

Finding Exits

Part 2: Behaviour of Different Markets



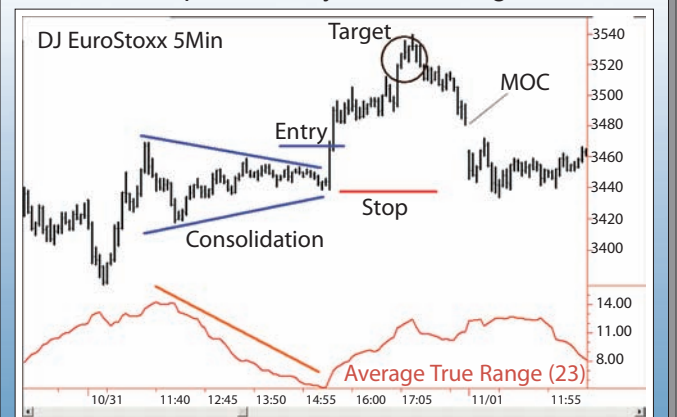
In the first part of this article we derived useful stop levels and profit targets for a short-term breakout system in the Bund future [1]. Our tests showed that the Bund-future worked for this short-term breakout system. After sharp breakouts intraday trends usually did not reverse, but kept their direction until the closing bell. Therefore, profit targets proved to be useless, whereas stops of 350 Euros or more made a good job in risk control and even improved the net profits. The general rule that for a good trading system a combination of stop and profit target is useful was not applicable for our entry setup in this market.

But is this the normal case? Will different markets also show this behaviour after a strong intraday breakout? In this article we will verify our findings on other liquid futures markets: on the Euro/US-Dollar, DAX, Euro-Stoxx, S&P and Nasdaq. We will check how different exits do their job on these markets. To determine these exits we used the same statistic method which we took in the first part of this article: John Sweeney's Maximum Favourable/Adverse Excursion, which shows the distribution of all trades of a trading system [2]. In this article we will however not go again into the details of this method, but focus on the gained results.

The Setup

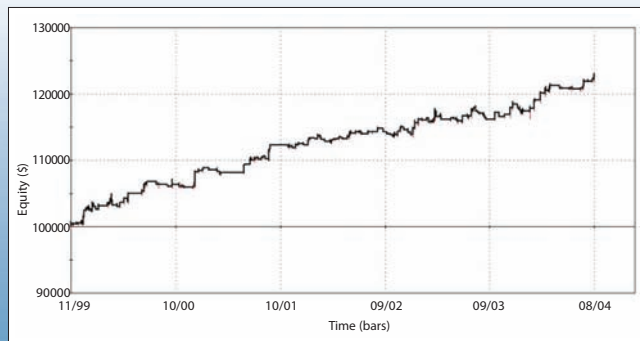
To initiate our trades we use a volatility based breakout system which enters the market in the direction of the intraday trend with a breakout (Figure 1.). The logic is a variation of Toby Crabel's opening range breakout [3]. In the base system, without added exits, every trade is closed latest at the end of the trading session (MOC = market on close). In case our added exit, profit target or stop loss is reached, a trade is closed earlier in the session and no second entry is taken that day. We used the same system logic with the same parameters for all the tested markets. No optimisation was performed for the entries. One reason for this demand is to avoid the effect of curve-fitting data to the past. This ensures the highest predictability of the results for real trading. Another reason is simply the fact that we do not want to focus on the entries, but on different exits. We want to use the very same entries for all the different markets and check how the inserted stops and targets affect the results. All results in this article are presented without subtracting slippage and commissions. Data source for the historical intraday data which we used was the company TICKDATA®.

F1) Test Setup with Entry and Exit Logic



Trades are initiated by an intraday volatility breakout system. If the applied stop or profit target is not reached within the trading session, the trade is closed end of the day (market on close = MOC).

F2) Detailed Equity Line for the Euro/Dollar



The detailed equity line displays net profit on a bar-by-bar basis revealing all equity run-ups and draw-downs.

