A Low Volatility, Option Based “Permanent Portfolio” Income Strategy (OPPS strategy)

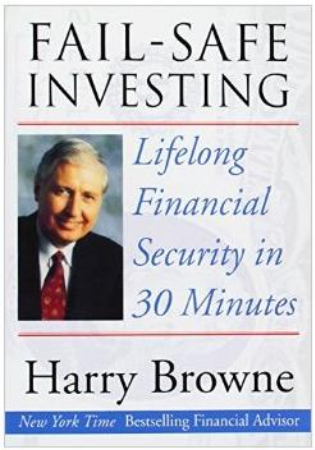
In the past we had many requests for low risk strategies which still generate a certain constant “dividend like” income. Here in Europe such strategies become more and more popular since many banks now charge negative yields on cash accounts above 100’000$.

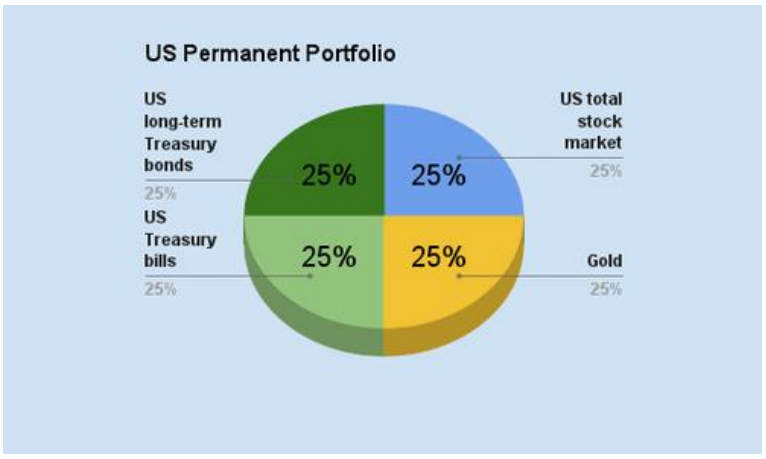
The approach we have chosen was to combine a good proven investment strategy and enhance its flexibility using our QuantTrader software. Then we execute this strategy using options instead of ETFs, which allows us to generate a constant daily option premium income on top of the basic strategy performance.

The result is a low volatility (= low risk) strategy for conservative investors which still produces a steady dividend like premium income. The volatility of the strategy is mostly below 7% compared with the S&P 500 which has a volatility of 15-20%.

The base “Permanent Portfolio” strategy

The “Permanent Portfolio” is probably the best-known investment strategy ever. It was created by Harry Browne and published in 2001 in his book, *Fail-Safe Investing: Lifelong Financial Security in 30 Minutes*. He was an investment advisor and radio host before becoming the Libertarian presidential candidate in 1996 and 2000.





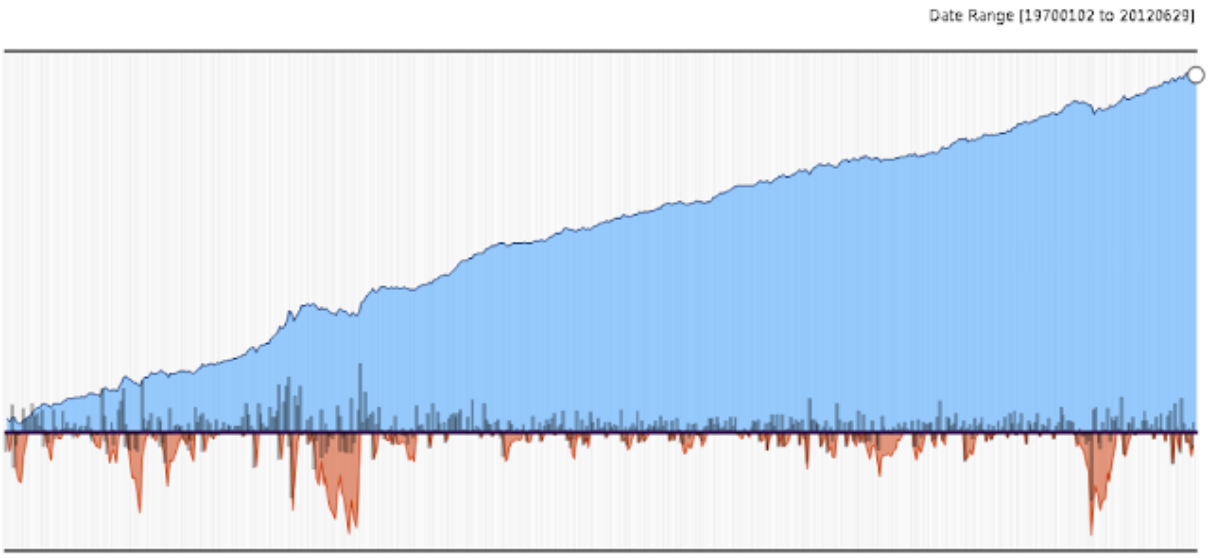
The book calls this type of investment portfolio, a "permanent portfolio" and advocates it be re-balanced once per year, so that the 25% allocation is precisely maintained for each asset class.

