

## **Challenging Orthodoxies**







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Welcome to our April 2020 Research Note. In this document we express our strategic view on the implications of what a world of zero percent interest rates means for investing. In light of this situation, we question and challenge the orthodox approach to investing used by the vast majority of asset management firms and pension funds the world over. Then we go on to demonstrate the alternative approach to investing that we have developed. We also turn our attention to the problem of risk – defining it; measuring it; and avoiding unnecessary incidents. Lastly, we take a look at what we've been doing, thinking and saying over the past year, concluding with a sneak peek of what of what we are currently working on.

We hope you enjoy reading this Research Note. If not enjoyable, we do at least, hope it gets you thinking.

#### 1. It's always been about risk

For 40 years now, investing in financial assets has been easy. Oh, we acknowledge there have been bumps along the way, a couple of which have even been sizeable, but in general it has been like riding a bicycle downhill on a sunny day - and having the wind at your back. Asset managers have been able to adopt simplistic approaches to building investment

The last 40 years has seen a rising tide lifts all boats

portfolios such as investing in a portfolio that consists of 60% equities and 40% bonds. This was because the academic theory said that when equities fall, bonds will deliver gains and vice versa. Then it was just a matter of sitting back and letting the good returns roll in, seemingly in spite of the manager's attempt to add value, as few managers have been able to outperform passive investment strategies. Yes indeed, the last 40 years has seen a rising tide lift all boats.

Fig. 1.1 illustrates how the since the early 1980s the global decline in interest rates has been a contributing factor in the performance of equity markets (here shown on an inverted log scale). Over the medium-term during that period the movement of these two asset classes has been largely uncorrelated, supporting the notion of so called "60-40" funds as a means of mitigating market risk in an investment portfolio. With global interest rates now nearing zero (if not lower), the ability of bonds to offset equity market risk in any meaningful way is now eradicated. Asset management professionals need to prove their worth going forward.





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This summary may seem scathing, but it is closer to the truth than many asset managers would care to admit. Every asset manager has undoubtedly worked hard in their role as fiduciary of other people's money. However, we would question whether they have worked smart, despite the fact it is any industry populated with academically smart people. We question whether they started at the right place? For the most part, asset managers started from the academic theory mentioned above. Namely, a mix of equities and bonds as the core of their portfolio. It was unquestioned – that's just how you invest, it's how everyone does it. Isn't it? Then you try to beat the market and peers by way of market timing and security selection.

Morpho Advisory ("Morpho") was started because we came to the realisation that this approach to investing is fundamentally flawed. The asset management industry have looked at historic returns and expect these to continue into the future – despite their "past results..." disclaimer, and have built their portfolios accordingly. We are firmly of the view that investing starts, not with chasing returns, but with identifying risk. What are the risks – and by this we mean real world

risk (i.e. of losing money) not academic risk (i.e. volatility as measured by standard deviation). Where are the risks? If you can't identify risks then you can't perform risk management. This is where the asset management industry falls down. They attempt to identify risk using the same bottom-up approach that shapes the silos they use in their portfolio management: risk in individual securities; risk in sectors; and risk in asset classes. By doing so they ignore both systematic risks and structural risks within the construction of their portfolios, which risks must be carried by the investing public they serve. To this, asset managers would claim that diversification is their approach to risk management – holding a bit of every security in every market based on market capitalisation. But, as we pointed out in our April 2019 Research Note, global markets are more correlated than many are aware of and this superficial form of diversification offers little in the way of risk protection.

Successfully being able to identify risk, by its very nature, should guide portfolio design & construction, which goes on to define asset allocation followed by market timing and finally security selection Starting from the point of addressing risk at the highest level is Morpho's approach,

as we detailed in our Research Note of April 2019. Successfully being able to identify risk, by its very nature, should guide portfolio design & construction, which goes on to define asset allocation, followed by market timing and finally security selection. All of these aspects working to address the problem of risk. Done properly, superior long-term returns are an out-working. And this is where the asset management industry faces its primary flaw and must acknowledge they have no 'edge'. They would say, "If we can't take risk then we can't make money", and there is a long history of alternative investment strategies demonstrating just that. However, it's not about taking no risk, it's about building asymmetry of risks into investment strategies, processes and portfolios to capture significantly more upside return than downside - and that is where skill is required. The asset management industry is populated with academically intelligent.

intelligent people.

