Innovating Liquid Alternatives

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BE INVES+ED

Private equity replication

01

Private equity has historically delivered a significant return advantage over public markets at a lower volatility ... but direct PE is hard to access for the average investor.

02

We believe we can replicate the average after-fee return characteristics of US buyout private equity.
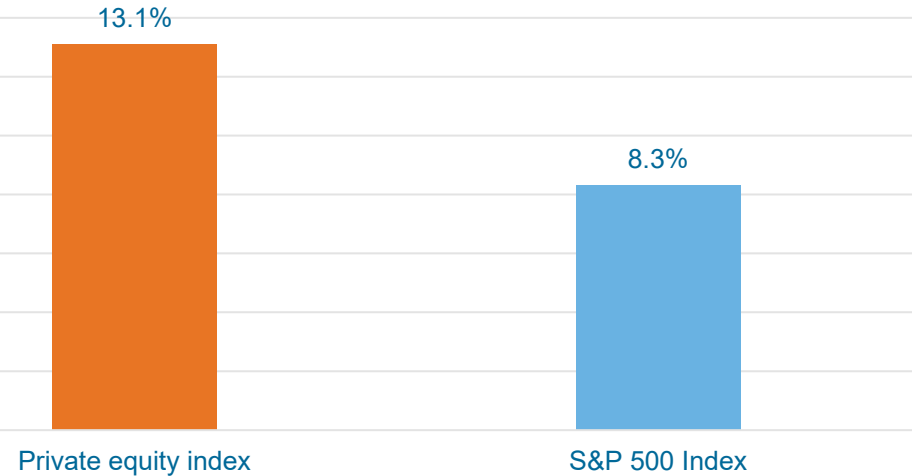
03

Mackenzie's PE replication strategy has succeeded in delivering significant alpha versus the Russell 2500 at a lower volatility since inception.
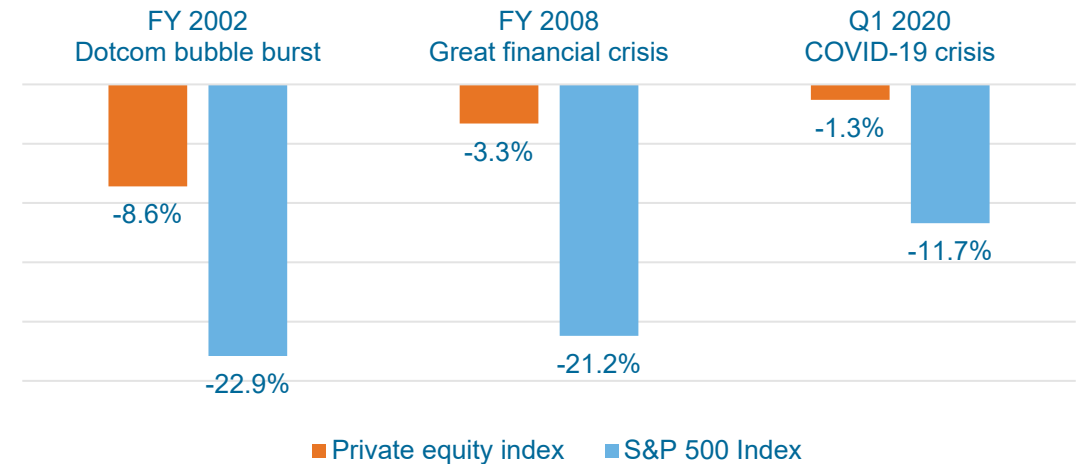
Private equity's performance advantage

Historical return premium vs. public equity of ~5%

20 year returns*

13.1% — Private equity index
8.3% — S&P 500 Index

Limited historical drawdowns vs. public equity

Performance in difficult markets

FY 2002 Dotcom bubble burst	FY 2008 Great financial crisis	Q1 2020 COVID-19 crisis
-8.6%	-3.3%	-1.3%
-22.9%	-21.2%	-11.7%

■ Private equity index ■ S&P 500 Index

Why replicate private equity?