The breakdown is as follows:

- **25% in U.S. stocks (equities)**, to provide a strong return during times of prosperity. For this portion of the portfolio, Browne recommends a basic S&P 500 index fund such as VFINX or SPY.
- **25% in long-term U.S. Treasury bonds (fixed income)**, which do well during prosperity and during deflation (but which do poorly during other economic cycles).
- **25% in cash** to hedge against periods of “tight money” or recession.
- **25% in gold (commodities)** to provide protection during periods of inflation.

According to Browne such a permanent portfolio should be safe, simple and stable, and as you can see in the following chart, this strategy worked well during the last 40 years with an average yearly return CAGR of 8.55%.

The original Permanent Portfolio performance since 1970

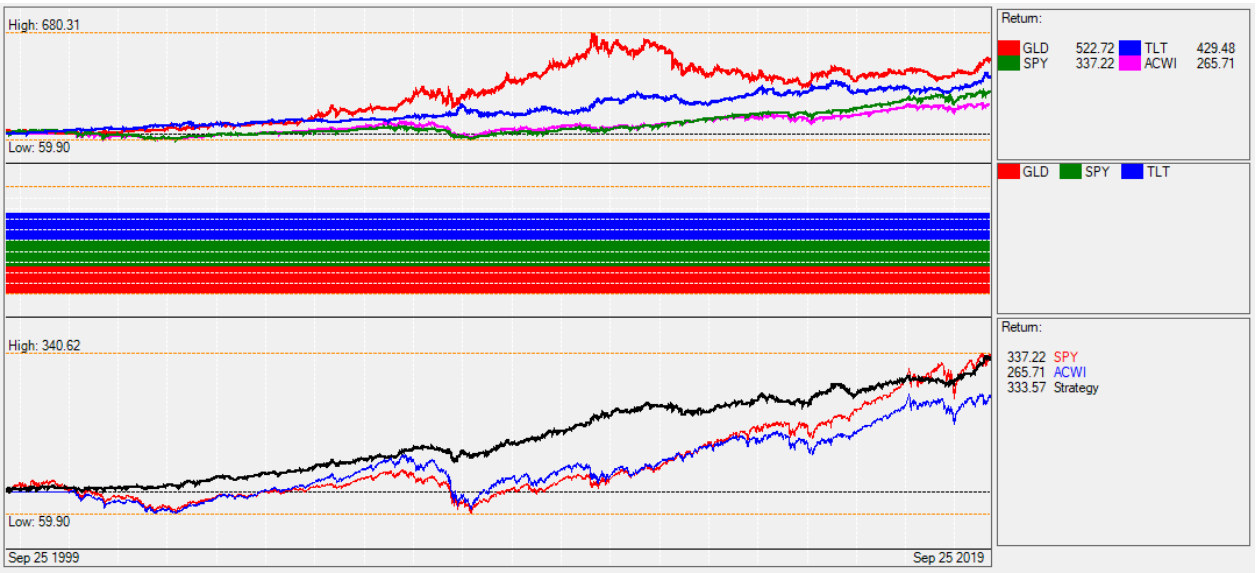


Curve		Trade		Time	
Total Return	3182%	Trade Winning %	72%	% Winning Months	66%
CAGR	8.55%	Average Trade	2.14%	Average Winning Month	1.73%
Sharpe	1.25	Average Win	4.87%	Average Losing Month	-1.27%
DVR	1.10	Average Loss	-4.93%	Best Month	10.18%
MAR	0.48	Win/Loss Ratio	0.99	Worst Month	-8.28%
Max Daily Drawdown	-17.96%	Best Trade	49.4%	% Winning Years	93%
Average Drawdown	-0.97%	Worst Trade	-25.7%	Best Year	35.00%
Avg Drawdown Length	15.36	Avg Days in Trade	63.09	Worst Year	-6.46%
Avg Trades Per Year	16	Trades	667	Positive 12 Month Periods	93%

Source: Ken French, Shiller, CRB

Below you see a QuantTrader performance chart for the last 20 years of this “fixed allocation” strategy using common ETFs.

