STUDY ON THE FOREX TRADING STRATEGY FOR THE CURRENCY PAIR EUR/USD

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ABSTRACT: *This research paper attempts to build a Forex trading Strategy on Currency pair EUR/USD. We used daily Series of data from January 2005 to February 2008 (156 exchange rates). Forex strategy built on the basis of ten parameters was considered. The trading strategy framed in this study has found that account balance which is seen as a measure of profitability of the strategy is influenced by the draw down level and lots employed. This provides an evidence to show that volume of trading and draw down level influences the profitability. The study ensures that the draw down level should be taken care of while changing the other variables. This is because increasing the draw down value would create high loss while trading. The important finding is that the time frame of trading does not influence the account balance.*

Key Words: *Forex trading strategy, Draw Down value, Time frame of trading*

1. INTRODUCTION: Access to foreign exchange (Forex), the most extensive market on the planet, is generally through an intermediary known as a Forex broker. Similar to a stock broker, these agents can also provide advice on Forex trading strategies.

When testing a given strategy, it shows the real situation and never tries to promote the chosen logic or overstate the result. Using this product relieves the user from relying blindly on Forex books and analyzers. Consequently, there is no possibility of losing money, relying on unproved trading systems.

This research attempts to build a strategy on EURO and USD pair (EUR/USD). The currency pair shows how much of the counter currency is needed to purchase one unit of the base currency. Currency pairs can be thought of as a single unit that can be bought or sold. The first currency of a currency pair is called the "base currency," while the second currency is called the "counter currency."

2. REVIEW OF LITERATRURE

2.1 Impact of lots employed on account balance

Studies on various stock markets have proved that the trading volume has a lagged relationship with the profitability. Hiemstra and Jones (1994) studied a linear relationship from Dow Jones stock returns to percentage changes in NYSE trading volume; they also found a significant bi-directional non-linear causality between returns and volume. A study conducted by Lee and Rui (2002) on three large stock markets (New York, Tokyo, and London) showed the positive correlation between trading volume and profitability except for the London stock market. All these studies have been essentially limited to stock markets with the existence of short sale restrictions. This study has been extended to confirm the relation between the volume and return in the foreign exchange market. The following hypothesis has been tested for this analysis.

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H1: Trading volume has an effect on the profitability of currency trading

2.2 Impact of indicator on account balance

The indicators used in technical analysis have been differentiated as price-based and volume-based indicators. The price-based indicators have been found to have a negligible effect on profitability. Blume et. al (1994), for instance, suggested that volume may provide insights into the quality of traders' information that cannot be observed from price statistics. Suominen (2001) also developed a model to demonstrate that trading volume contains additional useful information not reflected in current stock prices, which can be exploited by traders to improve the profitability of their trading strategies.

A study conducted by Elaine Loh provided empirical evidence on the role of volume in technical analysis by investigating if the performance of technical analysis based on daily price statistics may be improved by additionally employing technical indicators based on trading volume. This study examines the performance of currency trading strategy based on price indicators. Thus the following hypothesis has been framed regarding the efficiency of price based indicators in predicting profitability.

H1: Price based technical indicator influences the profitability of currency trading

2.3 Draw down and Account balance

Draw down is simply the amount of money lost in trading, expressed as a percentage of total trading. If all trades were profitable there would never be a draw down. Draw down does not measure overall performance, only the money lost while achieving that performance. Its calculation begins only with a losing trade and continues as long as the account hits new equity lows (Lave Dandry). The following hypothesis has been tested based on this fact to study the level of impact of draw down on the profitability.

H1: Draw down influences the account balance

2.4 Account balance and percentage position

Most of the traders employ a Moving Average (MA) trading rule that implies establishing or maintaining a long position in a currency if the short term MA is equal to or greater than the long-term MA; establish or maintain a short-position if the short-term MA is less than the long term MA. Though the Percentage position may have some influences on account balances, it will be very little and the influence does not impact more. Traders being able to gain money over the long run were taking smaller positions than losing and bankrupt traders (Johan Ginyard) (1982).

H1: The duration of a position held influences the account balance

2.5 Draw down and percentage position

Draw down is the peak-to-trough decline during a specific record period of an investment, fund or commodity. A draw down is usually quoted as the percentage between the peak and the trough. When the current position in a currency pair moves against the favorable trend, it sounds better to change the position as early as possible. As this time frame prolongs, the draw down value gets increased resulting in a greater loss which, in turn, reduces the profitability of trading. This leads to test the following hypothesis.

