



## ANGELES' LONG TERM CAPITAL MARKET ASSUMPTIONS AS OF JANUARY 2021

### INTRODUCTION:

This report presents Angeles Investment Advisors' updated capital market assumptions as of January 2021. These assumptions are used in asset allocation modeling for our clients over a long-term horizon (>10 years).

Versus our most recent assumptions from our mid year review in 2020, we have made several changes:

- Our global equity return assumption decreased from mid year by 10 basis points to 5.6%, reflecting a decreased expectation for US and international dividend yields and a P/E contraction in the US.
- Return expectations for high yield debt, bank loans, and private credit were decreased from mid year expectations on the basis of decreasing yields. High yield debt return expectations decreased from 5.25% to 4.0%. Bank Loans return expectations decreased from 5.0% to 4.0%. Private Credit return expectations decreased from 6.5% to 6.0%.
- Return expectations for all categories within real assets remained unchanged, with the exception of US TIPS. The US TIPS return assumption increased by 20 basis points from 0.5% to 0.7%.
- Return expectations for all categories within liquidity/capital preservation, with the exception of cash, were decreased from mid year expectations on the basis of decreasing yields throughout the year.
- Risk (defined as expected standard deviation of returns) and correlation assumptions reflect historical data through December 2020. No changes were made to our risk or correlation assumptions.



We continue to underscore the importance of judgment in using these long-term return and risk assumptions in a quantitative mean variance optimization framework. The recommendations that Angeles presents to its clients on investment policy are derived more from our experience and knowledge than from the "black box" output of mean variance optimization.



## WHAT ARE CAPITAL MARKET ASSUMPTIONS?

Capital market assumptions are forecasts for future long-term annualized returns, the standard deviation (volatility) of expected returns, and the correlation of expected returns among asset categories. These assumptions are inputs into asset allocation models. At Angeles, we view the long term as an investment horizon of at least ten years.

On an annual basis, Angeles formally develops long term capital market assumptions whereby our Investment Committee forecasts the total return, risk (measured by standard deviation), and correlation coefficients for all major and many sub-asset classes as well as inflation. Angeles reviews these assumptions semi-annually as well.

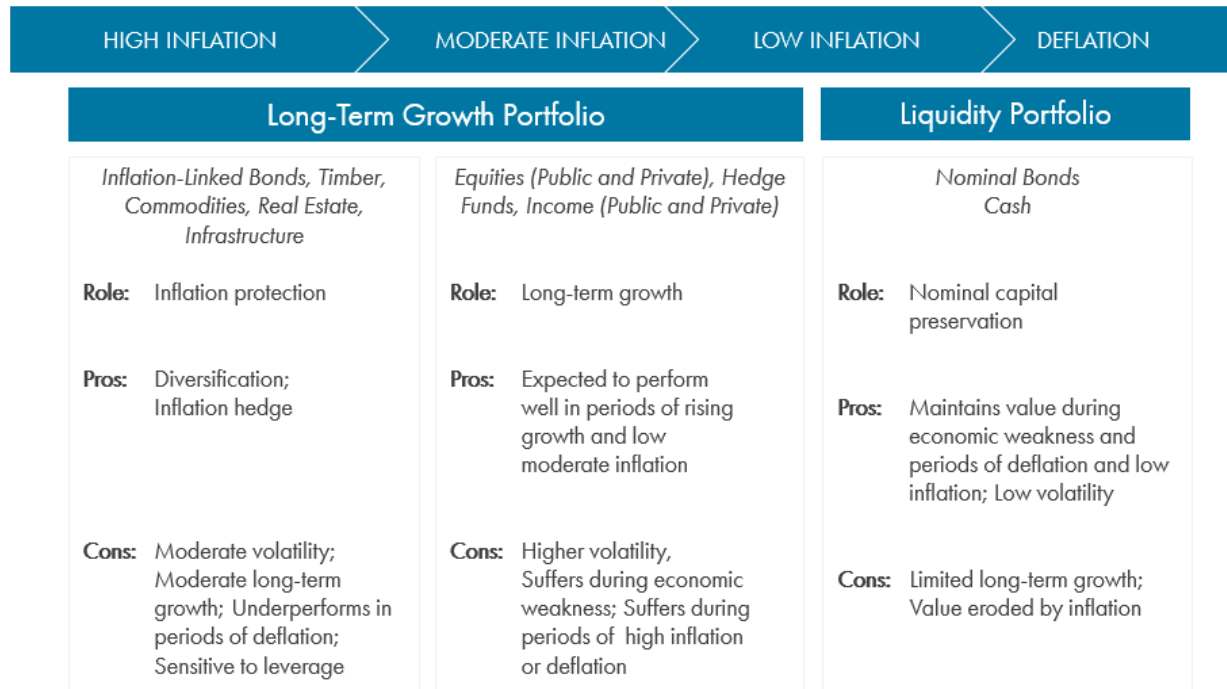
***Asset class assumptions are based on passively invested portfolios, net of investment management fees and transaction costs.*** In other words, public market equity and fixed income forecasts do not include the impact of active management or any premium/shortfall due to active management decisions. In categories where there is no passively managed vehicle, such as private equity, hedge funds, and private real estate, we estimate the broad asset class return based upon private partnership vehicle performance, net of all fees and expenses. As such, these return expectations do incorporate some level of active premium.

The capital market assumptions used in asset allocation modeling cannot be relied upon by themselves as a recommendation to invest in any particular asset class. Considerations such as diversification, supply and quality of investment managers, implementation issues and costs, capacity constraints, liquidity constraints, business risks, and the potential for active management premiums should all be evaluated. Each investor's particular circumstances should be considered as part of the asset allocation process.

Angeles' conceptual approach to asset allocation is illustrated below and groups a portfolio into two broad categories: (i) Long-Term Growth/ Capital Appreciation and (ii) Liquidity/ Capital Preservation. These two categories serve distinct and important roles in a portfolio and will behave differently in various capital market environments.



FIGURE 1 | CAPITAL MARKET ENVIRONMENT



Our capital market assumptions by asset and sub-asset class, shown on the following page, are organized in this fashion.



**TABLE 1 | ANGELES' CAPITAL MARKET ASSUMPTIONS - AS OF JANUARY 2021**  
US DOLLAR NOMINAL RETURNS (10+ YEARS)

	Expected Return	Expected Standard Deviation	Expected Yield	Expected Sharpe Ratio
<b>Long-Term Growth / Capital Appreciation</b>				
<i>Equities</i>				
Global Equity	5.6%	17.0%	2.1%	0.32
US Equity	5.25%	16.0%	1.75%	0.32
International Equity	5.3%	18.0%	2.75%	0.29
Emerging Market Equity	7.25%	24.0%	2.5%	0.30
Private Equity	8.5%	20.0%	--	0.42
Direct Hedge Funds	4.0%	8.0%	--	0.49
Hedge Fund of Funds	3.0%	7.0%	--	0.41
<i>Income</i>				
High Yield Debt	4.0%	12.0%	4.0%	0.33
Bank Loans	4.0%	10.0%	4.0%	0.39
Private Credit	6.0%	14.0%	6.0%	0.42
Preferred Stock	3.0%	14.0%	3.0%	0.21
Emerging Market Debt (External/\$-Denom)	5.0%	12.0%	5.0%	0.41
Emerging Market Debt (LCL)	4.5%	14.0%	4.3%	0.31
<i>Real Assets</i>				
US TIPS	0.7%	7.5%	0.7%	0.08
Global Real Estate Securities	4.0%	19.0%	3.75%	0.21
US REITs	4.0%	19.0%	3.75%	0.21
MLPs	6.75%	20.0%	6.50%	0.33
Private Real Estate - Core	4.0%	10.0%	3.0%	0.39
Private Real Estate - Opp./Value Added	8.5%	20.0%	--	0.42
Gold	1.6%	23.0%	--	0.07
Infrastructure (Private)	4.5%	12.0%	4.0%	0.37
Timber	4.0%	12.0%	3.5%	0.33
Commodities	1.6%	23.0%	--	0.07
<b>Liquidity / Capital Preservation</b>				
US Fixed Income	1.3%	5.0%	1.3%	0.24
Global Fixed Income	1.0%	7.0%	1.0%	0.13
Investment Grade Credit	1.7%	7.0%	1.7%	0.23
Long-term Credit	2.8%	12.0%	2.8%	0.23
US Short-term	0.15%	3.0%	0.15%	0.02
Municipals (National 1-10 Yr)	0.6%	4.0%	0.6%	0.13
Cash	0.1%	1.0%	0.1%	0.00
Global Inflation	1.8%			
US Inflation	1.75%			

Long term expected return and risk assumptions are not a guarantee of future performance and actual results can and will differ from forecasts over time. The assumptions should not solely be relied upon as a recommendation to invest in any particular asset class. Note that these asset class assumptions are based upon passively invested portfolios net of management fees; they do not consider the impact of active management. Return estimates are shown on a compound return basis, not on arithmetic returns.

Asset class assumptions presented constitute our judgment at the time they were forecasted and are subject to change without notice. Angeles Investment Advisors, LLC attest the information contained herein has been prepared from sources believed reliable but is not guaranteed by us as to its timeliness or accuracy and is not a complete summary or statement of all available data. This data is intended solely for our clients, is for informational purposes only and may not be publicly disclosed or distributed without our prior written consent.



