



Atlanta Consulting Group: Long-Term Capital Market Assumptions 2025

METHODOLOGY FOR CAPITAL MARKET ASSUMPTIONS

- ACG utilizes the Black-Litterman model as the foundation for our long-term (10-year forward) capital market assumptions ('CMA')
 - The Black-Litterman model was created by Fischer Black and Robert Litterman of Goldman Sachs in the early 1990s
 - Market return assumptions are derived using Reverse Optimization
 - Instead of solving for portfolio weights when performing Mean Variance Optimization, the Black-Litterman approach uses historical volatility, historical asset class correlation, and current market weights as inputs to solve for expected asset class returns
- After the quantitative model is run, ACG reviews the asset class assumptions to help ensure validity and identify outliers
- The building blocks approach is used on top of the Black-Litterman results for any outlying or esoteric asset classes
- We perform a final quality control by comparing our assumptions vs. other firm's forecasts
- Please refer to the important disclosures at the end of this presentation

2025 ACG CAPITAL MARKET ASSUMPTIONS

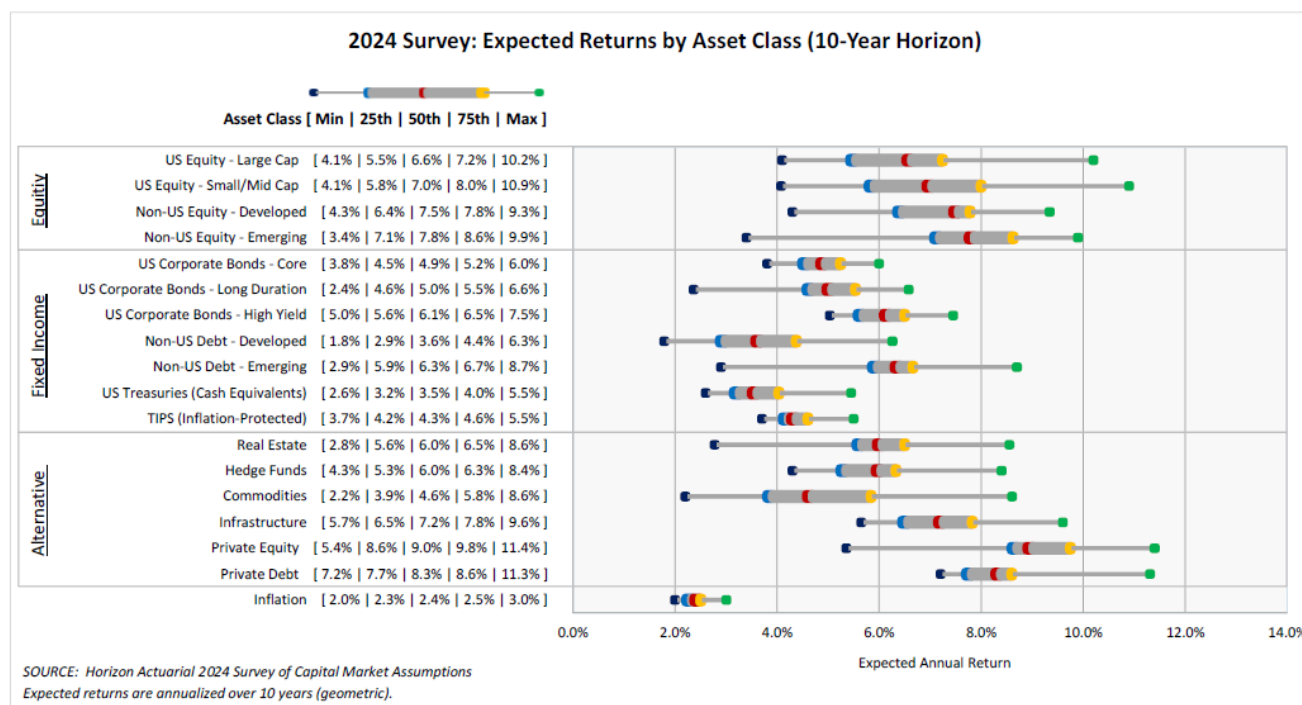
Asset Class	Index	2025			2024			Year over Year Change		
		Arithmetic	Geometric	Standard	Arithmetic	Geometric	Standard	Arithmetic	Geometric	Standard
		Return	Return	Deviation	Return	Return	Deviation	Return	Return	Deviation
		10-yr Annualized Forecast			10-yr Annualized Forecast					
Growth Assets										
US Large Cap Equity	Ibbotson SBBI US Large Stock	8.29	7.21	15.22	8.33	7.24	15.30	-0.04	-0.03	-0.09
US Mid Cap Equity	Russell Mid Cap	8.85	7.52	16.98	8.74	7.40	17.03	0.11	0.12	-0.05
US SMID Cap Equity	Russell 2500	9.01	7.44	18.46	8.83	7.25	18.47	0.18	0.18	0.00
US Small Cap Equity	Russell 2000	9.17	7.35	19.81	8.92	7.11	19.78	0.25	0.25	0.04
US Microcap Equity	Russell Microcap	9.25	7.12	21.46	8.95	6.84	21.33	0.30	0.28	0.13
US All Cap Equity	Russell 3000	8.43	7.32	15.51	8.43	7.30	15.59	0.00	0.01	-0.08
Intl Developed Equity	MSCI EAFE	9.12	7.81	16.87	9.08	7.75	16.99	0.04	0.05	-0.12
Intl Small Cap Equity	MSCI EAFE Small Cap	9.32	7.82	18.05	9.31	7.78	18.22	0.02	0.05	-0.18
Emerging Markets Equity	MSCI EM	11.12	8.94	21.88	11.08	8.87	22.08	0.04	0.08	-0.21
Frontier Markets	MSCI Frontier Markets	12.12	9.32	24.88	12.08	9.24	25.08	0.04	0.08	-0.21
