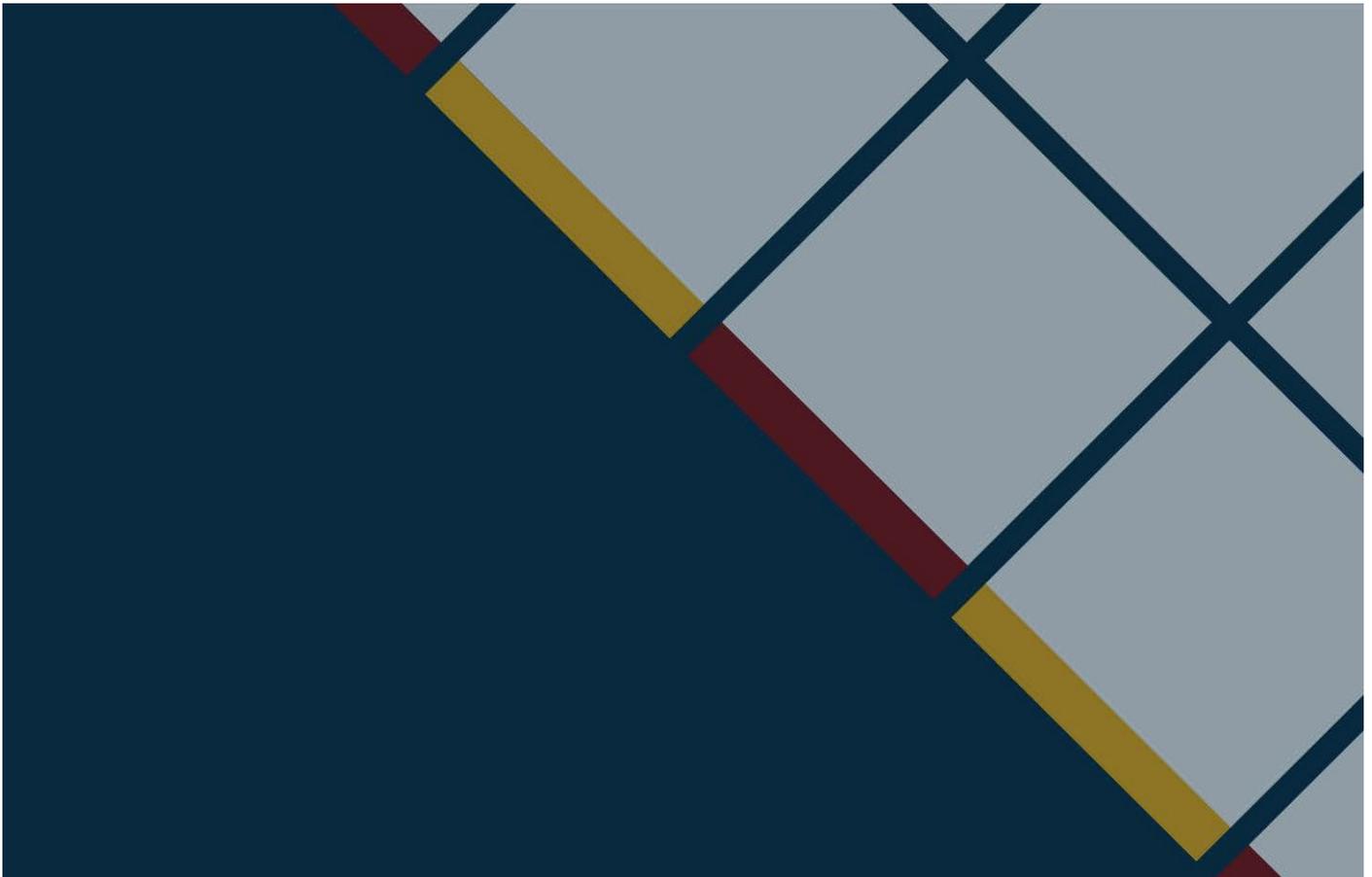




# Optimal Number of Active Managers



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## Introduction

One of the central questions for the choice of active or satellite investments is: what is an appropriate level of diversification between and amongst active fund managers? In general, diversification even when done naively within traditional investing, is a good thing. However, within active management this may not always be so. Specifically, here we consider the question: should investors in a platform of active investments be required to diversify - for example, with minimum requirements on the number of managers to be employed when constructing portfolios?

