ten Years	Fifteen Years	Since Inception 31 Oct 2008	Since Manager Inception 30 Sep 2012^
State Universities Retirement System of Illinois (Gross of Fees)⊦	12.05%	30.59%	3.72%	14.99%	14.10%	15.93%	14.53%	15.64%
State Universities Retirement System of Illinois (Net of Fees)‡	11.93	30.02	3.25	14.49	13.60	15.42	14.02	15.14
MSCI All Country World Index§	8.32	23.81	7.46	11.45	9.22	12.21	10.87	10.37
Value Added (Net of Fees)*	3.61	6.21	-4.21	3.04	4.38	3.21	3.15	4.77
MSCI All Country World Index Net†	8.20	23.22	6.96	10.92	8.66	11.63	10.30	9.80
Value Added (Net of Fees)*	3.73	6.80	-3.71	3.57	4.94	3.79	3.72	5.34

Past performance is not a reliable indicator of future performance.
⊦ Performance figures are shown gross of advisory fees. Total returns would be lower as a result of the deduction of such fees.
‡ Net returns reflect the deduction of advisory fees.
Total return includes all realized and unrealized gains and losses plus income.
All investments are subject to risk, including the possible loss of the money you invest.
§ Index returns shown with gross dividends reinvested.
* The Value Added row is shown as State Universities Retirement System of Illinois (Net of Fees) minus the benchmark in the previous row.
†Index returns shown with reinvestment of dividends after the deduction of withholding taxes.
^ 30 September 2012 represents the date David Eiswert took over lead management responsibility for the strategy.
Please see the Additional Disclosures page for sourcing information.

201810-603137

2023 Recap

Equity Market Surprises

- Lower Energy Prices
- Disappointing Chinese Recovery
- AI[2] Exuberance–Artificial Intelligence, Artificial Incretins (GLP-1s)
- Direction versus Level of Interest Rates Mattered More

Obstacles

- Regional U.S. Banking Crisis
- Geopolitics—U.S./China Cold War, Multiple Proxy Ground Wars

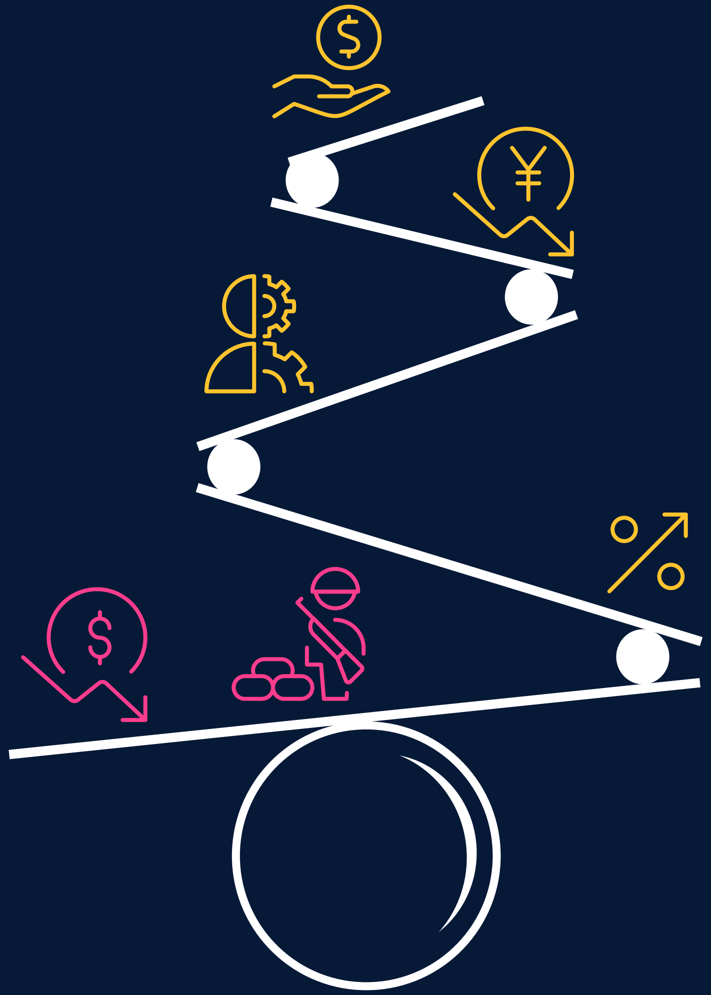


Exhibit 4

The set-up as we enter 2024

Lack of credit cycle creates euphoria and despair

Broadening **equity horizons**

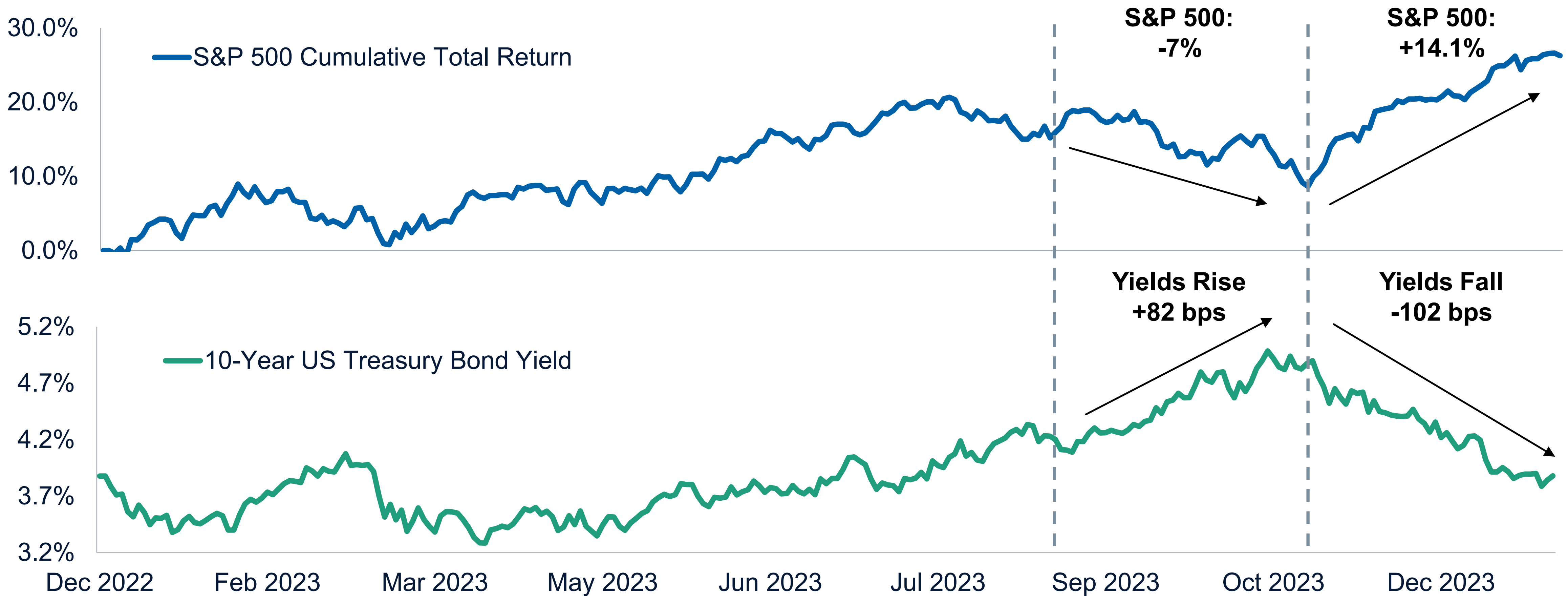
Is this the year for **EM?**

Wildcard for the markets—**energy**

Lack of credit cycle has the market bouncing between euphoria and despair

Calendar Year 2023

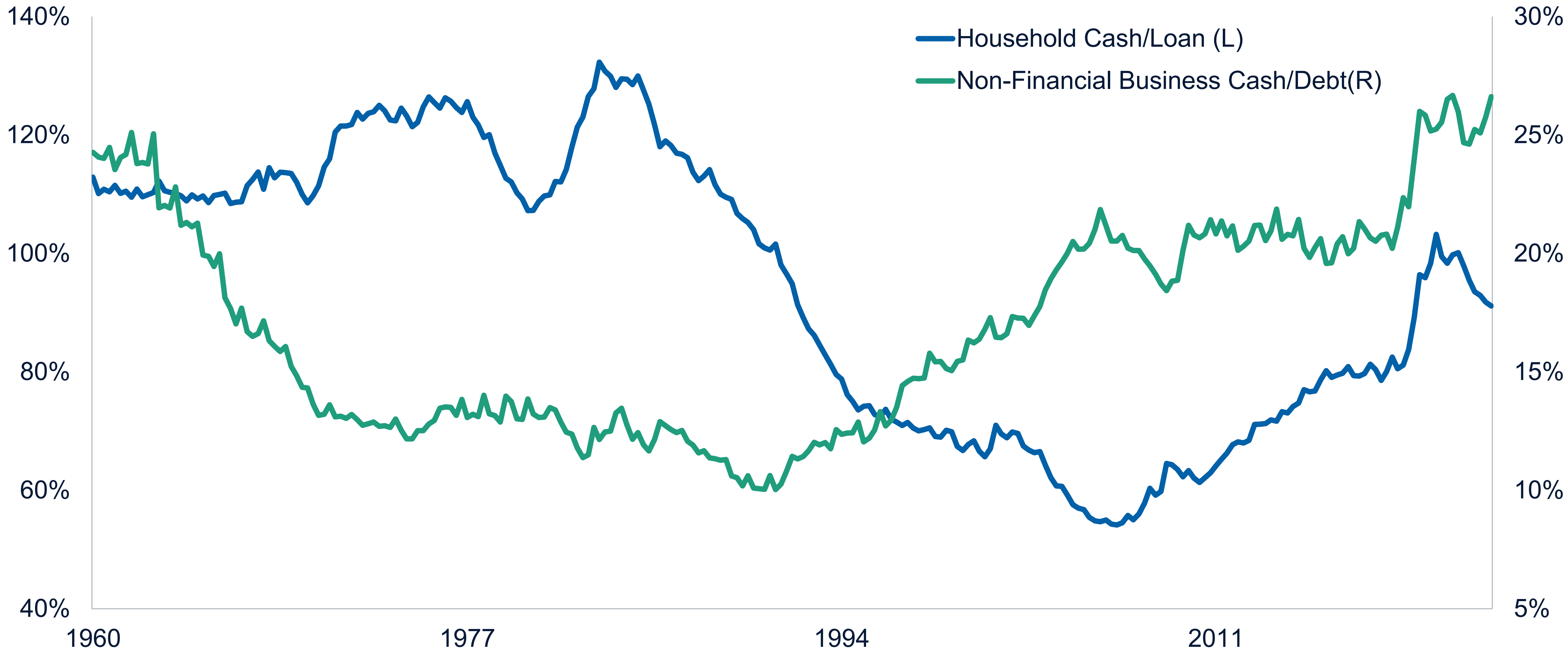
S&P 500 Total Return and 10-year Treasury Yield



Past performance is not a reliable indicator of future performance.
Sources: T. Rowe Price analysis using data from FactSet Research Systems Inc. All rights reserved.

Both corporate and consumer leverage is low

As of 30 September 2023

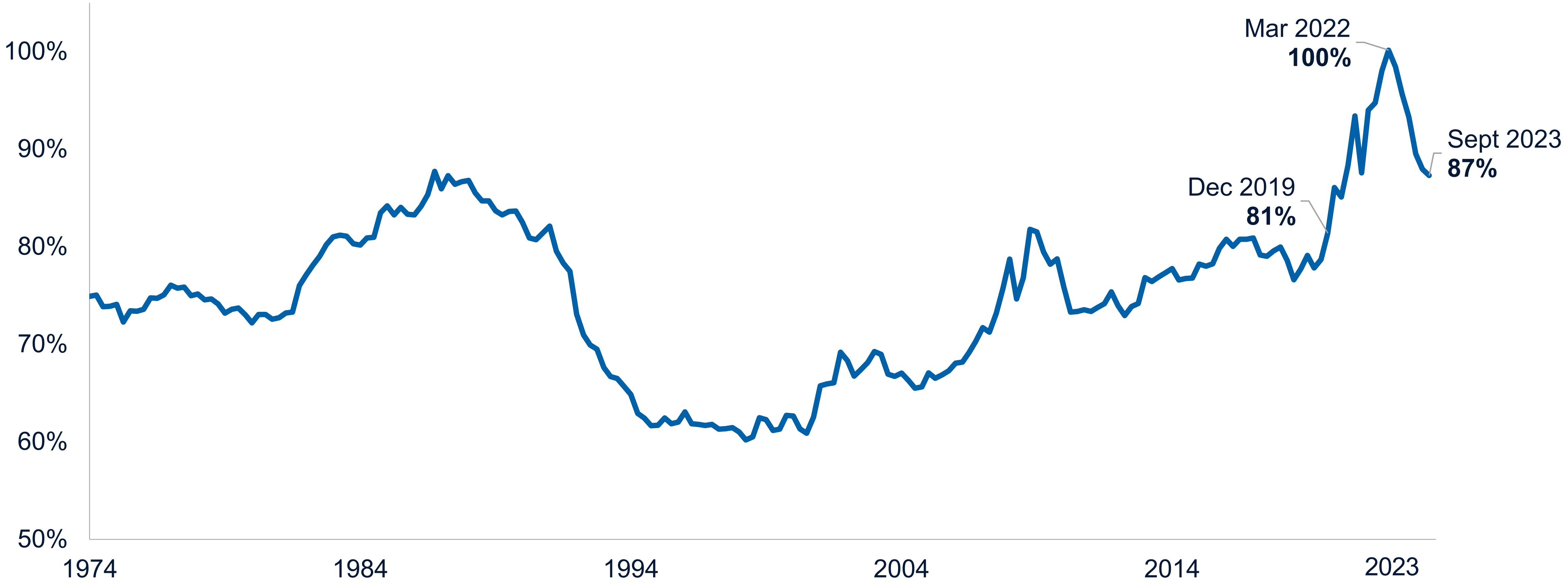


Source: U.S. Bureau of Economic Analysis/Haver Analytics. Please see Additional Disclosures page for additional information.

Savings are still at healthy levels

Q1 1974 to Q3 2023

U.S. Household Liquid Savings as % of Disposable Income



Note that liquid assets includes the following categories: Checkable Deposits and Currency, Time Savings and Deposits, and Money Market Shares.
Source: U.S. Federal Reserve Board.

AI²—Two Seismic Developments with Huge Potential for Change

Artificial Intelligence and Artificial Incretins could shepherd in a new era

Artificial intelligence(AI)

AI²

Artificial Incretins (GLP-1s)

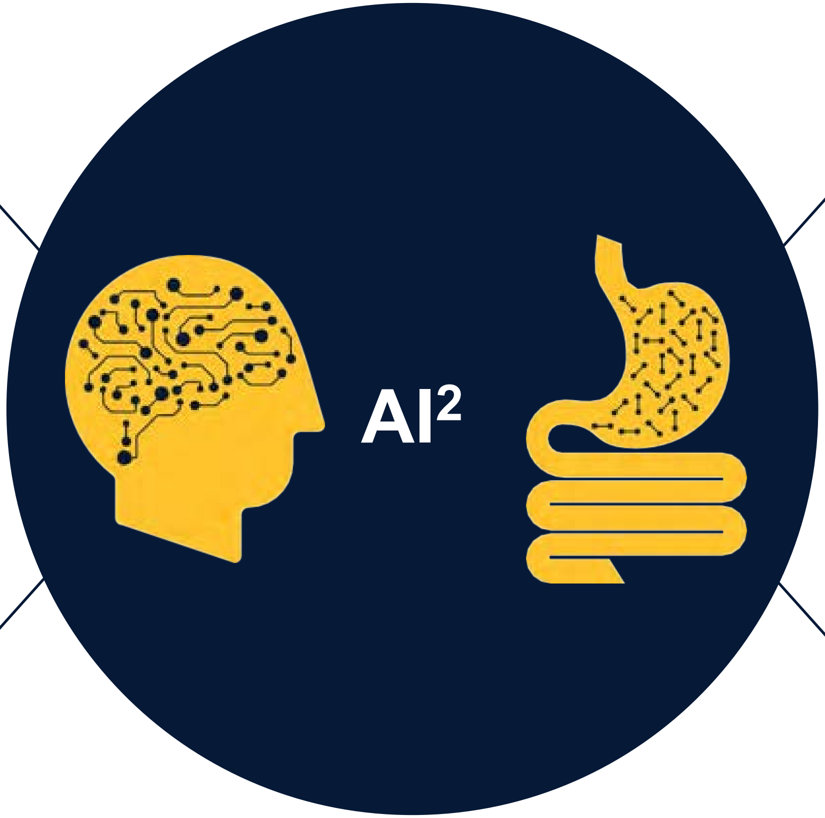
Source: T. Rowe Price.

How are Artificial Intelligence and Artificial Incretins Similar?

Large addressable markets:

- Obesity—$200 Billion
- Semi-chips—$400 Billion

Capacity constrained and are selling everything they can produce.



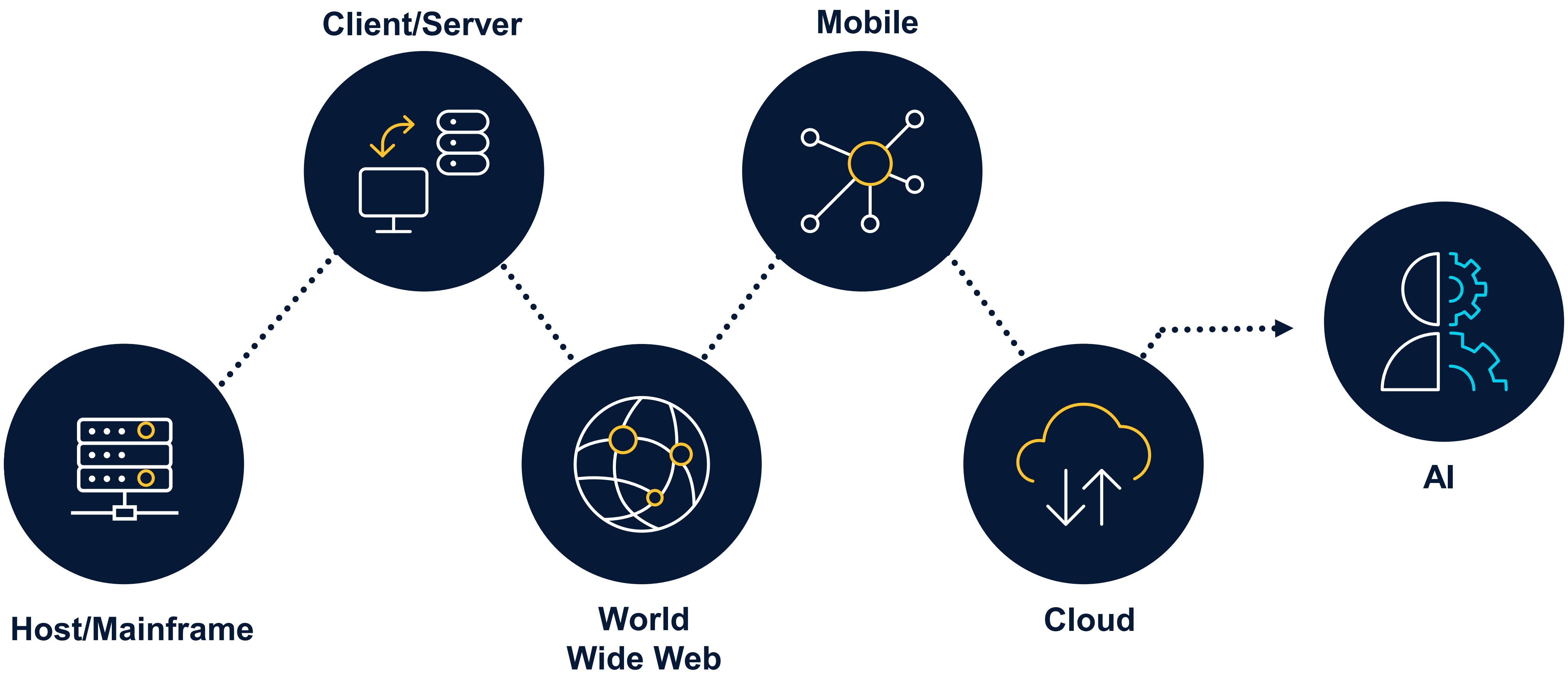
Market structure dominated by a few companies that are influential.

High barriers to entry with manufacturing, capital expenditures, and intellectual property.

Artificial Intelligence (AI)

Tech Innovation Cycles

Information technology maturity enables AI

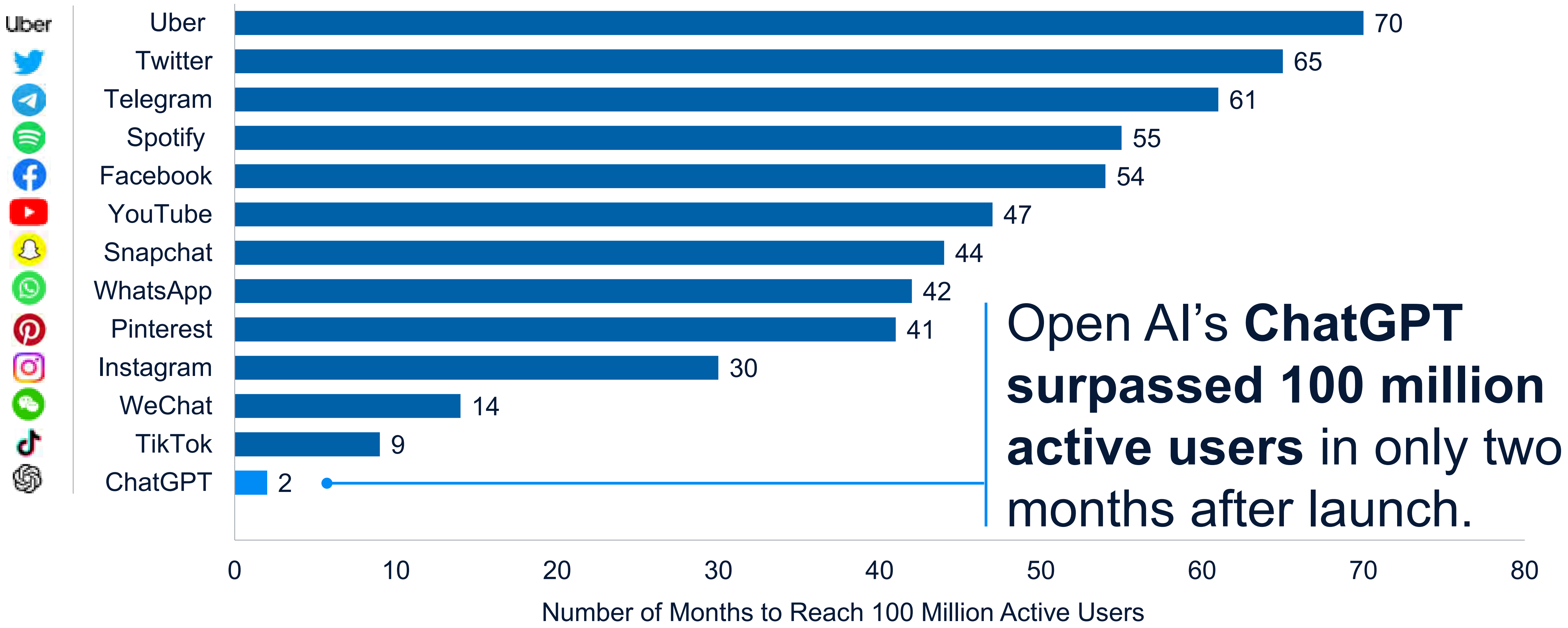


Source: T. Rowe Price; IBM, Impact 2014 Presentation via SlideShare.

Months to Reach 100 Million Users

As of 31 December 2023

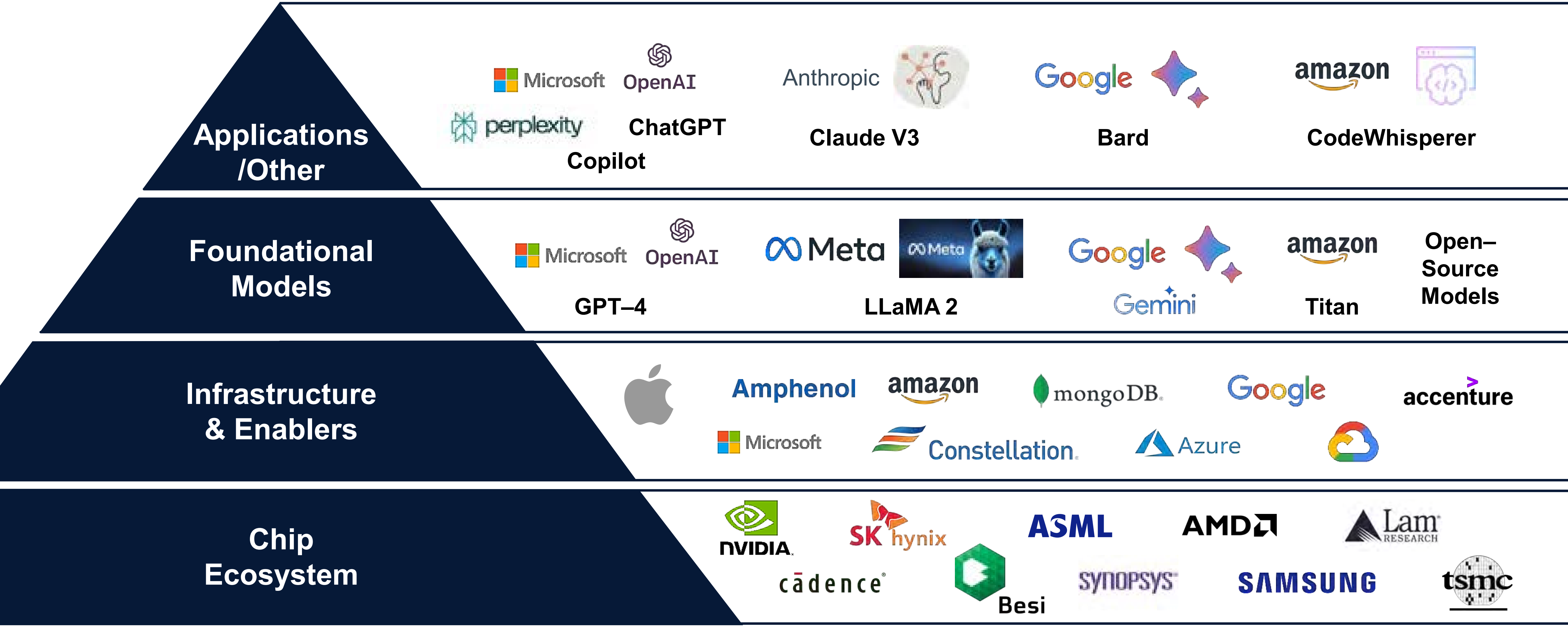
Comparison of consumer adoption rates



Source: www.visualcapitalist.com/threads-100-million-users/.

Hierarchy of AI

As of 30 June 2023

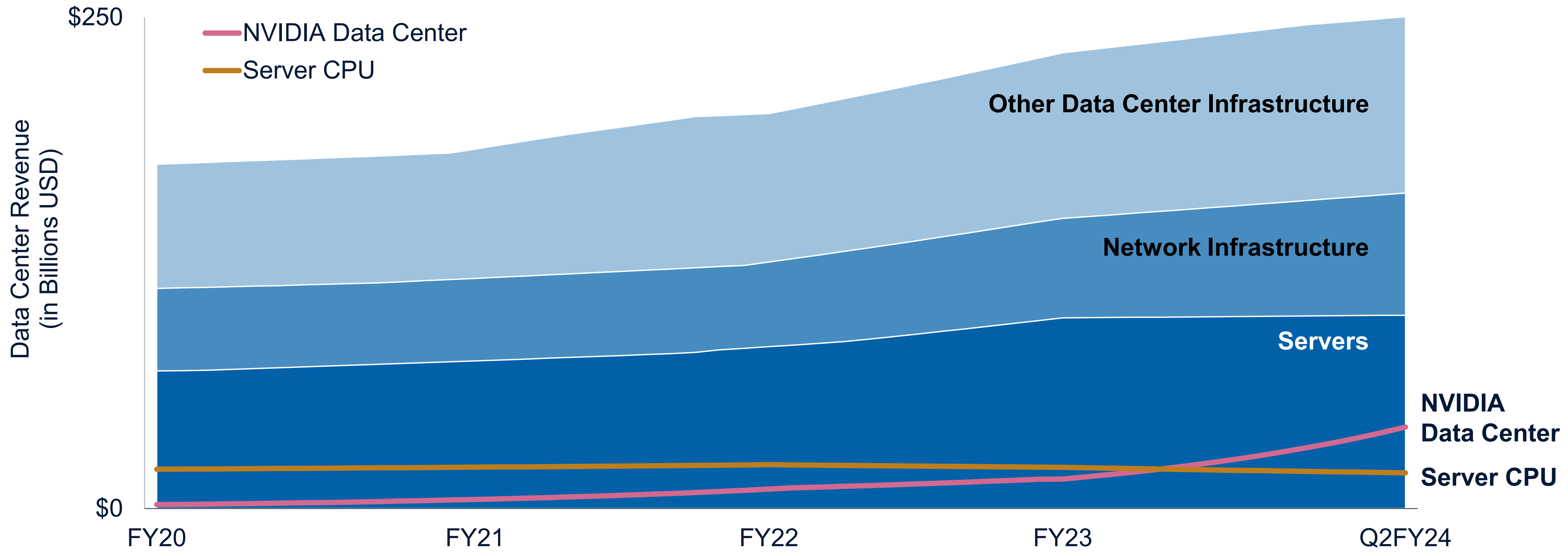


The specific securities identified and described are for informational purposes only and do not represent recommendations or statement of opinion intended to influence a person or persons in making a decision in relation to investment.
The trademarks shown are the property of their respective owners. Use does not imply endorsement, sponsorship, or affiliation of T. Rowe Price with any of the trademark owners.

