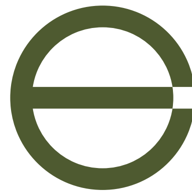

Epsilon Theory

THE FIVE THINGS THAT MATTER #2 | BY RUSTY GUINN

You Still Have Made a Choice

Drummers are really nothing more than time-keepers. They're the time of the band. I don't consider I should have as much recognition as say a brilliant guitar player. I think the best thing a drummer can have is restraint when he's playing — and so few have today. They think playing loud is playing best. Of course, I don't think I've reached my best yet. The day I don't move on I stop playing. I don't practice ever. I can only play with other people, I need to feel them around me.

— **Ginger Baker (founder of Cream), from a 1970 interview with *Disc Magazine***

La cuisine, c'est quand les choses ont le goût de ce qu'elles sont.

[Good cooking is when things taste of what they are.]

— **Maurice Edmond Sailland (Curnonsky) – 1872-1956**

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There are those who think that life
Has nothing left to chance
A host of holy horrors
To direct our aimless dance

A planet of playthings
We dance on the strings
Of powers we cannot perceive
The stars aren't aligned
Or the gods are malign
Blame is better to give than receive

You can choose a ready guide
In some celestial voice
If you choose not to decide
You still have made a choice

— **Rush, "Freewill", *Permanent Waves* (1980)**

> For the kingdom of heaven is like a man traveling to a far country, who called his own servants and delivered his goods to them. And to one he gave five talents, to another two, and to another one, to each according to his own ability; and immediately he went on a journey. Then he who had received the five talents went and traded with them, and made another five talents. And likewise, he who had received two gained two more also. But he who had received one went and dug in the ground, and hid his lord's money. After a long time the lord of those servants came and settled accounts with them.
>
> So he who had received five talents came and brought five other talents, saying, 'Lord, you delivered to me five talents; look, I have gained five more talents besides them.' His lord said to him, 'Well done, good and faithful servant; you were faithful over a few things, I will make you ruler over many things. Enter into the joy of your lord.' He also who had received two talents came and said, 'Lord, you delivered to me two talents; look, I have gained two more talents besides them.' His lord said to him, 'Well done, good and faithful servant; you have been faithful over a few things, I will make you ruler over many things. Enter into the joy of your lord.'
>
> Then he who had received the one talent came and said, 'Lord, I knew you to be a hard man, reaping where you have not sown, and gathering where you have not scattered seed. And I was afraid, and went and hid your talent in the ground. Look, there you have what is yours.'
>
> But his lord answered and said to him, 'You wicked and lazy servant, you knew that I reap where I have not sown, and gather where I have not scattered seed. So you

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> ought to have deposited my money with the bankers, and at my coming I would have received back my own with interest. Therefore, take the talent from him, and give it to him who has ten talents.
>
> For to everyone who has, more will be given, and he will have abundance; but from him who does not have, even what he has will be taken away. And cast the unprofitable servant into the outer darkness. There will be weeping and gnashing of teeth.
>
> — **The Bible, *Gospel of Matthew 25:14-30***

I will never understand why more people don't revere Rush.

With the possible exception of Led Zeppelin[1], I'm not sure there has been another band with such extraordinary instrumentalists across the board, such synergy between those members and their musical style and such a consistent approach to both lyrical and melodic construction. And yet they were only inducted into the Rock & Roll Hall of Fame in 2013. A short list of bands and singers the selection committee thought were more deserving: ABBA, Madonna, Jackson Browne, the Moonglows, Run DMC. At least they got in when Randy Newman did. I remember the first time I heard YYZ, the Rush tune named after the IATA airport code for Toronto's Pearson International Airport, pronounced "Why Why Zed" in the charming manner of the Commonwealth. It was then that I decided I would be a drummer. I did play for a while, and reached what I would describe as just above a baseline threshold of competence.

That's not a throwaway line.