TABLE 2 | CAPITAL MARKET CORRELATION ASSUMPTIONS

		Long-Term Growth / Capital Appreciation																							Liquidity / Capital Preservation														
		Equities								Income								Real Assets																					
		Asset Class								Global Equity	US Equity	Intl Eq	EM Equity	Private Equity	Direct Hedge Funds	Hedge Fund of Funds	DIF	High Yield	Bank Loans	Private Credit	Pref Stock	EMD External	EMD Local	US TIPS	Global REITs	US REITs	MLPs	Private Real Estate	Gold	Infrastructure	Timber	Commodities	US Core Fixed Income	IG Credit	Long Credit	Global Fixed Income	US Short-term	Munis (National)	ALP
Long-Term Growth / Capital Appreciation	Equities	Global Equity	1.00																																				
		US Equity	0.95	1.00																																			
		International Equity	0.95	0.90	1.00																																		
		Emerging Market Equity	0.90	0.85	0.85	1.00																																	
		Private Equity	0.65	0.65	0.65	0.60	1.00																																
		Direct Hedge Funds	0.85	0.85	0.85	0.85	0.65	1.00																															
		Hedge Fund of Funds	0.80	0.80	0.80	0.80	0.65	0.90	1.00																														
	Income	DIF	0.75	0.75	0.70	0.75	0.50	0.80	0.75	1.00																													
		High Yield	0.75	0.75	0.70	0.75	0.50	0.80	0.75	0.95	1.00																												
		Bank Loans	0.75	0.75	0.70	0.75	0.50	0.80	0.75	0.95	0.95	1.00																											
Private Credit		0.80	0.75	0.75	0.80	0.50	0.80	0.75	0.95	0.95	0.90	1.00																											
Preferred Stock		0.60	0.60	0.55	0.60	0.40	0.65	0.60	0.80	0.85	0.85	0.50	1.00																										
Emerging Market Debt External		0.70	0.60	0.70	0.75	0.40	0.65	0.60	0.80	0.80	0.80	0.80	1.00																										
Emerging Market Local Currency		0.80	0.70	0.85	0.80	0.50	0.65	0.60	0.65	0.65	0.65	0.65	0.75	1.00																									
Real Assets	US TIPS	-0.10	-0.10	-0.10	-0.10	0.00	0.00	0.00	0.30	0.30	0.30	0.25	0.30	0.45	0.15	1.00																							
	Global REITs	0.80	0.75	0.80	0.75	0.60	0.75	0.70	0.75	0.75	0.80	0.75	0.75	0.80	0.10	1.00																							
	US REITs	0.70	0.75	0.70	0.60	0.50	0.60	0.50	0.65	0.65	0.65	0.70	0.65	0.60	0.70	0.10	0.90	1.00																					
	MLPs	0.70	0.70	0.70	0.70	0.60	0.80	0.80	0.75	0.80	0.80	0.60	0.65	0.70	0.50	0.20	0.60	0.50	1.00																				
	Private Real Estate	0.20	0.20	0.20	0.10	0.50	0.20	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.25	0.25	0.00	1.00																			
	Gold	0.10	0.05	0.15	0.30	0.10	0.20	0.20	0.15	0.15	0.05	0.10	0.10	0.40	0.30	0.55	0.10	0.10	0.05	1.00																			
	Infrastructure	0.50	0.50	0.50	0.50	0.40	0.40	0.40	0.40	0.40	0.40	0.50	0.40	0.65	0.70	0.30	0.50	0.40	0.30	0.30	0.15	1.00																	
	Timber	0.10	0.10	0.10	0.00	0.20	0.00	0.00	-0.10	-0.10	-0.10	-0.15	-0.10	0.00	0.00	0.00	0.00	-0.15	-0.20	0.30	0.15	0.20	1.00																
	Commodities	0.50	0.40	0.50	0.50	0.30	0.60	0.65	0.50	0.50	0.50	0.55	0.50	0.45	0.50	0.30	0.40	0.35	0.60	0.30	0.40	0.40	0.00	1.00															
Liquidity / Capital Preservation		US Core Fixed Income	0.05	0.05	0.00	0.00	-0.10	-0.05	-0.05	0.10	0.10	0.10	0.10	0.30	0.20	0.60	0.00	0.00	0.00	-0.10	0.35	0.10	0.10	-0.10	1.00														
		Investment Grade Credit	0.20	0.20	0.20	0.20	0.00	0.25	0.20	0.45	0.45	0.40	0.45	0.65	0.55	0.45	0.40	0.30	0.30	-0.10	0.30	0.30	0.00	0.10	0.75	1.00													
		Long Credit	0.35	0.25	0.35	0.35	0.00	0.25	0.20	0.35	0.40	0.40	0.20	0.40	0.60	0.50	0.25	0.45	0.35	0.25	-0.10	0.20	0.40	0.00	0.00	0.75	0.95	1.00											
		Global Fixed Income	0.25	0.20	0.35	0.25	0.00	0.15	0.10	0.15	0.15	0.15	0.25	0.05	0.45	0.55	0.40	0.40	0.30	0.05	0.00	0.45	0.35	0.20	0.15	0.70	0.70	0.65	1.00										
		US Short-term	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.25	-0.20	-0.20	-0.40	-0.20	-0.10	-0.05	0.40	-0.15	-0.15	-0.20	0.00	0.30	0.00	0.20	-0.15	0.75	0.35	0.25	0.50	1.00									
		Munis (National 1-10 Yr)	-0.10	-0.20	-0.10	0.00	-0.30	-0.20	-0.20	0.05	0.05	-0.10	-0.05	0.25	0.45	0.20	0.40	0.05	0.05	0.05	-0.25	0.40	0.00	0.00	-0.15	0.90	0.70	0.65	0.60	0.55	1.00								
		ALP	0.00	0.00	-0.05	-0.05	-0.10	-0.10	-0.10	0.05	0.05	0.05	0.00	0.05	0.20	0.15	0.55	-0.05	-0.05	-0.05	-0.10	0.35	0.10	0.10	-0.10	0.95	0.05	0.05	0.65	0.95	0.85	1.00							
		Cash	0.00	0.00	0.00	0.00	0.10	0.10	0.00	-0.10	-0.10	-0.10	-0.20	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.05	0.10	1.00					

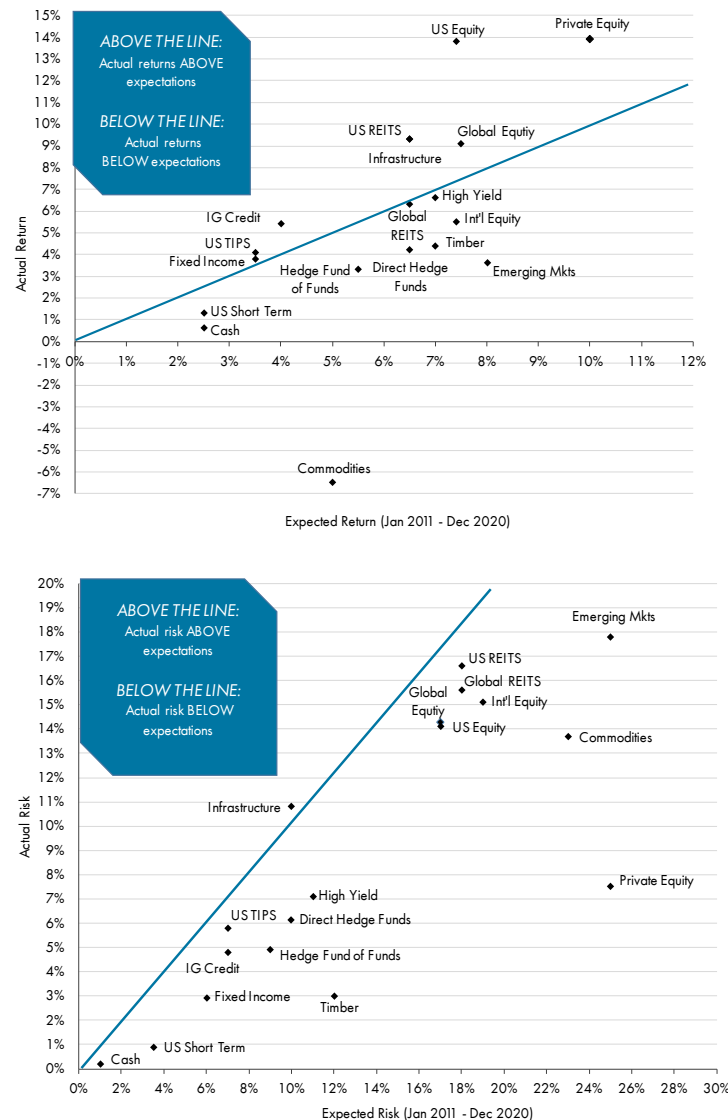
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Looking back at the last ten years, we revisited our 2011 long-term capital market assumptions to see how our predictions then fared versus actual results through December 2020. The past decade was a volatile period, including the tail end of the Global Financial Crisis and Great Recession, the period of deleveraging, the Eurozone debt crisis, the decline in oil and commodities since mid-2014, historically low interest rates, the equity rally in 2019, the COVID-19 induced global economic shutdown in early 2020, and the subsequent equity rally later in 2020. During this period, actual return results were below expectations for short-term bonds, cash, international equities, EM equities, hedge funds, timber, and commodities and above expectations for US equities, global equities, US REITs, private equity, IG credit and infrastructure, but were generally close to return expectations for other major asset classes. Expected risk was generally below expectations across all major asset classes. (In reading the charts below, if the asset class plots above the blue line, then the actual trailing 10-year return/risk was higher than our assumption and vice versa.)

FIGURE 2 | EXPECTED RETURN AND RISK ASSUMPTIONS IN 2011 VS. ACTUAL TRAILING 10-YEAR RETURN AND RISK



As of December 31, 2020. Data sourced from Morningstar. Expected return and risk data based on Angeles' 2011 Capital Market Assumptions.

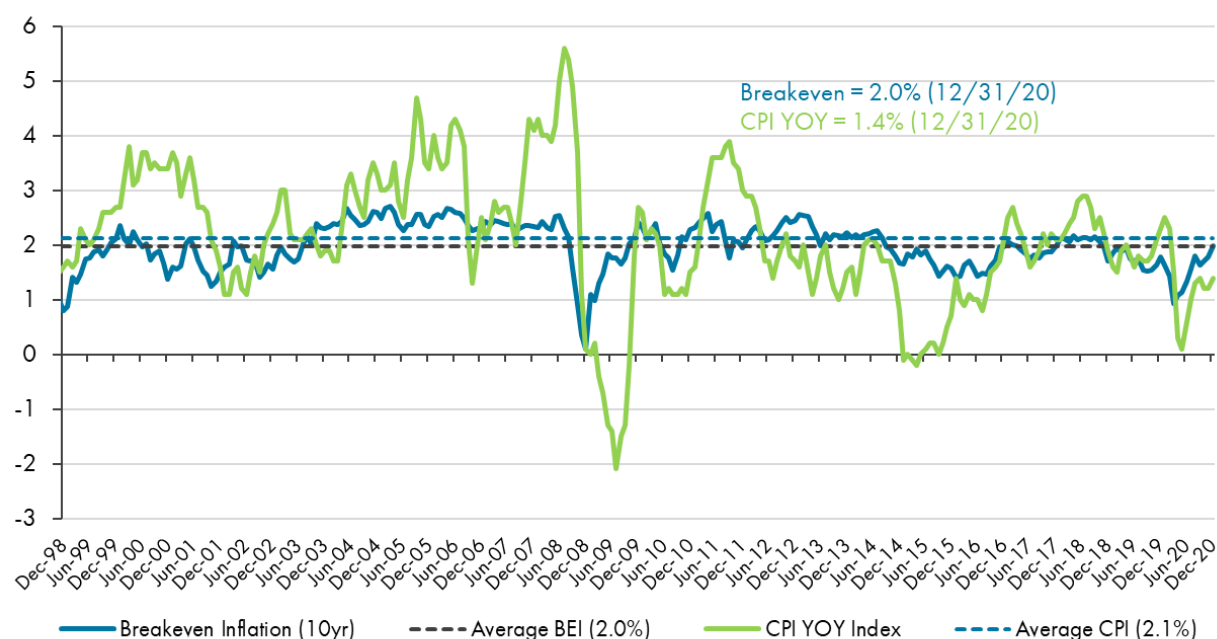


## INFLATION:

Angeles' long-term US inflation assumption increased to 1.75%, up 25 basis points from our mid year assumption. Angeles expects a modest recovery in 2021, so we increased inflation accordingly. We believe inflation will stay near the US Federal longer run target of 2%, and below the long-term average of 2.8% (average since 1922).

The "breakeven" inflation rate is an important factor in setting Angeles' inflation assumption, as it captures where the market for TIPS<sup>1</sup> is pricing inflation for the coming ten years (assuming a ten-year maturity). The TIPS market has gone from forecasting close to zero inflation at the depth of the financial crisis and COVID-19 economic shutdown (breakeven rate of 0.1% at December 2008 and 0.9% in March 2020), to a breakeven rate of 2.0% as of December 2020. The low breakeven rates of late 2008 and early 2020 reflected the market's recessionary and deflationary fears coupled with the illiquidity in the credit markets. Since then, the TIPS and bond markets normalized amid the reflationary central bank and fiscal policy response around the globe. As of December 2020, the market was pricing ten-year inflation to be closer to the historical average; see Figure 3.

FIGURE 3 | US BREAKEVEN INFLATION AND CPI



As of December 31, 2020. Data sourced from Bloomberg. The average CPI of 2.1% is calculated using data from August '98- December '20. It differs from the average CPI shown in Figure 3 due to the shorter time horizon.

