Alternative opportunities

2022 Outlook and methodology | Mid-year update | USD

Invesco Investment Solutions

2022 Alternative opportunities: Private market outlook

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Invesco Investment Solutions

Legend	Delta Δ (if applicable)
Very attractive	
Attractive	↗
Neutral	
Unattractive	↘
Very unattractive	

Current environment

Asset class	Overall	Valuations	Fundamentals	Regime
Private credit	**Neutral ↘**	**Attractive ↗**	**Neutral* ↘**	**Unattractive ↘**
Private equity	**Neutral**	**Neutral**	**Neutral**	**Unattractive ↘**
Real assets	**Neutral ↘**	**Neutral ↘**	**Attractive ↘**	**Unattractive ↘**

Executive summary

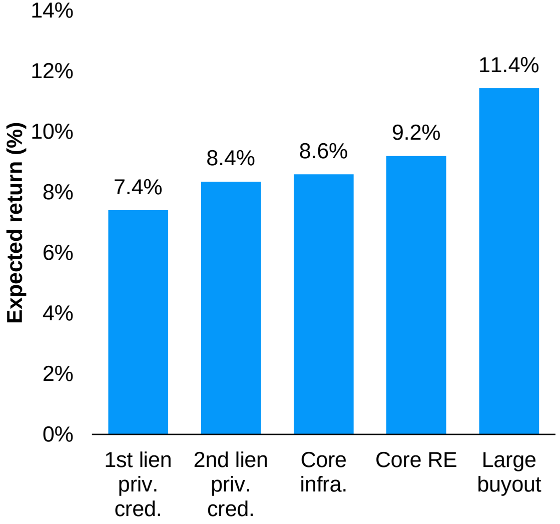
- Private markets may be a way for investors to diversify their portfolios to meet their objectives, whether enhancing growth with private equity, finding income in direct lending, or diversification through real assets. In the chart above, we present our views on private alternatives in today's market environment.
- With high and persistent inflation, rising interest rates, widening credit spreads, and significant equity market volatility, investors are facing many macroeconomic hurdles simultaneously. These conditions are most clear in our regime signal, which is presently at unattractive levels due high and rising volatility, a stark contrast from the investment environment just a few months ago in our prior publication.
- Combining the difficult backdrop with the latest data available for private markets, our framework leads us to the conclusion that all assets are presently neutral due to strong, but weakening, fundamentals and valuations that are roughly in line with history.
- Within private credit, spreads have held up relative to public assets, leading to an attractive valuation rating. Of note, we have downgraded fundamentals to neutral (*) as it has become evident that borrowing conditions have tightened, thus negatively impacting interest coverage ratios, which is not yet reflected in the data.

* We have downgraded private credit fundamentals to neutral based on present market conditions and lagged effects in the data

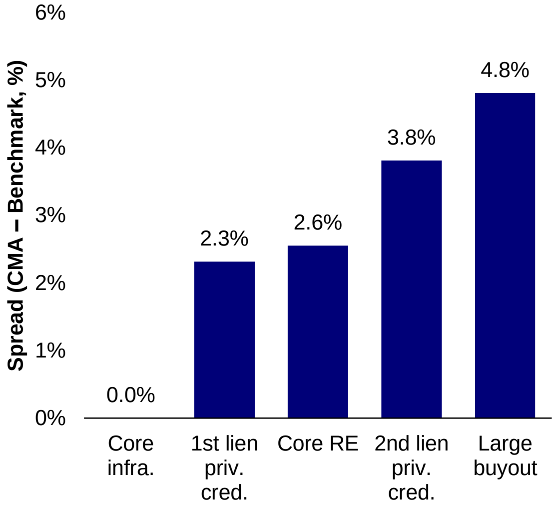
Market snapshot

Real assets and 1st lien private credit look attractive relative to history

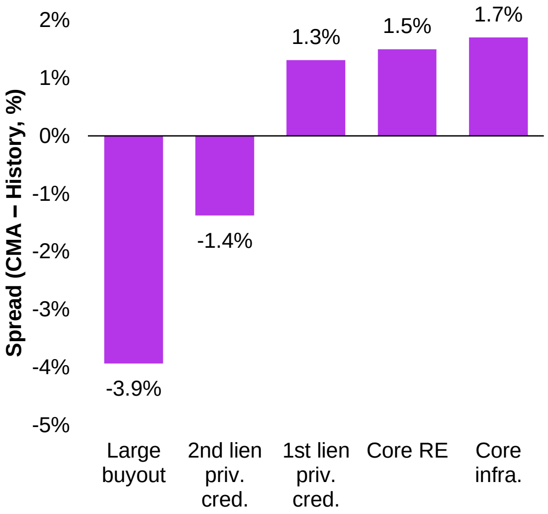
Private market CMAs



Illiquidity premium



Forward-looking vs historical



Source: Invesco Investment Solutions, Bloomberg L.P., Burgiss, Preqin. For illustrative purposes only. All historical return data covers a 20Y period, other than 1st lien private credit, which is since inception of the CDLI-S index (Q1 2011). Benchmarks for core infra., 1st line priv. cred., core RE, large buyout, are as follows; listed infrastructure, broadly syndicated loans, high yield, REITS, and broad US equites. Past performance is not a guarantee of future results. There can be no assurance that any estimated returns or projections can be realized, that forward-looking statements will materialize or that actual returns or results will not be materially lower than those presented. Current return data as of March 31, 2022. Data is unhedged USD and private markets are gross of normative fees. An investment cannot be made into an index. Refer to proxy information slide for additional information. Capital market assumptions are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions.

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Invesco

2022 Alternatives outlook: Direct lending

Jeff Bennett, CFA
Head of Manager Selection
Invesco Investment Solutions

Ron Kantowitz
Head of Direct Lending
Invesco Private Debt

Neutral rating due to challenged macro environment, weakened fundamentals, and spread widening

Asset class	Overall	Valuations	Fundamentals	Regime
Private credit	**Neutral ↘**	**Attractive ↗**	**Neutral* ↘**	**Unattractive ↘**

From a macroeconomic perspective, inflation and supply chain issues have supplanted COVID as the primary risk to earnings. Tighter labor market conditions, monetary policy and geopolitical uncertainty will likely pressure economic growth and margins. This has led to an increase in volatility across public markets and a decline in valuations which historically has led to contagion into private markets.

Our experience suggests that these environments are well-suited to allocations in direct lending, particularly strategies that focus on senior secured positions in the capital structure, low debt-to-enterprise value, conservative leverage and protections via strong documentation. Despite the asymmetric nature of direct lending, the asset class is well positioned to capitalize on the opportunity with the potential for greater returns with managed risk.

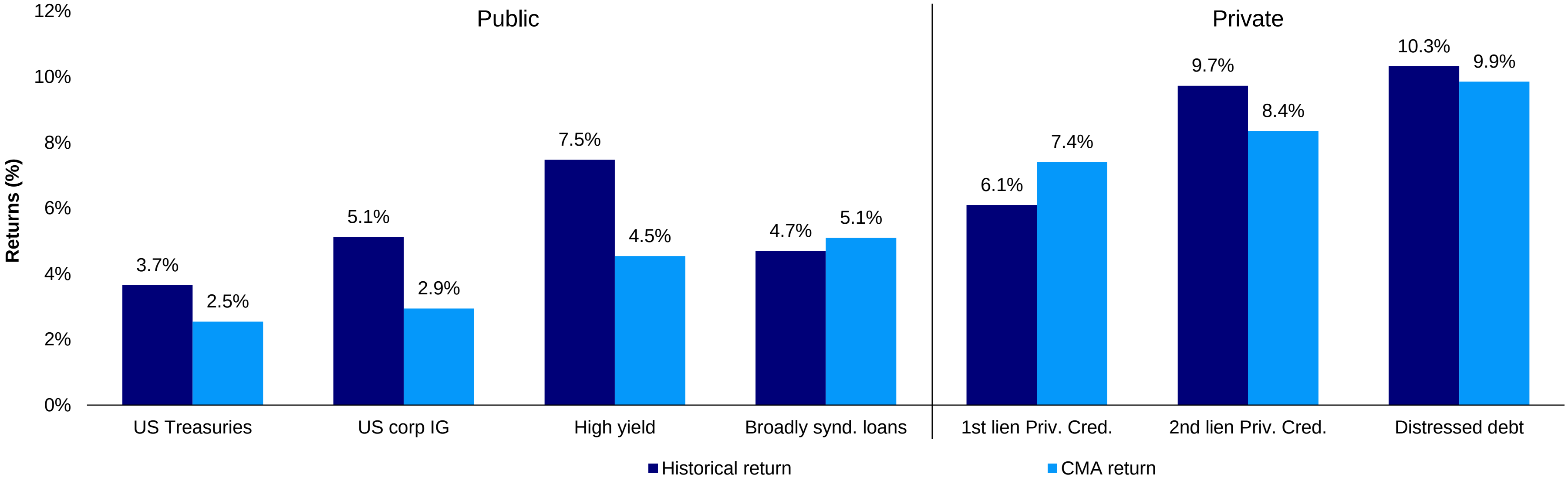
We believe vintages that deploy capital in this type of environment have the potential to generate returns in excess of original expectations. Private equity's focus on the middle market space continues to increase with record sums of dry powder driving new transactions. As this activity accounts for the majority of direct lending issuance, a structural tailwind continues to drive demand for debt financing. Despite the headwinds, fundamentals also remain supportive. Issuers have maintained healthy balance sheets and have interest coverage multiples with cushion to withstand higher rates.

In our view, the present environment bodes well for conservative direct lending strategies, particularly strategies deploying new capital without legacy portfolio issues. Despite a conservative posture, return opportunities and underwritten yields for new vintages can be greater than recent history. The floating rate feature of direct lending transactions allows investors to benefit from higher rates while spreads have also increased in tandem with liquid markets.

* We have downgraded private credit fundamentals to neutral based on present market conditions and lagged effects in the data

CMAs versus history

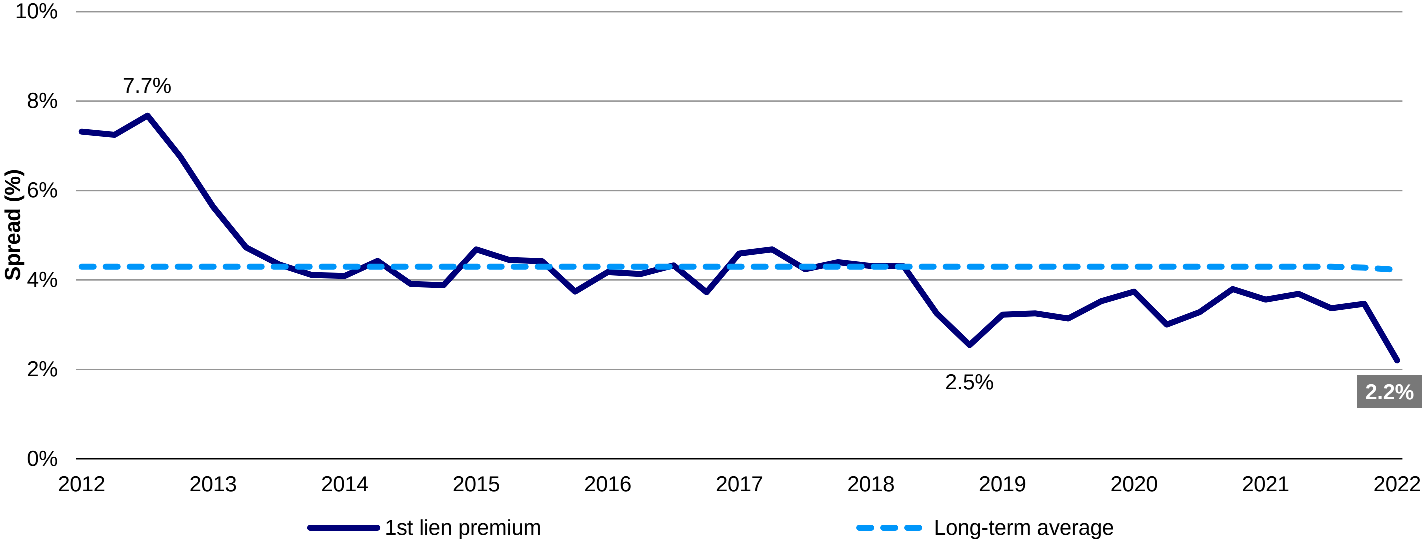
Long-term historical return vs. CMA expected return



Source: Invesco Investment Solutions, Bloomberg L.P., Burgiss, Preqin. For illustrative purposes only. All historical return data covers a 20Y period, other than 1st lien private credit, which is since inception of the CDLI-S index (Q1 2011). Past performance is not a guarantee of future results. There can be no assurance that any estimated returns or projections can be realized, that forward-looking statements will materialize or that actual returns or results will not be materially lower than those presented. Current return data as of March 31, 2022. Data is unhedged USD and private markets are gross of normative fees. An investment cannot be made into an index. Refer to proxy information slide for additional information. Capital market assumptions are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions.