Now is the time for those people to step forward, because the easy days of making healthy returns are over. The people on whose behalf they act as fiduciaries require them to show expertise – not just of the academic variety, but through real world application.

Given Morpho's risk-based approach to investing, it was natural that we foresaw the day approaching when global interest rates would be at zero whilst bond duration simultaneously











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lengthens, resulting in no yield but an increase in volatility from the supposedly defensive component of a portfolio. Additionally, in the chase for yield, there will be an increase in exposure to credit, whose price behaviour is already highly correlated to equities. What becomes of a "60-40" portfolio when the 40% is doing little or nothing? While some in the industry have been aware of this potentiality, few have looked to alter their approach to investing. By comparison, we at Morpho, in anticipation of this eventuality, have already developed (and continue to do so) alternative uncorrelated strategies that do not place the same reliance on bonds being the primary mitigant to risky assets in an investment portfolio. Strategies which also act to improve long-term returns whilst reducing drawdown and volatility risks relative to major market indices.



#### 2. Risk-based strategies in action

In our Research Note of April 2019 we described our risk-based approach to investing by way of applying it as an asset allocation methodology that challenges the orthodox approach. Toward the end of that document we went on to show how our approach naturally lent itself to be applied further out along the risk spectrum, demonstrating an increasing degree of benefit. Unsurprisingly, as little as one month after we published that research, we had evolved our proprietary systematic risk-based methodology from being a superior tactical asset allocation process into a range of absolute return strategies. We stress that none of these strategies have been historically optimized or 'tweaked'. We simply transplanted

the same low-frequency insight-based process we wrote about in April 2019 and applied it to absolute return strategies.

The following series of charts illustrate the performance of our three primary absolute return strategies (after fees) relative to major market indices. The charts compare our strategies relative to market on the basis of: *Total Return*; *Drawdowns*, *Volatility* of returns; and *Asymmetry* (i.e. greater upside than downside, especially relative to the standard deviation of returns).

Fig. 2.1 (right) illustrates our U.S. absolute return strategy, comparing it to the S&P 500 Index. This strategy uses a mixture of assets and asset classes at various points in the market cycle. One of these components is exposure to the S&P 500 via the SPDR SPY ETF, which is why we call it our U.S. strategy. Also included are commodities and bonds. But as we mentioned above, we are continuing to develop our strategies to reduce reliance on bonds going forward.







Fig. 2.2 (right) illustrates our Emerging Markets absolute return strategy, comparing it to the MSCI EM Index. This strategy is similar to our U.S. strategy but replaces S&P 500 with exposure to EM via the iShares EEM ETF, which is why we call it our EM strategy, plus it has exposure to additional commodities.

The Total Return and Drawdown profile of Morpho's strategies illustrated in Fig. 2.1 & 2.2 are vastly superior to that of their respective market indices, as is the standard deviation of returns.

However, the asymmetry of returns is what we are most proud of. Side-by-side comparison of our strategy with market indices illustrates Morpho's superior upside capture, whilst market indices demonstrate the opposite. This is especially noticeable when rolling 3 year returns are compared to the rolling 3 year standard deviation of returns for each.

Fig. 2.3 (right) illustrates our Uncorrelated Alpha absolute return strategy, comparing it to both the S&P 500 Index and the MSCI Emerging Markets Index. This strategy is a purely commodity based strategy.

This strategy demonstrates the highest Total Return of our three core absolute return strategies. It also demonstrates higher Drawdowns than our other strategies (although still below those of both the S&P 500 and MSCI EM Index) but with higher standard deviation of returns than market indices – which poses the question: "How do YOU define risk?"

The real strength of this strategy is that it is uncorrelated to major markets, making it yield-enhancing & risk-reducing at a portfolio level.