In the upper chart, you see the single ETF charts. In the middle chart you see the allocation which is a constant 25% for each asset class as Harry Browne described it.



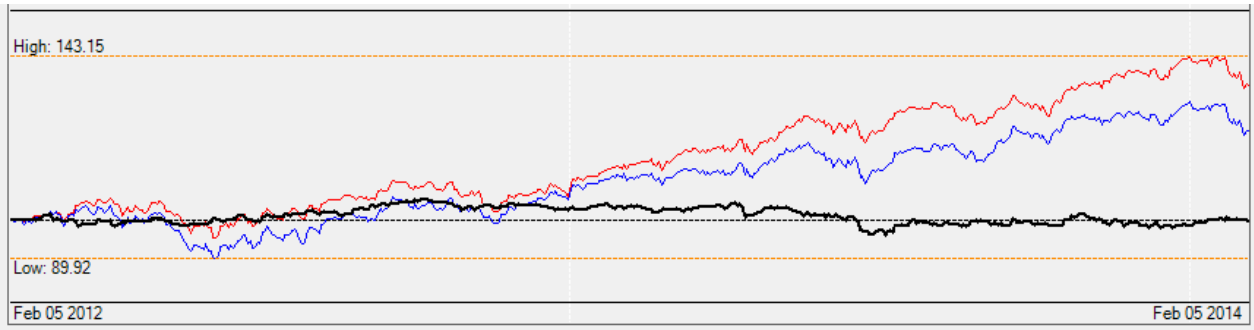
Below you see the 20-year performance of the strategy compared to the ACWI (All Company World Index)

	CAGR	Sharpe Ratio	Volatility	Draw/Start	Draw/Range
Strategy	6.217	0.944	6.588	0.00%	-15.54%
ACWI	5.364	0.290	18.520	-40.11%	-58.40%
GLD	8.633	0.491	17.575	-5.20%	-45.56%
SPY	6.275	0.329	19.058	-37.94%	-55.19%
TLT	7.570	0.586	12.909	-4.69%	-26.58%

As you can see the strategy performed much better than any equity only investment in the S&P500 or in the ACWI (All Country World Index). The main advantage of the strategy is the much-reduced drawdowns during the 2000, 2008, 2011, 2016 and the 2020 (Covid) market corrections.

Even if the outperformance of such a strategy is proven, this outperformance mostly results of the much-reduced drawdowns during the relatively short market correction periods. During the long periods of rising markets, the strategy can sometimes underperform the markets quite substantially.

An example is the 2-year period below with the S&P 500 rising 25% and the strategy being flat.

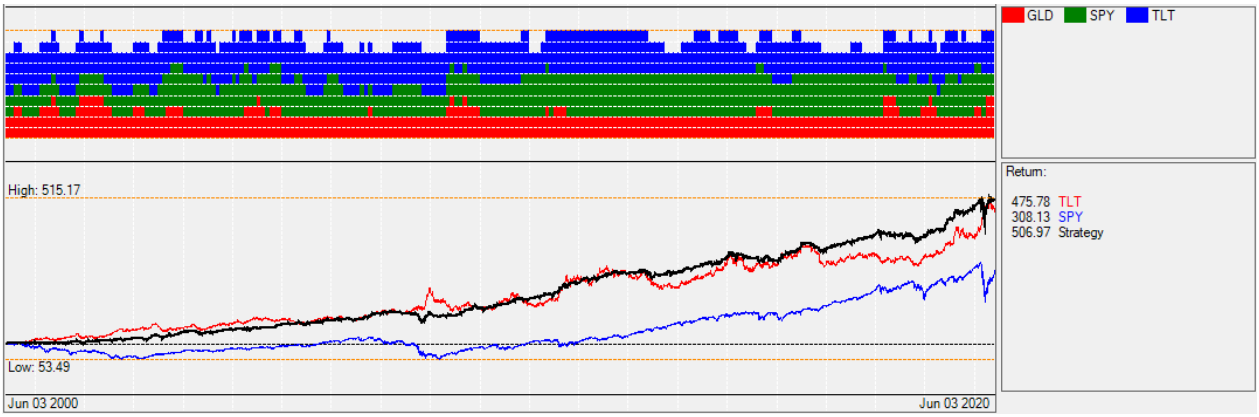


Most investors do not stand such long periods of underperformance and would quit the strategy probably just before the next market crash.