Addressing the Entire Data Center

As of 30 September 2023

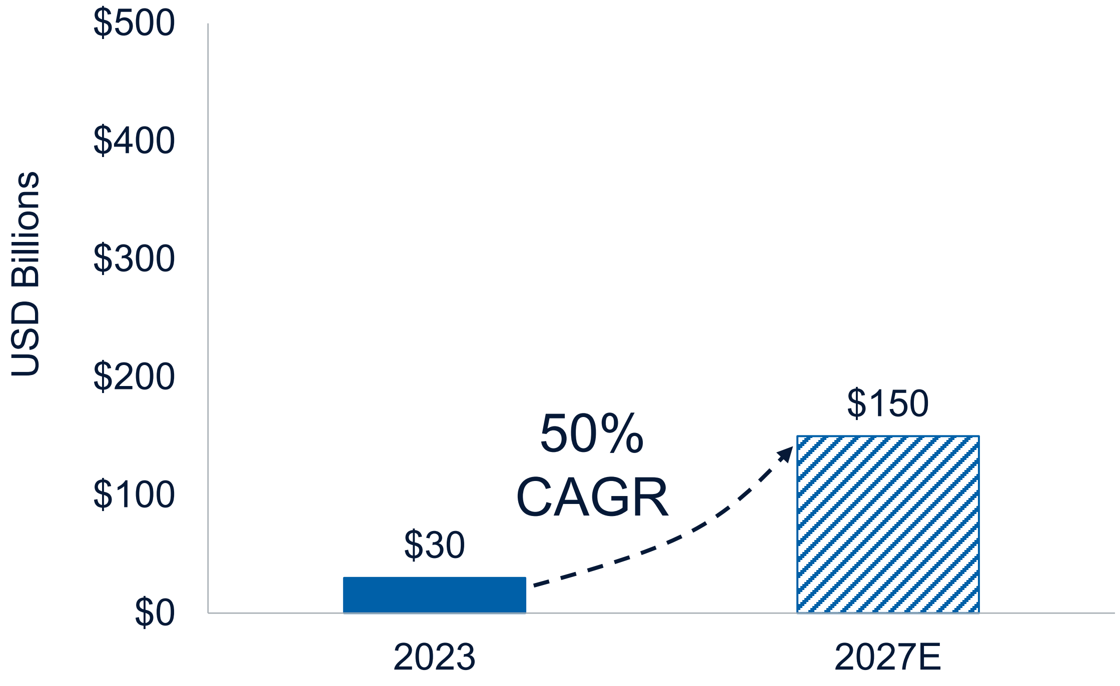
$1Trillion+ Data Center Infrastructure installed base



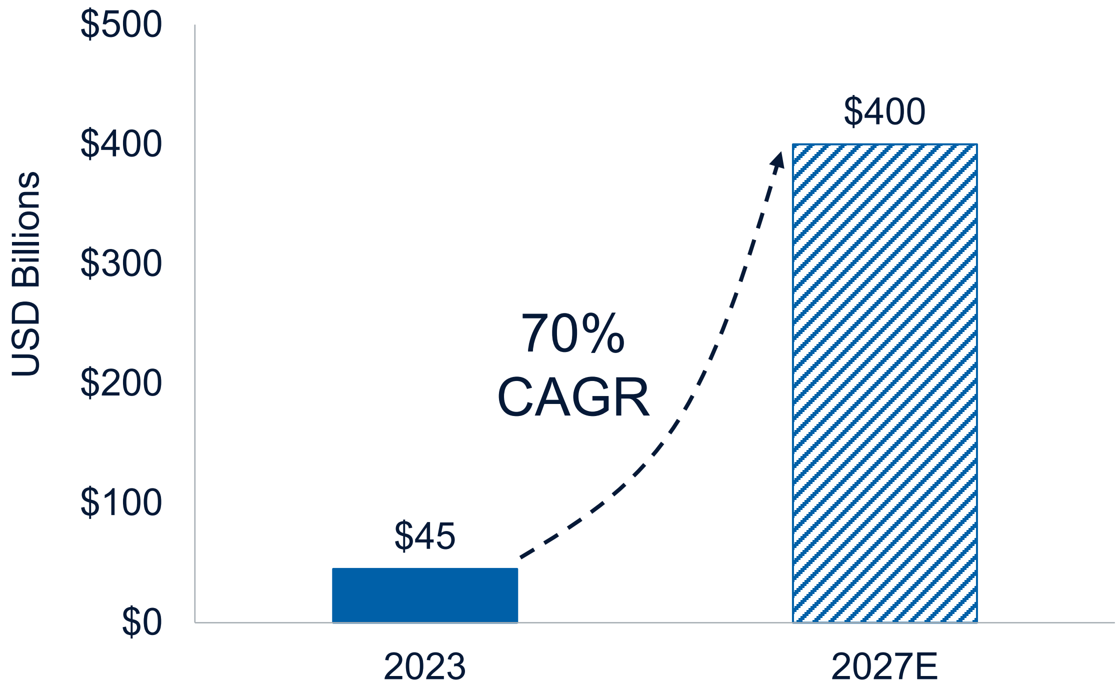
For Illustrative Purposes Only.
Source: Mercury Research, Dell'Oro.
Assumes NVIDIA Fiscal Year aligns to Calendar Year (e.g., FY2023 = CY2022).

Upward Revisions to Secular Growth Markets

AI Total Addressable Market 30 June 2023



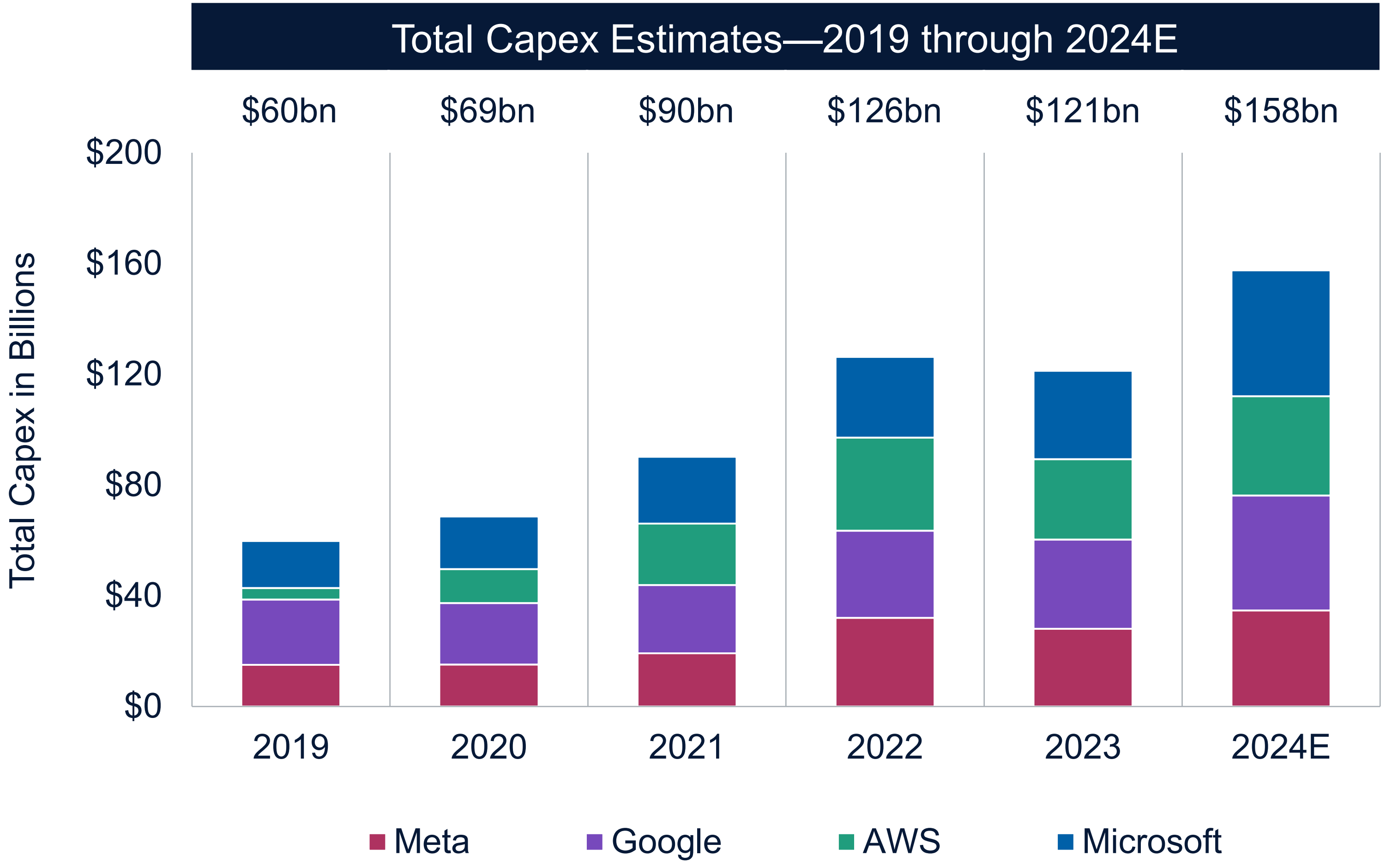
AI Total Addressable Market 30 November 2023



In **less than 6 months**, AMD (Advanced Micro Devices, Inc.) increased their estimate—materially.

Source: AI Chip Market—AMD Data Center and AI Technology Premier; Software Forecast—William Blair Research based on data from IDC; Worldwide Semiannual Artificial Intelligence Tracker, 2H21.
There is no guarantee that any forecasts made will come to pass.

Capex of Top Mega Cap Technology Companies



AI cycle funded by some of the worlds **most profitable companies**.

Source: Company Filings, Consensus Estimates, T. Rowe Price Estimates, Management Commentary, Bernstein Research.

AI is a Sustaining Innovation

Compute Resources

- Intense Capital
- Parallel Processing
- Memory Management
- Capable Infrastructure

Talent

- AI Savants
- Quality
- Retention

Data

- Preparation
- Objectivity
- Breadth
- Depth

Distribution

- Large Install Base
- Ease of Integration
- Attractive Value Proposition

- Strong **AI positioning**
- Compelling path to **monetization**
- Ability to **further innovate**

Can Generative AI Fracture the Magnificent 7?

We are curious—is Generative AI a sustaining or disruptive innovation?

Example #1

Nvidia (NVDA)

- Trying to foster competition to **broaden** their customer base.
  - Coreweave
  - Oracle Cloud Infrastructure (OCI) Compute

Example #2

Open AI enabling:

- ChatGPT
- Perplexity AI
- Sora AI

These new tools **compete** with search and now text-to-video creation.

Are we in contestable markets again?

Artificial Incretins (GLP-1s)

What are GLP-1s? How Do They Work?

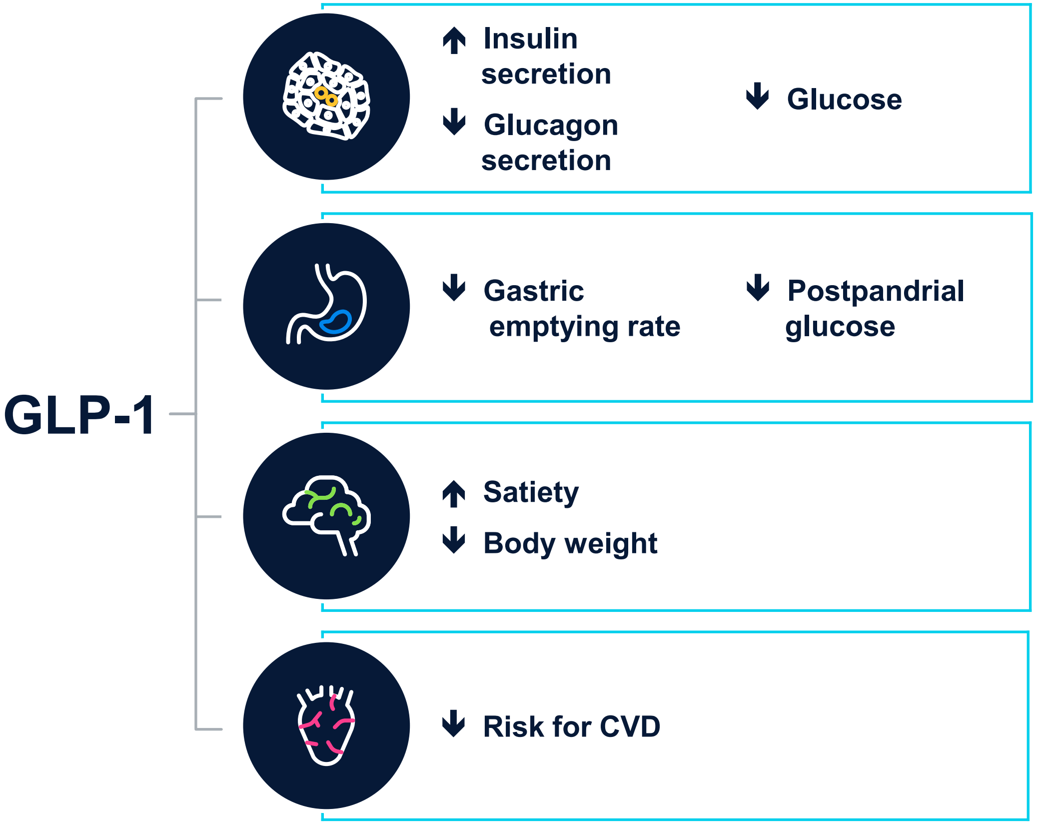
Background on GLP-1s

- **What is it**: Peptide hormones that secrete into the bloodstream in response to food, especially glucose.
- The Artificial Incretins (AI) in GLPs prevent greed response in the body. Biologically, we can't make enough of them.

GLP-1 medicines

Trulicity, Ozempic, Wegovy, Mounjaro, Zepbound

GLP-1 actions

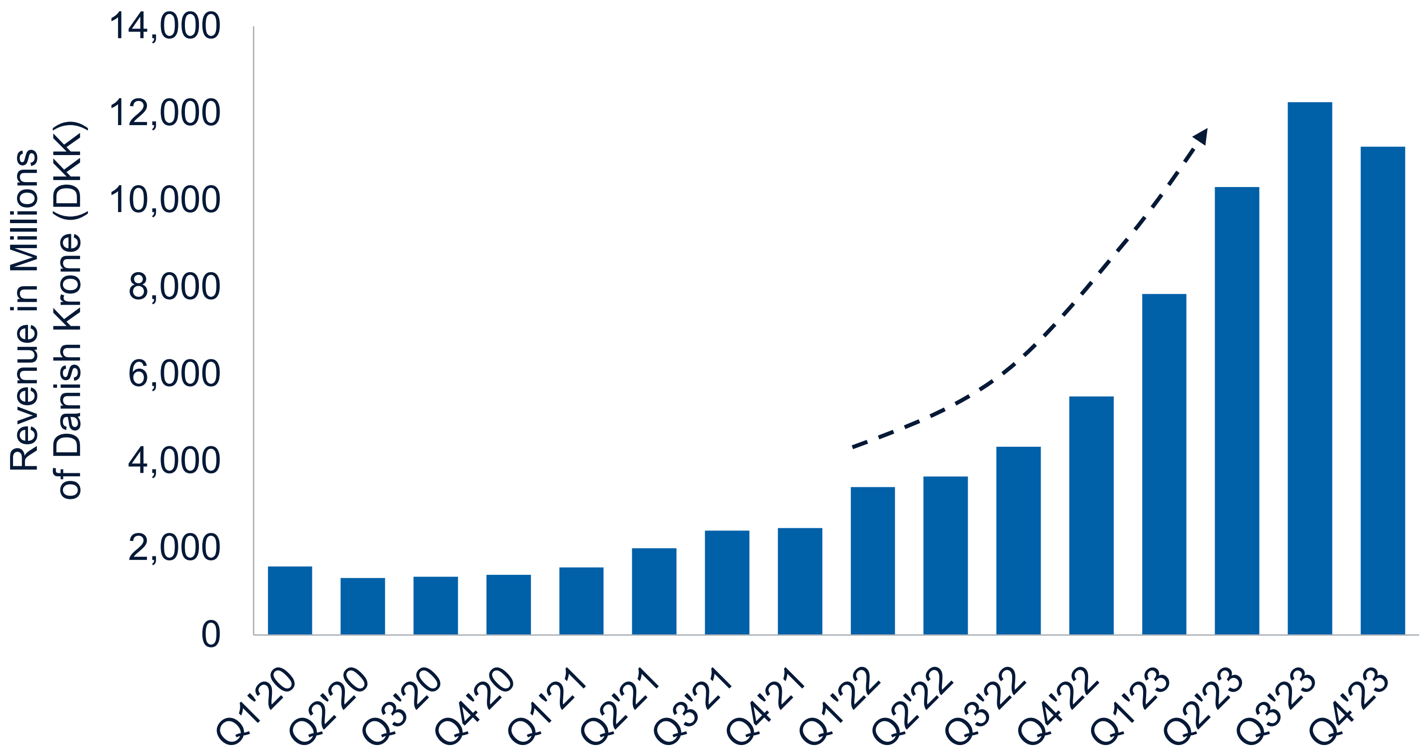


Source: Diabetologia: Incretins in Metabolic Disease: Pathophysiology and Therapy; October 2023.

Healthcare Innovation—Unlocking the Addressable Market of Global Obesity

As of 31 December 2023

Obesity revenue



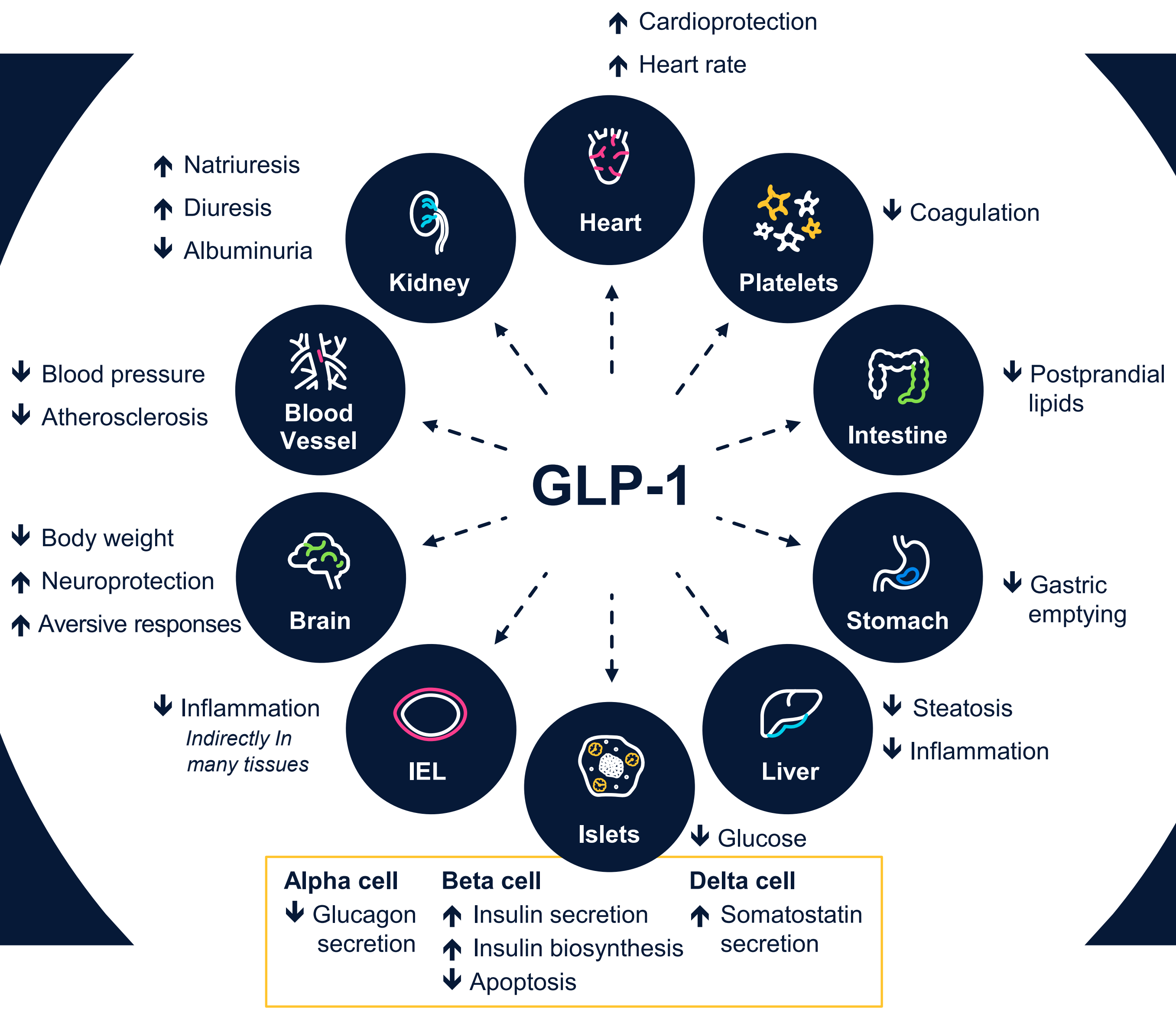
There are **100 million obese people in the U.S.** alone. 50 million are covered by insurance, and we are **treating less than one million**.

Past performance is not a reliable indicator of future performance.
Source: Novo Nordisk Earnings Report.

What Other Indications Might GLP-1 Help?

Current and future new indications in development:

- Type II Diabetes treatment ✓
- Obesity ✓
- Cardiovascular risk reduction ✓
- Heart Failure
- Chronic Kidney Disease
- Alcohol Use Disorder
- Nicotine Dependence
- Osteoarthritis Pain in Obese Individuals
- Nonalcoholic Steatohepatitis (NASH)
- Obstructive Sleep Apnea
- Peripheral Artery Disease
- Major Depressive Disorder
- Type I Diabetes
- Alzheimer's Disease



Source: Diabetologia: Incretins in Metabolic Disease: Pathophysiology and Therapy; October 2023.

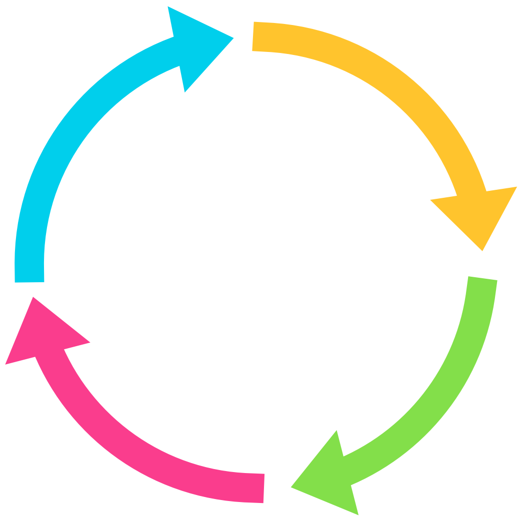
Exhibit 4

First, Second and Third Order Effects of GLP-1 Innovation in the Market

First Order Effects

Individuals

- First “functional cure” for many diabetes patients
- First diabetes “vaccine” for prediabetic patients
- Benefit to risk ratio looks very strong for a large portion of the population



Second Order Effects

Healthcare

- Less glucose monitoring machines
- Anything related to diabetes “downstream”—renal, cardiovascular disease
- Medical devices—fewer bariatric surgeries, but possibly more hip and knee replacements

Third Order Effects

ESG

- Less food consumption, resources used in the world to produce food
- Better health outcomes

Consumer

- Alcohol use, especially larger volume beverages,
- High volume/calorie/carb and fatty foods

Could This Be the Beginning of the End?

Competition

More clinical trials being conducted for obesity

Oral

A gift and a curse—could this drug be genericized? Small molecules can be copied

Government

At this time, the U.S. government legally can't pay for obesity, but what if that changes?

GLP-1 Drug Timeline

GLP-1 drugs have been around for over a decade, but more potent and longer-lasting versions have come to market just in the past few years

2005 — **Exenatide** (brand names Byetta and Bydurean approved in 2005/2012)

2010 — **Liraglutide** (brand names Victoza for diabetes, Saxenda for obesity)

2014 — **Dulaglutide** (brand name Trulicity)

2017 — **Semaglutide** (brand names Ozempic and Rybelsus (oral) for diabetes)

2021 — **Semaglutide** (brand name Wegovy for obesity)

2022 — **Tirzepatide** (brand names Mounjaro for diabetes and Zepbound for obesity)

2024 — **Oral Semaglutide** (Phase III for diabetes and obesity)
CagriSema (Phase III for obesity)

2025 — **Orforglipron** (Phase III for diabetes and obesity (oral))

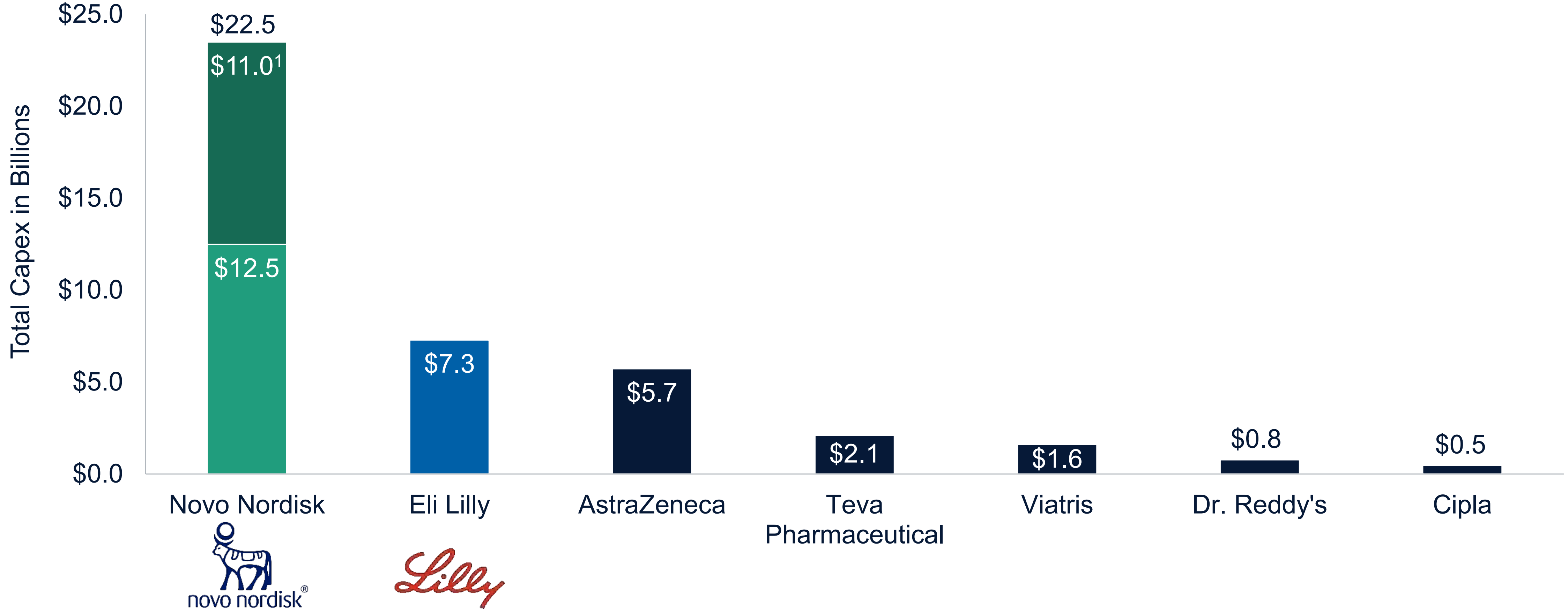
2026 — **Retatrutide** (Phase III for diabetes, obesity, and cardiovascular diseases)

novo nordisk®

Capital Expenditures of Pharmaceutical Companies Competing in GLP-1s

As of 31 December 2023

Capital Expenditures—2021–2024E



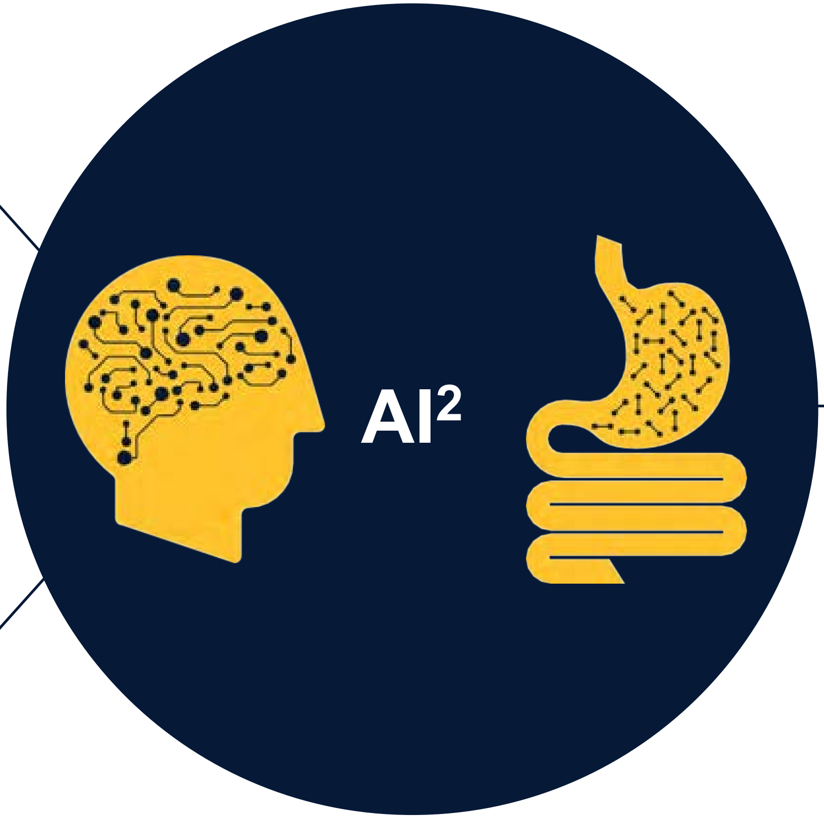
Source: FactSet.

[1] Novo Nordisk's recent $11 Billion purchase of Catalent, Inc. is captured in this chart as a pending acquisition. Data shown is the cumulative capex from CY 2021, 2022 and 2023 and estimated CY 2024.

Key Takeaways

Active management can help clients participate and navigate responsibility extreme outcomes in the market.

We believe we are in the early days of these **disruptive technology innovations**.