Being curious, we decided to investigate the efficacy of our Uncorrelated Alpha strategy over the longest period we could. We were able to apply it to 60 years of data. We reiterate the point we made in our April 2019 Research Note, that we only ran market data through our model after it was complete. This is an insight-based model, not a historically optimized model that engaged in any form of "curve fitting". The results of our historic analysis is demonstrated in the following charts.

Please note, no allowance was made for the deduction of fees from Morpho's Uncorrelated Alpha returns for this analysis.

Fig. 2.4 (right) illustrates Morpho's Uncorrelated Alpha absolute return strategy over 60 years, since 1959. It shows Total Return and Drawdowns for the strategy and compares them to those of the S&P 500 over the same period.

On a simple comparison basis, the Total Return of the strategy is superior to the S&P 500 but at the expense of a history of larger Drawdowns & higher Volatility than that of the S&P 500.



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Fig. 2.5 (right) illustrates the correlation of Morpho's Uncorrelated Alpha strategy to the S&P 500 over 60 years.

A rolling 3 year Beta of Morpho's strategy relative to the S&P 500 shows a consistent lack of correlation over 60 years.

Calculating Jensen's Alpha on a rolling 3 years basis using the S&P 500's Beta shows significant & positively skewed investment alpha generated over 60 years.

Fig. 2.6 (right) illustrates the benefits of truly diversified investments at a portfolio level.

Combining equal exposures to Morpho's strategy and the S&P 500 results in...

(i) 60 years of Annualized Returns that are almost double;

(ii) a halving of the Maximum Drawdown (with significantly lower cyclical Drawdowns over the 60 years); and

(iii) a reduction in annualized Volatility

...compared to a standalone investment in the S&P 500.



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#### 3. Quantify that risk

When we developed our insight-based and risk-focused approach to investing, we knew we were onto a good thing. Then, once we applied these insights to absolute returns strategies, it was validated by market data. Yet, we were left with a dilemma. We could clearly see that Returns were higher and Drawdowns lower when investing via our absolute return strategies compared to the broader market. But, we work in an industry that has a suite of abstract and academic concepts and measures used to test various investments on the basis of return relative to risk. There are so many of these formulas that few managers use the same metrics, except for one particular measure that all asset managers use even when they are a disparaging of it, being aware of its limitations. That measure is the Sharpe Ratio, developed in 1966.

We knew the underlying attributes of our strategies should make it compare favourably on a risk-adjusted basis relative to broad market exposures. But when we applied the Sharpe Ratio to the return series the results were OK, but not as good

Our absolute strategies generate returns that do not have a normal distribution as they should have been. We had encountered the primary flaw in the Sharpe Ratio – something few people achieve. The Sharpe Ratio only works when the underlying returns display a normal distribution. Our absolute strategies generate returns that do not have a normal distribution. On the contrary, the returns of our strategies are positively skewed and display a greater portion of fat tails to the upside. So we set out to make the Sharpe Ratio more meaningful to our strategies, but also more useful for broader





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application. In the end, we developed two methods of adjustment to the Sharpe Ratio that allow for both normal and nonnormal distributions, and that illustrate the difference in risk-adjusted returns of our strategies compared to those of the broad market. Essentially they are the same solution, but when applied both to our strategy returns and market returns, one results in our 'modified' Sharpe Ratio being materially unchanged from the standard Sharpe Ratio whilst the market's modified Sharpe Ratio is reduced. The other results in the market's modified Sharpe ratio remaining unchanged from the standard Sharpe Ratio while that of our strategies in increased. We preferred the latter option as it generates numbers that are meaningful to investment professionals who are familiar with the Sharpe Ratio. We named our modification the "Morpho Ratio", which is really just an adjustment factor applied to the existing Sharpe Ratio formula, so perhaps the "Morpho Adjustment Factor" might be a better description.

Sharpe Ratio \*  $\frac{\sqrt{((Skewness + n) * (Kurtosis + n))}}{n}$ 

We had no idea when we started on this journey that we would end up fixing one of the oldest and most respected formulas in investing – just as

a side project because its weakness annoyed us. Many academics have attempted to improve on the Sharpe Ratio, but in our research of those attempts we found them wanting, so we did it ourselves. In the process, we discovered a statistical approach to identify & quantify potential investment risk that reflects the real world, unlike academic normal distribution based approaches used across a range of financial risk management disciplines (e.g. VaR). A handy tool to have.