This study examines the performance of currency trading strategy based on price indicators.

H1: There is a significant association between draw down and different time frames employed.

2.6 Draw down and time frame

With the decreasing time frame, the frequency of trading increases. The probability of unfavorable moves in a high frequent trading is large. This being the case the draw down level will vary depending on the frequencies of trading. This necessitates examining the impact of various time frames on draw down level.

H1: Time frame of trading has an influence on draw down

2.7 Lots employed and Draw down

Trading Volume is an important factor that draws the attention of the traders. Low volume indicates that the market is illiquid which also implies high volatility in price and vice versa. This reduces the price effect i.e. Draw down in large trades. In general, with increase in volume, the market makers have greater opportunity for profit as result of low drawdown.

Drawdown is simply the amount of money lost in trading, expressed as a percentage of total trading. It does not talk about the performance of trading.

H1: Volume of trading influences drawdown.

2.8 Draw down and indicator

Drawdown is simply the amount of money lost in trading, expressed as a percentage of total trading. It does not talk about the performance of trading. Even with the same indicator of varying values, the profitability reduces which has an impact on drawdown. The indicator indicates the trend and the time to perform the buy or sell. Based on the indicator and values taken for the indicator, the draw down is influenced.

H1: Choice of indicator influences draw down level

2.9 Profit/loss ratio on time frame

A profit/loss ratio refers to the size of the average profit compared to the size of the average loss per trade. The profitability varies based on the time frame which influences the profit/loss ratio. There are certain traders who may maintain the ratio as 2:1 or 3:1 but it all depends on the timeframe they are trading and the other factors that are affecting the strategies followed by the trader. If the timeframe is constant, then the ratio does not get affected but trading in different time frames affects the ratio.

H1: Time frame of trading influences the profit/loss ratio

2.10 Account Balance and Time Frame

Account Balance varies as the time frame of trading varies. If the trading in the Forex must be considered in long term and as an investment, then longer time frame like weekly charts must be considered which gives more profitability. The shorter time frame and the Intraday are only based on speculation and the profitability is based on risk factor by the trader.

H1: Different time frames have varying effects on account balance

3. DATA AND RESEARCH METHODOLOGY:

3.1 Data

Only secondary data were used. The data set employed in this study consisted of monthly observations of exchange rates for EUR/USD currency pair. It has been collected from the Forex Strategy Builder software which is in-built for the period of January 2005 to February 2008. Period of study was from January 2005 to February 2008 (156 exchange rates). Sampling method which was used non-probability sampling, period of data collection has

been chosen according to its availability. The Forex strategy built on the basis of following ten parameters:

1. Impact of indicator on account balance
2. Draw down and account balance
3. Account balance and percentage position
4. Draw down and percentage position
5. Draw down and time frame
6. Lots employed and Draw down
7. Draw down and indicator
8. Profit/loss ratio on time frame
9. Account Balance and Time Frame
10. Impact of lots employed on account balance

3.2 Methodology

Given the time series nature of data, the parameters which were tested using of Correlation test has been used to study the correlation among variables like account balance, lots employed, time in position, draw down, time frame etc.Test was used to study the impact of indicator used on account balance, and one way ANOVA was used to study the impact of different time frames on account balance, draw down level, profit loss ratio and the impact of different indicators on account balance and draw down.

Here analysis was made with the help of commonly known software package of SPSS. The formula for Pearson's correlation takes on many forms. Here two variables are tested X, namely one variable, Y refers another variable N refers the number of observation. A commonly used formula is shown.

$$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{(\sum X^2 - \frac{(\sum X)^2}{N})(\sum Y^2 - \frac{(\sum Y)^2}{N})}}$$

The One-Way ANOVA procedure produces a one-way analysis of variance for a quantitative dependent variable by a single factor (independent) variable. Analysis of variance is used to test the hypothesis that several means are equal. This technique is an extension of the two-sample t test. It is easy to model all of this with an equation of the form:

$$y_{ij} = m + a_i + e_{ij}$$

This equation indicates that the jth data value, from level i, is the sum of three components: the common value (grand mean), the level effect (the deviation of each level mean from the grand mean), and the residual (what's left over).