There's a clear, explicit line that every drummer (hopefully) crosses at one point. A step-change in his understanding of the role of the instrument. The true novice drummer always picks up the sticks and plays the same thing. Common time. Somewhere between 90-100 beats per minute. Eighth note closed hi-hat throughout. Bass drum on the down and upbeat of the first beat. Snare on second down beat. And then it's all jazzy up-beat doodling on the snare for the rest of that bar until the down beat of four. Same thing for three measures, and on the fourth measure it's time for that awesome fill he's been practicing. I don't know how many subscribers are drummers, but I assure you, literally couples of you are nodding your heads.

The fills and off-beat snare hits are all superfluous and not necessary to the principal role of a drummer in rock and roll: to keep the damned beat. But there are a number of reasons why every neophyte does these same things. Mimicry of more advanced players who can do the creative and interesting things without losing the beat, for one. We see Tony Williams, John Bonham, or Bill Bruford and do what it is we *think* they are doing to make the music sound good. The amateur often also thinks that these are the necessary things to be perceived as a more advanced player, for another. He doesn't just imagine that his mimicry will make him sound more like the excellent

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[1] I don't want to hear it from the "but they stole people's music and weren't super nice about it" crowd. Zep played better rock and roll music than anyone before or after, and it's not even close.

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players, but imagines himself *looking like* them to others. More than anything, the amateur does these things because he hasn't quite figured out that keeping a good beat is so much more important than anything else he will do that he's willing to sacrifice it for what he thinks is impressive.

This thought process dominates so many other fields as well. Consider the number of amateur cooks who hit every sauce or piece of meat with a handful of garlic powder, onion powder, oregano, salt, pepper and cayenne, when the simplicity of salt as seasoning dominates most of the world's great cuisine. There is an instinct to think that complexity and depth must come from a huge range of ingredients[2] or from complexity in preparation, but most extraordinary cooking begins from an understanding of a small number of methods for heating, seasoning and establishing bases for sauces. Inventiveness, creativity and passion can take cuisine in millions of directions from there, but many home cooks see the celebrity chef's flamboyant recipe and internalize that the creative flourishes are *what matters* to the dish, and not the fact that he cooked a high-quality piece of meat at the right heat for the right amount of time.

If you're not much of a cook, consider instead the 30-handicap golfer who wouldn't be caught dead without a full complement of four lob wedges in his bag. You know, so that he can address every possible situation on the course. The trilling singer of the national anthem who can't hold a pitch but sees every word of the song as an opportunity to sing an entire scale's worth of notes. The karate novice who addresses his opponent with a convoluted stance. The writer who doesn't know when to stop giving examples to an audience who understood what he was getting at half-way through the one about cooking.

I'm guessing at least one of these things pisses you off, or at the very least makes you do an internal eye roll. And yet, as investors we are guilty of doing this kind of thing all the time, any time the topic of diversification comes up.

It comes from a good place. We know from what we've been taught (and from watching the experts) that we should diversify, but we don't have a particularly good way of knowing what that means. And so we fill our portfolios with multiple flavors of funds, accounts and individual securities. Three international equity funds with different strategies. Multiple different styles in emerging markets. Some value. Some growth. Some minimum volatility. Some call writing strategies. Some sector funds. Maybe some long/short hedge funds. Some passively managed index funds, some actively managed funds. Definitely some sexy stock picks. And in the end, the portfolio that we end up with looks very much like the global equity market, maybe with a tilt here or there to express uniqueness — that flashy extra little hit on the snare drum to look impressive.

This piece isn't about the time we waste on these things. I already wrote a piece about that a few weeks ago. This is about the harm we do to our portfolios when we play at diversifying instead of actually doing it.

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[2] And it can. Pueblan and Oaxacan cuisine feature moles with extraordinary complexity that does come from the melding of a range of seasonings and ingredients. Traditional American chilis, South Asian curries and soups from around the world often do as well. Dishes en croute (e.g. pate en croute, coulibiac, etc.) are notoriously tricky, too.

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The Parable of the Two FA's

So what does *actually diversifying* look like?

