saalt

strategic asset allocation over the long-term

Strategic Asset Allocation over the Long-Term (SAALT)

Investment Committee Views and Final Global Market Portfolio

A summary note

by A. Meyer-Cirkel

11-4-2016

Incorporating the Investment Committee Views into the Global Market Portfolio (GMP)

A recap of the general framework

A guiding principle of this platform has been to distil as much as possible of a broad range of financial models into actionable financial planning and investment guidance. Whereby applicable and well published models have been combined with available market information and the insights from a select group of finance experts – represented by the investment committee. Theoretical models are needed in order to allow identifying potential optimal saving and risk-taking over a lifetime of an individual with specific characteristics. Furthermore, models such as the "Modern Portfolio theory" (MPT) deliver what the optimal asset allocation should be for a spectrum of risk-preferences. The MPT has created the concept of efficient frontier, which delineates the maximum return for a certain level of investment risk. It has also shown that the tangency portfolio, or the touching point of a line starting at the risk free rate and the efficient frontier, is the market portfolio. Since when assuming that market participants are rational, all investors should hold their risky assets in the same proportions as the weight in the market portfolio. The tangency/market portfolio also represents the basket of securities that maximizes the Sharpe ratio, or the risk-adjusted return, among all possible portfolio combinations in the universe of risky assets.

Once the model foundation is laid out, the necessary step is to identify a usable market portfolio. The obvious best starting point is the actual allocation of globally traded assets, since it incorporates all the available market information and should have a Sharpe ratio that would be hard to beat. As laid out in the Research Note "[The Global Market Portfolio](#)" (GMP), we have undergone a comprehensive exercise in order to calculate the most recent GMP. Since for a few asset classes the market size has to be estimated based on infrequent publications, the exercise cannot be updated on a higher than semi-annual basis. The currently used GMP reflects the assessment for September-2016.

Finally, having the empirical weight allocations of the global invested portfolio and the related price histories of the underlying securities, allows usage of the Black-Litterman framework in order to back out the market implied expected return rates. Since those date back to September-2016, they need to be updated in line with the current macro-financial environment. For that purpose, the Investment Committee expresses their views and volatility expectations on all or just specific assets. The aggregated views of committee members will then be fed back into the Black-Litterman framework and lead to an according rebalance of the GMP weights.

About the Black-Litterman Model

The Black-Litterman model is a mathematical model for optimal portfolio allocation developed in 1990 at Goldman Sachs by Fischer Black and Robert Litterman. It seeks to overcome problems that institutional investors have encountered in applying modern portfolio theory in practice. The model starts with the equilibrium assumption that the asset allocation of a representative investor should be proportional to the market values of the available assets, and then modifies that to take into account the "views" (i.e., the specific opinions about asset returns) of the investor in question to arrive at a bespoke asset allocation[1].

A summary of the latest empirical GMP

The table below, pasted from the full Research Note, gives us an overview of the main asset classes and the respective weights of the aggregated holdings of all investors. From 2006 to 2016, few weight shifts are remarkable, among them a loss of importance of European, developed Asia, and Latin American equities, an increase in the role of emerging Asia, and a broadly stable position of North America. Furthermore, we see an increase in importance of private equity markets as well as inflation linked and high yield bond markets.

---

[1] Further details are laid out in the original publications.
- He, Guangliang, and Robert Litterman, "The Intuition Behind Black-Litterman Model Portfolios", Working Paper, Goldman Sachs Asset Management, New York, 1999.
- Black, Fischer and Robert Litterman, "Global Portfolio Optimization", Financial Analysts Journal, Vol. 48, No. 5 (Sep. - Oct., 1992), pp. 28-43

Table 2: Asset class market value (in millions) and market share

		2006		2016	
Adv. Markets Equity	N America	15,466,785	23.3%	25,634,916	22.0%
	Europe	11,187,635	16.8%	11,353,719	9.8%
	Asia Pacific	5,686,550	8.6%	7,490,742	6.4%
EM Equity	Asia Pacific	2,582,268	3.9%	5,662,352	4.9%
	Americas	806,980	1.2%	1,045,077	0.9%
	Europe, Middle East and Africa	1,376,811	2.1%	1,281,136	1.1%
Private Equity	Global	1,694,000	2.5%	3,939,540	3.4%
Frontier Markets	All available	0	0.0%	274,162	0.2%
Debt Markets	Asian-Pacific Aggregate Index	4,451,000	6.7%	10,471,505	9.0%
	Pan-European Aggregate Index	9,155,977	13.8%	15,052,672	12.9%
	US Aggregate Index	8,862,657	13.3%	19,483,992	16.7%
	Canada Broad Bond index	261,957	0.4%	565,392	0.5%
	LATAM	145,180	0.2%	438,672	0.4%
	World Inflation-Linked Bond Index	995,460	1.5%	2,639,845	2.3%
	Global High Yield Index	1,019,682	1.5%	2,385,749	2.1%
Real Estate	N. America	1,796,168	2.7%	4,178,302	3.6%
	Europe	711,232	1.1%	634,443	0.5%
	Asia Pacific	0	0.0%	3,338,943	2.9%
Other Real Goods	Timber & Forestry	108,249	0.2%	137,973	0.1%
Commodities	Oil & Gas, Metals, Agribusiness	170,000	0.3%	333,700	0.3%
Sum		**66,478,591**	**100%**	**116,342,830**	**100%**

