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## EQUITY TRADING TECHNIQUES

# Collaring portfolio protection

BY PHIL GOCKE

Since the introduction of options on PowerShares QQQ exchange-traded funds, we have faced a variety of market conditions. In nearly all cases, an option strategy overlay produced higher returns with lower risk. Here's how it works.

The credit crisis has rekindled interest in collars and protective strategies in general, and for good reason. In 2008-09, the PowerShares QQQ exchange-traded fund (ETF) experienced a drawdown of roughly 50% from peak to trough. Even diversification, which many rely on to be a strong guard against portfolio-wide losses, didn't protect as expected.

Many asset classes that are generally considered effective equity diversifiers also faced significant losses. Correlations of most asset classes with broad equity indexes tended to be significantly higher in 2007 and 2008 than in previous years, negating much of the expected benefits of diversification. This type of contagion across asset classes suggests that in times of major systemic stress, direct hedges through protective options strategies provide equity portfolios with more benefits than standard diversification programs.

**Standard deviations****Calculated spreads****Pricing models**

A new study has found that a long protective collar strategy using six-month put purchases and consecutive one-month call writes earned far superior returns compared to a simple buy-and-hold strategy, while reducing risk by almost 65%. The study ("Loosening Your Collar: Alternative Implementations of QQQ Collars") was

conducted by Edward Szado and Thomas Schneeweis at the Isenberg School of Management's Center for International Securities and Derivatives Markets at the University of Massachusetts.

Szado and Schneeweis evaluated more than 10 years of data on the PowerShares QQQ exchange-traded fund (Ticker: QQQQ) and its associated options. They also extended the analysis to a more active implementation of the strategy. While the passive collar used a constant set of fixed rules, the active collar used rules that adapt the collar to changing macroeconomic variables and market conditions. The active collar implementation generated higher returns than the passive implementation, while volatility was only slightly higher. Over the 122-month study period, the passive collar returned almost 150%, while the QQQ lost one-third of its value. The active collar outperformed both strategies and returned more than 200% (see "Active or passive," right).

**Knowing all options**

A variety of options strategies provide capital protection for equity-based portfolios. The most obvious choice is the use of protective puts. However, protective puts tend to be relatively expensive, especially in periods of high volatility.

Another options-based approach is the buy-write or covered call strategy. The covered call strategy entails the writing of call options against a long underlying



Go to [futuresmag.com](http://futuresmag.com) to see the in depth collar study.

position, typically at a one-to-one ratio. Several empirical studies have suggested that covered call writing can enhance returns as well as mitigate losses from market downturns. However, covered call writing still leaves an investor exposed to large down moves.

The collar strategy essentially adds a long protective put to a covered call strategy. This addition provides significant downside protection, which the covered call lacks. The purchase of the long put is financed by the sale of the call. In essence, the collar trades upside participation for downside protection. A tight collar provides less upside participation and more downside protection than a loose collar. At one extreme, the tightest collar using at-the-money (ATM) puts and calls effectively immunizes the portfolio from market movements. At the other extreme, a loose collar uses far out-of-the-money (OTM) puts and calls. Between these far OTM strike prices, the collar is essentially equivalent to a long underlying position.

The research assessed the effectiveness of the passive and active variations of the collar strategy from March 1999 to May 2009. The analysis considered a number of implementations of long collar strategies with varied moneyness of the puts and calls, as well as times to expiration. In addition, the collars' performances were

analyzed with the time period segmented into three sub-periods. These sub-periods feature different market environments reflecting conditions generally favorable and unfavorable to a collar strategy.

The protective collars significantly outperformed the QQQ in the overall period, as well as in the periods covering the technology bubble and the credit crisis. While the collar variations underperformed the QQQ in the interim period between 2003 and 2007, in all of the implementations in all time periods, both collars significantly reduced risk compared to the buy-and-hold strategy. The study further indicated that the collar variations using six-month put purchases outperformed the one-month and three-month put strategies in almost all measures. The slower time decay of the longer maturity six-month puts was a significant benefit to this collar implementation.

Rolling standard deviations clearly showed the risk-reduction benefits of the collar strategy ("Rolling your risk," page 32). The collar strategies exhibited lower standard deviations throughout the entire period, with the differences ranging from five to 45 percentage points. It is also worth noting that the risk-reduction benefits of the active collar strategy over the passive collar tended to be relatively subtle, particularly when compared to the difference between the collars and the QQQ.