Valuations: 1st lien yield vs. broadly syndicated loans

1st lien yields are still higher than public market comparisons, but illiquidity premia has shrunk from spread widening

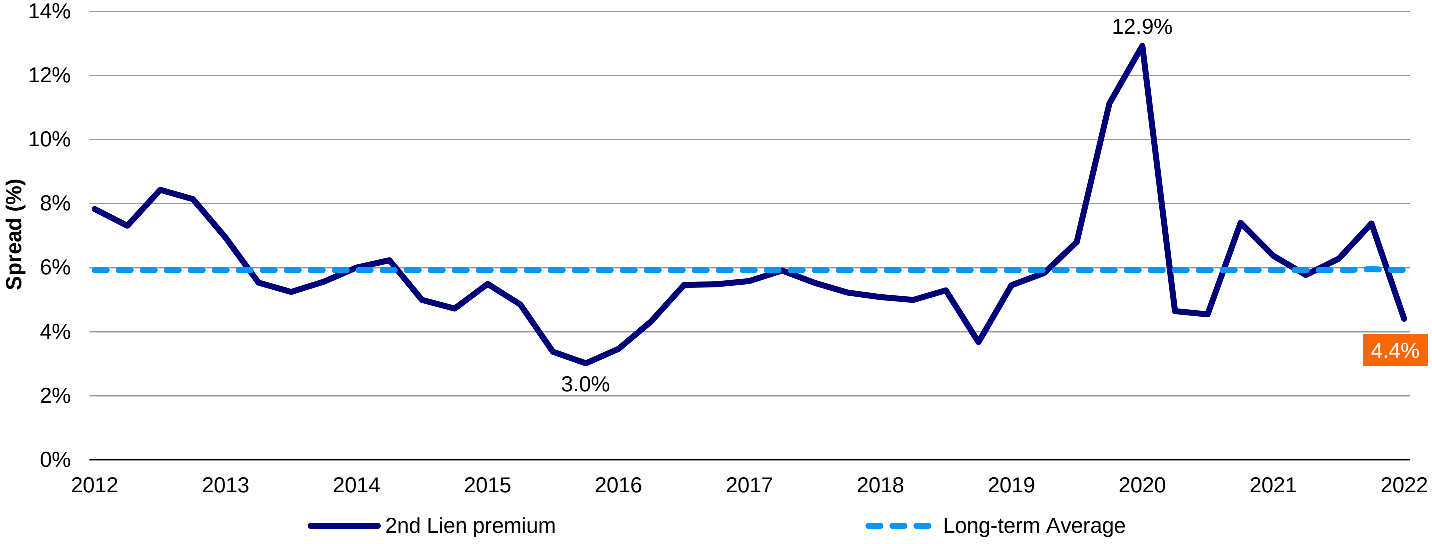


Relative attractiveness %		6m Δ
>4.5	Very attractive	
3-4.5	Attractive	
1.5-3	**Neutral**	↘
0-1.5	Unattractive	
<0	Very unattractive	

Source: Invesco Investment Solutions, Burgiss as of March 31, 2022. 1st lien private credit spread over LIBOR estimates are based on SEC filings by a representative sample of BDCs. Broadly syndicated loans yield is based on spread-to-maturity on the JPM Leveraged Loan Index.

Valuations: 2nd lien yield vs. high yield

2nd lien spreads to high yield have narrowed and are slightly below historical averages

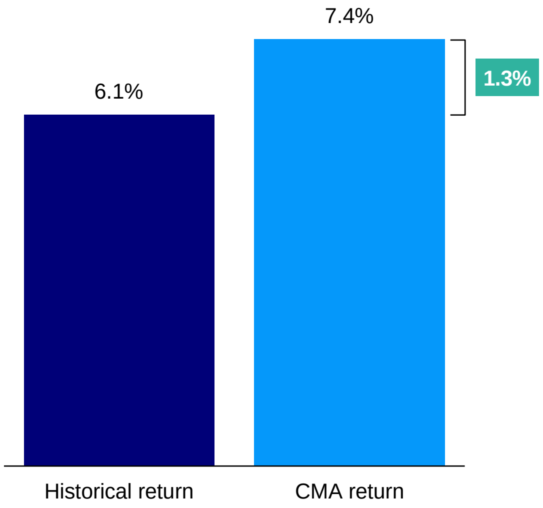


Relative attractiveness %		6m Δ
>8.5	Very attractive	
7-8.5	Attractive	
5.5-7	Neutral	
4-5.5	**Unattractive**	↘
<4	Very unattractive	

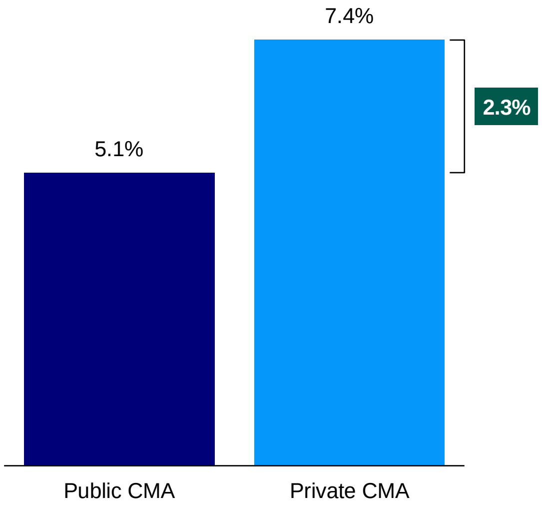
Source: Invesco Investment Solutions as of March 31, 2022. 2nd lien private credit spread over LIBOR estimates based on SEC filings by a representative sample of BDCs. HY bond yield is based on OAS on BBG US Corp HY Index.

Valuations: 1st lien CMA vs historical returns

1st lien CMAs are greater than history and improving to an attractive rating, while also providing a significant spread to public markets



Relative attractiveness %		6m Δ
>2.0	Very attractive	
1-2	**Attractive**	↗
-1-1	Neutral	
-2- -1	Unattractive	
<-2	Very unattractive	

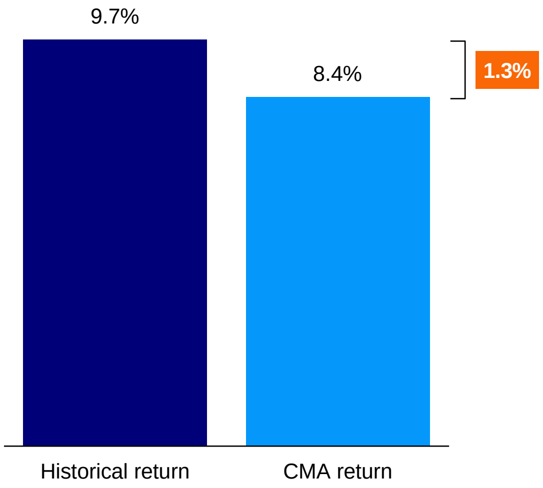


Relative attractiveness %		6m Δ
>2.0	**Very attractive**	
1-2	Attractive	
-1-1	Neutral	
-2- -1	Unattractive	
<-2	Very unattractive	

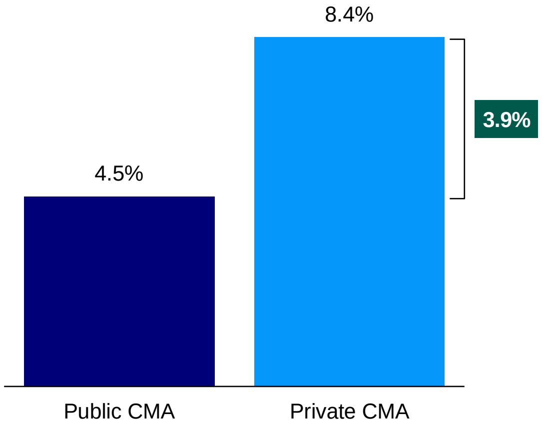
Source: Invesco Investment Solutions, Bloomberg L.P., Burgiss, Preqin. For illustrative purposes only. Public CMA refers to broadly syndicated loans. Past performance is not a guarantee of future results. There can be no assurance that any estimated returns or projections can be realized, that forward-looking statements will materialize or that actual returns or results will not be materially lower than those presented. Current return data as of March 31, 2022. Data is unhedged USD and private markets are gross of normative fees. An investment cannot be made into an index. Refer to proxy information slide for additional information. Capital market assumptions are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions.

Valuations: 2nd lien CMA vs historical returns

2nd lien CMAs are lower than their historical averages due to spread widening yet are expected to command a large premium to public markets



Relative attractiveness %	6m Δ
>2.0	Very attractive
1-2	Attractive
-1-1	Neutral
-2- -1	**Unattractive**
<-2	Very unattractive

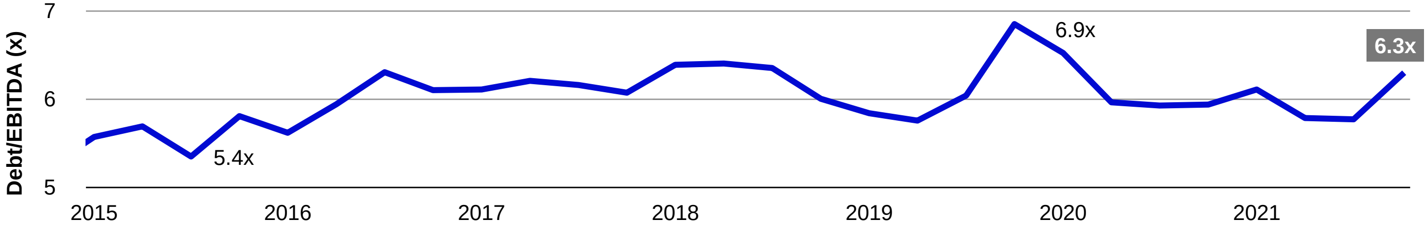


Relative attractiveness %	6m Δ
>2.0	**Very attractive**
1-2	Attractive
-1-1	Neutral
-2- -1	Unattractive
<-2	Very unattractive

Source: Invesco Investment Solutions, Bloomberg L.P., Burgiss, Preqin. For illustrative purposes only. Public CMA refers to broadly syndicated loans. Past performance is not a guarantee of future results. There can be no assurance that any estimated returns or projections can be realized, that forward-looking statements will materialize or that actual returns or results will not be materially lower than those presented. Current return data as of March 31, 2022. Data is unhedged USD and private markets are gross of normative fees. An investment cannot be made into an index. Refer to proxy information slide for additional information. Capital market assumptions are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions.