Finding Exits on the Different Markets

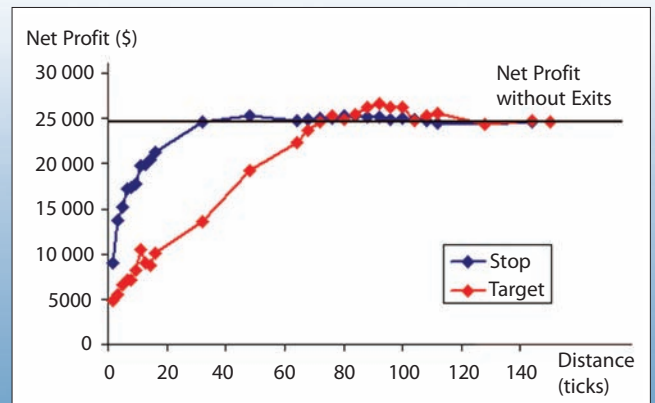
The Euro/Dollar Future

The currency markets are the world's biggest markets concerning the totally traded money. Private traders often prefer, for different reasons, the future at the Chicago Mercantile Exchange instead of the FOREX markets, although the futures usually move parallel to the cash markets. Additionally, trading with currency futures has special properties compared with stock or stock-index-futures trading. The currency markets are, on workdays, open 24 hours and trading can become complex since there is no nightly break. Therefore as a private trader it is helpful to use time filters or work with the bars of the CME day session in order to get a "normal" work time, which you can handle without stress for a longer period. Another special characteristic of currencies is their strong trending behaviour: Since in currencies there are often impulsive and strong trending movements, it is easier to get good results with breakout or trend following systems. The price for good results is a higher risk in currency markets as they are very volatile.

Figure 2 shows the result of our intraday breakout system without added stops and exits. As you can see the equity line is quite steady. With an average trade of 150\$ you can keep this system profitable even when you add a realistic amount of slippage and commissions.

Let us see what happens with the net profit of the system if we add exits, stops or profit targets (Figure 3). If taken too close, stops and targets only limit the net profit within our trading system. The Euro future is so well suited for our breakout methodology that the exits with any parameters cannot improve the result of the base system! You can see that suitable stops should be taken bigger than 40 ticks- otherwise the net profit is reduced considerably by the added exits. The profit target, similar to our findings with the Bund future in the last article, cannot increase profits by a high amount. There is only a small useful area of profit targets in the region of around 100 ticks, where the net profit becomes higher than the net profit without exits. Concerning the stop, it is good to know that a value near 40 ticks still keeps the most profits of the base system, and with having added this stop, the risk is more controlled. Do not feel too safe however- be aware of the big volatility and possible huge slippage in this volatile market, which can always overrun your stop and can give you a worse than calculated execution of your placed exit order.

F3) Net Profit Depending on Exits



Net profit depending on the stop and profit target distances within the Euro/Dollar future, 1999-2005. (Contract specifications: 1 tick = 12,50\$; 100 ticks = 1 cent = 1250\$). The net profit without exits is the horizontal black line at 24800\$. It cannot be exceeded much by any stops or targets.

We can conclude from our tests that within the market environment of a strong intraday breakout, the Euro future behaves in many ways similar to the Bund future. Both markets show a relatively trendy movement from the breakout until the market close. Why do these two completely different markets have this similarity? The answer might be their correlation. Both markets are strongly linked fundamentally. Changing interest rates in Europe, represented by the Bund-Future, have a big influence to the Euro/Dollar ratio. On the other hand, a changing Euro/Dollar rate changes the economic conditions and influences interest rates with the Bund. Therefore, changing macroeconomic conditions or news coming in, have impact on both futures at the same time and often lead to correlated behaviour, for example; sharp breakouts or start of new trends. It is important to take such correlations into account when trading a portfolio of different trading systems. The danger is that breakouts can be captured by your system on different markets simultaneously and then increase your risk instead of reducing it by diversification over several markets. Being aware of this, a solution can be to allow yourself to trade just one market at a special time, e.g. after news coming in or, even better, to diversify your market portfolio with different trading strategies.

Having found this interesting parallel between Euro/Dollar- and Bund-future, let us see how stops and profit targets work within a completely different market group, the stock index futures.

