Testing the Power of Technical Analysis for Forecasting the Market Trend and Future Price in FOREX Market

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ABSTRACT

According to the Bank for International Settlements, the preliminary global trading in foreign exchange markets averaged $5.3 trillion per day in April 2013. However, there is always volatility and uncertainty in FOREX market. In accordance with this issue, predicting the future prices and market movements are crucial for traders. In order to understand FOREX market better, the study is assisted by one of the most famous and popular methods which is technical analysis.

The aim of this study is to investigate the power of technical analysis for forecasting the market trend and future price in FOREX market. In order to achieve this result, the thesis analyzes the four most trading currency pairs in FOREX market during November of 2013 and utilizes various tools and indicators which are presented by brokerage companies in Meta Trader 4.

The study affirms the power of technical analysis in FOREX market. The result shows that 58.33% of entire positions are terminated with profit; 32% in hourly, 15% and 11% in daily and midday respectively. The study has also confirmed that GBP/USD is the most reliable currency pair among the others in the period study was carried out.

Keywords: FOREX market, Technical analysis, Indicators

ÖZ

Uluslararası Ödemeler Bankasından alınan veriler göstermiştir ki, Nisan 2013 itibariyle döviz piyasasındaki günlük hacim ortalama 5,3 trilyon dolardır. Yabancı döviz kuru piyasasında belirsizlik ve dalgalanma sürekli görülmektedir. Bu nedenle, gelecekteki fiyatları tahmin etmek yatırımcılar için çok önemlidir. Gelecekteki kurları tahmin edebilmek için bu çalışma popüler bir metot olan teknik analizi kullanmıştır.

Bu çalışmanın amacı, teknik analiz yönteminin döviz kurları eğilim ve fiyatlarını ne kadar öngerebilme gücüne sahip olduğunu test edecektir. Bu amaca ulaşılabilmesi için, çalışmada dünya finans piyasalarında önemli yere sahip olan dört ulusal para döviz kuru Kasım 2013 tarihi boyunca incelenmiş ve birçok firma tarafından da kullanılan Meta Trader 4 adlı program kullanılarak analiz yapılmıştır.

Bu çalışma döviz piyasasında teknik analiz kullanılmasının güvenilirliğini ölçmektedir. Elde edilen sonuçlar göstermiştir ki, yapılan tüm işlemler sonrasında %58.33 lük pozisyonlar kar ile tamamlanmıştır. Bu işlemlerin %32’si saatlik, %15’i günlük ve %11’i yarım günlük işlemlerle kar elde etmişlerdir. Bu çalışmanın yapıldığı dönemde göstermiştir ki, GBP/USD eşleşmesi diğerlerine göre daha güvenilirdir.

Anahtar Kelimeler: Yabancı döviz kuru piyasası, Teknik analiz, Göstergeler

DEDICATION

With very special gratitude to my beloved family for their unconditional support, both financially and emotionally throughout my degree.

I dedicate this study to my dear mom, dad and brothers.

ACKNOWLEDGMENT

It gives me great pleasure in acknowledging the support and help of my supervisor, Assoc. Prof. Dr. Mustafa Besim. Without his cooperation and guidance, this thesis would not have been accomplished.

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BIS	Bank of International for Settlement
CPI	Consumer Price Index
EMA	Exponential Moving Average
EUR	Euro
FX	Foreign Exchange
FOREX	Foreign Exchange
GBP	Great Britain Pound
GDP	Gross Domestic Production
IBRD	International Bank for Reconstruction and Development
IMF	International Monetary fund
IMS	International Monetary System
JPY	Japanese Yen
MACD	Moving Average Convergence Divergence
PPI	Producer Price Index
RSI	Relatively Strength Index
SMA	Simple Moving Average
USD	United States Dollar

Chapter 1

INTRODUCTION

According to the Bank for International Settlements in 2013, the preliminary global results show that trading in foreign exchange markets averaged $5.3 trillion per day (BIS, 2013). This has risen from $4.0 trillion in April 2010. Foreign exchange market becomes the biggest and the most liquid market in the world. Banks and nonbanks foreign exchange dealers, individual and firms conducting commercial and transaction, speculators and arbitragers, central banks and treasuries and foreign exchange brokers are the most important participants in this market. They endeavor to seize adequate profit from this market. BIS reported USD at 87% and EUR/USD at 24.1% as the most traded currency and currency pairs in whole FOREX market of April 2013 (BIS, 2013).

One of the most attractive characteristic of the FOREX market is that any trader is able to trade by opening an account in brokerage company. Moreover, individuals with a small amount of balance can commence to trade with abilities like leverage and indicators.

There are different factors which cause volatility and fluctuation in market like economic factors such as Gross Domestic Product (GDP), Producer Price Index (PPI), unemployment rate and natural catastrophes. High fluctuation in market makes predicting the future prices and movement the most anxious for traders. There are three different methods for analyzing the FOREX market. The first method is technical analysis which uses the historical prices and analyzes them with different tools and indicators. The second method is fundamental analysis that is based on news and economic factors of countries which is announced during the year. Finally, the third method is market trend analysis which is utilized technical analysis and fundamental analysis simultaneously (Roudgar, 2012).

1.1 Aim and Contribution

The aim of this study is to investigate the power of technical analysis for forecasting the market trend and future price in FOREX market. In order to reach this result, the study tests technical analysis in a period of one month in November of 2013. According to the Bank for International Settlements in April 2013, the four most traded currency pairs are selected. EUR/USD, GBP/USD, USD/JPY and AUD/USD are the most traded currency pairs respectively. The platform which is used in this research is Meta Trader 4. The platform represents different tools and indicators which are used in technical analysis. These tools and indicators are simple moving average, MACD, RSI, Fibonacci retracement. Support and resistance line, reversal and continuous patterns are assisted in the study.

These tools, indicators and patterns send various signals to traders. These signals are used simultaneously and no trades are executed. The only trade that is executed is the one through individual signal which is sent only by an indicator. Then traders combine them and specify the reversal pattern zone which is the critical zone. Thus, by reaching the price into this zone, traders monitor the behavior of price and select the best price and time for entering or closing their positions.

1.2 Structure

In the first chapter, a brief history of FOREX market has been sketched out. The aim and expected contribution of the thesis has been explained. Next chapter which is chapter 2 is the literature review of the study which describes the FOREX market in detail as well as different methods of analyzing the market and shortly explains technical analysis and indicators. Chapter 3 describes methodology, the model and approach, terminology and technical analysis. Data for the study and application of data and analysis have been set in chapter 4. The last chapter summarizes and concludes the study.

Chapter 2

LITRATURE REVIEW

The aim of this study is to investigate the power of technical analysis for forecasting the market trend and future price in FOREX market. In order to be able to do such forecasting, one needs to know the major participants in the market, their level of importance and the size of the market. It is crystal clear that one market with such a huge size, transaction and number of participants are faced with advantages and disadvantages which should be considered as some of these markets are there to assist and enable people to make profit whereas the others may be causing people to lose money.

