UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS

Presented by Fi3 Financial Advisors, LLC

10-YEAR CAPITAL MARKET FORECASTS (2018-2027)

Asset Class Returns, Standard Deviations, Correlations & Tail Assumptions

January 2018

SYNOPSIS

Our firm updates asset class assumptions at least annually to reflect 10-year estimates for asset class returns, standard deviations, skewness, kurtosis and correlations. This paper details our input assumptions for the investment period from January 2018 to December 2027.

Executive Summary of Year-Over-Year Return Assumption Changes

Asset Class	2017-2026 E(R)	2018-2027 E(R)	2018 vs. 2017
Cash*	0.5%	1.3%	0.8%
TIPS	2.3%	2.3%	0.0%
Muni Bond**	3.6%	3.3%	-0.3%
Muni High Yield**	10.7%	8.9%	-1.8%
US Bond	2.6%	2.7%	0.1%
For. Dev. Bond	1.8%	2.0%	0.2%
HY Bond	5.2%	4.9%	-0.3%
EM Bond	3.9%	3.3%	-0.6%
Global Equity	8.3%	7.1%	-1.2%
US Equity (AC)	6.7%	5.9%	-0.8%
US Equity (LC)	6.4%	5.7%	-0.7%
US Equity (MC)	6.9%	6.0%	-0.9%
US Equity (SC)	7.1%	6.1%	-1.0%
Non-US Equity (ACWI)	9.4%	7.8%	-1.6%
Int'l Dev. Equity	8.4%	6.9%	-1.5%
EM Equity	11.1%	8.9%	-2.2%
Real Estate	6.0%	5.9%	-0.1%
MLPs	10.6%	11.1%	0.5%
Commod. Fut.	3.4%	3.7%	0.3%
HFoF Multi-Strat	6.9%	6.4%	-0.5%
Hedge Funds (Liquid)	5.9%	5.4%	-0.5%
Private Equity	9.7%	8.9%	-0.8%

Summary of Return Forecast Changes

- Cash*: Significant percentage increase in risk free rate given Fed tightening
- TIPS: Inflation assumption largely unchanged year-over-year (down 9 bps to 1.87%)
- Muni High Yield**: HY muni yields down year-over-year
- For. Dev. Bond, HY Bond: Decline in high yield YTW of approximately 70 bps offset somewhat by a reduction in loss rate assumptions of approximately 40 bps
- EM Bond: Decline by approximately 60 bps in local YTM as a result of improved creditworthiness; currency assumptions constant from 2017
- Global Equity, US Equity (AC), US Equity (LC), US Equity (MC), US Equity (SC), Non-US Equity (ACWI), Int'l Dev. Equity, EM Equity: Global equity return assumptions down 120 bps in total with declines across each region; Intl Developed and Emerging Markets equity return assumption declines more significant than reductions across U.S. equities due to relative success of international markets last year
- MLPs: Increase in MLP yield year-over-year
- HFoF Multi-Strat, Hedge Funds (Liquid), Private Equity: Reduced return expectations due to declines in equity assumptions

*3-month forecast

**Tax equivalent based on highest marginal tax rate (39.6%)

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10-YEAR RETURN FORECASTS BY ASSET CLASS

INFLATION (CPI): Inflation is used as a building block of total return for several asset classes. The unbiased forecast of inflation is the difference between the 10-year nominal U.S. Treasury yield and the 10-year TIPS real yield. As of 11/30/2017, this difference was 1.87% (i.e., 2.41% - 0.54%). We believe this implied breakeven inflation rate (of 1.87%) is a rational median case assumption regarding CPI inflation for all items in the Consumer Price Index over the next 10 years. The following are the implied breakeven and forward CPI expectations based on current breakeven inflation relationships.

Implied Breakeven CPI (11/30/17)

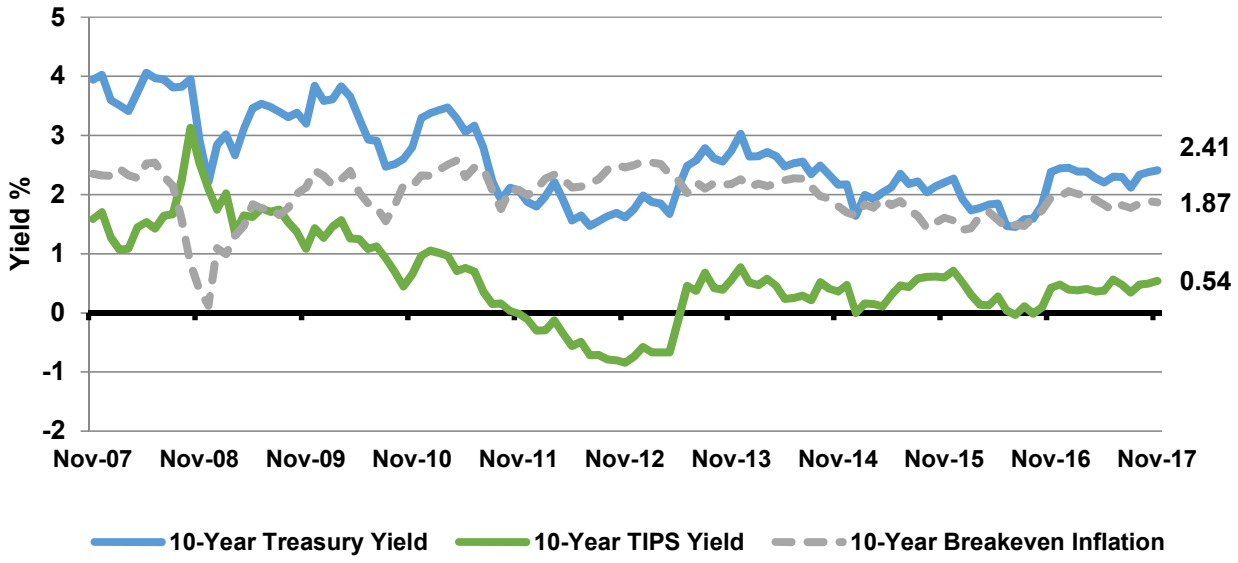
Maturity	Nominal	TIPS	Implied CPI
5 Years	2.14%	0.33%	1.81%
7 Years	2.31%	0.22%	2.09%
10 Years	2.41%	0.54%	1.87%
20 Years	2.61%	0.70%	1.91%
30 Years	2.83%	0.87%	1.96%

Implied Forward CPI (11/30/17)

Forward CPI	Implied CPI
1-5 Years	1.81%
5-10 Years	1.93%
10-20 Years	1.95%
20-30 Years	2.05%

Source: Bloomberg

Historical 10-Year U.S. Nominal and Real Rates



Source: Bloomberg

While the 10-year CPI forecast is 1.87%, we expect lower inflation (1.81%) in the first five years and higher inflation (1.93%) in the following five years.

10-Year Forecast of Annual CPI: 1.9%

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TIPS: As of 11/30/2017, the Bloomberg Barclays Capital U.S. TIPS Index had 38 issues (all U.S. Sovereign) with an average real yield of 0.48% and an average maturity of 8.33 years.

Bloomberg Barclays U.S. TIPS (11/30/17)

Summary Statistics	Value
Average Maturity (Yrs)	8.33
Average Real Duration (Yrs)	7.74
Average Coupon (%)	0.79
Yield to Worst (%)	2.35
Number of Issues	38

Source: Bloomberg, Barclays

Combining the real yield of the Bloomberg Barclays Capital U.S. TIPS Index (0.48%) with forecasted inflation (1.87%) leads to an expected return of 2.35%.

10-Year Forecast of Geometric Return: 2.3%

U.S. TAX-EXEMPT (MUNICIPAL) FIXED INCOME: As of 11/30/2017, the Bloomberg Barclays Capital U.S. Municipal Bond: 5 Year (4-6) Index had 5,500 issues with an average maturity of 5.00 years and an average duration of 4.03 years. The index is investment-grade rated.

Bloomberg Barclays 5-Year U.S. Municipal Bond (11/30/17)

Summary Statistics	Value
Average Maturity (Yrs)	5.00
Average Duration (Yrs)	4.03
Average Coupon (%)	4.82
Yield to Worst (%)	2.01
Number of Issues	5,500

Source: Bloomberg, Barclays

The unbiased return forecast for the Bloomberg Barclays Capital Municipal Bond: 5 Year (4-6) Index is found by dividing the current yield to worst by one minus the highest marginal federal tax rate [(2.01% / (1 - 0.396)] = 3.33%.