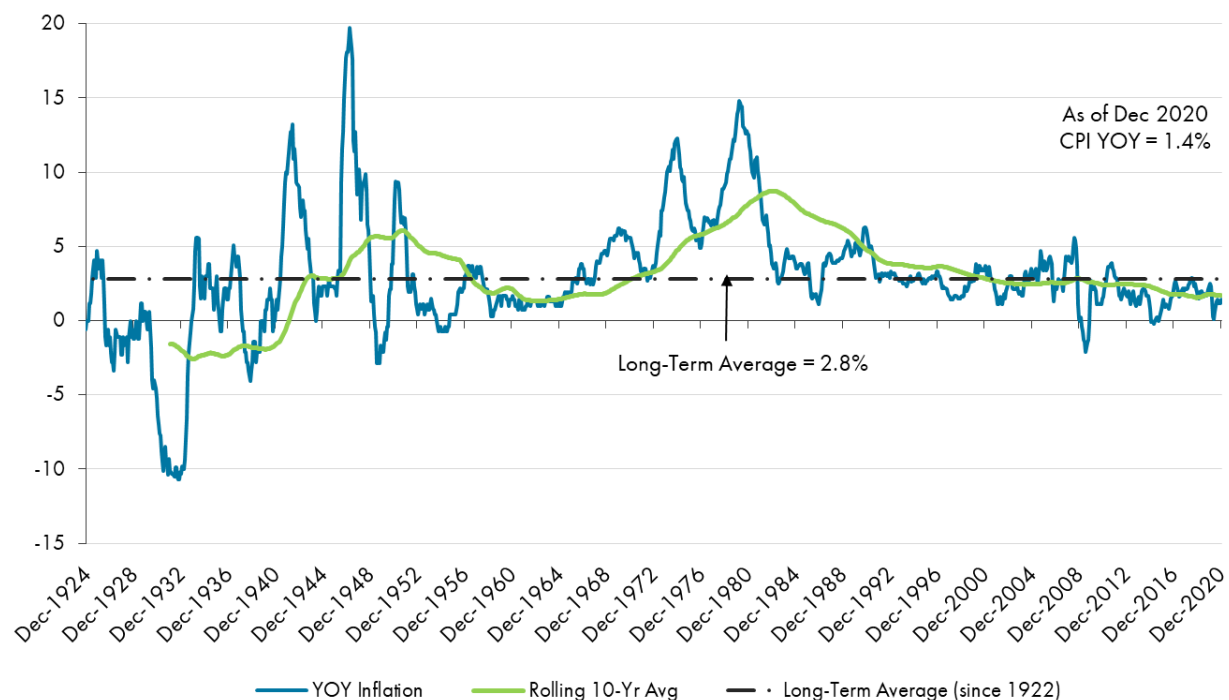
Headline inflation, as measured by the Consumer Price Index (CPI), ended the year at 1.4%. We expect it to remain below the long-term average of 2.8% (going back to 1922), and closer to 1.75% in the long run, given the current economic environment.

<sup>1</sup> TIPS, which stands for Treasury Inflation Protected Securities, is a US Treasury inflation-linked principal indexed bond that is adjusted by the change in inflation as measured by the Consumer Price Index (CPI) over the term of the bond.



Since 1922, year-over-year headline inflation in the US has averaged 2.8%, with considerable amount of variability in the level of inflation, particularly from the 1920s through the 1940s (a period that included both Depression-era deflation as well as post-World War II inflation). Since spiking in the mid-1970s and early 1980s, inflation has remained close to the long-term average and volatility has declined meaningfully. The standard deviation of year-over-year inflation declined from 17.5% (from 1922 through 1981) to approximately 5.0% (from 1982 through December 2020). This reduction in volatility is attributable to both the globalization of trade and manufacturing, and the US Federal Reserve's focus on keeping inflation well-contained. We expect the volatility of inflation to remain low, as the Federal Reserve aims to keep inflation close to its target.

FIGURE 4 | HEADLINE INFLATION: US CONSUMER PRICE INDEX (CPI)



As of December 31, 2020. Data sourced from Bloomberg.



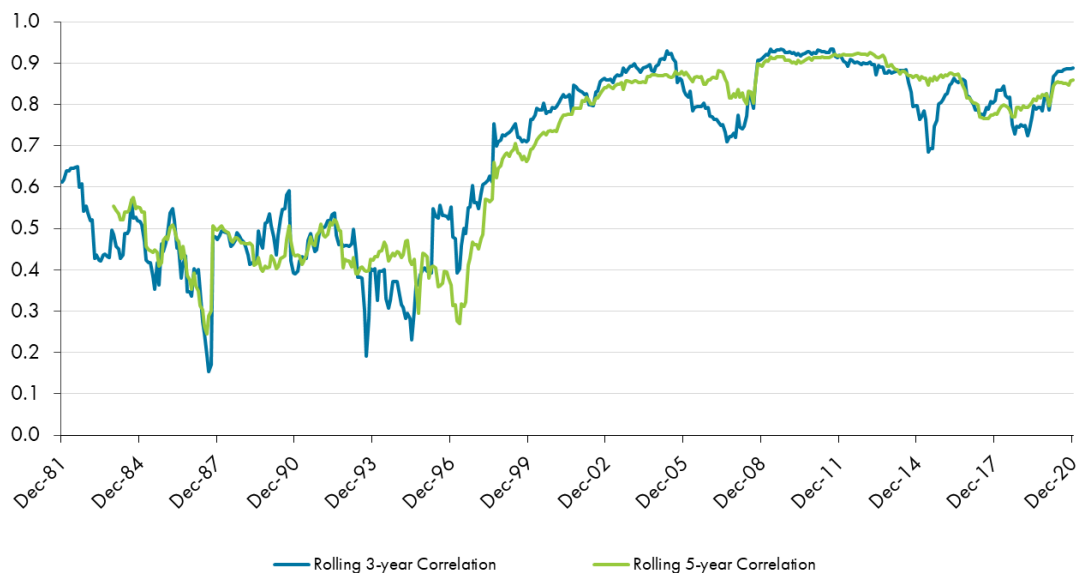


## LONG-TERM GROWTH/ CAPITAL APPRECIATION

### GLOBAL EQUITY RETURNS:

As we have since 2007, Angeles advocates considering US and international equity as a single asset class, global equity. We believe globalizing the equity portfolio is appropriate given the greater interdependence among nations and businesses, the increased influence of global trade on domestic economies, and the fact that country factors are less important attributes in equity performance than in years past. The correlation of US and non-US equity markets has been steadily increasing since the late 1990s and has hovered between 0.7 and 0.9 for most of the past 10 years, as illustrated in Figure 5. This is consistent with the notion that geographic distinctions are of decreasing importance to equity investors.

FIGURE 5 | ROLLING CORRELATIONS OF THE MSCI EAFE AND RUSSELL 3000 INDEX



As of December 31, 2020. Monthly returns used. Data sourced from eVestment Alliance. MSCI EAFE returns are in US dollars.

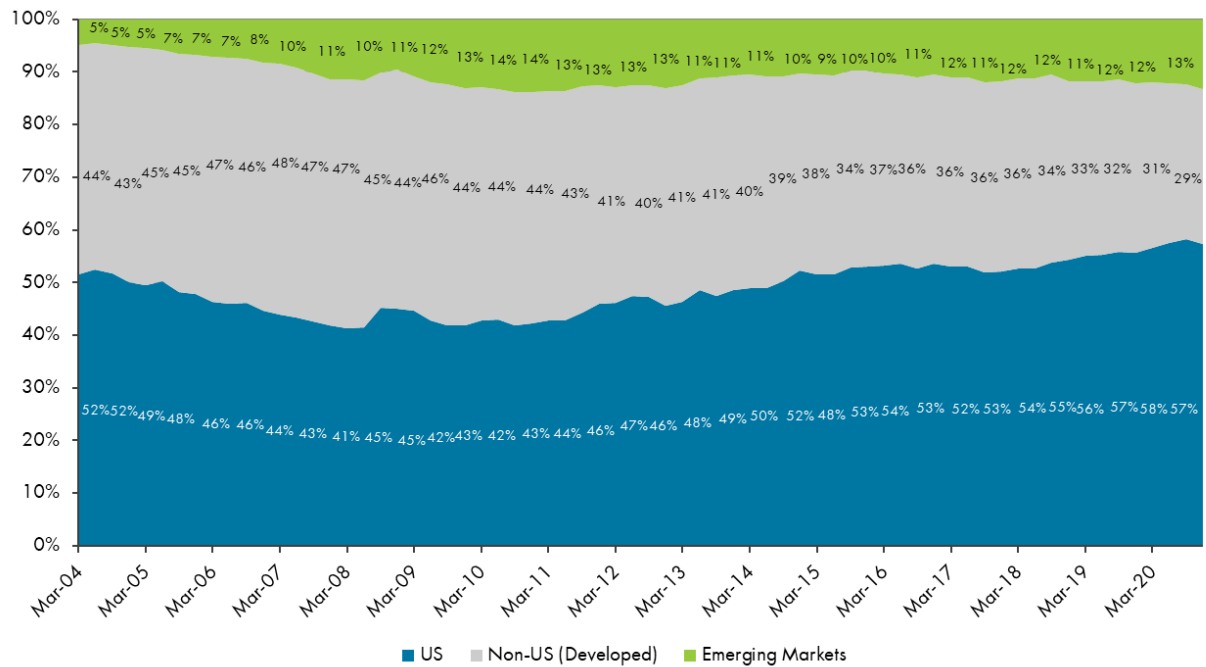
The global equity market rallied in 2020 despite the economic shutdown with the MSCI ACWI and S&P 500 returning 16.3% and 18.4%, respectively. As a result of the global pandemic and subsequent economic shutdown, the global equity markets experienced a massive contraction in the first quarter of 2020. However, by the time 2020 ended, the equity markets significantly recovered as a result of the global fiscal and monetary response in conjunction with the rapid development of multiple vaccines.

Over the last 10 years, the US has outperformed the international developed market and emerging markets equities. From the start of 2011 to the end of 2020, the US share in global equity markets (approximated by the MSCI All Country World Index [ACWI]<sup>2</sup>) grew from 43% to 57% while the share of non-US developed nations shrank from 44% to 29%. The share of emerging market domiciled issues has more than doubled in size since 2005, growing from 5% to 13%.

<sup>2</sup> MSCI ACWI is a common global equity benchmark that is market capitalization weighted and includes the US, developed non-US countries, and emerging equity markets.



FIGURE 6 | REGIONAL ALLOCATION WITHIN THE MSCI ACWI (2004-2020)



As of December 31, 2020. Data sourced from MSCI. Emerging Markets classified by MSCI.

In determining our expected return for global equities, Angeles applies a forward-looking fundamental, economic “building block” approach while being mindful of historical returns and trends. The framework used to arrive at the forecasted return of 5.6% for the global equity market separates the total return for equities into five components by major region as illustrated in Figure 7.

FIGURE 7 | EQUITY BUILDING BLOCKS

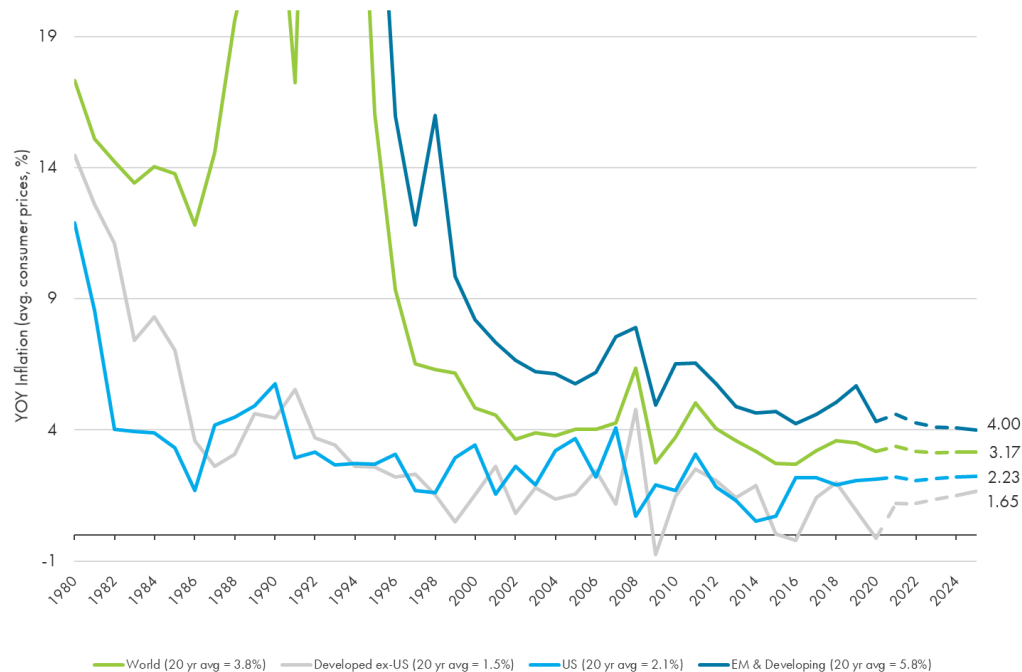
	US	Intl	EM	Global
Real GDP Growth	2.0	1.25	3.5	2.0
Dividend Yield	1.75	2.75	2.5	2.1
Inflation	1.75	1.3	3.0	1.8
P/E Expansion or Contraction	-0.25	flat	flat	-0.1
Currency Movements	flat	flat	-1.25	-0.2
<b>Expected Total Return for Equities</b>	<b>5.25</b>	<b>5.3</b>	<b>7.75</b>	<b>5.6</b>

Note: Assumes Global Equity weights of 57% for the US, 29% for developed non-US and 13% for emerging markets.