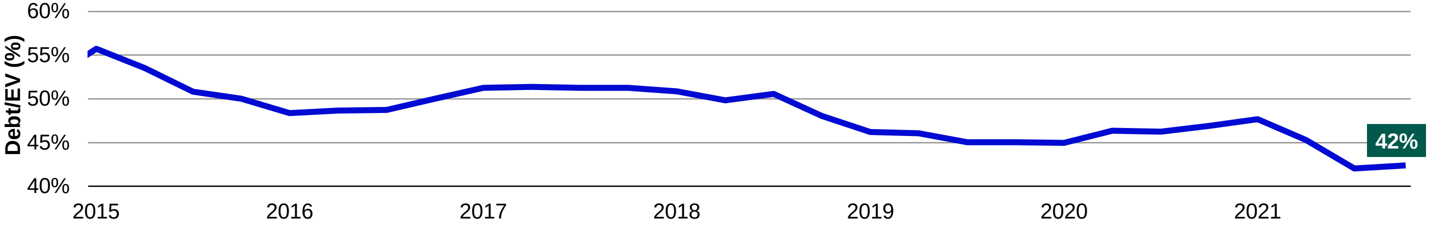
Fundamentals: US deal multiples and loan-to-value ratio

Debt multiples within private credit issuances are growing in the US, but remain in line with history



Relative attractiveness (x)		6m Δ
<4	Very attractive	
4-5	Attractive	
5-7	**Neutral**	
7-8	Unattractive	
>8	Very unattractive	

However, loan-to-value ratios are still healthy based on enterprise value

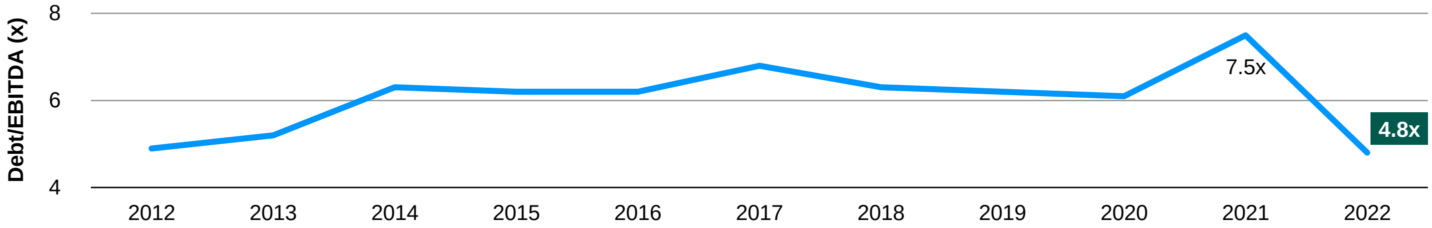


Relative attractiveness %		6m Δ
<45	**Very attractive**	
45-50	Attractive	
50-55	Neutral	
55-60	Unattractive	
>60	Very unattractive	

Source: Invesco Investment Solutions, Pitchbook 1Q22 US PE Breakdown, as of March 31, 2022. Represents four-quarter rolling median numbers.

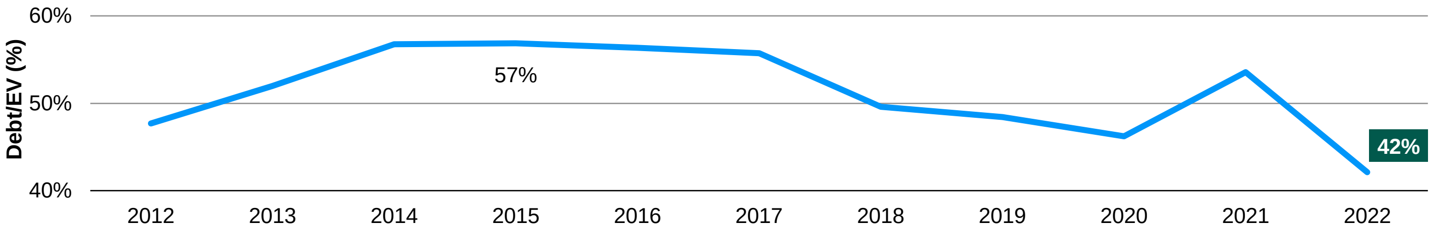
Fundamentals: European deal multiples and loan-to-value ratio

After recent drawdowns in the European market, debt metrics of private credit deals are very attractive relative to EBITDA



Relative attractiveness (x)		6m Δ
<5	**Very attractive**	↗
5-6.5	Attractive	
6.5-8.5	Neutral	
8.5-10	Unattractive	
>10	Very unattractive	

Loan-to-value ratios are also at very attractive levels compared to enterprise value

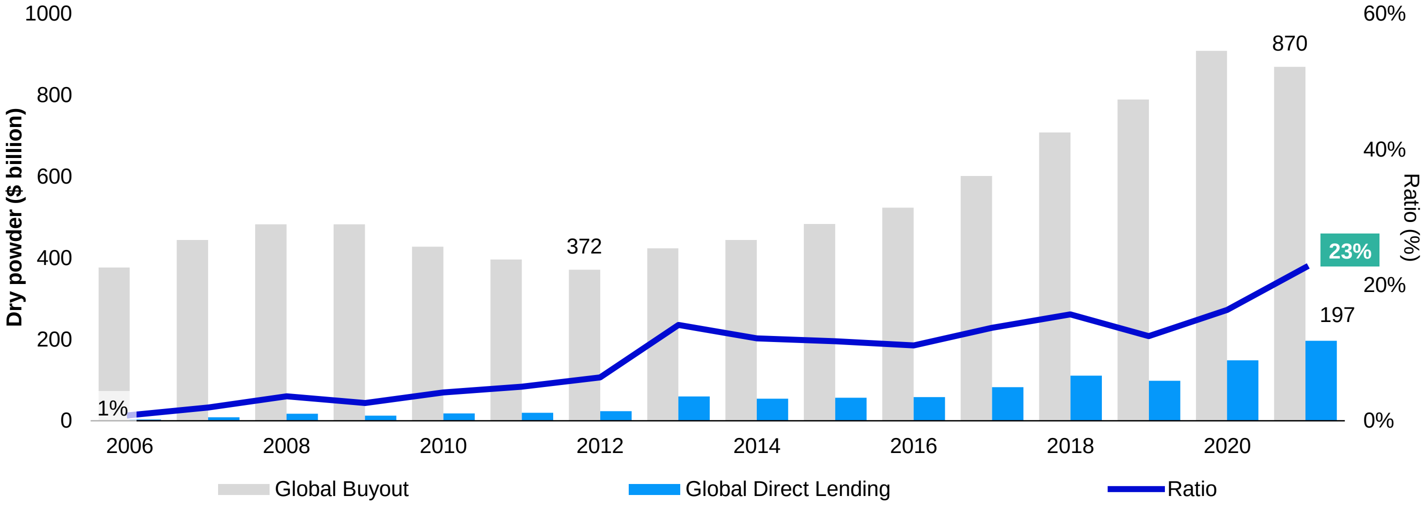


Relative attractiveness %		6m Δ
<45	**Very attractive**	↗
45-50	Attractive	
50-55	Neutral	
55-60	Unattractive	
>60	Very unattractive	

Source: Invesco Investment Solutions, Pitchbook 2Q22 European PE Breakdown, as of June 30, 2022. Represents four-quarter rolling median numbers. Data has been restated from prior versions due to an updated source from the vendor.

Fundamentals: Ratio of dry powder in global large buyout and direct lending

Global direct lending dry powder as a percentage of buyout dry powder is increasing, leaving fewer options on the table for deals, but still remains attractive



Relative attractiveness %	6m Δ
>15	Very attractive
15-25	Attractive
25-35	Neutral
35-45	Unattractive
>45	Very unattractive

Source: Invesco Investment Solutions, Preqin as of March 31, 2022

Direct lending: Alternative rating scorecard

Neutral rating due to challenged macro environment, weakened fundamentals, and spread widening affecting valuations

Direct lending: Neutral ↘		**Current**	**6m Δ**	**Relative attractiveness**
Valuations				
Illiquidity premium	1st lien private credit vs. broadly syndicated loans	2.2%	↘	Neutral
	2nd lien private credit vs. HY bonds	4.4%	↗	Unattractive
CMA	1st lien private credit CMA vs. historical return	1.3%		Attractive
	1st lien private credit CMA vs. public CMA (BSL)	2.3%		Very attractive
	2nd lien private credit CMA vs. historical return	-1.4%	↗	Unattractive
	2nd lien private credit CMA vs. public CMA (HY)	3.9%		Very attractive
Total valuations				**Attractive**
Fundamentals/ supply and demand				
Debt metrics (US)	Debt/EBITDA	6.3x	↗	Neutral
	Loan-to-Value (Debt/EV)	42%		Very attractive
Debt metrics (Europe)	Debt/EBITDA	4.8x	↗	Very attractive
	Loan-to-Value (Debt/EV)	42.1%		Very attractive
Supply and demand balance	Global direct lending/Global large buyout	23%		Attractive
Total fundamentals			↘	**Neutral***
Macro/regime				
GRACI tactical sentiment	Regime expected return vs. historical average		↘	Unattractive
	Regime expected return vs. public market comparison		↘	Unattractive
Total regime			↘	**Unattractive**

Source: Invesco Investment Solutions as of March 31, 2022. Regime analysis as of Sept. 30, 2022. * We have downgraded fundamentals to neutral based on present market conditions and lagged effects in the data.

Private equity

2

2022 Alternatives outlook: Large buyout

Jeff Bennett, CFA
Head of Manager Selection
Invesco Investment Solutions

Neutral rating from stable fundamentals and weakening valuations

Asset class	Overall	Valuations	Fundamentals	Regime
Private equity	Neutral	Neutral	Neutral	Unattractive ↘

Private equity outlook

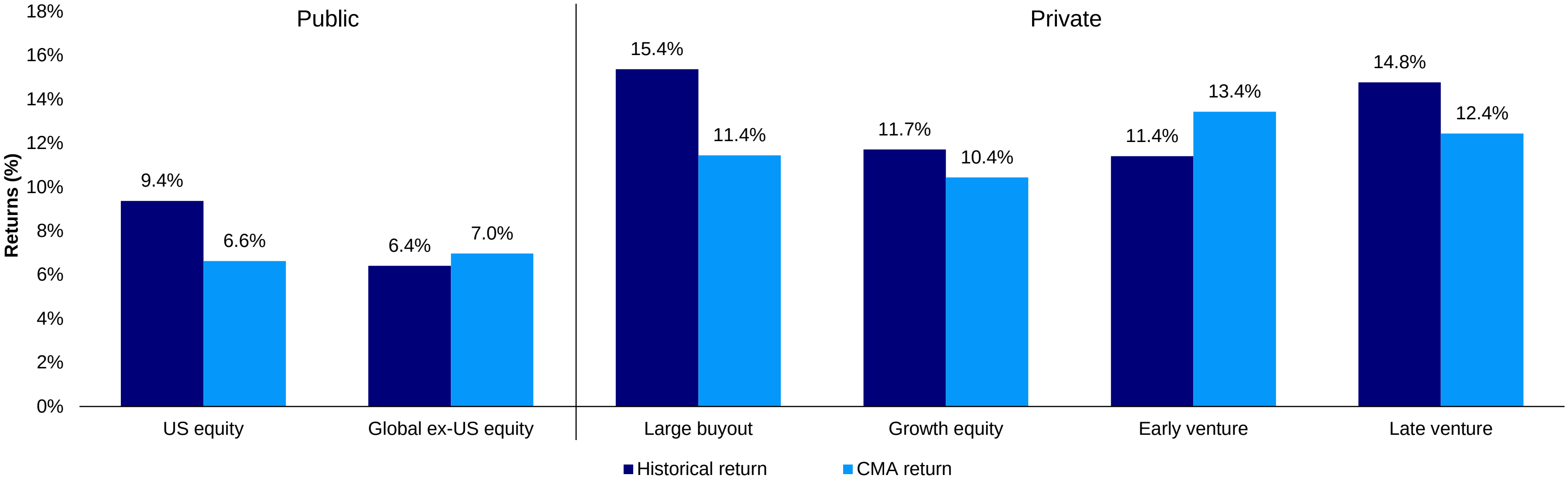
Looking out into the horizon using our capital market assumptions (CMAs), there are few places for equity investors to go when seeking historical levels of growth. Private equity has provided outsized levels of return than public markets on average and double-digit annualized returns have been common historically. We are monitoring the combined impact of declining equity multiples with rising interest costs within the leveraged buyout (LBO) market which have offsetting impacts on prospective returns.