10-Year Forecast of Geometric Return: 3.3%[i]

U.S. TAX-EXEMPT (MUNICIPAL) HIGH YIELD FIXED INCOME: As of 11/30/2017, the Bloomberg Barclays Capital U.S. Municipal High Yield Index had 3,136 issues with an average maturity of 20.57 years and an average duration of 7.42 years. The index is below investment-grade rated.

UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS

Bloomberg Barclays U.S. Municipal High Yield Bond (11/30/17)

Summary Statistics	Value
Average Maturity (Yrs)	20.57
Average Duration (Yrs)	7.42
Average Coupon (%)	5.22
Yield to Worst (%)	5.39
Number of Issues	3,136

Source: Bloomberg, Barclays

The unbiased return forecast for the Bloomberg Barclays Capital U.S. Municipal High Yield Index is found by dividing the current yield to worst by one minus the highest marginal federal tax rate [(5.39% / (1 - 0.396)] = 8.92%.

10-Year Forecast of Geometric Return: 8.9%[ii]

U.S. INVESTMENT GRADE FIXED INCOME: As of 11/30/2017, the Bloomberg Barclays Capital U.S. Aggregate Bond Index had 9,706 issues with an average maturity of 8.29 years and an average duration of 6.22 years. The index is investment-grade rated.

Bloomberg Barclays U.S. Aggregate (11/30/17)

Sector Breakdown	%
Govt / Agency	43.8
Corporate	25.8
MBS	28.0
ABS	0.6
CMBS	1.8

Credit Breakdown	%
AAA	71.1
AA	3.9
A	11.5
BBB	13.5
BB or lower	0.0

Maturity Breakdown	%
1-3 Years	20.8
3-5 Years	18.9
5-7 Years	20.0
7-10 Years	24.3
> 10 Years	16.0

Summary Statistics	Value
Average Maturity (Yrs)	8.29
Average Duration (Yrs)	6.22
Average Coupon (%)	3.06
Yield to Worst (%)	2.71
Number of Issues	9,706

Source: Bloomberg Barclays

The unbiased return forecast for the Bloomberg Barclays Capital U.S. Aggregate Bond Index is its current yield to worst of 2.71%.

10-Year Forecast of Geometric Return: 2.7%

HIGH YIELD BONDS: As of 11/30/2017, the Citi U.S. High Yield Market Index had 1,615 issues (all BB rated or lower) representing $1.08 trillion in market value. The yield to worst was 5.83% with an average maturity of 6.15 years and a 4.74 year average duration. The following charts reflect current high yield bond market metrics and historical spread data.

Citi U.S. High Yield Market Index (11/30/17)

Market Value ($B)	Par Value ($B)	MV / PV Premium (Discount)	Average Coupon (per $100 Par)	Coupon/ MV Yield	Current YTW
$1,081	$1,060	102%	6.46%	6.34%	5.83%

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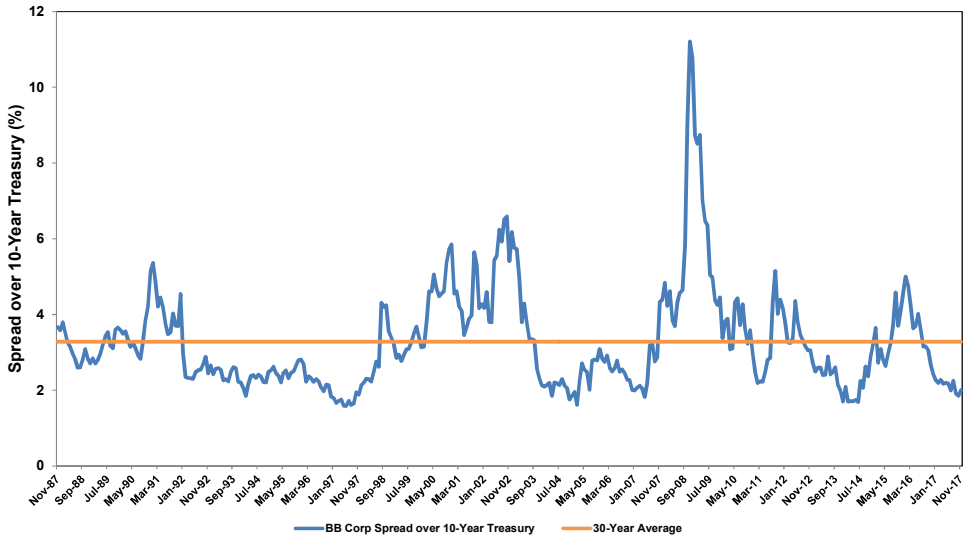
Source: Bloomberg, Citi

BB-Rated Corporate Spread vs. 10-Year U.S. Treasury (1987-2017)

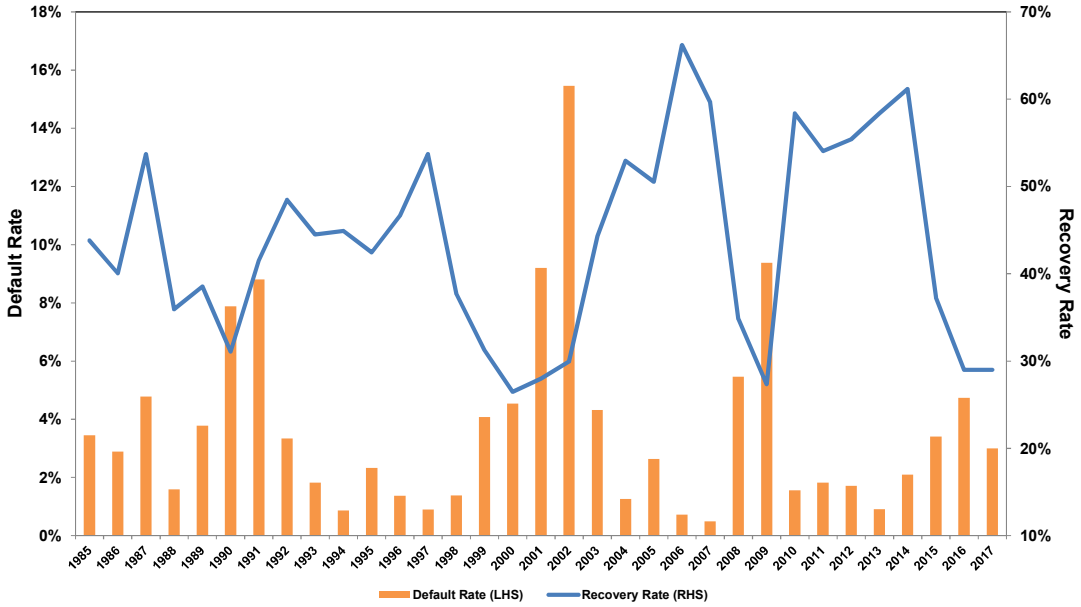


Source: Bloomberg, Citi

- As of 11/30/2017, the Citi BB-rated Corporate Bond spread over the 10-year U.S. Treasury was 2.01%, which is 1.27% below the long-term historical average of 3.28% since November 1987. This represents a spread contraction of 66 basis points on a year-over-year basis, largely attributed to a lower yield on the Index.
- From August 1983 to November 2017, the Bloomberg Barclays U.S. Corporate High Yield Index returned an annualized 9.12% versus 7.25% for the Bloomberg Barclays Capital U.S. Aggregate Bond Index. This represents a historical risk premium of 1.87% for high yield bonds (over investment-grade intermediate bonds).
- Moody's 2017 forecast for U.S. high yield default rate is 3.0%.

Historical High Yield Bond Default and Recovery Rates

UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS



Source: Credit Suisse, Moody's

- The geometric return forecast is derived from the *High Yield Default-Loss Method*, where expected return is a function of current credit spreads, expected default rates and expected recovery rates.