In accordance with the Bank for International Settlement, FOREX market is the biggest market all around the world by volume. According to Roudgar (2012), there are three ways for analyzing the market that is used by traders, technical analysis, fundamental analysis and market trend analysis.

Technical analysts believe that history of data and prices provide enough information to predict the future price in the FOREX market (Bickford, 2008). Technical analysts and traders are assisted by different tools and indicators in order to analyze the history of price and data in the market. The second approach is fundamental analysis. Fundamental analysts monitor the economy of various countries and based on the demand and supply for currencies, they predict the future prices. This type of analysis needs to be practiced a lot. The economy conditions, monetary policy, political forces and some other factors are really critical in fundamental analysis (Bickford, 2008). The last mode of analyzing the market is market trend analysis which is fulfilled by technical analysis and fundamental analysis simultaneously (Roudgar, 2012).

2.1 History of International Monetary System (IMS)

Over the past centuries, all trades and transactions have been done by gold and other valuable items. By passing time and increasing in international trades and agreements, monetary policy has changed (Moffett et al., 2012). The study will explain a brief history of IMS.

2.1.1 The Gold Standard, 1876-1913

Gold has played the main role in all trades and transactions. All products and items have exchanged in terms of gold. The Pharaohs, Greeks and Romans utilized gold coins in their merchandises until nineteenth century. With augment of transaction in nineteenth century, the lack of the official monetary system was becoming more tangible. They led to the classical gold standard which was accepted in Western Europe in the 1870s. The regulations were simple and clear. Each country specified a rate which could be exchanged to gold. According to this system which was accepted by other counties, the value of their currencies towards gold became stable. Hence, the exchange rates between currencies were assigned. There was no problem with this system until World War I (Moffett et al., 2012).

2.1.2 The Interwar Years and World War II, 1914-1944

Currencies have fluctuated over a specific range in terms of gold and other currencies. Unfortunately, this system did not work very well during these years. The problem was that speculators sold the weak currencies and because of this, the value of the related currency dropped more than determined by actual economic factor. On the contrary, for strong currencies, this appreciation could not be compensated. As a result, the amount of trades and transactions in the world declined to a very low level. The US adjusted gold standard in 1934 and U.S dollar depreciated to 35$ from 20.67$ per ounce. In many of the principal trade currencies, the convertibility between currencies was disrupted. U.S dollar was the only currency which could be exchanged by other currencies (Moffett et al., 2012).

2.1.3 Bretton Woods, 1944-Present

Bretton Woods's agreement was signed in 1944 that outlined rules and regulations for an international monetary system. It established a fixed exchange rate linked to the U.S. dollar with other countries pegging their currency to the dollar. This created the International Monetary Fund (IMF), as well as the International Bank for Reconstruction and Development (IBRD), a precursor for the modern World Bank. By the 1970s the fixed exchange rate collapsed and the currencies were traded in accordance with floating rate in lieu of fixed rate until today. The agreement was so named because it was signed in Bretton Woods, New Hampshire (Grabbe, 1996).

The FOREX market is a nonstop cash market where currencies of nations are traded typically via brokers. Foreign currencies are continually and simultaneously bought and sold across local and global market. Therefore, the value of trader's investments increases or decreases based on currency movements. It is with this reason that the foreign exchange market condition can change at any time in response to real time event.

2.2 Market Participants

Foreign exchange market is divided into two classifications: the interbank or wholesale market and client or retail market. The transactions which are executed in the interbank are usually equal to several million U.S dollars or equivalent to its value in different currencies. All the participants in FOREX market are organized in five categories within these two classifications (Moffett et al., 2012). These categories are discussed in the following points below.

2.2.1 Bank and Nonbank Foreign Exchange Dealers

This category operates in both classifications. The difference between bid and ask of foreign exchange is their profit. They buy a foreign exchange at bid price and sell it at ask price. Commercial and investment banks earn adequate profit from currency trading. On average, between 10% and 20% of annually net income of a great deal of banks in the United State is obtained by currency trading (Moffett et al., 2012).

2.2.2 Individual and Firms Conducting Commercial and Transaction

There are various types of firms and individuals who are assisted by foreign exchange market in order to do their transactions like international investors, importers and exporters and tourists. These people are affected by FOREX market incidentally (Moffett et al., 2012).

2.2.3 Speculators and Arbitragers

Speculators and arbitragers trade in market and gain their profit itself. Speculators profit from volatility in market. For example, they buy undervalued currency and sell it again after it is appreciated. However, arbitragers profit from the small difference between bid and ask price simultaneously (Miyazaki, 2007).

2.2.4 Central Banks and Treasuries

Central banks and treasuries are different in behavior and purpose from other participants in FOREX exchange market because they do not look for profit. They utilize their currencies in order to impress on market and monitor the price of their currencies. One of the main goals of them is supporting the value of their currencies in comparison with economic policies and other critical decisions (Moffett et al., 2012).

2.2.5 Foreign Exchange Brokers

All the traders in the world are becoming connected to each other by foreign exchange brokers since they are agents who accomplish buy and sell orders. Furthermore, brokers act as intermediaries amongst traders, banks and anyone who would like to use FOREX market. In exchange for this service, they charge a tiny commission for every trade which is called spread (http://www.easy-forex.com/int/glossary/).

2.3 Size

According to the Bank for International Settlements, the preliminary global results from the 2013 show that trading in foreign exchange markets averaged $5.3 trillion per day in April 2013. This has risen from $4.0 trillion in April 2010 and $3.3 trillion in April 2007. Additionally, the US dollar plays dominant role among all other currencies. Thus, FX deals with the US dollar on one side of the transaction which represents 87% of all deals initiated in April 2013 which is about 2 percent higher than three years before. Second and third places belong to EUR and JPY by 33.4 and 23 percent respectively. The most traded paired currencies belong to USD/EUR, USD/JPY and USD/GBP by 24.1(1.289 billions), 18.3(978 billions) and 8.8(472 billions) percent of FX market respectively (http://www.bis.org/publ/rpfx13.htm). Following pictures illustrate them clearly:

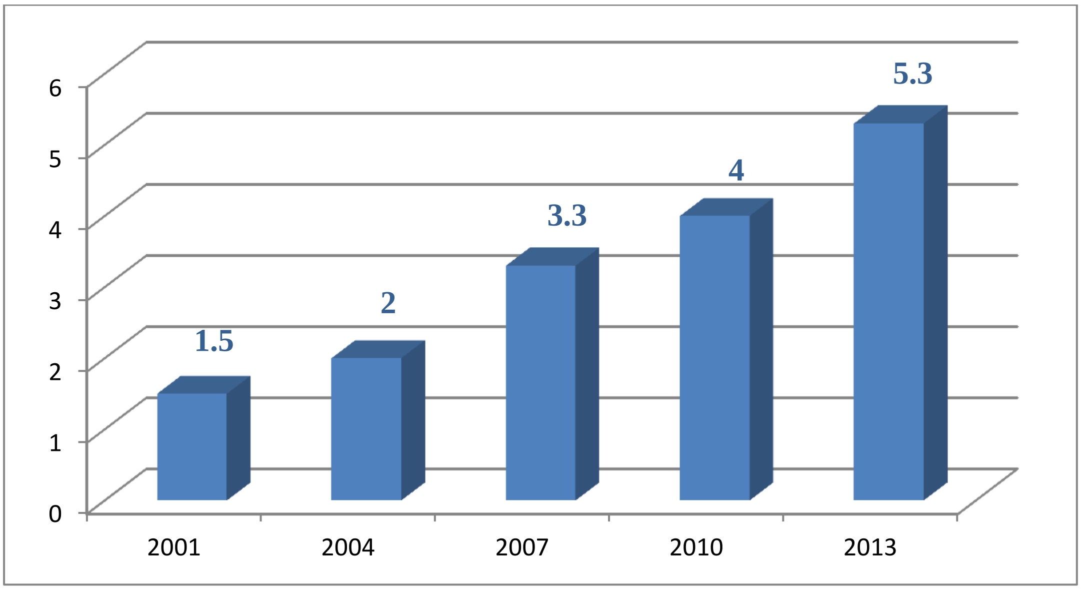

Figure 1: Foreign exchange market daily turnover; in billions US dollars

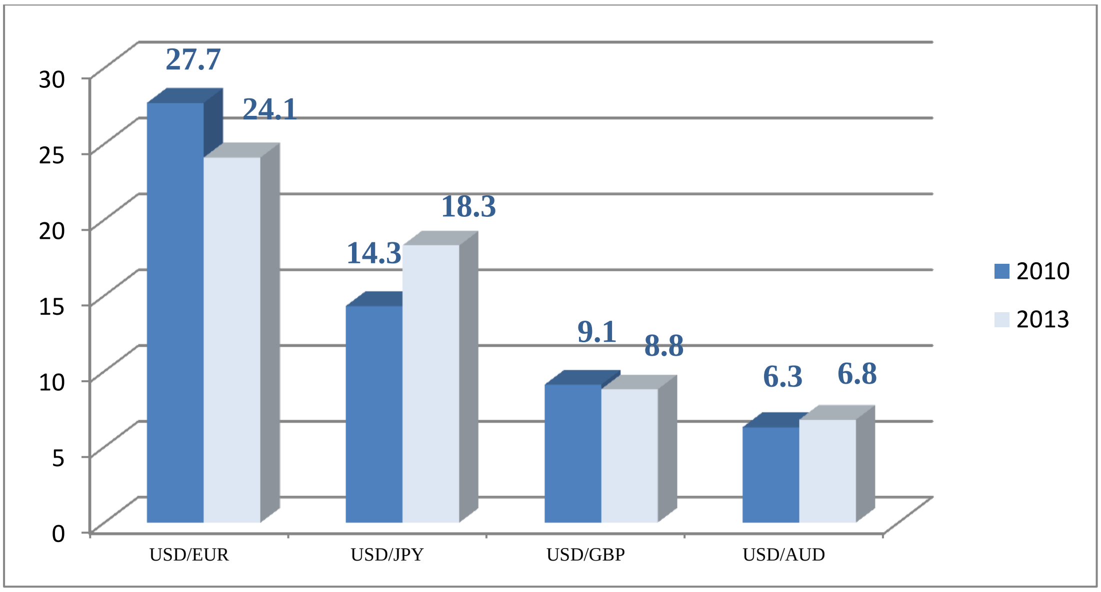

Figure 2: Foreign exchange market daily turnover by selected currency pairs; in percent

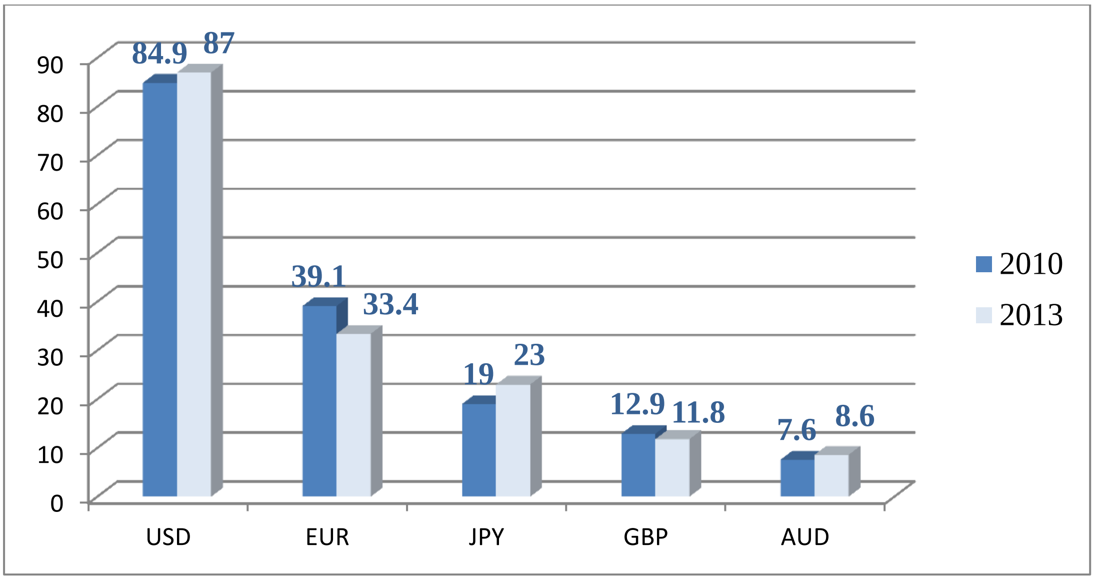

Figure 3: Foreign exchange market daily turnover by selected currencies; in percent

2.4 Fact and Challenges in FOREX Market

There is a huge difference between the size of foreign exchange market and all other markets. Its underlying size gives it specific advantages and disadvantages to participants in this market.

- This market is traded 24-hour in 5 days everywhere in the world except weekend. It started from New Zealand and Sydney, Australia and followed by Tokyo, Hong Kong, and then Singapore and later continued by European markets and finished in the US and now it is time for the Western Pacific countries to open their doors once again. This market never ceases during the week (Chen, 2009).

- Leverage - Foreign exchange markets give investors a lot of leverage when trading. It means a small amount of capital can go a long way. In fact, some brokers allow a leverage ratio of up to 500:1 or 10:1. In other words, a single dollar can be worth up to $500 or $10 when trading. This means that you can earn a lot of money with a relatively small investment (www.Easy-FOREX.com).

- Buy low Sell high; with this ability, you are able to gain profit from both bullish and bearish market; in as much as you can buy the currencies at lower price and sell it at higher. You can sell or buy when the market is overbought or oversold. This is a fantastic opportunity for traders who would like to earn profit from market fluctuation (Roudgar, 2012).