Advantageous efficiency & structure

> Collect PE performance characteristics without locking up invested capital.

> Lower fees and less complexity via a fully liquid investment

> Avoids the need for irregularly or poorly timed capital calls.

> Provides access for investors that need more liquidity or face reluctance/restrictions regarding multi-year lock-up of capital.

> Liquid structure allows for opportunistic allocation decisions.

PE replication: Six drivers of PE performance

Driver	Rationale
Industry selection	• PE managers demonstrated skill in industry/sector choices, allocations and shifts. • PE industry has good visibility into existing portfolio company operating conditions. • PE tends to move to where the best opportunities are or will be.
Investment focus	• PE LBO firms target common characteristics: high profitability and attractive valuations. • Attractive profitability is required to support application of leverage.
Leverage	• PE's long-term track record has been magnified through leverage.
Muted volatility	• PE firms consist of illiquid investments and are fair-valued on a lagged basis, leading to muted volatility versus public markets and significantly lower downside volatility during bear markets.
Company selection	• PE firms obtain access to confidential information for target companies prior to acquisition; skilled teams review a large set of potential targets and can walk away when they uncover problems.
Operational improvements	• Control of acquired companies permits all manner of improvements both within company and across PE firm's portfolio of companies.

We believe replication can deliver four of six PE return drivers

Driver	Match?	What we believe PE replication can do
Industry selection	✓	• Each PE firm transaction is publicly announced and can be tracked and aggregated. • PE replication strategy can match aggregate PE industry allocations and can adjust as allocations change.
Investment focus	✓	• Within each industry, the PE replication strategy identifies stocks that have high profitability, high quality and lower valuations. • Actively rebalance by replacing stocks whose valuation has increased significantly.
Leverage	✓	• PE replication can apply leverage via use of equity futures contracts.
Muted volatility	✓	• PE replication can introduce hedging to mitigate downside exposure.
Company selection	✗	• PE replication aims to replicate the performance profile of US private equity but *will not have access to confidential information.*
Operational improvements	✗	• PE replication invests in daily liquid publicly traded equity of listed companies but *will not purchase controlling stakes.*

The Mackenzie boutique advantage

Theory development and refinement

Day to day portfolio management

Investment rationale	Quantitative techniques	Tailored portfolio

TEAMS Joint effort between Global Quantitative Equity and Multi-Asset Strategies Teams at Mackenzie
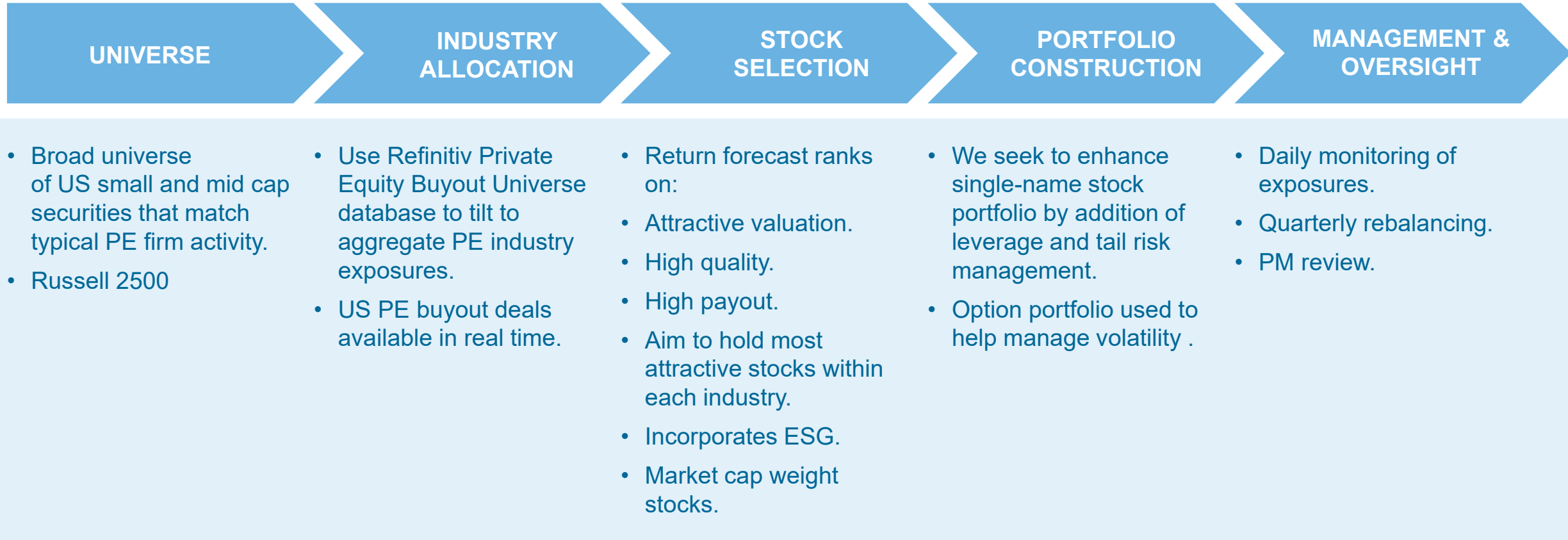
Both teams responsible for: Research and development on PE replication concept, ongoing research into and assessment of drivers of PE returns, ongoing research and consultation with institutional and private investors on use cases for liquid PE.