Global Equity	MSCI ACWI	8.82	7.76	15.13	8.83	7.76	15.25	-0.01	0.01	-0.13
Private Equity	Preqin Private Equity	11.25	8.85	22.96	10.95	8.57	22.83	0.30	0.28	0.13
US High Yield	ICE BofAML US High Yield	6.76	6.46	8.08	6.80	6.48	8.15	-0.03	-0.03	-0.08
Short Duration HY Fixed Income	ICE BofAML 1-3 BB-B US CP HY	5.76	5.59	6.03	5.80	5.62	6.13	-0.03	-0.03	-0.10
Emerging Market Debt	Bloomberg EM Hard Currency Agg	7.26	6.87	9.22	7.30	6.89	9.35	-0.03	-0.02	-0.12
Inflationary Assets										
US TIPS	BBgBarc US Treasury US TIPS	4.57	4.42	5.56	4.86	4.71	5.59	-0.29	-0.29	-0.03
US REITs	FTSE Nareit Equity REITs	8.82	7.39	17.55	8.90	7.47	17.57	-0.08	-0.08	-0.02
Global REITs	S&P Global REIT	8.32	7.06	16.43	8.40	7.15	16.44	-0.08	-0.08	-0.01
Commodities	Bloomberg Commodity	6.27	5.27	14.51	6.71	5.69	14.65	-0.44	-0.42	-0.14
Real Assets / Infrastructure	Custom Real Assets Index	7.79	7.24	10.92	7.98	7.43	10.92	-0.19	-0.19	0.00
MLPs	Alerian MLP	7.83	5.56	22.01	7.65	5.34	22.20	0.18	0.23	-0.19
Private Real Estate	NCREIF Property	10.32	9.16	15.93	10.40	9.24	15.94	-0.08	-0.08	-0.01
Bank Loans	S&P/LSTA Leveraged Loan	6.26	6.10	5.90	6.30	6.13	6.00	-0.03	-0.03	-0.11
Private Credit	Cliffwater Direct Lending Index	8.76	8.09	12.08	8.80	8.11	12.15	-0.03	-0.02	-0.08
Deflationary Assets										
Core Plus Fixed Income	BBgBarc US Agg Bond	4.82	4.68	5.46	5.11	4.97	5.50	-0.29	-0.29	-0.04
Short Duration Fixed Income	BBgBarc US Govt/Credit 1-3 Yr	4.44	4.40	2.64	4.65	4.61	2.66	-0.21	-0.21	-0.02
Long Duration Fixed Income	BBgBarc US Govt/Credit Long	5.10	4.61	10.18	5.37	4.87	10.27	-0.27	-0.26	-0.09
Cash (Tbills)	FTSE Treasury Bill 3 Mon	4.26	4.26	1.03	4.30	4.29	1.04	-0.03	-0.03	0.00
Global Fixed Income	FTSE WGBI USD	6.48	6.19	7.89	6.56	6.26	7.98	-0.08	-0.07	-0.09
Diversifying Assets										
Insurance Linked Securities	Eurekahedge ILS Advisers	5.82	5.59	6.96	6.11	5.88	7.00	-0.29	-0.29	-0.04
Liquid Alternatives	Wilshire Liquid Alternative	5.02	4.75	7.47	5.00	4.72	7.57	0.02	0.03	-0.10
Fund of Hedge Funds	CS Hedge Fund	5.77	5.57	6.47	5.75	5.54	6.57	0.02	0.03	-0.10
Hedge Fund - Distressed Credit	CS ED Distressed	5.71	5.51	6.59	5.47	5.27	6.43	0.24	0.23	0.16
Hedge Fund - Long / Short Equity	CS Long/Short Equity	6.47	6.12	8.64	6.45	6.09	8.77	0.02	0.03	-0.14
Hedge Fund - Event Driven	CS Event Driven	5.88	5.66	6.83	5.69	5.48	6.70	0.19	0.18	0.13