- Lower fees - One of the desirable advantages of FOREX market is its fees. Compared to other markets, this is particularly low-priced. This fee generally is known as spread (the difference between bid price and asked price). In other words, if you spend lower fees, you can save more money.

- Online services and tools; the fabulous advantage of FOREX market is that traders are able to trade wherever they want. Due to online services and tools, they can trade from their own home or any other places. Additionally, traders are allowed to execute their positions by few clicks on internet. Traders are assisted by these facilities in executing or terminating their positions. They put traders in the best position to be profitable in FOREX market.

- The FOREX market is fast and volatile. One of the main disadvantages of FOREX market is that it is fast and volatile. According to this, trades are able to make money quickly but on the other hand, they can lose it fast as well. In the FOREX market, prices can alter instantaneously and predict the future prices which become the foremost worry for traders.

- Leverage can work against you; using leverage in FOREX market is exceedingly tantalizing. Adequate leverage can assist you in gaining profit with a small capital. Likewise, it may cause loss to you. For example, with leverage, making 100$ for each 1$ is plausible. By contrast, losing this amount of money is conceivable as well.

- 24-hour market changes; 24-hours market is truly fascinating. Traders are about to trade whenever they want. On the contrary, it can be against traders. It means that, prices are changed momentarily at any time of the day. For instance, when you are asleep or hold up in traffic, the prices are altering.

- Online connections may fail; as mentioned before, using online connections have lots of advantages. However, they may fail. In accordance with this problem, traders may lose their connection while their transactions are incomplete and they cannot monitor the prices. In such cases, the responsibility of disrupting is held by traders.

2.5 Methods for Analyzing FOREX Market

There are 3 different methods for analyzing market; technical analysis, fundamental analysis and market trend analysis (Roudgar, 2012).

2.5.1 Technical Analysis

Technical analysis is the most popular subject for trading in the foreign exchange market. Price movements and future markets are predicted by using and analyzing the past of market and history. For predicting the future, technical analysts utilize various software, methods, pattern recognitions and indicators simultaneously. They are looking for perfect zone or point in taking position and entering the market and earning profit. It is not uncommon in analyzing market that indicators and lines which traders use to analyze give false signal, odds signal or just do not work. No one knows the future market direction and there is no way to predict the future price with 100 percent assurance. However, this should not be a reason to abandon the whole method of technical analysis (Kahn, 2006).

The main goal of technical analysis is identifying a trend in the early stage, being in same direction with it until its end or finding out when direction is changed and reversed and forecasting of ending trend.

Technical analysis is based on three critical principal:

1. Everything is hidden in market prices. It means that the current price reflects everything which is related to it and able to affect it like fundamental factors such as (interest rate, inflation, GDP, etc.), political factors, economical factors, demand and supply (Shamah, 2003).
2. Price move in trend. Trader and technical analysts use various types of indicators and different methods to look for patterns in chart to identify the trend. If you are able to find out the trend at the first level or distinguishing the changing direction early, you can take a position or terminate your position in the best moment and gaining good profit from the market. There is a famous sentence about trend which all of traders know that "trend is your friend" (Shamah, 2003).
3. History is repetitive. It means that all the things that happened in the past will be repeated again in the future like patterns. Patterns have been made in market over 100 years it is believed they will be repeated in the future as well as the past (Shamah, 2003).

2.5.2 Fundamental Analysis

Countries like public corporations have the same announcements which describe their economic and inform investors about overall health and their abilities. These announcements cause that traders buy, sell or keep currencies of the countries. Each country has about 20 major fundamental announcements that are released in a year which are announced weekly, monthly, quarterly or annually. Some of them are more influential than others. It means that some of them have a huge impact on prices. Traders monitor these indicators, especially those which announce rarely like quarterly or annually (Martinez, 2007). Some of the most important of them are mentioned in the below statements.

- **Gross Domestic Product (GDP):** This is announced quarterly and followed as the most important factor in the strength of economic activity of a country. It means, “the total value of a country’s production during the period and consists of the purchases of domestically produced goods and services by individuals, businesses, other countries and the government” (Shamah, 2003).
- **Producer Price Index (PPI):** This is “a measure of the average level of prices of a fixed basket of goods received in primary markets by producers” (Shamah, 2003, p.153) which is announced monthly..
- **Consumer Price Index (CPI):** This is “a measure of the average level of prices of a fixed market basket of goods and services purchased by consumers” (Shamah, 2003, p.152). CPI is released monthly.

Countries explain their situation to the traders by announcing these numbers and according to them traders start to trade. If these numbers are more than forecasting, this is good for the country and the currency will appreciate and this is a perfect situation for making buy position. If released number is less than forecasting, this is not good for country and the currency will depreciate and sell will be chosen and finally, if it is the same as the forecasting, it will remain neutral (Martinez, 2007).

When a fundamental is near to be announced, the market begins to consolidate. It means that all the traders stop trading and wait for that news. After few seconds, depending on news and numbers, price starts to move and dramatic movements can be seen in the chart.

During fundamental announcement, traders must pay attention because in a few seconds they can gain a lot of profit or miss a lot of money at the same time.

Three major world economic and time zone should be monitored by traders:

1. The Asian Market
2. The European Market (Great Britain specifically)
3. The U.S. Market

The majority of FOREX trading transactions are done in Great Britain. More than 75 percent of all FOREX transactions are done during the trading session of the European market. Traders trade the six major world currencies; EUR, GBP, CHF, JPY, CAD, and AUD against the U.S. dollar. However, most are paid in U.S. dollars (Martinez, 2007).

One of the other factors which is really important is natural catastrophes that happen suddenly and have a huge impact on market like earthquakes or floods. For example in 2011 in New Zealand an earthquake of 6.3-magnitude resulted in multiple deaths and ruined buildings. Because of this, New Zealand dollar slumped against other currencies. In NZDUSD which is illustrated below can see this fall which is 200 pips approximately. Before the earthquake, the rate was 0.7635 and suddenly after few hours it decreased to 0.7491 and after that it reached 0.7454 (Vyun, 2011).