There are lot of not-very-useful definitions out there. The eggs-in-one-basket definition we're all familiar with benefits from simplicity, which is not nothing. In addition, it *does* work if people have a good concept of what the *basket* is in the analogy. Most people don't. Say you have $100, and you decide that a *basket* is an advisor or a fund. So you split the money between the two, and they invest in the same thing. You have not diversified[3]. The other definitions for diversification tend to be more complicated, more quantitative in nature. That doesn't make them bad, and we'll be leaning on some of them. But we need a rule of thumb, some heuristic for describing what diversification *ought to look like* so that we know it when we see it. For the overwhelming majority of investors, that rule of thumb should go something like this:

Diversification is reducing how much you expect to lose when risky assets do poorly or very poorly without necessarily reducing how much total return you expect to generate.

Now, this is not exactly true, and it's very obviously not the *whole* definition. But by and large it is the part of the definition that matters most. The more nuanced way to think about diversification, of course, is to describe it as all the benefits you get from the fact that things in your portfolio don't always move together, even if they're both generally going up in value. But most investors are so concentrated in general exposure to risky assets — securities whose value rises and falls with the fortunes and profitability of companies, and how other investors perceive those fortunes — that this distinction is mostly an academic one. Investors live and die by home country equity risk. Period. Most investors understand this to one degree or another, but the way they respond in their portfolios doesn't reflect it.

I want to describe this to you in a parable.

There was once a rich lord who held $10 million in a S&P 500 ETF. He knew that he would be occupied with his growing business over the next year. Before he left, he met with his two financial advisors and gave them $1 million of his wealth and told them to "diversify his holdings."

He returned after a year and came before the first financial advisor. "My lord, I put the $1 million you gave me in a Russell 1000 Value ETF. Here is your $1.1 million." The rich man replied, "Dude, that's almost exactly what my other ETF did over the same period. What if the market had crashed? I wasn't diversified at all!" And the financial advisor was ashamed.

Furious and frustrated, the rich man then summoned his second financial advisor. "Sir, I put your $1 million in a Short-Duration Fixed Income mutual fund of impeccable reputation. Here's your $1 million back."

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[3] Cue the fund-of-funds due diligence analyst pointing out that we would have, in fact, diversified our fraud risk. Die on that hill if you want to, friend.

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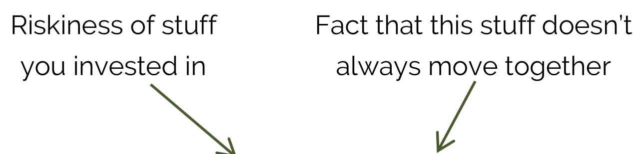
“Oh my God,” the lord replied, “Are you being serious right now? If I wanted to reduce my risk by stuffing my money in a mattress I could have done that without paying you a 65bp wrap fee. How do you sleep at night? I’m going to open a robo-advisor account.”

Most of us know we shouldn’t just hold a local equity index. We usually buy something else to diversify, because *that’s what you do.* But what we usually do falls short either because (1) the thing we buy to diversify isn’t actually all that different from what we already owned, or (2) the thing we buy to diversify reduces our risk *and* our return, which defeats the purpose. There’s nothing novel in what I’m saying here. Modern portfolio theory’s fundamental formula helps us to isolate how much of the variation in our portfolio’s returns comes from the riskiness of the stuff we invested in vs. the fact that this stuff doesn’t always move together.



$$\sigma_p^2 = w_a^2\sigma_a^2 + w_b^2\sigma_b^2 + 2w_a w_b \sigma_a \sigma_b \rho_{ab}$$

Source: Salient 2017 For illustrative purposes only

The Free Lunch Effect

So assuming we didn’t have any special knowledge about what assets would generate the highest risk-adjusted returns over the year our rich client was away on business, what answer would have made us the good guy in the parable? Maximizing how much benefit we get from that second expression above — *the fact that this stuff doesn’t always move together*.