**Inflation:** Angeles' assumption for global inflation is 1.8% as we expect global levels of inflation to be slightly higher than in the US (1.75%), with low inflation in developed markets (ex-UK) counteracting higher inflation in the UK and emerging markets. Inflation expectations in non-US developed countries remains unchanged from mid year at 1.3%, still reflecting a decreasing trend in historical inflation data as well as lower IMF projections over the next five years.

FIGURE 8 | IMF INFLATION DATA



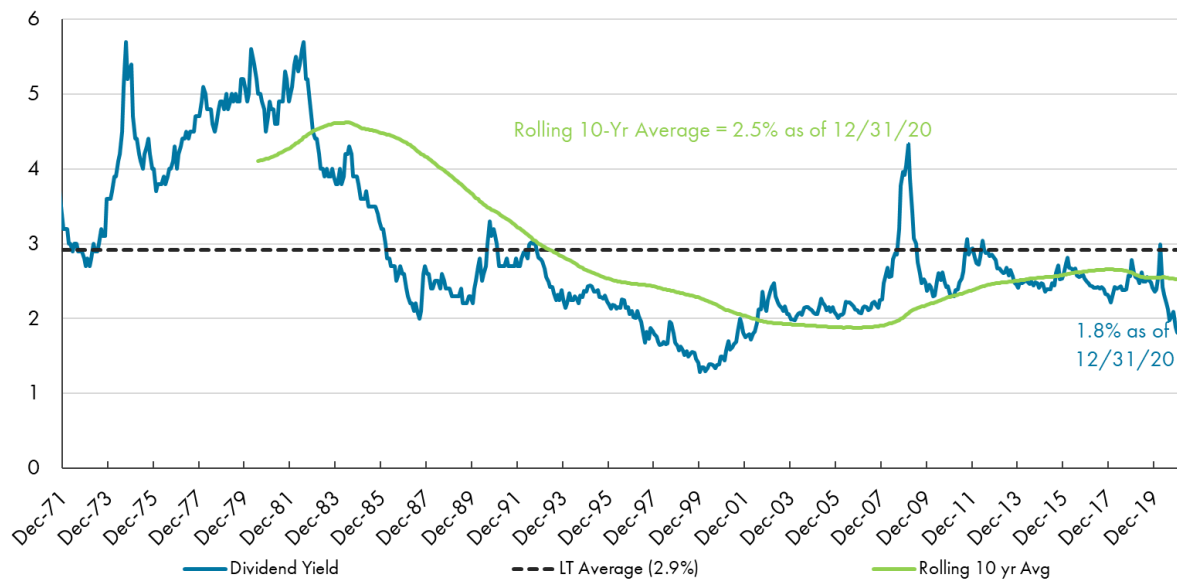
As of December 31, 2020. Data sourced from the IMF. Dashed lines represent forecasts by the IMF.

**Dividend/Income Return:** The return from dividends has historically been the most stable component of equity returns, though the last few years have experienced some volatility reflecting recent dramatic price swings in global equity markets. As global equity market prices bottomed in early March 2009, the dividend yield of the MSCI ACWI Index peaked at 4.3%. As of December 2020, the dividend yield was 1.8%.

Angeles' US and international dividend yield assumptions decreased by 25 basis points to 1.75% and 2.75%, respectively, as a result of decreasing yields (Figure 10). Emerging markets dividend yield assumption of 3.0% remained unchanged. As such, our global dividend yield decreased 30 basis points to 2.1%, which is below the rolling 10-year average of 2.5% and the long-term average of 2.9% (Figure 9).

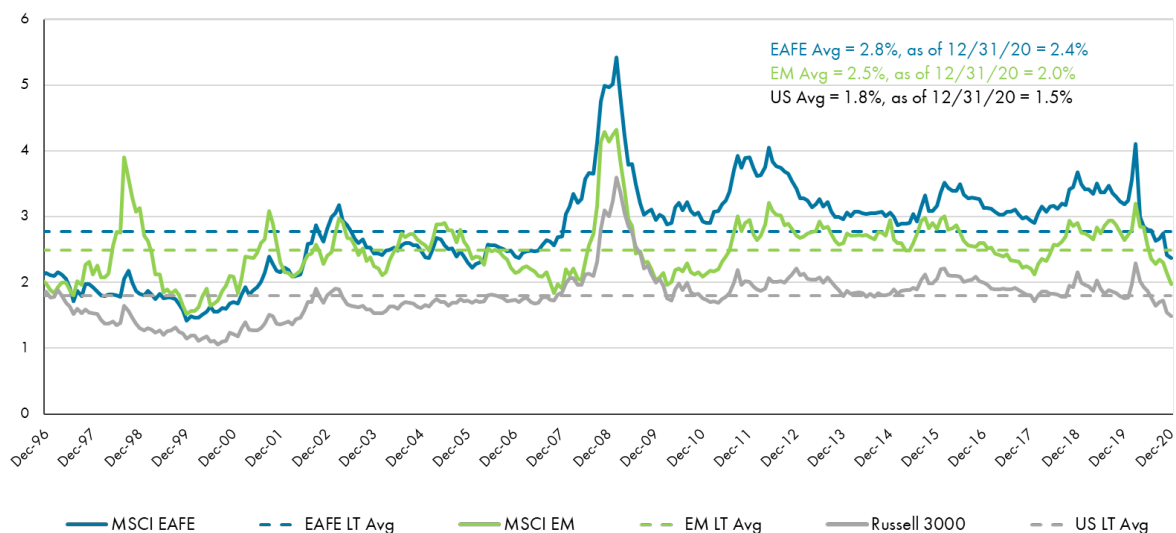


FIGURE 9 | HISTORICAL DIVIDEND YIELD: GLOBAL EQUITY MARKET\*



As of December 31, 2020. Data sourced from Bloomberg. \*MSCI World (ex-Emerging Markets) prior to 1996, MSCI ACWI (including EM) beyond.

FIGURE 10 | DIVIDEND YIELD BY REGION

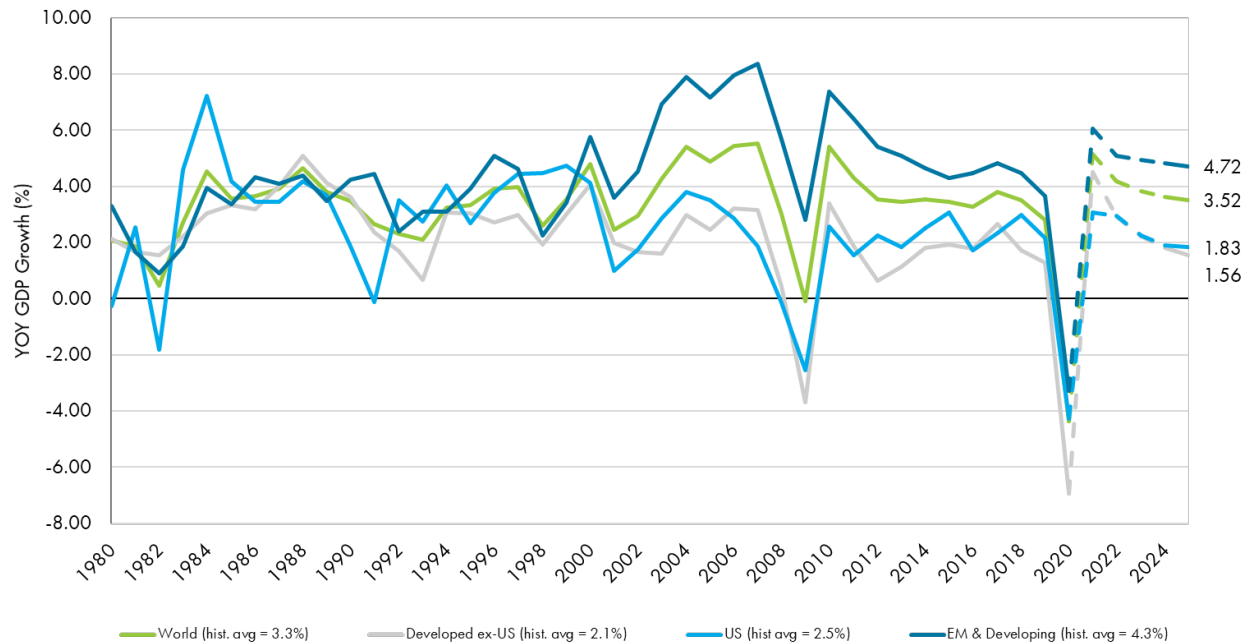


As of December 31, 2020. Data sourced from Bloomberg.

**Real GDP Growth:** Angeles' long term forecast for real GDP growth globally (including emerging markets) increased by 10 basis points to 2.0%. Our forecast is below the long-term average of real global GDP of 3.5% since 1960, and more in-line with the average growth rate over the past decade (2.1%). We believe global growth will continue to remain below the long-term average due to long-term structural headwinds including slowing labor productivity and population growth, deglobalization, and increasing wealth inequality.



FIGURE 11 | IMF REGIONAL GROSS DOMESTIC PRODUCT (GDP) GROWTH



As of December 31, 2020. Data sourced from the IMF. Dashed lines represent forecasts by the IMF.

Angeles' long term forecast for real US GDP growth remained unchanged from mid year at 2.0%, which is below the long-term average of 2.5% (since 1980).

FIGURE 12 | REAL US GDP

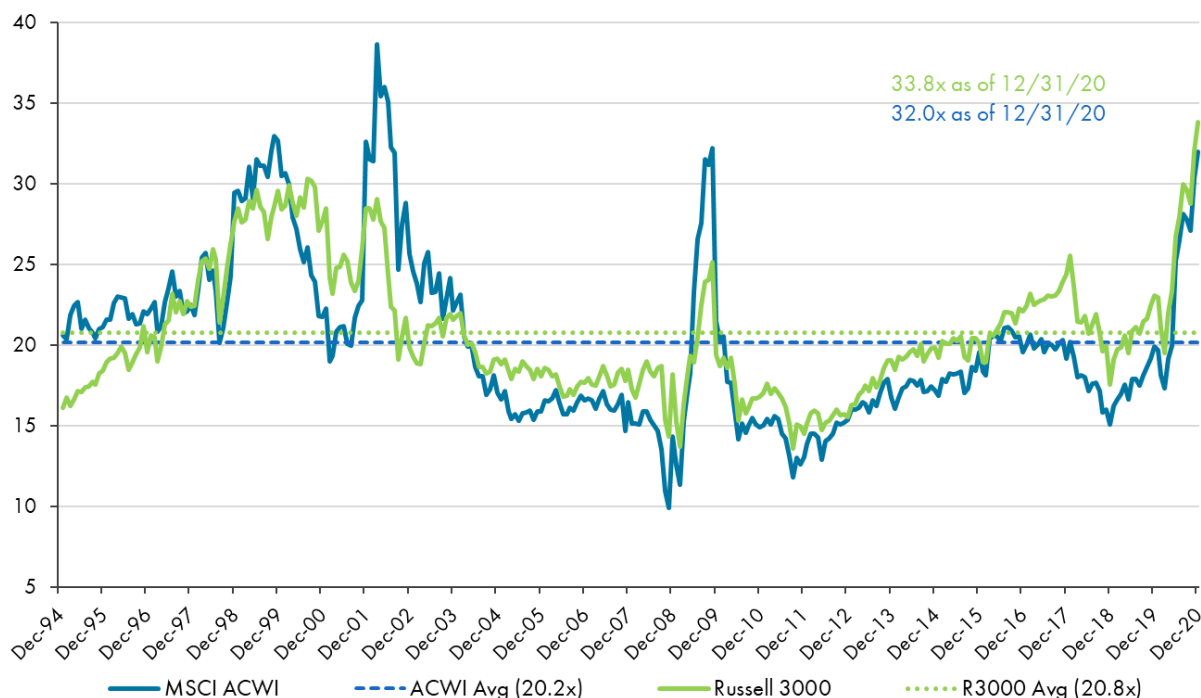


As of December 31, 2020. Chart sourced from JPM Asset Management. Underlying data sourced from BEA, FactSet, JPM Asset Management.