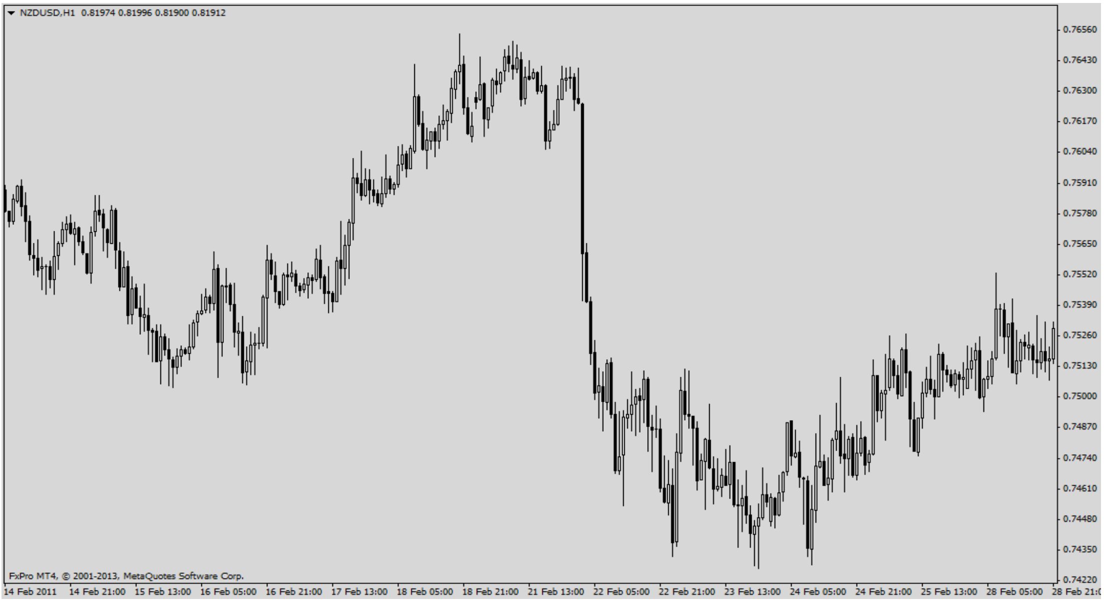

Figure 4: Big drop in NZD/USD Due to Natural Catastrophe, NZD/USD, H1 chart

2.5.3 Market Trend Analysis

The third group belongs to traders who are expert and experienced. They utilize technical analysis and fundamental analysis simultaneously and combine their signals together. Based on these signals, they make a decision and specify the best time and price for entering or terminating their positions (Booker 2006).

2.6 Tools and Indicators

There are a lot of tools and indicators which assist traders in finding important zones. After finding these zones, they start to trade. Undoubtedly, there are false and wrong signals with using these tools and indicators. Yet, in FOREX market no one is able to forecast the future market without any mistakes and can tell the future price and predict the next movement of the market. When you find out these zones they tell you that afterwards that it is possible to observe reversal, continuous or sideways movement in market price. With these results traders decide to take sell or buy position or not to take any positions until they find a better signal and zone for entering the position. Some of the most useful, important and functional tools and indicators are utilized by traders and technical analysts that are specified in the following statements.

- Candlestick Chart
- Support
- Resistance
- Simple Moving Average
- Moving Average Convergence Divergence (MACD)
- Relative Strength Index (RSI)
- Fibonacci Retracement

These will be explained in next chapter in details.

According to this chapter, technical analysis and fundamental analysis are the inseparable parts of trading in FOREX market. Traders are assisted by these methods in their trades. Some traders utilize fundamental analysis and technical analysis separately and the others use them simultaneously. MacFarlin (2011) categorized interest rate, employment, economic growth and trade, geopolitical events and commodity prices as top 5 FOREX fundamentals respectively. In another study which is focused on the technical analysis, it indicates that technical analysis stays passionately as a passion for many traders and should be assessed repeatedly as important method and tools in order to achieve profits (Menkhoff & Taylor, 2007). Importance of using technical analysis and fundamental analysis simultaneously is mentioned by Oberlechner (2001) in the European foreign exchange market. By collecting questionnaires from different European countries, he found that a majority of traders in Europe utilize a mixture of both methods (Oberlechner, 2001).

One of the infirmities of technical analysis is described by Sulistiawan & Hartono (2014). Technical analysis is tested before and after earning announcement in Indonesia between 2007- 2011. The result shows that the profitability of technical analysis signals before announcing is more than after announcing (Sulistiawan & Hartono 2014). In other words, the signals which are received before earning announcements are reliable.

In accordance with tools and indicators for trading FOREX, Cofnas (2004) mentioned that tools and indicators which are utilized lonely are useful, however when they are used together, they have eliminated false signals and the possibility of profitability is increased by this method.

In another thesis which is accomplished, Roudgar (2012) tested the success of technical analysis. He emphasized that technical analysis has played crucial role for analyzing the FOREX market and suggested that technical analysis is a vital method for forecasting the future prices, entering and closing positions.

Chapter 3

METHODOLOGY

The main purpose of this study is to investigate the power of technical analysis for anticipating the market trend and future price in FOREX market. What's more, technical analysis assists traders for analyzing the market. The study will test this method and investigate the probability of its success. In this study, different patterns, tools and indicators are adopted for analyzing the market. As mentioned in previous chapter, in this method historical prices are analyzed for predicting the future price and movement of the market.

As discussed in the previous chapter, traders and analysts use different methods for analyzing FOREX market. There are three types of methods for analyzing and three groups' traders. First group utilizes only technical analysis while the second group uses only fundamental analysis and the last group combines both technical and fundamental together and analysis the market.

3.1 The Model and Approach

The model which is applied for this study is ***Reversal Pattern.*** Reversal pattern zone specify important and critical zone and send different signals to traders where a new trend and movement is possible to occur. Depending on the signal, both continuation or reversal movements are possible. After finding these zones, the behavior of prices are monitored accurately and the best price and time for entering the market is chosen.

The study does not use pattern for trading alone. These patterns are supplemented with other tools and indicators in order to find out the right price and time for taking a position. Traders can distinguish oversold and overbought prices by assisting tools and indicators which are explained briefly in the previous chapter. In these zones, most of the time, pattern are shaped and indicators send supplement signals. For example, if products are oversold after analyzing and receiving signals from indicators, traders are supposed to a reversal trend and they are expected to an uptrend after this zone. If the price is overbought, a downtrend will be considered by traders and analysts.

The purpose of this study is using patterns, tools and indicators for finding potential zone. In other words, traders and analysts are assisted by patterns, tools and indicators to find the perfect time and price for entering the position. Furthermore, finding out the right price and time in order to terminate their positions is also needed. On account of the volatility of the market, it is common that a trade goes into profit for a while, suddenly changes its direction and continues its direction in opposite trend and closed with loss. Because of this, finding the best price and time for terminating the trade with profit is seriously vital.

One of the other purpose of this study is to find trends. It is really important that traders can find and distinguish the trend at the first stage. If traders distinguish a new trend, they are able to gain maximal profit from it. Thus, recognizing the end of a trend is important, because traders can terminate their previous positions in best situation with sufficient profit and become ready for taking new positions in a same direction of new trend.

In this study, patterns, tools and indicators are utilized at the same time. If most of them send the same signal, position will be formed. No positions are formed by sending signal from one of them. This is because the probability of sending failed and wrong signal by indicators, tools and patterns are individually high. If the position is made by receiving signals from all of them or most of them, the percentage of these mistakes will become less and less. For example, if a pattern like double top is distinguished, no position is made only by this signal. However, if RSI shows overbought, price is near the one of the Fibonacci ratio and MACD is confirmed a downtrend and started a new trend, a position will be made. In this situation, the probability of a downtrend is excessive and the most of the failed signals will be eliminated.