Before we jump into the math on this, it’s important to reinforce the caveat above: we’re assuming we don’t have any knowledge about risk-adjusted returns, which isn’t always true. Stay with me, because we will get back to that. For the time being, however, let’s take as a given that we don’t know what the future holds. Let’s also assume that, like the Parable of the Two FA’s, our client holds $10 million in S&P 500 ETFs. Also like the parable, we have been asked to reallocate $1 million of those assets to what will be most diversifying. In other words, it’s a marginal analysis.

The measure we’re looking to maximize is the *Free Lunch Effect*, which we define as the difference between the portfolio’s volatility after our change at the margin and the raw weighted average volatility of the underlying components. If the two assets both had volatility of 10%, for example, and the resulting portfolio volatility was 9%, the Free Lunch Effect would be 1%.

If maximizing the Free Lunch Effect is the goal, here’s the relative attractiveness of various things the two FA’s could have allocated to (based on characteristics of these markets between January 2000 and July 2017).

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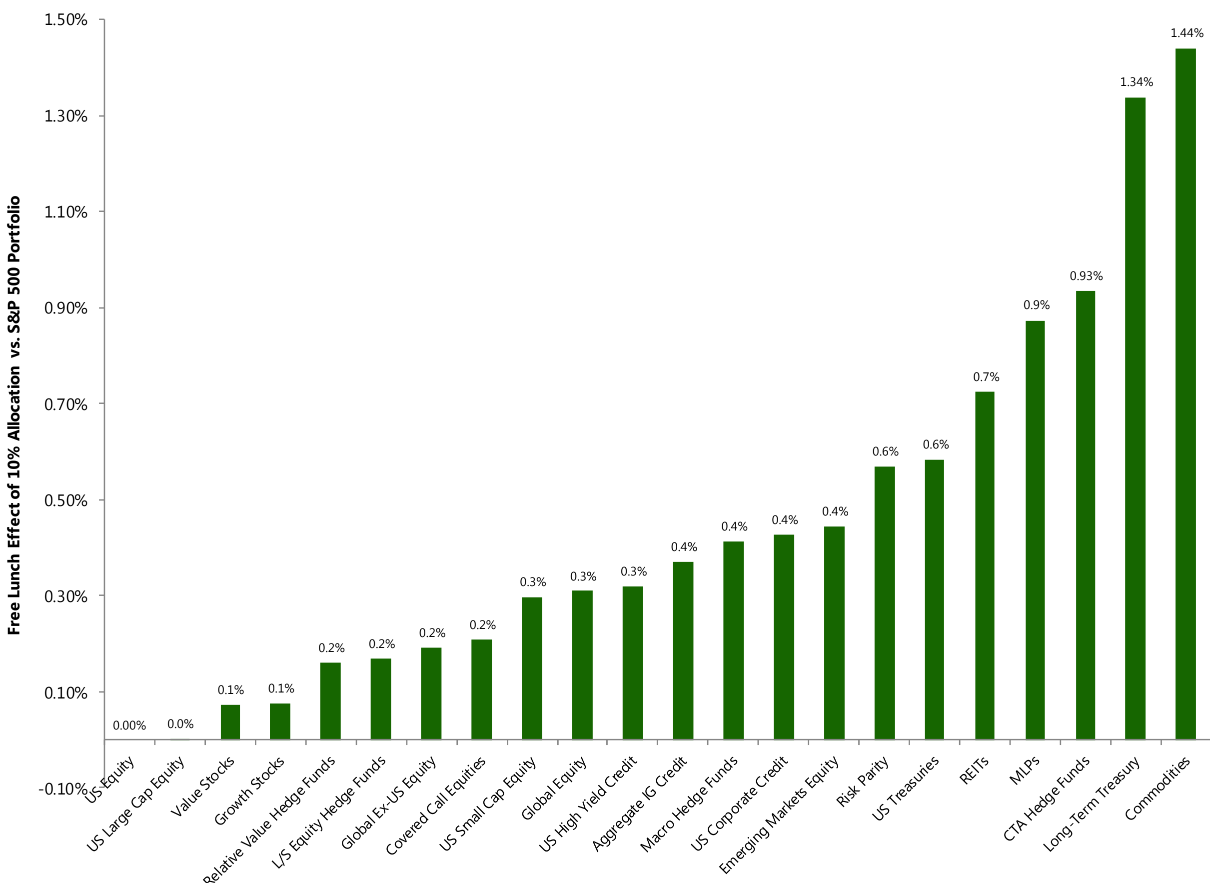
VOLATILITY REDUCTION FROM DIVERSIFICATION — ADDING 10% TO A PORTFOLIO OF S&P 500