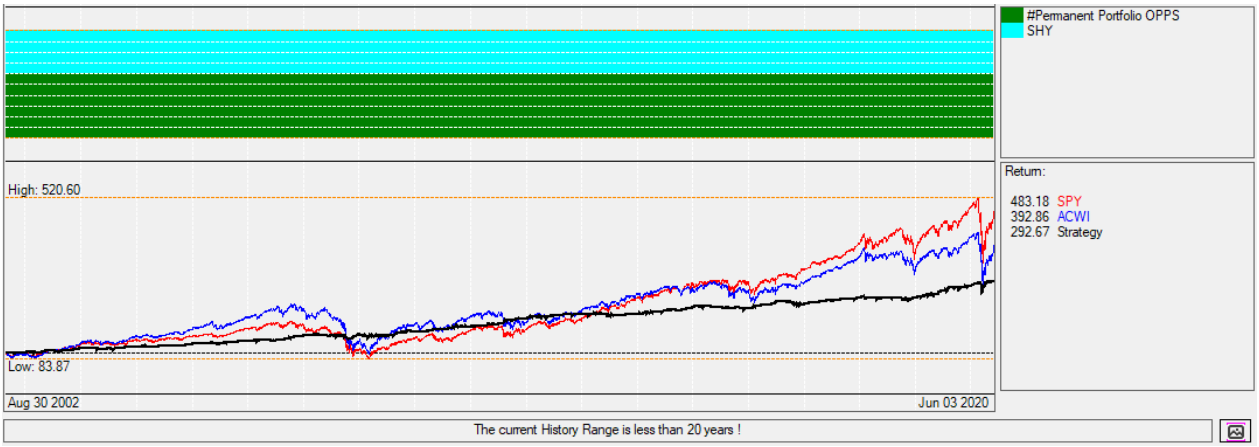
For the investor it is important that a strategy always produces a minimal “dividend like” yearly return. To add this constant return to the strategy we reduced the investments to maximum 20% for the S&P500, Gold and Treasuries and we added a 40% investment in cash like short term Treasuries and bonds like the GSY ETF. Even if GSY behaves like cash the yearly return during the last 20 years was 2.85% per year. We only add such an ETF on accounts if the broker pays a lower interest rate on cash deposits than the one, we get with such a short duration treasury ETFs.

The “Enhanced Permanent Portfolio Strategy” used as base strategy in our OPPS strategy

Instead of working with fixed allocations, our “Enhanced Permanent Portfolio Strategy” can change allocations of the S&P 500, Gold and Treasuries dynamically on a monthly basis between 20%-40%. The upper chart shows the allocations over the last 20 years.



As we have a very low volatility target of 5%, we allocate only 60% of a portfolio in the above strategy and we keep 40% invested in cash like products like the GSY or SHY ETF (short term bonds).



As you see the 20-year average return of this strategy was about 6.2% with a low volatility of 4.7%. The risk weighted return (Sharpe) is 1.3 which is about 3x higher than for a simple equity investment. Because the strategy always invests a bigger part in “safe haven” assets, the risk is low and you could still sleep well even during the 2000 and 2008 market corrections with drawdowns nearly 5-6x lower than with a pure equity investment.

Here are the 20-year performance characteristics of this strategy

	CAGR	Sharpe Ratio	Volatility	Draw/Start	Draw/Range
Strategy	6.241	1.331	4.691	-0.59%	-9.26%
#Permanent Portfolio OPPS	8.956	1.183	7.569	-1.02%	-15.62%
ACWI	8.019	0.411	19.506	-15.00%	-57.87%
GLD	9.556	0.536	17.843	-0.43%	-45.56%
GSY	2.193	0.493	4.447	-0.36%	-12.14%
SHY	2.130	1.517	1.404	-0.02%	-2.23%
SPY	9.287	0.481	19.310	-16.14%	-55.19%
TLT	7.260	0.521	13.937	-2.41%	-26.59%

At Rational-Invest.com we use this “Enhanced Permanent Portfolio Strategy” strategy as the base strategy but instead of using the GLD, TLT and SPY ETFs, we use options to replicate these tree long positions.

The main reason for this is, that we want to produce an additional “dividend like” option premium income to achieve a total strategy return of about 1% per month or about 12% per year while keeping the volatility low.