Source: ACG. All projections are 10-year forward-looking estimates

Please refer to the end of this presentation for important disclosures regarding the risks and limitations of these projections.

CONTEXT FOR LONG-TERM ASSUMPTIONS

- Amongst investment firms that generate long-term market assumptions, expected returns vary broadly across asset classes
 - The 25th percentile to 75th percentile is often considered an appropriate range for setting actuarial assumptions for future returns
- Long-term assumptions are a useful starting point when thinking about asset allocation, but are just one variable for investors to consider
 - Most institutional investors have longer time horizons than 10 or even 20 years
 - Risk/return objectives vary widely amongst different investors
 - CMA models are often biased by historical market data, while the future is unknowable



Source: Horizon Actuarial 2024 Survey of Capital Market Assumptions

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CONTEXT FOR LONG-TERM ASSUMPTIONS

- Asset-class specific forecasts remain relatively static through time and can meaningfully overestimate/underestimate performance
 - In the current cycle thus far, assumptions have been too conservative on US Equities and too aggressive on Commodities (see charts below)
- Current assumptions always need context—specific to each investor—which can be subjective
 - What asset classes are accessible for investment?
 - Where are we in the market cycle?
 - What risks are more/less important to my asset allocation (e.g., failure to meet long-term return target, short-term loss of capital, inflation, excess volatility, etc.)?