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In general, the ANOVA table for the one-way case is given by:

Source	Sum of Squares	Degrees of Freedom	Mean Square
Factor levels	$\sqrt{\sum a^2}$	I-1	$\sqrt{\sum a^2_{I-1}}$
residuals	$\sum\sum e_{ij}^2$	I(J-1)	$\sum\sum e^2_{I(J-1)}$
corrected total	$\Sigma\ \Sigma\ Y_{ij}^2\ IJm^2$	IJ-1	

In testing the null hypothesis that the populations mean is equal to a specified value μ_0, one uses the statistic

$$t = \frac{\chi - \mu_0}{s/\sqrt{n}}$$

It has been inferred that there is no significant relation between account balance and percentage position. The two variables have positive correlation. This is one of the main factors which affect profitability.

Where s is the sample standard deviation of the sample and n is the sample size. The degrees of freedom used in this test is n – 1.

4. OBJECTIVES OF THE STUDY:

1. To frame a Forex trading strategy based on technical analysis

2. Analyze the devised strategy's efficiency with the help of Forex strategy builder software.

5. RESULTS AND DISCUSSIONS:

5.1.1 Correlation between Account Balance and Drawdown

The calculated value of significance is .000 which is less than .05. Therefore reject the null hypothesis and accept the alternate hypothesis. There is a significant relation between account balance and draw down. The two variables have negative correlation. Hence if the drawdown value is decreased, the profitability will be increased.

5.1.2 Correlation between Account Balance and Percentage Position

The calculated value of significance is .153 which is greater than the observed value of .05. Therefore accept null hypothesis and reject the alternate hypothesis. Thus it has been inferred that there is no significant relation between account balance and percentage position. The two variables have positive correlation. This is one of the main factors which affect profitability.

5.1.3 Correlation between Account Balance and Lots Employed

The calculated value of significance is .021 which is less than the observed value of .05. Therefore reject the null hypothesis and accept the alternate hypothesis. It has been inferred that there is a significant relation between account balance and lots employed. The two variables have a positive correlation. Thus if the lot size is increased the profitability will also be increased.

5.1.4 Correlation between Percentage Position and Draw down

The calculated significant value 0.314 is found to be greater than the observed value of .05 and hence the null hypothesis has been accepted. The inference is that there is no significant correlation between percentage position and draw down. The lower value of correlation shows that they are weakly correlated.

5.1.5 Correlation between Lots Employed and Draw down

The calculated significant value of .000 is less than .05. Hence the null hypothesis has been rejected and the alternate hypothesis accepted. Thus the inference is that there exists a significant relation between lots employed and drawdown. The two variables are positively correlated. As the number of lots is increased the draw down may get increased resulting in significant loss.

5.2 ONE WAY ANOVA

5.2.1 Time Frame Vs Account Balance

Null hypothesis: There is no significant difference between the profitability at different time frame.

Alternate hypothesis: There is a significant difference between the profitability at different time frame.

The calculated value of significance (.725) is greater than the observed value of .05. Hence the null hypothesis has been accepted and inferred that there is no greater significant difference between the profits measured at different time frames. The profit level remains unaffected by the time frame employed.

5.2.2 Draw Down On Time Frame

Null hypothesis: There is no significant difference between the draw down level at different time frame.

Alternate hypothesis: There is a significant difference between the draw down level at different time frame.

The calculated value of significance (.105) is greater than the observed value of .05. Hence accept the null hypothesis that there is no greater significant difference between the draw down measured at different time frames. The draw down level remains unaffected by the time frame employed.

5.2.3 Draw Down On Indicator

Null hypothesis: there is no significant difference between the draw down level for different indicators

Alternate hypothesis: there is a significant difference between the draw down level for different indicators.

The calculated value of significance (.046) is less than the observed value of .05. Hence reject the null hypothesis. Thus there exists a significant difference between the draw down level for different indicators used.

5.2.4 Profit/ Loss Ratio on time frame

Null hypothesis: there is no significant difference between the profit loss ratio levels at different time frames

Alternate hypothesis: there is a significant difference between the profit loss ratio levels at different time frames.

The calculated value of significance (.414) is greater than the observed value of .05. Hence accept the null hypothesis. Thus there does not exist any significant

The draw down level remains unaffected by the time frame employed. There exists a significant difference between the draw down level for different indicators used.

difference between the draw down level for different time frames employed.

5.3 INDEPENDENT SAMPLE TEST

5.3.1 Indicator on account balance

Null hypothesis: There is no significant difference between the account balance values for different indicators used.

