Wide Range Day –

A System for Many Markets

If today's daily range is more than yesterday's, it is a clear signal to traders that it could become a Wide Range Day (WRD) – days on which it is easiest to earn money in the markets.

The Concept

The high to low range of a WRD is clearly wider than the average trading range. These days are marked by very active trading, the triggering of many important stops that therefore lead to an increased volume. Chances also increase that a strong trend will emerge from a WRD with prices ultimately consolidating at new levels. There are trading systems that try to capture this effect by adding or subtracting a certain amount from the daily and then open using these levels as entries and exits. The entry/exit levels are usually defined as a certain percentage of the average market range. Tony Crabel's Opening-Range-Breakout System is a popular example.

The trading system introduced in this article measures the high-low movement of prices as the trading day progresses, providing a successful entry technique for a wide variety of markets. Its aim is to hold positions until the end of the day utilising as much of the daily trend as possible.

A Wide Range Day is easy to identify after it has happened. For our system, a WRD simply means today's range must be greater than the previous day's range. This simplifies programming because it is easier to calculate the previous day's range as opposed to having to use Average True Range.

A Wide Range Day chart study can be drawn on daily charts using the following code:

WRD chart study for TradeStation:

If (high-low) > (high[1]-low[1]) then PlotPaintBar(High, Low, Open, Close)

WRD chart study for TradeSignal:

If (high-low) > (high[1]-low[1]) then drawcandlestick(o,h,l,c)

In Figure 1, WRDs are displayed as candlesticks in a chart of the DAX Future. Not all of the WRDs closed on their extremes, but these comparatively short candles are contrasted by the long WRDs in the middle of May.

Entry

The system attempts to utilise the tendency of an extreme closing price by opening a position on a potential WRD as it unfolds in the direction of the dominant trend and holding it through the session's close. It is a purely intraday system and does not trade overnight.

The tendency of prices to close at the extremes of a WRD can be observed in many different securities. So by all means, test the system in a wide variety of markets. By coupling a money management approach suited for each individual market, you can create a diversified system portfolio based on just one trading concept.

F1) Wide Range Days in the DAX Future

The daily chart shows WRDs as candlesticks which demonstrate a wider range than the previous day. These days often close near their extremes, thus offering an ideal time point for exiting trades.

Source: Tradesignal

The essence of the system is recognising a potential WRD. The same rules used for displaying WRDs on a chart are used for the system as well; when the current day's range stretches beyond the range of the previous day, a Wide Range Day is confirmed.

On a daily chart you cannot tell exactly when the range of the current bar becomes bigger than the previous day's range. However, on an intraday chart you can calculate it on every bar and display it accordingly.

A 15- to 30-minute chart is best-suited for this purpose. Shorter time scales increase the number of data points without displaying market action more accurately. If on the other hand you choose a wider time scale, for example an hourly chart, you cannot set stops as tightly or precisely as needed, which can also cause misleading test results.

The system adds the previous day's high-low range to the present day's lowest low resulting in a price level that signals the existence of a bullish WRD when broken through to the upside (= today's high-low range is greater than yesterday's). Similarly, the system subtracts the previous day's range from the current day's highest high resulting in the price level for a short trade entry. As soon as a breakout occurs through one of the levels, the range of the current day is confirmed as greater than the previous day's, thus indicating the presence of a WRD.

Figure 2 details the process. The previous day's high-low range is added to the current day's low and re-calculated when a lower low is registered. The green line is the result. If prices breakout though this line, a buy signal is generated. The reverse applies to the short side.

Every time prices break through one of the two lines an entry signal is received. In order to prevent volatile back and forth market phases from generating a series of failure signals as prices ping pong between the two levels, the system limits trading to one position per day per direction. If you have already received a long signal that resulted in a loss, the system will no longer generate a long signal, but can still generate a short signal.

This approach is advantageous from the point of view of protecting against risk. If you were to trade several times during the day in the same direction (only to be stopped out and reversed in the other direction) the system could potentially cause heavy losses. Even though historical tests of the Bund Future, DAX future, and the EUR/USD indicate that this has never occurred, the possibility of its occurrence should be eliminated right from the start.