- **Security and industry selection**
  Arup Datta, MBA, CFA
  Global Quantitative Equity Team
  Responsible for security selection, alpha generation, degree of PE replication.
- **Leverage and Volatility Management**
  Nelson Arruda, MFin, MSc, CFA
  Multi-Asset Strategies Team
  Responsible for application of leverage and risk control.

- Rules-based investment process.
- Aimed at desired outcomes.
- Focus on risk management.
- Theory/process enhancements as required based on ongoing industry research and day-to-day portfolio management.
- Overall portfolio oversight by co-PMs Arup Datta and Nelson Arruda.
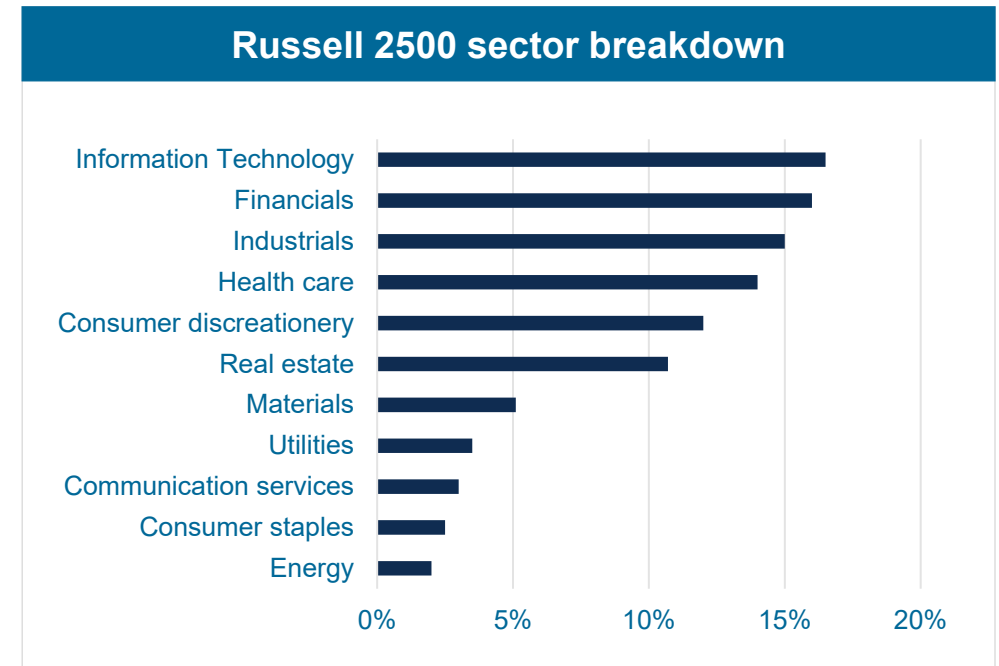
Investment process overview

| UNIVERSE | INDUSTRY ALLOCATION | STOCK SELECTION | PORTFOLIO CONSTRUCTION | MANAGEMENT & OVERSIGHT |

- Broad universe of US small and mid cap securities that match typical PE firm activity.
- Russell 2500