Source: Bloomberg, Datastream and Author's own calculations. 2016 data as of 09/2016.

Notes: The dataseries for Frontier Markets equities and Asia-Pacific Real real estate start after 2006 and are entered as zero in this exercise.

Views of the investment committee (IC) on near future developments

As part of the preparatory work to put forward their views, the IC has analyzed the current weighting of the portfolio components in the GMP as well as the related market expected implied rates of return, which have been backed out using the Black-Litterman framework – see table below for details. In addition, a comprehensive overview of market conditions (downloadable here) stood at their disposal, offering insights into general topical issues as well as summary reports of current conditions and a survey on views from a broad range of market participants, including central banks, international finance organizations such as the IMF and the World Bank, as well as large private sector banks and wealth managers.

The broad views of IC members have been laid out below, and serve as a backdrop for the return and variance information fed into the Black-Litterman framework. They do not necessarily reflect all members' positions on the discussed asset class - neither uniformity of thought nor dissonance are encouraged. A multiplicity of views is aggregated in a statistically consistent way. The main spelled out views are as follows:

For the next 6-12 months, expectations are particularly unpredictable, but the dominant outlook shows Europe to be dogged down by political uncertainty and banking sector concerns, while the US could see an upturn in projected growth based on a Trump Presidency finding a moderate balance between isolationism and domestic economic stimulus. But the unconventional political rhetoric of the US president-elect and the indications of possible fundamental policy shifts bare tail risks.

- **Europe**: European markets (both equities and bonds) will remain range-bound due to continued political risks ahead. The negative outcome of the Italian Referendum in December, French elections in May and German elections in October 2017 set the stage for the uncertainty on the political and economic future of the union. Europe's economic recovery will also be marked by ongoing banking sector concerns, whereby Italian high NPLs and Deutsche Bank's fines play a major role. Hence, it is unlikely that the European Central Bank will shift away soon from its expansionary monetary policy stance, thereby supporting the flow of savings into the real estate market, among others.
- **USA:** The newly elected government is perceived as pro-business and the market has shown preliminary signs of confidence in the outlook, particularly when measured by equity market reactions. The positive outlook is based on two main expectations, which are of historical proportions: a significant tax reduction across the board, and infrastructure spending in the order of $1 trillion. This would lead to increasing debt levels, reflationary tendencies, bottlenecks on the labor market, and increased pressure on the FED to take faster action on raising interest rates. Hence, bond yields are likely to rebound as a result. Nonetheless, potential refactoring of trade barriers/tariffs, and break-ups of traditional alliances and institutional setups bare considerable tail risks for equity markets and growth in the US, and contagion across the globe.
- **Asia:** Policy uncertainty emanating out of the US impacts the outlook for wider Asia, particularly potential trade tax/barriers imposed on Chinese goods could substantially impact the economy and asset markets. On a separate note, high valuations for Asian real estate presents potential risks, whereby high real estate prices in China and a decrease in construction activity need to be watched carefully.
- **Latin America:** Continued political and economic uncertainty, particularly for Brazil, dominate the picture. But some first signs of improved policy and output turnaround can be seen, which are supported by continued appreciation of commodity prices.

Aggregation of views and impact on GMP

The standard Black-Litterman model allows only one expert expressing views about the excess returns of the portfolio. The underlying tool used in our framework implements an extended version of the Black-Litterman model, where five experts can express their views. The views of the five experts must be

aggregated into a single view. To do this, the tool uses the *linear opinion pool* method with equal weights to all experts, based broadly on work by Hall and Mitchell (2007)[2].