High Yield Default-Loss Method applied as of 11/30/2017[iii]

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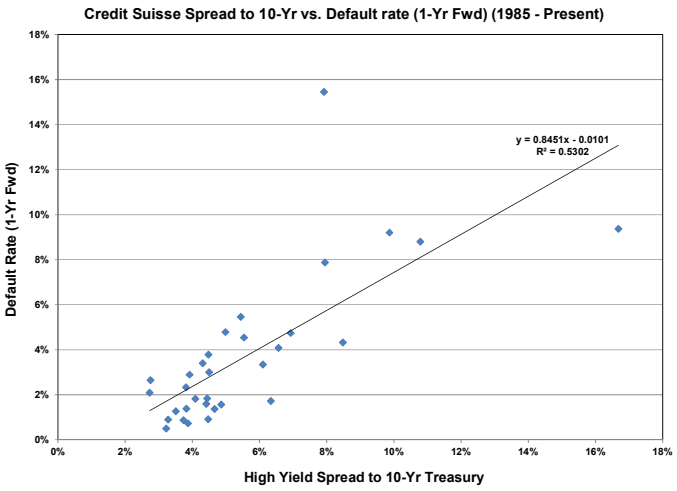
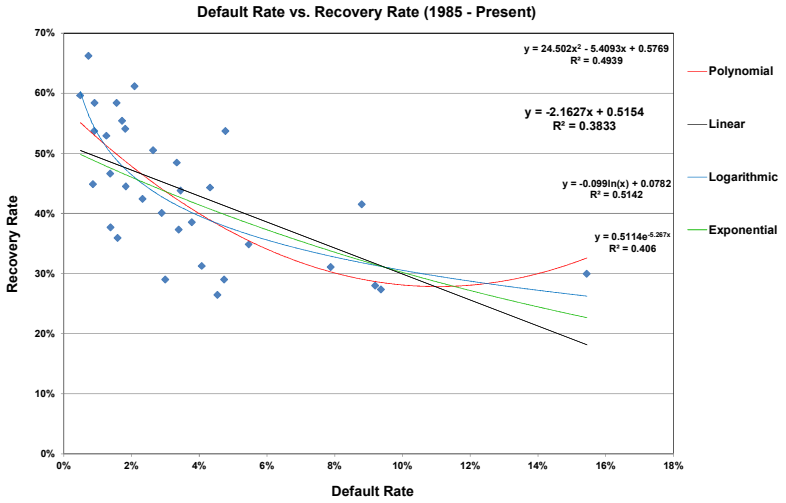




Polynomial Default-Recovery Regression

10-Year Treasury	Current Yield-to-Worst	Current Spread	Assumed Annual Default Rate	Assumed Annual Recovery Rate	Assumed Annual Loss Rate	Expected Return
2.41%	5.83%	3.41%	1.87%	48.92%	-0.95%	4.87%

Linear Default-Recovery Regression

10-Year Treasury	Current Yield-to-Worst	Current Spread	Assumed Annual Default Rate	Assumed Annual Recovery Rate	Assumed Annual Loss Rate	Expected Return
2.41%	5.83%	3.41%	1.87%	48.34%	-0.96%	4.86%

Logarithmic Default-Recovery Regression

10-Year Treasury	Current Yield-to-Worst	Current Spread	Assumed Annual Default Rate	Assumed Annual Recovery Rate	Assumed Annual Loss Rate	Expected Return
2.41%	5.83%	3.41%	1.87%	47.50%	-0.98%	4.85%

Exponential Default-Recovery Regression

10-Year Treasury	Current Yield-to-Worst	Current Spread	Assumed Annual Default Rate	Assumed Annual Recovery Rate	Assumed Annual Loss Rate	Expected Return
2.41%	5.83%	3.41%	1.87%	47.02%	-0.99%	4.84%

Source: Credit Suisse, Bloomberg,

- Based on the *High Yield Default-Loss Method*, the market is pricing in a 12-month forward 1.87% annual expected default rate as of 11/30/17. This implies an expected recovery rate of around 48%, and subsequent annual loss rate of approximately 0.97%. This represents an estimate based on recent default and recovery rates. We believe the midpoint of the range of all methods reflects a sensible view of default losses over a full market cycle.

10-Year Forecast of Geometric Return: 4.9%

FOREIGN DEVELOPED FIXED INCOME: As of 11/30/2017, the Citi World Government Bond ex-U.S. Index had an average yield to maturity of 0.74% with an average maturity of 10 years and an 8.60 year average duration.

Expected return is calculated by isolating the *sovereign index yield* and *currency and/or credit* components of the foreign developed bond market. The *sovereign index yield* component is calculated by taking the weighted average local bond market yield. Interest rate parity is then used to calculate the expected *currency* impact embedded in the foreign developed bond markets (in U.S. dollar terms). The difference in like-maturity rates across borders explains the currency Spot-Futures exchange rate relationship. If not, one could borrow in one currency, lend in the other and lock in an arbitrage profit.

UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS

Foreign Developed Bond Market Data as of 11/30/17[iv]

Country	Global Allocation Ex-US (%)	Local Bond Market Maturity (Years)	Local Bond Market YTM (%)	U.S. Treasury Equivalent YTM (%)	Interest Parity (Currency) Spread (%)	Gross Debt to GDP Ratio (%)	Sovereign Credit and/or Currency Premium / (Discount) (%)
Japan	30.2%	11.0	0.2	2.3	2.1	239	(1.0)
France - (Euro)	12.6%	9.2	0.3	2.3	2.0	96	0.0
Italy - (Euro)	12.3%	8.3	1.0	2.2	1.2	133	(0.1)
Germany - (Euro)	9.0%	7.8	(0.0)	2.2	2.3	68	0.1
United Kingdom	8.6%	15.7	1.3	2.4	1.1	89	0.0
Spain - (Euro)	7.1%	8.6	0.9	2.3	1.4	99	0.0
Belgium - (Euro)	3.2%	10.9	0.4	2.3	1.9	106	0.0
Netherlands - (Euro)	2.8%	8.7	0.1	2.3	2.2	62	0.2
Canada	2.6%	7.8	1.7	2.3	0.6	92	0.0
Australia	2.6%	7.8	2.3	2.3	(0.0)	41	0.4
Austria - (Euro)	2.0%	11.2	0.2	2.4	2.2	85	0.0
Mexico	1.0%	8.8	7.2	2.2	(5.0)	58	0.2
Ireland - (Euro)	1.0%	7.9	0.2	2.3	2.0	73	0.1
Denmark	0.8%	9.4	0.2	2.3	2.1	38	0.4
Finland - (Euro)	0.8%	7.1	0.0	2.2	2.2	63	0.2
Poland	0.8%	4.9	2.5	2.1	(0.3)	54	0.2
South Africa	0.7%	16.8	9.7	2.5	(7.2)	52	0.3
Sweden	0.6%	6.4	0.0	2.2	2.2	42	0.4
Malaysia	0.5%	8.1	3.9	2.3	(1.6)	56	0.2
Singapore	0.5%	8.2	8.2	2.2	(5.9)	112	(0.0)
Norway	0.4%	5.1	1.0	2.1	1.1	33	0.5
Switzerland	0.2%	4.7	(0.5)	2.1	2.6	43	0.4
Total / WTD Average	**100.0%**	**10.0**	**0.7**	**2.3**	**1.6**	**136**	**(0.3)**
United States	N/A*	7.4	2.1			107	

*The United States is 34.1% of the Total World Government Bond Index.

Source: Bloomberg, Citi

Fixed Income Returns Decomposition Method: (YLD) +/- (IRP) +/- (CRE/CUR)
10-Year Forecast (2018 - 2027): (0.74%) + (1.55%) + (-0.26%) = 2.03%

- *YLD* = Index Yield
- *IRP* = Interest Rate Parity Currency Adjustment
- *CRE/CUR* = Sovereign Credit/Currency Adjustment

The sovereign credit and/or currency premium / (discount) adjustment is applied to individual countries based on their debt-to-GDP ratios and reflects our bias for how interest parity relationships do not fully reflect the potential for currency debasement (a form of implicit default) or actual potential principal losses due to explicit default.

10-Year Forecast of Geometric Return: 2.0%

EMERGING MARKETS (LOCAL CURRENCY) FIXED INCOME: As of 11/30/2017, the JPMorgan GBI-EM Global Diversified Index had an average yield to maturity of 6.19% with an average maturity of 7.43 years and a 5.07 year average duration. Expected return is calculated by isolating the *sovereign index yield, currency and/or credit* components of the emerging markets bond market. The *sovereign index yield* component is calculated by taking the weighted average local bond market yield. Interest rate parity is then

used to calculate the expected *currency* impact embedded in the emerging markets bond markets (in U.S. dollar terms). The difference in like-maturity rates across borders explains the currency Spot-Futures exchange rate relationship. If not, one could borrow in one currency, lend in the other and lock in an arbitrage profit. In order to isolate each country's implied credit spread, credit default swaps are used to quantify credit risk above and beyond that of U.S. denominated bonds. This amount is then backed out of each country's yield in order to be removed from the interest rate parity calculation since implied credit risk is captured in the local bond yield and therefore should not be accounted for in the interest rate parity calculation as well.