The study will explore the percentage of probability of technical analysis' successfulness in FOREX market. It will test technical analysis, tools and indicators in different timeframes and find out how many signals which are sent, are based on technical analysis which are true and reliable and how many of them are failed and wrong. In general, the study is going to test this method for trading FOREX market in various timeframes.

The study will test this method for a period of 1 month from 1st of November 2013 until 30th of November 2013. The study classifies the time of trades into three categories. In other words, time of termination for every trade is classified. After taking a position, if a trade lasts for less than 12 hours, it will call it as ***hourly***. It means that after opening a trade in FOREX market, if trade terminates with loss or profit less than 12 hours, it will be classified as hourly. In the second category, if the termination's time of each trade lasts from 12 until 24 hours, it will be called as

midday. It means that from opening a position until closing the position, it lasts from 12 until 24 hours which is known as midday. For the last category, if every trade lasts more than 24 hours, more than one day, it is called ***daily***.

In FOREX market, currencies are traded against each other. In accordance with testing the method, the study selects four currency pairs among all of the currency pairs in FOREX market. As we discussed in previous chapter, 87% of transaction in FOREX market belong to the US dollar. In the light of this issue, the study chooses these four currency pairs from major currencies. According to report which is announced in September 2013 by the Bank of International Settlement, EUR/USD, GBP/USD, USD/JPY and AUD/USD are the most traded currency pairs in FOREX market. Under this report EUR/USD has shrunk from 27.7 to 24.1 since April 2010. In contrast, USD/JPY has jumped from 14.3 to 18.3 in April 2010. GBP/USD has decreased about 0.3 and with 8.8 percent has stood in third place. AUD/USD with 0.5-increased and 6.8 percent of all the market holds the forth place.

All the orders which are executed by traders are effectuated by internet. In the other words, the connection among trades, brokers and market are fulfilled by internet. As explained before, brokers play intermediary roll between traders and market. Because of this, brokers or brokerage companies supply different equipment and features to traders for trading in market. Meta Trader 4 is one of the most popular and frequent platform which is used by traders. One of the famous brokerage companies which provide professional services to clients in more than 150 countries is FxPro group. It is regulated in both UK and Cyprus .The study takes advantage of FxPro’s platform and its tools and indicators.

The purpose of the thesis is to predict the price movement and market trend in the early stage. For reaching this goal, some of the functional and popular technical indicators are applied by this research from Meta Trader 4. These indicators consist of Candlestick chart, Moving Average, Moving Average Convergence Divergence (MACD), Relative Strength Index (RSI) and Fibonacci Retracement.

In this study, trades are limited to 80 pips. In other words, 40 pips are counted as stop loss and 40 pips are evaluated as take profit. Whereupon price hits the stop loss and the position will be closed automatically with loss. In contrast, whenever price touches the take profit, the position will be terminated automatically and trade will close with profit. No position is closed manually and all of them will be closed with hitting the stop loss or take profit by market price.

In this research, the main focus is on the number of positions which are executed during the study and terminated with profit or loss. After closing the position, they will be classified in one of the three categories which have been explained before. Ultimately, after this classification, the percentage of successfulness will become clear.

3.2 Terminology

In last chapter, some tools and indicators have been explained briefly. In this chapter, the study will discuss about them in detail consecutively. Interpretation, performance and sending signal of them will be mentioned. However, before these explanations, it is useful to realize some definition of common terminologies in FOREX market. The most important terms are defined as follow:

Currency Pair – In every FOREX trade, buying of one currency and selling the other currency are done simultaneously. For example if you buy USD/JPY, you will buy USD as called Base Currency and sell second currency, JPY which is called Counter or Quote Currency.

Major Currency – If USD is involved in every currency pair as base or counter currency. It will be called major currency like EUR/USD, GBP/USD, USD/JPY and USD/CHF.

Cross Pair – If USD is not involved in currency pair, it will call cross pair, GBP/CHF, CAD/JPY for instance.

Broker – An individual or firm which acts as an intermediary between buyer and seller and in return charges fee or commission as spread.

Pip – the smallest unit of price in every currency price is called pip. Most of time, pip is the fourth decimal digit but in some brokers' chart fifth decimal is observed which is called pipet. Each pip is equal to 10 pipets. For example if bid price of USD/CAD changes from 1.0512 to 1.0520 it means currency pair is increased by 8 pips.

There is one exception which is JPY (Japanese Yen). In this pair currency, price is shown with two decimal and the last decimal is calculated as pip like 101.03 in USD/JPY.

Lot – “A lot is a standardized trading unit of 1,000 USD, leverage 100 to 1, controlling $100,000 USD unit of base currency”(Rosenstreich, 2005, p. 50). There are smaller sizes which are offered by some brokers that called mini and micro lot.

Leverage – It is an ability that offered by brokers which allows you to trade with multiplied of your capital. It could be from 1 to 500 that are different in brokers. When you use leverage 1 to 100, it means that if your capital is 1,000 USD, you can trade until 100,000 USD. Leverage observed as the biggest advantage and at the same time disadvantage of FOREX market, it can help you can earn a lot of profit with small capital or can cause huge losses to you.

Bid Price – The price which market is prepared to buy from trader. For example in EUR/USD, 1.3557/1.3559, the bid price is 1.3357 that means trader can sell one EUR for 1.3357 USA dollar.

Ask Price – The price which market is prepared to sell to trader. For example in EUR/USD, 1.3557/1.3559, the ask price is 1.3559 that means trader can buy one EUR for 1.3359 USA dollar.

Spread – This is the commission or charging money which brokers charge traders in every trade. The difference between ask price and bid price are called spread.

Balance – The amount of money is in trader’s account when trader has not got any open positions in the market.

Margin – The amount of money which broker hold in its account when trader has open option until trader terminate his/her position.

Margin Call – When trader losses money and does not have sufficient margin for taking position, it is called margin called that means trader should recharge his/her account.

Take Profit – It is the certain price which trader specifies it for his/her profit. When the price hits it, the position will be closed with profit automatically.

Stop Loss – It is the certain price which trader specifies it for his/her loss. When the price hits it, the position will be closed with loss automatically.

3.3 Technical Analysis

Technical analysts have been using various types of tools and indicators for trading in FOREX market. Some of the most important tools and indicators are mentioned in previous chapter. In this section, the study goes further and divides technical analysis into two parts. Technical indicators like simple moving average, MACD and RSI will be explained in first part in detail and their signals sent out will be interpreted and discussed. In the second part, some mostly used famous and functional patterns which are shaped in FOREX market like head and shoulders, triangles will be discussed.

These tools and indicators are utilized by traders and technical analysts because each of them is focused on specific part of market. They supplement each other and when they have been used together, they specify the best zone for entering the market to gain superlative profit or closing the position before losing your gains.