### Passive collar

The passive strategy using the 2% OTM six-month put and 2% OTM one-month call generally exhibited the best performance and represented a middle ground between ATM and far OTM. This strategy uses fixed rules and does not allow for flexibility in different market conditions.

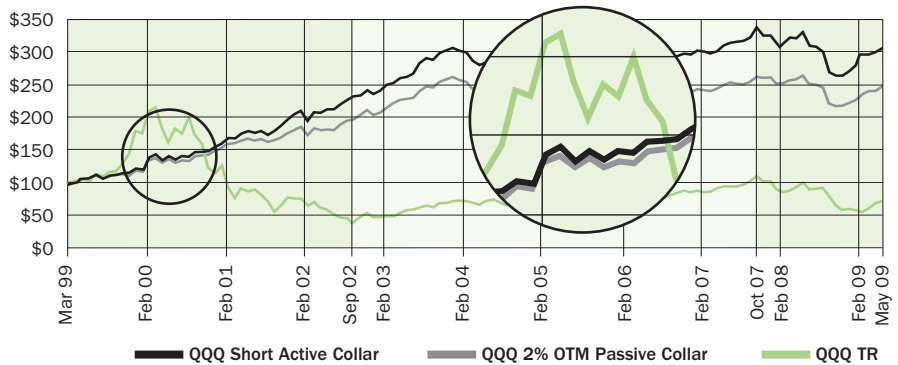
During the April 1999 to September 2002 period, the QQQ was extremely volatile and lost more than three-quarters of its value from peak to trough. Specifically, the QQQ had an annualized loss of 23.3% with a staggering 42% volatility. In contrast, the passive collar strategy generated an annualized positive return of 21% at a volatility of only 13.7%.

The collar was able to turn a sizeable loss into a significant gain while at the same time reducing risk by more than two-

## ACTIVE OR PASSIVE

This table shows the dependent variables that are produced by the shown input values combined with each accompanying value of the Factor 5 input.

**Growth of \$100 (QQQ, Passive and Active Collar) March 1999 to May 2009**



**Results of QQQ (Passive and Active Collar Strategies) April 1999 to May 2009\***

Monthly Data: April 1999 to May 2009	QQQQ TR	QQQQ TR Passive Collar	QQQQ TR Active Collar
Annualized Return	-3.57%	9.26%	11.55%
Annualized Standard Deviation	30.40%	10.98%	11.44%
Sharpe Ratio	-0.22%	0.56	0.74
Maximum Drawdown	-81.08%	-17.90%	-21.73%
Correlation with QQQ	1.00	0.37	0.39
Min Monthly Return	-26.20%	-9.95%	-10.38%
Max Monthly Return	23.48%	15.06%	15.41%
Number of Months	122	122	122
% Up Months	52%	65%	66%
% Down Months	48%	35%	34%

\*QQQQ TR FUND ONLY – No Options; QQQQ TR PASSIVE COLLAR – 2% OTM 1 Mo Call & 2% OTM 6 Mo Put; QQQQ TR Short ACTIVE COLLAR – 1 Mo Call & 6 Mo Put

Source: Options Industry Council

thirds. The capital protection ability of the collar strategy truly shines in this case. The collar could have earned investors a very impressive 21.2% per year over the sub-period with a maximum loss of capital of 7.5%, regardless of how poorly investors timed their entry into the strategy. The collar was an effective way of capturing a significant return from the bubble run-up without facing the tremendous losses that came with the collapse.

In the period between October 2002 and September 2007, steady positive returns, low volatility and few sharp down moves of the index explain why the collar strategy was expected to perform relatively poorly. The annualized return of the QQQ over this period was an impressive 20.4% at a relatively mod-

erate volatility of 17.5%. The collar only provided a 5.2% annualized return over this period. It did, however, do so at a far lower volatility. Nevertheless, this under-performance was not nearly as significant as the QQQ's under-performance in the earlier period.

While most asset classes became more correlated and collapsed during the credit crisis period from October 2007 to May 2009, the collar again provided significant capital protection. The annualized loss of 19.8% in the QQQ was reduced to a loss of only 1.4%, while the standard deviation was cut from 29.2% to 11.6%. Again, the strategy provided capital protection where the implementation was not a cost but rather additive to the returns of the underlying position.