Emerging Markets Bond Data as of 11/30/17[v]

Country	Allocation (%)	Local Bond Market Maturity (Years)	Local Bond Market YTM (%)	U.S. Treasury Equivalent YTM (%)	Market Implied Credit Spread	Interest Parity (Currency) Spread (%)	Gross Debt to GDP Ratio (%)	Sovereign Credit and/or Currency Premium / (Discount) (%)
Brazil	10.0%	3.6	9.1	2.1	1.5	(5.5)	78	0.1
Mexico	10.0%	9.5	7.3	2.3	0.8	(4.3)	58	0.2
Indonesia	9.6%	9.9	6.8	2.3	0.7	(3.9)	28	0.5
Poland	9.0%	4.7	2.7	2.1	0.3	(0.3)	54	0.2
Thailand	8.1%	6.9	2.3	2.2	0.2	0.1	42	0.4
South Africa	7.8%	15.7	9.9	2.5	1.6	(5.8)	52	0.3
Russia	7.6%	6.8	7.4	2.2	1.0	(4.2)	16	0.7
Turkey	7.1%	5.0	12.6	2.1	1.8	(8.7)	28	0.5
Colombia	6.9%	7.0	6.2	2.2	0.9	(3.1)	50	0.3
Malaysia	5.7%	5.7	3.9	2.2	0.4	(1.4)	56	0.2
Hungary	4.6%	4.9	1.3	2.1	0.7	1.5	74	0.1
Czech Republic	3.9%	5.9	1.2	0.0	0.1	(1.0)	37	0.4
Romania	2.9%	4.3	4.0	2.1	0.7	(1.1)	39	0.4
Peru	2.8%	11.5	5.3	2.3	0.5	(2.5)	24	0.6
Chile	2.4%	11.7	4.9	2.3	0.3	(2.2)	21	0.6
Argentina	1.0%	6.2	15.7	2.2	2.1	(11.3)	54	0.2
Philippines	0.3%	10.3	4.8	2.3	0.4	(2.2)	35	0.5
Uraguay	0.3%	7.1	8.4	0.0	1.6	(6.8)	62	0.2
Total / WTD Average	**100.0%**	**7.4**	**6.3**	**2.1**	**0.8**	**(3.3)**	**47**	**0.3**
United States		6.9	2.1				107	

Source: Bloomberg, JPMorgan

Fixed Income Returns Decomposition Method: (YLD) +/- (IRP) +/- (CRE/CUR)
10-Year Forecast (2018 - 2027): (6.30%) + (-3.32%) + (0.35%) = 3.33%

- *YLD* = Index Yield
- *IRP* = Interest Rate Parity Currency Adjustment
- *CRE/CUR* = Sovereign Credit/Currency Adjustment

The sovereign credit and/or currency premium / (discount) adjustment is applied to individual countries based on their debt-to-GDP ratios and reflects our bias for how interest parity relationships do not fully reflect the potential for currency debasement (a form of implicit default) or actual potential principal losses due to explicit default.

10-Year Forecast of Geometric Return: 3.3%

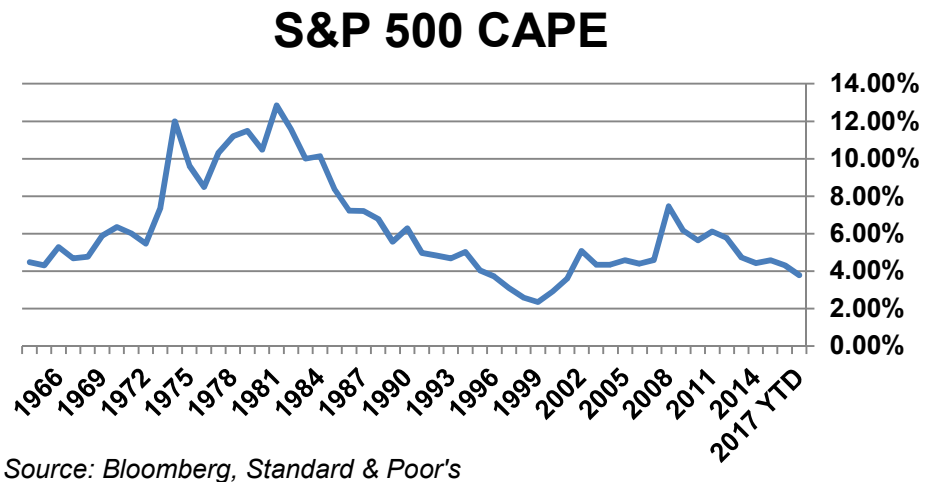
UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS

U.S. LARGE CAP EQUITIES: The expected geometric return forecast for U.S. Large Cap Equities (S&P 500) is derived by applying the *Cyclically-Adjusted Earnings Yield (CAPE) Method* where return is a function of the 10-year average real earnings, current price and 10-year inflation assumption (CPI).

Cyclically-Adjusted Earnings Yield Method: {[1 + (EARNINGS/PRICE)] * (1 + CPI)} - 1

10-Year Forecast (2018 - 2027): {[1 + (100.3 / 2647.58)] * (1 + 1.87%)} - 1
10-Year Forecast (2018 - 2027): {(1 + 3.79%) * (1 + 1.87%)} - 1 = 5.73%

- *EARNINGS* = 10-year average real earnings of the S&P 500 Index
- *PRICE* = Current S&P 500 Index real price
- *CPI* = Inflation Forecast



Source: Bloomberg, Standard & Poor's

10-Year Forecast of Geometric Return: 5.7%

U.S. MID CAP EQUITIES: Using historical correlations and volatility for Large, Mid, and Small Cap U.S. Equities (from 1979-2017) and U.S. market cap weights, the (unbiased) Black-Litterman arithmetic return forecast for Mid Cap is 7.7% (vs. 7.1% for Large Cap). Adjusting for forecasted volatility (18.2% Annual Standard Deviation), the expected geometric return is 6.0%.

10-Year Forecast of Geometric Return: 6.0%

U.S. SMALL CAP EQUITIES: Using historical correlations and volatility for Large, Mid, and Small Cap U.S. Equities (from 1979-2017) and U.S. market cap weights, the (unbiased) Black-Litterman arithmetic return forecast for Small Cap is 8.2% (vs. 7.1% for Large Cap). Adjusting for forecasted volatility (20.7% Annual Standard Deviation), the expected geometric return is 6.1%.

10-Year Forecast of Geometric Return: 6.1%

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Black-Litterman (U.S. Mid and Small Cap Equities)[vi,vii]

Market Caps

	% MC
Large Cap	69.7%
Mid Cap	20.5%
Small Cap	9.8%

Volatility

	St. Dev.
S&P 500	14.8%
RMID	16.5%
R2000	19.2%

1979-2017

Correlation Matrix

	S&P 500	RMID	R2000
S&P 500	1.00	0.94	0.83
RMID	0.94	1.00	0.94
R2000	0.83	0.94	1.00

1979-2017

Covariance Matrix

	S&P 500	RMID	R2000
S&P 500	2.19%	2.29%	2.37%
RMID	2.29%	2.71%	2.97%
R2000	2.37%	2.97%	3.71%

1979-2017

Mkt St. Dev.	17.14%
Mkt Variance	2.94%
Mkt RP	7.75%
RA Coefficient	2.64
RFR	1.26%

$[MC_1\%*COV_1+MC_2\%*COV_2+MC_3*COV_3]$ X RA Coeff. + RFR

Solve for Mkt RP w/ Large Cap = 5.7%

Ar. Ret.	7.1%	7.7%	8.2%
St. Dev.	16.8%	18.2%	20.7%
Ge. Ret.	**5.7%**	**6.0%**	**6.1%**

Risk Aversion Coefficient = MRP/VAR

10-Yr Forecast St. Dev.different from '79-'17

Source: Bloomberg, Dimensional Fund Advisors

U.S. ALL CAP EQUITIES: Using relative market capitalization weights[viii], correlation, volatility and forecasted expected returns for Large, Mid and Small Cap U.S. Equities, the (unbiased) expected geometric return forecast for All Cap is 5.9%.