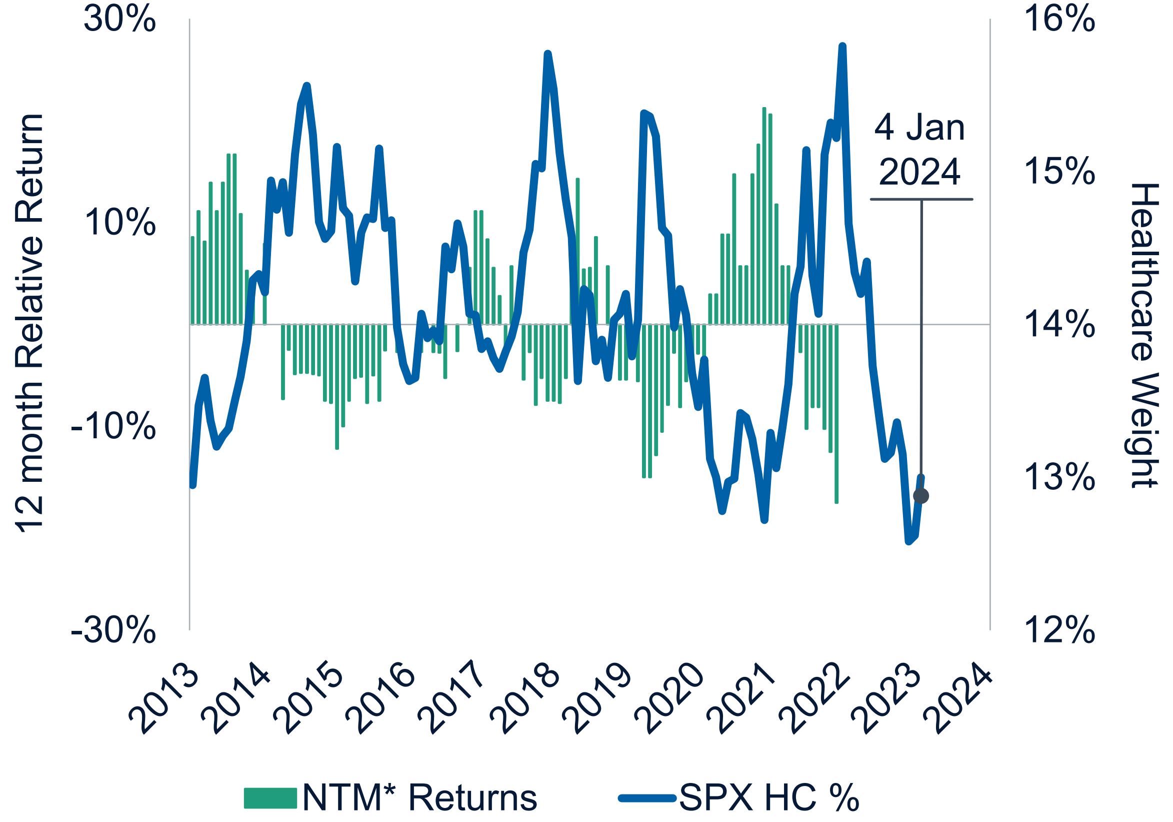


At this time, **both innovations look to benefit** the incumbent, but we are high to test disruption to the incumbents.

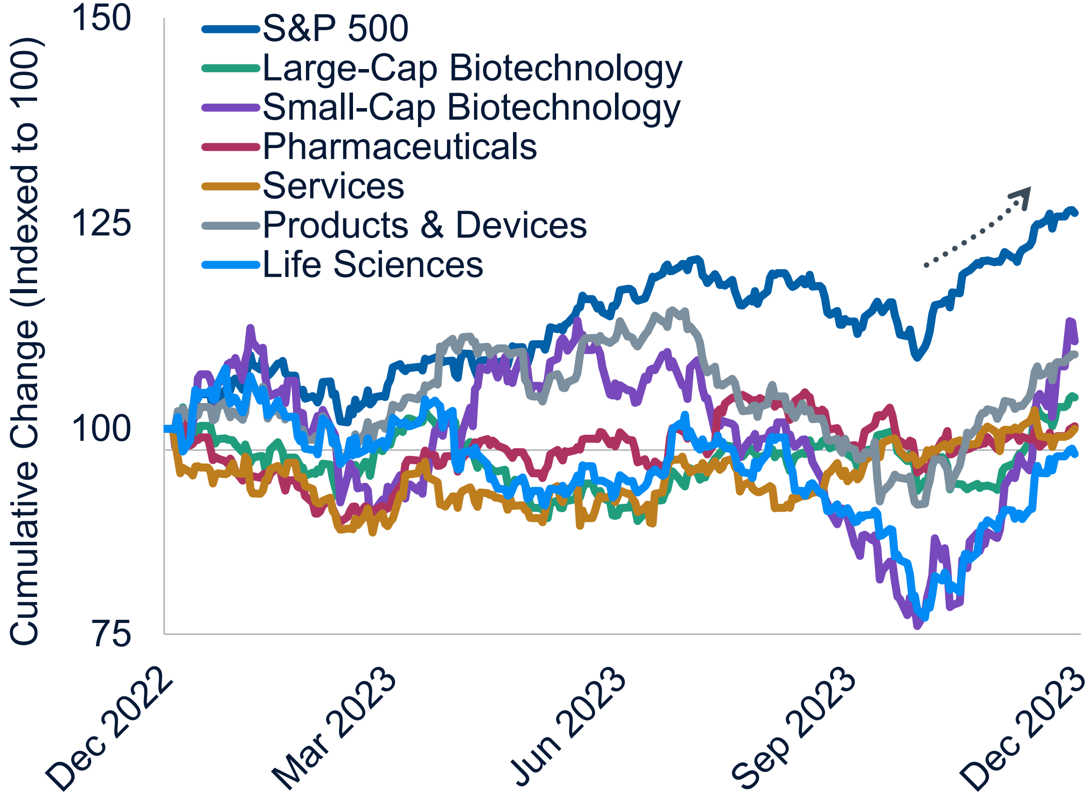
Broadening equity horizons—Healthcare

As of 4 January 2024

Healthcare Weight in S&P 500 versus Healthcare NTM* Relative Return



Healthcare Sector Performance for 2023



Past performance is not a reliable indicator of future performance.
There is no guarantee that any forecasts made will come to pass.
*Next Twelve Months.

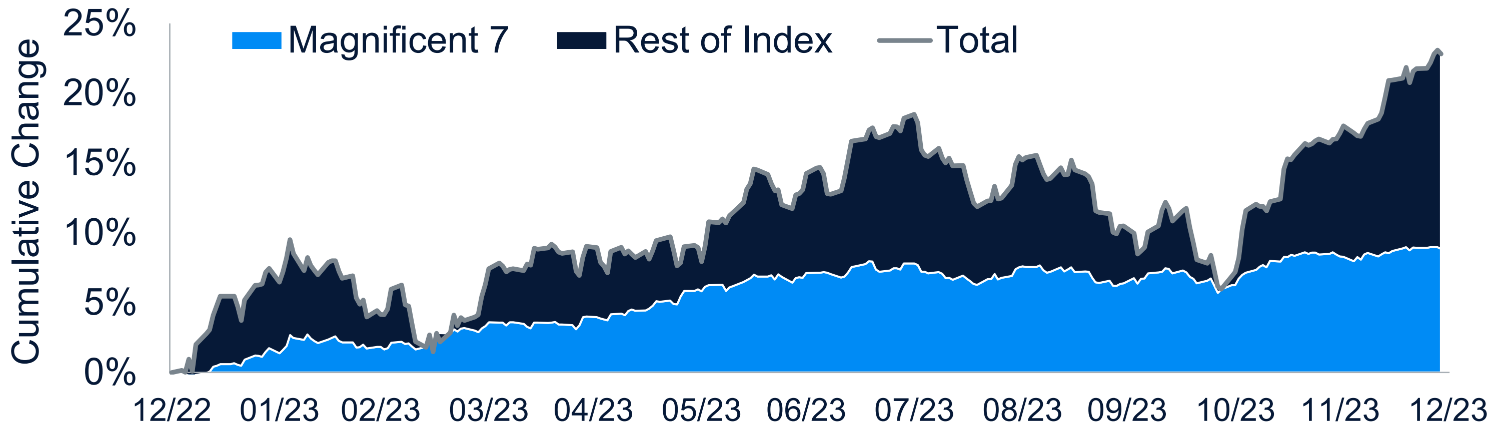
Sources: FactSet; T. Rowe Price. FactSet financial data and analytics.

Quick Hits on Other Relevant Topics

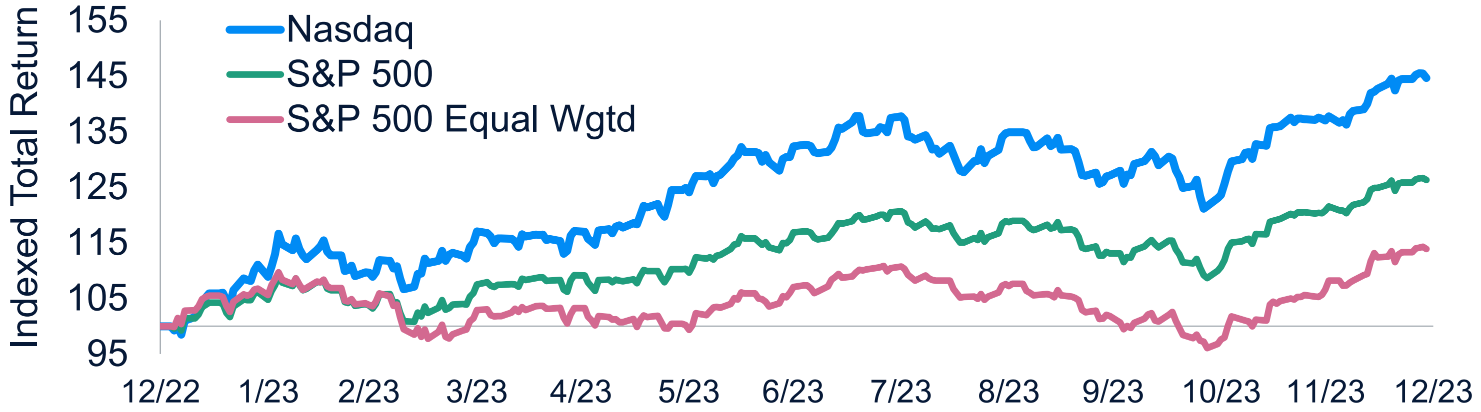
Magnificent 7—A new sector to risk manage

As of 31 December 2023

Have driven returns within the MSCI All-Country World Index…



…and led to diverging index performance



Magnificent 7 stocks accounted for **39%** of total index[1] return in 2023

2024 Performance

NASDAQ +45%
S&P 500 +26%
S&P Equal +14%

Past performance is not a reliable indicator of future performance.

The specific securities identified and described are for informational purposes only and do not represent recommendations.

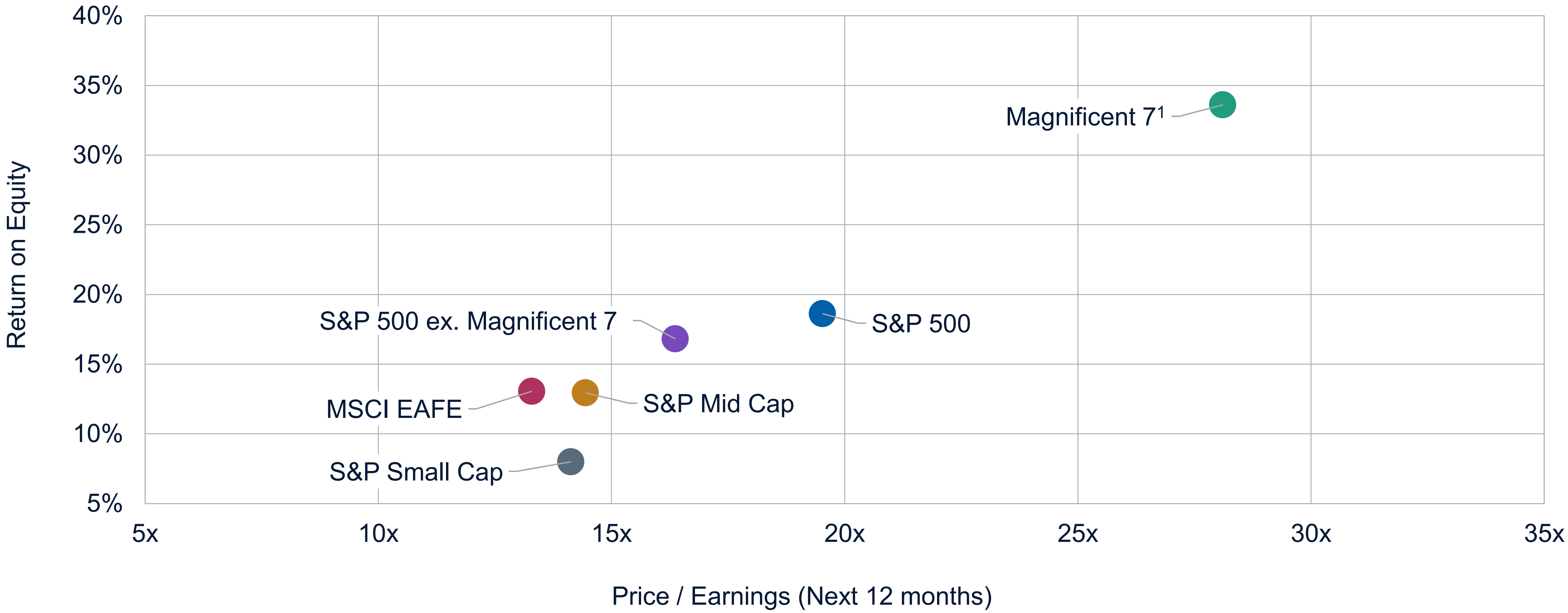
Source: T. Rowe Price analysis using data from FactSet Research Systems Inc. All rights reserved.

"Magnificent 7" includes Alphabet, Amazon, Apple, Meta, Microsoft, NVIDIA, and Tesla.

[1] MSCI All-Country World Index; Rest of index includes all index securities excluding the 'Magnificent 7'.

Magnificent 7 elevated valuations may be justified

As of 31 December 2023

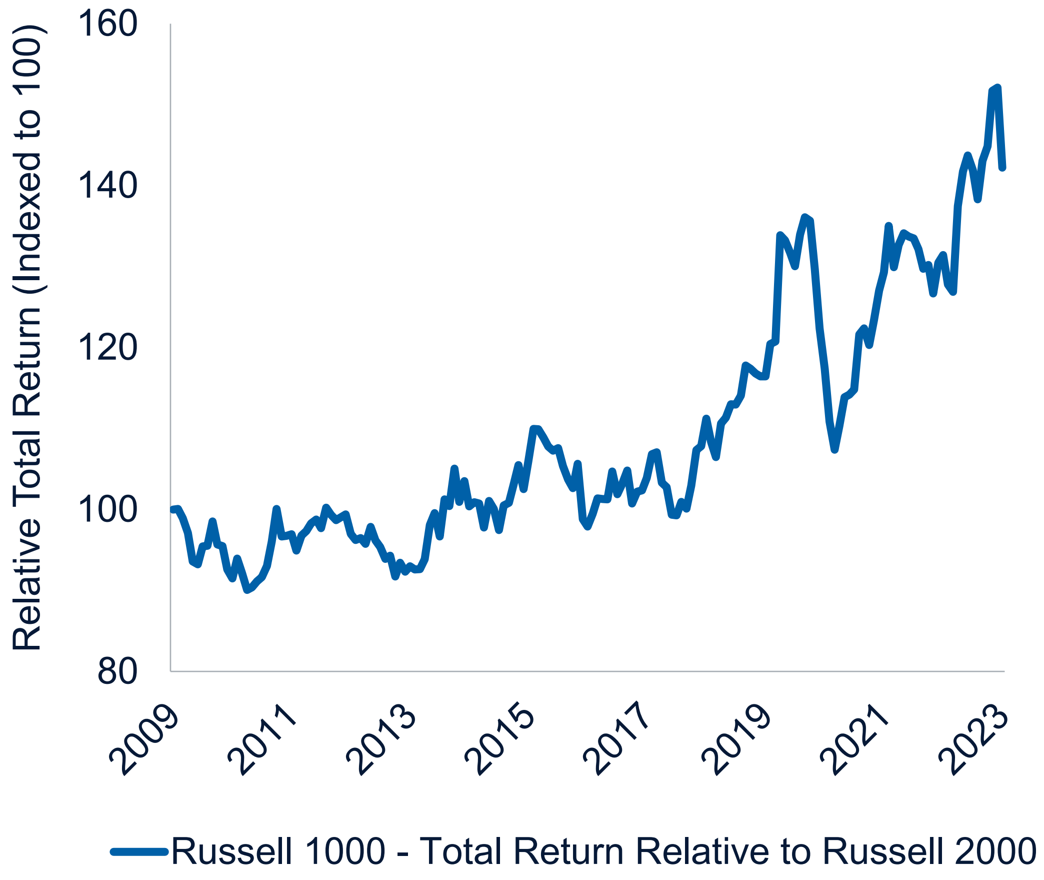


Past performance is not a reliable indicator of future performance.
These statistics are not a projection of future results. Actual results may vary.
[1]The "Magnificent 7" is Apple, Alphabet, Amazon, Meta, Microsoft, NVIDIA, and Tesla. The specific securities identified and described are for informational purposes only and do not represent recommendations.
Sources: T. Rowe Price analysis using data from FactSet Research Systems Inc. All rights reserved. Standard and Poor's. Please see Additional Disclosures page for sourcing information.

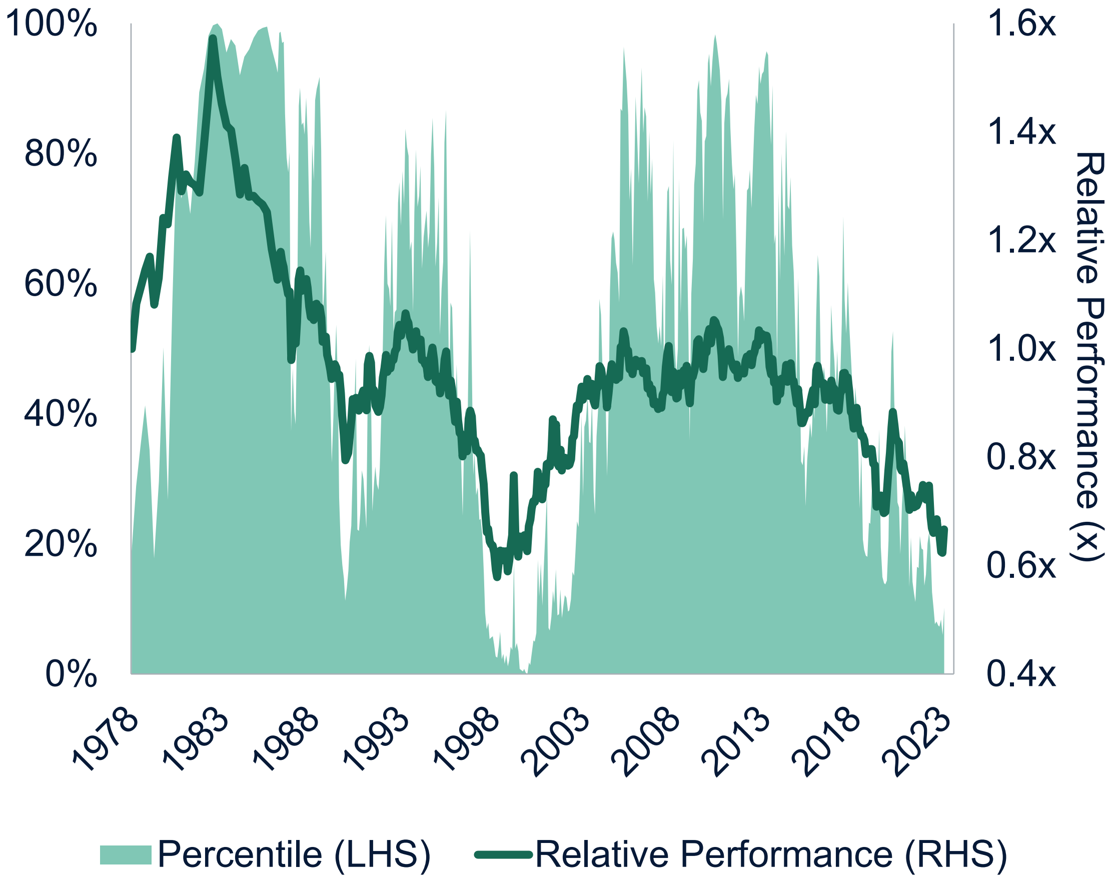
Performance and valuation by market cap range

As of 31 December 2023

Small stocks have lagged large peers…

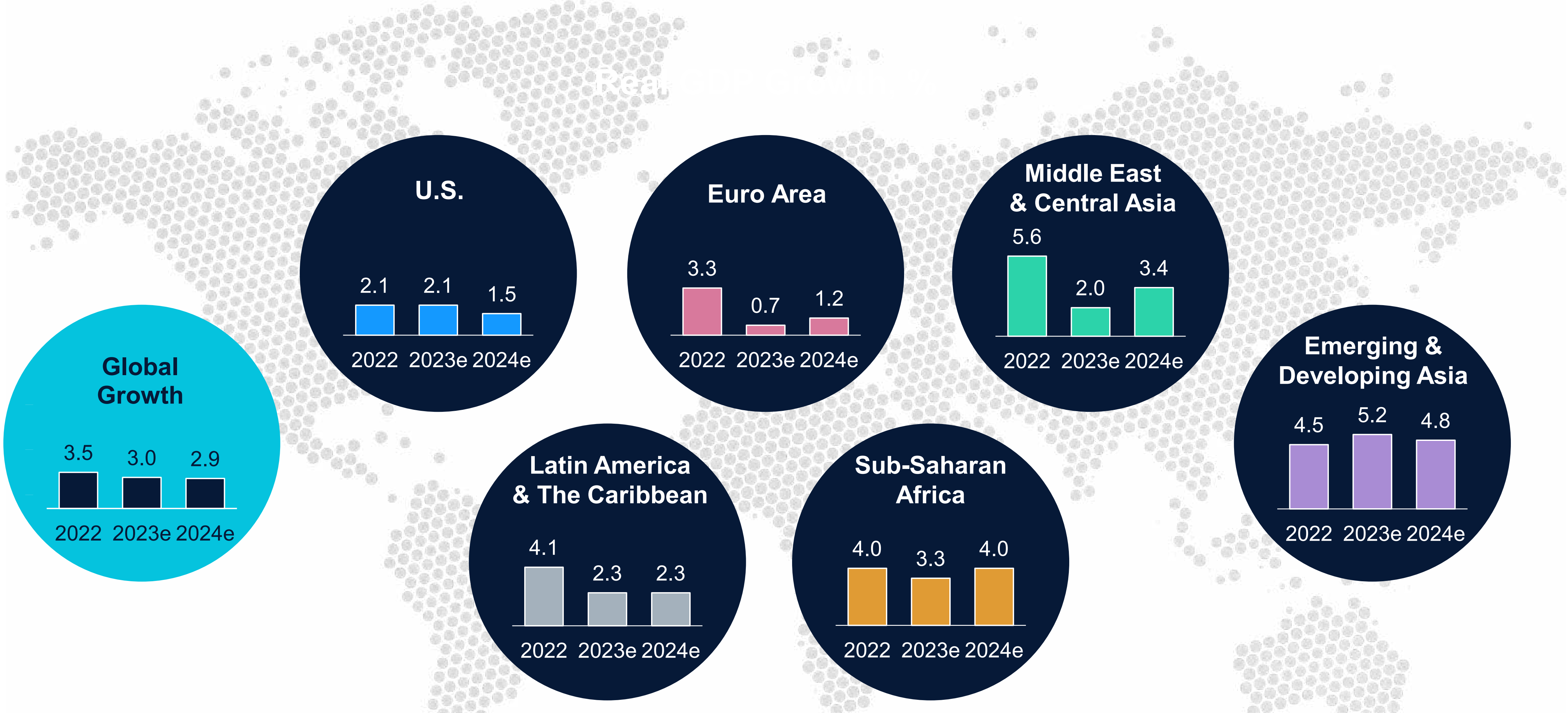


…leading to a widening of the valuation gap



Past performance is not a reliable indicator of future performance.
Source: FactSet, FTSE Russell, Jefferies.
Relative valuation model consists of relative Trailing and Forward P/E, Price-to-Book, Price-to-Sales and from 2002 Price-to-Cash Flow; from March 31, 2016 forward Jefferies' estimates.

Emerging Asia one of the most attractive regions



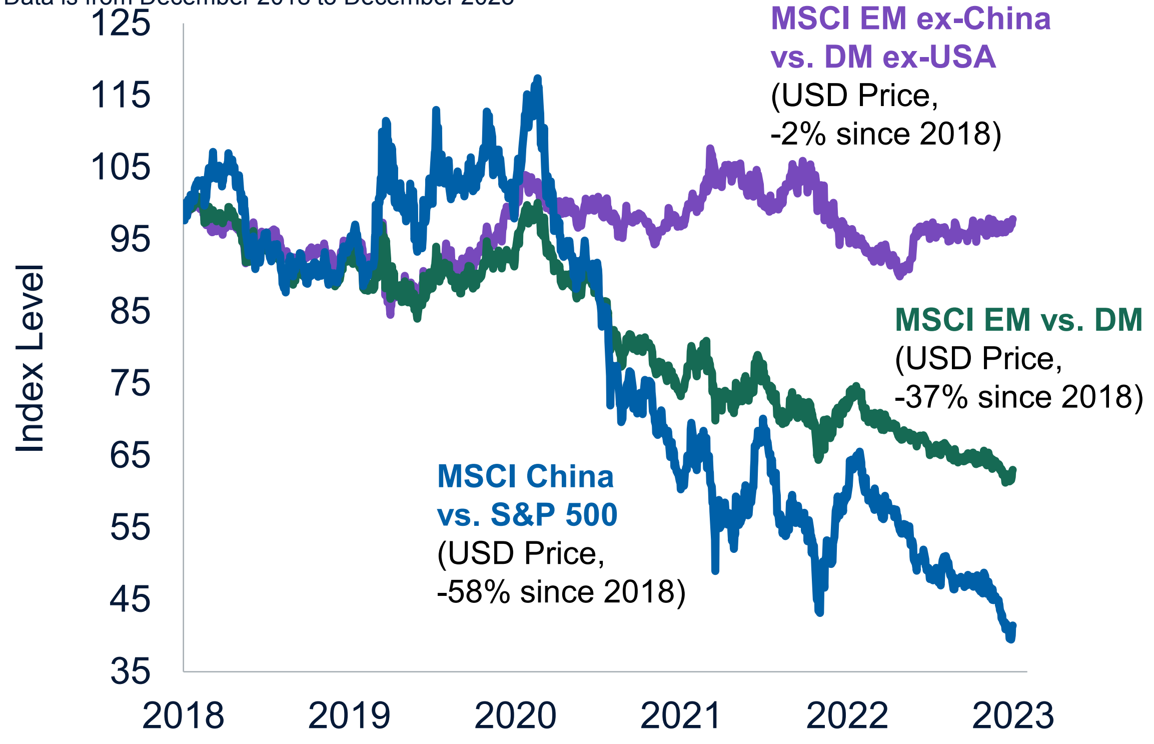
Source: IMF World Economic Outlook
Data as of October 2023
Actual outcomes may differ materially from estimates. Estimates are subject to change.

China—the most contrarian part of the market

As of 31 December 2023

The divergence in EM vs. DM returns can be traced to the relative outperformance of the U.S. vs. China

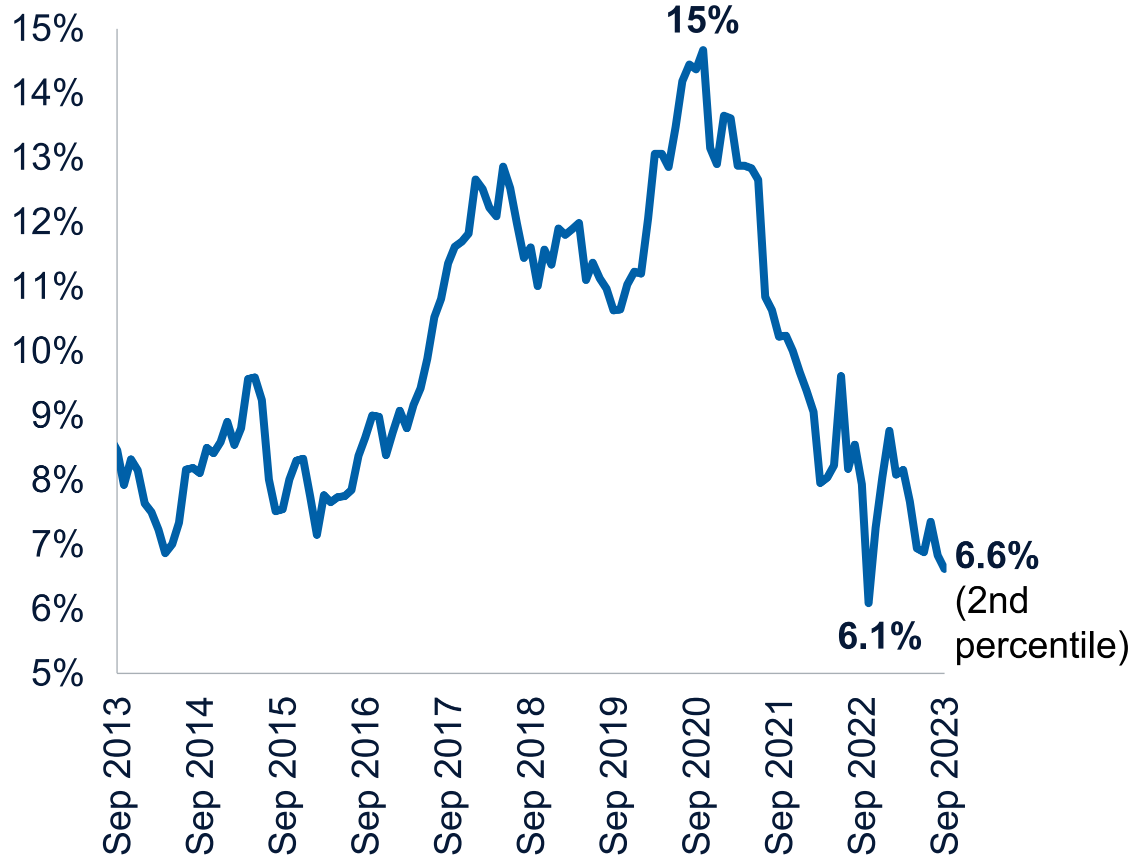
Data is from December 2018 to December 2023



China allocations in active funds globally

(includes GEM, AEJ, Global & Global ex-US funds, AUM: US$ 1tn)

As of 30 September, 2023



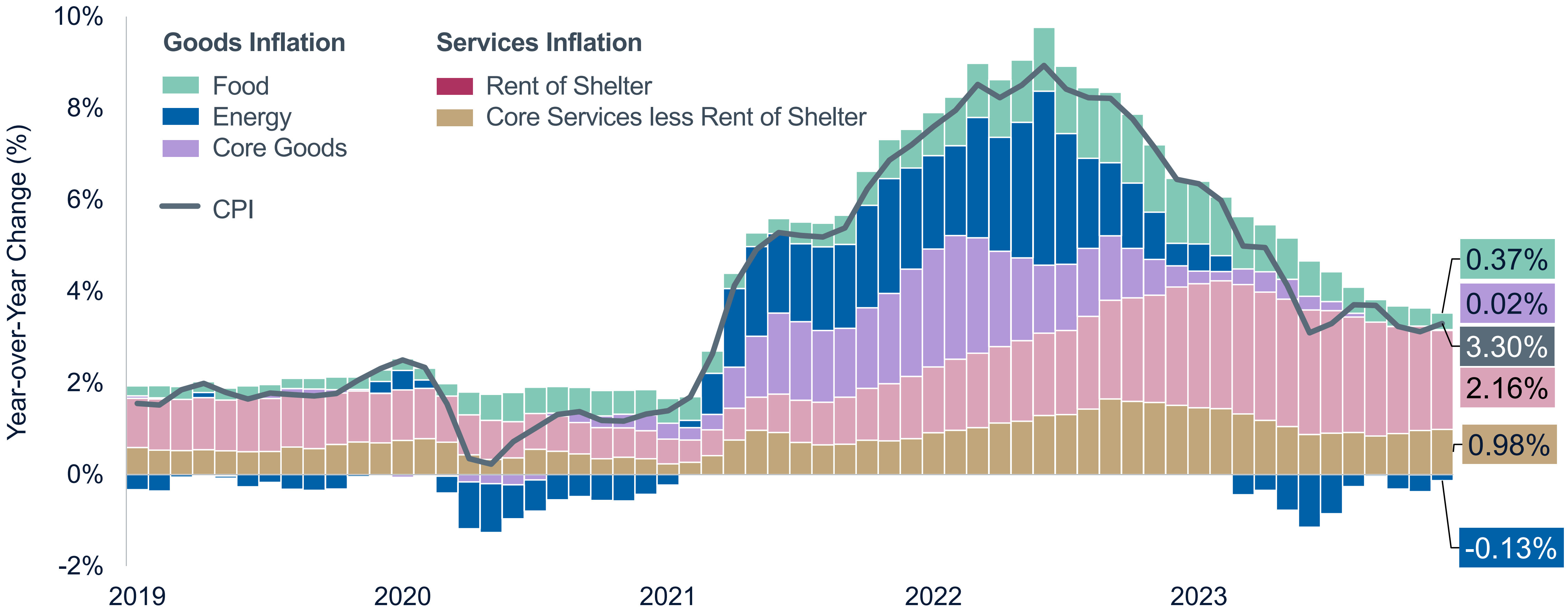
Past performance is not a reliable indicator of future performance.