The option-based sub strategies explained

One big advantage of this strategy is, that it uses the most liquid assets worldwide. The ETFs SPY, GLD and TLT are very liquid with small spreads and very liquid options. The Futures of the same assets, ES, GC and UB are even more liquid and trade nearly 24h a day. ES and GC Futures have very liquid options.

During the Covid19 crash, we could experience what happens with less liquid ETFs. During several days, these ETFs had spreads of several percent and eliminating a position was almost impossible. Investing in such assets adds a big additional tail-risk to a strategy. Most investors are totally unaware of this risk. High liquid assets are imperative for a low risk strategy.

This is also the reason why we do not use European ETFs or assets in our strategies. It is just too big of a risk, if suddenly you sit on your positions with no possibility to close them. Also, in a globalized world with highly correlated markets, it makes not much sense trying to outperform with stock picking of potentially illiquid assets.

Option volatility

The most important parameter to consider in an option-based strategy is volatility. If you do not design your strategy with care, then sooner or later you will lose a lot of money during a volatility spike.

It is especially important that you are aware that volatility is very dangerous when writing equity (ES, SPY or SPX) options to simulate a long equity position because volatility can spike very fast during a market correction. This negative correlation will amplify your losses in case of a market crash.

Gold and Treasuries most of the time have option volatility going in the other direction. If the price spikes up, then also volatility goes up. This positive correlation between price and volatility makes writing put options to simulate a Gold and Treasury long position much less dangerous. Gold and Treasuries can lose quite a lot, but these periods of bad performance are much longer and the drops are less steep as with equity. In the past there was always enough time to reduce positions in an orderly way.

All option strategies have been backtested using OptionNET Explorer. This software allows you to replay difficult market periods with real option prices and compare the result with normal ETF position profits and losses. The main difficulty with option strategies is to keep your delta $ exposure more or less constant during a crash. One of the main outcomes for all three asset classes was, that only options with an expiry of more than 100 days expiry can be used to simulate a classic long position. This reduces your premium income (theta), but shorter expiry options result in high gamma positions which means that daily price moves will result in huge delta changes and this behavior makes it nearly impossible to keep your allocations constant. If you have to correct your delta exposure too often, then you will lose money on the long run.

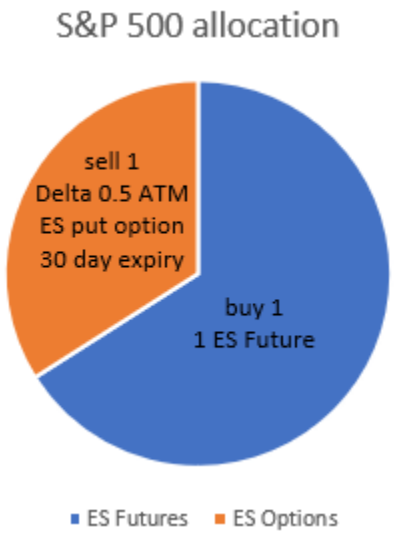
The option-based equity (S&P 500) long position

For the S&P 500 option-based strategy we normally trade Future options on the ES Future. These options have the big advantage of being traded 18h a day from Sunday 6 pm until Friday 5 pm only with a trading halt from 9:15 a.m. - 4:30 p.m. During these trading hours these options trade very liquid with a constant spread. I can easily rebalance a position here in Switzerland in the morning 6 hours before the US market opens and while most US investors are still sleeping. This fact is very important, as it lets you intervene whenever it is necessary.
One of the worst feelings I have already experienced was see European markets crashing but I had to wait another 6 hours until US markets opened to trade my ETF positions.

Here is an example of the ES chart of Monday February 24. Over the weekend there have been much news in the press about the Coronavirus, spreading from China to Italy and other countries. This was one of the rare moments I decided to reduce our equity position. I did this Monday morning at 7.30 am when I normally read the news and drink my morning coffee. The yellow circle shows the chart at this time. ES was already about 1.2% down when I reduced our ES long exposure. This was about at 1.30 am in the USA and most US investors where still sleeping. In the evening the ES future was about 4% down and continued to drop the following days. It only needed one small trade and we were on the safe side. This would be totally impossible with a diversified ETF portfolio.

The most important is to know that writing put options is risky because of the negative correlation of ETF price and volatility. It is very important that you never ever sell low delta put options only because you would get more premium like this.