If the position is not stopped out, the system acts on the original premise of a Wide Range Day and does not close the trade until the end of the day. This guarantees the chance of participating in an extensive favourable move whilst avoiding damaging trades if the market remains within a range.

Stops and Filters

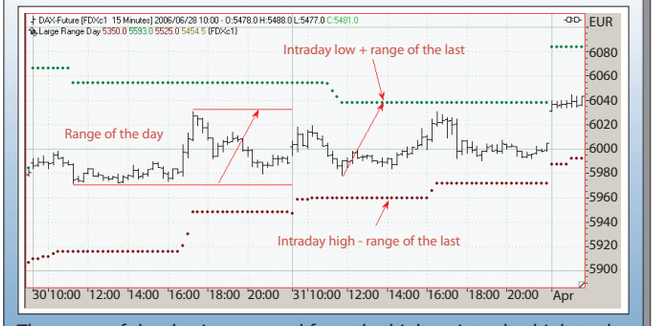
The first stop is placed at the same level as a trade in the opposite direction would be opened. This guarantees that any one trade cannot lose more than the value of the previous day's range. The maximum total risk on any one day is thus 2 fold more than the previous day's range. This is still substantial risk. Therefore, the system uses an additional stop to reduce risk further.

A second look at Figure 1 reveals another characteristic of WRDs. Not only do they close near their daily extremes, but also they very seldom move far from the day's open in the opposite direction of the daily trend. Thus, the wick of the candle is usually short on both sides in relation to the candle's size. This tendency can be utilised for an effective stop.

The system only allows trades if, prior to the trade signal, the market has not moved more in the opposite direction than an amount equal to the previous day's range. If that were the case it would be shown by a candle with a comparatively long wick. The system takes this into consideration by only allowing bullish signals that occur above the daily open. Respectively, bearish signals are only allowed below the daily open. As soon as prices fall by more than an amount equal to the previous day's range, the long entry point would end up below the opening price thus voiding itself. It is calculated as lowest low + the previous day's range.

Simultaneously the opening price is used as a stop level. Long positions can only be opened above the day's opening price and thus

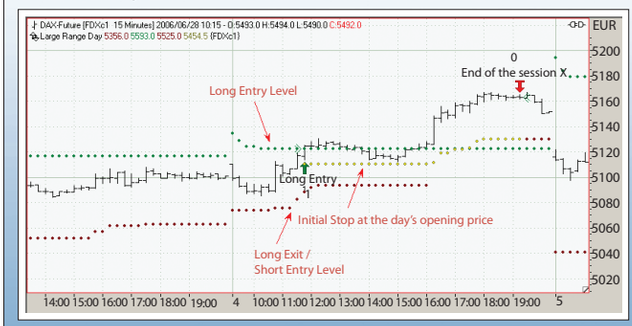
F2) System Construction



The range of the day is measured from the highest intraday high to the lowest intraday low. On the following day, this range is added to the intraday low (green line) and subtracted from the intraday high (red line). These levels are calculated every 15 minutes and adjusted if there is a new intraday high or low. A WRD is confirmed when one of the lines is broken through.

Source: Tradesignal

F3) The System at Work



The penetration of the long entry mark (lowest intraday low + previous day's range) signals a long entry. The initial stop is placed at the current day's opening price. As soon and the short entry mark (highest intraday high minus previous day's range) rises above the opening price where it also serves as the stop level. The position is closed one hour before the end of the session.

Source: Tradesignal

are stopped out if prices fall back to the opening level. Short trades are handled in the same way respectively.

Figure 3 shows how this looks in practice. After 11:00 am, prices move up through the long stop level and a position is taken. The initial stop is placed at the day's opening price (yellow line). A short position would be opened only after prices reach the brown line. After 5:00 pm the brown line was moved above the opening price. If the market would turn the long position it would be stopped out at this level, but not reversed to the short side (short only below the daily opening).