10-Year Forecast of Geometric Return: 5.9%

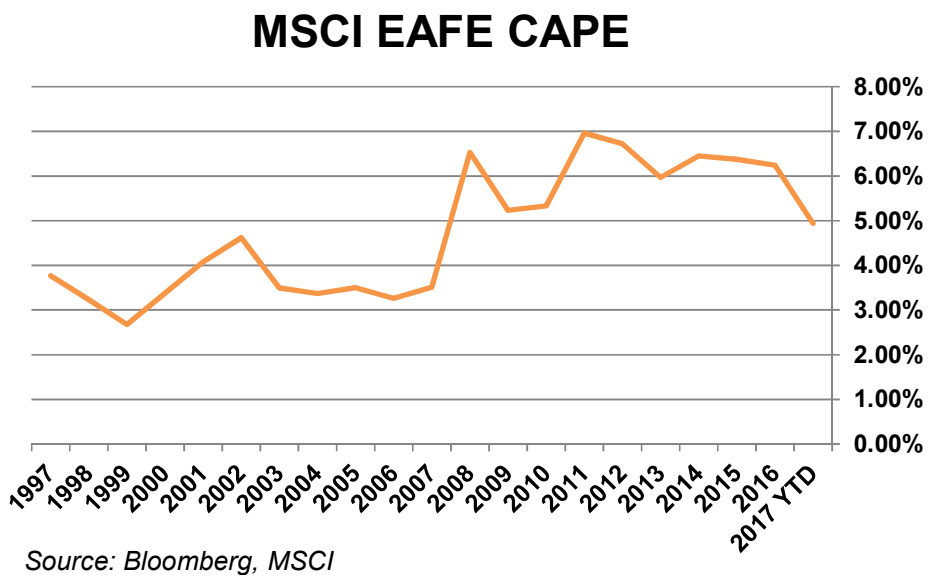
FOREIGN DEVELOPED EQUITIES: The expected geometric return forecast for Foreign Developed Equities (MSCI EAFE) is derived by applying the *Cyclically-Adjusted Earnings Yield Method* where return is a function of the 10-year average real earnings, current price and 10-year inflation assumption (CPI).

Cyclically-Adjusted Earnings Yield Method: {[1 + (EARNINGS/PRICE)] * (1 + CPI)} - 1

10-Year Forecast (2018 - 2027): {[1 + (99.84 / 2,020.13)] * (1 + 1.87%)} - 1
10-Year Forecast (2018 - 2027): {(1 + 4.94%) * (1 + 1.87%)} - 1 = 6.90%

- *EARNINGS* = 10-Year average real earnings of the MSCI EAFE Index
- *PRICE* = Current MSCI EAFE Index real price
- *CPI* = Inflation Forecast

UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS



Source: Bloomberg, MSCI

10-Year Forecast of Geometric Return: 6.9%

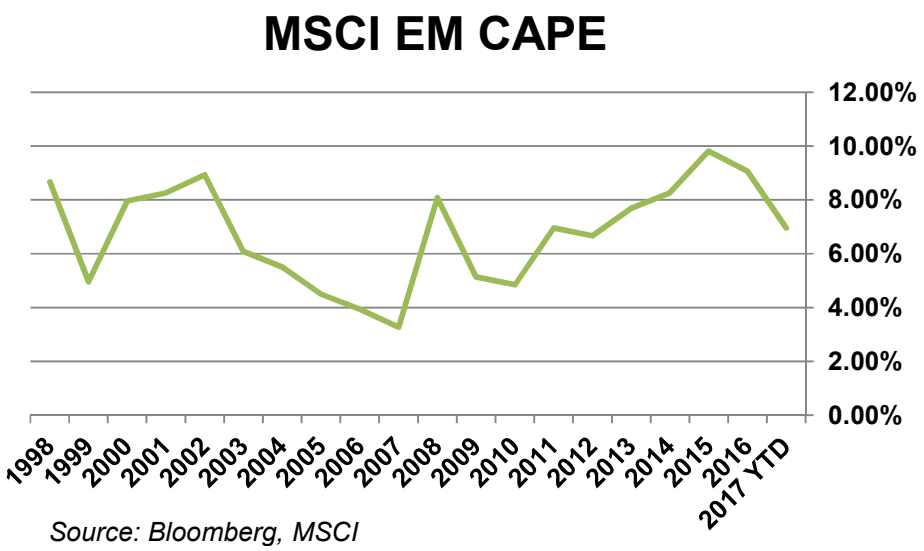
EMERGING MARKETS EQUITIES: The expected geometric return forecast for Emerging Markets Equities (MSCI Emerging Markets) is derived by applying the *Cyclically-Adjusted Earnings Yield Method* where return is a function of the 10-year average real earnings, current price and 10-year inflation assumption (CPI).

Cyclically-Adjusted Earnings Yield Method: {[1 + (EARNINGS/PRICE)] * (1 + CPI)} - 1

10-Year Forecast (2018 - 2027): {[1 + (78.02 / 1120.79)] * (1 + 1.87%)} - 1
10-Year Forecast (2018 - 2027): {(1 + 6.96%) * (1 + 1.87%)} - 1 = 8.93%

- *EARNINGS* = 10-year average real earnings of the MSCI Emerging Markets Index
- *PRICE* = Current MSCI Emerging Markets Index real price
- *CPI* = Inflation Forecast

UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS



Source: Bloomberg, MSCI

10-Year Forecast of Geometric Return: 8.9%

GLOBAL EX-U.S. EQUITIES: Using relative market capitalization weights[ix] (excluding the U.S.), correlation, volatility and forecasted expected returns for Foreign Developed and Emerging Markets Equity, the (unbiased) expected geometric return forecast for Global ex-U.S. is 7.8%.

10-Year Forecast of Geometric Return: 7.8%

GLOBAL EQUITIES: Using relative market capitalization weights[x], correlation, volatility and forecasted expected returns for U.S. All Cap, Foreign Developed and Emerging Markets Equity, the (unbiased) expected geometric return forecast for Global is 7.1%.

10-Year Forecast of Geometric Return: 7.1%

REAL ESTATE (REITs): From 1972-2017, the FTSE NAREIT Equity REITs Total Return Index had a total annualized return of 11.76%. The price component of return was 4.19% with 0.96% (annualized) coming from yield compression (*as the dividend yield fell from 6.13% in 1972 to 4.00% in 2017).* CPI averaged 4.10% annually, so real price return (excluding yield compression) was -0.82% annually. At 7.57% annually, the dividend was the largest component of return. The following returns decomposition method is used to forecast returns where total return is a function of dividend yields, real price return, yield compression and inflation (CPI).

Modified Returns Decomposition Method: [(DY) + (RPR[xi]) + (YLD C) + (CPI)]
Historical FTSE NAREIT Equity REITs Total Return Index (1972-2017): [(7.57%) + (-0.82%) + (0.96%) + (4.05%)] = 11.76%
10-Year Forecast (2018-2027): [(4.00%) + (0.00%) + (0.00%) + (1.87%)] = 5.87%

- *DY* = Dividend Yield
- *RPR* = Real price return excluding yield compression
- *YLD C* = Return resulting from yield compression
- *CPI* = Inflation Forecast

10-Year Forecast of Geometric Return: 5.9%

UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS

COMMODITY FUTURES INDEX: The expected return for a Commodity Futures index aggregates the expected spot price appreciation of the underlying commodities (expected to match inflation/CPI over a full market cycle), the expected excess return generated from the roll return in a forward contract, and the return from holding T-Bills (or TIPS) as collateral for the futures contracts. As of 11/30/17, the historical components of return for the S&P GSCI and Bloomberg Commodity Index were as follows:

Commodity Futures Returns Decomposition Method: [(SPOT) +/- (ROLL[xii]) +/- (COLLATERAL)]
Historical S&P GSCI Total Return Index (1971-2017): [(2.80%[xiii]) + (-1.62%) + (4.79%)] = 6.09%
Historical Bloomberg Commodity Total Return Index (1991-2017): [(5.17%) + (-5.18%) + (2.33%)] = 2.15%
10-Year Forecast (2018-2027): [(1.87%) + (0.00%) + (1.84%[xiv])] = 3.71%

- *SPOT* = Spot price return, assumed to keep pace with inflation as measured by CPI forecast
- *ROLL* = Roll return, assumed to be earned from holding a futures contract to (near) maturity
- *COLLATERAL* = Collateral return, earned by the return of the asset used to collateralize futures/swaps (i.e., T-Bills, TIPS, etc.). Collateral return is assumed to keep pace with a 10-year incremental rise in risk free rates (currently 1.26%) to the expected 10-year Treasury (2.41%).

10-Year Forecast of Geometric Return: 3.7%

ENERGY INFRASTRUCTURE MLPs: For most MLPs, the ability to increase distributions is a function of inflation (i.e., many midstream MLPs have inflation adjustors), demand growth for energy (i.e., oil, natural gas) and accretive acquisition growth. From 1996-2017, the Alerian MLP Index had a total annualized return of 11.84%. The price component of return was 4.50%. 0.51% (annualized) of this price return came from yield compression (*as the distribution yield fell from 8.98% in 1996 to 7.99% in 2017).* CPI averaged 2.11% annually, so real price return (excluding yield compression) was 1.89% annually. At 7.34% annually, the distribution yield was the largest component of return. The following returns decomposition method is used to forecast returns where total return is a function of distribution yields, real price return, yield compression and inflation (CPI).