Private equity strategies enter the back half of 2022 with muted new deal and exit activity. Our CMA is slightly below LBO's historical return profile, yet significantly above that of public equity. We expect a pick-up in activity once market conditions stabilize driven in part by the combination healthy levels of dry powder and an expanded opportunity set for take-private transactions resulting from the sell-off in public equity markets.

Despite the growth in deal activity from LBO's over the past several years, recent levels relative to the size of the M&A market are nowhere near those of the 2000's tech bubble and are presently being monitored. Dry powder levels are in line with historical averages relative to the size of the SMID opportunity set, providing ample space for deals over the medium term.

CMAs versus history

Long-term historical return vs. CMA expected return



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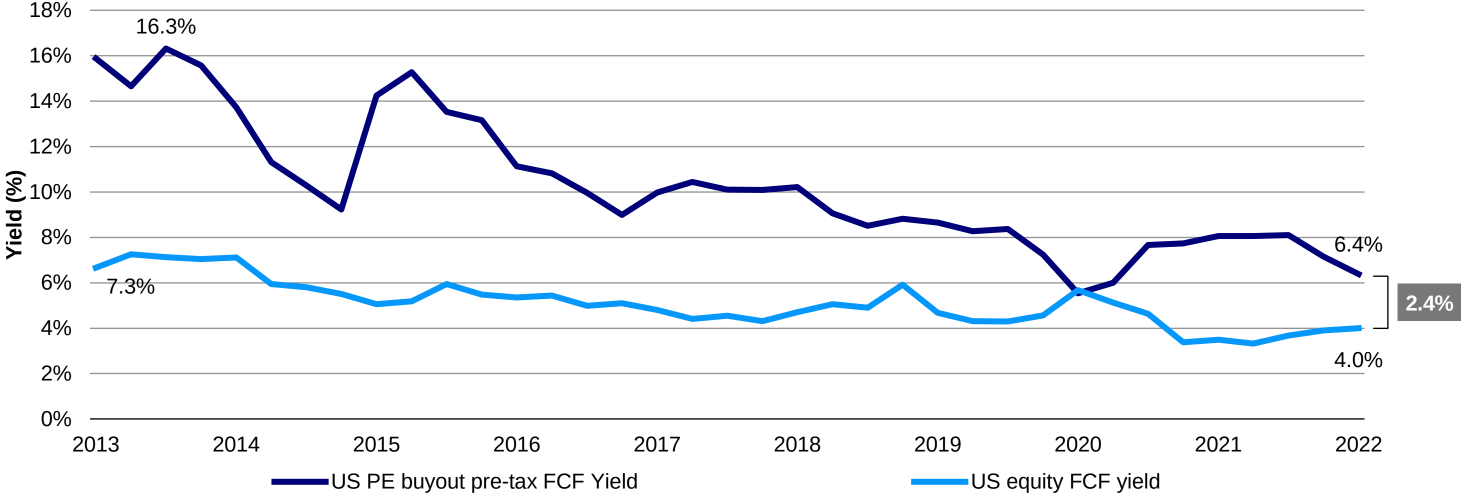
Valuations: US large buyout vs. equity market yield

US large buyout is still expected to provide excess yield relative to public markets, but less than historically observed as compressing valuations are being offset by increasing cost of leverage

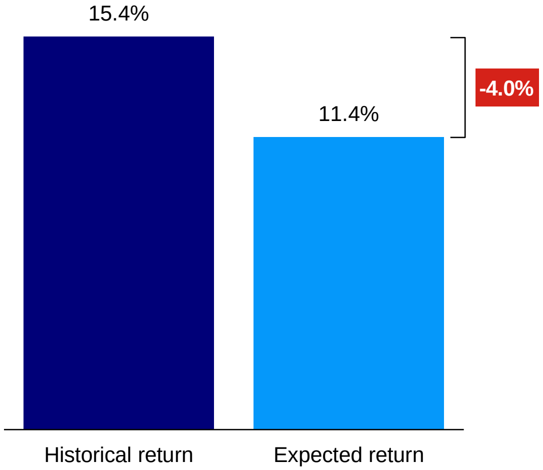


Relative attractiveness %		6m Δ
>6	Very attractive	
4-6	Attractive	
2-4	Neutral	↘
0-2	Unattractive	
<0	Very unattractive	

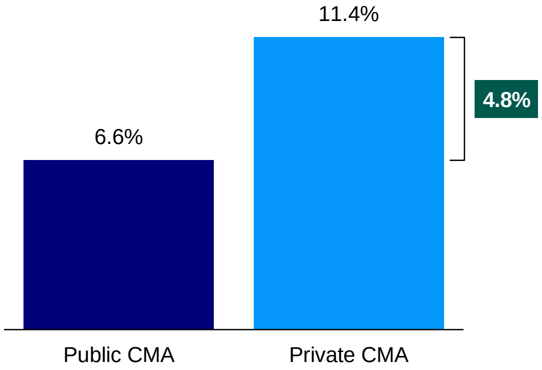
Source: Invesco Investment Solutions, Pitchbook, Bloomberg L.P. as of March 31, 2022

Valuations: CMAs relative to historical averages

Our CMA for US large buyout is below the historical average due to higher cost of financing deals and slower growth



Relative attractiveness %		6m Δ
>2.0	Very attractive	
1-2	Attractive	
-1-1	Neutral	
-2- -1	Unattractive	
<-2	**Very unattractive**	↘

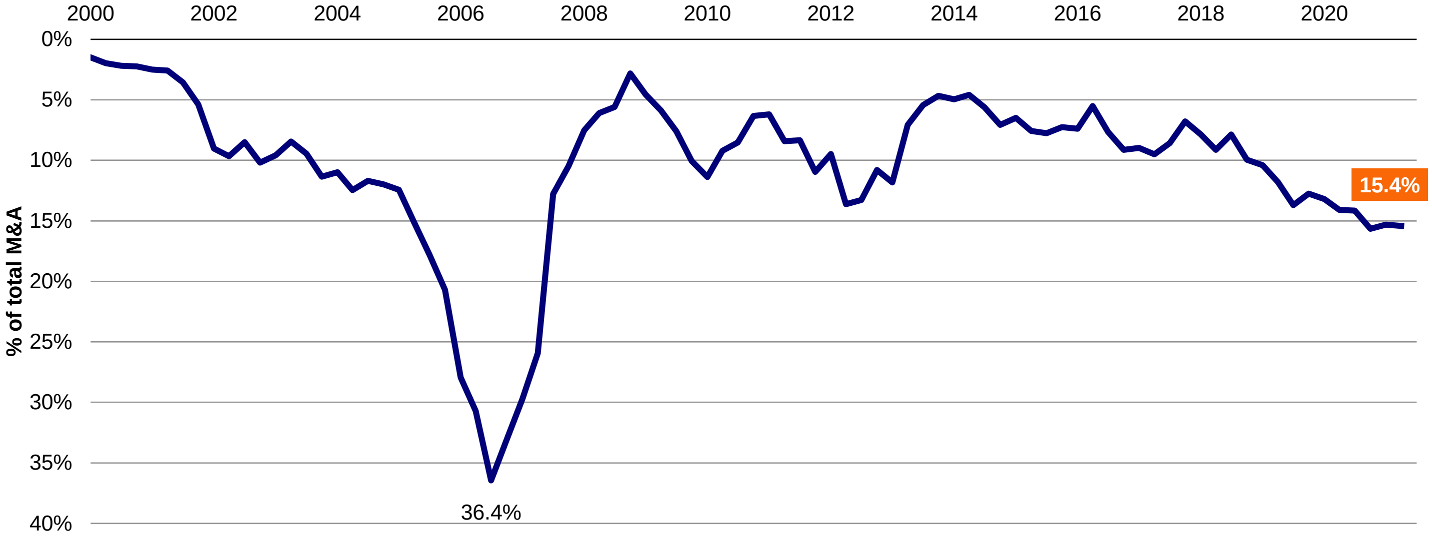


Relative attractiveness %		6m Δ
>2.0	**Very attractive**	
1-2	Attractive	
-1-1	Neutral	
-2- -1	Unattractive	
<-2	Very unattractive	

Source: Invesco Investment Solutions, Bloomberg L.P., Burgiss, Preqin. Historical return data is 20Y for all assets. For illustrative purposes only. Past performance is not a guarantee of future results. There can be no assurance that any estimated returns or projections can be realized, that forward-looking statements will materialize or that actual returns or results will not be materially lower than those presented. Current return data as of March 31, 2022. Data is unhedged USD and private markets are gross of normative fees. An investment cannot be made into an index. Refer to proxy information slide for additional information. Capital market assumptions are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions.

Fundamentals: US large buyout vs. total US M&A activity

US large buyout deal volume has been slowly trending higher relative to the broader M&A market

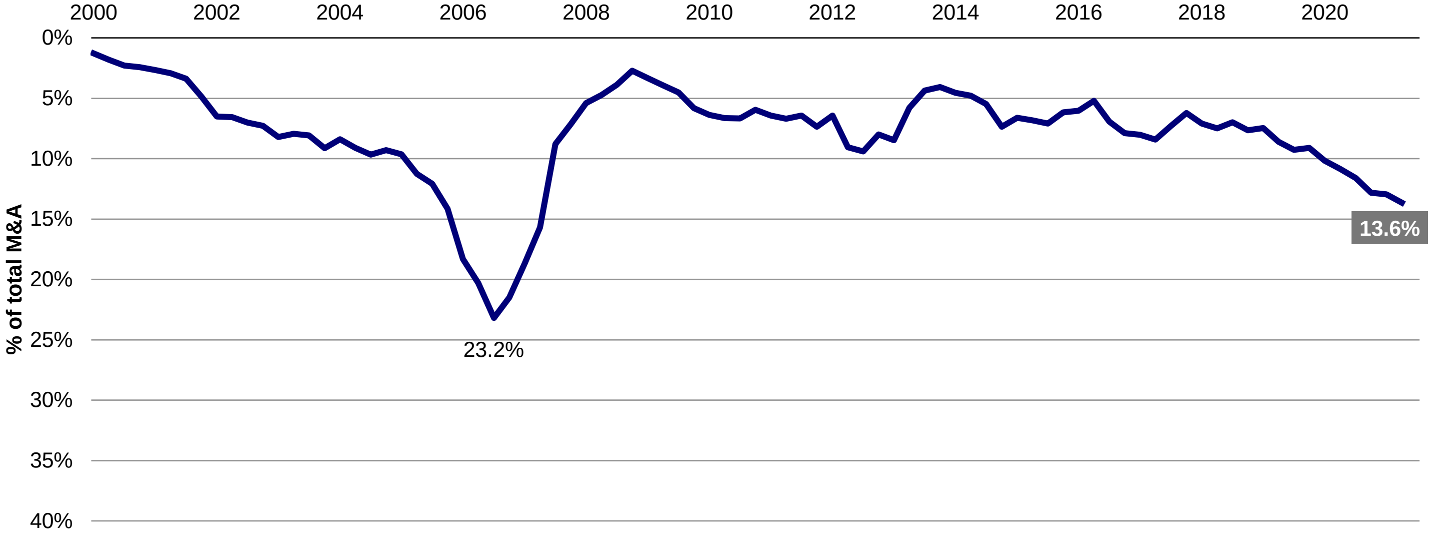


Relative attractiveness %	6m Δ
<5	Very attractive
5-10	Attractive
10-15	Neutral
15-20	**Unattractive**
>20	Very unattractive

Source: Invesco Investment Solutions, Bloomberg L.P. as of March 31, 2022

Fundamentals: Global large buyout vs. total global M&A activity

Global large buyout volumes are trending higher, however the deal composition is a healthier mix than in the US