Sources: Left chart—MSCI, GIR (Global Investment Research division at Goldman Sachs). Right chart—EPFR, MSCI, FactSet, Goldman Sachs Global Investment Research. Financial data and analytics provider FactSet. Please see Additional Disclosures page for information about this MSCI information.

Wildcard for the market—Energy

January 2019 to December 2023

Contribution to CPI

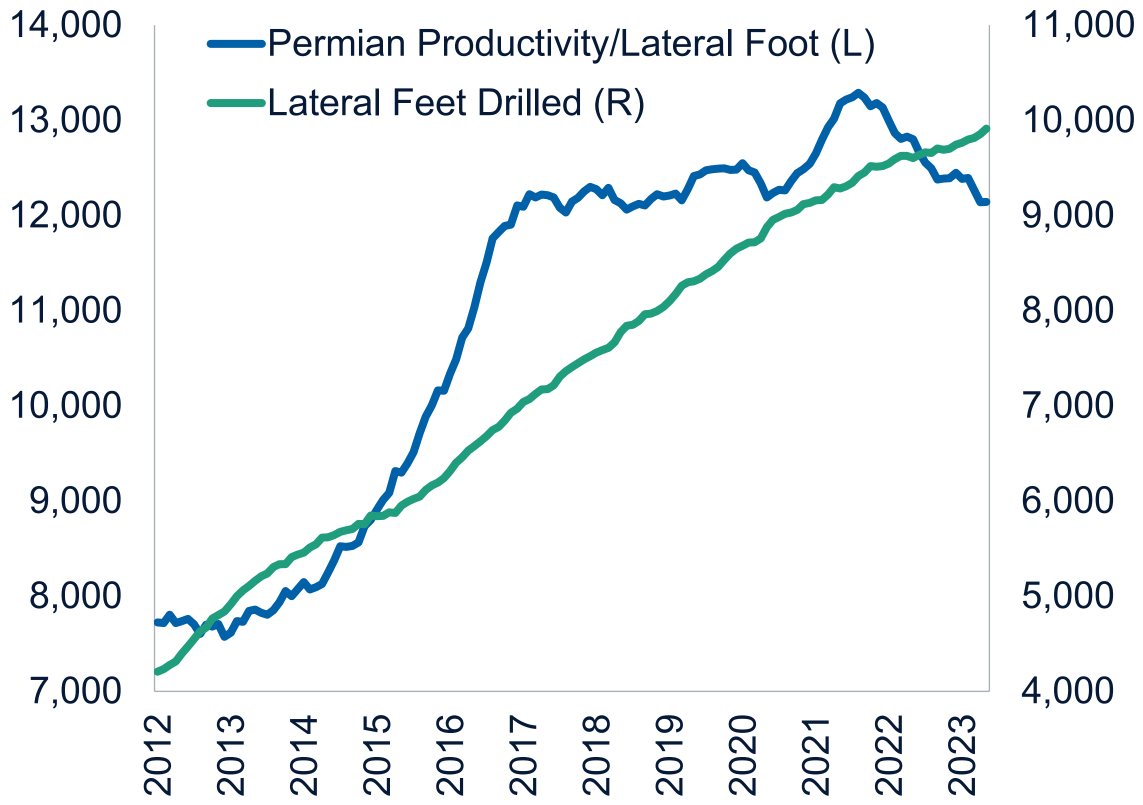


Source: Bloomberg Finance L.P.

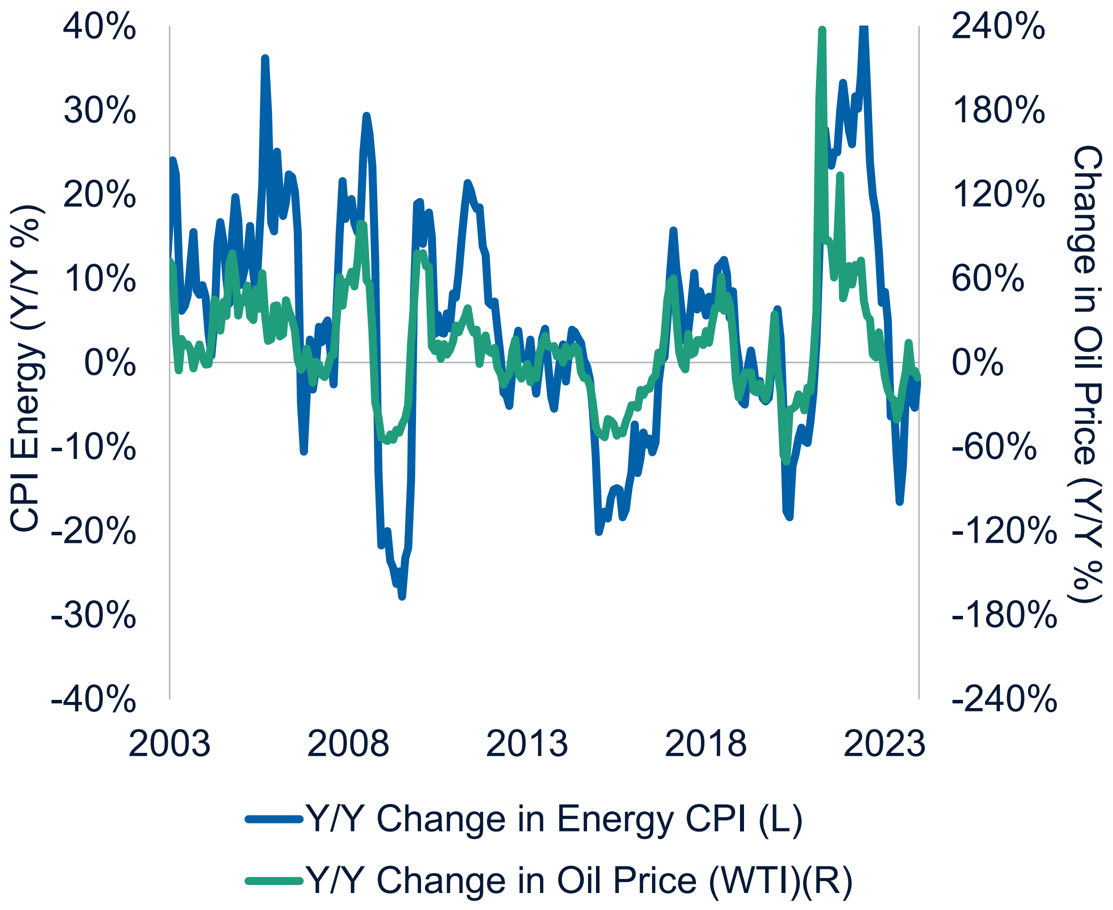
Easy shale boom over—implications to Energy

As of 31 December 2023

Permian Productivity



Crude Oil Price versus Energy (US$)

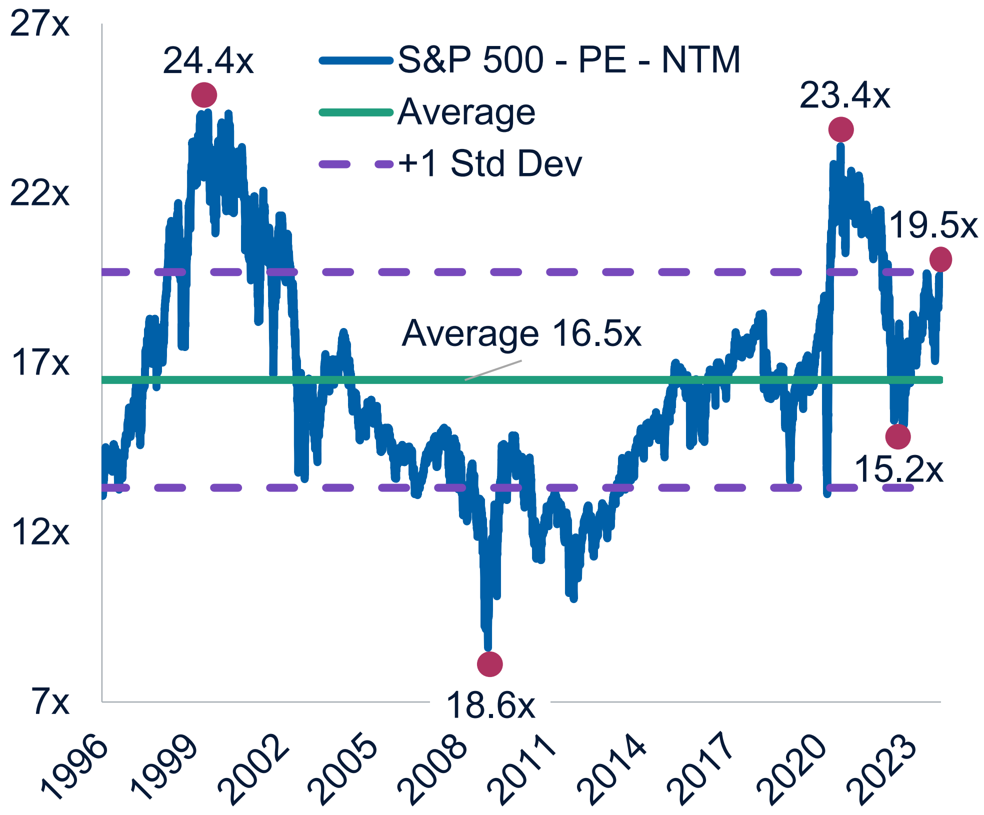


Past performance is not a reliable indicator of future performance.
Source: T. Rowe Price calculations using data from FactSet Research Systems Inc. All rights reserved.
All figures are in USD.

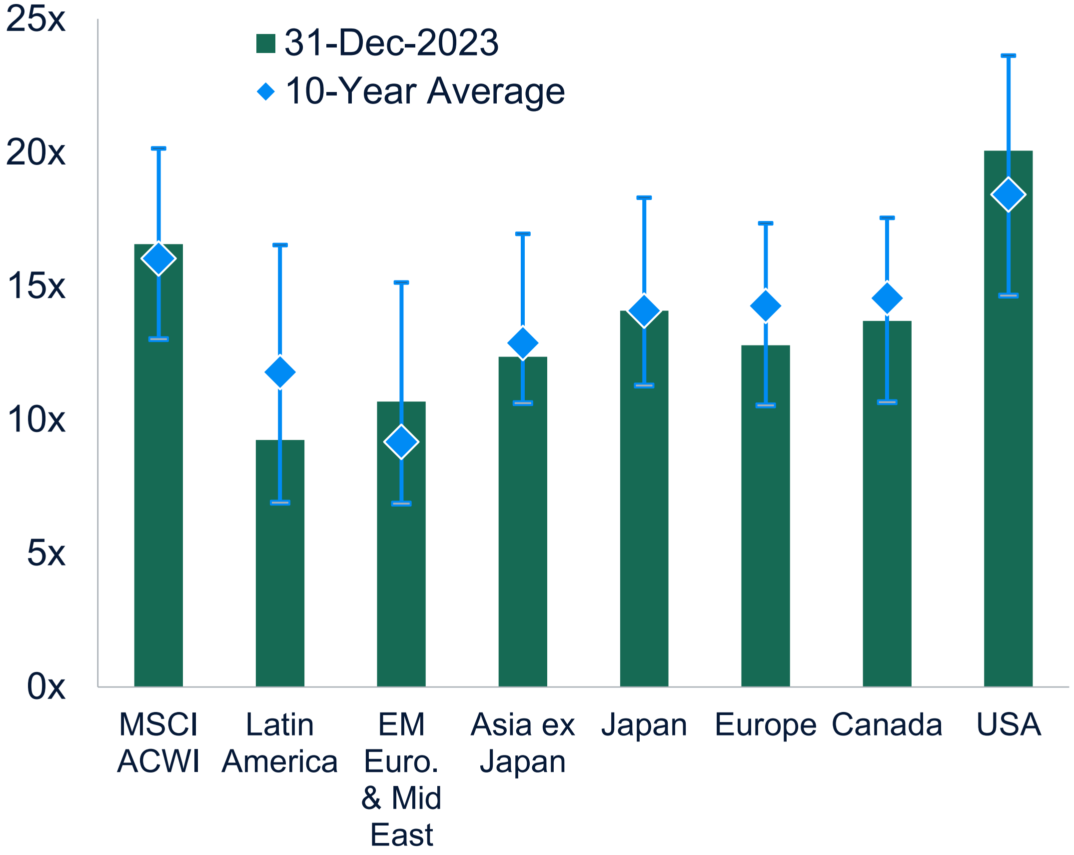
Valuation debate—are multiples low enough?

As of 31 December 2023

S&P 500 NTM P/E



Regional NTM P/E[1]



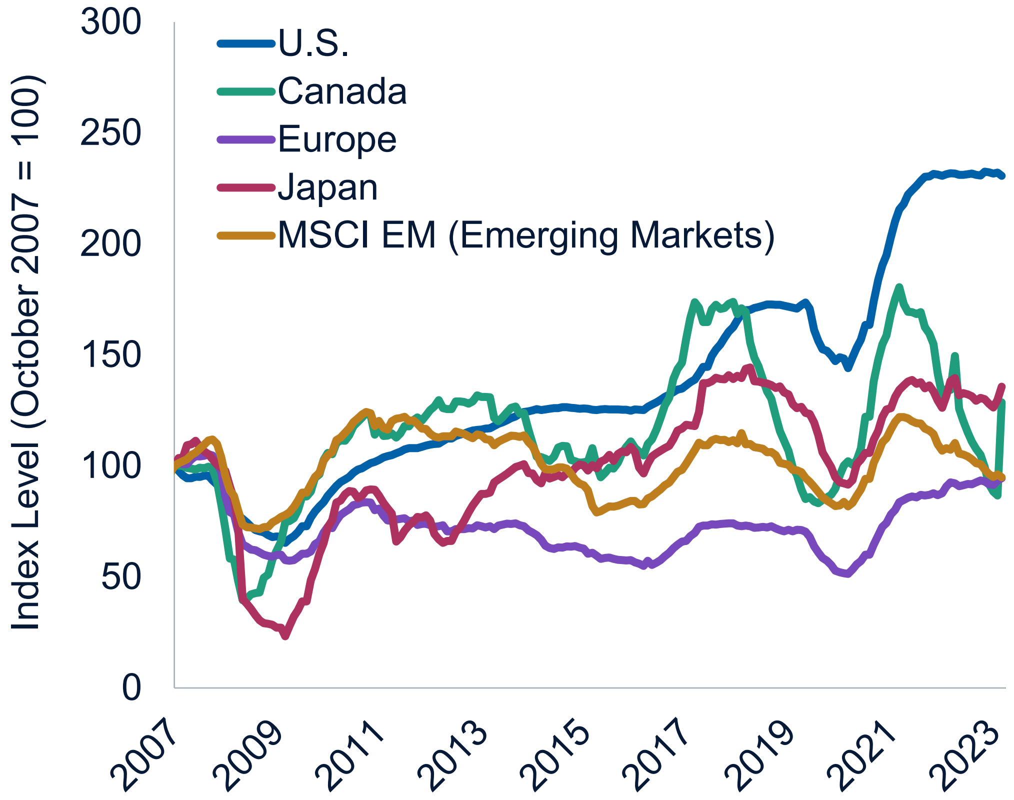
Past performance is not a reliable indicator of future performance.
Source: T. Rowe Price analysis using data from FactSet Research Systems Inc. All rights reserved.
Please see Additional Disclosures page for information about this S&P information.
[1] Based on each MSCI regional index. Vertical lines represent 10-year high/low range.

Earnings growth estimates are re-accelerating

As of 31 December 2023

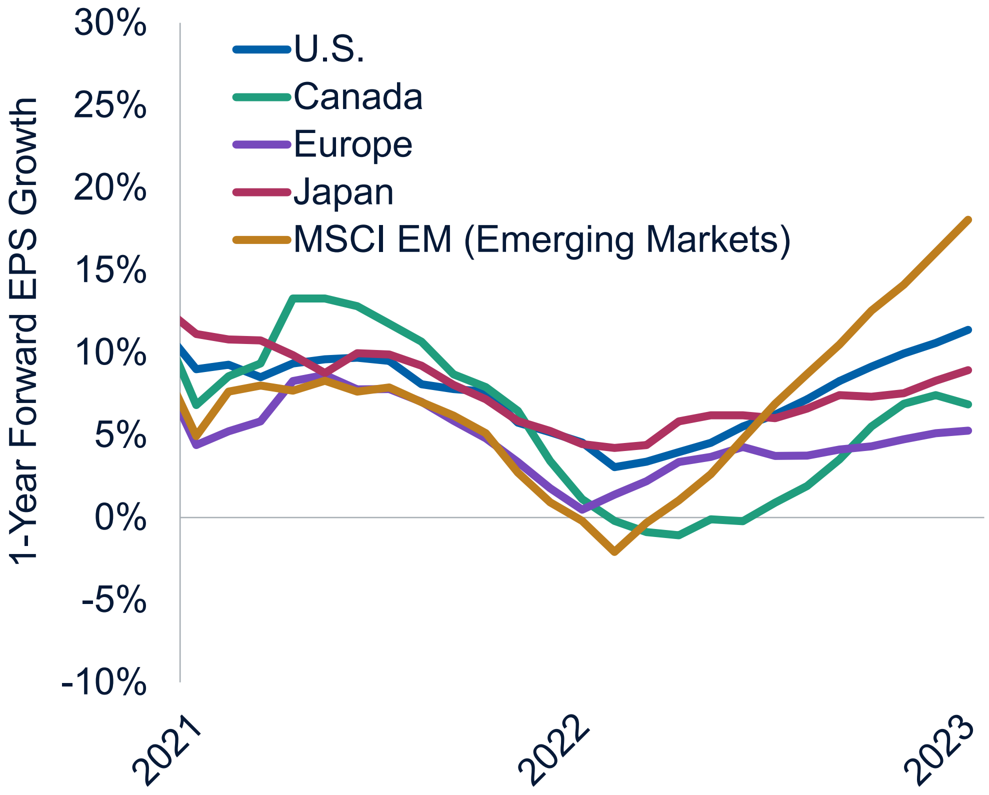
Historical earnings growth

31 October 2007 to 31 December 2023



Earnings growth estimates

1-Year Forward EPS Growth



Past performance is not a reliable indicator of future performance.

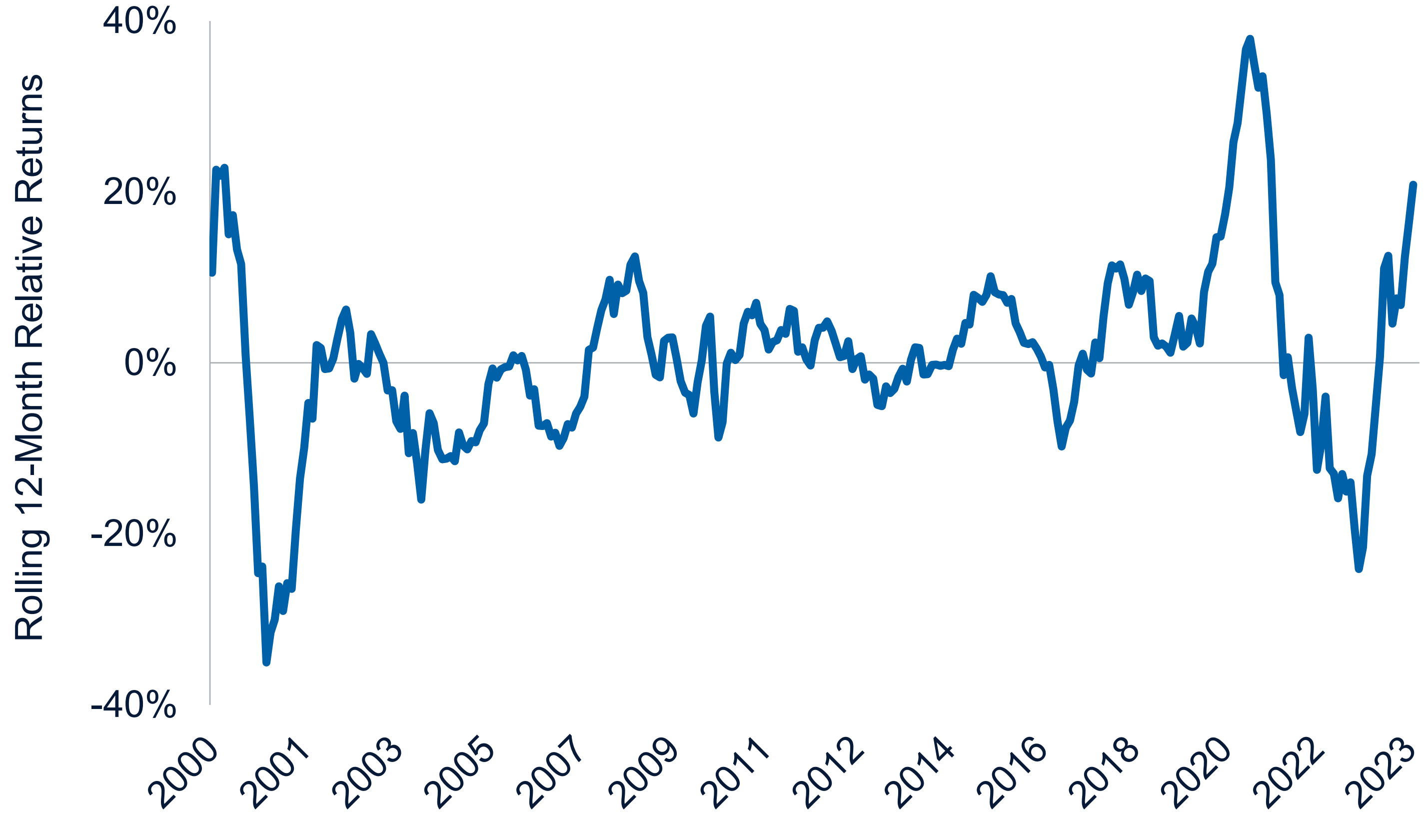
Sources: T. Rowe Price calculations using data from FactSet Research Systems Inc. All rights reserved. Standard & Poor's, MSCI. See Additional Disclosures at the end of the presentation for more information.

Indices: US: S&P 500, Canada: MSCI Canada, Europe: MSCI Europe, Japan: MSCI Japan, Emerging Markets: MSCI Emerging Markets.

Normalizing extreme style divergence?

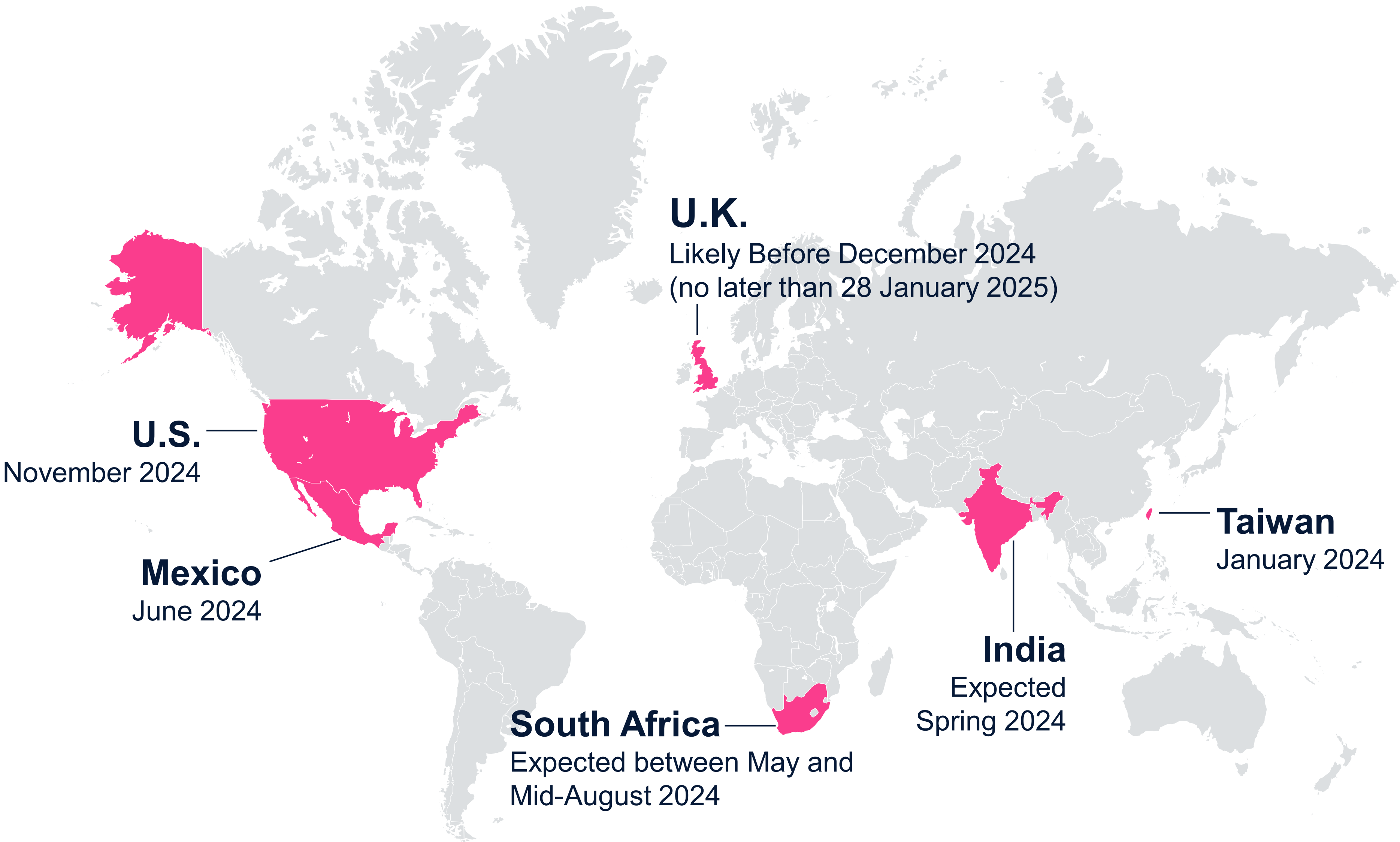
As of 31 December 2023

Growth vs. Value[1]



Past performance is not a reliable indicator of future performance.
Source: T. Rowe Price analysis using data from FactSet Research Systems Inc. All rights reserved.
[1] References MSCI All Country Word Index data in USD.
Please see Additional Disclosure page for information about this MSCI information.

Election cycle—key elections to watch in 2024



Balancing the Bulls and Bears

As of 31 December 2023

The Bulls

- Equity valuations reasonable
- Implied Fed Put in the U.S. economy
- Corporate and consumer debt levels are low
- Inflation falling
- AI productivity boom
- Election cycle

The Bears

- Geopolitical uncertainty
- Elevated inflation relative to history
- Low growth environment
- Peaking returns momentum
- Complacency (VIX)

APPENDIX

Biography

Jennifer O'Hara Martin is a global equity portfolio specialist in the U.S. Equity Division. She is a member of the Global Growth Equity, Global Focused Growth Equity, Global Technology Equity, Communications & Technology Equity, and Science & Technology Equity Strategy teams. Jennifer is a vice president of T. Rowe Price Group, Inc.

Jennifer's investment experience began in 1996, and she has been with T. Rowe Price since 2005, beginning in the U.S. Equity Division, when she joined the firm as an equity research analyst covering food retailing and discount stores, in addition to being a member of the portfolio oversight team for the US Structured Research Equity Strategy. Prior to this, Jennifer was employed by Northern Trust, following telecommunications and business services companies. Jennifer also was employed by Merrill Lynch as an investment banking analyst.

