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FACTOR DYNAMIC HEDGING STRATEGY

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OVERVIEW

Over the past year, we have witnessed extreme market movements due to the effects of the global pandemic. The 2020 average level of the fear gauge -the VIX- was 29.25, with a peak of 83. Its long-term average is approximately 20. Volatility and equity drawdowns are substantial threats to the return of stock portfolios. Therefore, hedging the position of equity portfolios to mitigate the effects of economic crises has always been a key pillar of portfolio management. With this focus, we analyze the performance of “typical” hedging tools compared to the dynamic quality strategy. Common hedging methods include holding short-dated S&P 500 put options, holding risk free assets, building long gold or long credit protection portfolios (Appendix). In this focus we present an alternative hedging strategy exploiting the work of C.R. Hervey (2019). The dynamic strategy consists in building a long short quality portfolio - long on high quality, short on low quality stocks - which would be rebalanced each 6 months. This portfolio would then be attached to our benchmarked equity portfolio (obtaining a portable alpha) in order to mitigate the effect of downturns without the need to time the market.

PASSIVE HEDGING STRATEGIES

Long put options

Buying and rolling 1-month S&P 500 put options is the most reliable defensive method but it is also very expensive. This strategy performed strongly during the last economic crises. During the financial crises, the total return of the strategy was +40.5%, in the tech burst it almost reached the total loss of the S&P 500 with a +44.7% return.

The most visible disadvantage of this strategy is the long-term overall cost: the annualized excess return of it in the sample is -7.4%, especially because during times of turmoil rolling the options become more expensive since the implied volatility increases.

If we had combined a long position on the S&P 500 and the put options strategy with the same weight, the excess return would be negative even without considering transaction costs. The

Portfolio Manager has to time the market in order to make this strategy work.

Bonds

A long position on government bonds is widely considered as an effective hedge, given the “safe assets” reputation of sovereign bonds. This strategy is based on the negative correlation between stocks and bonds prices. This relationship has only been negative since 2000, Treasury and equity had moved in the same direction in the previous century. The stocks-bonds correlation varied substantially, and these fluctuations make uncertain the future of this hedging strategy. After 2000 the returns of this strategy were positive (+24% during the financial crisis), but since it derives from a relationship with such a high variability its effectiveness differs depending on the period and the type of crisis/recession.

Long gold

Gold also has been always treated as a safe-haven asset. Long exposure to gold is a source of value that during difficult times balances the losses of the markets. On average this strategy has a positive return during recessions, but along with bonds, gold has a very variable relationship with the market. It provides protection against rising inflation in the long-run, but gold is also characterized by a significant idiosyncratic risk related to political and financial instability in mining countries. However, the main concern is that the relationship with equity was positive until 1985, then it has reversed, this uncertainty makes long gold exposure an unstable hedging strategy.

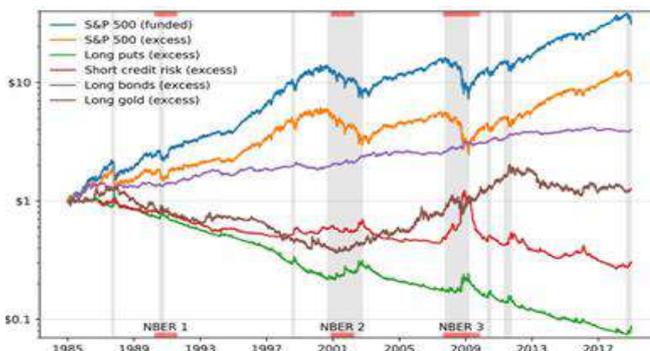


Figure 1: Passive strategy comparison .
This figure shows the performance of different hedging tools and the cumulative total return of the S&P 500

FACTOR DYNAMIC ANALYSIS

This report aims at testing the effectiveness of the flight to quality effect, through the construction of a long short portfolio to connect to the original equity portfolio. We would consider in a first place the period between February and March 2020, then we would expand the analysis to include periods of bull market.

We built the long short quality factor portfolio starting from 2019 companies' economic data, focusing our attention on key indicators such as ROE and EPS, moreover we adjust the scoring factor for the historical volatility, after a Winsorization process to clean the data. We are long on high quality stocks and short on low quality stocks, resulting in a net zero investment portfolio that can be easily attached to the active equity portfolio.