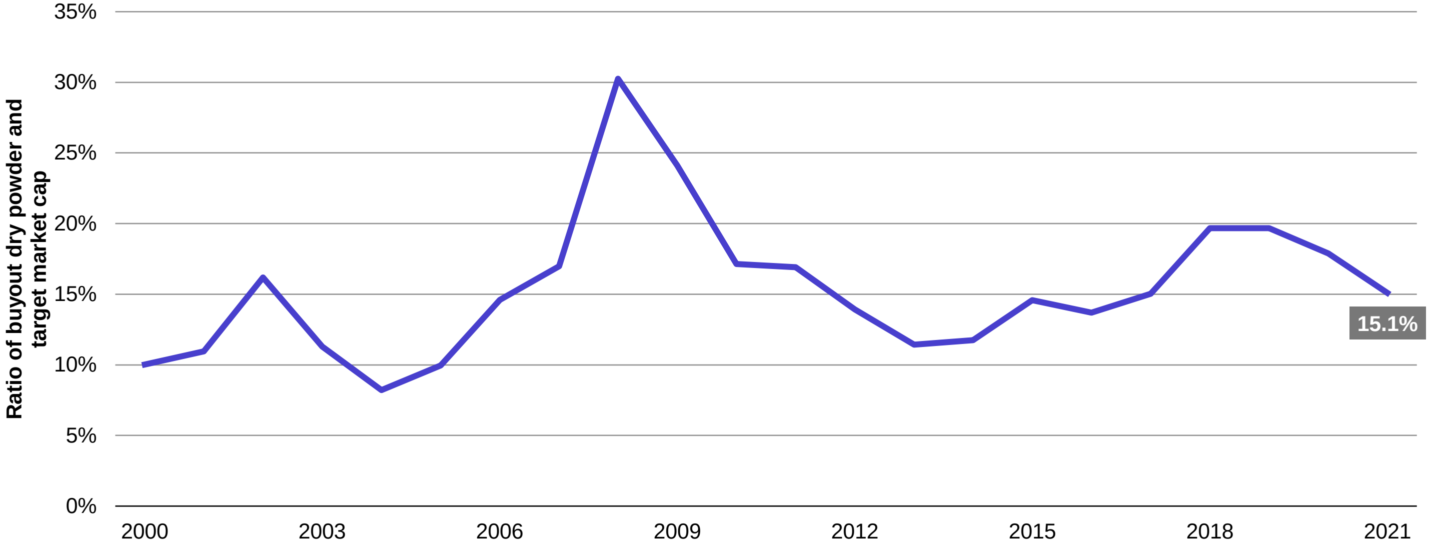


Relative attractiveness %	6m Δ
<5	Very attractive
5-10	Attractive
10-15	**Neutral**
15-20	Unattractive
>20	Very unattractive

Source: Invesco Investment Solutions, Bloomberg L.P. as of March 31, 2022

Fundamentals: Large buyout dry powder vs. mid/small equity market cap

The opportunity set for US large buyout targets remain in balance with dry powder levels, prompting a neutral rating



Relative attractiveness %		6m Δ
<10	Very attractive	
10-15	Attractive	
15-20	**Neutral**	
20-25	Unattractive	
>25	Very unattractive	

Source: Invesco Investment Solutions, Bloomberg L.P., Preqin as of Dec. 31, 2021. Mid/Small Equity Market represented by Russell 2000 Index.

Large buyout: Alternative rating scorecard

Neutral rating from stable fundamentals and weakening valuations

Large buyout: Neutral		Current	6m Δ	Relative attractiveness
Valuations				
Relative yields	Large buyout relative to public equity market yield	2.4%	↘	Neutral
CMA	Large buyout CMA vs. historical return	-3.9%	↘	Very unattractive
	Large buyout CMA vs. public CMA (US equities)	4.8%		Very attractive
Total valuations				**Neutral**
Fundamentals/supply and demand				
Deal volume vs. total M&A activity	US deal vol. vs. US M&A activity	15.4%		Unattractive
	Global deal vol. vs. global M&A activity	13.6%		Neutral
Supply and demand	Large buyout dry powder vs. SMID equity market cap	15.1%		Neutral
Total fundamentals				**Neutral**
Macro/regime				
GRACI tactical sentiment	Regime expected return vs. historical average		↘	Unattractive
	Regime expected return vs. public market comparison		↘	Unattractive
Total regime			↘	**Unattractive**

Source: Invesco Investment Solutions as of March 31, 2022. Regime analysis as of Sept. 30, 2022.

Real assets

3

2022 Alternatives outlook: Real assets

Jeff Bennett, CFA
Head of Manager Selection
Invesco Investment Solutions

Mike Bessell
Investment Strategist
Invesco Global Real Estate

Attractive rating despite weaking fundamentals and valuations, largely due to spread compression

Asset class	Overall	Valuations	Fundamentals	Regime
Real assets	**Neutral ↘**	**Neutral ↘**	**Attractive ↘**	**Unattractive ↘**

Sharp increases in interest rates, most notably in the US, have had a significant impact on real estate financing conditions. Due to these moves being very recent, the full effects upon capital flows, pricing and fundamentals are yet to be realized. Looking forward, real estate investors are focused on the impact of the macroeconomic forces on the broader GDP growth outlook and more specifically on how these may translate into cap rate movements, which are tightening from very attractive levels across an array of benchmark bond measures.

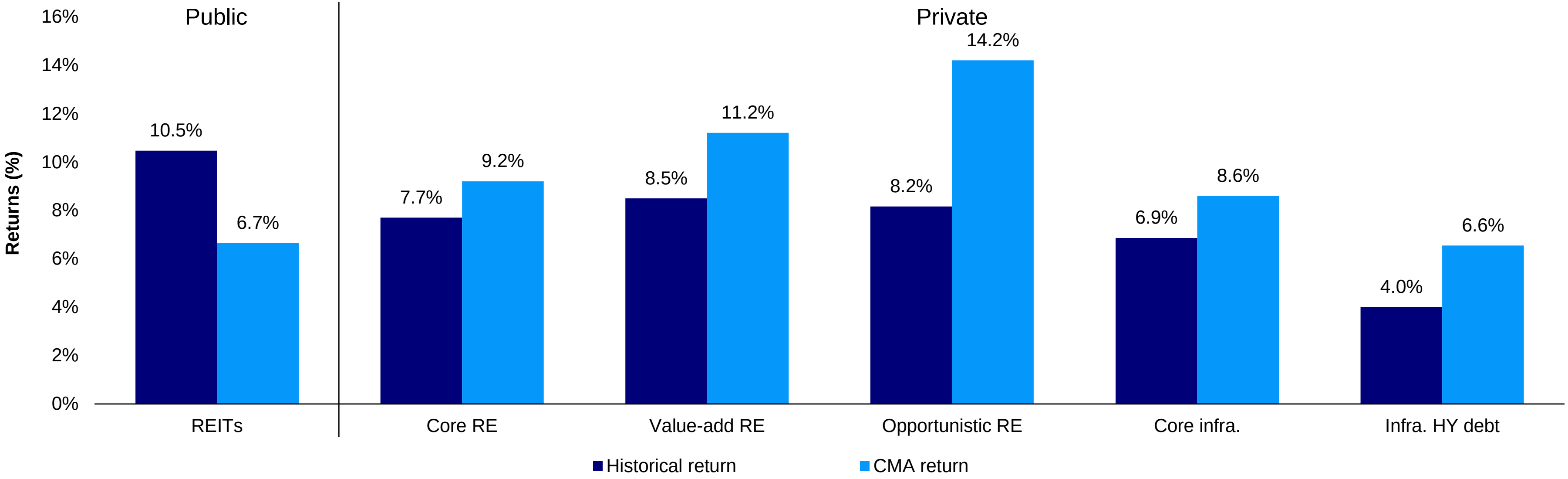
We are watching carefully to see how conditions evolve in different markets, focusing most closely on:

- Occupational trends, where the impacts vary by sector. We continue to see strong demand for space in logistics, a shortage of apartment supply in many cities, and strong take-up of Grade A office space in key markets, particularly in Europe and APAC.
- Capital markets are seeing some transactions stalling or repricing. In the US this is leading to broadening price adjustments for certain sectors and asset profiles, while in other markets this is in anticipation of yields increasing.
- Buyer pools have shrunk in most markets, partly due to leveraged buyers pulling back. While open-end funds and cash buyers have still been showing interest through Q2, almost all participants are proceeding with heightened caution.
- The combination of uncertainty on market pricing and construction cost inflation is resulting in development pipelines reducing, with developers pausing on forward deals.

While present valuations are not likely representative of current clearing prices, we remain optimistic on long-term, secular drivers within real estate, taking a defensive approach while remaining opportunistic amid volatility.

CMAs versus history

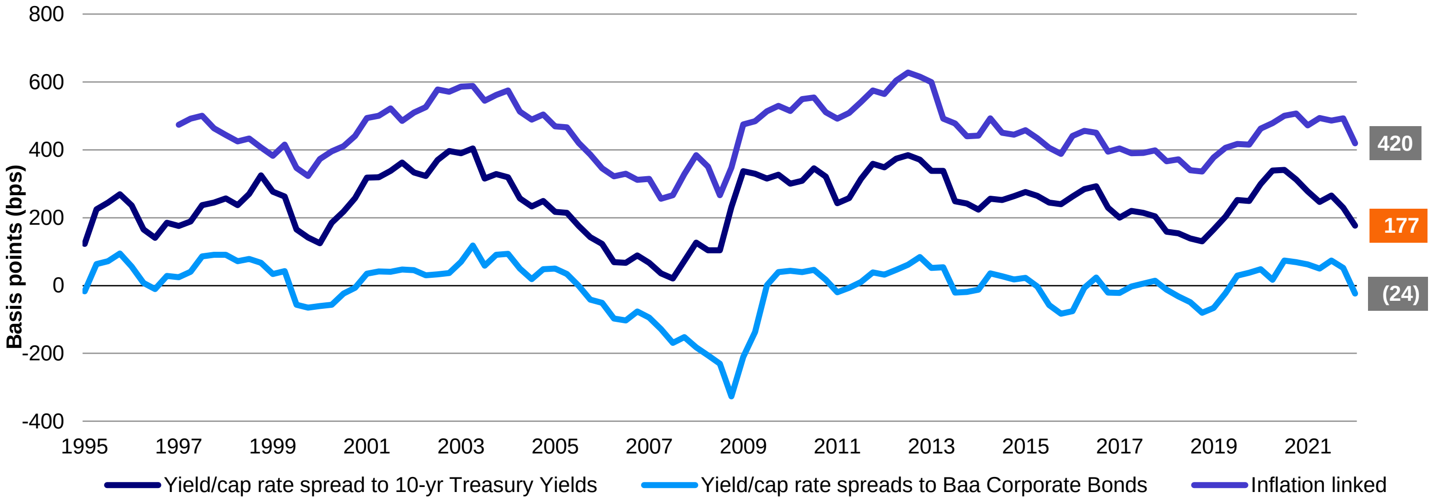
Long-term historical return vs. CMA expected return



Source: Invesco Investment Solutions, Bloomberg L.P., Burgiss, Preqin. Historical return data is 20Y for all assets other than core infrastructure and infrastructure HY debt, which are 15Y, the longest period available. For illustrative purposes only. Past performance is not a guarantee of future results. There can be no assurance that any estimated returns or projections can be realized, that forward-looking statements will materialize or that actual returns or results will not be materially lower than those presented. Current return data as of March 31, 2022. Data is unhedged USD and private markets are gross of normative fees. An investment cannot be made into an index. Refer to proxy information slide for additional information. Capital market assumptions are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions.