3.3.1 Tools and indicators

In this section the study will explain some of the most popular and functional indicators in detail which have been discussed in the previous chapter. This will give some effective information about them and tell how they become interpret and work.

3.3.1.1 Candlestick chart

Candlestick charting method is invented by Japanese rice traders in the 1600's. Traders' emotions are shown by candlesticks. Candlestick charts consist of real-body and shadow. The difference between opening and closing price is called real-body and the difference between open and close with the highest and the lowest price which is shown with a line is called the shadow. If the closing price is higher than opening price, the body will be white and called bullish. It means that the price is increasing and if the closing price is lower than opening price, the body will be black and called bearish. It means that the price is decreasing. Candlestick charts provide an outstanding outlook for realizing the market movement in a short time and give a good opportunity to traders for understanding the supply and demand between the currency pair and making a good decision for the next movement of the market (Duddella, 2008).Candlestick formation and candlestick chart are illustrated below respectively.

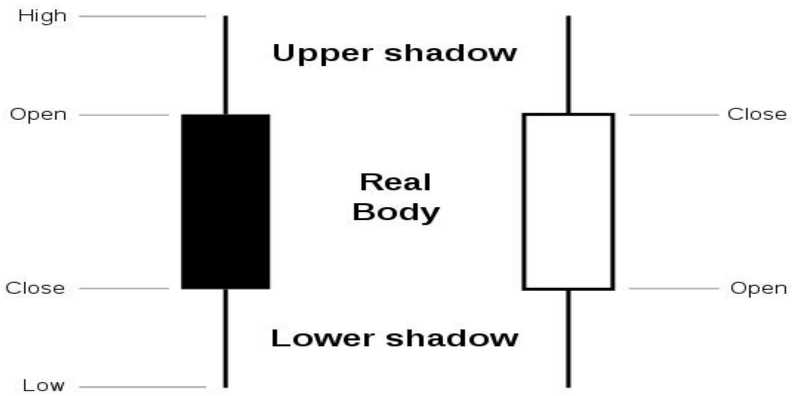

Figure 5: Candlestick Formation

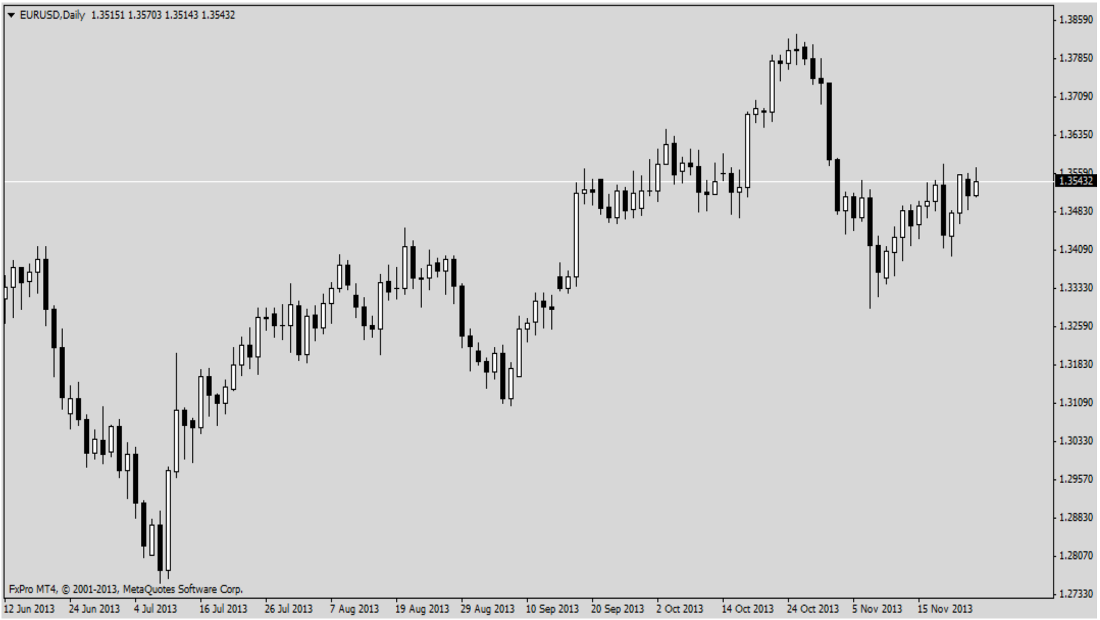

Figure 6: Candlestick chart, EUR/USD, Daily Chart

3.3.1.2 Support

Support is a price level which buyers have a sufficient strength who will not allow the price to decrease anymore. When the price reaches this point, buyers start to buy and demand for the base currency which will increase rather than supply. In other words, when the price is in a downtrend, buyers interfere with buying the currency and reversal movement is observed in a chart. When the price hits the point, it is similar to bounce a ball which hits the wall. Support is shown in chart with a horizontal line or sloping line (Elder, 1993). However, when this point is broken and price passes it, it means sellers are stronger than buyers and supply is becoming bigger than demand.

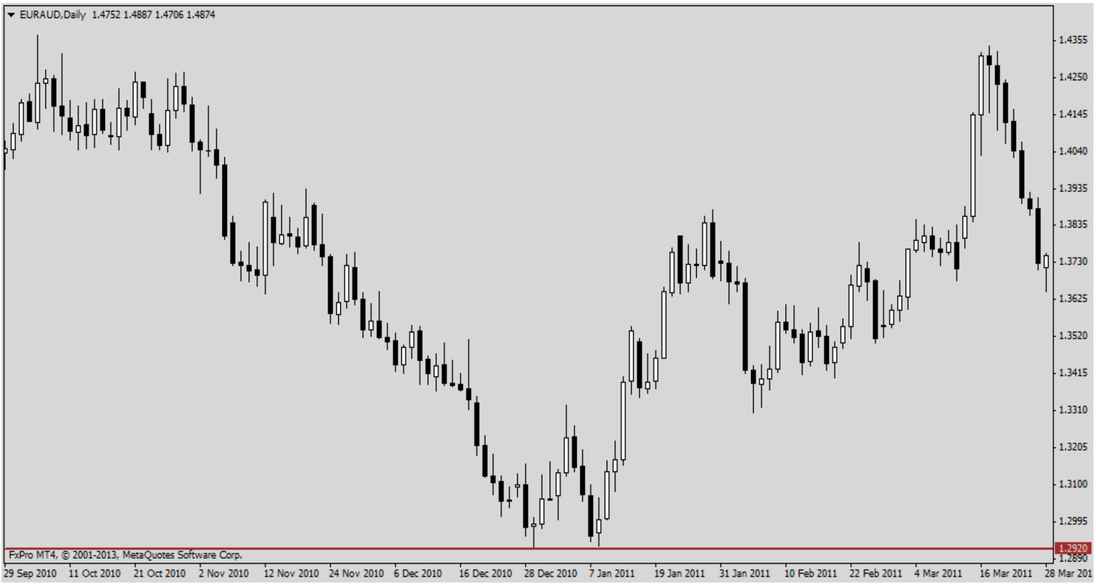

Figure 7: Support line, EUR/AUD, Daily Chart

3.3.1.3 Resistance

Resistance is a price level which sellers have a sufficient strength who will not allow the price to increase anymore. When the price reaches this point, sellers start to sell and supply for the base currency which will increase rather than demand. In other words, when the price is in an uptrend, sellers interfere with selling the base currency and reversal movement is observed in a chart. Resistance is shown in chart with a horizontal line or a sloping line (Elder, 1993). However, when this point is broken and price passes it, it means that buyers are stronger than sellers and demand is becoming bigger than supply.