# Crude in deep contango — will it change?

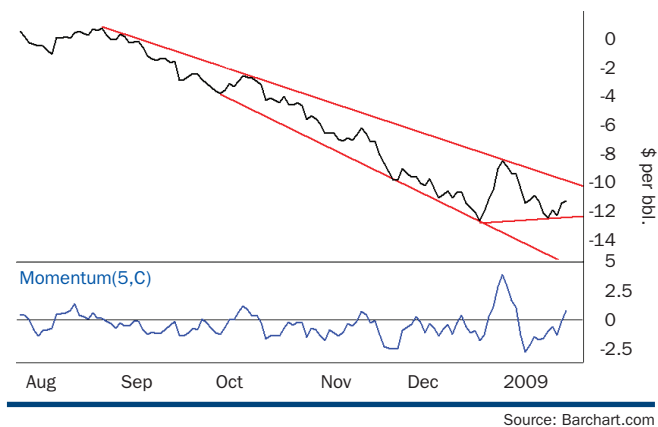
BY DOMINICK A. CHIRICHELLA

As crude oil rallied to unprecedented levels, experts set a moving new floor for crude. First it was \$40, then \$50, then \$60 and eventually \$80. Once the correction in crude turned violent, the price curve seemed to indicate that the sell-off was overdone and a deep contango formed along the price curve.

Currently the entire oil complex is in a strong contango and as such storing oil is a very economical trade. Estimates indicate that about 25 ships have been chartered by various players solely for storing oil (about 50 million barrels) while inventories in Cushing, Okla. (the delivery location for the Nymex WTI contract) have been surging, with total storage capacity in Cushing at the highest level in years. With most every investment yielding next to nothing, the oil market is providing a tremendous return for storing oil for those who have the working capital and access to storage facilities. Oil inventories are still in a building pattern because of very favorable economics to buy and hold oil in storage.

## OPPORTUNITY KNOCKING?

April 2009 – March 2010 WTI crude



For those not in a position to enter this trade on a physical basis, there is still an opportunity to approach the trade using the Nymex WTI contract, as the conditions that have driven the market into a deep contango are changing. These changing conditions will affect the shape of the forward curve and thus provide a trading opportunity. Here are the key conditions that are changing:

- OPEC has committed to cut production significantly. They will be cutting over four million barrels per day out of the supply chain by Jan. 1, 2009 as compared to September 2008. The overhang of oil (resulting in the contango) will begin to subside and inventories will move into a destocking pattern.
- The demand/decline pattern for oil may be approaching a bottom as countries around the world kick-off massive

infrastructure projects to jump start the global economy.



See the in depth collar study at [futuresmag.com](http://futuresmag.com)

Most of this stimulus is not only labor intensive but also energy intensive.

- With energy prices at four-year lows in the United States, the consumer may be starting to revert to some of their old driving habits. Over the last month or so, gasoline demand (as estimated by the EIA) is relatively steady.
- Geopolitical tensions are rising in the Middle East once again as the Israeli/Hamas conflict broadens. If this situation continues to deteriorate, it could lead to supply disruptions from the world's largest supply area for crude oil.

The above suggests the oil supply will not only be moving more in line with demand, it most likely will overshoot the balance with near-term supply likely dropping to levels below near-term demand. The result will be a pull from inventories to meet ongoing supply needs and thus the setting for the forward curve to begin to change shape from a deep contango to possibly a backwardation, especially if OPEC's resolve to keep production low remains strong. To take advantage of the changing conditions, we suggest looking at the April 2009/March 2010 Nymex WTI spread. We chose the April/March spread to give the trade time to evolve. The April Nymex contract does not expire until March 20, or well after the OPEC cuts will have had time to affect inventories (see "Opportunity knocking?").

In addition to the aforementioned fundamental reasons we believe will impact this spread, "Opportunity knocking" shows the contango seems to be subsiding and may be in the early stages of a turnaround. The five-period momentum indicator shown on the lower portion of the chart also seems poised for a breakout and may be an early warning signal for a change in direction of the spread. We suggest buying the spread (buy Apr. '09/sell Mar. '10) in anticipation of the forward curve flattening and possibly moving into backwardation. We strongly suggest anyone entering this trade carefully follow the progress of OPEC to make certain they are abiding by their announced cuts as well as the weekly EIA inventory data released every Wednesday at 10:30 a.m. EST.

While there is some fundamental evidence that the market could return to backwardation, it would be prudent to take profits on this trade well before that occurs. The correction that occurred in the first part of December involved a \$4 move in the spread.

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