Source: Salient 2017. For illustrative purposes only. Past performance is not indicative of how the index will perform in the future. The index reflects the reinvestment of dividends and income and does not reflect deductions for fees, expenses or taxes. The index is unmanaged and is not available for direct investment.

The two FA's failed for two different reasons. The first failed because he selected an asset which was too similar. The second failed because he selected an asset which was not risky enough for its differentness to matter. The first concept is intuitive to most of us, but the second is a bit more esoteric. I think it's best thought of by considering how much the risk of a portfolio is reduced by adding an asset with varying levels of correlation and volatility. To stop playing at diversification, this is where you start.

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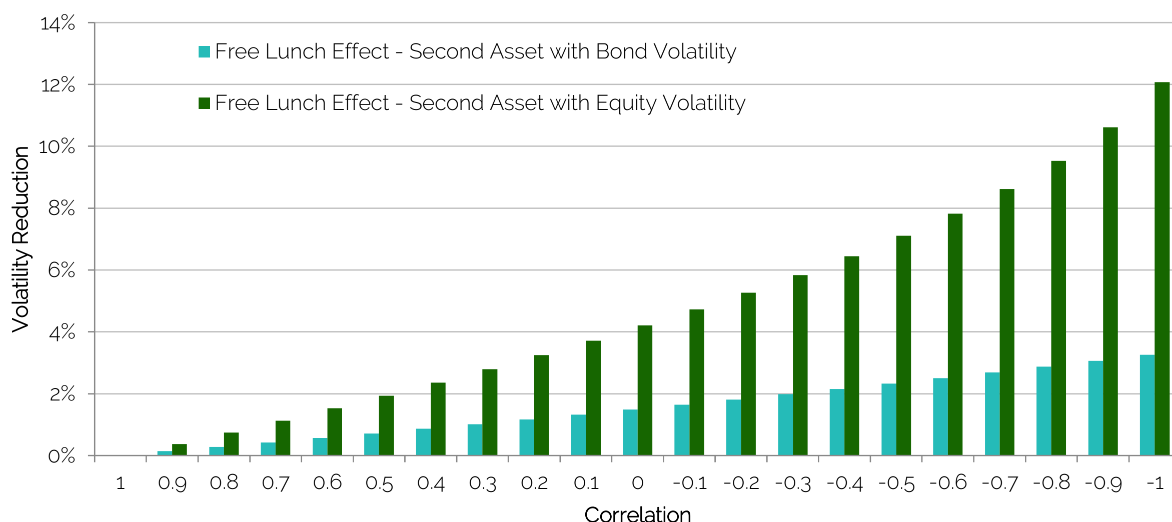
VOLATILITY REDUCTION BY CORRELATION AND VOLATILITY OF DIVERSIFYING ASSET



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If You Choose not to Decide

If there are some complaints that can be leveled against this approach, two of them, I think, are valid and worthy of exploration.

The first is that diversification cannot be fully captured in measures of correlation. If you read Whom Fortune Favors, you'll know that our code recognizes that we live in a behaviorally-influenced, non-ergodic world. While I think we'd all recognize that U.S. value stocks are *almost* always going to be a poor diversifier against global equities (and vice versa), clearly there are events outside of the historical record or *what we know today* that could completely change that. And so the proper reading of this should always be in context of an adaptive portfolio management process.