- Use Refinitiv Private Equity Buyout Universe database to tilt to aggregate PE industry exposures.
- US PE buyout deals available in real time.

- Return forecast ranks on:
- Attractive valuation.
- High quality.
- High payout.
- Aim to hold most attractive stocks within each industry.
- Incorporates ESG.
- Market cap weight stocks.

- We seek to enhance single-name stock portfolio by addition of leverage and tail risk management.
- Option portfolio used to help manage volatility .

- Daily monitoring of exposures.
- Quarterly rebalancing.
- PM review.

Universe

UNIVERSE	INDUSTRY ALLOCATION	STOCK SELECTION	PORTFOLIO CONSTRUCTION	MANAGEMENT & OVERSIGHT

UNIVERSE

- Analyzing decades of PE activity shows that PE firms are overwhelmingly concentrated in small to mid-cap companies.
- Russell 2500 (broad universe of SMID cap stocks).

Russell 2500 sector breakdown

Sector	
Information Technology	~16.5%
Financials	~16%
Industrials	~15%
Health care	~14%
Consumer discreationery	~12%
Real estate	~10.5%
Materials	~5%
Utilities	~3.5%
Communication services	~3%
Consumer staples	~2.5%
Energy	~2%

(chart axis: 0%, 5%, 10%, 15%, 20%)

Refinitiv PE Buyout Research Index

Refinitiv is a global provider of market data and infrastructure; subsidiary of London Stock Exchange Group.

Formerly Thomson Reuters Financial & Risk, now 40,000 client companies in 190 countries; 2017 revenue $6.1 billion USD and 18,500 employees.

Refinitiv's PE Buyout Research Index analyzes over 8,000 US PE companies, tracks gross performance aggregating company values, updated live as deals are announced.

The Refinitiv PE Data Feed includes PE transaction details for over 340,000 investments, including round date, investment amount, investment stage and participating investors.

Result: database provides real-time aggregate buyout PE sector allocation across 24 industry groupings.

We use this information to drive PE replication strategy's industry weights.

Industry allocation

Tilt to PE industry exposures

- All PE buyout deals are announced at time of transaction.

- Use PE Refinitiv data to tilt to aggregate PE industry exposures.

- Focus on US PE buyout deals only.

- 24 distinct industry classifications within 11 GICS sectors.