Modified Returns Decomposition Method: [(DY) + (RPR[xv]) + (YLD C[xvi]) + (CPI[xvii])]
Historical Alerian MLP Total Return Index (1996-2017): [(7.34%) + (1.89%) + (0.51%) + (2.11%)] = 11.84%
10-Year Forecast (2018-2027): [(7.99%) + (1.25%) + (0.00%) + (1.87%)] = 11.11%

- *DY* = Distribution Yield
- *RPR* = Real price return excluding yield compression
- *YLD C* = Return resulting from yield compression
- *CPI* = Inflation Forecast

10-Year Forecast of Geometric Return: 11.1%
HEDGE FUNDS (DIVERSIFIED MULTI-STRATEGY PORTFOLIO): Hedge funds are not an asset class, but an amalgam of trading strategies with exposures (often leveraged) to many different esoteric risk factors. The return stream for hedge funds is also unique and less comparable to true asset classes. Historical (aggregated) hedge fund return streams have properties that make the payoff structure more non-normal than most other assets (i.e., a payoff structure similar to underwriting flood insurance). That is, volatility will often be low from month-to-month, but with lower probability, resulting in 'left tail' events occuring with much higher consequence. The hedge fund return forecast is also unique in that it is the only investment category with a net positive manager alpha assumption. That is, the hedge fund return forecast is not meant to represent a return expectation for the aggregate hedge fund market, but rather a skillful portfolio of hedge funds. For purposes of measuring historical risk exposures (correlations to other asset classes) of hedge funds, the HFRI Fund of Funds Index is used as the proxy. The return, risk, correlation, skewness and kurtosis assumptions are subject to change on a strategy-by-strategy basis.

The current 10-year standard deviation (or volatility) forecast for a 59% investment grade U.S. fixed income and 41% global equity mix is 8.9%, which matches the current 10-year standard deviation forecast for a diversified multi-strategy portfolio of hedge funds. This

fixed/equity mix has a 4.9% 10-year geometric expected return forecast. Our expectation is for a skillful and diversified portfolio of hedge fund managers to add 1.5% of excess return (i.e., 4.9% + 1.5% = 6.4%) at approximately the same volatility level. For liquid alternatives, the same process is employed but a 0.5% excess return is used to arrive at a 5.4% return assumption.

10-Year Forecast of Geometric Return: 6.4% for FOHF[xviii] & 5.4% for Liquid Alternatives

PRIVATE EQUITY: We assume investors demand a 3% risk premium over U.S. All Cap Equity (after expenses) to justify the risk and illiquidity of investing in private equity. The private equity return forecast is not meant to represent a return expectation for the aggregate private equity market, but rather a portfolio of skillful private equity funds. This return forecast is subject to change depending upon the unique properties of the private equity investment product (i.e., buyout, venture, etc.).

10-Year Forecast of Geometric Return: 8.9%

UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS

APPENDIX 1:

RETURN AND RISK ASSUMPTIONS

ASSET CLASS	Expected Median Annual Return	Expected Geometric Annual Return	Expected Risk (σ)	Skew	Kurt	Broad Asset Class
Cash	1.3%	1.3%	0.0%	0.00	0.00	FI
TIPS	3.0%	2.3%	11.0%	(0.81)	5.14	FI
Muni Bond	3.4%	3.3%	4.8%	(0.34)	1.36	FI
Muni High Yield	10.2%	8.9%	16.2%	(1.05)	9.06	FI
US Bond	3.0%	2.7%	7.0%	(0.31)	1.26	FI
For. Dev. Bond	2.5%	2.0%	9.2%	(0.01)	0.74	FI
HY Bond	5.9%	4.9%	14.7%	(1.03)	8.80	FI
EM Bond	5.2%	3.3%	19.2%	(1.82)	10.66	FI
Global Equity	8.8%	7.1%	18.3%	(0.75)	1.77	EQ
US Equity (AC)	7.4%	5.9%	17.1%	(0.71)	1.33	EQ
US Equity (LC)	7.1%	5.7%	16.9%	(0.65)	1.16	EQ
US Equity (MC)	7.7%	6.0%	18.3%	(0.75)	2.31	EQ
US Equity (SC)	8.2%	6.1%	20.7%	(0.47)	0.99	EQ
Non-US Equity (ACWI)	10.3%	7.8%	22.6%	(0.70)	1.82	EQ
Int'l Dev. Equity	9.4%	6.9%	22.4%	(0.66)	1.40	EQ
EM Equity	13.3%	8.9%	29.6%	(0.72)	2.03	EQ
Real Estate	8.2%	5.9%	21.4%	(0.67)	7.95	RA
MLPs	13.3%	11.1%	21.0%	(0.37)	1.61	RA
Commod. Fut.	5.8%	3.7%	20.2%	(0.78)	3.87	RA
HFoF Multi-Strat	6.8%	6.4%	8.9%	(0.70)	4.82	ALPHA
Hedge Funds (Liquid)	5.8%	5.4%	8.7%	(0.70)	4.82	ALPHA
Private Equity	11.7%	8.9%	23.8%	2.98	14.33	ALPHA

UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS

APPENDIX 2:

CORRELATION ASSUMPTIONS

	Cash	TIPS	Muni Bond	Muni High Yield	US Bond	For. Dev. Bond	HY Bond	EM Bond	Global Equity	US Equity (AC)	US Equity (LC)	US Equity (MC)	US Equity (SC)	Non-US Equity (ACW)	Int'l Dev. Equity	EM Equity	Real Estate	MLPs	Commod. Fut.	HFoF Multi-Strat	Hedge Funds (Liquid)	Private Equity
Cash	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIPS	0	1	0.58	0.36	0.76	0.57	0.28	0.35	0.08	0.02	0.02	0.06	-0.02	0.12	0.10	0.15	0.23	0.14	0.55	0.10	0.10	-0.20
Muni Bond	0	0.58	1	0.41	0.77	0.46	0.21	0.24	0.06	0.07	0.08	0.07	-0.02	0.05	0.05	0.02	0.13	0.17	0.11	0.06	0.06	-0.27
Muni High Yield	0	0.36	0.41	1	0.30	0.17	0.44	0.21	0.24	0.21	0.20	0.24	0.14	0.26	0.24	0.24	0.29	0.28	0.24	0.30	0.30	0.05
US Bond	0	0.76	0.77	0.30	1	0.54	0.29	0.33	0.10	0.19	0.20	0.20	0.10	0.09	0.15	0.03	0.21	0.12	0.32	0.07	0.07	-0.23
For. Dev. Bond	0	0.57	0.46	0.17	0.54	1	0.09	0.30	0.26	0.02	0.04	0.01	-0.05	0.33	0.38	0.10	0.10	0.08	0.27	0.00	0.00	-0.21
HY Bond	0	0.28	0.21	0.44	0.29	0.09	1	0.55	0.61	0.60	0.58	0.64	0.60	0.57	0.51	0.57	0.59	0.55	0.27	0.47	0.47	0.12
EM Bond	0	0.35	0.24	0.21	0.33	0.30	0.55	1	0.63	0.57	0.57	0.57	0.52	0.65	0.60	0.74	0.47	0.37	0.45	0.55	0.55	0.27
Global Equity	0	0.08	0.06	0.24	0.10	0.26	0.61	0.63	1	0.89	0.89	0.85	0.75	0.97	0.95	0.76	0.54	0.41	0.29	0.59	0.59	0.51
US Equity (AC)	0	0.02	0.07	0.21	0.19	0.02	0.60	0.57	0.89	1	0.99	0.97	0.88	0.75	0.67	0.68	0.64	0.40	0.26	0.57	0.57	0.48
US Equity (LC)	0	0.02	0.08	0.20	0.20	0.04	0.58	0.57	0.89	0.99	1	0.94	0.83	0.75	0.67	0.66	0.61	0.39	0.25	0.54	0.54	0.49
US Equity (MC)	0	0.06	0.07	0.24	0.20	0.01	0.64	0.57	0.85	0.97	0.94	1	0.94	0.74	0.65	0.69	0.70	0.44	0.28	0.60	0.60	0.41
US Equity (SC)	0	-0.02	-0.02	0.14	0.10	-0.05	0.60	0.52	0.75	0.88	0.83	0.94	1	0.66	0.59	0.66	0.69	0.39	0.22	0.58	0.58	0.39
Non-US Equity (ACWI)	0	0.12	0.05	0.26	0.09	0.33	0.57	0.65	0.97	0.75	0.75	0.74	0.66	1	0.99	0.76	0.49	0.39	0.33	0.58	0.58	0.47
Int'l Dev. Equity	0	0.10	0.05	0.24	0.15	0.38	0.51	0.60	0.95	0.67	0.67	0.65	0.59	0.99	1	0.70	0.49	0.37	0.32	0.54	0.54	0.45
EM Equity	0	0.15	0.02	0.24	0.03	0.10	0.57	0.74	0.76	0.68	0.66	0.69	0.66	0.76	0.70	1	0.46	0.38	0.34	0.66	0.66	0.36
Real Estate	0	0.23	0.13	0.29	0.21	0.10	0.59	0.47	0.54	0.64	0.61	0.70	0.69	0.49	0.49	0.46	1	0.33	0.25	0.29	0.29	0.14
MLPs	0	0.14	0.17	0.28	0.12	0.08	0.55	0.37	0.41	0.40	0.39	0.44	0.39	0.39	0.37	0.38	0.33	1	0.32	0.33	0.33	0.00
Commod. Fut.	0	0.55	0.11	0.24	0.32	0.27	0.27	0.45	0.29	0.26	0.25	0.28	0.22	0.33	0.32	0.34	0.25	0.32	1	0.40	0.40	0.14
HFoF Multi-Strat	0	0.10	0.06	0.30	0.07	0.00	0.47	0.55	0.59	0.57	0.54	0.60	0.58	0.58	0.54	0.66	0.29	0.33	0.40	1	1.00	0.60
Hedge Funds (Liquid)	0	0.10	0.06	0.30	0.07	0.00	0.47	0.55	0.59	0.57	0.54	0.60	0.58	0.58	0.54	0.66	0.29	0.33	0.40	1.00	1	0.60
Private Equity	**0**	-0.20	-0.27	0.05	-0.23	-0.21	0.12	0.27	0.51	0.48	0.49	0.41	0.39	0.47	0.45	0.36	0.14	0.00	0.14	0.60	0.60	1

UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS

APPENDIX 3: STANDARD DEVIATION FORECASTS

Annualizing a historical monthly standard deviation by multiplying by √12 understates true annual volatility (because of monthly serial correlation). Therefore, standard deviation is derived (for all asset classes) by calculating the annual standard deviation of all historical 12-month periods.

An adjustment will be made to asset classes with shorter return streams that will attempt to normalize volatility between asset classes. The methodology is used for the following asset classes:

Asset Classes

- TIPS (3/1997)
- Emerging Markets Bonds (1/1994)
- Hedge Funds Portfolio (1/1990)
- MLPs (1/1990)
- Emerging Market Equities (1/1988)
- Foreign Bonds (1/1985)
- High Yield Bonds (11/1984)

Methodology

Standard Deviation (σ) of Asset = [short-term σ of asset] * [long-term σ of comparable asset]
[short-term σ of comparable asset]

APPENDIX 4:

DIFFERENTIATING ARITHMETIC AND GEOMETRIC ASSUMPTIONS

1. **ARITHMETIC RETURNS VS. GEOMETRIC RETURNS**

   The arithmetic average annual return is always equal to or greater than a geometric (or compounded) annualized return. Since the CAPM and the Black-Litterman are single time period models, they forecast an arithmetic return (i.e., one-year). On the other hand, geometric returns are more appropriate for quantifying expected holding period returns (i.e., 10-years).

   Geometric Return = [Arithmetic Return] – [(Standard Deviation)^2] / 2

   The Frontier Engineer™ asset allocation modeling seeks to optimize (the median expected) aggregate portfolio geometric returns (per unit risk) rather than arithmetic returns (per unit risk).

2. **OPTIMIZING FOR GEOMETRIC RETURN**

   If two assets have the same expected return (and low correlation), they can be combined in a portfolio to generate a higher holding period return (geometric) than either two investments on a segregated basis. The following example shows how two investments with 10% expected arithmetic returns and 20% expected annual standard deviations can be combined in a portfolio to generate a higher time horizon return (geometric) than either on a segregated basis *(correlation = 0).*

   Expected Arithmetic Return (2 asset portfolio) = w_1*(AR_1) + w_2*(AR_2)
   Expected Arithmetic Return (2 asset portfolio) = 0.50*10% + 0.50*10% = **10.0%**
   AR_1 = Arithmetic Return of asset 1
   AR_2 = Arithmetic Return of asset 2

w_1 = weight of asset 1
w_2 = weight of asset 2

Expected Standard Deviation (2 asset portfolio) = $\sqrt{[(w_1^2*\sigma_1^2+w_2^2*\sigma_2^2)+(2*w_1*w_2*\sigma_1*\sigma_2*r_{(1,2)})]}$
Expected Standard Deviation (2 asset portfolio) = $\sqrt{[(0.50^2*0.20^2+0.50^2*0.20^2) + (2*0.50*0.50*0.20*0.20*0.00)]}$ = **14.1%**
w_1 = weight of asset 1
w_2 = weight of asset 2
σ_1 = standard deviation of asset 1
σ_2 = standard deviation of asset 2
$r_{(1,2)}$ =Correlation between asset 1 and 2

As previously stated, geometric return = arithmetic return – $\sigma^2/2$

- Expected Geometric Return (Asset 1 in vacuum) = 10% - $20\%^2/2$ = **8.0%**
- Expected Geometric Return (Asset 2 in vacuum) = 10% - $20\%^2/2$ = **8.0%**
- Expected Geometric Return (50/50 Portfolio) = 10% - $14.1\%^2/2$ = **9.0%**

3. **CONCLUSION**

Two low correlating assets with the same arithmetic return have a higher geometric return when combined within a portfolio (and rebalanced) than either has on a stand-alone basis.

APPENDIX 5:

DEFINITIONS

Our portfolio optimization requires 10-year forecasts of the following metrics:

1. **Expected Median Annual Return**[xix] of each asset class
2. **Expected Annual Geometric Return**[xx] of each asset class
3. **Expected Annual Standard Deviation** of each asset class
4. **Expected Correlation** among all asset classes
5. **Expected Skewness** of each asset class (corrected for asymmetry)
6. **Expected Excess Kurtosis** of each asset class (corrected for tails)

Expected 10-Year Median Annual Return Forecast
The annual median return forecast represents the expected midpoint of all possible future 10-year returns for an asset class. These return forecasts (or expected returns) are highly unlikely to be precisely correct over the 10-year time horizon. We expect the actual 10-year return to have a 50% probability of being higher or lower than the forecast.

Expected 10-Year Geometric Annual Return[xxi] **Forecast**
The geometric return forecast represents the expected midpoint of all possible future 10-year outcomes for an asset class. These geometric return forecast estimates (or expected returns) are highly unlikely to be precisely correct over the 10-year time horizon. We expect the actual 10-year return to have a 50% probability of being higher or lower than the forecast.

Expected 10-Year Annual Standard Deviation Forecast
The 10-year standard deviation forecast represents the median expected (normally distributed) variability of annual returns about the mean. The higher the standard deviation, the more uncertain the outcome.

UPDATED 10-YEAR CAPITAL MARKET ASSUMPTIONS

Expected Correlation
The 10-year forecast of asset class correlation coefficients quantifies the degree to which two assets are expected to move together. The correlation coefficient can range from -1 (perfect negative correlation) to +1 (perfect positive correlation).

Expected Skewness
The 10-year skewness forecast quantifies the degree of expected asymmetry of the return distribution. If the left tail is more pronounced than the right tail, the asset has negative skewness. If the reverse is true, it has positive skewness. If the two are equal, it has zero skewness (normally distributed).

Expected Excess Kurtosis
The 10-year excess kurtosis forecast of each asset class quantifies the degree of expected peakedness (or flatness) of the return distribution. If excess kurtosis is positive, the distribution is more peaked (with extreme events). If excess kurtosis is negative, the distribution is flatter (with fewer extreme events).

FORECASTING METHODS

RETURNS:
10-year asset class return forecasts are developed using various methodologies including:

1. Risk Premium Method
2. Equity Returns Decomposition Method
3. Cyclically-Adjusted Earnings Yield (Modified CAPE) Method
4. Black-Litterman Method
5. Fixed Income Returns Decomposition Method
6. High Yield Default-Loss Method
7. Commodity Futures Returns Decomposition Method
8. Corrections for extreme asset class over/under valuation (or other disequilibrium in capital market assumptions)

1. The Risk Premium Method adds a risk premium to a referenced asset's return forecast.

   Return = (RA) +/- (RP)

   - *RA= Forecasted Return of "Reference Asset"*
   - *RP = Appropriate "Risk Premium" added to the Referenced Asset's forecast*

2. The Equity Returns Decomposition Method breaks out the components of equity returns.
   Return = [(1 + DIV) * (1 + P/E) * (1 + REG) * (1 + CPI)] - 1

   - *DIV = Dividend Yield*
   - *P/E = P/E Expansion/Contraction*
   - *REG = Real Earnings Growth = [Return on Equity] * [Earnings Retention Ratio]*
   - *CPI = Inflation (Consumer Price Index)*

   The following is the Modified Equity Returns Decomposition Method for REITs and MLPs:
   Return = [(DY) +/- (RPR) +/- (YLD C) +/- (CPI)]

   - *DY = Dividend/Distribution Yield*
   - *RPR = Real price return excluding yield compression*

- *YLD C = Price return resulting from yield compression*
- *CPI = Inflation (Consumer Price Index)*

3. The Cyclically-Adjusted Earnings Yield Method incorporates a smoothing technique to earnings by dividing the average real earnings by the current (real) Index price. The result is a cyclically-adjusted real earnings yield of an individual equity asset class, to which forward-looking inflation expectations are applied to garner an unbiased nominal expected return.