Our view on this question is “no.” There are many reasons this does not necessarily make sense and here we explain why.

## Background

Large financial services firms often build a platform of active or satellite fund manager investments. Such a platform allows clients the opportunity to invest in private equity, real estate, hedge funds, managed futures, and credit structures to satisfy a broad range of investment objectives. These platforms showcase fund managers who have been diligenced, with whom commercial arrangements have been struck, and whose products are made available for distribution. In other words, investors who choose to engage the platform do so outside traditional (equity and fixed income products) strategic asset allocation, particularly by recognizing that they may be adding some amount of potential active return to their portfolios.

In this context, we have developed a framework to analytically suggest how to link various types of active, idiosyncratic, and alpha-generating investments to a strategic portfolio of well diversified asset classes (sometimes also called a “core-satellite” framework). The key idea is that it drives rigor into the risk budgeting process to help investors answer three questions:

- › *What might be an appropriate allocation to active risk and active managers on top of the strategic portfolio?*
- › *What should be the mix of managers one should allocate to?*
- › *Where should active investments be funded from?*

# Rationale for Manager Diversification

Our research, albeit counter intuitive in its findings, suggests that requiring a specific or minimum number of managers from a platform may not fit the investment rationale. To provide color, consider the following scenario in the traditional, long-only world: suppose that a person has a 100% allocation to passive bond investments. This investor comes to her advisor—banker or financial consultant—and indicates that she really believes that investing something in, for instance IBM equity, is going to be a great value. What would be prudent advice to give to this client?

Consider four possibilities:

- › *Don't invest in IBM*
- › *Invest in IBM only, but since you are not willing to absorb a great deal of risk, be prudent and do it in a relatively modest amount, say not more than 3% of the overall portfolio*
- › *Invest 3% in IBM, but you must choose two other stocks which you also invest 3% in each because that will give you diversification within equities*
- › *Invest 1% in each of three single stocks because that will give you diversification within equities*

We will return to this example throughout the remainder of this note and will consider the choice recommendation in conclusion. We now turn to the rationale for our answer above.

## ■ Investors might believe in only a single fund manager

As we noted earlier, for an investor to make an investment in any single manager hedge fund, they must believe that it will add alpha to their portfolio while preserving the risk characteristics they aim to achieve. In this context, if an investor believes that only one of the managers on an offering platform will add return to their portfolio (even if the platform sponsor believes that all the managers have value-adding potential), forcing multiple managers will be sub-optimal from their point of view by either forcing inclusion of potentially negative alpha managers or forcing them to forego the opportunity to add alpha by not investing at all.

Consider an example in which an investor has a portfolio consisting of 50% equity and 50% fixed income and is choosing from three hypothetical and randomly chosen fund managers: Canyon (Event Driven), Paulson (Event Driven), and Trellus (Long-Short Equity). Further assume that the investor is allocating 3% of her portfolio to these active fund managers. If the investor believes that all three managers will have similar risk and return characteristics going forward, investing 1% in each of the managers is a reasonable approach. However, if she believes that there will be significant differences among managers, allocating equally to the three managers can lead to a loss in terms of realized risk adjusted return.

Assume that the investor believes that these three managers are likely to replicate their historical performance (i.e., she assumes that future returns and risks are similar to historical ones). In this case, she should allocate (based on a random sampled historical period chosen where Trellus outperforms) the entire 3% to Trellus, as shown in Portfolio B in Table 1.