**Multiple Expansion/Contraction:** Equity valuations, typically measured by the price/earnings (P/E) multiple, measures how much investors are willing to pay for corporate earnings. Since January 1995, the MSCI ACWI (global equity index) has had an average P/E ratio of about 20.2x (based on trailing earnings). As of December 2020, the ACWI Index's P/E was 32.0x, significantly higher than the long-term average since 1995. The most recent P/E ratios (which reflect trailing 12-month earnings) are skewed upward by the drop in recent earnings during 2020 related to COVID-19 shutdowns globally.

FIGURE 13 | PRICE/EARNINGS RATIO OF MAJOR MARKETS



As of December 31, 2020. Data sourced from Bloomberg. Note: P/E is calculated as price per share divided by earning per share from continuing operations and before extraordinary items. PE for the index is market cap weighted.

As of December 2020, the current P/E ratio of the US broad equity market (Russell 3000 Index) was 33.8x, significantly higher than the long-term average of 20.8x. Relative to historical data, equities appear to be overvalued, and we project compression across the US market.

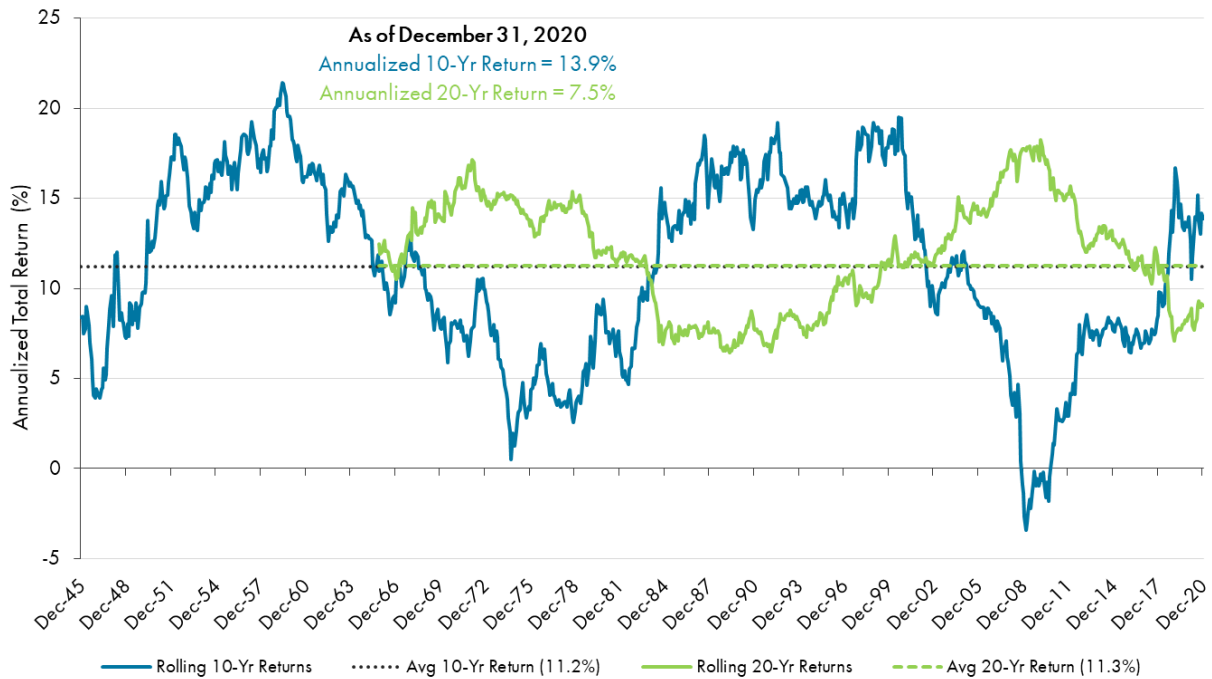
**Currency Movements:** Currency movements can depress or amplify returns for US dollar-based investors over short time intervals. Our current global foreign currency returns have an expected return of -0.2% over the long term due to a -1.25% of expected currency return in emerging markets.

Incorporating the five elements discussed above results in an expected return forecast of 5.6% for global equities. While below the average rolling ten-year total return of the S&P 500 (11.2% since 1936), Angeles believes this return is appropriate given the impact of short-term market conditions on long term total returns. The chart below illustrates the cyclical quality of returns and speaks to the unprecedented nature of the 2008



equity returns. The S&P 500 was used as a proxy given its extensive record; our 5.6% estimate is a global equity return assumption.

FIGURE 14 | ROLLING LONG-TERM ANNUALIZED RETURNS OF THE S&P 500 INDEX



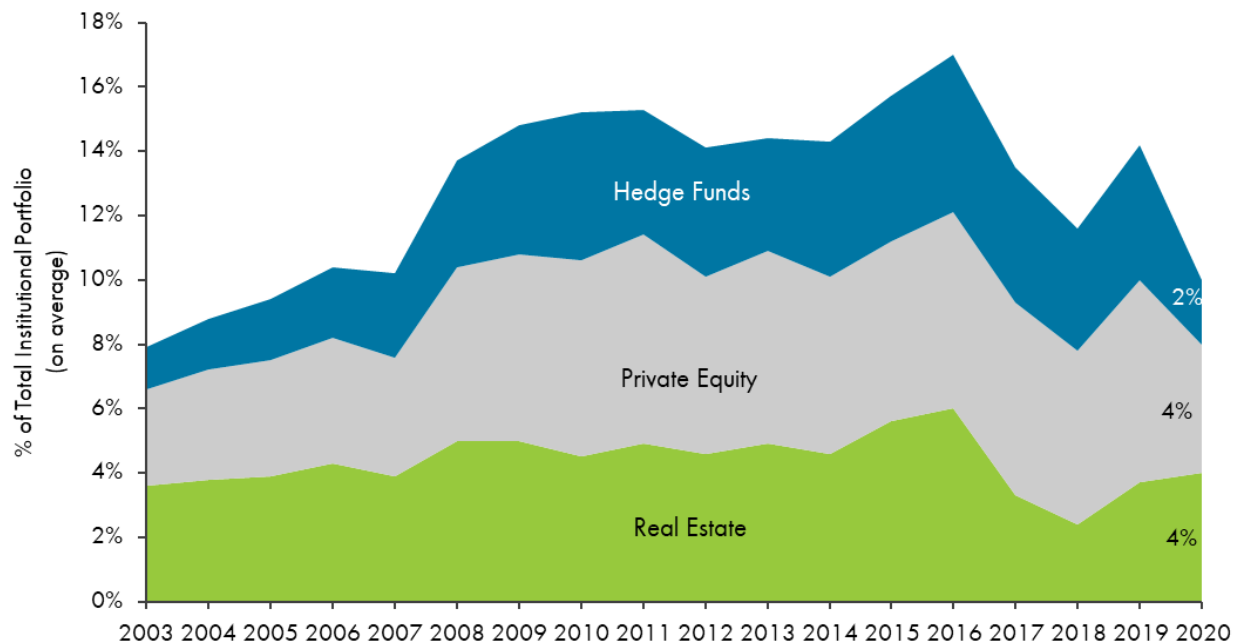
As of December 31, 2020. Data sourced from Dimensional Fund Advisors prior to 1970 and eVestment Alliance post 1970.



## ALTERNATIVE INVESTMENTS RETURN FORECASTS:

Alternative investments include less traditional asset classes such as real estate, private equity, private credit, and hedge funds that tend to have lower correlations with traditional asset classes (i.e., stocks, bonds, and cash). According to Greenwich Associates' most recent Key Trends in Institutional Asset Management Report, the average allocation to alternatives among institutions was 10% in 2020, a slight increase since 2003. Most of this growth has come from an increase in private equity allocations.

FIGURE 15 | INSTITUTIONAL ALLOCATION TO ALTERNATIVES



Data sourced from Greenwich Associates' 2020 Key Trends in Institutional Asset Management – United States (most recent available at time of this writing); Greenwich Associates is a strategic consulting and research firm that conducts annual surveys among institutional investors.

Given liquidity issues, the importance of fund/manager selection, the lack of investable benchmarks, and the multiplicity of sub-strategies, Angeles tends to be more conservative in setting the return and risk assumptions for alternative assets. We gauge the return expectations for these alternative asset classes in conjunction with the expectations for traditional asset classes to ensure that they are reasonable and comparable to one another.

**Private Equity.** For a private equity portfolio, we assume an allocation to both buyout and venture capital partnerships and assume a collective return of 8.5%, which is a 290 basis point premium above public global equity markets. While this reflects the value-added from manager and partnership selection, it represents Angeles' estimate of a median return for a mature portfolio that has vintage year diversification while accounting for the lack of liquidity and long-term nature of a private equity investment.

The distribution around median private equity returns is large due to significant selection and execution risk. Successful private equity partnership selection is critical to achieving premium returns in excess of public markets. Private equity funds have experienced a wide dispersion in returns with the average spread between top and

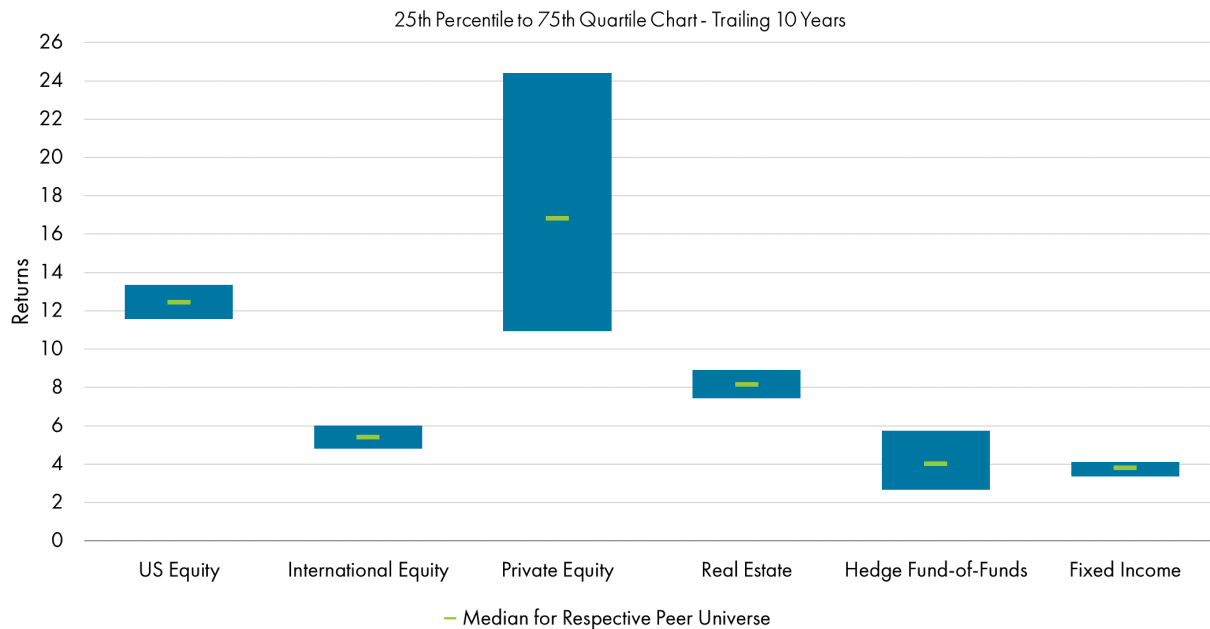




bottom quartile private equity funds averaging over 14% for the past ten years. This is seven to seventeen times the average spread between top and bottom quartile managers for traditional asset classes. For example, the spread between top and bottom quartile managers over the past ten years was 1.8% for large cap US equity strategies and less than 1% for core plus US bond strategies.