Stock Index Futures

Markets change. This is one of the most important fact traders should be aware of. However, it seldom occurred so dramatically as in the development and burst of the stock market bubble around the year 2000. When developing trading systems for stock index futures you must take into account the big translation which happened here: A stop of hundred points in the DAX placed in the year 2000, when the market had reached 8000, is not the same as a hundred point stop in the year 2003 when the market traded close to 2000 (Figure 4)! When talking about stops and targets you must always consider changing volatility and changing market values. From Figure 4 you can see that the Average True Range as a measure of market volatility dropped by

F4) DAX-Future with Average True Range



DAX-Future, point based adjusted, daily, January 1997-January 2006. The stock index futures have gone through big changes the last ten years.

a factor 2-4 in the last years, especially after 2003 when the market started a quiet but steady recovery from its low. It is obvious that stops and targets must be adapted to those changing market conditions when testing market strategies. The question is whether you adjust your exits according to the absolute value of the market, or according to its volatility, e.g. the Average True Range. We preferred to adjust the exits to the Average True Range since it gives a more reliable forecast about the daily ranges in which prices move than just the price itself.

Now that we have worked out a solution for the market transition which happened in previous years, let us see how different exits work in the stock index futures.

When testing our intraday breakout system on the stock index futures, one fact became obvious: The stock index futures turned their direction intraday more often than the Euro and the Bund did after sharp breakouts! Figure 1 shows one signal of our breakout system for the EuroStoxx50 future. Within the first six hours of the trading day the market consolidated within a symmetric triangle formation. While building this formation, the market volatility, which we determined with the Average True Range of the last 23 five-minute-bars, dropped significantly. Suddenly a sharp breakout out of this formation occurred at about 3:30 pm MET, which is the opening time of the S&P500 pit trading session. Our trading logic entered long at 3470. The market gained about 100 points, starting from 3440 to an intraday high at 3540, but closed the session 60 points below its intraday high at 3480. There are many other trading days where the market is even choppier and turns the direction up and down not only once but several times. In this environment our intraday breakout system needs good exits. It is not enough here to keep the initiated trades until the closing bell like it works to be profitable in the Bund and Euro. Let us see how stops and targets worked for the four investigated stock index futures:

DAX

For this market we found profit targets to be really useful (Figure 5) to improve net profits within our intraday breakout system. In today's volatility conditions a profit target between 30 and 120 points

improves the net profit up to 50%! It was not so clear as in the Bund or the Euro/Dollar future where to find a good stop level. The net profit, depending on the chosen stop loss, is a zig-zag line. You can see that in today's market conditions the stop should certainly be above 20 points. Smaller stops are captured too often by the intraday price noise and decrease the net profit drastically. But it is not so clear from our tests alone if you should put your stop to 20, 30 or 70 points.

EuroStoxx50

For this market we found a useful stop above 25 points or higher. In contrast to the tests on the DAX future the 25 points level very clearly marks the base line above which you should place your stop. With stop distances between 25-35 points you do not cut the total net profit by being stopped too often by intraday price noise. Concerning the profit target the EuroStoxx future is similar to the DAX. A broad range between 30 and 100 points mark good profit targets which improve the net profit of the system with only MOC exit by about 20%. That is not like the 50% in the DAX, but still a considerable amount to add a target to the breakout system.

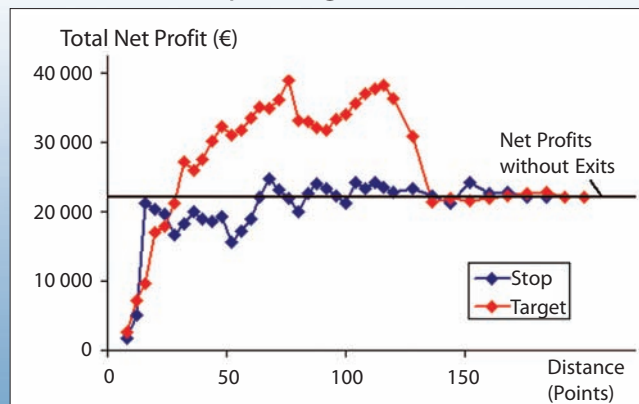
S&P500

For this market we found an interesting transition within the last few years. Whereas, within the stock market bubble profit targets between 40 and 55 points improved the net profit by 10-15%, in the low volatility environment of the last three years profit targets were ineffective. If you still want to use a target, we recommend about 30 points for today's volatility conditions. But as mentioned, targets have not helped the last 3 years, but on the other side, made no harm either. Concerning useful stop levels we found a good base line for a minimum stop of about 12 points intraday.