With this technique, the portfolio manager could simply take position in a long short portfolio, while still being invested in the original equity portfolio, without the two burdens explained before:

1. Market Timing;

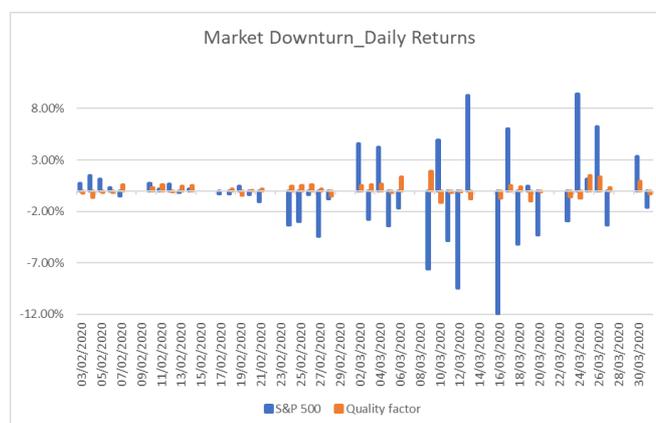
Unlike the put option strategy, this quality exposition would work constantly. The long short would appreciate in bear periods (flight to quality effect), while giving up some performance in bull market periods.

2. Time Varying Correlation:

Since the attached portfolio is a factorial one, its correlation with the equity market would not be affected as time passes by neither its net exposition (since it is 0%) nor by its asset classes, since we are in the equity spectrum.

The new combination would be a **portable alpha portfolio** (or in this case a portable hedge). We would have the original equity portfolio – represented by the SP500 – and the attached long short quality one. The logic is that this new combination would yield a YTD performance approximately similar as the SP500 one, while reducing the volatility and the drawdown related to the market crash of February – March 2020.

As expected our analysis has proven the effectiveness of this methodology. Below we report the daily return of both the SP500 and the quality long short portfolio, that shows a negative correlation.



01/02/2020 - 31/03/2020	
Correlation	-33.30%
Performance SP500	-22.84%
Performance Quality	6.47%

Figure 2: Market Downturn Daily Returns

This chart represents the compared returns between the S&P 500 and the quality factor for the period starting 03/02/2020 to the end of March.

The results obtained indicate a significant negative correlation between our factor and the market, as well as more stability of our long-short portfolio which achieved a cumulative linear return for the period of 6.47% respect of a -22.84% of the market. Our strategy is consistent with the “flight to quality” effect, but in order to evaluate the cost of hedging, we increase our observation period to October 2020, a period characterized by the market recovery. In fact, this step is crucial in order to rule out the dependence of this strategy on the market timing.

To do so, we rebalanced our portfolio using data from April 2020 getting the allocation showed in the Appendix. At this point, we build a combined portfolio that includes returns from S&P and the quality factor to be confronted with the original equity unhedged portfolio. The normalized results are reported below, note that both portfolios are 100% net long – by construction – and normalized to 100.

We can clearly see from the graph that the original portfolio is the main driver of the performance as it should be. The added quality portfolio helps adding extra basis points in turbulent and uncertain periods, while it lags when the recovery takes place.



Figure 3: Daily portfolio value comparison
The following chart illustrates the performance of the combined portfolio in comparison with the S&P 500 for the entire observation period.

CONCLUSION

The above-mentioned is one of the many possible ways in which an equity manager can hedge an equity portfolio. Taking into consideration the empirical evidence from our sample and the work of Harvey (2019) we can conclude that even if the performance of a dynamic strategy is not as strong as its alternatives during bull markets, it provides a stable and solid hedge during times of stress.

A quality-driven long short portfolio is very efficient to minimize the losses that eventually an equity portfolio will run into, and its construction costs are low around 1/2% per year. Of course, it is important to consider the nature of each crisis and the investment objective to find the best hedging strategy.