The second complaint, as I alluded to earlier, is the fact that we are not always indifferent in our risk-adjusted return expectations for different assets. I'm sure many of you looked at the above chart and said to yourself, "Yeah, I'm not piling into commodities." I don't blame you (I'm still not satisfied with explanations for why I ought to be paid for being long contracts on many commodities), but that is the point. Not owning commodities or MLPs because you don't get them isn't the same as not expressing an opinion. If you choose not to decide, you still have made a choice.

When investors choose to forgo diversification, on any basis, they are *implicitly betting that decisions that they make will outperform* what diversification would have yielded them. It may not be optimal to own the most diversified portfolio you can possibly own, because anti-diversifying decisions might, in fact, be worth it. But it is exactly that thought process that must become part of our code as investors. It's OK to turn down a free lunch, but you'd damn well better know that what you're going to spend your money on is better.

So how do you quantify that implicit bet? Again, the Free Lunch Effect gives us our easiest answer. Consider the following case: let's assume we had two investment options, both with similar risk of

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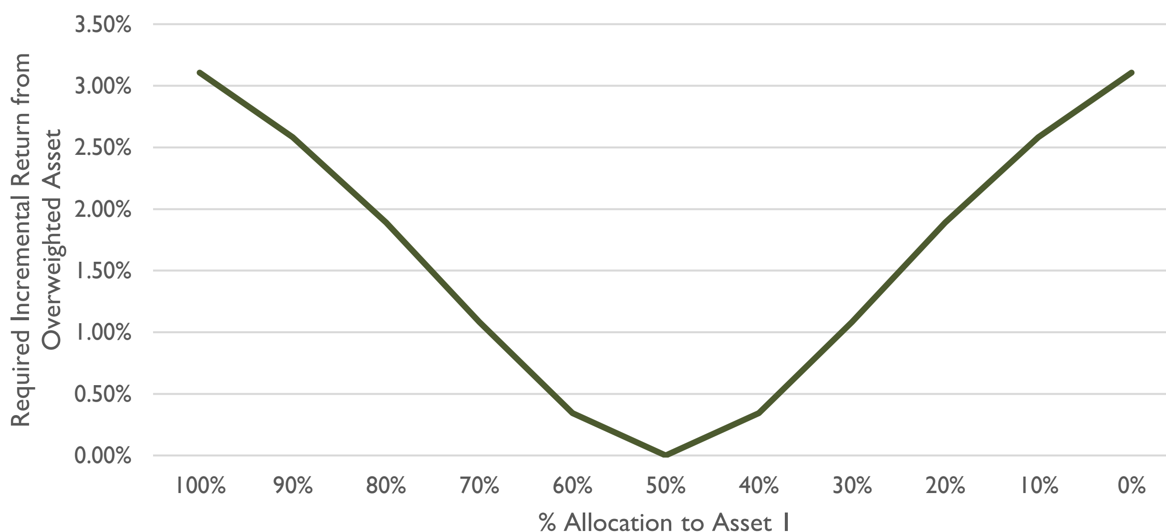
around 15%. For simplicity's sake we'll start from our naïve assumption that our assets produce, say, 0.5 units of return for every unit of risk we take. If the two assets are perfectly uncorrelated, how much more return would we need to demand from Asset 1 vs. Asset 2 to own more of it than the other? To own 100% Asset 1?

Well, the chart below shows it. In the case above, if you invest 100% of your portfolio in Asset 1, an investor who thinks about his portfolio in risk-adjusted terms is *implicitly betting* that Asset 1 will generate more than 3% more return per year, or an incremental 0.21 in return/risk units. If the assets are less similar, this implicit view grows exponentially.