Alternate hypothesis: There is a significant difference between the account balance and indicators used. Levine's test Ho says the variances of the two samples are equal. Calculated value of significance (.000) is less than the assumed value of .05. Therefore reject the null hypothesis which says that the choice of indicator does not influence net profit. It is inferred that the account balance changes with different indicators. Looking at the descriptive statistics the momentum indicator helps in having greater profitability. It means that the variances are different.

The study ensures that the draw down level should be taken care of while changing the other variables. This is because increasing the draw down value would create high loss while trading. The important finding is that the time frame of trading does not influence the account balance.

CONCULSIONS:

The trading strategy framed in this study has found that account balance which is seen as a measure of profitability of the strategy is influenced by the draw down level and lots employed. This provides an evidence to show that volume of trading and draw down level influences the profitability. The study ensures that the draw down level should be taken care of while changing the other variables. This is because increasing the draw down value would create high loss while trading. The study ensures that the draw down level should be taken care of while changing the other variables. This is because increasing the draw down value would create high loss while trading. The important finding is that the time frame of trading does not influence the account balance.

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CORRELATION

5.1.1 Correlation between Account Balance and Drawdown

		account balance	DRAWDOWN
account balance	Pearson Correlation	1	-.540
	Sig. (2-tailed)	.	.000
	N	156	156
DRAWDOWN	Pearson Correlation	-.540	1
	Sig. (2-tailed)	.000	.
	N	156	156

5.1.2 Correlation between Account Balance and Percentage Position

		Percentage Position	Account Balance
Percentage Position	Pearson Correlation	1	.179(*)
	Sig. (2 tailed)		.026
	N	156	156
Account Balance	Pearson Correlation	.179(*)	1
	Sig. (2 tailed)	.026	
	N	156	156

5.1.3 Correlation between Account Balance and Lots Employed

		Account Balance	Lots Employed
Account Balance	Pearson Correlation	1	.184
	Sig. (2-tailed)		.021
	N	156	156
Lots Employed	Pearson Correlation	.184	1
	Sig. (2-tailed)	.021	
	N	156	156

5.1.4 Correlation between Percentage Position and Drawdown

		DRAWDOWN	percentage position
DRAWDOWN	Pearson Correlation	1	.081
	Sig. (2-tailed)		.314
	N	156	156
percentage position	Pearson Correlation	.081	1
	Sig. (2-tailed)	.314	.
	N	156	156

5.1.5 Correlation between Lots Employed and Drawdown

		Draw Down	Lots Employed
DRAWDOWN	Pearson Correlation	1	.711
	Sig. (2-tailed)	.	.000
	N	156	156
lots employed	Pearson Correlation	.711	1
	Sig. (2-tailed)	.000	.
	N	156	156

5.2 ONE WAY ANOVA

5.2.1 Time Frame Vs Account Balance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	145069.705	2	72534.853	.341	.711
Within Groups	32526798.962	153	212593.457		
Total	32671868.667	155			

Tukey HSD

TIME	N	Subset for alpha = .05
		1
1 day	52	403.88
1 hour	52	414.06
4 hours	52	473.06
Sig.		.725

5.2.2 Draw Down On Time Frame

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1432587.500	2	716293.750	2.711	.070
Within Groups	40432063.808	153	264261.855		
Total	41864651.308	155			

Tukey HSD

TIME	N	Subset for alpha = .05
		1
4 hours	52	55.67
1 hour	52	61.54
1 day	52	261.83
Sig.		.105

5.2.3 Draw Down On Indicator

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1067392.410	1	1067392.410	4.029	.046
Within Groups	40797258.897	154	264917.266		
Total	41864651.308	155			

5.2.4 Profit/ Loss Ratio on Time Frame

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	653.311	2	326.656	.790	.457
Within Groups	33897.497	82	413.384		
Total	34550.808	84			

Tukey HSD

TIME	N	Subset for alpha = .05
		1
1 day	24	5.5371
4 hours	31	8.5588
1 hour	30	12.4645
Sig.		.414

5.3 INDEPENDENT SAMPLE T – TEST

Account Balance and Indicator

Group Statistic

	indicator	N	Mean	Std. Deviation	Std. Error Mean
Account Balance	leading	78	281.64	221.797	25.114
	lagging	78	579.03	574.737	65.076

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Account Balance	Equal variances assumed	12.820	.000	-4.263	154	.000	-297.38	69.754	-435.183	-159.587
	Equal variances not assumed			-4.263	99.437	.000	-297.38	69.754	-435.784	-158.985