Return = {[1 + (EARNINGS/PRICE)] * (1 + CPI)} – 1

- *EARNINGS = 10-year average real earnings of Index*
- *PRICE = Current real price of Index*
- *CPI = Inflation (Consumer Price Index)*

4. The Black-Litterman Method uses reverse mean-variance optimization to arrive at unbiased asset class return forecasts by inputting correlation, volatility and market capitalization weights, then solving for (equilibrium) expected returns (or risk premiums).

- *Market capitalization weights for each asset*
- *Correlation between the assets*
- *Volatility (or standard deviation) of assets*
- *Risk free rate*
- *The risk aversion coefficient of the reference market portfolio*

5. The Fixed Income Returns Decomposition Method forecasts the components of fixed income Index returns (Yield Δ and Price Δ) and combines them for a total return forecast.

Returns = (YLD) +/- (CUR) +/- (PE) +/- (CRED)

- *YLD = Bond Index YTM*
- *CUR = Expected currency effect derived from interest rate parity*
- *PE = Bond Index "Price Effect"*
- *CRED = Credit spread premium*

6. The High Yield Default-Loss Method forecasts fixed income returns by regressing default rates, recovery rates and credit spreads to generate an expected loss rate, then combines the Index yield to solve for a total return forecast.

- *Bond Index Yield*
- *U.S. Treasury Yield*
- *Historical Default Rates*
- *Historical Recovery Rates*

7. The Commodity Futures Index Returns Decomposition Method forecasts and aggregates the components of a commodity futures Index's total return.

Returns = (SPOT) +/- (ROLL) +/- (COLLATERAL)

- *SPOT = Spot price return, which is assumed to keep pace with inflation as measured by CPI forecast*
- *ROLL = Roll return expected to be earned from holding a futures contract to (near) maturity*

- *COLLATERAL = Collateral return, which is earned by the return of the asset used to collateralize futures/swaps (i.e. T-Bills)*

8. **We** reserves the right to make corrections for over or undervaluation of asset classes (or what we believe is capital markets disequilibrium) when developing forecasts. An expectation of mean-reversion in relative valuations (convergence of relationships) may be used when developing 10-year capital market assumptions.

STANDARD DEVIATION:
Standard deviation is derived by calculating the rolling annual standard deviation of all historical 12-month periods. For asset classes with short track records, adjustments to historical standard deviations may be made where appropriate. Such adjustments may be made using the following methodology:

$$\textbf{Standard Deviation } (\sigma) \textbf{ of Asset} = \frac{[\textbf{short-term } \sigma \textbf{ of asset}] * [\textbf{long-term } \sigma \textbf{ of comparable asset}]}{[\textbf{short-term } \sigma \textbf{ of comparable asset}]}$$

CORRELATION:
Correlation is calculated using long-term historical monthly data over common time periods with the exception of the risk-free asset (cash), which is assumed to have a zero correlation to all asset classes (except short-term bonds).

SKEWNESS AND KURTOSIS**:**
We observe (monthly) skewness and excess kurtosis for each asset class over a uniform period of time (1997-2016). Failing to observe skewness and excess kurtosis over a uniform period of time for each asset class, especially during periods of stress (i.e., no emerging markets equity data for October 1987), will likely understate the impact of extreme events for asset classes with shorter return streams relative to those with longer return streams. Adjustments may be made to skewness and excess kurtosis from historical measures if warranted.

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[i] The 3.3% annualized return assumption is used for optimization purposes to advantage municipal bonds over taxable bonds in taxable accounts as appropriate. However, 2.0% in annualized return is used when looking at portfolio level forward looking returns that are a weighted average of the underlying asset class return expectations.
[ii] The 8.9% annualized return assumption is used for optimization purposes to advantage municipal bonds over taxable bonds in taxable accounts as appropriate. However, 5.3% in annualized return is used when looking at portfolio level forward looking returns that are a weighted average of the underlying asset class return expectations.
[iii] Default Rate = -1.01% + 0.8451 * [HY Yield-to-Worst Spread vs. 10-Year Treasury]. R^2 = 0.5302. Recovery Rate algorithm combines linear, polynomial, logarithmic and exponential factors; additional details available upon request.
[iv] Source: Citigroup (Citigroup World Government Bond ex-U.S. Index data); DSA Calculation.
[v] Source: JPMorgan (JPMorgan GBI-EM Global Diversified Index data); Bloomberg (CDS Spreads); DSA Calculation.
[vi] RA Coefficient (i.e., Risk Aversion Coefficient) = Market Risk Premium/Market Variance.
[vii] 10-Year forecast standard deviation different from 1979-2017 historical standard deviation.
[viii] As of 9/30/17, the U.S. equity market capitalization was comprised as follows: 69.7% Large Cap, 20.5% Mid Cap and 9.8% Small Cap. Source: DFA LP Global Market Breakdown.
[ix] As of 9/30/17, the Global ex-U.S. equity market capitalization was comprised as follows: 76.3% Foreign Developed and 23.7% Emerging Markets. Source: DFA LP Global Market Breakdown.
[x] As of 9/30/17, the Global equity market capitalization was comprised as follows: 51.6% U.S., 37.0% Foreign Developed and 11.4% Emerging Markets. Source: DFA LP Global Market Breakdown.
[xi] Unlike traditional stocks, REITs pay out virtually all their earnings (or FFO) in dividends and rely on the issuance of new equity (and debt) to grow earnings (or FFO). Therefore, the expected long-term RPR is capped at zero.
[xii] Assumes median scenario is zero roll return.
[xiii] During this same period (i.e., 1971-2017), CPI averaged 4.1% annually and outperformed the GSCI Spot Return (i.e., 2.8%).
[xiv] While the 11/30/2017 3-month T-Bill yield was 1.26%, the 10-year holding period T-Bill return forecast is expected to annualize an average of 1.84% as rates rise to align with the current ten-year Treasury (i.e., 2.41% over the next 10-Year period).
[xv] MLPs pay out virtually all their distributable cash flow and rely on the issuance of new equity to grow real distributable cash flow (or DCF). Therefore, the expected long-term RPR is assumed to be constrained to growth in U.S. energy demand (~1.25% over the last 20 years). Between 2012 and 2016, The Federal Energy Regulatory Commission (FERC) temporarily increased this figure to 2.65%. Because many MLP investment vehicles have a tax drag, we will assume this PPI adjustor will equal the tax drag and net to zero. While we believe there is a strong case for accretive acquisition growth (unlike most other asset classes) over the next decade as C-Corps continue to divest energy infrastructure assets, we will conservatively assume zero real price return (excluding yield expansion/compression) from accretive growth.
[xvi] Assumes median scenario is zero yield compression.
[xvii] Many midstream MLPs have inflation adjustors (i.e., PPI + 1.25%). Between 2012 and 2016, the FERC temporarily increased this inflation adjustor to PPI + 2.65%. Because many MLP investment vehicles have a tax drag, we will assume this PPI adjustor will equal the tax drag and net to zero. Therefore, we estimate nominal fee growth (or price growth) will equal our 10-year inflation assumption of 1.87% with the PPI adjustors (i.e., 2.65% for 2012-2016 and 1.25% historical) being offset by MLP investment vehicle tax drag.
[xviii] While our 10-year return forecast is expressed as if hedge fund returns were normally distributed, the Frontier Engineer™ model treats the return forecast as a median (rather than mean), and fattens the left tail, increasing the magnitude of lower probability events. Additional detail surrounding forecast assumptions at the individual hedge fund sub-strategy level is available upon request.
[xix] Median return is used because it does not require a normal return distribution assumption.

[xx] The expression of the expected geometric return forecast (from median returns) requires a normal return distribution assumption (i.e., that mean = median). This is for illustrative purposes only. The geometric return forecasts are expressed as if returns were normal (i.e., median = mean). For Frontier Engineer™ optimization, asset class return distributions do not have to be normally (Gaussian) distributed.
[xxi] Geometric Return = Arithmetic Mean or Median Return – $\sigma^2/2$.