Jennifer earned a B.S. in agricultural economics from the University of Illinois, Urbana-Champaign and an M.B.A. from Northwestern University, Kellogg School of Management. She presently serves on the Board of Trustees of the Baltimore Museum of Art and is a committee member for the Northwestern University, Kellogg School of Management, Asset Management Practicum.

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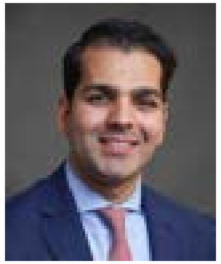

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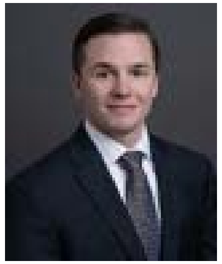
E-mail: taham.mahimwalla@troweprice.com

- Coordinates overall relationship management activities
- Primary point of contact providing access to broad firm resources
- Ultimate accountability for client satisfaction



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- Supports client-specific requests and day-to-day servicing

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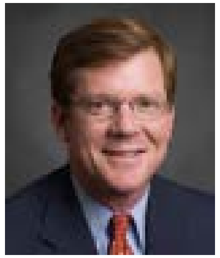
- Key contact during initial onboarding and for future cash flows
- Operational liaison with legal, investments, and custodian
- Coordinates review of legal agreements and contracts



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- Partners with client service team to share intellectual capital, industry insights, etc.
- Leads investment solutions dialogue in areas beyond current mandate(s)

Additional Disclosure

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Thank You

Exhibit 5

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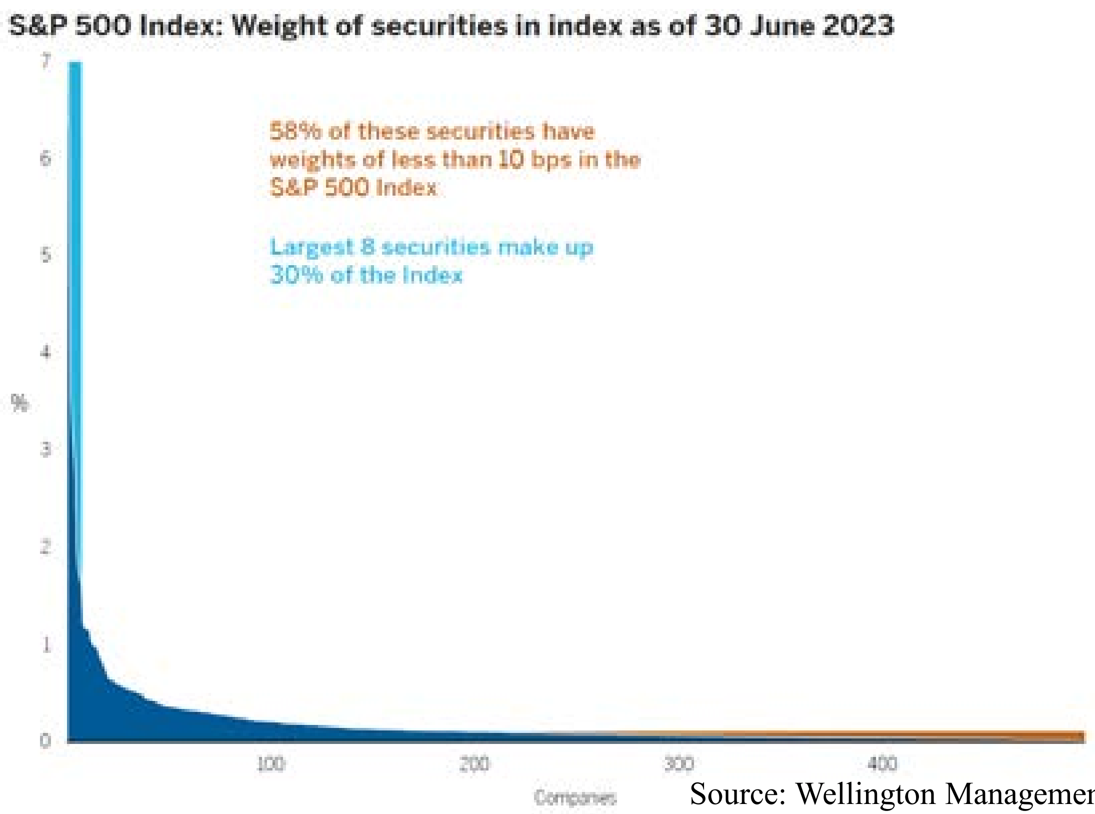
Increasing Capital Efficiency
Equity Short Extension Strategies

Michael Schlachter, CFA
Chief Investment Officer

Exhibit 5

Active Management Problem #1

- Indexes are dominated by a handful of securities



Source: Wellington Management, as of June 30, 2023

- Meaningful underweights are impossible for most securities

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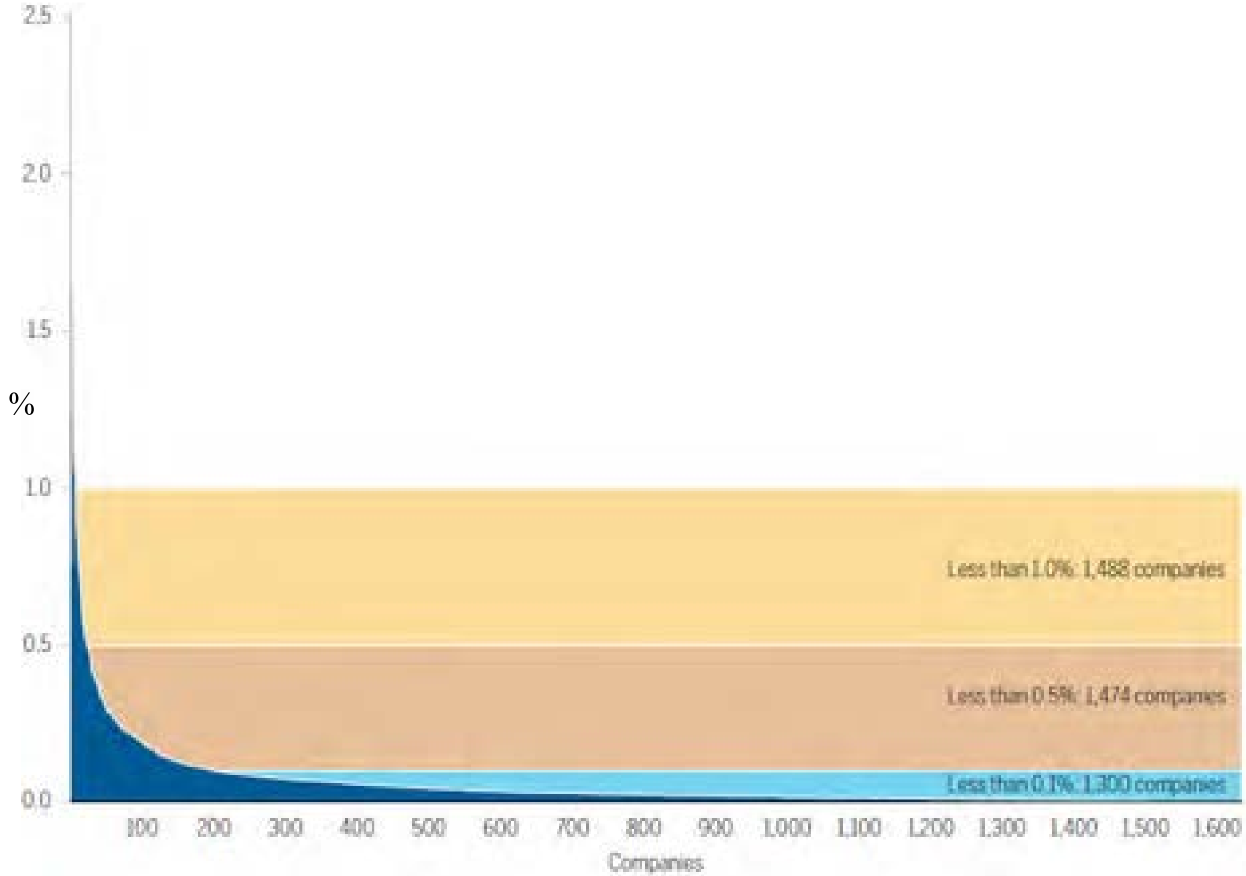
Not Just a US Problem

MSCI World Index



1,495 securities in the index
Source: Wellington Management, as of September 30, 2023

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Active Management Problem #2

- Systematic and quantitative investment managers (and some fundamental managers) rank all securities in the benchmark / universe
- Long-only portfolios permit investment managers to purchase the securities that they like, utilizing positive information
- A long-only portfolio has no way to utilize negative information, other than avoid a security
  - Which may not be a meaningful position versus the index

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Solution?

- "Short Extension" strategies use a limited amount of portfolio leverage to more efficiently invest capital
- Selling short undesirable securities allows managers to make use of negative information
- Additional capital is used to increase positions in desired securities
- Net market exposure remains 100%
- Beta (stock market exposure) remains around 1.0
- Strategies typically have higher active share since stocks with a large index weight consume less of the gross portfolio exposure
- Leverage levels can vary among products from 120/20 to 180/80

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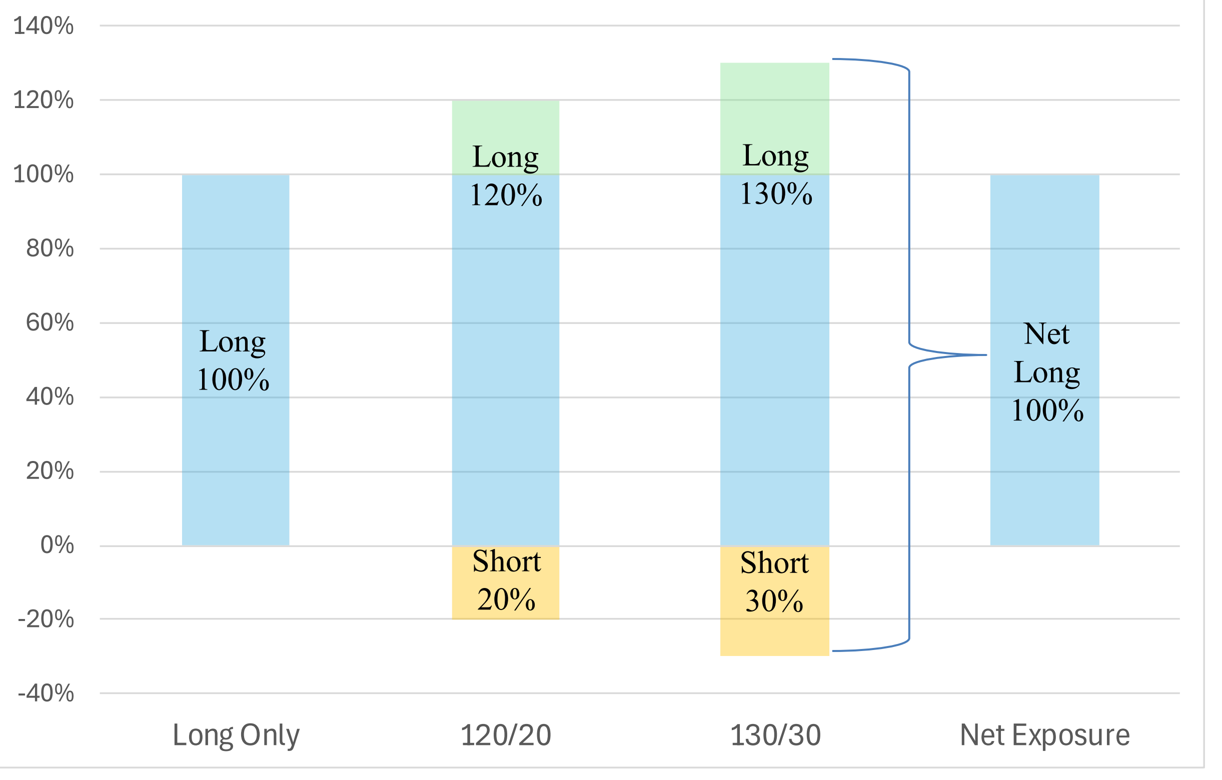
Short Extension Construction



1 – Investment manager buys desired stocks

2 – Shorts stocks with a negative view

3 – Buys additional exposure to desired stocks

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Risks of Short Extension

- All the normal underperformance and market risks of an equity strategy

PLUS

- A 130/30 strategy has 160% gross market exposure
  - Wrong calls on stocks are magnified
- Shorting has a different loss profile than buying stocks
- Shorting requires expertise

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Short Extension is NOT a Hedge Fund

- Although leverage is used, the net exposure in the portfolio is 100% equities
- Managers seek to outperform a standard stock market index
- Performance fees, if any, will be calculated relative to a stock market index
- The portfolio holds only liquid equity positions
- The portfolio will have daily liquidity
- Holdings will be fully transparent to us
- The portfolio will be grouped in our accounting and performance systems among the equity managers

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Investment Beliefs

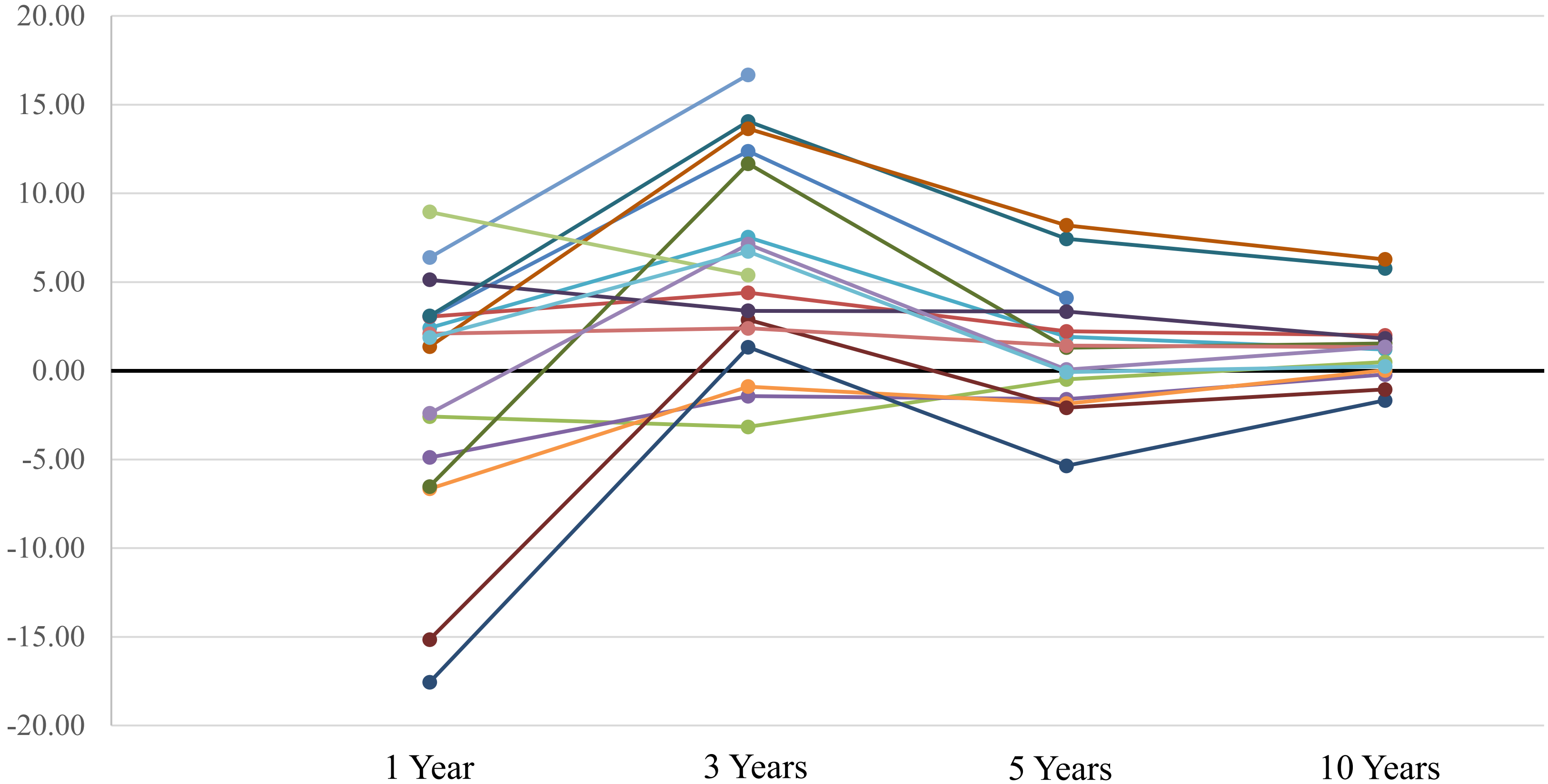
First adopted in September 2018; Reviewed/updated January 2020

The investment beliefs of the Board are based on capital market theories that are generally accepted and followed by institutional investors. These beliefs hold that:

- An appropriately diversified strategic allocation policy is the primary policy tool for maximizing the investment program's long-term return in light of its risk profile.
- In order to achieve objectives, SURS must incur equity-like investment risk.
- Diversification within strategic classes helps to mitigate risks.
- Rebalancing and pacing are key risk management tools.
- Utilization of passive approaches in highly-efficient markets should take priority.
- Active management can prove beneficial in certain market segments.
- Investment costs matter.
- Private markets should produce higher returns than public markets.
- SURS is committed to enhancing diversity throughout the portfolio.
- Addressing material environmental, social and governance-related (ESG) issues can lead to positive portfolio and governance outcomes.

Products in eVestment – US

Performance Relative to Russell 3000



eVestment Database, as of December 31, 2023. All US extended equity products.

Returns are both gross and net, depending on product type.

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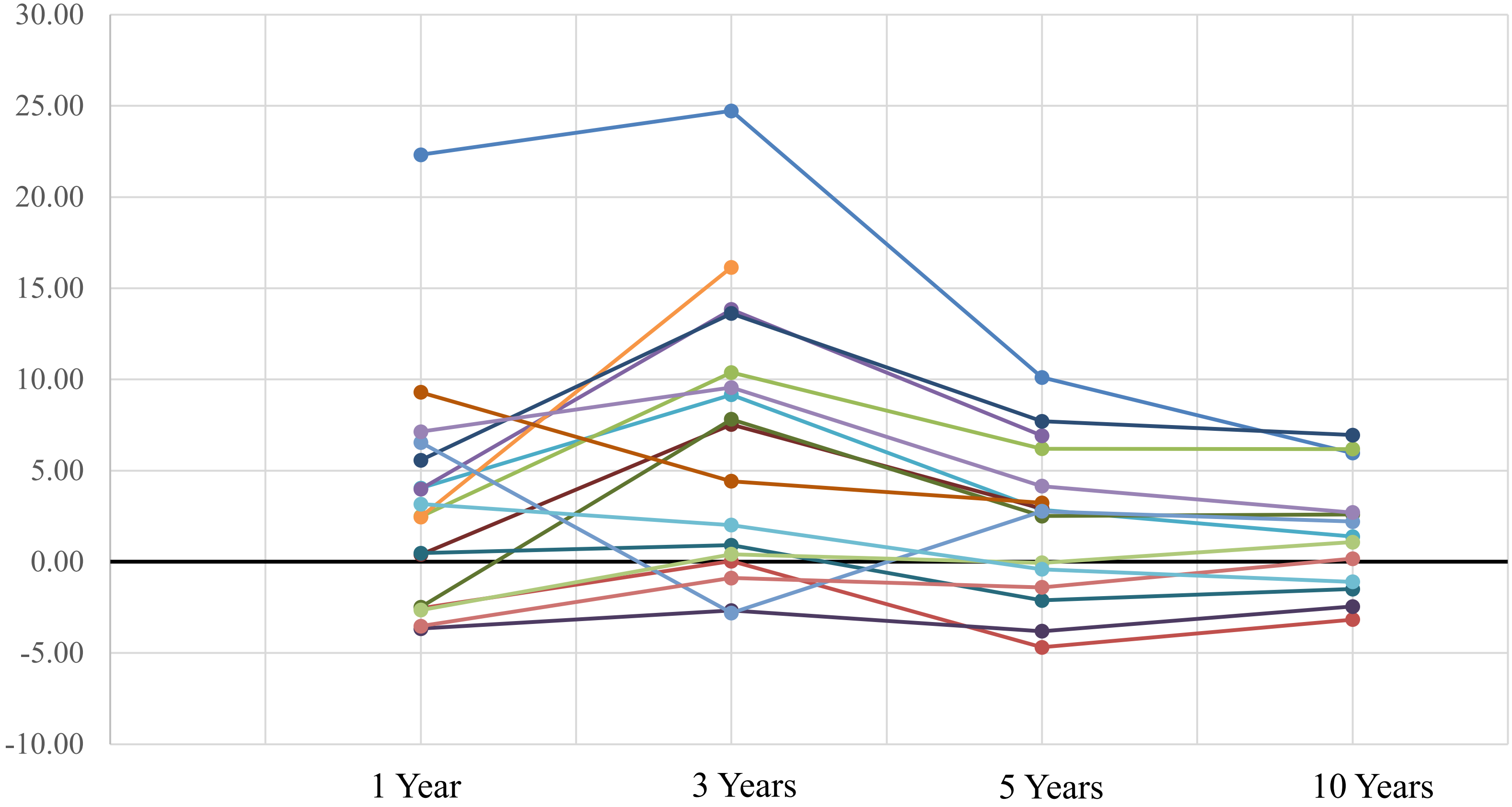
Exhibit 5

Products in eVestment – Global

Performance Relative to MSCI ACWI



eVestment Database, as of December 31, 2023. All Global, EAFE, and non-US extended equity products.

Returns are both gross and net, depending on product type.

RFP – Next Steps

- Investment Staff intends to issue an RFP, in the absence of Trustee objections, for an extended equity manager
- The RFP will be non-specific regarding equity market, to allow for a broad response
- Portfolio size and funding source will be determined, depending on market selected, liquidity, fit within overall portfolio, and other considerations

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MEKETA
INVESTMENT GROUP

130/30 Long-Short Equity Strategies

WHITEPAPER
SEPTEMBER 2019

CONTRIBUTORS
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This paper aims to familiarize institutional investors with 130/30 (long-short "extension") equity strategies. It addresses how these strategies were developed, why these strategies (and their variants) may be of interest to institutional investors, and how to deploy them within their portfolios. The paper also reviews the risk and return characteristics of 130/30 strategies, compares them to long-only strategies, addresses several implementation issues, and provides a snapshot of the current 130/30 marketplace. Finally, the paper provides clear quantitative and qualitative examples so that institutional investors may better understand the underlying mechanics of these strategies.

Background

Shortly before the Great Financial Crisis of 2007–09, the financial press was paying increased attention to the then up-and-coming 130/30 investment strategy, creating much buzz in the investment community. Justification for the development of these strategies was grounded in financial literature and theory. Of course, the practical aspects are even more important and involve issues such as fee structures, liquidity, contribution to risk, and expected returns. Now that this strategy has built a decade-plus track record and gone through a full market cycle, it deserves a deeper evaluation to determine its suitability for an institutional investor's portfolio.

The 130/30 approach is based on the assumption that a typical active equity portfolio manager is hampered by her ability to hold only long positions (i.e., she cannot sell stocks short). Active portfolio construction typically centers on screening a particular universe of stocks (e.g., domestic large cap) and picking the best securities for the portfolio. Whatever her analytical approach, the portfolio manager will seek to select stocks that she believes will outperform the market over the expected holding period. It is natural to assume that during this analytical screening process, the portfolio manager may also come across stocks that she expects to *under*perform the market. That is, the portfolio manager not only has ideas about which stocks may be winners, but by logical extension, the same analytical process is likely telling her which stocks are likely may be losers as well. If this portfolio manager could short the stocks she were pessimistic about, she might be able to add value to the portfolio. A 130/30 strategy is designed to allow the portfolio manager to do just that, without modifying the portfolio's net exposure to the equity market.

Suppose that a long-only portfolio manager is benchmarked to the market capitalization weighted Russell 1000 index of U.S. large-cap equities. The largest 200 stocks in this index comprise over 75% of the index's total capitalization. The other 800 stocks each account for a fraction of a percent of the remainder. If the investment manager has a positive opinion on the 201st stock, she can buy a large quantity of it and take advantage of her conviction, as the managed portfolio weight in this stock will dwarf the index weight. However, if the portfolio manager has a negative opinion on the 201st stock, the most she can do is to weight the stock at zero inside the portfolio. She cannot stretch the boundary of potential performance because of the shorting constraint that she faces. The stock is too small for the portfolio to benefit significantly from her conviction that the stock is about to underperform. However, if we remove the short constraint "handcuffs" and allow the portfolio manager to short this stock, then she can effectively achieve a *negative weighting* that captures her investment beliefs better than merely reducing that stock's weighting in the portfolio to zero. Thus, in theory, the long short manager can put her opinions of individual securities (both bullish and bearish) to work in generating excess returns for the portfolio more effectively than can a long-only manager.

Selling short

Short selling is the process of selling shares of a security without owning them, planning to buy them back at a future date in the expectation that their price will have fallen. It is "buy low, sell high," but with the order reversed. The concept of short selling may be particularly appealing to a 130/30 manager, who has an opinion not only on which stocks will go up in price, but also which ones will decline.

To engage in short selling, an investor must establish an account with a prime broker, who arranges to borrow the security to be shorted. For illiquid securities, short selling poses a particular problem, as it may be difficult to borrow the needed quantity. Moreover, if the lender recalls the security, the broker may not be able to find a replacement, thus forcing the investor to cover their short position at what may be an inopportune time.

The cost of borrowing stock can vary greatly based on supply and demand. The cost of borrowing for less widely-traded, illiquid securities may be hundreds of basis points higher than the cost for widely-traded stock. The short seller incurs this cost as a "haircut" on the "short rebate," a payment received from the interest earned on the short sale proceeds. The prime broker typically takes custody of the long positions as collateral for the short positions.

On its own, short selling can be very risky. When an investor takes a long position in a security, the amount they can lose is limited to the amount they invested in the security, as the price of the security cannot fall below zero. However, when short selling, the amount an investor can lose is unlimited, as the underlying security may increase in value infinitely. Further, the long-term trend for equities has been to increase in value.

Just as on the long side, a portfolio of short positions decreases in risk with increased diversification. Further, a portfolio of short positions becomes less risky when combined with a portfolio of long positions, as this reduces some of the market risk.

130/30 long-short construction

The numbers "130" and "30" indicate that a manager has a 130% weighting in long positions and a 30% weighting in short positions within the same portfolio. The result is a 100% net long portfolio. To illustrate the mechanics, suppose that a manager purchases for the portfolio $100,000 worth of stock that he expects to outperform relative to the market. He then shorts $30,000 worth of stock that he expects to underperform, and subsequently uses the proceeds to buy $30,000 more of the expected outperformer stocks. The result is a gross exposure of $160,000 ($130,000 long plus $30,000 short) to the market with a net of $100,000 actually invested.

These 130/30 portfolios are targeted to have a beta of 1.0, and are therefore also known as "beta one" strategies. The beta-one 130/30 portfolio is structured such that the net beta is targeted to be the same beta value as the index to which the strategy is benchmarked. With the same systematic risk as the market, the goal is then to produce a return greater than the market (i.e., positive alpha) without taking on added market risk. Contrast this with a passive index fund, which, by definition, has a beta of 1.0 but an expected alpha of zero.

History

The global bear markets during the 2000-2002 period caused much concern for institutional investors, as decreasing asset values threatened the robustness of pensions and other institutional accounts that had been financially buttressed during the great bull market run of the 1980s and 1990s. As is often the case following bear markets, financial innovation came to the fore and investors flocked to alternative sources of returns. Thus, in the mid 2000s, there was tremendous growth in the "alternative" investment space, including private equity investments, hedge fund strategies, portable alpha, and myriad other strategies. As base interest rates and risk premia declined, there was a growing consensus that investors were entering a period of low expected returns. It is in the crucible of this environment that the interest in alternative investment strategies, including 130/30, came to the forefront.

The concept of the 130/30 portfolio and its "extension strategy" variants (e.g., the 120/20 and 140/40 portfolios) is not new. Academic research has touted the benefits of pairing longs and shorts in a single portfolio ever since the advent of Modern Portfolio Theory. Markowitz's original work, expanded upon by Sharpe, Lintner, Mossin, and others, resulted in the Capital Asset Pricing Model (CAPM). "Efficiency" in this framework calls for the unlimited ability to sell short and employ full use of the proceeds. Jacobs and Levy, as well as Brush and others, began writing articles on long-short investing in the 1990s, largely to explain the risk and return properties of market-neutral portfolios that were being managed since the 1980s. However, it was not until the work of Clarke, de Silva, Thorley, and Sapra was published and widely understood that 130/30 strategies began to gain serious traction as a separate entity from other long-short combinations such as a market-neutral hedge fund. The foundation was laid that justified this particular combination of longs and shorts as being the optimal (in a theoretical and mathematical sense) structure for expressing manager skill.

After the Global Financial Crisis, this strategy seemed largely abandoned by investors before once again gaining traction beginning in 2011.

The 130/30 strategy gained an influx of popularity in the mid 2000s and by 2008 there were sixty-eight 130/30 products in the eVestment Alliance database,[1] with assets under management in excess of $25 billion. In addition, there were a handful of other extension strategies (e.g., 120/20, 150/50). Importantly, many of these 130/30 products were brand new and had track records of less than one year, which made evaluation of these products difficult. Even so, the level of attention placed on these strategies caused them to be popular investment options. The previous bull market had resulted in an increased risk tolerance for many investors. However, just as many of these products were incepting, the Global Financial Crisis occurred, causing great losses across risk assets. While a typical equity fund may have a 96% long exposure with 4% cash, which provides a slight cushion in downward markets, 130/30 funds aim to be 100% long and do not have that protection from cash. Many portfolios lost significant value and experienced below average returns, causing products to close in their first few years.

[1] eVestment Alliance was used throughout this paper for manager database comparisons.

After the Global Financial Crisis, this strategy seemed largely abandoned by investors before once again gaining traction beginning in 2011. New products have emerged, in addition to those that survived the Financial Crisis. Many private funds, which have fewer regulations than public ones, have also adopted the strategy. Our research indicated that, in a more stable environment, there has been some evidence of success with this strategy. Even so, with low numbers of products available for review, this strategy should certainly be looked at on a manager-by-manager basis.