Valuations: Cap rate spreads to 10Y Treasuries, Baa corporates, and inflation-linked bonds

Real estate cap rate spreads have tightened but most remain in a neutral range near their long-term averages. Spreads to treasuries have weakened to unattractive levels

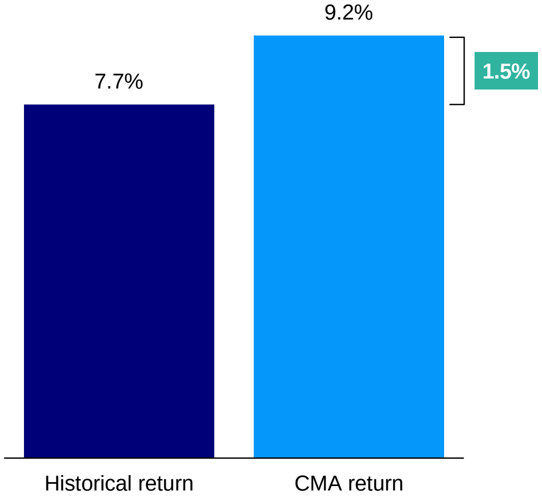


Relative attractiveness		6m Δ
	Very attractive	
	Attractive	
2/3	Neutral	
1/3	Unattractive	
	Very unattractive	

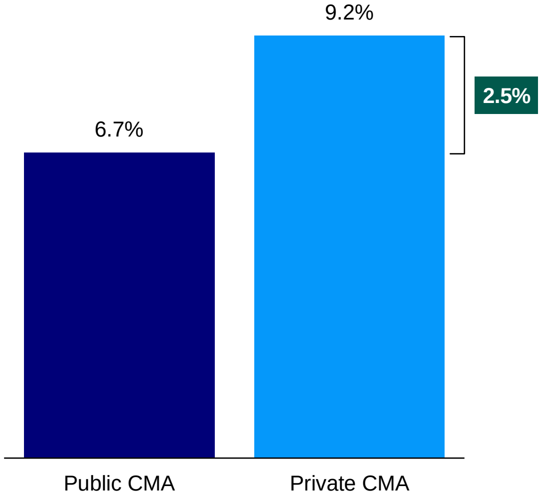
Source: Invesco Investment Solutions, NCREIF, Moody's Analytics as of March 31, 2022.

Valuations: CMAs relative to historical averages for core real estate

Expected return is still larger than history despite recent decreases in cap rates which have downgraded it to an attractive rating



Relative attractiveness %		6m Δ
>2.0	Very attractive	
1-2	**Attractive**	↘
-1-1	Neutral	
-2- -1	Unattractive	
<-2	Very unattractive	

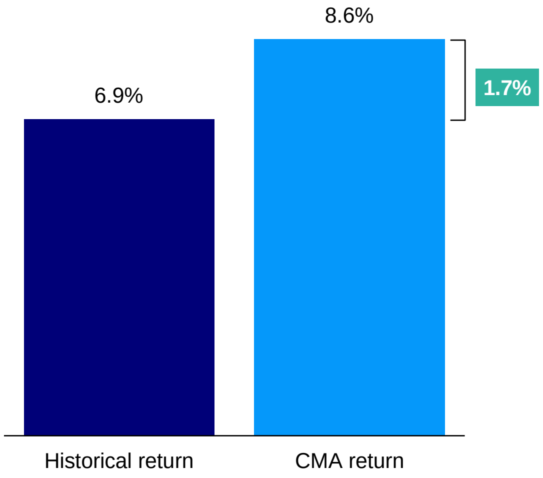


Relative attractiveness %		6m Δ
>2.0	**Very attractive**	
1-2	Attractive	
-1-1	Neutral	
-2- -1	Unattractive	
<-2	Very unattractive	

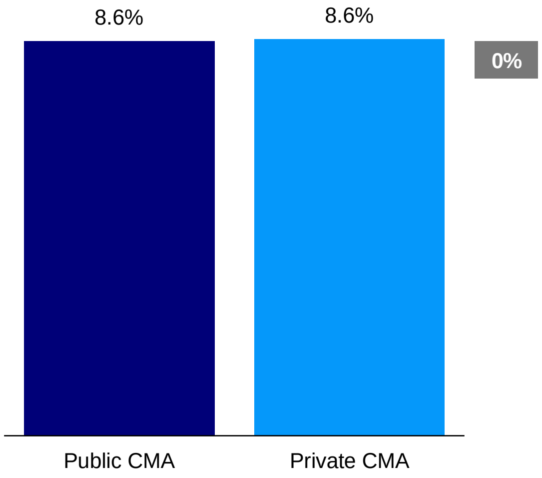
Source: Invesco Investment Solutions, Bloomberg L.P., Burgiss, Preqin. Historical return data is 20Y for all assets. For illustrative purposes only. Past performance is not a guarantee of future results. There can be no assurance that any estimated returns or projections can be realized, that forward-looking statements will materialize or that actual returns or results will not be materially lower than those presented. Current return data as of March 31, 2022. Data is unhedged USD and private markets are gross of normative fees. An investment cannot be made into an index. Refer to proxy information slide for additional information. Capital market assumptions are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions.

Valuations: CMAs relative to historical averages for core infrastructure

Core infrastructure's CMA is attractive relative to its long-term historical returns, and expected returns are in line with listed infrastructure



Relative attractiveness %	6m Δ
>2.0	Very attractive
1-2	**Attractive**
-1-1	Neutral
-2- -1	Unattractive
<-2	Very unattractive

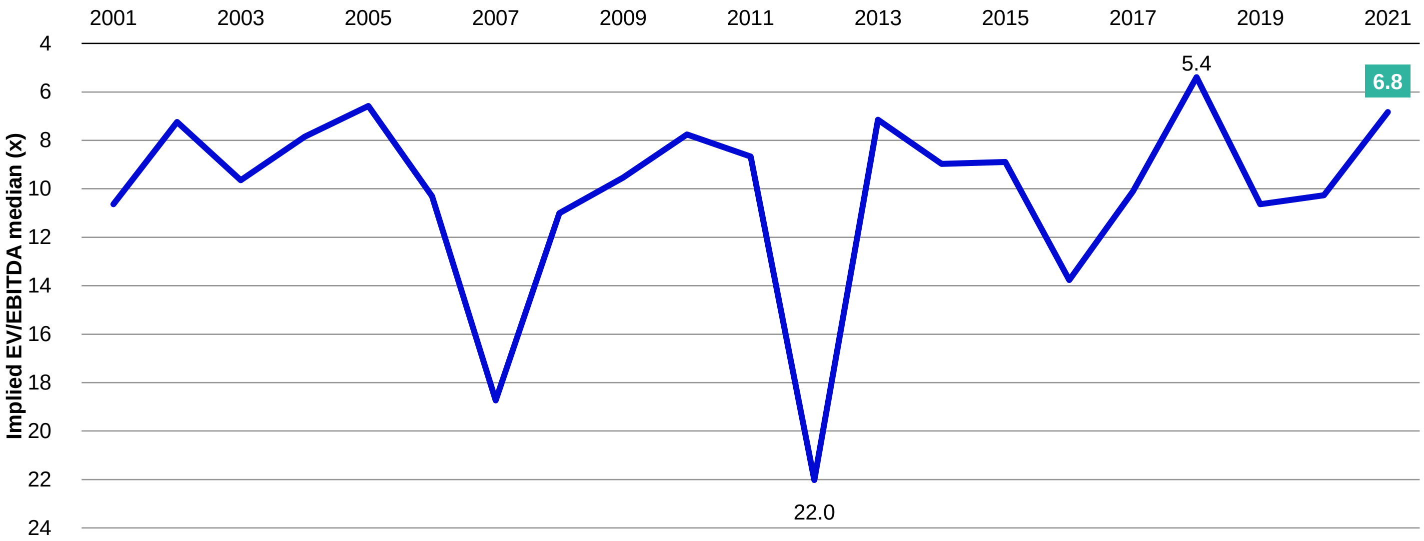


Relative attractiveness %	6m Δ
>2.0	Very attractive
1-2	Attractive
-1-1	**Neutral**
-2- -1	Unattractive
<-2	Very unattractive

Source: Invesco Investment Solutions, Bloomberg L.P., Burgiss, Preqin. Historical return data is 20Y for all assets. For illustrative purposes only. Past performance is not a guarantee of future results. There can be no assurance that any estimated returns or projections can be realized, that forward-looking statements will materialize or that actual returns or results will not be materially lower than those presented. Current return data as of March 31, 2022. Data is unhedged USD and private markets are gross of normative fees. An investment cannot be made into an index. Refer to proxy information slide for additional information. Capital market assumptions are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions.

Valuations: Infrastructure deals implied EV/EBITDA median

Infrastructure deal pricing remains stable

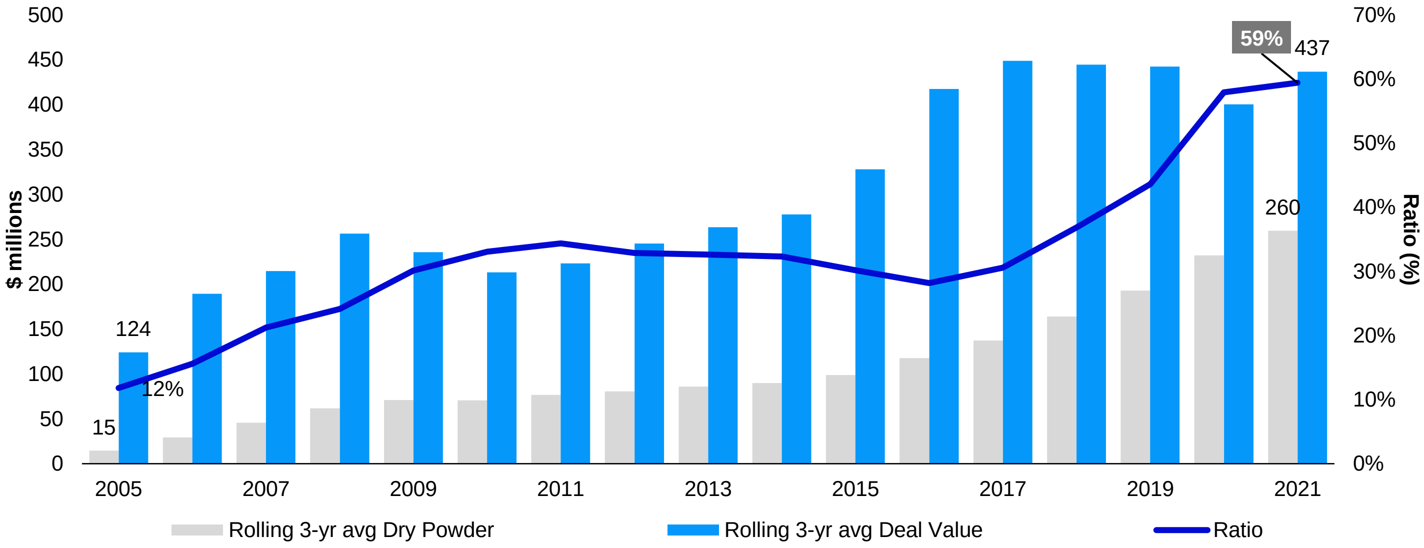


Relative attractiveness (x) 6m Δ	
<6	Very attractive
6-8	**Attractive**
8-12	Neutral
12-14	Unattractive
>14	Very unattractive

Source: Invesco Investment Solutions, Pitchbook, as of Dec. 31, 2021. Comprises utilities, transportation and communications and networking sectors. Latest data available.