DISCLAIMER

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Reference:

“The Best of Strategies for the Worst of Times: Can Portfolios be Crisis Proofed?” by CAMPBELL R. HARVEY, EDWARD HOYLE, SANDY RATTRAY, MATTHEW SARGAISON, DAN TAYLOR, and OTTO VAN HEMERT, May 2019 version



APPENDIX

Long Short allocation

Name	Weight	Name	Weight	Name	Weight	Name	Weight
<i>Long Positions</i>		<i>Short Positions</i>		<i>Rebalanced Long Positions</i>		<i>Rebalanced Short Positions</i>	
LOCKHEED MARTIN	0.05	NEWELL BRANDS (XSC)	-0.05	SBA COMMS.	0.05	DXC TECHNOLOGY	-0.05
BOEING	0.05	MICRON TECHNOLOGY	-0.05	DOMINO'S PIZZA	0.05	APACHE	-0.05
O REILLY AUTOMOTIVE	0.05	SVB FINANCIAL GROUP	-0.05	LOCKHEED MARTIN	0.05	LUMEN TECHNOLOGIES	-0.05
KIMBERLY-CLARK	0.05	NRG ENERGY	-0.05	MSCI	0.05	SVB FINANCIAL GROUP	-0.05
HOME DEPOT	0.05	FEDEX	-0.05	COLGATE-PALM.	0.05	HOWMET AEROSPACE	-0.05
MASTERCARD	0.05	UNDER ARMOUR 'C'	-0.05	S&P GLOBAL	0.05	CENTERPOINT EN.	-0.05
S&P GLOBAL	0.05	GENERAL ELECTRIC	-0.05	MOODY'S	0.05	CARDINAL HEALTH	-0.05
NVR	0.05	WESTERN DIGITAL	-0.05	PHILIP MORRIS INTL.	0.05	DEXCOM	-0.05
MOODY'S	0.05	TWITTER	-0.05	AUTOZONE	0.05	NORWEGIAN CRUISE LINE	-0.05
MSCI	0.05	IPG PHOTONICS	-0.05	PHILLIPS 66	0.05	ADVANCED MICRO DEVICI	-0.05
NEXTERA ENERGY	0.05	EDISON INTL.	-0.05	NRG ENERGY	0.05	VENTAS	-0.05
STARBUCKS	0.05	UNDER ARMOUR A	-0.05	MCDONALDS	0.05	SL GREEN REALTY	-0.05
ALPHABET 'C'	0.05	ABIOMED	-0.05	ABBVIE	0.05	DOW ORD SHS	-0.05
BOOKING HOLDINGS	0.05	PERRIGO	-0.05	ALPHABET 'C'	0.05	HNTGTN.INGALLS INDS.	-0.05
EVEREST RE GP.	0.05	L BRANDS	-0.05	BOEING	0.05	FREEPORT-MCMORAN	-0.05
VALERO ENERGY	0.05	DUPONT DE NEMOURS	-0.05	METTLER TOLEDO INTL.	0.05	PNC FINL.SVS.GP.	-0.05
LYONDELLBASELL INDS.CL.A	0.05	MARATHON OIL	-0.05	WESTERN UNION	0.05	UNITED RENTALS	-0.05
PEPSICO	0.05	KRAFT HEINZ	-0.05	AMERICAN AIRLINES GROUP	0.05	BIOGEN	-0.05
SEMPRA EN.	0.05	COMERICA	-0.05	AMAZON.COM	0.05	GENERAL ELECTRIC	-0.05
VERIZON COMMUNICATION!	0.05	INCYTE	-0.05	HOME DEPOT	0.05	MOSAIC	-0.05

Credit Protection passive strategy

This strategy exploits the spread between corporate and treasury bond yields. This spread is likely to widen during crises, a credit protection strategy benefits from this trend and hedges our exposure. To implement this strategy, it is common to get a short credit exposure with a CDS.

The returns of this approach are very similar to the previous put strategy. During the financial crisis the short credit risk hedge had a huge +128% return, but during other drawdowns performed poorly compared to the put options strategy.

Taking into consideration other risks that the credit market could bring (e.g. counterparty risk, pricing of the derivatives) investors face a trade-off between the reliability of the put strategy and the relatively lower cost -in terms of returns- of the credit strategy