IMPLIED INCREMENTAL RETURN EXPECTATION FROM OVERWEIGHTED ASSET



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A Chain of Linked Engagements

The point of this note isn't to try to convince you to focus your portfolio construction efforts on higher volatility diversifiers like those highlighted earlier (although many of you should). It's also not to argue that maximizing diversification should be your first objective (although most of us are so far from the optimum that moving in this direction wouldn't hurt). It is to emphasize that portfolio construction and the decisions we make are a chain of linked engagements. It is to give you pause when you or your client asks for a 'best new investment idea'. If your experiences are like mine, the question is nearly always expressed in isolation — recommend me a stock, a mutual fund, a hedge fund. These questions can never be answered in isolation. If you really must tinker with your

> If we do not learn to regard a war, and the separate campaigns of which it is composed, as a chain of linked engagements each leading to the next, but instead succumb to the idea that the capture of certain geographical points or the seizure of undefended provinces are of value in themselves, we are liable to regard them as windfall profits.
>
> — ***On War,*** **Carl von Clausewitz**

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allocation, sure, I can give you my view, but only if I know what else you own, and only if I know what you intend to sell in order to buy the thing.

Anyone who will make a recommendation to you without knowing those things is an idiot, a charlatan, or both.

Most of us, whether we are entrenched in financial markets or not, think about our decisions not in a vacuum but in terms of opportunity cost. If we buy A, we're giving up B. If we invest in A, we're giving up on B. If we do A, we won't have time for B. Opportunity cost is fundamental to thinking about nearly every aspect of human endeavor but for some reason is completely absent from the way many investors typically think about building portfolios.

Look, if you didn't completely follow where I was going with Whom Fortune Favors, I get it. Telling you to think about risk and diversification separately is more than a little bit arcane. But here's where it comes together: an investor can only make wise decisions about asset allocation, about selecting fund managers, about tactical bets and about individual investments when he has an objective opportunity cost to assess those decisions against that allows him to make his portfolio decisions intentionally, not implicitly. That opportunity cost is the free lunch provided by diversification.

If we take this way of thinking to its natural extreme, we must recognize that we can, at any point, identify the portfolio that would have provided the maximum diversification, at least using the tools we've outlined here. For most periods, if you run through that analysis, you are very likely to find that a portfolio of those assets in which every investment contributes a comparable amount of risk to the whole — a risk parity portfolio, in other words - typically provides something near to that maximum level of diversification. I am not suggesting that your portfolio be the maximum diversification portfolio or risk parity. But I am suggesting that a risk parity portfolio of your investable universe is an excellent place to use as an anchor for this necessary analysis.

If you don't favor it for various reasons (e.g., using volatility as a proxy for risk is the devil, it's just levered bonds, etc.), then find your home portfolio that accomplishes similar goals in a way that is rules-based and sensible. Maybe it's the true market portfolio we highlight in I am Spartacus. If you're conservative, maybe it's the tangency portfolio from the efficient frontier. And if you're more aggressive, maybe it is something closer to the Kelly Optimal portfolio we discussed in Whom Fortune Favors. From there, your portfolio construction exercise becomes relatively simple: does the benefit I expect from this action exceed its diversification opportunity cost?

How do you measure it? If you have capital markets assumptions or projections, feel free to use them. Perhaps simpler, assume a particular Sharpe Ratio, say 0.25 or 0.30, and multiply it times the drop in diversification impact from the action you're taking. Are you confident that the change you're making to the portfolio is going to have more of an impact than that? That's…really it. Now the shrewd among you might be saying, "Rusty, isn't that kind of like what a mean-variance optimization model would do?" It isn't kind of like that, it's literally that. And so what? We're not reinventing portfolio science here, we're trying to unpack it so that we can use it more effectively as investors.

Recognize that this isn't just a relevant approach to scenarios where you're changing things around because you think it will improve returns dramatically. This is also a useful construct for understanding whether all the shenanigans in search of diversification, all that Chili P you're adding,

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are really worth the headache. Is that fifth emerging markets manager really adding something? Is sub-dividing your regions to add country managers really worth the time?

In the end, it's all about being intentional. With as many decisions as we have to manage, the worst thing we can do is let our portfolios make our decisions for us. Given the benefits of diversification, investors ought to put the burden of proof on anything that makes a portfolio less diversified. In doing so, they will recognize why this code recognizes the intentional pursuit of real diversification as the #2 Thing that Matters.

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