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Capital Market Assumptions — A 2000 Update

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Editor's Note: Historical return data provided in this article taken from Stocks Bonds Bills and Inflation 2000 Yearbook *(Ibbotson Associates).*

Perhaps the most critical investment decision made by a plan sponsor is the asset allocation decision. This decision is often made after extensive quantitative modeling is performed using a variety of inputs related to investments and plan liabilities and cash flows. The most fundamental of these inputs is the set of capital market assumptions relative to each of the asset classes being considered for the portfolio. The attributes of an asset class that are important to this modeling process are future expectations for:

- Returns
- Risk (volatility of returns generally expressed as standard deviation)
- Correlation with other asset classes

A set of return assumptions must also be developed by the plan actuary to measure plan obligations. The components of these return assumptions must be identified and developed to comply with Actuarial Standards of Practice #27 *Selection of Economic Assumptions for Measuring Pension Obligations.* Given the parallels in the development of the return assumptions for both investment and actuarial purposes, we thought it would be beneficial to provide an update on the set of capital market assumptions developed by our firm and utilized in the asset allocation process. These capital market assumptions have appeared previously in the Pension Section News (November 1998, June 1996, September 1991, September 1989). The prior articles laid out Global Portfolio Strategies' process for developing the capital market assumptions as well as the return, risk and correlation estimates.

The 2000 Capital Market Assumptions developed by the firm's Capital Markets Committee for asset allocation policy development is presented in Exhibit #1. I will also provide some insight into the assumptions and considerations implicit in some of the expected return data presented. This can be useful as a collateral source for judging the reasonableness of the assumption development processes you may be involved with.

The development of forward-looking capital market assumptions has been traditionally grounded in historical data. As was described in the previous articles, the real work here involves determining:

- which historical relationships reflected in that data have any predictive value going forward
- what future conditions may alter or impact the historically implied relationships.

A "building block" approach is used in developing return expectations. This approach begins by developing an expected inflation rate and an expected real risk free rate of return. Investment risk premiums are then developed based on the fundamental risk attributes of each asset class. Inherent in this process are a review of historical data and a strategic forecast of future changes in the economy and the capital markets, focusing on secular as opposed to cyclical changes that might reasonably be expected. By our definition, these assumptions are considered a strategic forecast over an "any 10-year" period. As such, they are meant to cover several business cycles and generally presume markets are stable and in equilibrium. While the committee is cognizant of current market conditions such as valuation levels, they strive to ground the strategic forecasts on fundamental rather than cyclical economic and capital market relationships.

To begin the process an estimate for inflation is developed. The point estimate of 2.25% reflects a reduction from the long-term historical rate of 3.1 % (1926–1999) and a compound annual rate of 2.9% in the 90s. The premise behind this downward future bias included factors such as the impact of demographics, the increased efficiency in capital markets, a long-term increase in productivity due to technology, increased global competition and a monetary regime committed to managing inflation.

A real risk free rate of 2.25% was projected. This rate is higher than the historical norm (.7% from 1926–1999) but more in line with the period since the early 80s when the effects of the Fed's shift in focus from responding to inflation to proactively managing it were becoming apparent. Real short rates serve to facilitate the smooth functioning of the economy by regulating the flow of capital. The Fed has historically viewed a real rate of 1.75% to 2.0% as appropriate for maintaining savings and credit demand equilibrium. The committee's projection is in line with this estimate with a slight premium reflecting the increased relative importance of the capital markets vs. the banking system and projected future growth in demand and credit use. This rate is consistent with a strategic forecast characterized by strong investment spending and rising productivity growth. The higher real rate might also include an uncertainty premium associated with investor's fears about future inflation.

In the fixed income asset classes the committee projected risk premiums associated with each asset class. Generally these spreads remained within the historical ranges used by the committee with perhaps a slight narrowing due to a projected reduction in volatility in both economic growth and credit markets.

Since the last set of assumptions was published, several new asset classes were added in recognition of their distinct investment characteristics and role in the market. In particular, mortgage-backed and asset-backed securities were split out of the corporate debt category. These are securities that are collateralized by mortgages and non-mortgage instruments such as automobile loans, credit cards, and home-equity loans respectively. Mortgage-backed securities were accorded a spread over intermediate corporates recognizing their duration and optionality differential. Asset-backed securities, with slightly shorter average duration and less optionality were projected on par with intermediate corporates. Both high yield fixed income and real estate were positioned similarly between domestic equity and long corporates given the hybrid nature of their returns.