Global Market Portfolio in an Expanded Black-Litterman Framework

Securities & Indices	Asset Classes	Equilibrium Portfolio			Portfolio Characteristics - IC's Views	
		Equilibrium Market Weights	Equilibrium Market Returns - high risk aversion coefficient	Equilibrium Market Returns - low risk aversion coefficient	Difference between aggregated expected retuns of IC and equilibrium	Resulting Constrained Portfolio Weights
MSCI North America Investable Market Index	North America Equity	22.03%	7.10%	3.55%	0.56%	23.38%
Barclays U.S. Aggregate Index	US Bond Market	16.75%	2.34%	1.17%	0.07%	17.92%
Barclays Pan-European Aggregate Index	European Bonds	12.94%	0.70%	0.35%	0.03%	10.45%
MSCI Europe and Middle East Index	European Equity	9.76%	5.88%	2.94%	-0.27%	5.74%
Barclays Asian Pacific Aggregate Index	Asian Bonds	9.00%	1.72%	0.86%	-0.17%	5.79%
MSCI Pacific Investable Market Index	Asia Pacific Equity	6.44%	5.10%	2.55%	-0.16%	3.66%
MSCI Emerging Markets Asia Index	EM Asia Equity	4.87%	6.17%	3.09%	0.18%	7.01%
iShares Listed Private Equity UCITS ETF	Private Equity Market	3.39%	6.29%	3.15%	0.14%	4.10%
MSCI US REIT Index	US Real Estate	3.59%	6.42%	3.21%	0.72%	5.01%
iShares Asia Property Yield UCITS ETF	Asia Real Estate	2.87%	6.52%	3.26%	-0.42%	0.00%
Barclays Global Aggregate Inflation-Linked Index	Global Inflation Linked Bonds	2.27%	1.61%	0.81%	0.08%	4.68%
Barclays Global High Yield Index	Global High Yield	2.05%	2.77%	1.38%	0.28%	2.34%
MSCI Emerging Markets EMEA Index	EM Europe and Middle East Equity	1.10%	6.71%	3.35%	0.33%	2.38%
MSCI Emerging Markets Latin America Index	EM Latin America Equity	0.90%	7.42%	3.71%	-0.24%	0.00%
MSCI Europe Real Estate Index	Europe Real Estate	0.55%	5.54%	2.77%	0.33%	4.10%
Barclays Canadian Corporate Index	Canadian Bonds	0.49%	2.15%	1.08%	0.04%	0.71%
Bloomberg Commodity Index Total Return	Commodities	0.29%	3.42%	1.71%	0.20%	2.72%
JPMorgan GBI-EM Broad Latin America Index	Latin American Bonds	0.38%	3.98%	1.99%	-0.05%	0.00%
MSCI Frontier Markets Index	Frontier Markets Equity	0.24%	3.56%	1.78%	0.04%	0.00%
S&P Global Timber & Forestry Index	Real Goods - Timber	0.12%	6.84%	3.42%	-0.08%	0.00%

Note: "Low" risk aversion coefficient from He and Litterman (1999), "high" coefficient of 5. The reported difference in expected returns is obtained by using the "low" risk aversion coefficient, taking the aggregated expected returns from IC and deducting the equilibrium market return. The constrained portfolio weights are obtained by an optimization procedure not allowing short-selling and having a condition of total portfolio adding to a 100%.

---

[2] Hall, Stephen G., and James Mitchell. "Combining density forecasts." *International Journal of Forecasting* 23 (2007): 1-13.

The above table presents the main results of the exercise. The column "Equilibrium Market Weights" shows the weights already presented in the empirical GMP estimation. To back out the "Equilibrium Market Returns", the Black-Litterman model uses a reverse optimization process. Two columns are presented in order to demonstrate the variance of expected returns due to changes to the coefficient of risk aversion. The next column shows the difference in return expectations from the aggregated experts' (IC) views. Finally, the last column then is obtained after incorporating all information, applying the Bayesian update for the calculation of the posterior excess returns and covariance matrix, and then performing a constrained optimization procedure to obtain the new GMP weights.

The most visible portfolio weight change takes place in European equity, where we see a suggested downward shift from a 9.8% allocation in the September-2016 GMP to the new allocation of 5.7%. Similarly, the cautious outlook for Asian real estate, leads to a weight reduction from 2.9% as per GMP to a 0% allocation resulting from the IC's views. Even more broadly, the suggested rebalancing sees a round about 3 percentage point reduction in the exposure to Asian equity and bond markets, compared to the estimated global market portfolio of September 2016. US and European real estate markets are expected to outperform benchmark and are therefore overweight.

We see a zero weighting now for a few asset classes, in addition to Asian real estate, including Latin American equity and bonds, Frontier Market equity and Timber investments.