Why a 130/30 structure?

Clarke, de Silva, and Thorley (2002) outline how two major factors, signal quality and the transfer coefficient (TC), contribute to excess returns. Signal quality describes how well the manager can forecast the returns of securities in the portfolio, and is therefore a measure of manager skill. The TC is a measure of how effectively a manager can translate that skill into actual security weights to capitalize on his forecasting ability. An investment manager with a high signal quality (information ratio) but a low TC because of portfolio constraints is like an architect who has drafted the blueprints for his masterpiece but lacks funding to actually buy the materials and see construction through completely. As should be expected, the removal of the long-only constraint can theoretically enable the manager to transfer his knowledge into a more efficient portfolio construction and increase his TC. If TC is increased, then the information ratio is increased – translation: higher active returns per unit of active risk.

There have been numerous academic and practitioner studies showing the benefits of loosening the shorting constraint of a manager on the resultant TC of the portfolio. Clarke, de Silva, and Sapra (2004) show that the marginal increase in the TC begins to diminish as the 125/25 to 150/50 range is reached. Alford (2006) shows that the increase in expected alpha at a given tracking error begins to diminish with increases in the amount of shorting in the portfolio past a 130/30 structure. The dominant consensus is that while increasing the amount of shorting beyond 130/30 could potentially add value, most of the benefits of shorting are captured in the 130/30 configuration and any additional shorting would entail marginal risks and costs that exceed the marginal benefits of the additional constraint loosening.

In reality, 130/30 managers may stray from a pure 130/30 long-short allocation as the landscape of opportunity changes. Many managers begin with a 130/30 allocation as a starting point and then deviate as seems fit based on a variety of factors. A 130/30 manager may drift between structures if they perceive the potential to add value. An institutional investor should check the details of the product's investment policy to see how much leeway the manager has in changing the tactical long-short allocation.

Analytical process

Quantitative techniques naturally lend themselves to a more comprehensive coverage of the investable universe for a 130/30 strategy because automatic rules can be set up. Thus, the majority of 130/30 managers to-date utilize quantitative analysis as opposed to fundamental analysis. Ranking systems vary among managers, but range from the simple (earnings or cash flow multiples) to the complex (multifactor regression models to determine stock price sensitivity). The main idea behind all of the quantitative variants is straightforward. Once the model or the screening criteria are established, the decision threshold automatically ranks and designates securities for purchase and sale without the perceived handicap of emotion or judgment. This enables the quantitative manager to scour through a much larger investable universe than a fundamental manager reasonably could.

However, there are a few 130/30 managers that claim to primarily use fundamental techniques.[2] One potential drawback with this approach is that fundamental analysis is generally more time consuming than a quantitative approach. If comprehensive analysis of each of the stocks within the Russell 1000 is going to take place on a security-by-security basis, then it could be resource exhausting (or impossible) to thoroughly analyze each name in the investable universe. This is not normally a problem for a long-only fundamental portfolio where the fundamental analysis can be conducted and updated as needed. However, in a portfolio where there is short selling involved, this can be problematic because the shorted names will typically have a higher turnover than the long side of the strategy. Constant fundamental updating in the short book in such a way is so daunting that most fundamental 130/30 competitors tend to be the larger investment managers that have access to enormous analytical manpower and institutional-quality resources. Alternatively, rather than selecting individual stocks to short, the manager may short a "basket" of stocks (e.g., via an ETF) based on the broad market or sector of the market. Notwithstanding the challenges faced by fundamental managers, our research indicates that the amount of assets under management in fundamental and quantitative approaches is likely to be more balanced in the future, as more fundamental managers embrace 130/30 strategies.

[2] As of March 2019, approximately 85% of the portfolios examined used a quantitative technique.

Characteristics

Risk and return

One goal of a "beta-one" strategy is to achieve a return higher than the benchmark while taking the same market risk as the benchmark. By definition, the risk as measured by beta for any equity index is 1.0 (hence the "beta-one" name). Therefore, unlike an active long only strategy, which may seek beta exposures that differ from the market to achieve excess returns, the 130/30 manager uses the blended long-short strategy to target the same risk as the market. As a result of the limited supply of small-cap and lower mid-cap securities available (due to the higher costs to borrow and short), larger-cap indices such as the S&P 500 and the Russell 1000 are favorable to use as benchmarks.

Many of the 130/30 portfolios that existed in the 2000s have since closed, bringing the number of portfolios examined for this study from 68 in 2008 down to 47 in 2019. Calculating returns net of fees further decreased the sample to 23. Although the sample was significantly reduced, we believed it was important to report net of fees data to better compare returns as 130/30 funds have higher fees then long-only ones. The following table summarizes the performance, net of fees, across this small sample.

TABLE 1

Sample of Observed 130/30 and Long Only Account Returns, Net of Fees (as of March 31, 2019)

Reporting *at Least* a:	Number of Products	Median 130/30 Trailing Return Over Period (%)	Number of Products	Median Large-Cap Long Only Trailing Return Over Period (%)	Benchmark Trailing Return Over Period (S&P 500, %)	Benchmark Trailing Return Over Period (Russell 1000, %)
Q1 2019 Return	23	11.7	1,664	12.3	13.7	14.0
1 Year Return	20	2.9	1,617	5.1	9.5	9.3
3 Year Return	20	10.7	1,508	10.9	13.5	13.5
5 Year Return	19	8.5	1,359	8.2	10.9	10.6
10 Year Return	14	15.0	988	14.2	15.9	16.1

Across the 5-year and 10-year returns shown in the preceding table, the median 130/30 outperformed the long-only returns. However, the portfolios have slightly underperformed in the last three years. This could be due to a number of reasons, including small sample size. If a single fund performed poorly, it has a larger effect on the median returns for 130/30 funds then it would for the larger universe of long-only funds. Also important to note, the 10 year returns are for the portfolios that have survived the Global Financial Crisis and are therefore among the most successful managers. Many managers who experienced severe underperformance subsequently closed their funds and those returns have been excluded from the data. Thus, the results are skewed higher than one would expect for a broad population by this survivor bias.

While previously it was difficult to get a full picture of empirically observed returns without sufficiently long track records to calculate standard risk metrics, these metrics are now available. The table below compares the average standard deviation and beta of a 130/30 portfolio in comparison to that of a large cap long-only portfolio.

TABLE 2
Observed 130/30 and Long-Only Risk Metrics (Monthly Data as of March 31, 2018)

	130/30 Strategies			Long-Only Large Cap Strategies		
Reporting *at Least* a:	Number of Products	130/30 Strategies Average Standard Deviation	Average Beta	Number of Products	Average Standard Deviation	Average Beta
1 Year Return	45	17.6	1.03	2,368	15.7	0.89
3 Year Return	45	12.4	1.03	2,368	11.4	0.90
5 Year Return	45	12.4	1.00	2,157	11.9	0.93
10 Year Return	33	13.9	1.01	1,600	13.0	1.00

As shown, a 130/30 portfolio has been more volatile than a long-only portfolio. The risk, however, seems to have been higher in the short-term rather than in the long term. While the average standard deviation is slightly higher for 130/30 portfolios, the beta is actually closer to 1.00.

There is, however, inherently more risk with 130/30 portfolios. Targeting a beta of 1.0 ex ante, for the portfolio does not mean that the beta will actually be 1.0 ex post for all portfolios. Further, a manager could be wrong on both their long and short positions, thus losing money on both sides. The strategy is also theoretically open to unlimited losses as a result of the short position exposures. In a long-only portfolio, for instance, the worst that can happen is that the investment manager makes the worst concentrated bets imaginable and all of the positions in the portfolio drop to zero, for an effective return of –100%. However, in a long short portfolio like a 130/30, the manager could make the worst concentrated bets imaginable and not only see the long positions drop to zero, but see the liability to replace the shorts begin to burgeon such that the effective return is less than –100% with no sellable long positions to cover the shorts. While in practice this scenario is extremely unlikely, it is possible in theory for the manager to lose more than the initial investment, although this could not be passed through to the investor.

As a practical matter, there is a high enough correlation between stocks as well as a dearth of managers in a 130/30 that would actually make such concentrated bets that the probability of the aforementioned scenario occurring would be vanishingly small. We illustrate the differences in position returns in the following table. This table shows the hypothetical return outcomes for a 130/30 strategy, ignoring associated costs for simplicity, if the short positions increase or decrease in value by the percentage shown on the y-axis and if the long positions increase or decrease in value by the percentage shown on the x-axis. The intersecting total portfolio percentage return is the outcome given the 130/30 long-short proportions of the strategy and assuming *full investment* of the short proceeds.

TABLE 3

Hypothetical 130/30 Returns Matrix

%Δ in Aggregate Short Positions							
30%	-48%	-35%	-22%	-9%	4%	17%	30%
20%	-45%	-32%	-19%	-6%	7%	20%	33%
10%	-42%	-29%	-16%	-3%	10%	23%	36%
0%	-39%	-26%	-13%	0%	13%	26%	39%
-10%	-36%	-23%	-10%	3%	16%	29%	41%
-20%	-33%	-20%	-7%	6%	19%	32%	45%
-30%	-30%	-17%	-4%	9%	22%	35%	48%
	-30%	**-20%**	**-10%**	**0%**	**10%**	**20%**	**30%**

%Δ in Aggregate Long Positions

Though the shown ranges in Table 2 are limited (± 30% movement on the long and short picks), showing a greater range is actually not needed. Observing the data, a clear pattern of short leverage on portfolio returns is discovered: For every 10% countermovement in the returns on the aggregate short picks *relative* to the returns on the aggregate long picks, the total long-short portfolio's performance is impaired or enhanced by an incremental 3% versus the long-only portfolio. For instance, suppose the long positions in the portfolio increased in value by 10% and the short positions of the portfolio also rose by 10% (note that this last part is not beneficial to the total portfolio because the manager wants the short picks to decrease). In Table 2, we see that the total portfolio return would then be 10%. That is, the strategy has not done any better than a long-only strategy which also returned 10%. Now suppose that the stocks representing the short component remain static in price (0% return) while the long component still delivers 10%. Now the total portfolio is shown to have a return of 13%, or 3% better than the long-only portfolio. The reason that this is possible even though the shorts did not decrease in value is that the 130/30 manager was able to purchase more than the net investment worth of long positions as a result of using the proceeds from the shorted stock. This pattern continues. If the portfolio longs deliver 10% and the shorted stocks decrease 10% (a 20% countermovement), then the total portfolio will return 16% (or 6% better than the long only portfolio). This ratio of every 10% countermovement producing a 3% marginal increase/decrease in performance makes sense because by definition, the portfolio is leveraged 30% with shorted funds. Of course, the leverage works in the opposite direction as well. If the shorts increase by 10% relative to the longs, then the portfolio will do 3% worse than the long-only portfolio.

Role of strategy

How to classify the strategy within an investor's portfolio is not a simple determination. Alford (2006) believes that the strategy can be included in a portfolio's conventional equity allocation. After all, most of the strategy's expected return (and risk) will derive from the public equity market. However, some institutional investors might be uncomfortable considering a 130/30 addition as an equity variant. First, consider that the 130/30 strategy may have correlation and risk properties different from a traditional long-only equity portfolio. Second, the manager of a 130/30 strategy has greater leeway in making opportunistic bets than does the manager of a long-only equity strategy.

At the very least, the 130/30 concept can be considered a first step for an institutional investor that wants to evaluate the effects of shorting before investing in long-short hedge funds. In this sense, the 130/30 portfolio may be classified as a bridge to the "alternative" asset class category, which may or may not fit into the investor's existing equity allocation. In short, it makes sense for most institutional investors to classify this strategy as an equity product, though more conservative investors may choose to classify it as an alternative investment.

Implementation issues

130/30 products naturally have a plethora of implementation issues that managers must face. Note that all these implementation considerations, except of the benchmark issue, apply to all long-short equity and extension funds and are not unique to 130/30 portfolios.

Benchmarks

Finding the most appropriate benchmark for 130/30 strategies has been a debated topic. Benchmarks ought to be transparent, investable, and replicable. 130/30 investors have generally benchmarked their large capitalization or all capitalization 130/30 managers to traditional long-only indices such as the S&P 500 or the Russell 1000 indices. In 2007, Credit Suisse created a generic 130/30 Large Cap Index that provided a benchmark specifically for 130/30 portfolios. Other organizations such as Standard & Poor's have also developed proprietary 130/30 indices. Their methodologies and construction methods differ, and no one 130/30 index seems to have a clear edge over the others as of the writing of this document. Further, one can argue that their methodologies closely resemble actively managed strategies, or at least active bets versus the market. Consequently, the vast majority of investors continue to benchmark 130/30 products against the long-only indices, and there is no reason to anticipate a change in the near future.

Fees and other costs

By their nature, 130/30 strategies are active. Thus, higher fees are going to be associated with a 130/30 portfolio. Moreover, the fees are higher than are those for traditional active long only portfolios because of the increased costs of managing the short positions; consequently, fees may resemble the fee structures for hedge funds. A typical 130/30 manager may require 1% on the managed assets plus a 10-15% cut of any excess returns (above the benchmark).

Not only are the management fees above those of long-only portfolios, but the trading costs are higher as well. In particular, the gross exposure of 160% of assets (130% long plus 30% short) translates into higher transaction costs. As a practical matter, 130/30 strategies could easily have transaction costs 1.6 times higher than traditional long-only portfolios, on average. In addition, 130/30 strategies are more sensitive to the timing of bets, particularly on the short side, where the borrowed stocks may have to be replaced by a pre-specified time. Consequently, the holding period for securities in 130/30 portfolios may be shorter than in traditional long-only portfolios, leading to more frequent trading and hence greater transaction costs. Higher fees and transaction costs obviously present a much higher hurdle for the portfolio manager to overcome.

There is also the inherent cost of borrowing stock to short. On top of that cost, a prime broker may require collateral to be held from the proceeds of selling the security. The premise of a 130/30 strategy is that with the proceeds from the shorts, long positions are purchased to create increased leverage. When a prime broker requires collateral, this can make it difficult for a portfolio manager to implement a true 130/30 strategy.

Because of the prime broker's importance to the 130/30 strategy execution, it is imperative that an investment manager have an established relationship with one if the strategy is to be successful.

Many skeptics see the 130/30 strategy as a way for previously long-only portfolio managers to manage a product for which they can charge hedge fund-like fees while they receive on the job training in shorting stocks. Some portfolio managers of 130/30 strategies have been criticized for merely shorting index/industry ETFs, while actively managing only the long side of the strategy. Such a manager shows no skill in shorting, and as a result, many feel that such a manager adds minimal value over a long-only strategy and does not deserve the higher fees charged by this strategy.

Use of prime brokers

130/30 strategies involve an extra layer of complexity in that the investment manager needs to use a prime broker to carry out their short sale operations. Mostly all of the large investment banks provide prime brokerage services. For the short side of the book, prime brokers perform the critical function of securing the stocks for shorting. In addition, the prime broker deals with cash management, clearing, and custody.

The prime broker may also provide analysis of the short market, and inform the investment manager of supply and demand factors, as well as provide intelligence on opportunities that may arise for short trades. Without the prime broker providing all of these functions, the 130/30 strategy would not be possible.

Because of the prime broker's importance to the 130/30 strategy execution, it is imperative that an investment manager have an established relationship with one if the strategy is to be successful. In fact, it has become standard since the Global Financial Crisis for a manager to have multiple prime brokers in order to mitigate operational risk. Managers who have just entered the 130/30 arena may have extensive operational issues in establishing a relationship with a prime broker, including systems compatibility and unfamiliarity with the complex details of maintaining this relationship. This is particularly germane for institutional investors considering investing in a commingled 130/30 account, where an established prime broker relationship may mean a more efficient product. However, should an institutional investor be large and sophisticated enough to want a separately managed account, that investor will have their choice of which prime broker(s) to use. In many cases, though, the extra costs associated with forcing the investment manager to use a new prime broker instead of their established prime broker relationship may exceed any perceived benefits.

Stop-loss controls

As a result of the potential for a greater potential magnitude of loss on the short side of the portfolio, care must be taken to investigate what kind of stop-loss controls a 130/30 manager has in place to mitigate these risks. A stop-loss order is typically used to prevent a loss if the price of a stock goes down, but this order can also be used to purchase a stock at a given target price when the price of a shorted stock goes up. For instance, a manager could place a stop loss (buy) order on Stock XYZ at $50. If the current market price is $40, when the stock climbs upward and hits $50, this will trigger the stop-loss order and it will automatically become a market order to buy at $50. Why does the manager want to do this? If the manager is dealing with multiple short positions that are difficult to monitor simultaneously, then setting up the stop-loss orders is an insurance policy allowing the portfolio manager to "set it and forget it." For better or worse, it also takes the human (emotional) element out of the decision. Hence, if the shorted stock rises past a particular level, the manager can reacquire the stock at a known value that does not create unlimited downside exposure for the portfolio.

Short squeezes

Short positions are much more sensitive to short-term volatility than long positions. For each position, the short seller has a smaller window of time in which her stock's price can advantageously move, as compared to a long position. Additionally, the phenomenon known as a "short squeeze" can inject added risk into a long-short portfolio.

In a short squeeze, price increases in the shorted stock spur a systematic purchasing of the stock to cover the short positions before the losses get worse. This purchasing can occur manually but frequently occurs because stop-loss orders have automatically been placed on the shorted stock. In ordinary market conditions, this is sensible and will act to mitigate the losses of the short seller. However, if there is enough demand for the stock in a time when short interest is also very high, the stop-loss mechanism can lose its effectiveness. The situation snowballs as buy orders begin to inundate the market, further driving the stock price up and worsening the magnitude of losses for short sellers. A short squeeze is more likely to happen with a smaller capitalization stock. This is because a small capitalization stock is more likely to have a higher proportion of short interest compared to total shares outstanding than a larger capitalization stock. However, since most 130/30 strategies are using a large capitalization universe from which to select securities,[3] the possibility of a short squeeze is low, though not zero.

[3] 72% of funds analyzed were large capitalization.

Summary and recommendation

The 130/30 portfolio structure appears to have a mixture of support and resistance. While a highly skilled active manager can theoretically add greater value within a 130/30 framework than a long-only portfolio, investors have not replaced long-short or long-only portfolios *en masse*, perhaps because actual experience has not lived up to the expectations for the average 130/30 manager. However, this strategy can be seen as a different, and perhaps more efficient, way to obtain equity market exposure.

If an institutional investor is looking to obtain exposure to strategies of a non-traditional nature, then 130/30 strategies represent a logical step in the pursuit of returns above what a long-only portfolio can deliver. For institutional investors with existing hedge fund exposure (particularly long-short), there may be no discomfort with hiring a 130/30 manager in principle, but this type of investor may view the 130/30 as a watered-down version of an existing strategy.

The market for 130/30 funds has grown since falling during the financial crisis. As with any other strategy, both winners and losers have and will continue to emerge as manager skill in this space is tested by the market. The higher fees charged and costs incurred represent a significant hurdle that may be difficult for most managers to overcome. The small sample size of available data also makes it difficult to reach definitive conclusions. If an institutional investor does decide to proceed with the inclusion of a 130/30 strategy, they should look at the products on a manger-to-manager basis. As this strategy requires a high amount of skill and active management, proper manager selection is of utmost importance to add value using a 130/30 strategies.

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Extension equity strategies, long ignored, could find role in Magnificent 7 era

By DOUGLAS APPELL

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"Extension" strategies, which relax the shorting constraint on long-only equity managers, have languished for more than a decade following a brief moment in the sun in the run-up to the global financial crisis.

Now, some portfolio managers contend, those strategies may be due for a second look as active equity managers grapple with challenges resulting from sustained, breakneck growth by a handful of U.S. tech giants.

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The S&P 500 weighting of the so-called Magnificent Seven — Apple, Amazon, Alphabet, Meta, Microsoft, Nvidia and Tesla — more than doubled over the span of a decade to almost 30%, a level of concentration that has raised the bar for managers looking to beat the index by deviating from it.

Over the past decade, the S&P 500 has really been the S&P 493 and the S&P 7, and "you really wanted to be invested in the S&P 7," noted Ben Inker, co-head of asset allocation with Boston-based quant firm GMO.

Managers of high-active-share equity strategies — pursuing benchmark-beating returns by shifting exposures from index heavyweights to other companies they see as having stronger prospects — have more often than not trailed the S&P 500 in recent years as the Magnificent Seven set the pace for growth, leaving investment committees facing increasing pressure to justify the costs of active management, Inker said.

Data going back to 1957 shows that for more than half a century, a bet against the 10 largest S&P stocks at the end of a decade has been a safe one — with 9 of those 10 listed companies, which generally reached those heights by achieving considerable scale and lofty stock market valuations, underperforming over the subsequent 10 years, Inker said.

For the last decade, by contrast, "the 10 largest stocks did something really weird — they substantially outperformed the market … and that almost never happens," he said.

Analysts see good odds that those seven corporate trees won't grow to the sky, even if the strength of their businesses compares favorably with the tech boom of the late 1990s — a prior period of market concentration when some high-flyers were buoyed as much by hope as by revenues and profits.

"It's a tough act to keep going" as companies get bigger, even if those that are more service providers than manufacturers could have further room to run, said George Patterson, CIO of PGIM Quantitative Solutions.

Some market veterans already spy signs of a broadening market.

David Polak, a London-based equity investment director with Capital Group, said while those seven heavyweights have outstanding business prospects and Capital Group maintains high weightings in many of them, for the past two years — effectively a mini-cycle of sharp declines in 2022 followed by a strong rebound in 2023 — a broader number of S&P constituents managed to post relatively strong returns, led by Eli Lilly, on the back of demand for its blockbuster obesity drug.

Only Nvidia and Microsoft were in the top 20 for that period, a sign that the Magnificent Seven juggernaut could be "running out of steam," due more to high valuations than to any particular problem with those companies' businesses, he said.

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Timing uncertain

If the dominance of those growth stocks is widely expected to prove ephemeral, market veterans aren't rushing to call an inflexion point.

"My guess is the Magnificent Seven era will end," GMO's Inker said. "I couldn't tell you exactly when they'll go back to the normal historic pattern of underperformance but we've got to be closer to the end than we were."

"I don't think tech will outperform the rest of the market to the degree that we saw in 2023 but I also wouldn't bet against U.S. tech," said Saira Malik, San Francisco-based CIO with **Nuveen**. Continued strong demand from companies looking to integrate artificial intelligence into their business models should remain a tailwind for those big growth companies going forward, she said.

The timing is of more than academic interest for managers of U.S. equities. The Magnificent Seven's continued dominance would tend to favor passive management while a broadening of the market would be more conducive for active management.

All of which could make achieving a healthy degree of diversification a moving target.

Market players are doing what "they've always been taught to do," creating diversified, all-weather portfolios, but with the market being driven by a handful of names, they're underperforming, noted Brian Levitt, New York-based global market strategist with Invesco.

That said, November and December were "pretty great," with a decline in market rates on expectations of multiple Fed rate cuts in 2024 leading to much broader market participation, said Levitt. Then January and February saw rate cut expectations retreating somewhat, which left the market once again focusing on a handful of names, he said.

Meanwhile, against the backdrop of "very, very high growth expectations," if those tech heavyweights don't deliver, the risks of a sell-off could be amplified by the market's concentration, noted PGIM's Mr. Patterson.

Against that uncertain backdrop, Inker said, extension strategies can offer investors a means of maintaining their Magnificent Seven exposures — protecting themselves should those stocks continue to run — while simultaneously investing in other best ideas for their portfolios.

"If you want your active managers to really be active and you want them to start off with the benchmark, so their deviations from the benchmark are due to their active choices, an equity extension strategy is really the only way to have both of those things," Inker said.

Extension strategies can be seen as a more disciplined way to amplify exposure to a systematic manager's alpha model than, for example, a high-active-share portfolio of 20 or 30 stocks that effectively gives up on diversification and amplifies active risk, said Seth Weingram, senior vice president with Boston-based quant firm **Acadian Asset Management**.

The unique structure of the index today is forcing long-only managers to take on enormous stock-specific risks, risks that managers of extension funds have far more room to manage, agreed Susan Bao, a managing director with **J.P. Morgan Asset Management** and portfolio manager of the firm's $9.5 billion JPM U.S. Large Cap Core 130/30 strategy.

Bao said she's able to overweight Magnificent Seven stocks her team is particularly bullish on, such as Microsoft and Amazon, while also making big bets on companies such as Mastercard and UnitedHealth Group, with the help of funds obtained by shorting stocks the fund's analysts are especially bearish on. It takes a strategy with the flexibility 130/30 offers "to capture parts of both worlds" today, she said.

High active share should be a means of generating alpha rather than an end in itself, noted Bao. As of Dec. 31, Bao's strategy had both an active share of 73% and a low tracking error, resulting in a top decile information ratio — a measure of how much risk managers are taking per unit of return — among large-cap U.S. core strategies.

For 2023, the JPM U.S. Large Cap Core 130/30 garnered a 31% return, beating its S&P 500 benchmark by 4.74 percentage points. For the five years through the end of 2023, the strategy delivered an annualized return of 18.5%, topping the benchmark by 2.8 percentage points.

Still, analysts say it could take a considerable effort to revive interest in the long dormant equity extension corner of the market.

Extension strategies have "just fallen off the table," with perhaps half of market players haunted by vague memories of fallout suffered by 130/30 strategies from the collapse of highly levered hedge funds during the global financial crisis and the other half too young to remember them at all, noted Acadian's Weingram.

The prospect of adding shorting activities to the long-only segment of an institutional portfolio remains a stumbling block for many, noted PGIM's Patterson.

Inker said the first go-round of investor interest in extension strategies coincided with a period almost mirror opposite of today, with a considerably unconcentrated U.S. market where an equal-weighted S&P index outpaced the market-cap weighted S&P by 1,000 basis points a year for five years running, allowing GMO's extension strategies at the time to crush the benchmark.

And then the business ran into "the buzzsaw of the global financial crisis (and) shorting became really hard," with the result that the salad days quickly turned into "nobody wants to touch equity extension strategies again," Inker said.

GMO's Quality Spectrum extension strategy, a 175/75 fund focused on quality stocks globally, with $51 million in AUM, reported a 25.3% return for 2023, besting its MSCI

ACWI benchmark by 3.14 percentage points. For the three years through 2023, it returned an annualized 20.64%, beating its benchmark by 14.89 percentage points.

Those strategies "sort of went out of favor for a long time," with few assets raised over a 15-year period, said Nick Davies, a Washington-based partner and senior investment consultant with Mercer.

Still, Davies said, there have been fledgling signs of interest recently as equity markets leveled off and volatility increased.

JPMAM's Bao said she's seen signs of growing interest in extension strategies as well from public pension funds and retail investors alike.

At present, only a handful of companies – including **Arrowstreet Capital**, **J.P. Morgan Asset Management** and **Jacobs Levy Equity Management** – have sizable extension businesses.

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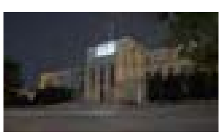

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Benchmark (index) performance does not reflect the deduction of transaction costs, management fees, or other costs which would reduce returns. References to market or composite indexes, benchmarks or other measures of relative performance are for comparison purposes only. An investor cannot invest directly in an index.

REF: TCA-01707

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Disclaimer (cont'd)

Sustainability-related aspects of the investment included herein, if applicable, should be read in conjunction with all of the characteristics or objectives as described in the offering memorandum.

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The outbreak of a novel and highly contagious form of coronavirus ("COVID-19"), which the World Health Organization has declared to constitute a pandemic, has resulted in numerous deaths, adversely impacted global commercial activity and contributed to significant volatility in certain equity and debt markets. The global impact of the outbreak is rapidly evolving, and many countries have reacted by instituting quarantines, prohibitions on travel and the closure of offices, businesses, schools, retail stores and other public venues. Businesses are also implementing similar precautionary measures. Such measures, as well as the general uncertainty surrounding the dangers and impact of COVID-19, are creating significant disruption in supply chains and economic activity and are having a particularly adverse impact on energy, transportation, hospitality, tourism, entertainment and other industries. The impact of COVID-19 has led to significant volatility and declines in the global financial markets and oil prices and it is uncertain how long this volatility will continue. As COVID-19 continues to spread, the potential impacts, including a global, regional or other economic recession, are increasingly uncertain and difficult to assess. Any public health emergency, including any outbreak of COVID-19 or other existing or new epidemic diseases, or the threat thereof, and the resulting financial and economic market uncertainty could have a significant adverse impact on the funds, the value of their investments and their portfolio companies. The information herein is as of the dates referenced and not all of the effects, directly or indirectly, resulting from COVID-19 and/or the current market environment may be reflected herein. The full impact of COVID-19 and its ultimate potential effects on portfolio company performance and valuations is particularly uncertain and difficult to predict.

Exhibit 8

Ares Management

» With approximately $419 billion in assets under management, Ares Management Corporation is a global alternative investment manager operating an integrated platform across five business groups

Profile

Founded	1997
AUM	$419bn
Employees	~2,850
Investment Professionals	~990
Global Offices	35+
Direct Institutional Relationships	~2,300
Listing: NYSE – Market Capitalization	$39.9bn[1]

Global Footprint[2]

The Ares Differentiators

Power of a broad and scaled platform enhancing investment capabilities

Deep management team with integrated and collaborative approach

20+ year track record of attractive risk adjusted returns through market cycles

A pioneer and leader in leveraged finance, private credit and secondaries

	Credit	Private Equity	Real Assets	Secondaries	Other Businesses
AUM	$284.8bn	$39.1bn	$65.4bn	$24.7bn	$4.8bn
Strategies	Direct Lending	Corporate Private Equity	Real Estate Equity	Private Equity Secondaries	Ares Insurance Solutions[4]
	Liquid Credit	Special Opportunities[3]	Real Estate Debt	Real Estate Secondaries	Ares Acquisition Corporation[5]
	Alternative Credit	APAC Private Equity	Infrastructure Opportunities	Infrastructure Secondaries	
	APAC Credit		Infrastructure Debt	Credit Secondaries	

Note: As of December 31, 2023. AUM amounts include funds managed by Ivy Hill Asset Management, L.P., a wholly owned portfolio company of Ares Capital Corporation and registered investment adviser. Past performance is not indicative of future results.

