2011 Ten-Year Return, Risk, and Correlation Assumptions

Expected Inflation, Average Annual Risk Free Rates & Annual Risk Premiums for Various Classes - %

Category	Expectation – Annual %	Comments
Inflation	2.75	The 10-year TIPS breakeven inflation rate was 2.3% as of December 31, 2010. PCA believes that while the TIPS breakeven inflation rate is one important data point indicative of equilibrium pricing of inflation expectations, there are other considerations. Buyers of TIPS may be bidding up TIPS to gain inflation protection. 2010 inflation was low. CPI for calendar 2010 was 1.5%, but trended up in December. The University of Michigan Survey of 5-to-10 year annual inflation expectations have centered around 2.8% during the fall. The unemployment rate has stabilized, declining in December. Commodity prices have risen since mid-year, and are trending upward. While excess capacity and current unemployment levels indicate significant slack in the U.S. economy, large tax stimulus, loose monetary policy, quantitative easing two, exploding Federal deficit spending and a resurgent global economy, point to higher future inflation long-term.
Real Risk-Free Rates		
Short-term (Cash)	0.25	Federal Reserve short-term lending rates remain between 0.0% and 0.25%, currently much lower than long-term inflation expectations and below recent realized inflation. Thus, the Fed's current short-term rates establish real lending rates that are significantly negative. Expectations are for negative real, short-term lending rates over the next year or two, rising only when economic growth improves. Extrapolated trend shows real risk free trend barely above 0%.
Longer-term (10-year TIPS yield)	1.00	The expected long-term real yield is projected as the current 10-year TIPS real yield. As of 12/31/2010, the 10-Year TIPS real yield was 1.00%, which fell significantly over the past year.
Risk Premiums over Short-term Real Risk-free Rate:		
Domestic US Fixed Income International Fixed Income Global Fixed Income	0.30	Yield-to-maturity on the Barclays Capital Universal as of 12/31/10 was 3.3%. The end of 2010 saw credit spreads narrow towards pre-crisis levels, as well as steepening of the yield curve. Fed was successful in holding down short-term interest rates, but long-term rates rose at the end of the year when Quantitative Easing Two and an extension of tax cuts was announced. Most of the levers of expected future bond returns have already been pulled. Current expected return represents negligible yield spread compression as a source of return. In addition, long-term rates are expected to remain stable or rise. Our longer-term, higher expected inflation level is expected to prove detrimental to fixed income returns. Thus, our estimate reflects extrapolation of recent declining trend in fixed income risk premium. At the margin, future fixed income net issuance is likely to be government tilted, further depressing market average yields.
Core Real Estate	4.00	Assumes a mix of private core real estate and an allocation of 15% to public real estate securities. Premium decrease from 2010 reflects price gains in 2010, rising interest rates (cost of leverage), and a stable to rising cap rate level, reverting towards historical averages.
Basic Real Return	3.50	Combination of TIPS, Timber, Commodities, and Hedge Funds of Funds. The projected return premium to TIPS is lower than last year. The trend for commodity price appreciation is up, but this doesn't translate neatly to commodity strategy returns. Extrapolation of historical premium trends is justified. Slightly lower than last year based on the heavy weight of TIPS in the class.
Domestic Equity International Equity Global Equity	5.75 6.00 5.90	Equity premium return reached a trough in its long-term cycle two years ago, trend is expected to adjust upward over next several years. Fundamental expectations are in line with trend extrapolations. Valuations appear fair on a earnings yield basis, but are slightly higher than last year's level. Downside risk of an extended recession / depression caused by a banking sector collapse has passed. For long-term planning purposes the Non-U.S. equity risk premiums are assumed to be slightly higher than that of the U.S., due to EM growth premium.
Hedged International Equity	5.90	International equity premium less frictional cost of hedging.
Alternative Investments/Private Equity	9.00	Expected long-term illiquidity premium over global public equity of 3.0%. Current expectation adjusted upward to reflect extrapolated trends and healed debt financing markets.

2011 Ten-Year Return, Risk, and Correlation Assumptions

Last revision: 1/11

Summary of Investment Class Assumptions

	Expected Avg. Nominal Annual Return	Expected Geo. Compound Nominal Annual Return	Expected Risk of Nominal Returns (Annl. SD)	Cash	TIPS	CoreFxd	IntlBds	GlblBds	RealEst	RealRet	USEq	IntlEq	GlblEq	HIntlEq	PrivEq
Cash	3.00	3.00	2.00												
Treasury Infl. Protected Securities	3.75	3.60	6.00	0.20											
Domestic US Fixed Income	3.30	3.20	4.50	0.30	0.60										
International Fixed Income	3.30	2.80	10.00	-0.10	0.40	0.40									
Global Fixed Income	3.30	3.00	8.00	0.00	0.50	0.60	0.95								
Core Real Estate	7.00	6.50	10.00	0.30	0.00	0.00	-0.20	-0.20							
Real Return	6.50	6.20	8.00	0.20	0.60	0.30	0.00	0.00	0.25						
Domestic Equity	8.75	7.30	17.00	0.00	0.00	0.30	0.00	0.00	0.40	0.25					
International Equity	9.00	7.00	20.00	0.00	0.00	0.10	0.10	0.10	0.40	0.25	0.85				
Global Equity	8.90	7.40	17.50	0.00	0.00	0.20	0.05	0.05	0.40	0.25	0.90	0.90			
Hedged International Equity	8.90	7.10	19.00	0.10	0.00	-0.10	-0.10	-0.10	0.50	0.35	0.90	0.90	0.90		
Private Equity/Venture Capital	12.00	8.90	25.00	0.00	0.00	0.00	0.00	0.00	0.40	0.25	0.90	0.80	0.85	0.90	
Inflation	2.75	2.75	2.00	0.50	0.50	-0.20	-0.15	-0.20	0.40	0.60	0.20	0.20	0.20	0.20	0.10