The following series of charts show a side-by-side comparison of the Sharpe Ratio of our absolute strategies next to those of market indices. Each chart compares the standard Sharpe Ratio to our Morpho Ratio, which more accurately reflects the underlying distribution of returns in the data set.



Fig. 3.1 (above left) illustrates the rolling 3 year Sharpe Ratio for Morpho's U.S. strategy, comparing the standard Sharpe Ratio formula with the Morpho Ratio (the Sharpe Ratio adjusted to reflect the true distribution of returns rather than presuming a normal distribution). Notice how this adjustment improves on what is already a healthy Sharpe Ratio because of the favourably asymmetric distribution of returns.



Fig. 3.2 (above right) illustrates the rolling 3 year Sharpe & Morpho Ratios for the S&P 500. The S&P 500 Sharpe Ratio is unchanged, due to its normal distribution.

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Fig. 3.3 (above left) shows the rolling 3 year Sharpe Ratio for Morpho's E.M. strategy, comparing the standard Sharpe Ratio with the Morpho Ratio. Fig. 3.4 (above right) shows the rolling 3 year Sharpe & Morpho Ratios for the MSCI EM Index. MSCI EM's Sharpe Ratio is unchanged, due to its normal distribution.

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Fig. 3.5 (left) illustrates the rolling 3 year Sharpe Ratio for Morpho's Uncorrelated Alpha strategy, comparing the standard Sharpe Ratio formula with the Morpho Ratio (the Sharpe Ratio adjusted to reflect the true distribution of returns rather than presuming a normal distribution).

As per our other strategies, this adjustment improves on what is already a healthy Sharpe Ratio because of the favourably asymmetric distribution of returns.

We have included the standard Sharpe Ratio of the S&P 500 for comparative purposes.

At Morpho, we are interested in real-world results. Therefore, the following charts include comparatives to one of the best performing alternative strategies that offers diversification to major market indices – CTAs (Commodity Trading Advisors & Managed Futures). Additionally, we look at risk being defined as Drawdowns (our preference), not just volatility. Here we use the CALMAR Ratio to illustrate risk-adjusted performance. The CALMAR Ratio measures annualised returns relative to the Maximum Drawdown. Our strategies consistently demonstrate superior risk-adjusted performance across any measure, in addition to superior absolute returns, while other strategies come & go on various measures.



Fig. 3.6 (above left) illustrates the rolling 3 year Morpho Ratio for our three absolute return strategies compared to that of the S&P 500 and CTAs (i.e. performance relative to risk with risk defined as volatility – adjusted for the true distribution characteristics of the underlying returns).

Fig. 3.7 (above right) illustrates the rolling 3 year CALMAR Ratio, comparing CTAs & the S&P 500 to our strategies (i.e. performance relative to risk with risk defined as Drawdowns).

#### 4. And now for the News

Over the last year we haven't just had our head down, developing absolute return strategies and undertaking quantitative analysis that refines on established risk measurement practices. On the contrary, we've occasionally lifted our head to look about and see what's happening in the world around us. On a number of ocassions we even published our thoughts, a selection of which follow:



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Fig. 4.2 (right) Last October we highlighted that, due to convexity (especially with yields approaching zero), asset managers were heading into a world of higher risk and they were oblivious to the fact. We likened them and their approach to investing to that of Custer's last stand.

We added to that tweet, pointing out that Risk Parity as a strategy is structurally impaired by those same risks.

2020 has thus far demonstrated that orthodox approaches to portfolio management (e.g. 60-40 portfolios) have indeed reached their 'use by' date.