1. As of February 26, 2024.
2. New Delhi office is operated by a third party with whom Ares Asia maintains an ongoing relationship relating to the sourcing, acquisition and/or management of investments.
3. Effective March 31, 2024, we will move our Special Opportunities strategy from our Private Equity Group into our Credit Group as Opportunistic Credit. The fund name will remain Special Opportunities.
4. AUM managed by Ares Insurance Solutions excludes assets which are sub-advised by other Ares' investment groups or invested in Ares funds and investment vehicles.
5. AUM includes Ares Acquisition Corporation ("AAC") and Ares Acquisition Corporation II ("AACT").

What is Specialty Lending? (see video here)

Diversified Exposure to Assets You Touch Every Day

Mortgage Loans	Credit Card Receivables	Infrastructure Assets
Media Assets	Shipping Containers	Solar Loans
Small Business Loans	Bank Assets	Healthcare Receivables
Auto Loans	Fiber Assets	Equipment Leases

Specialty Lending is a type of secured lending.

Loans are collateralized by large, diversified portfolios of…

Loans / Leases | **Receivables** | **Royalties / Fees**

Also called alternative credit, asset-based credit, asset-backed debt, asset finance, and specialty finance.

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Managing Risk in Alternative Credit

We focus on investments that share five key features designed to protect value and minimize loss

In our experience, these key features contribute to performance consistency across market environments

Cash Flows

We focus on investments having durable cash flows. We believe this can shorten investment tenors, enhance price stability and reduce severities

Structure

We design our investments with features that stabilize performance, especially in times of stress

Covenants

Covenants are designed to protect our rights and priority over the assets and cash flows that support our investments

Downside Protection

Control/Seniority

As credit investors, we know that seniority and other forms of control can lead to greater predictability of outcomes

Asset Security

Our investments are always secured by assets. When combined with proper structure, asset security can greatly mitigate downside risks

For illustrative purposes only. References to “downside protection” or similar language are not guarantees against loss of investment capital or value.

Ares Is a Leader in Alternative Credit Markets

Team	Experience	Comparing Loss Rates[4]
74 investment professionals (one of the market's largest dedicated teams)[1]	**~$36.0bn** in AUM across diverse Alt Credit mandates[3]	**1 bp** realized annual loss rate **(ARES ALTERNATIVE CREDIT)**
~21yrs of experience (on average) across the team's 36 senior investment professionals[1]	**~$44.1bn** deployed in Alt Credit since inception[4]	**96 bps** realized annual loss rate of corporate bank loans **(CSLLI)**[5]
~990 investment professionals across Ares Credit, Real Estate, Private Equity, Secondary Solutions and Strategic Initiatives[2]	**~$13.2bn** deployed in last twelve months[2]	**211 bps** realized annual loss rates of high yield bonds **(HUCO)**[5]

Past performance is not indicative of future results.

1. As of April 2024.
2. As of December 31, 2023.
3. As of December 31, 2023. AUM reflects USD amount. Includes ~$33.9bn invested across dedicated funds and ~$2.1bn invested across other strategies.
4. As of September 30, 2023. With respect to Ares' track record since inception in 2011, please review in conjunction with the Pro Forma Performance Notes.
5. Bank Loans represented by the Credit Suisse Leveraged Loan Index ("CSLLI") and HY Bonds represented by the ICE BofA US High Yield Constrained Index ("HUC0"). **Please refer to the Endnotes for important index disclosure.**

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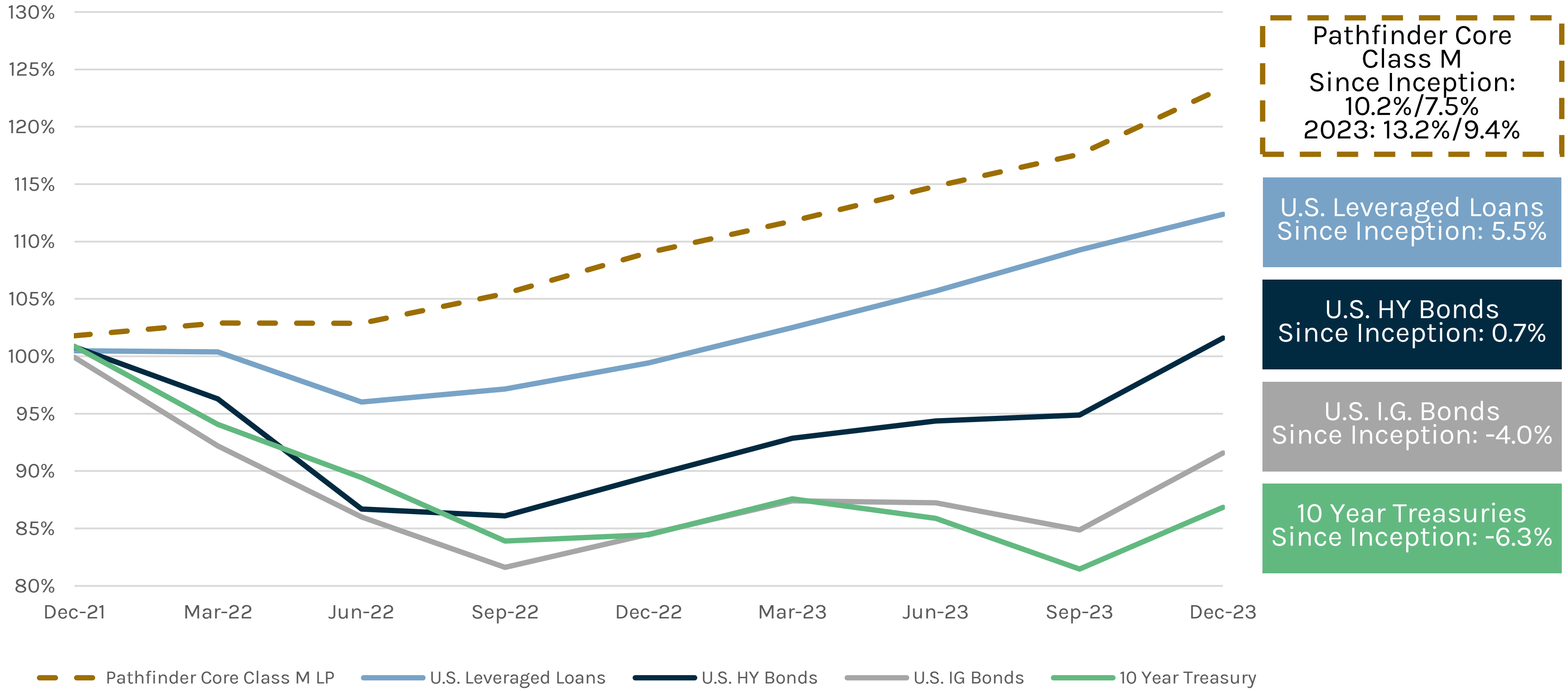
Performance Relative to Traditional Credit Markets

» Pathfinder Core has strongly outperformed traditional credit markets since inception

Cumulative Time-Weighted Returns[1,2]



Data as of December 31, 2023 unless otherwise noted and subject to change at any time. Past performance is not necessarily indicative of future results. Any investment involves significant risk, including the loss of principal. Actual outcomes and results may differ materially from the returns indicated above. Returns are unaudited. As with all unaudited returns, they are subject to uncertainties and variations and may not be predictive of final results. All returns are total returns and include the reinvestment of income and other earnings from securities or other investments and reflect the deduction of all trading expenses. This is not an offering of securities for sale in any jurisdiction. Any indication of interest from prospective investors involves no obligation or commitment of any kind. Performance of individual capital accounts may vary from the fund results. The performance inception date is October 29, 2021. Gross returns do not reflect the deduction of management fees, or other expenses. Net returns are calculated by subtracting the applicable management fee, and other expenses from the gross returns on a monthly basis. Returns are expressed in US Dollars. Reflects investment and other figures for the Class M, or Main Class, Limited Partners only. Please refer to endnotes for additional disclosures.

1. Monthly returns are calculated by linking daily returns. Represents the cumulative returns since inception. Gross returns do not reflect the deduction of management fees, incentive fees, or other expenses.
2. Please refer to Index Disclosure for important index disclosures.

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Exhibit 8

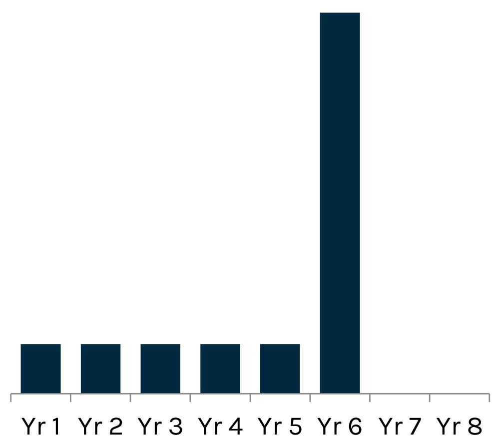
Comparing Investment Cash Flow Profiles

» The typical Alternative Credit investment has a cash flow profile that is very different

Private Equity

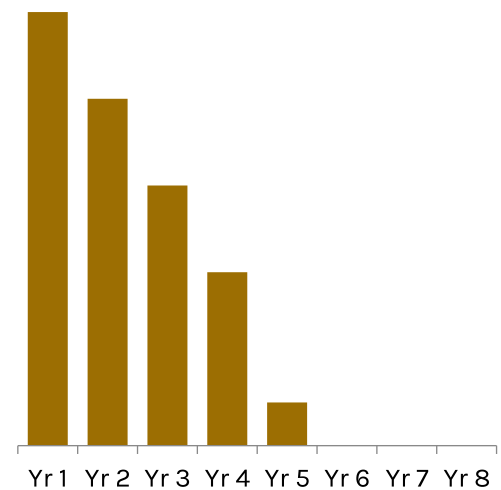
Typically receives little to no cash flow until a realization event (e.g., the sale or IPO of the company).

Corporate Debt



Typically receives only interest coupons until a realization event (e.g., the refinancing of the debt or sale of the company).

Alternative Credit



Typically sees a high volume of front-loaded cash flows from the underlying assets. It does not generally rely on a realization event.

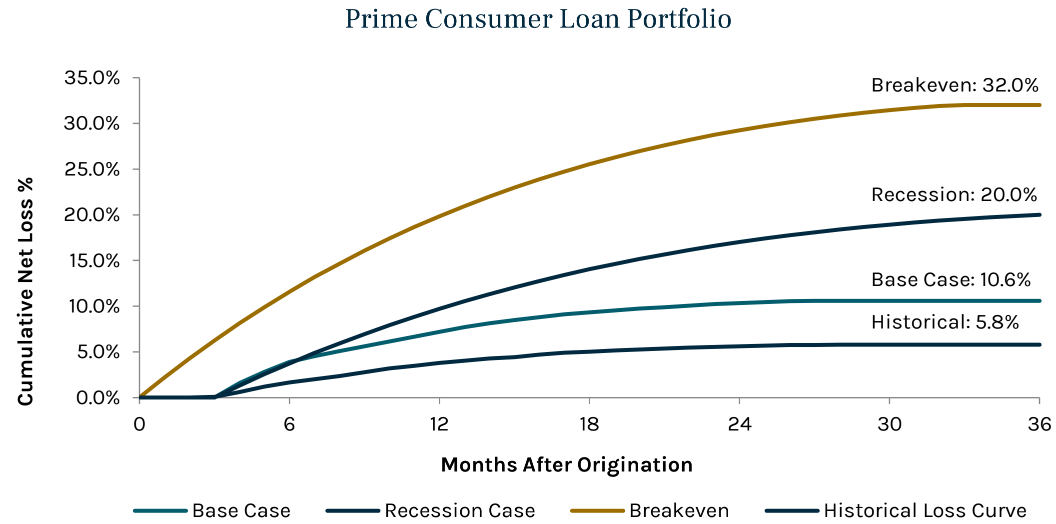
Typical cash flows are presented for illustrative purposes only. Actual cash flows may vary materially from those presented above.

We Design a "Margin of Safety" for Stressful Times

Focused on assets that typically generate resilient cash flows.

Designed to withstand an economic downturn.

Designed with structural features to help ensure a full recovery.



Historical Loss Curve:
The historical level of losses in the underlying asset portfolio

Base Case:
Investment team's conservative estimate of future losses within the asset portfolio (typically based on the counterparty's worst vintage)

Recession Case:
Indicates the level of historic losses based on peak defaults during the last recession, which serves as a proxy for future recessionary environments

Breakeven Case:
The level of losses in the underlying asset portfolio that would be required to cause a $1 loss on our investment. Ares typically designs our investments of this type to withstand at least 200% of Base Case and at least 150%+ of Recessionary loss rates

For illustrative purposes only. There is no guarantee base case will be achieved. Results shown are not representative of Pathfinder Core's track record. Note: Great Financial Crisis is defined as the period just prior to and following the credit market dislocation of 2008. Modeled losses are exclusively for informational and discussion purposes only. Modeled results have inherent limitations, and actual results will differ significantly from the illustrative loss curves presented herein. In modeling the losses shown herein, Ares used publicly available data as well as assumptions that it believes are reasonable. Loss assumptions shown herein are meant to be purely illustrative and do not represent actual losses. The use of different assumptions could also produce materially different results. References to "downside protection" or similar language are not guarantees against loss of investment capital or value.

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Key Market Themes

Banks: Capital and Liquidity Stresses

Consumer Credit: The Reboot

Changing Environment = Changing Relative Value

Key Market Themes

Banks: Capital and Liquidity Stresses

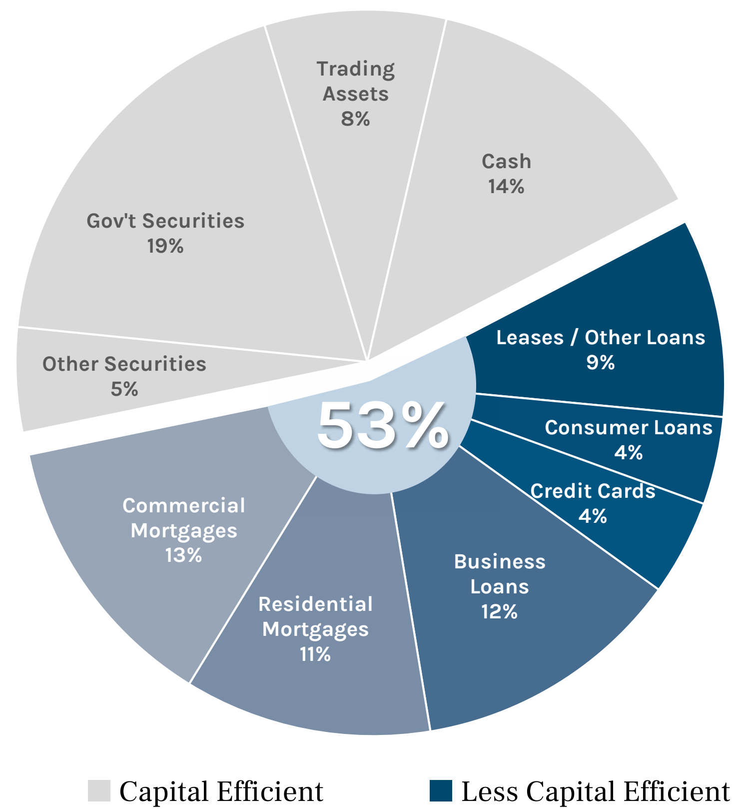
Consumer Credit: The Reboot

Changing Environment = Changing Relative Value

The $12 Trillion Question

- Bank **liabilities** have a higher cost and a shorter tenor now (and going forward)
- New **capital** requirements have substantially changed the economics of certain assets
- Bank balance sheet **assets** will adjust to the new liability and capital paradigms

US BANKS: BALANCE SHEET ASSETS ($23 trillion)[1]

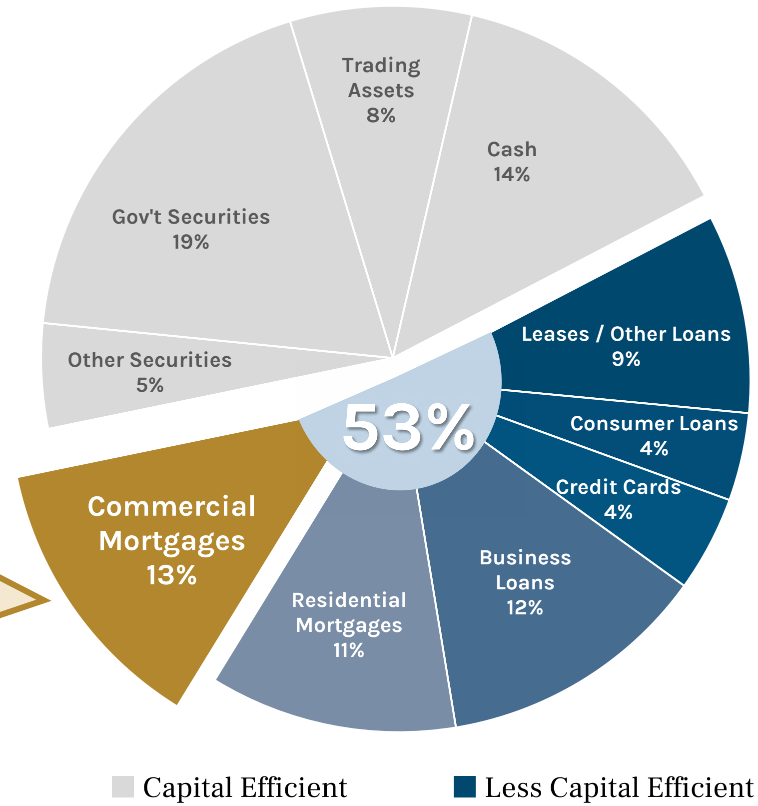


Based on Ares' views only as of February 2024. There is no guarantee that these results will occur.

1. Federal Reserve Board as of April 12, 2023.

The $12 Trillion Question (cont'd)

US BANKS: BALANCE SHEET ASSETS
($23 trillion)[1]



- Smaller U.S. banks are most vulnerable to stresses in their CRE portfolio
- Smaller banks will have to take significant steps to **shore up regulatory capital**

Based on Ares' views only as of February 2024. There is no guarantee that these results will occur.

1. Federal Reserve Board as of April 12, 2023.

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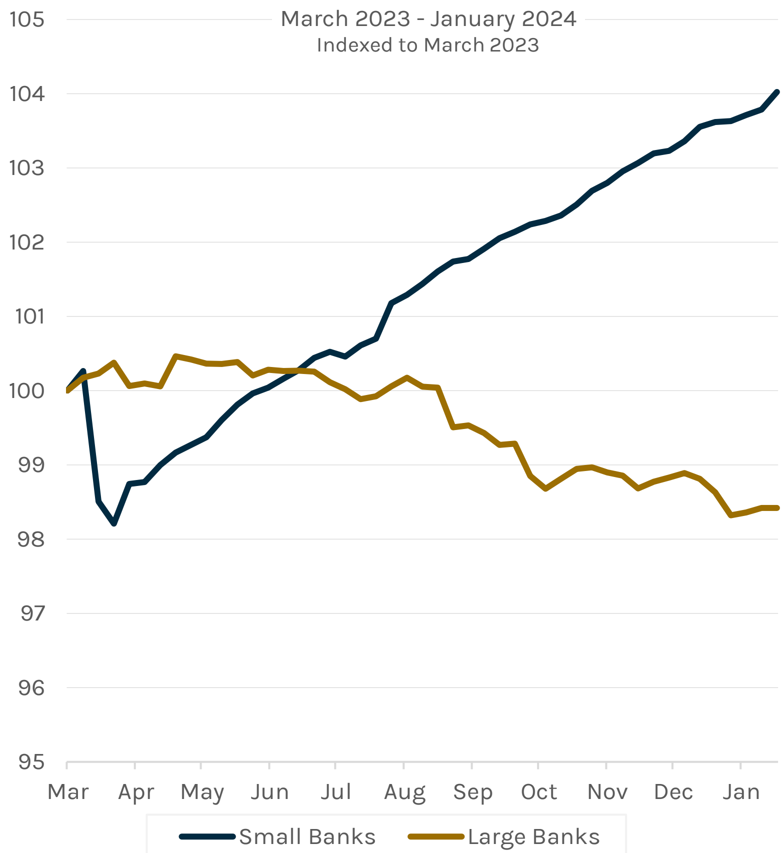
Commercial Real Estate Market Update

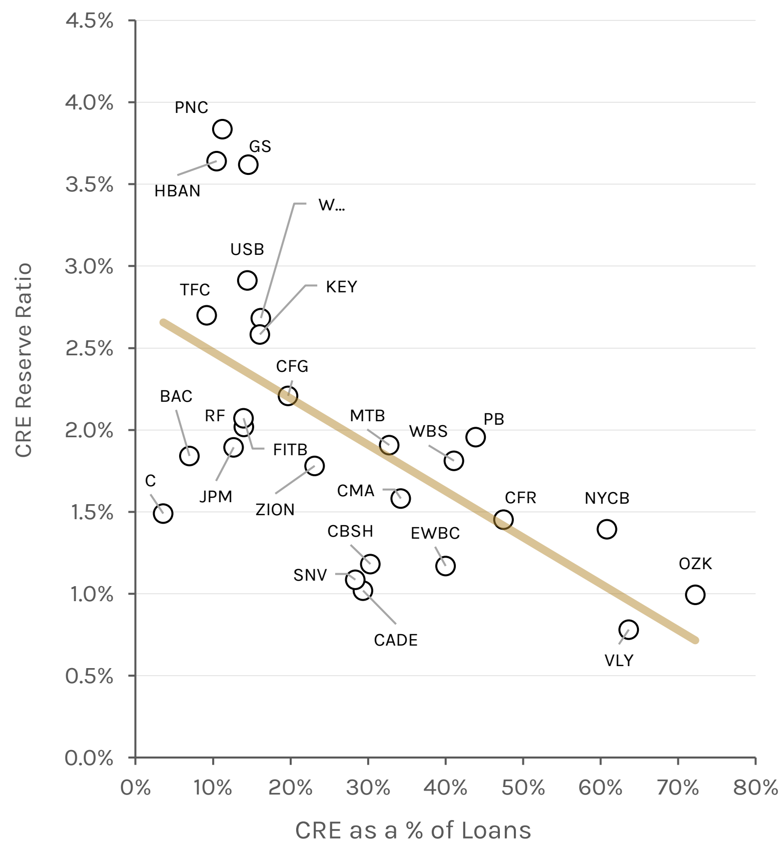
Bank CRE Mortgage Holdings[1]

- Smaller U.S. banks have been increasing their exposure to CRE over the past years



Bank CRE Exposure and Loss Reserves[2]

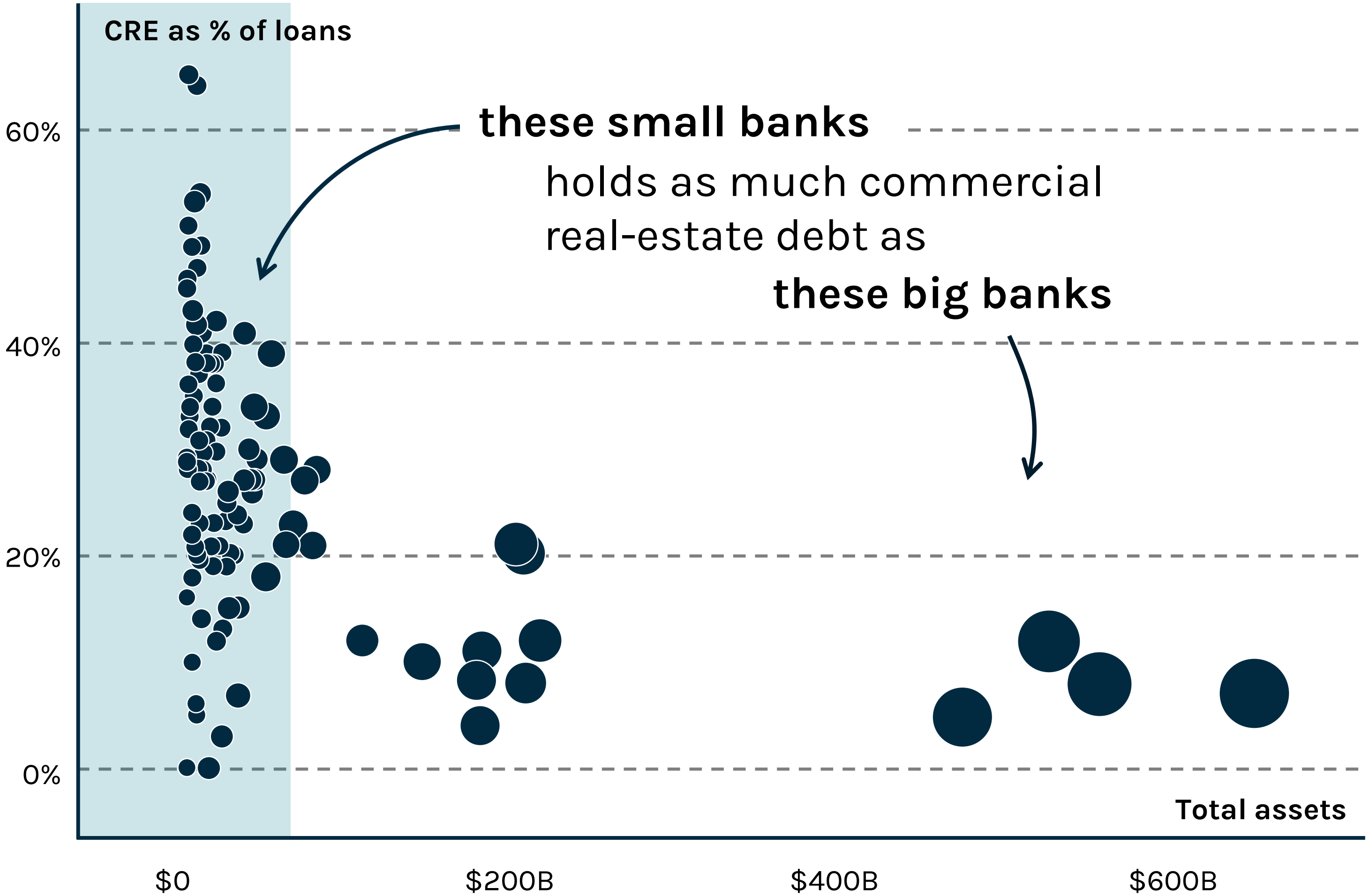
- The smaller the bank, the greater the exposure to CRE and the greater the exposure the lower loss reserves



1. Source: Federal Reserve, Bank of America as of January 24, 2024.
2. Source: Federal Reserve as of December 31, 2023.

Commercial Real Estate Market Update (Cont'd)

» Local banks provide half of all commercial-property loans.



Source: S&P Capital IQ as of January 2024.

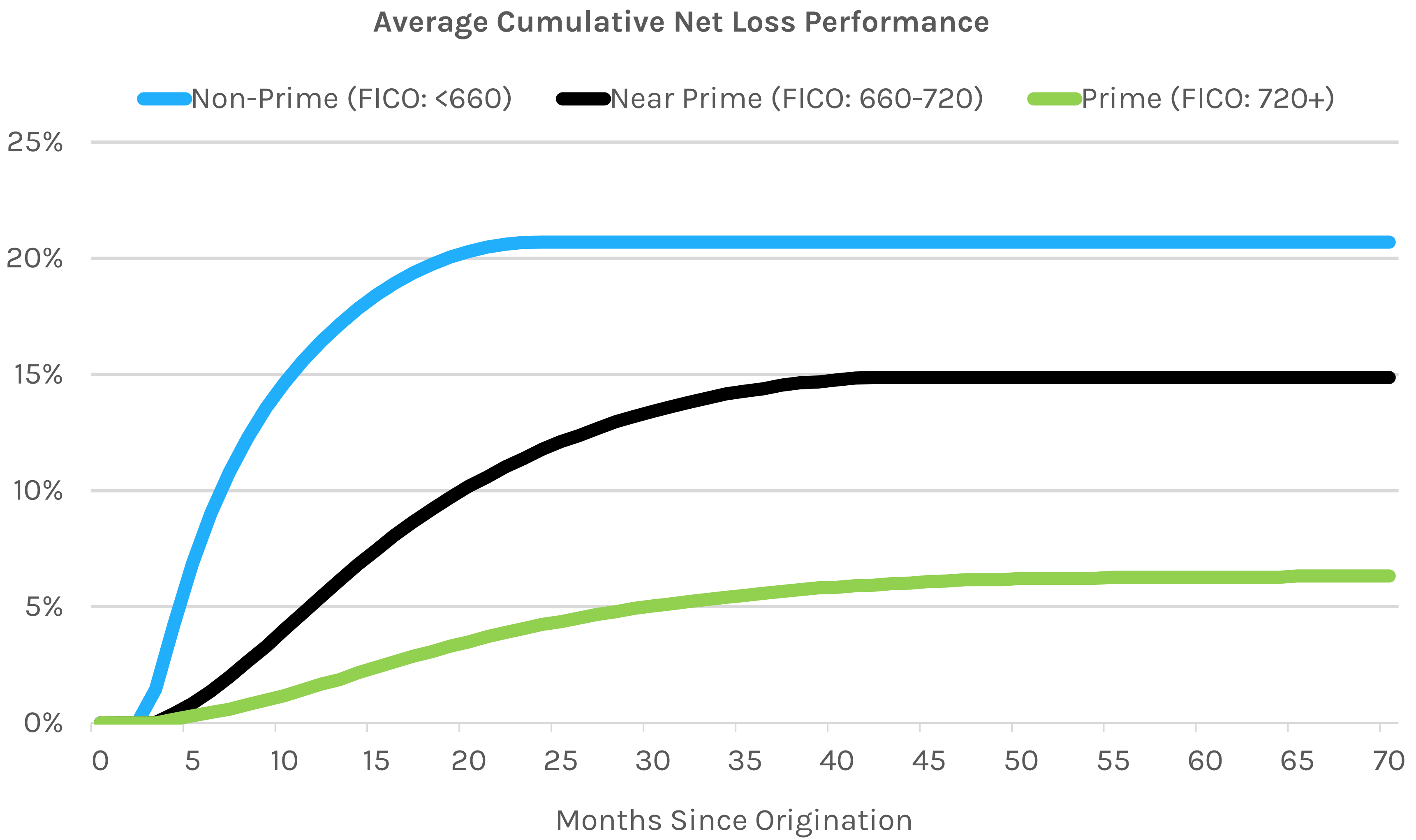
Key Market Themes

Banks: Capital and Liquidity Stresses

Consumer Credit: The Reboot

Changing Environment = Changing Relative Value

Loss Curves by Consumer Quality



Source: Ares proprietary data, Consumer Lender as of December 31, 2023. Shows actual historical vintage loss rates across the illiquid Alternative Credit portfolio

Exhibit 8

Consumer Lending Loss Rates – Last Five Years

Source: Ares proprietary data, Consumer Lender as of December 31, 2023. Shows actual historical vintage loss rates from a tech-enabled consumer lender.