Chart 2: US Equities: Expected 10yr Returns vs Past 10yr Returns



Source: ASR Ltd. / Horizon Actuarial Services / LSEG Datastream

Chart 3: Commodities: Expected 10yr Returns vs Past 10yr Returns



Source: ASR Ltd. / Horizon Actuarial Services / LSEG Datastream

ACG ASSET CLASS INSIGHTS

Asset Class	Qualitative Observations	Long-Term Thesis
Domestic Equity	<ul style="list-style-type: none"> Market concentration in Large Cap and specifically the Magnificent 7 stocks High valuations relative to history and other asset classes 	<ul style="list-style-type: none"> Equity beta is a key, long-term portfolio component Important to continue to monitor active vs. passive across style and market cap
Foreign Equity	<ul style="list-style-type: none"> Geopolitics a growing concern Threat of tariffs and trade wars adds to uncertainty Relative valuations attractive (Dev. Intl and EM) Strong US Dollar has been a major headwind 	<ul style="list-style-type: none"> Foreign exposure adds to opportunity set International and EM stocks can see long periods of outperformance relative to the U.S. (e.g., 2000-2009 decade)
Private Markets	<ul style="list-style-type: none"> High levels of dry powder needing deployment Higher base rates can strain private equity sponsors Higher demand for credit from private lenders Stress but possible opportunities in Real Estate 	<ul style="list-style-type: none"> Private market exposure adds to opportunity set and can provide unique risk/return characteristics Capture illiquidity premium Manager dispersion is wide so selection is critical
Diversified Fixed Income	<ul style="list-style-type: none"> Duration more attractive as yields have remained elevated Better equity hedge with higher starting yields Tight credit spreads remain a risk 	<ul style="list-style-type: none"> Provides important stability to portfolios Starting yields are a significant predictor of longer-term returns
Short-Term Fixed Income	<ul style="list-style-type: none"> Still attractive due to current yield curve Economic slowdown is a risk if the Fed needs to cut rates more quickly 	<ul style="list-style-type: none"> Volatility dampener Potential source of funds / liquidity
Hedge Funds	<ul style="list-style-type: none"> Good diversifier during recent bouts of volatility Higher rate regimes historically good for hedge funds due to higher volatility and dispersion 	<ul style="list-style-type: none"> Ability to increase opportunity set and access unique trade opportunities Diversified hedge fund portfolios have acted as lower volatility diversifiers in times of market stress
Real Assets	<ul style="list-style-type: none"> Have shown good inflation-hedging properties Some sectors have shown sensitivity to bond yields Good active management could add value in specific areas of Real Estate, Infrastructure, Commodities which have some secular tailwinds 	<ul style="list-style-type: none"> Potential to provide hedge against unexpected inflation Real Assets allocations have proven to be good portfolio diversifiers over the long-term despite often looking weak over short or intermediate time periods

APPENDIX

MAJOR ASSET CLASS CATEGORY OVERVIEW

Asset Class Category	Characteristics	Number of Sub-Asset Classes
Growth	<ul style="list-style-type: none">• Higher risk/return potential• Drive portfolio return in 'bull markets'• Detract from portfolio in 'bear markets'	15
Inflationary	<ul style="list-style-type: none">• Hedge against rising Inflation• Income/yield is a greater portion of total return• Typically tied to a physical asset	9
Deflationary	<ul style="list-style-type: none">• Hedge against rising deflation• Fixed income securities or 'Bonds'• Often called 'risk-off' or 'defensive'	5
Diversifying	<ul style="list-style-type: none">• Aim to generate positive absolute return regardless of broader market conditions• Generally have lower correlations to other asset classes within a portfolio	6

GROWTH CATEGORY OVERVIEW

Asset Class	Index	Arithmetic Return <i>10-yr Annualized Forecast</i>	Geometric Return	Standard Deviation
Growth Assets				
US Large Cap Equity	Ibbotson SBBI US Large Stock	8.29	7.21	15.22
US Mid Cap Equity	Russell Mid Cap	8.85	7.52	16.98
US SMID Cap Equity	Russell 2500	9.01	7.44	18.46
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US High Yield	ICE BofAML US High Yield	6.76	6.46	8.08
Short Duration HY Fixed Income	ICE BofAML 1-3 BB-B US CP HY	5.76	5.59	6.03
Emerging Market Debt	Bloomberg EM Hard Currency Agg	7.26	6.87	9.22

- Comprised of equities, fixed income strategies with higher volatility, and higher risk alternative sub-asset classes
- Returns are primarily generated through capital appreciation of the underlying assets
- Higher allocations to the above sub-asset classes result in more aggressive portfolios, and lower allocations to the growth category result in more conservative portfolios

Source: ACG. All projections are 10-year forward-looking

Please refer to the end of this presentation for important disclosures regarding the risks and limitations of these projections.