**FIGURE 16 | DISTRIBUTION OF RETURNS BY ASSET CLASS**

*25<sup>TH</sup> PERCENTILE TO 75<sup>TH</sup> PERCENTILE QUARTILE CHART – TRAILING 10 YEARS THROUGH DECEMBER 31, 2020*



\*Data as of December 31, 2020. Data sourced from Morningstar, eVestment Alliance, and Cambridge Associates. The green bars represent median (50<sup>th</sup> percentile) returns, while the blue bars represent returns for the 25<sup>th</sup> and 75<sup>th</sup> percentile fund within the respective peer universe. Quartile data based on returns from Morningstar open-ended universes with exception of private equity, which is based on private equity funds (buyout, growth equity, private equity energy, and mezzanine funds) compiled by Cambridge Associates. Morningstar universes: US Equity (US OE Large Blend), International Equity (US OE Foreign Large Blend), Public Real Estate (US OE Real Estate), and Fixed Income (US OE Intermediate-Term Bond). Hedge Fund data based on constituent performance within the HFRI Fund Weighted Index through December 31, 2020. Cambridge US Private Equity data based on 2010 Vintage Year funds through June 30, 2020 and shown on a net IRR basis.

A blend of buyouts and venture capital (70%/30% assumed in Figure 18 below) has outpaced the 290 basis point assumed premium to equity markets in periods greater than 5 years.



FIGURE 17 | RETURN-RISK TABLE AND SCATTERPLOT

20 YEARS ENDING SEPTEMBER 30, 2020

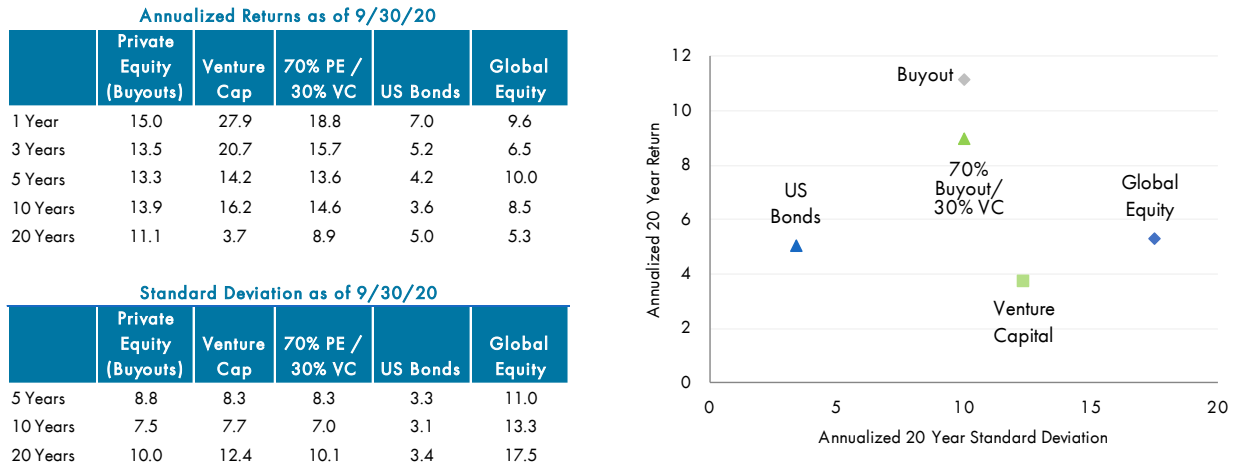
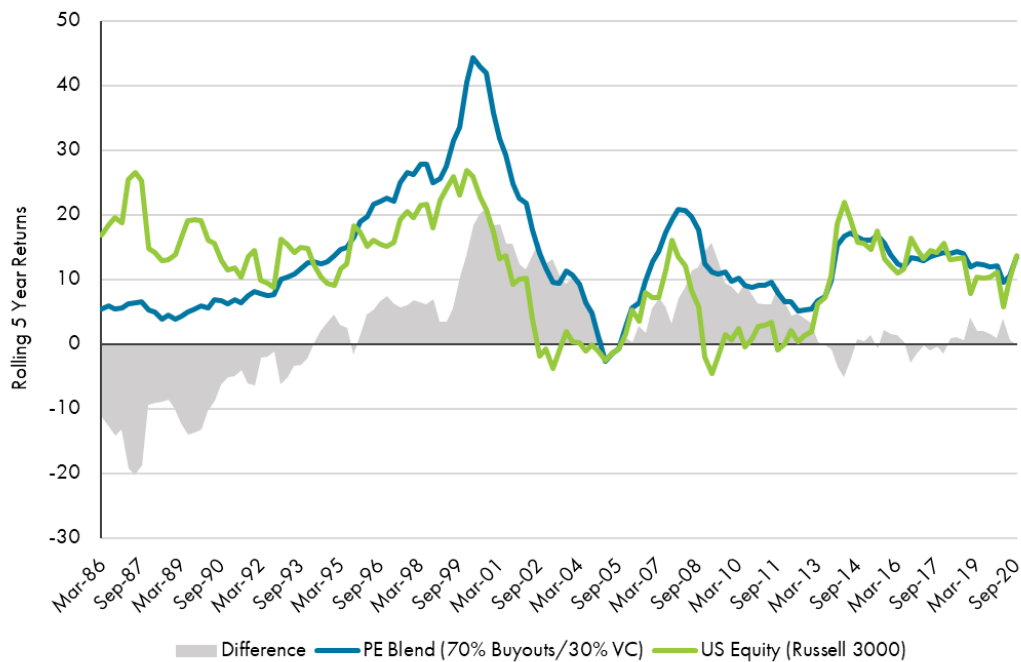


FIGURE 18 | ROLLING 5-YEAR RETURNS ENDING SEPTEMBER 30, 2020

PRIVATE EQUITY 70/30 BLEND VS. PUBLIC EQUITY MARKET (RUSSELL 3000)



As of September 30, 2020 (most recent data available at time of this writing). Based on quarterly returns. Private Equity and Venture Capital index data is sourced from Cambridge Associates. US Bonds are represented by Bloomberg Barclays Aggregate, Global Equity by MSCI ACWIMI from Sep 1994 and beyond (MSCI ACWI used for prior returns), US Equity by Russell 3000 Index, and International Equity by MSCI EAFE Index. 70/30 private equity/venture cap blend assumes quarterly rebalancing.

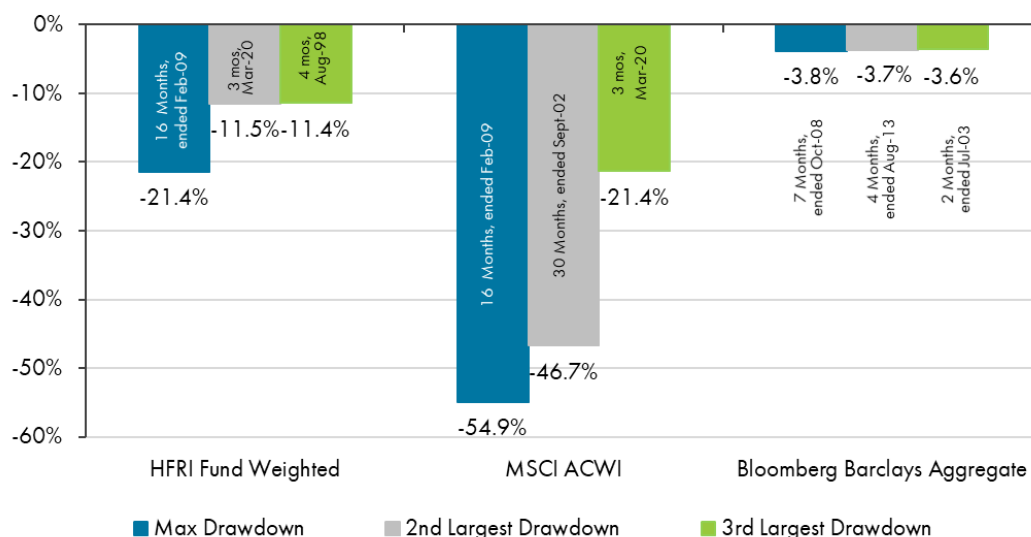


**Hedge Funds/Absolute Return Strategies:** Hedge funds vary widely in the range of investment strategies and risk characteristics of funds. The term “hedge fund” can encompass investments in virtually any public security, derivative and private vehicle, and may utilize no to large amounts of leverage. Generally, hedge funds seek to earn positive absolute returns, irrespective of market movements.

Angeles’ return forecast for hedge funds is calculated based on a combination of underlying traditional asset class forward-looking return assumptions, which predominately centers on global equities and high yield bonds, the largest drivers of “beta” in hedge fund returns. Direct hedge fund and hedge fund of fund return expectations remain unchanged from our mid year review at 4% and 3%, respectively.

The credit crunch that started in 2007 and peaked in 2008 and early 2009 roiled the hedge fund market as forced selling from leveraged players exacerbated the downward spiral in markets. As a result, this period marked the largest drawdown experienced among hedge funds since the inception of the first benchmark for hedge funds (the oldest benchmark, Hedge Fund Research, started January 1990). A broad index for hedge funds (the HFRI Fund Weighted Composite Index) lost 21% over the 16-month span ending February 2009. While this was weak in absolute terms, it managed to provide some protection from the extreme losses experienced in the equity markets, where the MSCI ACWI returned -55% during the same period. In addition to losses, illiquid markets in 2008 led to considerable illiquidity for hedge funds, with many unable to meet redemption requests in a timely fashion.

FIGURE 19 | THREE LARGEST DRAWDOWNS (JANUARY 1995 – DECEMBER 2020)

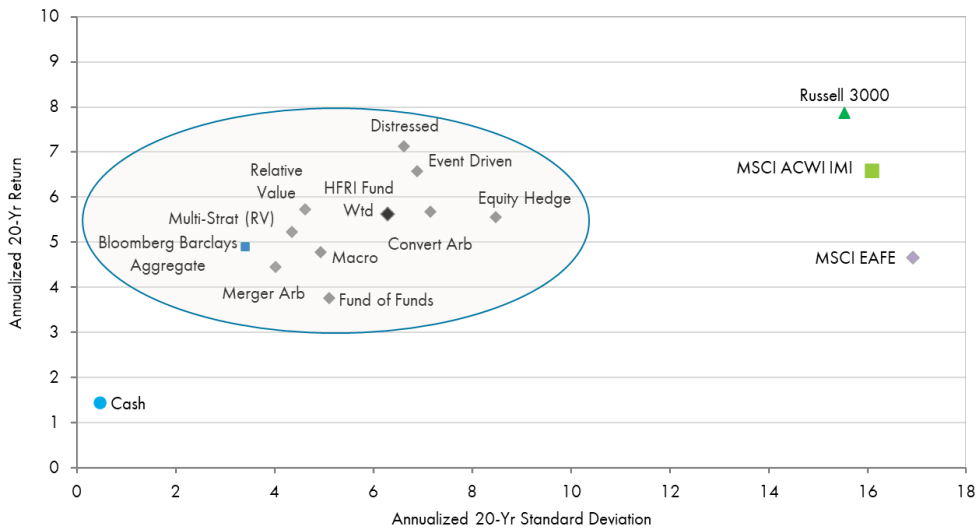


As of December 31, 2020. Data sourced from eVestment Alliance.