To minimize the risk, we always buy one ES Future and write one put option with a delta of at least 0.5. Such a Future/Option pair is equal a to a 241'500$ long S&P 5000 position. For bigger Positions use a multiple of this. For smaller positions use MES Micro Futures or SPY ETF/Options. Here the minimum is 100 ETFs and 1 Option which is equal to about 48'000$. This way our S&P 500 equity exposure can increase a maximum of 25% if the option delta moves from 0.5 to 1 during a correction. We do this only when volatility is above 15, so that we get a decent option premium. If volatility is low, then it is better to stay with a pure ES Future long position and wait for a market correction and higher volatility. Writing put options at low volatility is not worth the risk.



As an example, for a 1'000'000$ S&P 500 investment, we would need to buy 6.2 ES Futures:

1'000'000 / 3220 (underlying price) = 310 / 50 (ES option multiplier) = 6,2

Instead of buying 6 ES futures we buy only 4 futures and we sell 4 delta 0.5 ATM ES put options.

As one future is 161'000$ 4 futures are 4 x 161'000$ = 644'000$

We also sell 4 delta 0.5 ATM ES put options with about 45 days expiry 4 x 161'000$ x 0.5 = 322'000$

Together we get a long position of 966'000$

The ATM put options with 45 days expiry will pay you a premium of more than 100$ which equals to a 3% monthly performance. This option part gives you an excellent 1.5% downside buffer on the whole position if the market goes down. Going forward I try to spread the put options between 45 and 150 days. This way you will end up with a staggered position of put options where only a few options expire. Also I roll options if they have a delta below 0.2 because these are risky positions. In case of a crash they can get 5x the actual dollar exposure. Better roll these positions back in time and to at least delta 0.5. In a fast rising bull market option premium becomes less important and I normally roll to higher 0.6 deltas and further out. The general idea is to always close or let expire nearest expiry put options and reopen long expiry put options to preserve delta $ exposure.

If the market goes up more than 3% in a month then your option profit is capped to 3% if you do not roll the option positions. If the market goes up, then your position delta$ will decrease to the value of the ES future position which is slightly higher as the initial 644'000$. If the market goes down, then your position can increase to a maximum value of about 1'288'000$ which is an increase of 322'000$. If the market goes down and volatility goes up, then it makes sense to roll out the put option to capture more volatility premium. As you get more premium for further out options you will be able to roll out at no cost most of the time. Due to the excellent liquidity of the ES Futures it is always very simple to readjust the investment by selling one Future. I even always have some "stop" orders in the system to sell ES Futures all 50 points the S&P500 goes down. I even do it without limits because the ES future is so liquid that you can in fact always execute market orders. Even during the Covid crash, ES Futures traded with the normal low spread.

Here is an example of two different trades during a 15% S&P 500 crash:

Trade 1 (the proposed 1ES Future + 1ATM Put) on February 19. 2020

Buy 4 ES futures and sell 4 ES delta 0.5 put options with an expiry of 31 days and delta $ exposure of 948'080$ (ES is at 3386)

Result on February 28. after the S&P 500 drops 508 points

The option premium of about 4% reduces the total loss by 2%. The **loss = -176'000$** with a delta $ exposure of 1'151'000 (ES is at 2878). The option is now at delta 1 which means that the put option behaves like an ES future and volatility has no effect on the price anymore.

Trade 2 (the dangerous low delta trade you should not do) on February 19. 2020

You want to collect more premium and decide to sell delta 0.2 put options which are about 5% OTM (out of the money).

Sell 28 ES delta 0.2 put options with an expiry of 58 days and delta $ exposure of 931'150$ (ES is at 3386)

Result on February 28. After the S&P 500 drops 508 points

The option price increased from 25$ to 351$ which is a 326$ increase. The **loss = -456'400$** with a delta $ exposure of 3'369'114 (ES is at 2878) and option delta is at 0.8

You see that after a 15% S&P 500 drop, your exposure is not 1 million anymore but 3.5 million and you lost 49% which is nearly half of your initial long position value. If the market goes further down, the trade 2 will produce 3x the losses of trade 1 because of the 3x higher exposure.

With the proposed delta 0.5 trade you lost 18% which is slightly (3%) more than you would have lost with a straight equity investment, but going forward you will profit from much higher premium income due to the higher volatility. If you would adjust the exposure during the crash by selling some Futures, then you would come very close to the drawdown of a pure Future long position.

The main problem with these low delta positions with shorter expiry is, that you go down with the market with a high exposure and finally if the market rebounds up again, your delta will become quickly smaller and you go up with a small exposure.

I sometimes also sell some delta 0.5 call options if the market is near all time high and there is no risk of big upside jumps. This is then a sort of a safe covered call trade which allows you to reduce your exposure and increase premium income.

