



# Methodology Strategic Asset Allocation Model

Table 1. Strategic Asset Allocation optimized for min. volatility with a specified portfolio return target

	Strategic Allocation	Allocation bandwidth			Weight in portfolio
<b>Global Allocation</b>					
Equities	52	36	-	68	
Bonds	25	18	-	33	
Commodities	7	5	-	9	7.00
Real Estate	13	9	-	17	13.00
Gold	3	2	-	4	3.00
<b>Regional Equities</b>					
US	32	22	-	42	16.64
Euro Area	18	13	-	23	9.36
Japan	23	16	-	30	11.96
Emerging Markets	27	19	-	35	14.04
<b>Fixed Income</b>					
Government Bonds	18	13	-	23	
Investment Grade	18	13	-	23	4.50
High Yield	33	23	-	43	8.25
TIPS	31	22	-	40	7.75
<b>Government Bonds</b>					
US Treasuries	33	23	-	43	1.49
EMU Govt Bonds	23	16	-	30	1.04
Japan Gov Bonds	23	16	-	30	1.04
EM local crny bonds	22	15	-	29	0.99



In the SAA table above, the left column is divided into four blocks. The top block is the global SAA, consisting of global equities, global bonds, commodities, (listed) real estate and gold. Liquidity is lacking because we assume a 'fully invested portfolio'.

The second block is the equity SAA, where the strategic allocation to global equities is further broken down into the regions of the US, Europe, Japan and emerging markets (EM). The third block is the bond SAA, where the strategic allocation to global bonds is broken down into government bonds, investment grade, high yield and TIPS.

Finally, the fourth block shows how the strategic asset allocation to government bonds is broken down into US Treasuries, EMU government bonds, Japanese government bonds and EM local-currency government bonds.

The second column of the SAA table indicates the strategic weighting of each asset class and the column next to it ('allocation bandwidth') indicates the bandwidth within which the TAA may deviate from the SAA.

The particular selection of asset categories is based on the fact that many institutional investors invest in these categories, that they are liquid investments, and that a benchmark is available for each category with a fairly long track record. The strategic asset allocation has a 10-year horizon and it is reviewed annually (in December or January).

## SAA model

The SAA is determined using the [Black-Litterman model](#) to determine the optimal combination of risk and return. Our starting point in determining the SAA is that capital preservation is more important than achieving the highest possible return. This is why, on the basis of a return objective, the SAA model is optimised for the lowest possible risk (the lowest possible volatility).

In addition to a return objective, another (limiting) condition is that each asset category we track must have an allocation. For each asset class, a bandwidth is formulated within which the model can set the allocation. This bandwidth is partly based on the 'classic' 60/40 ratio of equities and bonds in portfolios. We maintain this ratio in reduced form (45% equities and 30% bonds) to allow for an allocation to real estate (10%), commodities (10%) and gold (5%). The SAA model can set an allocation for each asset class within a bandwidth with the specified percentage at the centre and 33% leeway at the bottom and top. The tables below include the bandwidths for all asset categories of the four blocks, as well as the benchmark used for each asset category.



Table 2: Global benchmarks

Asset	Benchmark	Minimum – maximum weighting
Global Stocks	MSCI World	30% - 60%
Global Bonds	Bloomberg Global Aggregate USD	21% - 39%
Commodities	S&P GSCI Commodity Spot	7% - 13%
Real estate	FTSE EPRA/NAREIT Developed index	7% - 13%
Gold	Gold spot future	3% - 7%

Table 3: Global stocks

Asset	Benchmark	Minimum – maximum weighting
US stocks	MSCI US	18% - 33%
EMU stocks	MSCI Europe ex UK	18% - 33%
Japan stocks	MSCI Japan	18% - 33%
EM stocks	MSCI EM	18% - 33%

Table 4: Global bonds

Asset	Benchmark	Minimum – maximum weighting
Global Government Bonds	Bloomberg global government bonds	18% - 33%
Global Investment Grade	Bloomberg Corporate bonds IG index	18% - 33%
Global High yield	Bloomberg Corporate HY bonds index	18% - 33%
Tips	Bloomberg U.S. Aggregate index	18% - 33%

Table 5: Government bonds

Asset	Benchmark	Minimum – maximum weighting
US government bonds	Bloomberg US government bond index	18% - 33%
EMU government bonds	Bloomberg EMU government bond index	18% - 33%
Japan Government Bonds	Bloomberg Asian-Pacific Japan	18% - 33%
EM local currency gov. bonds	Bloomberg EM USD Aggregate	18% - 33%



Finally, the SAA model has the following constraints and assumptions:

- » The use of leverage is not permitted.
- » It is not possible to short an asset category.
- » The SAA has a 10-year horizon.
- » SAA is updated annually, if necessary. The performance measurement of SAA at the end of the year assumes no rebalancing in the interim.