- Result: significant industry tilts versus Russell 2500.
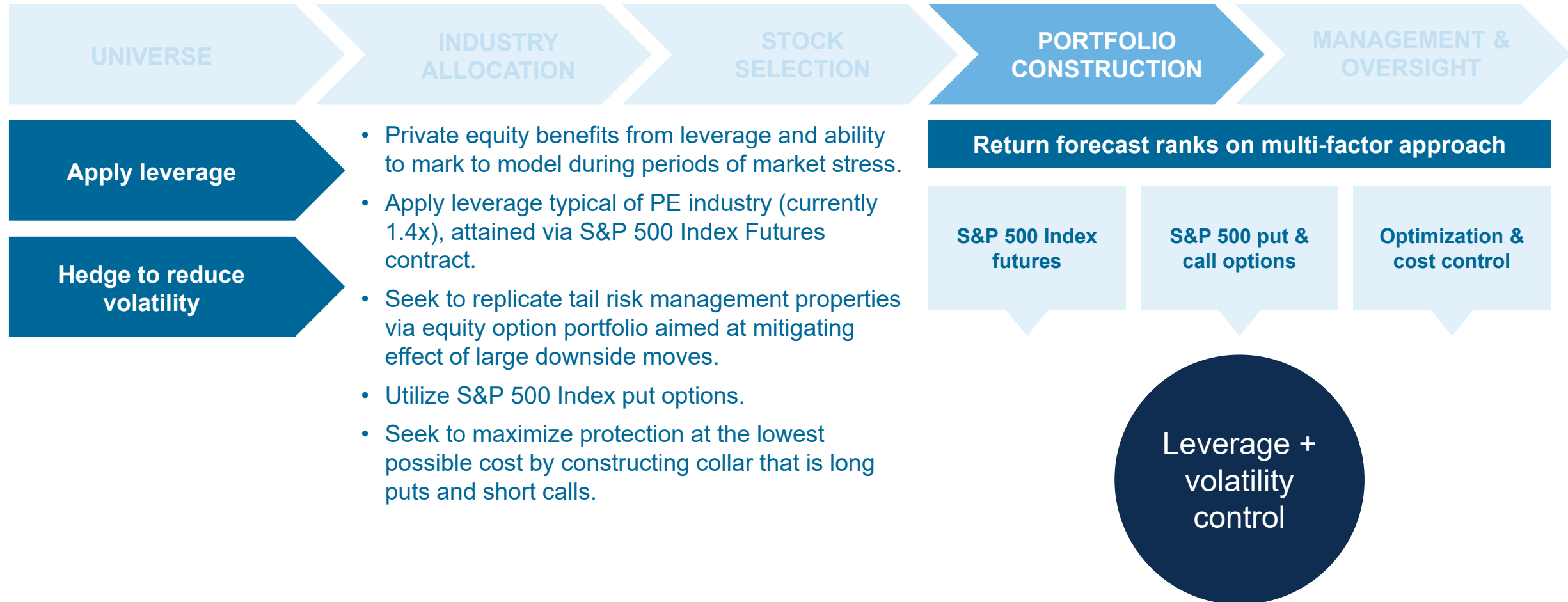
Sector active weights: PE vs. Russell 2500

Chart legend: ■ 2000 to 2006 ■ 2007 to 2013 ■ 2014 to 2019

Sectors (top to bottom): Real Estate, Utilities, Communication Services, Information Technology, Financials, Health care, Consumer staples, Consumer discretionary, Industrials, Materials, Energy. X-axis: -10%, -5%, 0%, 5%, 10%.

Represents active industry weights of the Refinitiv US Private Equity buyout universe versus the Russell 2500 Index. Data from 2000-2019.

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Stock selection

| UNIVERSE | INDUSTRY ALLOCATION | STOCK SELECTION | PORTFOLIO CONSTRUCTION | MANAGEMENT & OVERSIGHT |

Select "PE-like" stocks

- Mix of valuation, quality and growth factors used to rank top 20% of stocks within Russell 2500.
- Aim to hold most attractive stocks within each industry (top quintile).
- Once industry quintiles identified, stocks held at market cap weight.
- Liquidity screen further limits selection to 300-400 names.
- Designed to avoid high turnover signals.

Return forecast ranks on multi-factor approach

Valuation	(P/E, P/BV, P/CF)	**~25%**
Growth	(Select growth factors like innovation)	**~25%**
Quality	(Share repurchases, profitability, ESG)	**~40%**
Other	(Informed investor)	**~10%**

Represents a subset of factors utilized. Factors are subject to change over time.

Portfolio construction

| UNIVERSE | INDUSTRY ALLOCATION | STOCK SELECTION | PORTFOLIO CONSTRUCTION | MANAGEMENT & OVERSIGHT |

Apply leverage

Hedge to reduce volatility

- Private equity benefits from leverage and ability to mark to model during periods of market stress.
- Apply leverage typical of PE industry (currently 1.4x), attained via S&P 500 Index Futures contract.
- Seek to replicate tail risk management properties via equity option portfolio aimed at mitigating effect of large downside moves.
- Utilize S&P 500 Index put options.
- Seek to maximize protection at the lowest possible cost by constructing collar that is long puts and short calls.

