How to Trade Commodities Profitably

The 4-Week Rule According to Donchian

Richard Donchian is considered to be the founder of both trend-following trading and the hedge fund industry. As early as 1934, he published a series of Trading Guidelines, which to this day constitute an integral part of any solid training completed by traders. He achieved fame primarily on account of the Turtle traders who used his "4-week breakout rule" as a basis for their successful trading strategy in the 1970s and 1980s. This article will show that Donchian's approach still enables traders to make good money today.

» Richard Davoud Donchian was born in 1905 and graduated from Yale University in 1928 with a degree in economics. After reading Jesse Livermore's book "Reminiscences of a Stock Operator", he shifted his focus of interest to financial markets. Due to high losses during the 1929 stock-market crash, he subsequently began to take a close look at technical analysis. He had come to the realisation that that was the only way you could generate consistent profits in the markets. In 1934, this led to the publication of 20 Trading Guidelines which to this day are still followed (or should be) intuitively by most traders, such as: "Limit your losses and let your profits run."

In 1948, Donchian founded "Futures, Inc", the first publicly accessible commodity futures fund. This fund was based on two important principles: Diversification into non-correlated assets and position management according to a trend-following principle that came to be known worldwide by the term "4-Week Rule". Note that until the seventies of the 20th century, the focus of futures trading at US markets had been on grain and foodstuffs, which had a significant impact on the portfolio structure in the Donchian fund.

Rudolf Wittmer

Rudolf Wittmer, who has a university degree in engineering, has been active as a fund manager and hedge-fund consultant in recent years and is a passionate trader who turned his hobby into a career more than 20 years ago. By constantly refining his trading models, he has made a name for himself as a systems trading specialist in Germany.

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The 4-Week Rule

The 4- week rule was henceforth used as a base rule for many trend-following funds. The most striking thing about it was its simplicity:

- Enter a long position and close out shorts if current price exceeds the highest price of the past four weeks.
- Enter a short position and close out longs if current price falls below the low of the past four weeks.

Surely, things could hardly be any simpler than that. Buy when the future reaches a new 4-week high, and sell when it falls to a new 4-week low. Donchian has always emphasised that one should focus on long positions since their profit potential was significantly higher than that of short positions. In Figure 1, we have illustrated the principle of the 4-week rule.

F1) 4-Week Rule in Silver Futures

On 20th August, a new four-week high was reached and a long position was initiated. On 15th October, prices fell to a new four-week low, which is why the long position was closed out and a short position was opened.

Source: TradeStation

Selection of Assets

Donchian has repeatedly stressed the benefits of good diversification. So for our small test portfolio we have selected one asset each from the five different segments – currencies, metals, energy, grain, and softs. We can see from the correlation matrix in Table 1 that, overall, it is fair to say that there is very little correlation between the euro, silver, crude oil, soybeans, and cotton.

The Rules in Detail

We use a stop order to enter the market on the 20-day high. The exit is made either via a new signal in the opposite direction or an "approaching" trailing stop. For a long position, the trailing stop will start at the low of the last 80 days and be reduced by two units every day, that is, on the second trading day the stop will be placed at the 78-day low (80 minus 2), on the third day at the 76-day low, and so on. At the least, the stop remains at the low of the previous six days.

Starting Capital and Number of Contracts

Since we apply the rule to a portfolio of contracts of various sizes, we have to choose an appropriate number of contracts to make sure that each position is weighted about the same. For this purpose, we have assumed a starting capital of one million dollars for each position. We are willing to take a two per cent risk of loss for each position, which amounts to $20,000. We then divide this sum by three times the Average True Range (ATR) of the past 50 days, which will guarantee that using this rule carries the same risk for each market.

As an example, Soybeans are quoted at eleven dollars a bushel. The position corresponds to a contract value of $55,000 since one contract is 5000 bushels. The ATR of the past 50 days is 25 points, which amounts to a value of $1250. This amount is multiplied by three, resulting in $3750. We then take our maximum risk capital of $20,000 and divide it by $3750, resulting in 5.33 contracts. We decide to round that figure down, which enables us to place a position of five contracts in the market.