Likewise, what occurred in the Risk Parity space can only be described as a cluster fuck of epic proportions. Thank goodness these 'quant' strategies are managed by the smartest people in the room.\*

#### \* that was sarcasm



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Fig. 4.1 (left) We observed last May that the U.S. market continued to show strength, deviating from other markets globally. This was primarily due to U.S. corporates engaging in share buy-backs that bolstered their share price & made relatively flat sales growth look better than it actually was. However, as we noted, this is simply financial engineering, which weakens a company's Balance Sheet by replacing equity with debt. As we concluded, there is no free lunch in such practices, it merely takes future earnings and brings them into the present, leaving the future with a greater degree of risk. The only beneficiaries were corporate management who would have secured that year's bonus. Incentive systems need to be long-term in nature.

How many companies now wish they had the Balance Sheet strength they possessed before they engaged in buy-backs?

Then again, perhaps corporate boards and management were counting on Federal bailouts even back then?

Morpho Advisory @morphoadvisory · Oct 27, 2019 Long-Tsy losses growing in size #convexity & freq v \$SPX. Believing they 'got it covered' is leading orthodox portfolio mgrs to their Little Bighorn. #Volatility, #Duration & #Credit risk converging in orthodoxy's Last Stand. Manage risk, reward'll come. #LiquidityTakeTheHindmost



Fig. 4.3 (left) Throughout 2019 we posted this chart multiple times. The yield curve kept telling people that a jump in volatility was on the horizon. Still, everyone seemed surprised when it happened.

What this chart does show is that asset managers continue to operate with short-term behaviours despite the fact that their business is the management of assets over 20-40 year time horizons.

To those who are looking for that quick recovery the market is currently pricing in, this chart might disabuse you of that notion. It is telling you there are at least a couple more years of higher volatility ahead.





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Fig. 4.4 (right) This one is a couple of years old, but it was worth digging out. We called "time" on holding exposure to credit late 2017. It was well timed even though there was a temporary rally in credit spreads during 2019. It's always better to be early rather than late when it comes to credit, especially now that duration is lengthening in the 'chase for yield' and that credit spreads increasingly show equity-like trading characteristics.

Yes, it was easy to anticipate the current crisis, though not the trigger, nor the magnitude of the event that would begin the decline. All we knew was that structural weaknesses were everywhere and that investing to achieve an asymmetry in outcomes means taking these factors into consideration.

The jump in credit spreads in 2020 has rapidly erased years of marginal gains, not to mention the process of rating downgrades (i.e. fallen angels) has only just begun. Yet, asset managers will persist in their foolish games, valuing activity over productivity – with other people's money.



Morpho Advisory @morphoadvisory · Dec 20, 2017

A greater portion of IG credit dwells on the clifftop overlooking the HY lands beyond. The coming crisis will see many descend that credit cliff. But at current spreads, do they care? Clearly not, as they gear up, taking the CB bait. Investors should be very afraid. (source: IMF) A high proportion of ratings are clustered at the t investment-grade rating range. 1. Quality Breakdown of the Investment-Gra (Percent of sample with BBB rating) 60 –



#### 5. It pays to tinker

In addition to expressing our views on developments going on in markets and the world around us, we continued to make new observations into the shape and structure of markets. This was all as a result of our endless tinkering and ceaseless curiosity. The process of exploration and discovery is hard to beat, especially when it bears fruit.



One of the first insight-based models we developed was adapted after we discovered that it was useful when applied to CME Milk Futures. We published this development in August of 2019. As we mentioned at the time, when you have one genuine insight into the drivers of markets, it leads to further insights because you now know what you are looking for.

We subsequently had an opportunity to provide some of our information to a global dairy cooperative. Part of the information we provided was a forecast for the price of CME Class III Milk Futures based on our proprietary insights. It has proved to be fairly accurate.



Fig. 5.1 (above) shows our discovery in relation to milk prices and how insights into the shape and structure of markets in one area can open up other areas that previously held a mystique because of the presumption that you need esoteric knowledge.

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Fig. 5.2 (right) shows our CME Class III Milk Futures price forecast of August 2019 including the actual subsequent price path. So far, so good.

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When you have genuine insights into the drivers of markets, one of the key things it provides that other participants don't have is knowledge of what is important and what can be ignored. This reduces 'noise' and allows for clarity of thought, whilst also elevating efficacy. By comparison, the market treats all information equally and lives by the creed that more is better.

