Mathematical Proof for the Trading System Employed by the RoboMiner

Note- This information is current as of March, 2010. Although the AUDNZD has been pushing against the high end of its historical range in recent months, the system has held due to the built in safeguards which allow for limited extensions of that historical range.

The hypothesis is that there is a method to trade the Forex market that limits the risk to the point where our risks are the same or less than other types of investments.

The theory is simply that if we had $4000 and bought or sold only .01 standard lots of the AUD/NZD currency pair, then no matter what the price went to in its historical operating range, no one would ever get a margin call. I will show that by limiting the investments to a small percentage of the balance that we can achieve this result.

The currency pair that I will use for this proof is the Australian dollar and the New Zealand dollar AUD/NZD. These two countries are located in immediate proximity to each other and have the same types of economies. They look and act so much alike that if something affects one, it will almost always affect the other in a like manner. The history of their currencies bear this out as well. They do behave very similarly, but not exactly the same. If we look at the history of this currency pair from the highest price it has reached to the lowest that it achieved since 2001, we can see that the entire range is just over 2700 pips. From a high of 1.3121 to a low of 1.0428 is .2693 or 2693 pips.

The center of this range is (1.0428 + 1.3121)/ 2 = 1.1775. We will get to why this center is important later on. For now we will use the entire range as 2600. When we look at this pair, it becomes obvious that the wave action is about 40 pips. That is to say that the price of the AUDNZD will frequently move up 40 pips and down by the same amount. If we buy .01 standard lots of this currency and sell it after the price moves up 40 pips, we will make a profit of approximately $2.80. If the price goes the other way by 40 pips we will of course have a loss of $2.80 as well.

Grid trading is the method of dividing the total range (2600+ pips) into sub ranges of 40 pips each. This will give us 66 sub ranges. Every time the price moves up 40 pips, we close our buys for a profit and open a new buy for the same number of lots. Since we don't know if the price is going up or going to go down, we can also sell the same number of lots. Most people that grid trade do it this way.

When the price is climbing on the weekly and monthly charts we would see a string of opened sells left, one for each sub-range that the price has moved through. I am going to give you the formula to determine what impact each individual sell left hanging has in a moment, but first I want to describe what is actually happening. As the price moves up, each instance of sell is getting more negative by the same amount as each other open sell. Each range will add the same amount of negative impact to the profit/loss as you would make by closing out the buy for a profit. The first instance would contribute its value times the number of ranges that the price moves through. To add all of these up, take the total number of ranges that the price has gone through and multiply it by the total ranges plus one, then divide by 2. This number is the same as if only one sell went through each of them. Let's call each one of these a 'lot-range'. The formula is (X times X+1)/2 If the AUDNZD has a total range of 2600+ pips and has 66 sub-ranges then we multiply 66 times 67 and divide by 2 which is

2211 lot-ranges.

I won't show calculations for the contributing profit but will give you the value for .01 standard lots per 40 pip range which is $2.80 . To find out how negative our profit/loss column is just multiply the $2.80 times 2211 lot ranges. That comes to $6190.80. Each .01 lots will require about $5.00 of margin (at 200:1) or about $330 for all 66 ranges. This means that if you have $6550, you could grid trade .01 lots without worrying too much about a margin call. The question is this, is it worth it?

There are about 50 trades per month on average if you count both buying and selling. To be conservative I will use 36 trades per month. 36 trades times $2.80 per trade is $100.80. Our percentage is $100.80 per month divided by $6550 needed in the balance to trade .01 lots. $100.80 / $6550 = 1.53% per month.

If you can live with 18%-24% per year then this will work but if you can't, then try this; only do sells on the top 33 ranges, anything over the center point of 1.1700 and buys for any trade under the center price of 1.1700. When the price is at the center range you will have 1 open trade, either a buy or a sell depending on the direction of the price change. Now the most that the accumulated string of buys or sells that would be left opened is 33.   Using our formula, 33 x 34 / 2 = 561 lot-ranges.

At $2.80 per range, 561 lot-ranges will need $1570.80 to cover the .01 lots plus another $165 to cover the margin. This will cover the whole 66 ranges, but only 33 at a time. This also means that you will have only half of the number of trades because you are doing only buys or only sells. $2.80 per trade times 18 trades per month is $50.40/month. $50.40 / $1735 = 2.90% per month or 35%-45% per year. You can greatly increase your profits by doing fewer trades.

On top of this there is compounding. Remember the rule of 72. Every time your profit grows by the amount set in your BalanceFactor setting, you add .01 lots to each trade. You can potentially double your money every year.

$1000 doubled every year for 10 years is $1,024,000. How much do you need to live on? Let's assume that you want to further protect your balance and take out only half of what you make or 1.5% per month. For each thousand dollars that you need per month you would need to have $1000 / 1.50% or $67,000.

For convenience you can round that to $70,000 for each $1000 you need to take out to live on each month. The rest of your interest will stay in your account to further protect your balance from a margin call. What is the danger of this happening? As we have seen, $1735 is the bare minimum needed to protect .01 lots through all 66 ranges, 33 at a time. The only danger is if the price breaks its historical boundaries and goes beyond the 33 ranges. To be rational, we must assume that this will happen at some point.

To prepare for this there are several money management things that we could do. At first we are limited but we could start with $4000 per .01 lots which would add several more ranges beyond the normal 33. This is assuming that we halt trading at 33 ranges or anything over the extreme limits which is the currencies historical highs and lows. Second is to raise the amount accrued before adding another micro-lot. (.01 standard lots is 1 micro-lot). Third is to

fix your lot size that you trade after a certain point to allow your balance to grow and only take out half of what you make in profits. If you take out 2000 for the month but probably won't need all of it, open a second account that you don't trade from that you can transfer money back and forth to from your live trading account. This way, if you need a money transfusion to keep your trades safe, its available in minutes instead of hours. These added precautions are only for the case that the price sets a new historical boundary. The likelihood of that being extreme is mitigated by the closeness of the working conditions of the two currencies as mentioned earlier.

There is the added risk of human mistakes and trying to be always on hand to manually do the trades all of the time. For this you can purchase the Robo-Miner or RoboMiner Pro. These trading robots, both of which are simpler versions of the GT-Shadow, can be set up and used by almost anyone without any technical experience. Both are available at http://www.forex-goldmine.com .

There is also a slight risk that the price will quit changing as much as it has historically done and the percentage of profits decrease because of it, but there is also a slight possibility that it could increase as well. You will lose some of your profits to the swap when you have a string of buys left open but you will make extra from the swap when you have a string of sells left open as well.

It would be prudent to have a few extra dollars in the account to cover the swap, fluctuations in the value of the U.S. dollar and AUD/NZD price extremes, so we recommend that you begin with at least $4000.

This dissertation is on the order of a mathematical proof and not to be construed as giving trading advice. There has been no attempt to mitigate all risk such as dishonest brokers, government intervention, or any other non-quantifiable risks that comes with everyday life.

Thank you, and may the Forex be with you.

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