Return forecast ranks on multi-factor approach

| S&P 500 Index futures | S&P 500 put & call options | Optimization & cost control |

Leverage + volatility control

Management and oversight

UNIVERSE	INDUSTRY ALLOCATION	STOCK SELECTION	PORTFOLIO CONSTRUCTION	MANAGEMENT & OVERSIGHT

Ongoing management

- Monitor PE industry exposures via Refinitiv database.
- Quarterly rebalancing of single-name portfolio.
- 125% targeted annual portfolio turnover (balance between precision in factor exposures and transaction costs).

Oversight

- Daily risk monitoring.
- PM review.
- CIO and Compliance oversight.

Integrated process

Industry tilts
PE exposures

Stock selection
PE characteristics

Option overlay
Downside protection

Mackenzie's differentiators

SMID cap focus — research shows buyout PE activity is concentrated in small and mid-sized companies. True replication will tilt away from large and mega-sized companies.

Extended holding period — average holding period for buyout PE is approximately seven years. True replication will not feature momentum or other short-term trading signals.

Downside hedging — private equity avoids full markdown during equity bear markets. True replication will incorporate downside mitigation strategies to mitigate left tail risk.

Mackenzie Private Equity Replication Strategy – performance (CAD)

> Mackenzie Private Equity Replication Fund has performed well since inception, outperforming the Russell 2500 by <u>8.3%</u>, with 65% of the volatility.

> The strategy is designed to replicate the long-term performance characteristics of US buyout private equity. Performance vs. the Russell 2500 is shown as a near-term gauge because PE returns are released with a long lag, are not fully marked to market, and the Russell 2500 is representative of the market cap of the firm's buyout PE tends to favour. The most recent data for the Cambridge Associates PE Index is September 30, 2022 in the right-hand-side table.

As of 2023-04-30	SI of composite	
	Return	Std dev
Mackenzie Private Equity Replication Strategy (Composite)	10.9%	14.2%
Mackenzie Private Equity Replication Fund (Series F)*	10.3%	14.2%
FTSE Canada 91 Day T-Bill + 650bps	8.0%	0.6%
Russell 2500	2.0%	21.9%
S&P 500	9.1%	18.3%

Composite inception date: 2021-01-01
*Fund inception date: 2020-12-17

As of 2022-09-30	SI of composite	
	Return	Std dev
Mackenzie Private Equity Replication Strategy (Composite)	8.2%	13.9%
Mackenzie Private Equity Replication Fund (Series F)*	6.9%	13.9%
FTSE Canada 91 Day T-Bill + 650bps	7.1%	0.3%
Russell 2500	-1.8%	21.9%
S&P 500	3.2%	18.1%
Cambridge Associates US Private Equity (Legacy)	18.7%	n/a

Composite inception date: 2021-01-01
*Fund inception date: 2020-12-17

Smoothing of returns due to use of downside hedging

Legend: Russell 2500 TR CAD (orange), MPER (CAD) (blue)

Russell 2500 peak-to-trough declines

Period	1	2	3	4	5	6	7
Date range (start)	Feb 12	Mar 15	Apr 29	Nov 4	Aug 18	Nov 30	Feb 2
Date range (end)	Mar 4	Mar 24	May 12	Jun 16	Sep 26	Dec 28	Mar 23
Russell 2500 (CAD) return	-6.3%	-7.2%	-7.6%	-24.2%	-11.6%	-7.6%	-11.2%
MPER (CAD) return	-1.8%	-2.8%	-1.7%	-15.7%	-2.9%	-5.1%	-5.7%
Excess return	**4.5%**	**4.4%**	**5.9%**	**8.4%**	**8.7%**	**2.5%**	**5.6%**

Source: Morningstar. Data as of April 30, 2023. Performance shown is of a representative account (Canadian mutual fund, fee-based series or Series F). Shown is growth of $10,000 since Jan. 1, 2021, to Apr. 30, 2023, with major drawdown periods highlighted.

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Disclaimer