Exiting Session End

Originally, the system closed the position at the end of the session. However, this can be problematic in actual trading. Theoretically, you have to close the position on the last traded price of the day. In reality, you have to try to guess the closing price a few minutes before the bell and try to trade accordingly. This leads to unavoidable slippage and you will never attain the theoretical performance of the system in real trading. In order to avoid this problem the system closes the position one hour before the theoretical session close. Back tests show this does not lead to any significant change in performance, but wins an extra hour to trade the theoretical exit price provided by the system.

Performance

The system can be used in many markets. It was originally developed for trading the Euro against the U.S. dollar. In order to avoid having to trade this market 24 hours a day, you can shorten the trading hours in the chart software to 8:00 AM to 10:00 PM so that after hours trading is not shown. Additionally, the day's range is calculated using only this time frame, which of course deviates from the day chart. However, this does not disturb actual trading as shown in the historical performance chart for this currency pair in Figure 4.

Trading 100,000 EUR/USD within a test period of three years and 449 trades realised a gain of 34,670 Euros. The average trade was 7.7 pips and the profit factor was 1.6, showing a positive expectation for the system.

However, do not be confused by the positive statistics of a system for a market. Conclusions about stability can only be made after testing in other markets. Figure 1 showed WRDs in the DAX future, subsequently the system should work with this market as well.

This is shown in Figure 5. Within a test period of 2 ½ years, trading one contract attained a gain of 32,300 Euros. The profit factor again was 1.6. Tests using the Bund Future showed similar positive results.

Practical Application

The system is relatively easy to execute. Long entry levels are adjusted when a new low has been reached leaving enough time for adjusting orders. Even when the system is based on 15-minute data you do not have to adjust orders every 15 minutes.

Use entries exactly the same way the system does, with stops that automatically exit you from the market. This ensures that you are secured by a stop whenever you are in the market.

The daily risk is small when compared to the risk of a system failure. Even if the trading idea seems grounded and the system has functioned well historically, it is no guarantee it will perform the same way in the future. Markets change and historical data can fool you. Additional problems in actual application could be experienced so that actual performance is much worse than theoretical results. In order to use the system with a reasonable opportunity-to-risk ratio you have to create a money management plan that includes a system shut down parameter when a certain amount of funds have been lost. For example, that could be two times the maximal drawdown attained in historical testing. For the system shown in Figure 4 it would mean a system shut down takes place as soon a drawdown of more than 7,000 euros from the equity line all-time-high occurs. If that happens, it is a clear sign the system is not working as expected. Of course, it is important to follow any systems actual equity developments in order to stop trading immediately if any system error occurred.

Since the system performs in a number of markets when tested it seems reasonable to consider investing in some of these markets. Minimising risk would require close observation of each individual market as well as the performance of the system portfolio. Figure 5

F4) Equity Curve Trading 100,000 EUR/USD

The system generated consistent performance during 2003. A profit of 34,670 Euros was attained with 446 trades. The average profit was thus 7.7 pips/trade. The biggest daily loss was 88 pips. The performance figures for the long and short side are nearly equal.

Source: Tradesignal

F5) System Performance Using One DAX Future

Good performance was also attained with the DAX Future. Trading one contract attained a profit of 32,325 Euros; the average profit per trade was 4 points.

Source: Tradesignal

shows the performance of a portfolio of three markets using the WRD system and position sizes of 100,000 EUR/USD, 1 DAX Future and 8 Bund Futures. The worst-case total portfolio risk of about 30,000 Euros is contrasted by an equally high yearly profit potential.

Summary

The Wide Range Day system is easy to trade on an intraday basis. The system presents an opportunity to earn money on days in which the market undergoes strong moves, while avoiding overtrading on trendless days. A simple exit at the end of the day and an adjustable stop prevent any unnecessary risks. The concept behind this system was purposely kept simple for this article. Using this as a foundation, you might improve the system in simple ways. For instance, does it make sense to enter long trades only when the market is in a long-term upwards trend or does the system profit better on negative days during these phases? How does the system perform when the open – close range is used, instead of the high-low range? Experiment as well with a fixed fractional based money management approach (Kelly Formula, optimal f). In this way you automatically increase position size in the markets in which the system works well, while not eliminating bad performing markets from the portfolio too early.

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