Take for example, another of our insight-based discoveries. This is another of our unique creations, having never seen anything like it in any way, shape or form elsewhere. Something Dr John Hussman acknowledged also. We discovered that the SKEW Index has the potential to indicate significant market moves when applied to the S&P 500. Maybe not a robust indicator when used in isolation, but certainly another useful and independent tool that can tell of the market's general condition.

This was just another indicator that confirmed all our other (seemingly unrelated) indictors, which were suggesting markets were setting up for a significant fall – much of which is still yet to come.

Fig. 5.3 (right) shows our discovery that the CBOE SKEW Index has the potential to indicate a general level of complacency amongst market participants – i.e. the SKEW Index falls when the market is no longer prepared to pay for tail risk protection. Ironically, this means the market is ripe for a significant fall due to unhedged investors then needing to chase the market down once a sell-off begins.



Yikes. Now there's one I haven't seen before. Thanks for this! I'm going to have to think about what's driving the implied probability distribution here.

#### 6. We've been doing a spot of quanting

What are we currently working on? Well, we've gone back to have another look at our proprietary insight-based currency model, which has had a few iterations. We think we may now have a meaningful platform from which to start building something useful. It's still a work in progress but we'll let you have a sneak peek at how it's shaping up thus far, which includes a 1 year forecast horizon. As per our norm, it's high-level and best used over a medium to long-term horizon. That's where the value is - if you have the discipline. The following chart [*Fig. 6.1 (below)*] shows it applied to the New Zealand Dollar.









#### 7. Who was that masked man?

In this document we've given you a glimpse of Morpho Advisory and its capabilities. Essentially we are creators of unique and proprietary quantitative investments strategies with an emphasis on risk management. We also have the capability to perform macroeconomic research and market analysis, but those services have an abundance of offerings elsewhere. We play to our strength, which is investment strategies first, then with macro research and market analysis acting in a supporting role. Ultimately, it is alternative and uncorrelated

We are creators of unique and proprietary quantitative investments strategies with an emphasis on risk management

investment strategies that are of greater worth, delivering the greater value-add than macroeconomic research and market analysis.

Ironically, the preponderance of macroeconomic research houses and their clients aim to achieve what we have, but they

We have genuine insight into the structure of markets and their key drivers. Our proposition is unique don't offer anything as tangible as Morpho Advisory – merely hints and suggestions. These other service providers produce macroeconomic research and market analysis as a platform to generate trade ideas and investment theses for their clients. We have been able to bypass that traditional approach because we have genuine insight into the structure of markets and their key drivers. Our proposition is unique.

Morpho Advisory was founded by Brett Tulloch, who has over 30 years of financial and capital markets experience across an uncommonly diverse range of applications. His background has been in management of: major global fixed income portfolios for billion dollar asset management firms; billion dollar corporate balance sheets requiring issuance of debt securities across the world's capital markets; and significant corporate finance and project finance transactions.

As the founder, Morpho Advisory reflects Brett's inimitable style. Creativity and unorthodox approaches to the challenges that financial markets pose are encouraged. These are amalgamated with a strategic outlook that doesn't only encompass economic and market data, but also the very structure of the economic and financial market environment. We believe that the medium is very often the message (to quote Marshall McLuhan) - that is, the environment shapes the behaviour. This sets Morpho Advisory apart. While the asset management industry clings to, and celebrates, its orthodoxy, we at Morpho Advisory can no longer maintain orthodoxy's delusion. The Emperor has no clothes. Orthodox approaches to asset management have reached their 'use by' date. The world is at an inflection point where everything must change. So great is the juncture that we find ourselves at, it will be touch and go whether the current financial system collapses (or a substantial part thereof) or whether it will just result in a significant regime change. Morpho Advisory has chosen to turn onto the road less travelled.







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Morpho Advisory Unique Investment & Market Risk Solutions

> Market Risk Actively managed

Strategic Outlook Multiple methods of application

Improved Measures of Risk Meaningful, real-world application

Reduced Drawdowns Real-world risk management

Reduced Volatility Academic risk management

> **Higher Returns** *The ultimate objective*

> > **Diversification** *True benefits*

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