Significant Changes from Last Year's Beginning of the Year Ten-Year Assumptions

- Expected inflation has been revised down, from 3.00% to 2.75%.
- Cash returns have been revised down, from 3.50% to 3.00% on lower inflation expectations and lower market interest rates.
- Fixed income expected returns have come down significantly, declining from 4.00% to 3.30%, due to falling rates and tight spreads.
- Equity expected returns have declined across the board owing to lower base returns to cash and fixed income, premium remains the same.

Indices Used in Modeling Asset Class Assumptions

Asset Class	Index
Cash	Citigroup 3 month US Treasury Bill Index
TIPS	Barclays Capital TIPS, simulated TIPS series per Bridgewater
Domestic US Fixed	Barclays Capital Universal, Barclays Capital Aggregate Index, Barclays Capital G/C Index, Barclays Capital Intermediate Govt. Index, Barclays Capital Corp/Credit Index
International Fixed	Barclays Capital Global Treasury ex-US Unhedged, Solomon/Citigroup World Non-US Government Bond Index
Global Fixed	Barclays Capital Global Treasury Index, Salomon/Citigroup World Government Bond Index
Core Real Estate	NCREIF NPI Index, Prior Indices, NAREIT Equity REIT Index
Real Return	Barclays Capital TIPS, various Hedge Fund Indices, NCREIF Timber Index, Dow Jones UBS Commodity Index
Domestic Equity	Russell 3000 Index, S&P 500 Index
International Equity	MSCI/Barra ACWI ex-US Index, MSCI/Barra EAFE Index
Global Equity	MSCI/Barra ACWI Index
Hedged Intl. Equity	Hedged MSCI/Barra EAFE Index, MSCI/Barra ACWI ex-US Index, MSCI/Barra EMF Index
Private Equity	Prior Brinson Venture Capital Index, VCJ Post Venture Capital Index

Notes:

PCA developed its average annual return premiums and standard deviation estimates using a combination of approaches. First, for major asset classes with an appropriate amount of history, PCA studied historical time series over both one-year and five-year holding periods to uncover any specific trends in the time series data. For example, domestic stock return premiums exhibit cyclical behavior, with each full cycle lasting approximately 40-50 years. Statistical procedures were used to identify such trends and extrapolate these trends 10-15 years forward. Second, PCA examined fundamental variables underlying several major asset classes and computed expectations based on consensus views of these variables. PCA also reviewed outlook opinions from a handful of leading investment banks and investment advisory firms. PCA compiled these opinions to develop consensus expectations for the major asset classes. PCA then used these consensus expectations as reference checks against its own expectations. Finally, PCA professionals discussed and debated asset expectations internally until a consensus view developed.

In recognizing that asset class risks are not always stable, PCA also examined risk trends utilizing similar statistical procedures. PCA also calculated risks weighting more recent periods heavier than earlier periods. In certain instances, weighted standard deviations differed materially from basic standard deviations. In these cases, PCA utilized weighted standard deviations as a base line for analysis.

In recognizing that correlations are also not always stable, PCA analyzed the current behavior of the correlations among major pairs of asset classes. In analyzing the correlation trends among pairs of assets, we focused on correlation trends across non-overlapping five-year holding periods. Using statistical procedures highlighted above, we extrapolated the trends of these correlations into the future to gain a sense of their level and direction. For correlation pairs containing short annual return histories, we analyzed correlations of annual returns. Similar to analyzing risks, we also applied a decay factor to return history and calculated weighted correlations where appropriate.

The investment class risk premia estimated for classes that consist of publicly traded securities are market “beta” returns, and do not assume returns to active management, nor active management fees. The risk premia for investment classes that, by definition, are actively managed (e.g. private real estate, hedge fund of funds, private equity), have been developed “net” of customary investment management fees, which are intrinsic to the indices from which the premia were developed.

Given the complexities associated with developing capital market expectations, we advise users of the above information to rely on judgment as well as optimization approaches in setting strategic allocations to any set of investment classes. Please note that all information shown is based on qualitative and quantitative analyses. Exclusive reliance on the above is not advised. This information is not intended as a recommendation to invest in any particular asset class or as a promise of future performance. References to future returns for either asset allocation strategies or asset classes are not promises or even estimates of actual returns a client portfolio may achieve.

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