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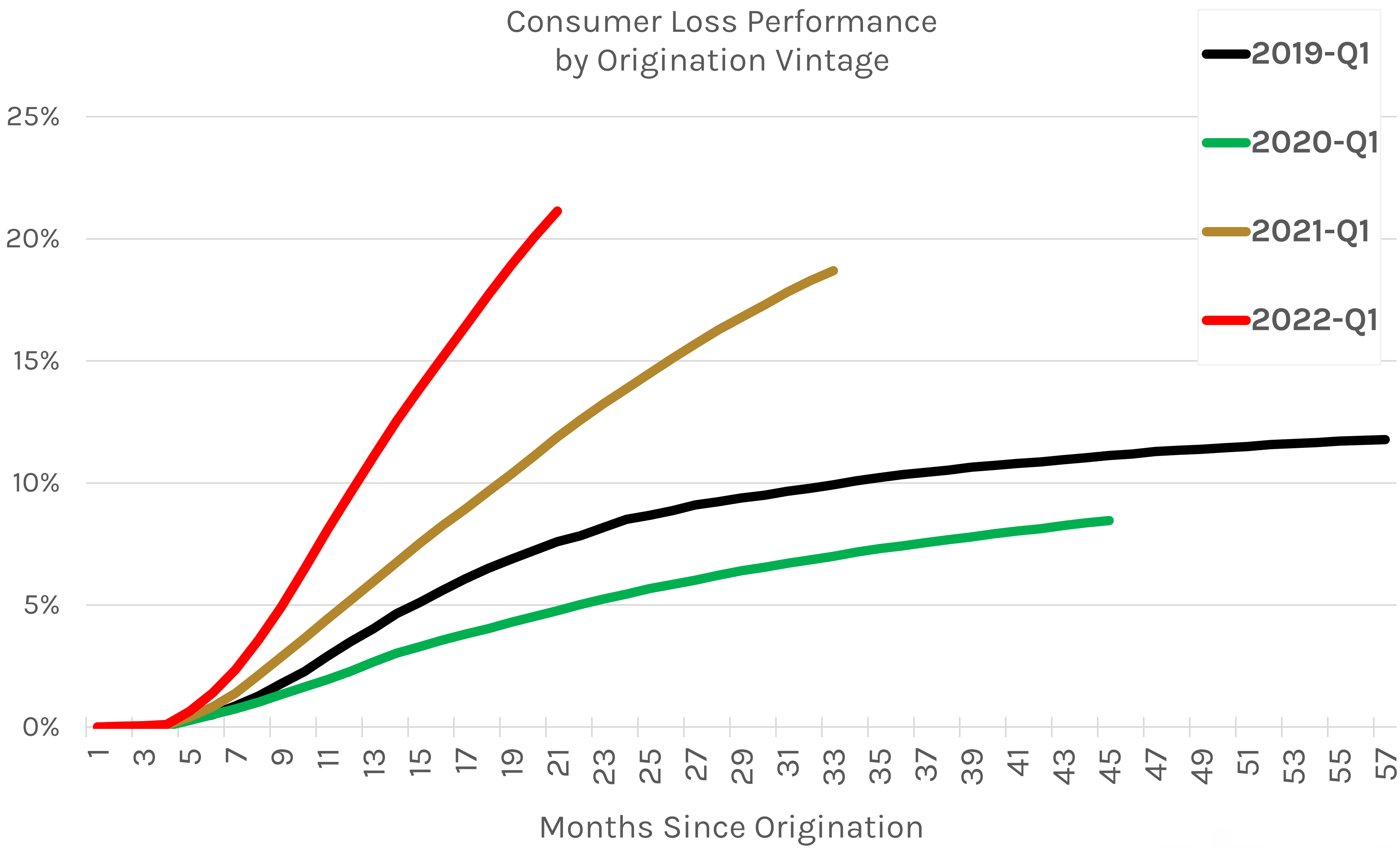
Exhibit 8

Consumer Lending Loss Rates – Last Five Years



Source: Ares proprietary data, Consumer Lender as of December 31, 2023. Shows actual historical vintage loss rates from a tech-enabled consumer lender.

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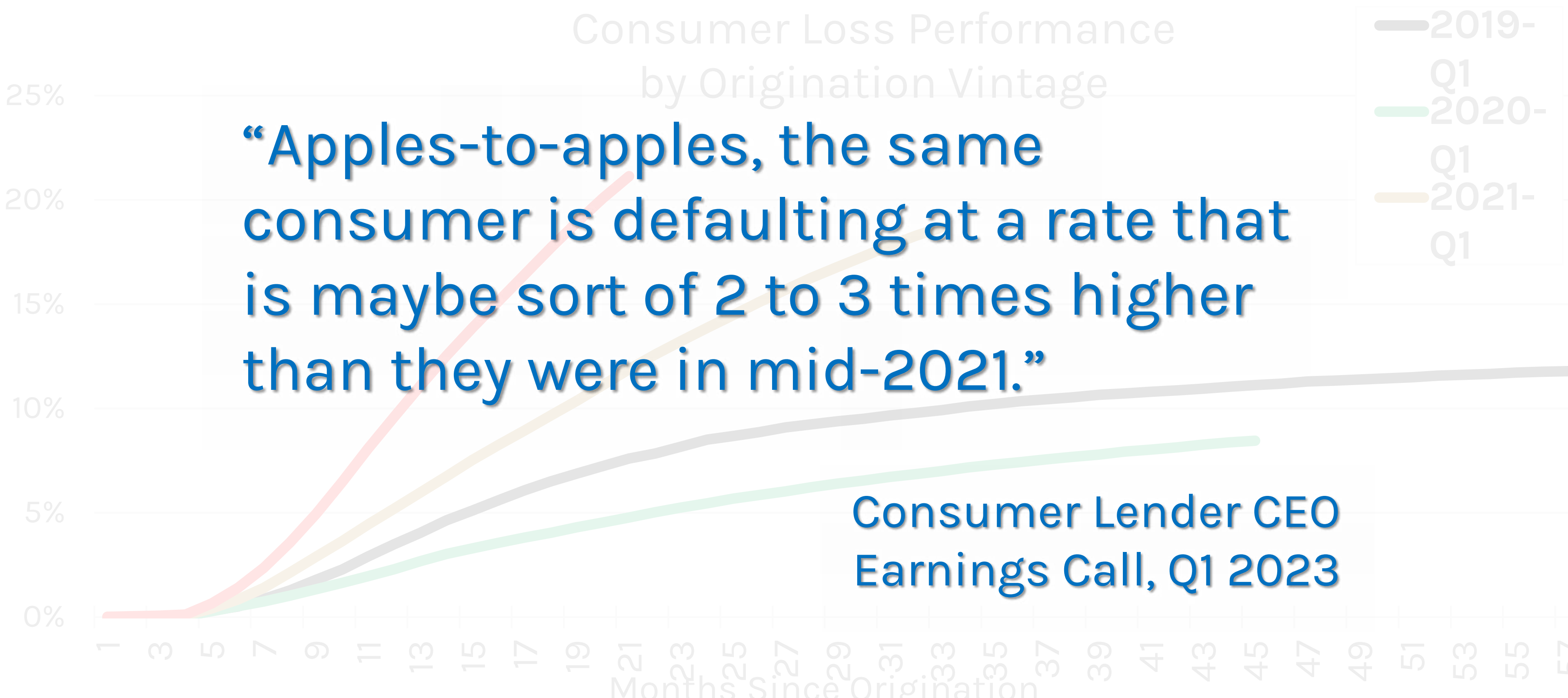
Exhibit 8

Consumer Lending Loss Rates – Last Five Years



"Apples-to-apples, the same consumer is defaulting at a rate that is maybe sort of 2 to 3 times higher than they were in mid-2021."

Consumer Lender CEO
Earnings Call, Q1 2023

Source: Shows actual historical vintage loss rates from a tech-enabled consumer lender.

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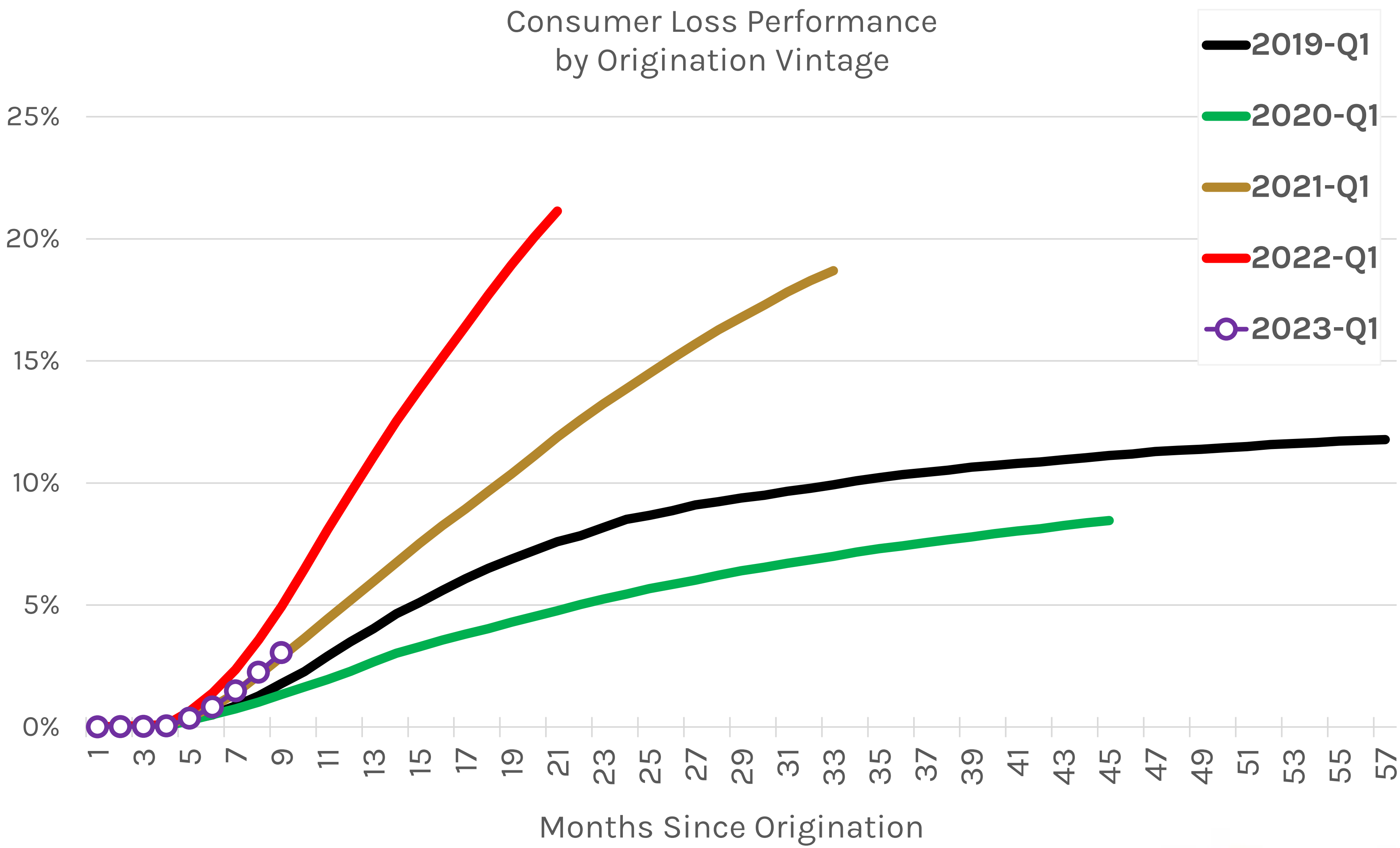
Consumer Lending Loss Rates – Last Five Years



Source: Ares proprietary data, Consumer Lender as of December 31, 2023. Shows actual historical vintage loss rates from a tech-enabled consumer lender.

Seeking Value & Resiliency in Portfolio Construction

Best Practices	Potential Pitfalls
Sourcing & origination	Too Niche – "feast/famine" cycles
Diversification	Too concentrated
Stress testing	Too small
Data & technology	Reliance on leverage
Scale & flexibility	"Bucket" approach

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Endnotes

Pro Forma Performance Notes to Alt Credit Track Record Slides

- **Past performance is not indicative of future results**. Please see the below performance disclosures for important information about the results shown herein. The investments reflected herein are intended to be illustrative, and are not intended to be used as an indication of current or future performance of any Ares strategy or investment. Further, reference to these particular investments is not necessarily indicative that any Ares fund or strategy will offer or hold any or all of the investments. The opportunity to invest in future Ares funds, strategies or investments on an ongoing basis is not guaranteed, and will be made by means of definitive offering memoranda, which will be furnished to qualified investors at their request.
- The Total Alternative Credit track record shown includes the following:
  - all CLO investments in commingled funds and separately managed accounts executed by investment professionals within Ares Credit Group for the period January 1, 2012 to September 30, 2023;
  - all FINCO debt investments in Ares Capital Corporation executed by investment professionals within Ares Credit Group for the period from January 1, 2012 to September 30, 2023;
  - all directly-originated Alternative Credit investments in commingled funds and separately managed accounts executed by investment professionals within Ares Credit Group;
  - all rated private ABS investments in commingled funds and separately managed accounts executed by investment professionals within Ares Credit Group;
  - all REDS investments in commingled funds and separately managed accounts executed by investment professionals within Ares Credit Group for the period January 1, 2018 to September 30, 2023; and
  - all K-Series investments in separately managed accounts executed by investment professionals within Ares Real Estate Group.
- "Pathfinder Core Strategy Subset" consists of investments made in strategies with risk-return objectives aligned with those of Pathfinder Core. The Pathfinder Core Strategy Subset includes certain investments allocated to Ares Pathfinder Fund which have higher underwritten returns than investments contemplated for the Pathfinder Core Fund.
- The pro forma performance results shown have been compiled by Ares from actual realized and unrealized investments that were not collectively part of an actual portfolio. However, these results are based on a grouping of assets that are representative of the strategy that Pathfinder Core intends to follow. Pro forma results are hypothetical and have inherent limitations, and no representation is being made that any account will or is likely to achieve results similar to those shown. Had a fund focused on the assets represented by this performance actually existed, Ares may not have made the same investment decisions. Given Ares did not offer an investment vehicle that held all of the assets included in the pro forma track record, an investor was not able to invest in these assets as presented. There are factors related to the markets in general, or to the implementation of any specific portfolio strategy, which cannot be fully accounted for in the preparation of pro forma portfolio performance, all of which can adversely affect actual portfolio results. Returns of unrealized investments herein are based in part on unrealized valuations and the actual realized returns of such unrealized investments may differ materially from the returns indicated herein. The performance information summarized herein has not been audited. Past performance is not indicative of future results. No individual investor has received the investment performance indicated by the pro forma returns presented herein. Certain assumptions, not all of which are described herein, have been made to calculate pro forma returns and the use of different assumptions could produce materially different results. Assumptions are based upon what Ares believes represents a reasonable fee analysis. Fees and expenses for Ares Pathfinder Core Fund may be materially different than the fee and expense assumptions provided herein.
  a. Represents total net losses on all realized investments divided by total invested capital.
  b. Represents the asset-level Internal Rate of Return (IRR) of selected investments. IRR is the discount rate that makes the net present value of all cash flows related to a particular investment equal to zero. IRRs are de-annualized for investments with a holding period of less than one year. Gross asset-level IRR is gross of management and other expenses related to investments as these expenses are not allocable to specific investments and differ among funds. Gross asset-level performance does not reflect the effect of management fees, carried interest or other expenses, which in the aggregate may be substantial. The effects of actual management fees, performance fees, and other expenses may differ, maybe materially, from the effects of expenses estimated herein. Investments are considered to be realized when the original investment objective has been achieved through the receipt of cash upon the sale of an investment. Past performance is not indicative of future results, the achievement of which cannot be assured. The implied net asset level return is calculated by applying a fee reduction to the gross return based on hypothetical management fees, hypothetical operating and organizational expenses, and hypothetical carried interest, but does not reflect the impact of taxes. For purposes of calculating the net returns, fee and expense assumptions are based on representative fee structures for each strategy:
     - Pathfinder Core Strategy Subset: a management fee of 1.25% on average invested capital per annum; a 0.29% operating and organizational expense on average invested capital per annum; an overall carried interest rate of 20% over a 6% performance hurdle on net profits of the entire track record.
     - Liquid IG Strategy: a management fee of 0.5% on average invested capital per annum; a 0.05% operating and organizational expense on average invested capital per annum.
  c. MOIC represents Multiple on Invested Capital. Asset-level MOIC is gross of management and other expenses related to investments as these expenses are not allocable to specific investments and differ among funds. The effect of such management and other expenses may reduce, maybe materially, the multiples show herein. Investments are considered to be realized when the original investment objective has been achieved through the receipt of cash upon the sale of an investment. The net MOIC reflects the deduction of hypothetical management fees, incentive fees, and operating and administrative expenses from the gross MOIC. See (b) above for further details on the assumptions.
- Note pro forma net IRR and MOIC exclude the benefit of any recycling, reinvestment and liquidity management.

Index Definitions

- Estimates of market correlation are not available for many Alternative Credit sectors due to lack of independent, publicly available data. However, where data is available, correlations with traditional markets have historically been quite low. The table herein shows five-year correlation statistics across the Private Asset Backed Composite (SMA) ("Composite"), which includes all separately managed fully discretionary, fee-paying separately managed and fund of one portfolios that primarily invest in directly originated private asset-backed investments with a focus on downside protection and attractive current income. Investments are primarily USD-denominated.. Observations by senior members of the Team from over decades of investment experience also support the general view that cash flow performance, default rates and loss rates in most Alternative Credit sectors are generally not correlated with markets but tend to be idiosyncratic and specific to individual transactions.
- Index data is provided for comparison purposes only. The information related to the various indices is sourced from the providers' websites. Ares is not responsible for any historic revision made to the indices. The indices include the reinvestment of dividends, interest and other earnings and have not been adjusted for management fees or expenses. Any indices that are not denominated in U.S. Dollars are hedged back to the U.S. Dollar currency for comparison purposes.
- Correlation results have been calculated using the monthly returns of the below reference indices:
  1. 'US Small Cap' is represented by the Russell 2000 index. The Russell 2000® Index measures the performance of the largest 2,000 US companies and accounts for 10% of the market capitalization of the Russell 3000, which represents approximately 97% of the investable US equity market. The Russell 2000® Index is constructed to provide a comprehensive, unbiased and stable barometer of the broad market and is completely reconstituted annually to ensure new and growing equities are included.
  2. 'US Large Cap' is represented by the S&P 500 index. The S&P 500 index is designed to be a leading indicator of US equities and is meant to reflect the risk/return characteristics of the large cap universe.
  3. 'Euro Equities' is represented by the EURO STOXX 50® Index. The EURO STOXX 50® Index represents the performance of the 50 largest companies among the 19 supersectors in terms of free-float market cap in 11 Eurozone countries. These countries include Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain. The index has a fixed number of components and is part of the STOXX blue-chip index family. The index captures about 60% of the free-float market cap of the EURO STOXX Total Market Index (TMI).
  4. 'World Equities' is represented by the MSCI World Index. The MSCI World Index captures large and mid-cap representation across 23 Developed Markets (DM) countries. With 1,649 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country. DM countries include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the UK and the US.
  5. 'US Corp Loans' is represented by the Credit Suisse Leveraged Loan Index ('CSLLI'). The CSLLI is an index designed to mirror the investable universe of the $US-denominated leveraged loan market.
  6. 'Euro Corp Loans' is represented by the Western European Leveraged Loan Index ('WELLI'). The WELLI is designed to mirror the investible universe of the Western European leveraged loan market, with loans denominated in $US and Western European currencies.
  7. 'US High Yield' is represented by the ICE BofAML High Yield Master II Index ('H0A0'). The H0A0 consists of below investment grade US dollar denominated corporate bonds that are publicly issued in the US domestic and yankee bonds (issues included in the index have maturities of one year or more and have a credit rating lower than BBB-/Baa3, but are not in default).
  8. 'Euro High Yield' is represented by the ICE BofAML European High Yield Index ('HE00'). The HE00 tracks the performance of EUR denominated below investment grade corporate debt publicly issued in the euro domestic or eurobond markets.
  9. 'Barclays Agg' is represented by the Bloomberg Barclays Global Aggregate Bond Index. The Bloomberg Barclays Global Aggregate Bond Index is a flagship measure of global investment grade debt from twenty-four local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers.
  10. 'Barclays ABS' is represented by the Bloomberg Barclays Asset-Backed Securities Index. The Bloomberg Barclays Asset-Backed Securities Index is the ABS component of the Bloomberg Barclays US Aggregate Bond Index and has three subsectors (credit and charge cards, autos, and utility).
  11. 'Barclays CMBS' is represented by the Bloomberg Barclays Non-Agency Investment Grade CMBS Index.
  12. 'US CLO BBB' is represented by the J.P. Morgan Collateralized Loan Obligation BBB Index (CLOIE). The J.P. Morgan Collateralized Loan Obligation BBB Index (CLOIE) is dedicated to tracking the US dollar-denominated broadly-syndicated, arbitrage CLO market. The CLOIE is not tradeable and aims to enhance market transparency and act as a potential total return benchmark. Represents US dollar-denominated post-crisis broadly syndicated CLOs rated BBB.
  13. 'US CLO BB' is represented by the J.P. Morgan Collateralized Loan Obligation BB Index (CLOIE). The J.P. Morgan Collateralized Loan Obligation BB Index (CLOIE) is dedicated to tracking the US dollar-denominated broadly-syndicated, arbitrage CLO market. The CLOIE is not tradeable and aims to enhance market transparency and act as a potential total return benchmark. Represents US dollar-denominated post-crisis broadly syndicated CLOs rated BB.
  14. 'US Govt 10yr' is represented by the ICE BofA Current 10-Year US Treasury Index (GA10). The ICE BofA Current 10-Year US Treasury Index is a one-security index comprised of the most recently issued 10-year US Treasury note. The index is rebalanced monthly. In order to qualify for inclusion, a 10-year note must be auctioned on or before the third business day before the last business day of the month.
  15. 'Euro Govt 10yr' is represented by the ICE BofA 7-10 Year German Government Index (G4D0). The ICE BofA 7-10 Year German Government Index is a subset of ICE BofA German Government Index including all securities with a remaining term to final maturity greater than or equal to 7 years and less than 10 years.
- Note Oil Shock defined as the period from October 2015 to June 2016. Liquidity/Rates Shock defined as the period from October 2018 to March 2019. COVID Shock defined as the period from March 2020 to June 2020.
- **Index Disclosure**: Indices are provided for illustrative purposes only and not indicative of any investment. They have not been selected to represent appropriate benchmarks or targets for the strategy. Rather, the indices shown are provided solely to illustrate the performance of well-known and widely recognized indices. Any comparisons herein of the investment performance of a strategy to an index are qualified as follows: (i) the volatility of such index will likely be materially different from that of the strategy; (ii) such index will, in many cases, employ different investment guidelines and criteria than the strategy and, therefore, holdings in such strategy will differ significantly from holdings of the securities that comprise such index and such strategy may invest in different asset classes altogether from the illustrative index, which may materially impact the performance of the strategy relative to the index; and (iii) the performance of such index is disclosed solely to allow for comparison on the referenced strategy's performance to that of a well-known index. Comparisons to indices have limitations because indices have risk profiles, volatility, asset composition and other material characteristics that will differ from the strategy. The indices do not reflect the deduction of fees or expenses. You cannot invest directly in an index. No representation is being made as to the risk profile of any benchmark or index relative to the risk profile of the strategy presented herein. There can be no assurance that the future performance of any specific investment, investment strategy, or product will be profitable, equal any corresponding indicated historical performance, or be suitable for a portfolio.

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Risk Factors

Risk Factors – General - An investment in an Ares fund, strategy, account or vehicle entails a significant degree of risk and, therefore, should be undertaken only by investors capable of evaluating the risks of that investment and bearing the risks it represents. General risks about making an investment are provided below. This is a non-exhaustive list of risk factors and conflicts of interest that should be considered in evaluating before making an investment. Investors should review a more complete list of risks, conflicts and or other considerations as described in a PPM or other offering documentation involved in connection with making an investment. Prospective investors should carefully review that additional information for other risks and the investment strategy's objective process and investment techniques associated with a corresponding investment.

Prospective investors should understand risks associated with the types of equity and debt investments to be made, as well as risks related specifically to the various private and or public investment strategy and more generally to investments involved in the strategy.

No Assurance of Investment Return - Neither Ares or the general partner can provide assurance that it will be able to choose, make and/or realize investments in any company, portfolio of companies or asset. Further, there can be no assurance that the fund or strategy will be able to generate returns for its investors or that the returns will be commensurate with the risks of investing in the types of companies, assets and transactions described or that such returns will be comparable to the fund or strategy's targeted returns. The marketability and value of any such investment will depend upon many factors beyond the control of the fund or strategy, the manager. The expenses of the fund or strategy may exceed its income. The fund or strategy would bear the expenses of transactions that are not consummated, including any break-up fees. As a result, the fund or strategy could incur a substantial cost with no opportunity for a return. A prospective investor could lose the entire amount of its contributed capital, and therefore an investor should only invest in the fund or strategy if the investor can withstand a total loss of its investment.

Past Performance Not Indicative of Future Results - Past performance of the manager, and their respective investment professionals with respect to fund, strategy or other portfolios, investment vehicles or accounts may be not indicative of the future results that the fund or strategy will achieve. Similarly, the past performance of the manager, its affiliates and their respective investment professionals over a particular period is not indicative of the results that may be expected in future periods. Furthermore, the strategies and risks guiding the fund or strategy's investments may differ substantially from investments and strategies undertaken by the manager, and their respective investment professionals with respect to the prior funds or strategies.

Valuation of Investments - A meaningful portion of the fund or strategy's portfolio may be expected to be in private investments that may be valued by the manager given the lack of public market information. As such, the fair value of such investments may not be readily determinable. The investments are generally expected to be valued at a fair value as determined in good faith and in accordance with U.S. generally accepted accounting principles. The types of factors that may be considered in valuing the fund or strategy's investments include any restrictions on the marketability of such investments, the lack of a market for such investments, the control premium if any associated with such investments, the anticipated impact of immediate sale, the length of time before any such sales may become possible and the cost and complexity of any such sales and other relevant factors. Because such valuations are inherently uncertain, may fluctuate over short periods of time and may be based on estimates, the manager's determinations of fair value may differ materially from the values that would have been used if a ready market for these investments existed and from valuations of third parties and may differ materially from the values that the fund or strategy may ultimately realize.

Allocation of Investment Opportunities - The fund or strategy may focus on illiquid and liquid debt and or illiquid and liquid equity investments. Certain investment opportunities appropriate for the fund or strategy may also be appropriate for other Ares funds or strategies, including those funds or strategies not within the same investment team and can range across the Ares investment platform. It is generally intended that, subject to Ares' allocation policy, the fund or strategy and other Ares funds or strategies, as applicable, which share common investment opportunities as determined in the sole discretion of the manager, allocate over time in a fair and equitable manner, taking into account relevant facts and circumstances and to the extent practicable, including but not limited to, pro-rata based on available capital, subject to the investment objectives, investment restrictions, liquidity, available capital, remaining investment period, leverage, diversification and other limitations applicable to the fund or strategy and such other Ares funds or strategies and as may otherwise be agreed by the respective Investment Committee of such funds or strategies. There can be no assurance that proportional allocations between the fund or strategy and any such other Ares funds or strategies will be achieved.

Ares and its affiliates currently manage, and in the future expect to manage, various other Ares funds or strategies, including by other investment teams, some of which may invest in securities, instruments, assets or obligations eligible for purchase by the fund or strategy. Other Ares funds or strategies include, for the avoidance of doubt, funds and accounts managed or advised by investment advisors that may be acquired or controlled by (or that otherwise become part of) Ares in the future. Situations in which other Ares funds or strategies may invest in the same or securities, instruments, assets or obligations eligible for purchase by the respective fund or strategy, present potential for conflicts of interest. The investment policies, fee arrangements and other circumstances of the overlap may occur with those of other Ares funds or strategies. It is generally intended that, subject to Ares' allocation policy, the fund or strategy and the other Ares funds or strategies, as applicable, which share common investment opportunities as determined in the sole discretion of the manager, taking into account relevant facts and circumstances and to the extent practicable, shall be allocated amongst the funds and strategies over a period of time, that is fair and equitable to the respective funds and strategies. There can be no assurance that proportional allocations between the fund or strategy and any such other Ares funds or strategies will be achieved.

Ares and its affiliates may, from time to time, be presented with investment opportunities that fall within the fund or strategy's investment objectives and the investment objectives of one or more other Ares funds or strategies. While Ares will seek to manage such conflicts of interest in good faith, there may be situations in which the interests of a fund or strategy with respect to a particular investment or other matter conflict with the interests of one or more of the other Ares funds and strategies. Neither the manager or Ares Management has any affirmative obligation to offer any investments to a particular fund strategy, or to inform the respective fund or strategy before offering investments to any other Ares fund or strategy. A copy of Ares' Investment Allocation Policy is available upon request.

Risk Factors (Cont.)

Conflicts of Interest - Ares manages various funds and strategies and the management of these funds and strategies can give rise to conflicts of interest between the investors of a single fund or strategy and differing fund or strategy. Because Ares provides concurrent advisory services to our investors for which the investment mandates, compensation and fee arrangements (including with respect to performance fees and fee offsets) and other circumstances differ from strategy to strategy, the potential for Ares to receive greater fees from certain funds or strategies creates a potential conflict of interest with respect to the allocation of investment opportunities, as funds or strategies that pay higher fees may create incentives to direct investment ideas to, and/or to allocate investments in favor of such a fund or strategy. In addition, Ares, from time to time, also enters into accounts directly or indirectly with single or multiple investors that commit significant capital into a particular fund or strategy and or across the broader Ares platform. Such arrangements often include Ares granting certain preferential terms to these specific investors, including co-investment rights, a waiver or reduction of management fees or performance fees or carried interest, a blended management fee, and/or performance fee or carried interest rates that are lower than those applicable to respective fund or strategy in which those investors are currently invested.

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