Even considering the extreme events of 2008 and early 2009, hedge funds continue to offer solid risk-adjusted returns versus equities and other asset traditional classes over the long term, as shown in Figure 20. A broad measure of the hedge fund market, approximated by the HFRI Fund Weighted Composite, has gained an annualized 5.6% over the past 20 years – below global equity market (which has gained 6.6%) and above the broad bond market (up 4.9% for this period). Meanwhile, risk, as measured by standard deviation, has been less than half that of the equity market.



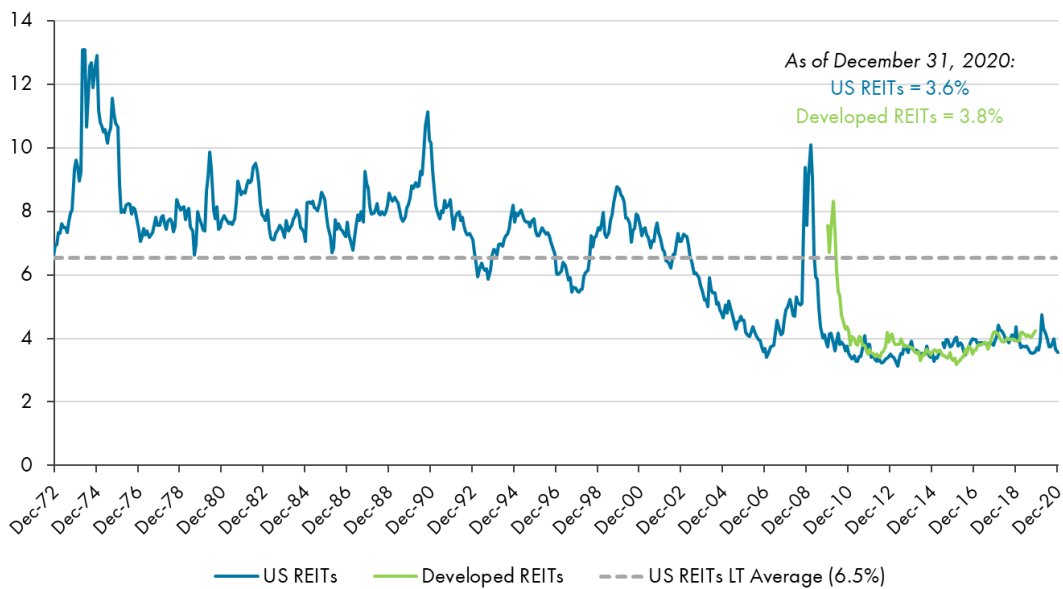
FIGURE 20 | RISK/REWARD FOR HEDGE FUNDS: 20-YRS ENDED DECEMBER 2020



As of December 31, 2020. Data sourced from HFRI and Bloomberg.

**Real estate:** Angeles' return forecast for public real estate securities (REITs and real estate operating companies) remains unchanged for both domestic and global securities at 4.0%. As of December 2020, the dividend yields for the global and US REIT markets were 3.8% and 3.6%, respectively. We expect to see no changes to dividend growth for REITs moving forward.

FIGURE 21 | REIT DIVIDEND YIELD



As of December 31, 2020. Data sourced from NAREIT and FTSE EPRA.



Core private real estate offers investors a stable level of income combined with the potential for modest price appreciation, particularly in periods of *unexpected* inflation. However, private real estate is relatively illiquid as open-ended funds are subject to “redemption queues” that often restrict redemptions during times of duress, when liquidity is most needed. Our return expectation for core private real estate remains unchanged and expect new investors in core private real estate portfolios to earn returns of 4%, in-line with REITs.

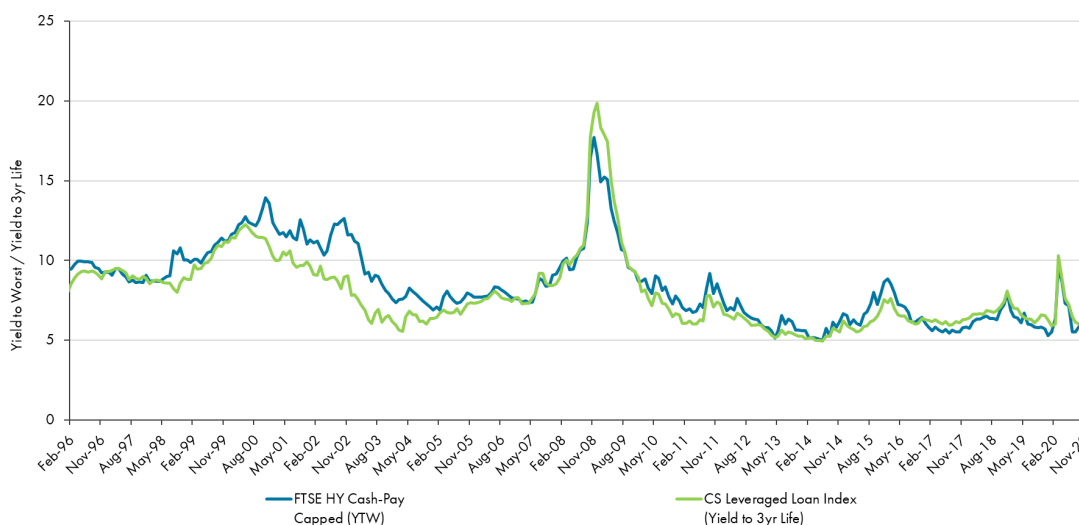
Like private equity investments, “value added” and “opportunistic” real estate strategies employ more leverage in acquiring underperforming properties and real estate related assets and making significant improvements to the assets. “Value-added” strategies employ leverage of 40-60% (versus 20% to 30% for core private real estate) and similarly seek to benefit through improved operating income and significant capital appreciation, as opposed to a steady yield. In the case of private opportunistic and value-added real estate portfolios, Angeles forecasts returns by adjusting our REIT model for the increased level of leverage employed. We project that private opportunistic/value added real estate will achieve returns of 8.5% with volatility of 20%, which is consistent with private equity.

#### INCOME:

**High Yield Bonds:** For high yield bonds, Angeles adjusts the yield-to-worst for expected default levels and recovery rates. Using a 4.3% yield-to-worst (for the FTSE HY Cash Pay Capped as of December 2020) as a starting point, Angeles assumes an expected credit loss rate of approximately 0.3% to forecast a long-term return of 4.0% for high yield bonds.

**Bank Loans:** Angeles takes a similar approach for assessing the outlook on bank loans. Based on a yield of 5.1% (for the CS Leveraged Loan Index [Yield to 3yr Life] as of December 2020), Angeles assumes an expected credit loss rate of approximately 1.1% to arrive at a forecasted long-term return of 4.0% for bank loans.

FIGURE 22 | BANK LOAN AND HIGH YIELD HISTORICAL YIELDS



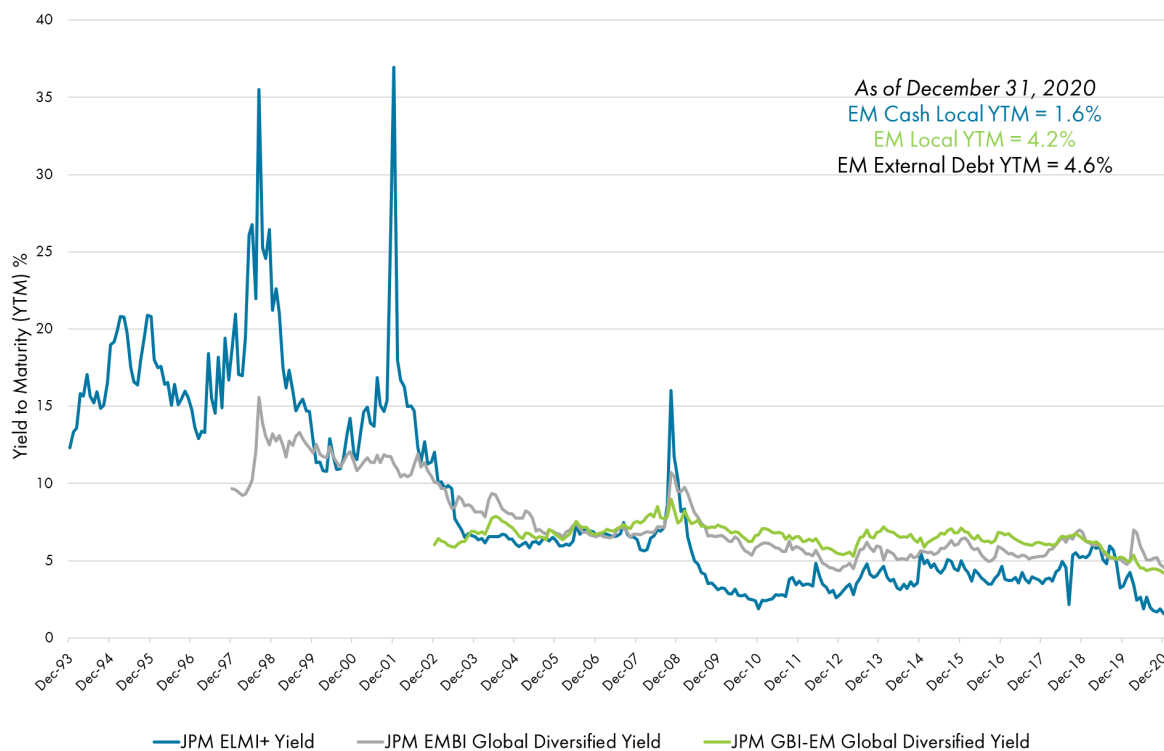
As of December 31, 2020. Data sourced from Oaktree. FTSE High Yield Cash-Pay data from 1/31/1992 through 12/31/2001 and FTSE High Yield Cash-Pay Capped data onwards.



**Private Credit:** Angeles expects Private Credit investments to offer a long-term annualized return of 6.0% over the long-term. Given the lack of a comparable investable index, Angeles' return assumption is calculated using a blend of high yield bonds and leveraged loans and includes a 200 basis point premium to account for illiquidity and dislocated acquisition prices of underlying assets.

**Emerging Market Debt:** Our return assumption for EM Local Currency Debt increased by 20 basis points to 4.5%. Our EM Debt External assumption remained unchanged from our mid year review at 5.0%.

FIGURE 23 | EMERGING MARKET DEBT HISTORICAL YIELDS



As of December 31, 2020. Data sourced from PIMCO and JP Morgan. EM Cash Local is represented by JPM ELMI+ Index, EM External Debt is represented by JPM EMBI Global Diversified Index, and EM Local Debt is represented by JPM GBI-EM Global Diversified Index.



## LIQUIDITY/ CAPITAL PRESERVATION

### FIXED INCOME RETURNS:

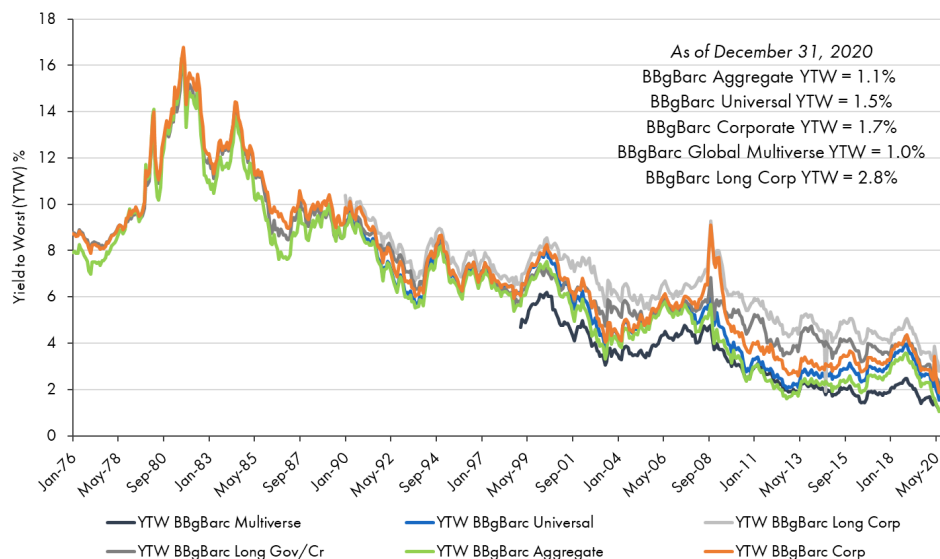
Angeles' fixed income return assumptions are based principally on bonds' yield-to-maturity (yield-to-worst<sup>3</sup> for corporate holdings) since the return of a bond portfolio will essentially equal its yield if the portfolio is held until maturity or interest rates remain stable. In the short term, yield levels are poor predictors of bond sector performance because yields can compress or widen based upon economic and business conditions. Historical data analysis shows that yield-to-maturity is a solid predictor of long-term performance when the forecast period is more than five years.