A note on the starting capital of one million dollars: This amount was chosen for a futures portfolio where the drawdown of 20 per cent should not be exceeded. For more aggressive traders, the starting capital may well be decreased to about $300,000.

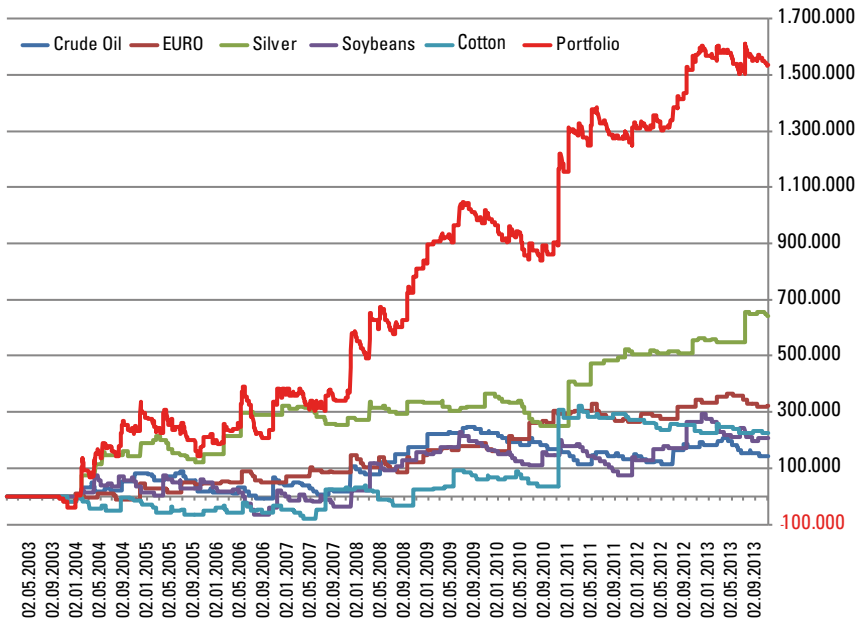
However, it is also possible to implement this strategy even for smaller account sizes of less than $10,000. In

T1) Correlations

	EU	SI	CL	S	CT
EU		-33	51	30	-35
SI	-33		-45	0	17
CL	51	-45		47	4
S	30	0	47		-17
CT	-35	17	4	-17	

Correlations in percentage terms for a period of 180 days between five selected assets (EU = Euro, SI = Silver, CL = crude oil, S = soybeans, CT = cotton). No correlation significantly exceeds the value of ± 50%.

F2) Result for Five Selected Assets and the Portfolio



The graphic shows the trading result for the five selected assets and for the entire portfolio (thicker red curve). By itself, none of the individual markets looks outstanding. The market for silver (green line) is the only one to have considerably risen in the past ten years. Due to the low correlations between the individual markets, however, the development of the overall portfolio looks very good.

Source: Author's own calculations

such cases, Contracts for Difference (CFDs) should be chosen as trading instruments instead of futures.