If the market goes up fast, then the delta of your puts will decrease. If your premium profit is more than 75%, then it makes sense to roll the put into a new ATM/30 day short put position. It is important to check that you get a good roll price somewhere between “mid” and “ask” price. There is no need for immediate execution, you better wait some hours to get a good price.

Instead of ES Future options you may also trade SPX or SPY options. If you trade SPY options you need to be aware of the limited trading hours which increases your tail risk.

The option-based long Gold position

Contrary to equity, most of the times gold volatility spikes up if the gold price rises. Gold is heavily traded by chartists and if some chart patterns signal an outbreak, or some critical price levels are crossed, then gold volatility can spike up a lot because bullish traders buy call options at any price to leverage their gold trades.

For us, this is an advantage, as it means that we can write also options with a lower delta than 0.5 without a big downside risk. Gold normally goes down quite slowly, so that there is always enough time to readjust your Gold allocation. We normally write delta 0.3 to 0.4 GC Future options with the longest available expiry which trade at an acceptable spread. Normally this is about 150 days out.

You get about 30-50$ of premium for a 150-day delta 0.3 put option. This way you will be able to collect an additional 10% of premium generated profit per year with you option based gold position.

Due to these upside volatility spikes, I would never sell low delta call options. These call options can explode in price if gold breaks out of a chart pattern and they are of a similar risk as low delta equity put options.

The good thing with the positively correlated volatility is, that during a big up-move, the gold volatility increases and sometimes you can write the same put options at the same price as before the up-move. This is the perfect scenario to sell some more delta 0.3-0.4 put options to increase and readjust the exposure. On the other hand, if the gold price goes down, this normally goes hand in hand with decreasing volatilities which dampens your losses. In general option gains and losses are dampened by this positively correlated volatility.

A disadvantage is, that sometimes the volatility increase is so strong, that even after a big price increase, it is possible that you even experience a small loss on your long gold position. This however is not really a problem as higher volatility results in more premium income and you will get your profits in any case just with some small delay.

If you are more of a cautious investor, then best is to write higher delta 0.5 to 0.6 put options. This way you reduce Gamma and Vega and still get a good premium. Delta 0.5 ATM options are also the most liquid options with the smallest spreads.

Delta $ adjustments and rolling short Gold put option scenarios:

The general idea is to always close nearest expiry put options in falling markets and reopen long expiry put options if TLT prices go up again. This is in fact a sort of continuous option rolling procedure.

Gold goes down at low volatility: Close nearest expiry put options with highest delta to reestablish your original delta $ exposure

Gold goes down at high volatility: Close nearest expiry put options and sell delta 0.5 call options with about the same premium. This way you keep your premium until volatility comes down again.

Gold goes up fast at high volatility: Sell continuously 150-300 day delta 0.4-0.5 put options to reestablish your original delta $ exposure.

Gold goes up at normal volatility: Sell continuously 150-300 day delta 0.3 put options to reestablish your original delta $ exposure.

The option-based long Treasury position

We are using options on the TLT (20+ year treasury bonds) ETF to build our position. There is the UB (Ultra Bond) Future but it has no liquid options. The ZB Future has more options but only with too short expiries. The only Treasury options which are traded with enough liquidity and small spreads are TLT options. Here we also sell delta 0.3-0.4 put options of at least 150-300 days. TLT has so called LEAP options (Long-term Equity Anticipation) which can be used to build an equity like long Treasury position. These options are the January options and you get these with up to 2 years expiry. They are normally the most liquid options with long expiry. Volatility spikes are like for gold mostly positively correlated with TLT price spikes but normally these volatility spikes are less frequent as with gold because TLT options are not so heavily traded by technical chartist traders.

Like for gold we readjust within a 20% range and try to minimize trades.

If TLT volatility (symbol VXTLT) is lower than about 12, then it is better to just invest directly in UB Futures or TLT ETFs. You can perhaps add a small 20-30% part of TLT ATM delta 0.5 options with 45 days expiry like we do this for the S&P allocation. Such an allocation will return better profits if the equity market collapses and Treasury prices and volatility spike. If the market crashes, then TLT volatility can spike considerably which can even result on a temporary loss on your TLT option position with longer expiries. On March 20. 2020 VXTLT spiked to 46 which is a record.

Using delta 0.3put options you will add about 5% of premium per year.

Delta $ adjustments and rolling short TLT put option scenarios:

The general idea is to always close nearest expiry put options in falling markets and reopen long expiry put options if TLT prices go up again. This is in fact a sort of continuous option rolling procedure.