	<b>Portfolio A - Equal Weights Among Active Managers</b>	<b>Portfolio B - Optimal Weight Among Active Managers</b>
<b>Fixed Income</b>	<b>48.5%</b>	<b>48.5%</b>
<b>Equity</b>	<b>48.5%</b>	<b>48.5%</b>
<b>Canyon</b>	<b>1.0%</b>	<b>0.0%</b>
<b>Paulson Partners</b>	<b>1.0%</b>	<b>0.0%</b>
<b>Trellus</b>	<b>1.0%</b>	<b>3.0%</b>
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Excess Return Over Cash</b>	<b>4.97%</b>	<b>5.21%</b>
<b>Total Risk</b>	<b>9.15%</b>	<b>9.21%</b>
<b>Sharpe Ratio</b>	<b>0.54</b>	<b>0.57</b>

Allocating equally across active managers in Portfolio A reduces the portfolio's expected return by 24 bps, while reducing the risk by only 6 bps, resulting in a loss in efficiency. Even if the investor is incorrect (i.e. 'Trellus' future realized returns are lower than expected) the risk of portfolio B is almost indistinguishable from that of portfolio A.

There are several reasons why the risk differential is so low, which are explained in the next three points.

■ **Diversification should be considered in the context of the entire portfolio not just within choosing from within a platform.**

Forcing multiple investments in an active platform to encourage diversification is somewhat of false diversification. This is because the diversification between the strategic portfolio and the active managers is much more important and much greater than diversification within the active portfolio, especially at relatively low allocations to active managers.

To see this, consider the following simplified example. Assume again that an investor has a half equity, half fixed income portfolio, and would like to allocate 9% of the portfolio to active managers; (we chose a 9% allocation to active managers for this example and the subsequent example, because a 3% allocation did not generate meaningful differences in risk levels among portfolios). The investor is choosing from among three active managers, each with an expected return of 10% and a volatility of 10%. For simplicity, assume that each active manager is completely uncorrelated with fixed income, equity, and the other active managers (the assumption of no correlation among managers leads to the maximum diversification benefit). What is the difference in portfolio risk between a portfolio that allocates 9% to one manager, versus 3% to each of the three managers? Table 2 illustrates the results:

	<b>Portfolio A - Equal Weights Among Active Managers</b>	<b>Portfolio B - Optimal Weight Among Active Managers</b>
<b>Fixed Income</b>	<b>45.5%</b>	<b>45.5%</b>
<b>Equity</b>	<b>45.5%</b>	<b>45.5%</b>
<b>Total Core Weight</b>	<b>91.0%</b>	<b>91.0%</b>
<b>Manager A</b>	<b>3%</b>	<b>0%</b>
<b>Manager B</b>	<b>3%</b>	<b>0%</b>
<b>Manager C</b>	<b>3%</b>	<b>9%</b>
<b>Total Satellite Weight</b>	<b>9%</b>	<b>9%</b>
<b>Core Portfolio Risk</b>	<b>9.29%</b>	<b>9.29%</b>
<b>Satellite Portfolio Risk</b>	<b>5.77%</b>	<b>10.00%</b>
<b>Total Portfolio Risk</b>	<b>8.47%</b>	<b>8.51%</b>

It is true that diversification substantially reduces the risk of the satellite portfolio; the undiversified satellite portfolio has a risk of 10%, while the diversified portfolio has a risk of 5.77%. However, in the context of the total portfolio, the impact is miniscule. On a portfolio basis, the difference in risk is only 4 bps, even with a 9% allocation to active risk.

■ **Within a platform, the amount of diversification, depending on the managers picked might not be that high.**

Another important point is that diversification based on a guideline that requires a mandated certain number of managers may be misleading. The previous example assumed that fund manager returns are uncorrelated; in reality, there is always correlation among manager returns which reduces diversification benefits. Taking the specific managers considered, we present two sorts of randomly chosen historical data. First, Table 3 shows the correlations amongst the total returns of the managers within a random historical period chosen. As can be seen, in some cases these are relatively low or even negative (e.g., SFI and Basswood have a (0.14) correlation) and in some cases, they can be quite high, particularly when they are within the same strategy (e.g., Centaurus and Golden Tree have a 0.7 correlation).