Valuations: Infrastructure rolling 3-year average deal value vs. dry powder

Increasing demand for infrastructure assets with stable deal values

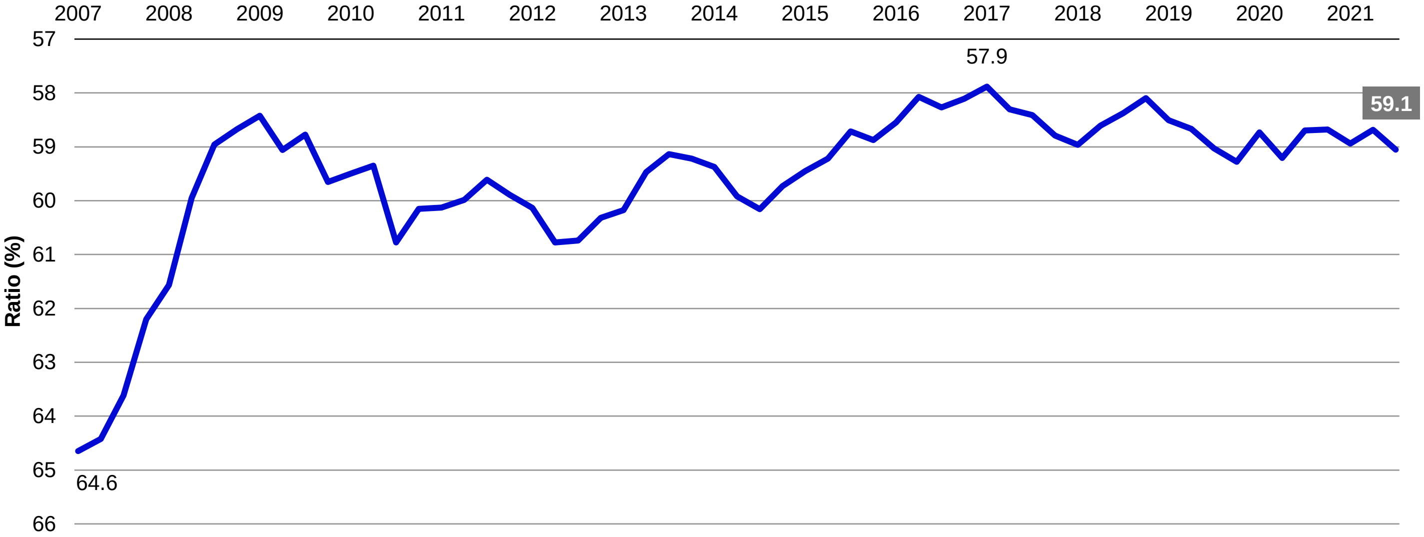


Relative attractiveness %		1Y Δ
<10	Very attractive	
10-25	Attractive	
25-75	**Neutral**	
75-90	Unattractive	
>90	Very unattractive	

Source: Invesco Investment Solutions, Preqin as of Dec. 31, 2021. Latest data available.

Valuations: Real estate: Loan-to-value ratio (rolling 4-quarter average)

Loan-to-value ratio within real estate is trending upwards

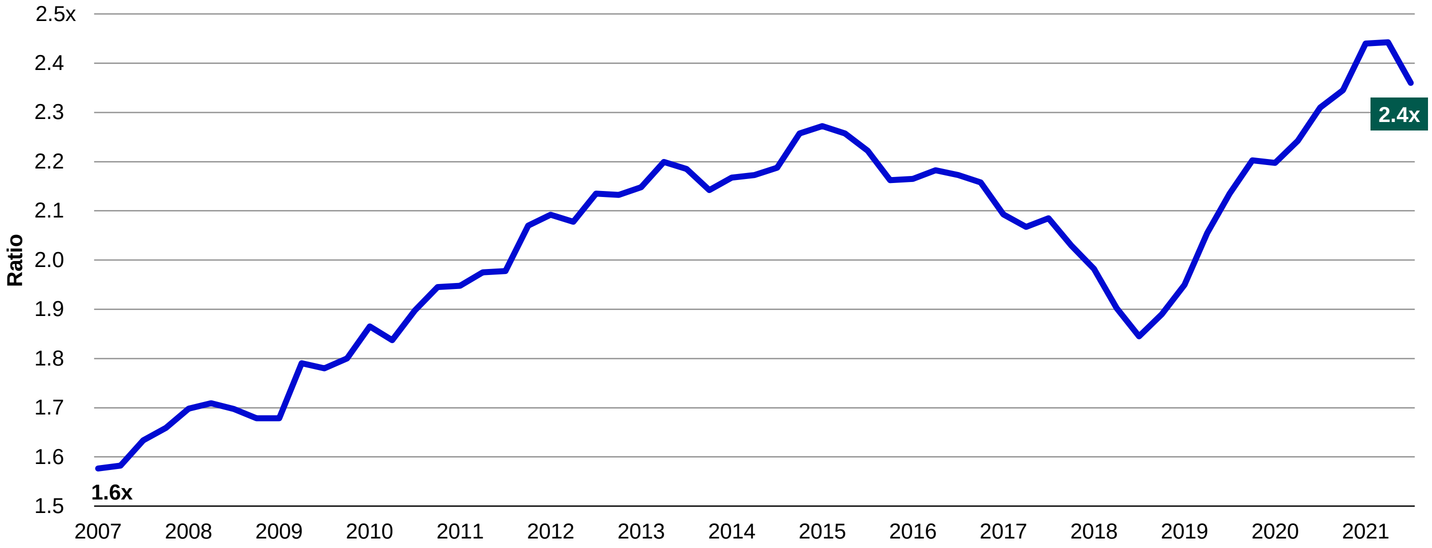


Relative attractiveness %		6m Δ
<58	Very attractive	
58-59	Attractive	
59-61	**Neutral**	↘
61-62	Unattractive	
>62	Very unattractive	

Source: Invesco Investment Solutions, American Council of Life Insurers as of March 31, 2022.

Valuations: Real estate: Debt coverage ratio (rolling 4-quarter average)

Strong debt coverage ratios across the real estate sector indicate healthy balance sheets, yet are rolling over

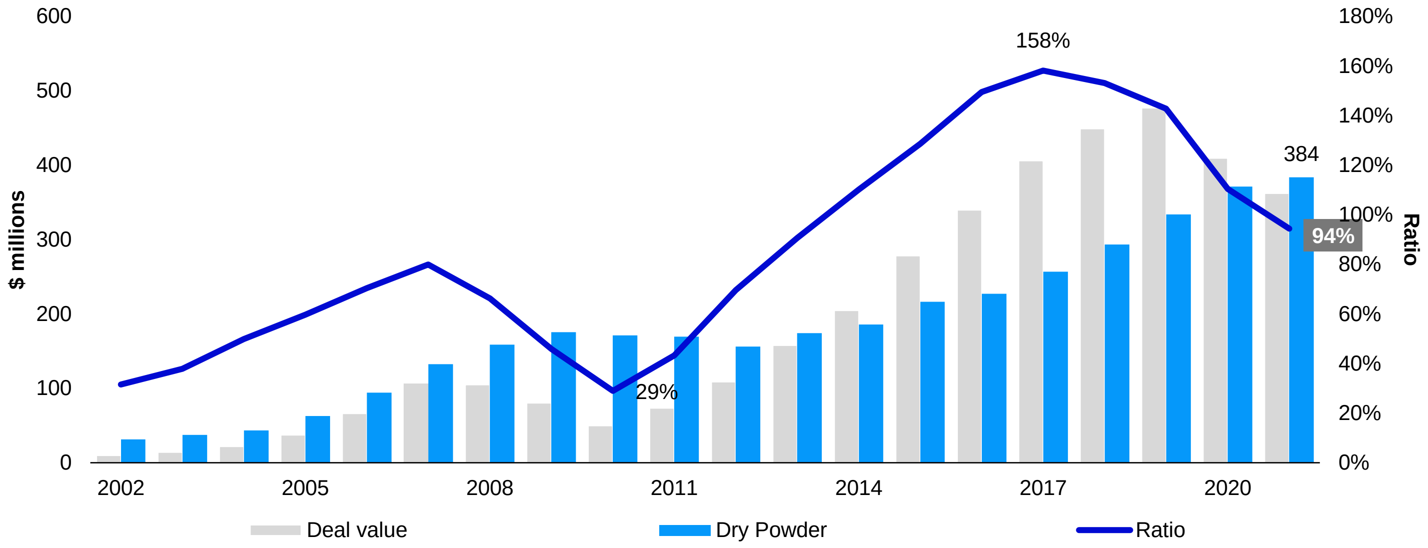


Relative attractiveness (x)		6m Δ
>2.15	**Very attractive**	↗
2.05-2.15	Attractive	
1.85-2.05	Neutral	
1.7-1.85	Unattractive	
>1.7	Very unattractive	

Source: Invesco Investment Solutions, American Council of Life Insurers as of March 31, 2022

Valuations: Real estate rolling 3-year average deal value vs. dry powder

Demand in the form of dry powder has been outpacing the supply of real estate deals in recent years



Relative attractiveness %	6m Δ
>125	Very attractive
100-125	Attractive
75-100	**Neutral**
50-75	Unattractive
<50	Very unattractive

Source: Invesco Investment Solutions, Preqin as of Dec. 31, 2021

Real assets: Alternative rating scorecard

Neutral rating despite weaking fundamentals and valuations, largely due to spread compression

Real assets: Neutral ↘		**Current**	**6m Δ**	**Relative attractiveness**
Valuations				
Spread to liquid markets (bps)	vs. 10Y treasuries	177	↘	Unattractive
	vs. Baa corporate bonds	-24	↘	Neutral
	vs. Inflation-indexed government bonds	420	↘	Neutral
CMA	Core RE CMA vs. historical returns	1.5%	↘	Attractive
	Core RE CMA vs. public CMA (REITS)	2.5%		Very attractive
	Infra. CMA vs. historical returns	1.7%		Attractive
	Infra. CMA vs. public CMA (listed infra.)	0%		Neutral
Total valuations				**Neutral**
Fundamentals/supply and demand				
Infrastructure	Global EV/EBITDA	6.8x		Attractive
	Dry powder vs. deal volume	168%		Neutral
Real estate	Loan-to-Value (rolling 4-quarters)	59.1%		Neutral
	Debt coverage ratio	2.4x	↘	Very attractive
	Dry powder vs. deal volume	94%		Neutral
Total fundamentals				**Attractive**
Macro/regime				
GRACI tactical sentiment	Regime expected return vs. historical average		↘	Unattractive
	Regime expected return vs. public markets		↘	Unattractive
Total regime			↘	**Unattractive**

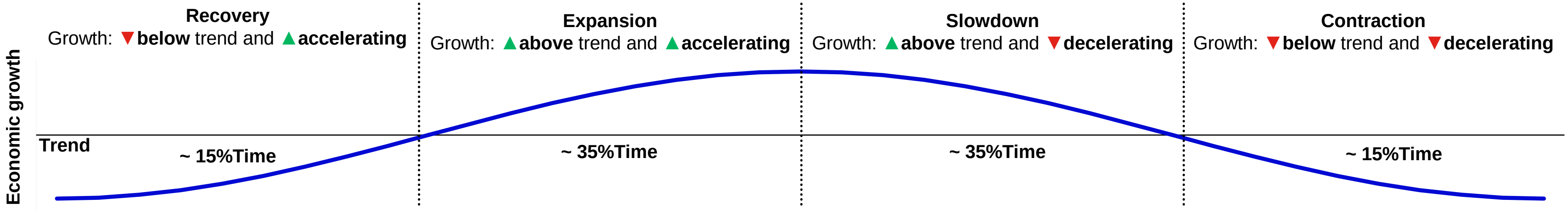
Source: Invesco Investment Solutions as of March 31, 2022. Regime analysis as of Sept. 30, 2022.