INFLATIONARY CATEGORY OVERVIEW

Asset Class	Index	Arithmetic Return <i>10-yr Annualized Forecast</i>	Geometric Return	Standard Deviation
Inflationary Assets				
US TIPS	BBgBarc US Treasury US TIPS	4.57	4.42	5.56
US REITs	FTSE Nareit Equity REITs	8.82	7.39	17.55
Global REITs	S&P Global REIT	8.32	7.06	16.43
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MLPs	Alerian MLP	7.83	5.56	22.01
Private Real Estate	NCREIF Property	10.32	9.16	15.93
Bank Loans	S&P/LSTA Leveraged Loan	6.26	6.10	5.90
Private Credit	Cliffwater Direct Lending Index	8.76	8.09	12.08

- Comprised mainly of income generating or floating rate sub-asset classes
- Inflation occurs when prices for goods and services rise while the purchasing power of currency declines
- The above sub-asset classes have a positive correlation with expected inflation, and use income generation to offset the declining asset value

Source: ACG. All projections are 10-year forward-looking

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DEFLATIONARY CATEGORY OVERVIEW

Asset Class	Index	Arithmetic	Geometric	Standard
		Return	Return	Deviation
		10-yr Annualized Forecast		
Deflationary Assets				
Core Plus Fixed Income	BBgBarc US Agg Bond	4.82	4.68	5.46
Short Duration Fixed Income	BBgBarc US Govt/Credit 1-3 Yr	4.44	4.40	2.64
Long Duration Fixed Income	BBgBarc US Govt/Credit Long	5.10	4.61	10.18
Cash (Tbills)	FTSE Treasury Bill 3 Mon	4.26	4.26	1.03
Global Fixed Income	FTSE WGBI USD	6.48	6.19	7.89

- Comprised of lower volatility fixed income sub-asset classes that have historically fared well in times of deflation
- Deflation occurs when lower levels of demand within an economy lead to an excessive drop in prices for goods and services over an extended period of time
- An investor would favor the above sub-asset classes during periods of high unemployment and/or economic depressions

DIVERSIFYING CATEGORY OVERVIEW

Asset Class	Index	Arithmetic	Geometric	Standard
		Return	Return	Deviation
		10-yr Annualized Forecast		
Diversifying Assets				
Insurance Linked Securities	Eurekahedge ILS Advisers	5.82	5.59	6.96
Liquid Alternatives	Wilshire Liquid Alternative	5.02	4.75	7.47
Fund of Hedge Funds	CS Hedge Fund	5.77	5.57	6.47
Hedge Fund - Distressed Credit	CS ED Distressed	5.71	5.51	6.59
Hedge Fund - Long / Short Equity	CS Long/Short Equity	6.47	6.12	8.64
Hedge Fund - Event Driven	CS Event Driven	5.88	5.66	6.83

- Comprised of sub-asset classes that have lower correlation to traditional stocks and bonds
- These sub-asset classes seek to generate positive absolute return regardless of how the broader market performs
- The category strives to provides a diversified return stream by focusing on niche opportunities within the marketplace, while attempting to capture an additional illiquidity premium

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Alternative Investments: Alternative investments are intended for qualified investors only. Alternative Investments such as derivatives, hedge funds, private equity funds, and funds of funds can result in higher return potential but also higher loss potential. Changes in economic conditions or other circumstances can adversely affect investments. Alternative investments are speculative and involve a high degree of risk.

Bonds: Bonds are subject to interest rate risk. As the prevailing level of bond interest rates rise, the value of bonds already held in a portfolio declines. Portfolios that hold bonds are subject to declines and increases in value due to general changes in interest rates.

International/Emerging Market Equities: Investing in international securities involves special additional risks. These risks include, but are not limited to, currency risk, political risk, and risk associated with varying accounting standards. Investing in emerging markets may accentuate these risks.

Liquidity Risk: Trading may be halted due to market conditions, impacting an investor's ability to sell a security.

Market Risk: The market prices of securities can fluctuate as a result of several factors, such as security-specific factors or general investor sentiment. Therefore, investors should be aware of the prospect of market fluctuations and the impact it may have on the market price.

Mid Cap Equities: Portfolios that invest in companies with market capitalization below \$10 billion involve additional risks. The securities of these companies may be more volatile and less liquid than the securities of larger companies.

Sector Strategies: Portfolios that invest exclusively in one sector or industry involve additional risks. The lack of industry diversification subjects the investor to increased industry-specific risks.

Small Cap Equities: Portfolios that invest in stocks of small companies involve additional risks. Smaller companies typically have a higher risk of failure and are not as well established as larger blue-chip companies. Historically, smaller company stocks have experienced a greater degree of market volatility than the overall market average.