TLT goes down at low volatility: Close nearest expiry put options with highest delta to reestablish your original delta $ exposure

TLT goes down at high volatility: Close nearest expiry put options and sell delta 0.5 call options with about the same premium. This way you keep your premium until volatility comes down again.

TLT goes up fast at high volatility: Sell continuously 150-300 day delta 0.4-0.5 put options to reestablish your original delta $ exposure.

TLT goes up at normal volatility: Sell continuously 150-300 day delta 0.3 put options to reestablish your original delta $ exposure.

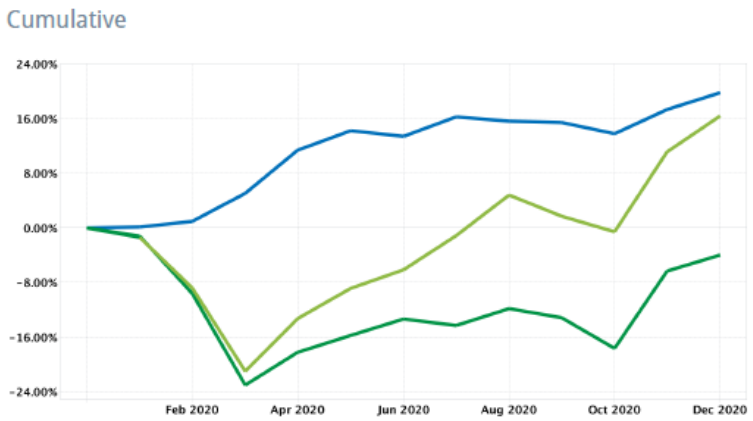
Conclusion

Using short positions of options with a long expiry equity to build our Permanent Portfolio positions, we can add between 5%-10% of premium income to the underlying strategy which itself had an average profit of 6.2% over the last 20 years. This means that we can achieve about a 12% annual profit even after all expenses while keeping our volatility in the low 5-7% range. The premium income is a very constant “dividend” like income and at the moment with increased volatilities a 1’000’000$ account collects about 400-500$ of option premium per day, which is nearly 1.5% per month.

The only disadvantage of such a strategy is that it needs to be actively managed due to the fact, that the allocations need to be adjusted if option deltas change too much. This is only something investors with a good know-how about option trading should consider doing by their own. Rational-Invest offers the service to do this for European clients by managing Interactive Broker accounts as Rational-Invest OOPS strategy subaccounts.

Here is the 2020 performance of our Rational-Invest reference account. The performance of the strategy was 21.59%. The net performance was 19.74% after all trading fees, our management fee of 0.75% and 1.1 negative interest rate because it is a Euro account.

Interactive Brokers monthly performance chart of 2020



Blue: OPPS strategy - Light green: ACWI (All Country World Index) - Dark Green: Euro Stoxx 600

Even more important than this excellent performance was the exceptionally low volatility or risk of the strategy during this very volatile year. Below you can see the Interactive Brokers Risk Analysis which shows a downside deviation (or downside risk) of only 0.48% which is about 10x lower than the downside risk of the two benchmarks (ACWI and DJ600).

The reason for this low downside risk was the fact that the strategy invests a bigger part in so called “safe haven” assets (Treasuries and Gold) and only about 1/3rd of the portfolio is invested in “riskier” equity.

Risk Measures Benchmark Comparison

Risk Analysis

	ACWI	DJ600	permanent portfolio
Ending VAMI	1,163.33	959.58	1,197.37
Max Drawdown	21.05%	23.03%	2.07%
Peak-To-Valley	Start - Mar 20	Start - Mar 20	Jul 20 - Oct 20
Recovery	5 Months	Ongoing	1 Month
Sharpe Ratio	0.75	-0.05	2.48
Sortino Ratio	1.14	-0.07	10.92
Standard Deviation	6.96%	6.97%	2.13%
Downside Deviation	4.58%	5.20%	0.48%
Correlation	0.23	0.16	-
β:	0.07	0.05	-
α:	0.17	0.18	-
Tracking Error	6.79%	6.96%	-
Information Ratio	0.50	3.42	-
Turnover	-	-	192.57%
Mean Return	1.51%	-0.10%	1.53%
Positive Periods	7 (58.33%)	6 (50.00%)	8 (66.67%)
Negative Periods	5 (41.67%)	6 (50.00%)	4 (33.33%)

Frank Grossmann, Rational-Invest AG

Zurich, 19.01.2021