Regimes analysis

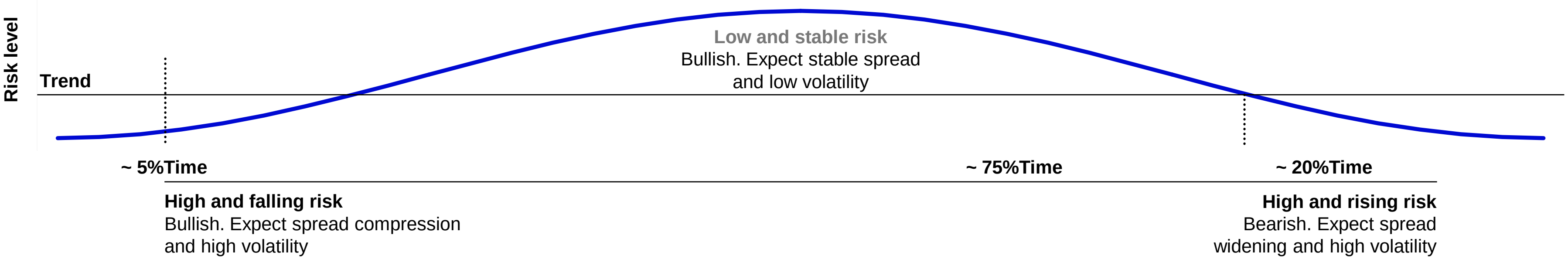
4

Contrasting our public and private markets frameworks

Public markets framework



Private markets framework



Source: Invesco Investment Solutions as of March 31, 2022

Regime definitions

Regimes outline

High and falling risk	Bullish > Expect meaningful spread compression, high volatility
Low and stable risk	Bullish > Expect stable spreads, and low volatility
High and rising risk	Bearish > Expect spread widening, high volatility

Model background

High and falling risk	Growth accelerating and credit spreads > 75th percentile
Low and stable risk	Credit spreads < 75th percentile
High and rising risk	Growth decelerating and credit spreads > 75th percentile or global contraction

Source: Invesco Investment Solutions as of March 31, 2022

Ranking of attractiveness of asset classes by regime relative to history

Ranking performance relative to historical averages (regime divided by long-term average)

Regime	1st Lien	2nd Lien	LBO	GRTH	EVT	LVT	Core RE	Core Infra
Long-term average return	**6.1%**	**9.7%**	**15.4%**	**11.7%**	**11.4%**	**14.8%**	**7.7%**	**6.9%**
High and falling risk	49.1%	8.7%	25.9%	27.9%	3.7%	21.7%	-33.5%	7.7%
Ranking	4	3	4	4	2	4	2	3
Low and stable risk	6.5%	9.3%	14.8%	10.9%	18.5%	19.3%	10.2%	8.5%
Ranking	3	3	3	3	4	4	4	4
High and rising risk	-3.0%	1.8%	1.6%	4.9%	6.5%	9.5%	-3.6%	-1.7%
Ranking	2	2	2	2	2	2	2	2

Relative attractiveness %

Unattractive (<80) Neutral (80-120) Attractive (120>)

Source: Invesco Investment Solutions as of March 31, 2022
The acronyms; LBO, GRTH, EVT, LVT, Core RE, and Core Infra, represents Leveraged Buyout, Growth Equity, Early-stage Venture, Late-stage Venture, Core Real Estate, and Core Infrastructure, respectively. Any reference to a ranking provides no guarantee for future performance results and is not constant over time.

Contrasting our public and private markets frameworks

Ranking performance relative to public markets in the same period

Regime	LBO	GRTH	US LG	EVT	LVT	US SM	1st Lien	BSL	2nd Lien	Gbl HY	Core RE	Core Infra	REITs
High and falling risk	25.9%	27.9%	63.1%	3.7%	21.7%	79.9%	49.1%	57.1%	8.7%	79.3%	-33.5%	7.7%	124.3%
Ranking	2	2		2	2		3		2		2	2	
Low and stable risk	14.8%	10.9%	8.9%	18.5%	19.3%	6.6%	6.5%	3.3%	9.3%	3.8%	10.2%	8.5%	6.2%
Ranking	4	4		4	4		4		4		4	4	
High and rising risk	1.6%	4.9%	9.9%	6.5%	9.5%	16.0%	-3.0%	1.1%	1.8%	7.1%	-3.6%	-1.7%	2.8%
Ranking	2	2		2	2		2		2		2	2	

Relative attractiveness %

Unattractive (<80) Neutral (80-120) Attractive (120>)

Source: Invesco Investment Solutions as of March 31, 2022

The acronyms; LBO, GRTH, US LG, EVT, LVT, US SM, BLS, Glb HY, Core RE, and Core Infra, represents Leveraged Buyout, Growth Equity, US Large Cap Equities, Early-stage Venture, Late-stage Venture, Broadly Syndicated Loans, Global High Yield, Core Real Estate, and Core Infrastructure, respectively. Any reference to a ranking provides no guarantee for future performance results and is not constant over time.

Invesco Investment Solutions

Invesco Investment Solutions is an experienced multi-asset team that seeks to deliver desired client outcomes using Invesco's global capabilities, scale and infrastructure. We partner with you to fully understand your goals and harness strategies across Invesco's global spectrum of active, passive, factor and alternative investments that address your unique needs. From robust research and analysis to bespoke investment solutions, our team brings insight and innovation to your portfolio construction process. Our approach starts with a complete understanding of your needs:

We help support better investment outcomes by delivering insightful and thorough analytics.
By putting analytics into practice, we develop investment approaches specific to your needs.
We work as an extension of your team to engage across functions and implement solutions.

The foundation of the team's process is the development of capital market assumptions — long-term forecasts for the behavior of different asset classes. Their expectations for returns, volatility, and correlation serve as guidelines for long-term, strategic asset allocation decisions.
Assisting clients in North America, Europe and Asia, Invesco's Investment Solutions team consists of over 75 professionals, with 20+ years of experience across the leadership team. The team benefits from Invesco's on-the-ground presence in 25 countries worldwide, with over 150 professionals to support investment selection and ongoing monitoring.

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CMA proxies and statistics (USD)

	Asset class	Underlying index (proxy)	10-year CMA[1]	10-year historical	CMA +/- history	10-year arith. CMA	10-year exp. risk	Return/ risk[2]	5-year CMA	5-year CMA less 10-year CMA	10-year CMA yield
Fixed income	US Tsy	BBG US Tsy	3.3	1.0	+	3.4	5.9	0.58	3.0	-0.3	3.1
	US TIPS	BBG US TIPS	3.3	1.7	+	3.5	5.7	0.62	3.0	-0.4	3.3
	US Broadly Synd. Loans	CSFB Leverage Loan	7.6	3.9	+	7.9	8.4	0.95	7.8	0.2	8.1
	US Agg	BBG US Agg	3.6	1.5	+	3.8	6.1	0.63	3.2	-0.4	3.7
	US MBS	BBG US MBS	3.9	1.2	+	4.2	6.6	0.63	3.7	-0.2	3.8
	US IG Corp	BBG US IG	4.0	2.6	+	4.3	7.8	0.55	3.4	-0.5	4.7
	US HY Corps	BBG US HY	7.3	4.5	+	7.8	10.3	0.76	7.3	0.1	8.9
	US Muni	BOA ML US Muni	3.4	2.5	+	3.6	7.1	0.51	2.8	-0.5	3.3
	US HY Muni	BBG Muni Bond HY	3.1	4.4	-	3.4	8.6	0.40	0.5	-2.6	5.3
	Global Agg	BBG Global Agg	3.6	0.1	+	3.9	7.0	0.55	3.4	-0.2	3.7
	Global Agg ex-US	BBG Global Agg ex-US	3.5	-1.1	+	4.0	10.4	0.38	3.2	-0.3	3.8
	EM Agg	BBG EM Agg	6.1	2.5	+	6.9	13.2	0.52	6.2	0.1	7.2
	China RMB Credit	BBG China Corporate	3.8	4.5	-	3.9	3.9	1.00	3.7	-0.1	3.4

1 Returns are geometric unless otherwise stated. These estimates reflect the views of IIS, the views of other investment teams at Invesco may differ from those presented here.
2 Risk/Return is calculated using the 10-year, Arithmetic Capital Market Assumption divided by Expected Risk.
Source: IIS proprietary research as of March 31, 2022. Performance, whether actual or simulated, does not guarantee future results. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see the following slides for a summary of our CMA methodology and our CMA paper for detailed information about our CMA methodology.

CMA proxies and statistics (USD)

	Asset class	Underlying index (proxy)	10-year CMA[1]	10-year historical	CMA +/- history	10-year arith. CMA	10-year exp. risk	Return/ risk[2]	5-year CMA	5-year CMA less 10-year CMA	10-year CMA yield
Equity	Global Equity	MSCI ACWI	7.7	9.3	-	9.1	17.2	0.53	8.2	0.4	3.2
	China Large Cap	CSI 300	8.9	7.9	+	13.8	34.8	0.40	9.0	0.1	2.0
	US Large Cap	S&P 500	7.6	13.0	-	8.9	16.9	0.53	8.1	0.5	2.8
	US Mid Cap	Russell Midcap	8.4	11.3	-	10.1	19.7	0.51	9.1	0.7	2.8
	US Small Cap	Russell 2000	9.8	9.4	+	12.1	23.1	0.53	11.7	1.8	2.3
	EAFE Equity	MSCI EAFE	7.4	5.9	+	9.0	18.7	0.48	7.6	0.2	4.6
	Europe Equity	MSCI Europe	8.0	6.1	+	9.6	18.8	0.51	8.3	0.3	4.6
	UK Large Cap	FTSE 100	8.3	3.8	+	10.1	20.1	0.50	8.0	-0.3	4.7
	Canada Equity	S&P TSX	6.3	5.7	+	8.2	20.4	0.40	6.5	0.2	2.5
	Japan Equity	MSCI JP	5.7	5.9	-	7.9	22.6	0.35	5.0	-0.7	5.3
	EM Equity	MSCI EM	9.3	3.4	+	12.0	25.1	0.48	10.0	0.7	2.2
	APAC ex-JP	MSCI APXJ	8.7	5.8	+	11.4	25.2	0.45	9.8	1.2	2.2
Alternatives	US REITs	FTSE NAREIT Equity	7.6	8.3	-	9.2	18.7	0.49	7.7	0.1	3.4
	Global REITs	FTSE EPRA/NAREIT Developed	7.3	5.6	+	8.9	18.9	0.47	7.3	0.0	4.1
	Global Infra	DJ Brookfield Global Infra	9.6	7.6	+	10.6	14.6	0.73	8.9	-0.7	3.6
	GS Commodities	S&P GSCI	7.6	-1.8	+	10.1	23.9	0.42	7.1	-0.6	—
	HFRI Hedge Funds	HFRI HF	7.5	5.3	+	7.9	8.9	0.89	8.1	0.6	—

1 Returns are geometric unless otherwise stated. These estimates reflect the views of IIS, the views of other investment teams at Invesco may differ from those presented here.
2 Risk/Return is calculated using the 10-year, Arithmetic Capital Market Assumption divided by Expected Risk.
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Investment risks

The value of investments and any income will fluctuate (this may partly be the result of exchange rate fluctuations) and investors may not get back the full amount invested.

Invesco Investment Solutions develops CMAs that provide long-term estimates for the behavior of major asset classes globally. The team is dedicated to designing outcome-oriented, multi-asset portfolios that meet the specific goals of investors. The assumptions, which are based on 5- and 10-year investment time horizons, are intended to guide these strategic asset class allocations. For each selected asset class, we develop assumptions for estimated return, estimated standard deviation of return (volatility), and estimated correlation with other asset classes. This information is not intended as a recommendation to invest in a specific asset class or strategy, or as a promise of future performance. Estimated returns are subject to uncertainty and error and can be conditional on economic scenarios. In the event a particular scenario comes to pass, actual returns could be significantly higher or lower than these estimates.

Disclosures

Capital market assumptions methodology

We employ a fundamentally based “building block” approach to estimating asset class returns. Estimates for income and capital gain components of returns for each asset class are informed by fundamental and historical data. Components are then combined to establish estimated returns. Here we provide a summary of key elements of the methodology used to produce our long-term (10-year) and medium-term (5-year) estimates. **Fixed income returns** are composed of; the average of the starting (initial) yield and the expected yield for bonds, estimated changes in valuations given changes in the Treasury yield curve, roll return which reflects the impact on the price of bonds that are held over time, and a credit adjustment which estimates the potential impact on returns from credit rating downgrades and defaults. **Equity returns** are composed of; a dividend yield, calculated using dividend per share divided by price per share, buyback yield, calculated as the percentage change in shares outstanding resulting from companies buying back or issuing shares, valuations change, the expected change in value given the current Price/Earnings (P/E) ratio and the assumption of reversion to the long-term average P/E ratio, and the estimated growth of earnings based on the long-term average real GDP per capita and inflation. **Alternative returns** are composed of; a variety of public versus private assets with heterogenous drivers of return given their distinct nature. They range from a beta driven proxy to public markets or a bottom up, building block methodology like that of fixed income or equities depending whether they are more bond like or stock like. **Volatility estimates** for the different asset classes, we use rolling historical quarterly returns of various market benchmarks. Given that benchmarks have differing histories within and across asset classes, we normalize the volatility estimates of shorter-lived benchmarks to ensure that all series are measured over similar time periods.

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Unless otherwise stated, all information is sourced from Invesco Investment Solutions, in USD and as of March 31, 2022.

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