There are other ways in which the SAA model can be optimised. We have included two of them in the appendices. In Appendix II, the SAA model is optimised for the maximum Sharpe ratio. In Appendix III, the SAA model is optimised for a minimum volatility in the absence of a return objective.

## Description of inputs used for the model

Below, we will briefly describe the inputs we used for the SAA model.

**Expected returns:** the SAA model uses the expected returns published in the [ECR Expected Returns](#) report, which is published quarterly. These expected returns are an average of the expected returns of 47 major asset managers. These asset managers generally base their expected returns on expected growth and inflation for the next 10 years, taking into account the effect of current valuations on future returns. Research shows that firm undervaluation or overvaluation is an important predictor of whether an asset will show outperformance or underperformance in the coming years.

In our view, this way of determining expected returns is preferable to the traditional way, which is based on past returns.

For the asset class of gold, an average return expected by major asset managers is not available. This is why, in the case of gold, we will use an expected return based on gold's return over the past 32-years.

**Return objective:** there are two objective methods for determining a return objective. The first method is an average of major asset managers' expected returns for the various asset classes. As many asset managers do not publish an expected return for gold, the return objective for 'global assets' is determined by averaging the expected returns for global stocks, global bonds, commodities and real estate. Table 6 shows the averages of expected returns relevant to us.



Table 6: Average expected returns

Asset category	Asset classes used to calculate av. Expected return	Average expected return of the major asset managers
Global Assets	Global Equity, Global Bonds (avg of global gov bonds, Global HY & Global IG), Commodities and Real Estate	6.01%
Global Equity	US, Europe, Japan & Emerging Markets Equity	7.28%
Global Bonds	Global gov bonds, Global IG, Global HY, US TIPS	4.89%
Government bonds	US Treasury, EUR gov bonds, Japan gov bonds, EM local currency gov bonds	3.93%

The second method of arriving at a return objective is to average long-term growth expectations. This method is more difficult to determine because only a few financial institutions such as the IMF and World Bank publish and/or frequently update their forecasts for real growth and inflation for the next decade. The majority of published growth and inflation forecasts covers the next two years. We found two relevant growth forecasts for the global economy. The first is from PWC for the period through 2030 (2.7%) and the second from the Conference Board for the period through 2028 (3.1%). As for inflation expectations through 2028, the IMF expects an average inflation rate of 2% for developed economies, and this figure is 5% for emerging markets. The average of the two is 3.5%. Combined with the average growth forecast of PWC and the Conference Board (2.9%), this results in a nominal growth forecast of 6.4%.

The SAA model therefore uses the first method; the average of major asset managers' expected returns for the various asset classes.

**Volatility and correlations:** It is difficult to provide an informed expectation for future average volatility of and correlations between asset classes. There are only a few asset managers who, without considering historical volatility and correlations, have an informed expectation for volatility and correlations for the next 10 years. This is why we assume that historical volatility and correlations give a good estimate for future volatility and correlations. This uses data from Eikon going back as far as Table 7 indicates.

Table 7: Time span of data used

Categories	Start date of data
Global assets	1991
Regional equities	1988
Fixed income	2007
Regional government bonds	2005



**Risk-free rate:** for the calculation of the Sharpe ratio of the SAA portfolio, the recent 10-year US government bond yield is used as the risk-free interest rate. This term to maturity corresponds to the (average) horizon of the expected returns used.

## Strategic FX allocation

There are several ways to determine the strategic FX allocation:

1. On the basis of currency distribution of the strategic asset allocation.
2. On the basis of market capitalisation of bonds and stocks in the various currencies.
3. On the basis of share in FX transactions.

We choose the latter option. The share in FX transactions is a good reflection of a currency's usefulness for investors (either to invest or to consume). Moreover, the other two options are difficult to implement:

- » For example, an allocation to a global bond index is usually in dollars, but this index also includes many bonds of companies and governments denominated in other currencies.
- » The market capitalisation of the various asset classes is sometimes difficult to determine. Another disadvantage is that exchanges where companies and bonds are listed (and the currencies in which assets are listed) are concentrated in a number of countries/currencies. This may therefore provide a distorted view of the importance of a currency.

Both the [WTO \(in 2011\)](#) and the [BIS \(in 2022\)](#) have published data on the share of currencies in the FX market. We take the average of both parties, specifying the share of USD, EUR, JPY, GBP, AUD, CAD and CHF and group the share of other currencies under emerging market currencies. You can see the result in table 8 on the next page.



Table 8: Strategic FX allocation table

# Strategic FX Allocation

	<b>Strategic Allocation</b>	<b>Allocation bandwidth</b>
<b>USD</b>	43%	30% - 56%
<b>EUR</b>	17%	12% - 22%
<b>JPY</b>	9%	6% - 12%
<b>GBP</b>	6%	4% - 8%
<b>CHF</b>	4%	3% - 5%
<b>CAD</b>	3%	2% - 4%
<b>AUD</b>	3%	2% - 4%
<b>EM FX</b>	15%	11% - 20%

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