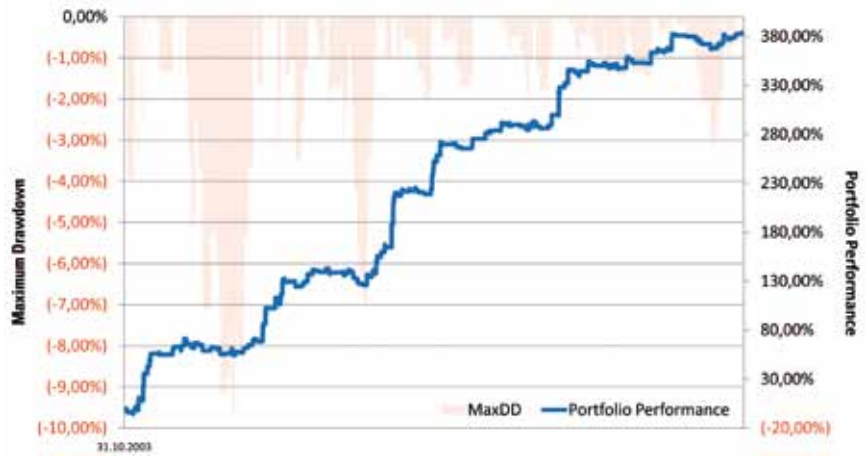
First Few Test Results

The results for our five selected markets can be seen in Figure 2. The first thing that is noticeable is that all the markets boast a positive result over the test period from 2003 to October 2013. Considering that such a trading rule is already 80 years old and a very simple one, this was something that couldn't necessarily be expected.

The test results did not include any commission or slippage. Since each market has comprised a total of about 100 trades in the past decade and the average profit per trade is between 2000 and 7000 dollars, this would not alter anything as far as the quality of that statement is concerned. With a starting capital of one million dollars, the portfolio generates a profit of approximately $1.5 million. This represents an annual return of almost ten per cent. (Note: It is the "same million" in every market, which means that an extra million does not have to be kept for each market because for each individual position only that margin is needed which amounts to about four per cent of the total capital.)

Furthermore, we can clearly see that the curve of the overall portfolio is growing steadily and without any major setbacks although the performance of the individual market does not exactly appear to be outstanding. Here, the diversification into weakly correlated markets really comes to fruition.

F3) Result and Drawdowns of a 12-Asset Portfolio



Trading result for the portfolio consisting of twelve selected assets. The development of the maximum drawdown is highlighted in pale red for the entire portfolio.

Source: Author's own calculations

Extension

Encouraged by the surprisingly good results, we have extended our portfolio to include gold, platinum, copper, wheat, soybean meal, soybean oil, and sugar. At the same time, the most important parameter of the rule was changed: the number of days that the breakout relates to. It has been shown here that when values are increased to between 100 and 200 days, the profitability of the trading approach was able to be improved significantly – while simultaneously reducing trading frequency to about two to three trades per year and market. We left the starting capital

of one million dollars unchanged although seven more markets are being traded now. This was made possible by the very low correlations that continue to exist.

Applied to an individual market, the strategy does not show top results. In fact, the secret of success is in the correct selection of the portfolio. As a result, it can be said that the expansion of the portfolio from five to twelve markets causes the maximum drawdown to be reduced significantly from about 14 to less than ten per cent and the return, at the same time, to be increased from ten per cent per annum to about 17 per cent. It is quite possible for more risk-loving traders to reduce their starting capital to about one third and achieve a return in the higher double-digit percentage range.

Strategy Snapshot

Strategy name:	Donchian 4-Week Rule
Strategy type:	Trend-following
Time horizon:	Daily chart
Setup:	Purchase (sale) of the X-day high (low)
Exit:	Signal in the opposite direction or trailing stop
Trailing stop:	Starting at X-day low for long positions and X-day high for short ones; X is placed at 80 on the day after the opening of the position and subsequently reduced by 2 every day. The minimum for X is 6, i.e. after 37 days, the stop will remain at the low of the last 6 days
Risk- and money management:	2% risk per trade

Conclusion

Donchian's "4-Week Rule" is often considered only in terms of the technical rule. However, an essential factor accounting for the success of Donchian was the principle of diversification. As our example shows, this will also work very well if you create a portfolio which includes weakly correlated assets. While in situations of global stress, for example, the historical rules of correlation may be overridden, possibly causing severe temporary losses, Donchian's rule will generally work well if you create a portfolio on the basis of the aspect of correlation. A portfolio consisting only of equity indices or exclusively of stocks will never produce such a steady equity curve as our mixed commodity portfolio does since global stock markets correlate too much over a long period of time. «

Preview of the next Issue

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PEOPLE

Norbert Lohrke

Norbert Lohrke is an expert with 30 years' experience in auditing, consulting and fundamental analysis as well as a sought-after speaker. Through his stock selection service Globalyze he offers his research to long-term investors; however, even shorter-term traders might profit from his views and expand their own horizon.

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