What's cooking?

CTAs are uncorrelated to other strategies. It makes allocation to CTAs so simple, it's almost an afterthought… put us in the corner and forget about us. We are like the nerdy kids at the back of the class that every teacher loves: they do their own thing, disturb nobody and come the end-of-year exam, raise the class average in the national scores table.

If you view CTAs this way, please read my seasonal magic trick special…

Today though, I am going to attempt a much more ambitious magic trick. Can I have an allocator volunteer from the audience? Yes sir, please come forward. Don't be afraid, it won't hurt much. Today I am going to suggest how you can improve your allocation process in a way you never thought possible. By comparing just two simple vectors[1].

Your portfolio baking recipe

Let me have a look at your current portfolio construction process… first you start by assembling the list of ingredients. These are your asset classes: bonds, equity, FX, gold, crypto, commodities etc… You may also have some private markets and some hedge funds but for today's exercise, these will matter less. We will also not concern ourselves with how you source your ingredients: finding the best manager, most cost-effective fund, most promising new entrants in each category is up to you.

Your recipe's first step is probably to set up some capital markets assumptions (CMAs): what are your expectations for next year for each asset class? You expect equities to rise E%, for bond yields to stay the same at B%, for gold to rise G% and for crypto to crash by -C%. We may also have expected volatilities for each asset class and perhaps some skew estimates too.

The second step is to assemble the utensils: cash flows constraints, tax implications, risk constraints and risk appetites. I am sure you want the portfolio to be edible to your investment committee.

We mix these all in a big correlation matrix bowl, put into our optimizing oven and voila! some strategic weightings on each asset category: (W_E, W_B, W_G, W_C, W_{HF})

The third step is where your beautiful cake becomes a fudge cake. You recognise the uncertainty in your CMAs: Crypto may crash -C% but it can also appreciate by 10C%. You

[1] Actually, the maths is quite involved for this one, but we are going to skip it and concentrate on the basic idea.

accounted for E% rise in equities but you recognise that you may have some trade wars, or even real wars around the corner. Even the fresh correlation matrix may be out-of-date by next month. Are negative equity-bond correlations out of season?

To address these uncertainties, you run lots of scenarios. Lots and lots of scenarios. In fact, you probably pay your consultants to run a big Monte-Carlo simulation. And every simulation, or change to your CMAs, yields a slightly different allocation.

You probably look at multiple scenarios and weigh their likelihood and then you coat your cake with fudge, selecting a defensive set of weights which is resilient to the scenarios you consider most likely: you want an all-weather cake to be palatable even if a financial winter arrives.

Figure 1: A typical allocation process, as described by Morningstar, https://adviserblog.morningstar.co.uk/files/2016/03/CMA-SAA-Methodology.pdf

More uncertainty: the autocorrelation sensitivity

One of the problems when running scenarios is that even uncertainty is uncertain. You may have estimated the volatility of equities, but the tail probability of equities exceeding 2,3 or 4 standard deviations is far higher in real life than it is in your simulation. That is because of autocorrelation of returns in real financial data. Our allocation process has a negative sensitivity to autocorrelation.

Embracing uncertainty

Now, before we present this cake to the IC, let me cast my magic spell. Of course, there is great uncertainty around our current CMAs. We can measure how the uncertainty affects allocations: If we assume equities to appreciate by E%+1%, we are likely to allocate, W_E + D_E to equities.

I am not going to solve your optimization problem for you, but I expect that those derivatives we just calculated: (D_E, D_B, D_G, D_C) are all positive: I will be surprised if your current recipe suggests allocating less to a higher performing asset.

Instead of closing our eyes and praying our CMAs are accurate, I have this magic ingredient you can add to your cake. You need something that should equity go up by 1% extra, would automatically have allocated extra D_E% to equities.

If only we could find this magic ingredient in the market.

Adding a Plateau to the Gateau

Wait! It exists? By a complete stroke of luck, CTAs do precisely this. A typical CTA has a built-in d = (d_E, d_B, d_G, d_C) ready made for you. (CTAs have time varying deltas, but we are interested in d and v, conditional on CMAs materializing).

Those derivatives we calculated previously (D_E, D_B, D_G, D_C) can then be calibrated to the CTA's delta and you probably want to allocate D_E/d_E of capital to the equity risk of the CTA.

If you are big enough to run CTA as an SMA, you ring your SMA manager and ask them to adjust their asset class allocations for you so that d and D match precisely. If you can find an asset-specific CTAs, you can address each of these derivatives using specific allocation to each asset class CTA. Even if you add an off-the-shelf CTA to your allocation, since (d_E, d_B, d_G, d_C) are in the same direction you want to go with D, you can ensure that in a region around the CMAs, your deviation from the optimal allocation is much less than it was for the standalone portfolio. We have just built an optimality plateau around our portfolio gateau.

CTAs have positive sensitivity to autocorrelation

There is one more subtle way CTAs can add value to your allocation process: they act as an insurance against your negative sensitivity to autocorrelation: You may need to explain to your IC why you under-allocated to Gold just before it had a massive bull run. Holding CTAs will have increased your Gold allocation and is a way of addressing the tail risk in your portfolio construction.

Bake off time

There, that wasn't too painful, was it? Please give a round of applause to the brave allocator volunteer who embraced CTAs as part of his portfolio allocation process. CTAs can be viewed as an afterthought, an "add on" but they can also live as a tool at the core of your allocation process.

4687883

4687899