As of December 2020, the yield-to-worst for the Bloomberg Barclays Universal Bond Index was 1.5%; the average maturity as of December 2020 was approximately nine years. This yield provides an estimate for the return that an investor can expect to receive if they were to hold a portfolio similar to the Barclays Universal Index for the next nine years.

The Bloomberg Barclays Universal Index is similar to the Bloomberg Barclays Aggregate Index in that both indices track the broad US bond market and are commonly used fixed income benchmarks. However, the Aggregate Index consists only of investment grade bonds while the Universal Index includes allocations to high yield and dollar-denominated emerging market debt. Over time, the yields of these two indices have closely tracked each other, as shown below, with the Universal having a slight yield premium that has averaged 34 basis points since 1990.

We decreased our expected return for US core fixed income from 1.5% to 1.3%, reflecting a fall in interest rates from our mid year review.

FIGURE 24 | HISTORICAL YIELD TO WORST (YTW)



As of December 31, 2020. Data sourced from PIMCO and Bloomberg. "BBgBarc" is short for Bloomberg Barclays. Yield data for Universal not available prior to 1990.

<sup>3</sup> Yield to worst is generally defined as the yield to maturity assuming call provisions are exercised as early as possible.



Yields have come down significantly since the late 1970s and early 1980s, when inflation hit double digit levels, and are now well below the long-term average yield (since inception of the index in 1976) of 6.4% for the Aggregate Index. Due to central bank's injecting liquidity into the credit markets to combat the COVID-19 economic shutdown, yields decreased over the course of 2020 resulting in lowered expected returns across many of our fixed income assumptions.





## EXPECTED STANDARD DEVIATION OF RETURNS AND CORRELATION:

The standard deviations of returns for asset classes tend to be relatively stable over time and historical data tends to be a reliable predictor of future volatility. To forecast expected standard deviations of returns, we review historical data, looking at the entire time series as well as multiple rolling time periods; in some cases, we may put a greater weight on more recent historical periods. We may adjust upward an asset class' volatility assumption if it appears to be overvalued, i.e., at the high end of its historical valuation range. Risk estimates for private investments that utilize accounting data or where the use of market-related pricing may be lagged consistently underestimate investment volatility. As such, for private asset classes, we factor in the use of financial leverage and illiquidity when estimating standard deviation and correlation.

After thorough examination of broader market data and observed volatility across client results, no changes were made to our volatility assumptions from our mid year review.

The chart below provides the rolling five-year standard deviation for the major asset classes.

FIGURE 25 | ROLLING 5-YEAR HISTORICAL STANDARD DEVIATIONS



As of December 31, 2020. Data sourced from eVestment Alliance. Historical data based on monthly returns.

To forecast correlations, we similarly look at historical data. In addition to examining the entire available time series, we analyze rolling time periods and place a greater weight on more recent historical periods. While correlations are generally thought to be stable for long periods of time, we have empirically observed relationships shift as certain macroeconomic factors evolve (such as inflation, leverage, growth) which is accounted for in our weighting scheme. This was particularly apparent during the financial crisis when correlations across many assets spiked upward before stabilizing. Despite the changes in certain correlations during economic downturns, historical data still supports the benefits of diversification. No changes were made to our correlation assumptions from mid year.



## APPENDIX A | HISTORICAL ASSET CLASS STATISTICS (US\$)

AS OF DECEMBER 31, 2020

Asset Class	Index Proxy	Yield				Annualized Return				Sharpe Ratio	Standard Deviation			
		12/31/20	12/31/19	12/31/18	12/31/17	10 Year	15 Year	20 Year	25 Year	25 Year	10 Year	15 Year	20 Year	25 Year
Long-Term Growth/Capital Appreciation														
Equities														
Global Equity	MSCI ACWI IMI Index (ND)	1.8	2.4	2.7	2.3	9.1	7.3	6.5	7.2	0.3	14.3	16.5	16.1	15.8
US Equity Total Market	Russell 3000 Index	1.5	1.8	2.2	1.8	13.8	10.0	7.8	9.7	0.5	14.1	15.7	15.6	15.7
International Equity	MSCI EAFE Index (ND)	2.4	3.4	3.7	3.0	5.5	4.5	4.5	5.0	0.2	15.1	17.5	16.9	16.5
Emerging Market Equity	MSCI Emerging Markets Index (ND) <sup>1</sup>	1.9	2.6	3.0	2.3	3.6	6.6	9.6	5.9	0.3	17.8	21.8	21.6	21.4
Private Equity	Cambridge Private Equity Index <sup>2</sup>	N.A.	N.A.	N.A.	N.A.	13.9	12.6	11.1	14.3	1.1	7.5	9.3	10.0	10.6
Venture Capital	Cambridge Venture Capital Index <sup>2</sup>	N.A.	N.A.	N.A.	N.A.	16.2	12.2	3.7	15.2	0.6	7.7	8.3	12.4	23.5
Direct Hedge Funds	HFRI Fund Weighted Index	N.A.	N.A.	N.A.	N.A.	4.2	4.7	5.5	7.3	0.7	6.1	6.6	6.3	7.0
Hedge Fund of Funds	HFRI Fund of Funds Index	N.A.	N.A.	N.A.	N.A.	3.3	3.0	3.7	5.1	0.5	4.9	5.6	5.1	5.8
Income														
High Yield	ICE BofAML US High Yield	4.2	5.4	8.0	5.8	6.6	7.3	7.6	7.0	0.6	7.1	9.7	9.4	8.8
Bank Loans	Credit Suisse Leveraged Loan	4.9	6.3	8.1	6.3	4.5	4.5	4.6	4.9	0.5	5.4	7.3	6.5	5.8
Private Credit	50% High Yield/ 50% Bank Loans + 150bps <sup>3</sup>	6.1	7.3	9.5	7.6	5.5	5.9	6.1	6.0	0.5	6.2	8.5	8.0	7.3
Preferred Stock	ICE BofAML Fxd Rate Pref	1.3	2.1	5.7	1.9	6.8	4.3	4.9	5.4	0.3	5.7	14.0	12.3	11.0
Emerging Market Debt External	JPM EMBI Global Diversified	4.6	4.9	6.9	5.3	6.2	6.9	8.5	9.5	0.7	7.9	8.9	8.6	10.8
Emerging Market Debt Local	JPM GBI-EM Diversified Unhedged	4.2	5.2	6.5	6.1	1.6	5.0	---	---	---	12.2	12.3	---	---
Real Assets														
US TIPS	BBgBarc TIPS Index	0.7	2.0	2.8	2.3	4.1	4.5	5.9	---	---	5.8	7.5	7.4	---
Global REITs	FTSE EPRA/NAREIT Developed Index	3.9	3.8	4.4	3.9	6.3	5.2	8.1	7.8	0.3	15.6	19.9	18.4	18.0
US REITs	FTSE NAREIT All Equity REITs Index	3.6	3.6	4.4	4.0	9.3	7.2	10.0	10.0	0.4	15.6	22.6	20.8	19.5
Master Limited Partnerships	Alerian MLP Index	12.2	9.1	8.9	7.8	-2.3	3.6	7.5	8.7	0.3	29.4	26.6	24.0	22.4
Private Real Estate	NCREIF Index <sup>2</sup>	N.A.	N.A.	N.A.	N.A.	9.4	7.4	8.3	9.1	1.6	2.0	5.1	4.6	4.2
Gold	London Gold Fixing Index	N.A.	N.A.	N.A.	N.A.	3.0	9.1	10.1	6.4	0.3	16.8	17.9	16.9	16.2
Infrastructure	FTSE Global Core Infrastructure Index	N.A.	N.A.	N.A.	N.A.	9.3	8.6	---	---	---	10.8	11.6	---	---
Timber	NCREIF Timberland Index <sup>2</sup>	N.A.	N.A.	N.A.	N.A.	4.4	6.1	5.6	6.7	0.9	3.0	5.0	4.9	5.0
Commodities	Bloomberg Commodity Index	N.A.	N.A.	N.A.	N.A.	-6.5	-4.0	-0.5	1.5	0.0	13.7	16.5	15.9	15.5
Liquidity/ Capital Preservation														
US Core Fixed Income	BBgBarc Aggregate Bond Index	1.1	2.3	3.3	2.7	3.8	4.5	4.8	5.2	0.9	2.9	3.2	3.4	3.4
US Core Fixed Income	BBgBarc Universal Bond Index	1.5	2.7	3.7	3.0	4.2	4.7	5.1	5.4	0.9	2.9	3.2	3.4	3.4
Global Fixed Income	BBgBarc Multiverse	1.0	1.7	2.3	1.9	3.0	4.2	4.9	---	---	4.5	5.3	5.4	---
Investment Grade Credit	BBgBarc Credit Index	1.7	2.8	4.1	3.2	5.4	5.6	6.0	5.9	0.7	4.8	5.5	5.4	5.2
Long-term Fixed Income	BBgBarc Long Credit	2.8	3.6	4.9	4.0	8.2	7.5	8.0	7.4	0.6	8.8	9.8	9.6	9.0
US Short-term	BBgBarc 1-3 Year Govt Index	0.1	1.6	2.5	1.9	1.3	2.3	2.7	3.3	0.8	0.9	1.2	1.4	1.4
Municipals (National 1-10 Yr)	BBgBarc US 1-10 Yr Municipal	0.6	1.4	2.3	2.0	3.3	3.7	3.9	4.2	0.7	2.5	2.8	3.0	2.9
Cash	ICE BofAML 3M US Trsy Note	0.1	1.5	2.4	1.4	0.6	1.2	1.5	2.3	0.1	0.2	0.5	0.5	0.6
Inflation	CPI All Urban Consumers NSA	N.A.	N.A.	N.A.	N.A.	1.7	1.9	2.0	2.1	-0.1	1.1	1.3	1.3	1.2

Based on quarterly returns through 12/31/20. <sup>1</sup> Prior to 12/31/98, performance was based off returns of the MSCI Emerging Markets Index (Gross Dividends). <sup>2</sup> Trailing period as of 9/30/2020. <sup>3</sup> 50% CS Leveraged Loan/ 50% ICE BofAML US High Yield. Long term expected return and risk assumptions are not a guarantee of future performance and actual results can and will differ from forecasts over time. The assumptions should not solely be relied upon as a recommendation to invest in any particular asset class. Note that these asset class assumptions are based upon passively invested portfolios net of management fees; they do not consider the impact of active management. Return estimates are shown on a compound return basis, not on arithmetic returns. Asset class assumptions presented constitute our judgment at the time they were forecasted and are subject to change without notice. Angeles Investment Advisors, LLC attest the information contained herein has been prepared from sources believed reliable but is not guaranteed by us as to its timeliness or accuracy and is not a complete summary or statement of all available data. This data is intended solely for our clients, is for informational purposes only and may not be publicly disclosed or distributed without our prior written consent. Neither MSCI nor any other party involved in or related to compiling, computing or creating the MSCI data makes any express or implied warranties or representations with respect to such data (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of such data. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in or related to compiling, computing or creating the data have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages. No further distribution or dissemination of the MSCI data is permitted without MSCI's express written consent.