	Vega	SFI	Nylin	Gartmore	Basswood	Canyon	Centaurus	Golden Tree	Paulson Partners	Trellus
<b>Vega</b>	1									
<b>SFI</b>	-0.12	1								
<b>Nylin</b>	0.11	0.01	1							
<b>Gartmore</b>	0.07	0.0	0.15	1						
<b>Basswood</b>	0.18	-0.14	0.06	0.09	1					
<b>Canyon</b>	-0.15	0.08	0.25	0.3	0.37	1				
<b>Centaurus</b>	0.56	0.27	-0.11	-0.24	0.13	0.2	1			
<b>Golden Tree</b>	0.28	0.08	-0.04	-0.17	0.22	0.6	0.7	1		
<b>Paulson Partners</b>	0.14	-0.02	0.15	0.12	0.53	0.59	0.18	0.22	1	
<b>Trellus</b>	0.01	0.01	0.33	0.24	0.33	0.39	0.16	0.23	0.63	1

To see this in another way, we also show how much diversification one obtains from choosing incrementally more managers. Here we choose those managers which are the mostly highly correlated to reveal the limits of this approach. Table 4 shows the change in volatility as we go from one manager, to two managers, to three managers. As one can see, the volatility declines by a very slight amount (by 10 bps), although part of the reason for this is the fact that the volatilities of the managers are not the same.

**Table 4 - Diversification Impact**

	<b>One Manager</b>	<b>Two Managers</b>	<b>Three Managers</b>
<b>Fixed Income</b>	<b>45.5%</b>	<b>45.5%</b>	<b>45.5%</b>
<b>Equity</b>	<b>45.5%</b>	<b>45.5%</b>	<b>45.5%</b>
<b>Canyon</b>	<b>9.0%</b>	<b>4.5%</b>	<b>3.0%</b>
<b>Golden Tree</b>	<b>0.0%</b>	<b>4.5%</b>	<b>3.0%</b>
<b>Centaurus</b>	<b>0.0%</b>	<b>0.0%</b>	<b>3.0%</b>
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Portfolio Risk</b>	<b>8.32%</b>	<b>8.29%</b>	<b>8.22%</b>

■ **Diversification guidelines based on the number of managers chosen is superior to forcing a certain number of managers to be chosen.**

Conditional on the fact that multiple managers can add alpha, then it is true that having a larger opportunity set will increase the potential to allocate to active managers. What this means is that in a rigorous analysis, the total allocated to a platform of multiple fund manager offerings increases with the addition of alpha-generating managers. This is different than saying that all investors must invest in a certain number of managers, but instead that given the number of managers chosen, the maximum should vary.

For this reason, we suggest that allocating guidelines specify: a maximum to any single manager, and a maximum to the platform in total. This approach overcomes the problems listed above as it does not treat diversification along the dimension of the number of managers but based instead allows flexibility to allocate to fewer managers at lower platform levels.

To clarify, consider a set of guidelines which requires that no more than 3% is allocated to any single manager but allows up to 9% in the platform as a whole. If the investor chooses to be less diversified at the platform level, e.g. allocate to only one manager, then the total allocated to the platform under the guidelines is lower than someone who thinks that there are three managers who can add value to the existing portfolio. In this case, the maximum allocation for the person who chooses only one manager will be 3% and the maximum for the one who chooses three managers is 9%. In other words, this structure

follows more accurately a systematic process, since the amount allocated to active managers is increasing in the number of managers chosen (as one would expect if there is some diversification between the managers) but does not force the investor to choose a certain number of managers.

## Conclusion

We continue to develop new approaches to alpha-beta separation, with a focus on portfolio strategy with hedge funds as well as design cutting-edge tools for incorporating active investments within portfolios. We believe that forcing diversification upon investors in any active platform may not be sensible. Instead, we believe that the total allocation to a platform should be a function of the number of managers. In other words, rather than fix the number of managers required, it is a better approach to allow them to vary but have the maximum guideline vary with the number of managers.

Returning to the initial example, we believe the advice option (ii)—allowing the investment but with limited allocations—is the most sensible. Disallowing the investment excludes the client from an investment she believes will add value. Forcing her to accept two other stocks might be suboptimal.