NASDAQ

More than any other stock index future this market behaved different within the stock market bubble. When testing any good intraday

F5) Net Profit Depending on Exits



Net profit depending on the stop (blue) and profit target (red) distances within the DAX future (contract specifications: 1 point = 25 €). The net profit without exits is the horizontal black line at 22400 €. Stops and targets are adjusted to today's volatility conditions. There is a big range of profit targets between 30 and 120 points which increase the total net profit.

T1) Useful Stop and Profit Targets

	Stop	Target
BUND	> 35 ticks	No
Euro/Dollar	> 40 ticks	100 ticks
DAX	> 20 points	60-130 points
EuroStoxx50	> 25 points	30-100 points
S&P500	> 12 points	30-35 points
Nasdaq	> 15 points	35-50 points

Table 1 shows useful stop and profit targets for today's volatility conditions.

breakout system on historic Nasdaq data of the last 10 years, most profits usually result from the years 1999-2001, when the market had its highest point value, volatility and daily trading ranges. Today's market conditions are far away from these volatile times. By rule of thumb today's stop values should at least be bigger than about 15 points, targets can be placed in the area between 35 and 50 points.

All tested stock index futures have the following similarities:

- They seem to have changed their market structure more than Bund and Euro/Dollar the last years after the stock market bubble.
- In their environment of more changes in their direction and not ever-lasting intraday trends, profit targets become valuable. They are able to save some profits before the market turns.
- Like in the Bund and Euro, useful stop points can be found in most markets. Do not take stops too close, otherwise the intraday price noise will stop you out too often.

In Table 1 you will find an overview of all tested markets and useful stops and profit targets for our volatility breakout system. An interesting fact which this table shows for all tested futures is the 1:3 rule: The table shows what many traders know from their intuition, that targets should be taken about three times further away than the stops. This means on the other side that useful targets should be placed very far away. They are located in large amounts outside the normal, average daily trading ranges. Profit targets are especially useful on days with very huge, extraordinary breakouts. On such days, markets tend to exaggerate and a target can skim parts of the profits before the next intraday trend change occurs. On "normal" days targets are usually not reached.

Conclusion

Different markets need different exits. Additionally the structure and characteristic of markets change over the years which need adaptation of the exits.

For our intraday breakout system the Euro behaves quite similar to the Bund. For these two markets, stops do their job in risk control and do not minimise the profits if not taken too close.

In contrast to the findings in the Bund and Euro for the stock index futures, we found that profit targets are useful there. If not taken too close, often about a factor 3 or larger than the stop, they can improve your profits in an often-turning market environment. Like with the Bund and Euro, in the stock index futures stops do not cut the profits if they are taken wide enough and are a valuable tool for risk control.

References

- [1] Thomas Stridsman:
"Trading Systems that work", Mc Graw Hill 2001
- [2] Toby Crabel:
"Day Trading with Short-term Price Patterns and Opening Range Breakout", Greenville 1990
- [3] John Sweeney:
"Maximum Adverse Excursion- Analysing Price Fluctuations for Trading Management", published by John Wiley & Sons, 1st edition, 1997

Our presented method and our results with simple stops and targets can be a starting point for your own research. Your possibilities with the various exits like trailing stops, breakeven stops, time stops and different targets are nearly unlimited. Always keep in mind that exits must be considered relatively to the entries. Therefore be careful and do not generalise our findings to very different entry setups or longer timeframes. Take your time and test your trading strategy together with different exits before applying it in real trading.

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