Despite substantial short-term volatility, stocks returns over inflation have been quite stable over long periods of time, averaging about 7%. The committee projected that this fundamental relationship would remain intact over a long future horizon, attributing a modest increase of .75% due to projected increased equity demand, the impacts of fiscal policy and deregulation and expected productivity gains. The equity premium is then calculated as 5.5%. This is the difference between the projected rate of return on large cap stocks and T-bills. There is substantial debate currently over whether the equity risk premium might decrease substantially in the future given recent valuations in the markets and some underlying fundamental changes regarding investors understanding and appetite for risk. Some of these contrary factors may be considered in your analysis. The small cap equity premium remained within the historical range used by the committee. International returns were forecast neutral to currency returns, consistent with the strategic horizon.

In the end, the process of forecasting expectations requires significant judgements in term of relevant past history and future trends. Utilizing experts up front and reviewing the forecasts underlying the assumptions for internal consistency can help you gain comfort in the process. Performing additional sensitivity testing on the back end can aid in assessing the reliability of the modeled portfolio over a range of possible future outcomes.

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2000 Assumptions for Expected Return and Standard Deviation/Correlations

Correlations-Historical

Asset Class	Any 10-Year Return	Any 10-Year Standard Deviation	T-Bills	Inter. Gov't Bonds	Inter. Corp. Bonds	Long-Term Gov't Bonds	Long-Term Corp. Bonds	Intl. Bonds	Asset Backed	Mortgage Backed	High Yield Bonds	Emerging Mkt. Bonds	Comm. Real Estate	Large Cap Equities	Mid-Cap Equities	Small Cap Equities	Int'l Equities	Emerging Mkt. Equities	Private Equity
T-Bills	4.60%	1.76%	1.00																
Intermediate Gov't Bonds	6.60%	4.00%	0.14	1.00															
Intermediate Corp. Bonds	6.26%	6.26%	0.08	0.93	1.00														
Long Term Gov't Bonds	6.66%	4.60%	0.02	0.91	0.89	1.00													
Long Term Corp. Bonds	6.66%	7.68%	0.02	0.89	0.96	0.93	1.00												
International Bonds	5.76%	5.21%	0.06	0.37	0.27	0.31	0.23	1.00											
Asset Backed	6.26%	7.29%	0.16	0.91	0.93	0.84	0.84	0.27	1.00										
Mortgage Backed	6.60%	8.08%	0.06	0.91	0.92	0.87	0.92	0.27	0.85	1.00									
High Yield Bonds	8.60%	13.33%	-0.03	0.37	0.62	0.39	0.63	-0.04	0.46	0.45	1.00								
Emerging Mkt. Bonds	9.60%	17.24%	0.08	0.16	0.30	0.13	0.28	-0.09	0.14	0.24	0.60	1.00							
Commercial Real Estate	8.60%	13.79%	0.19	-0.21	-0.19	-0.13	-0.16	-0.18	0.07	-0.19	-0.20	-0.10	1.00						
Large Cap Equities	10.00%	17.76%	-0.06	0.26	0.38	0.33	0.41	-0.06	0.21	0.30	0.61	0.69	0.10	1.00					
Mid-Cap Equities	10.60%	18.76%	-0.06	0.26	0.36	0.31	0.36	-0.10	0.09	0.28	0.56	0.67	-0.06	0.94	1.00				
Small Cap Equities	11.60%	20.69%	-0.04	0.16	0.26	0.19	0.25	-0.13	-0.03	0.19	0.56	0.53	-0.08	0.84	0.94	1.00			
International Equities	10.26%	17.97%	-0.09	0.17	0.24	0.20	0.22	0.48	0.03	0.17	0.29	0.43	0.09	0.60	0.48	0.45	1.00		
Emerging Markets	13.26%	25.74%	0.00	-0.03	0.08	-0.07	0.06	-0.04	-0.13	0.04	0.36	0.72	-0.21	0.62	0.56	0.57	0.48	1.00	
Private Equity	13.26%	25.74%	-0.03	-0.16	-0.10	-0.11	-0.08	-0.11	-0.11	-0.12	0.09	0.47	0.06	0.28	0.26	0.31	0.20	0.33	1.00

The inflation rate for the normal ten-year period is 2.25%.

The Standard Deviation data is for the "any ten year "period.

Correlations are for the longest time period available for each asset class, however, some correlations have been adjusted due to limitations of available information.