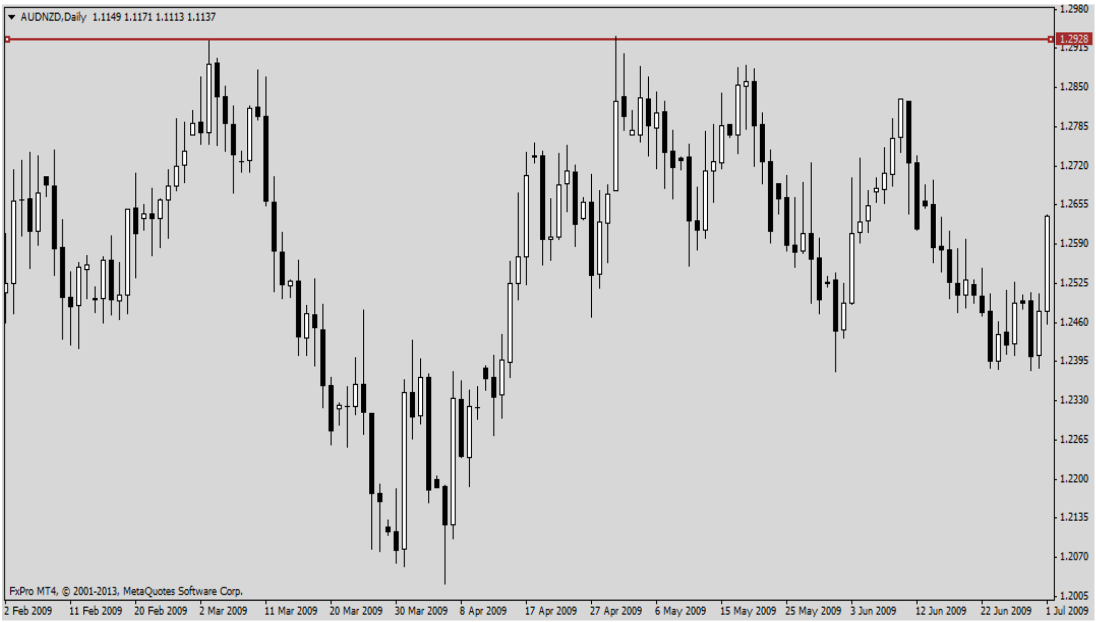

Figure 8: Resistance line, AUD/NZD, Daily Chart

3.3.1.4 Simple Moving Average

There are various types of moving average which is simple moving average. This is the most basic and popular moving average among traders. Simple moving average calculates the closing price of specific period adds them up and then divides them by the number of period. For example 100 day moving average means the average of closing price of last 100 days. There are several points in chart which price and moving average cross each other. Every time that price has been higher than moving average, it means that price is moving above the average. This shows strength in market and buyers are encouraged to buy more. Thus the specific currency and price moves higher and higher. In this situation, an uptrend is observed in the market (Kahn, 2006).

On the other hand, when the price falls below the moving average, it means the average is higher than the price. In this circumstance, traders commence to sell that currency and price decreases progressively. A bearish trend can be seen clearly in the following chart. When a downtrend occurs in market, it can be defined as supply which is more than the demand (Kahn, 2006).

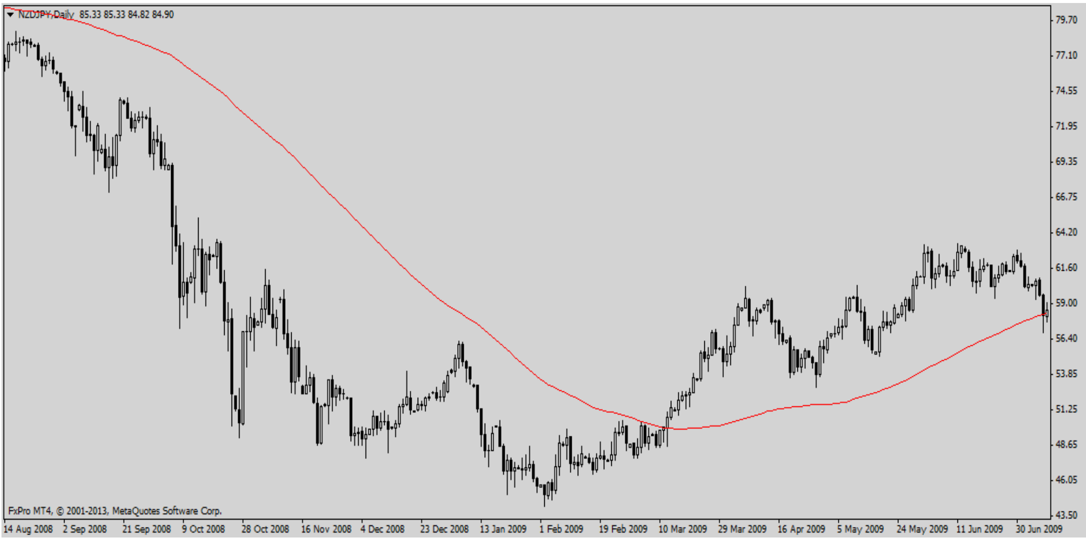

Figure 9: 100-day Simple Moving Average, NZD/JPY, Daily Chart

3.3.1.5 Moving Average Convergence Divergence (MACD)

Gerald Appel who was an analyst and money manager in New York introduced MACD for the first time in late 1970s. As explained before, MACD consists of 2 lines which cross each other and some vertical lines which are shaped as histogram. The red dashed line is known as signal line and it is 9-day exponential moving average (EMA). The other line which is blue is known as MACD line. MACD line is made by subtracting 26 day EMA and 12 EMA. Histograms are equal to the difference between MACD line and signal line. There is a horizontal line which is called zero line and it is very important. As can be seen in indicators window, histograms are sometimes placed above or below the zero line. If they are above the zero line, it means the market is bullish and if they are below the zero line, it is defined as bearish. The other signal is sent by crossing MACD line and signal line. After the crossing, if the signal line is above the MACD line, sell position will be a good position. In contrast, if the signal line is below the MACD it will mean MACD line is above the signal line. Additionally, MACD will send and buy signal for traders (Elder, 1993).

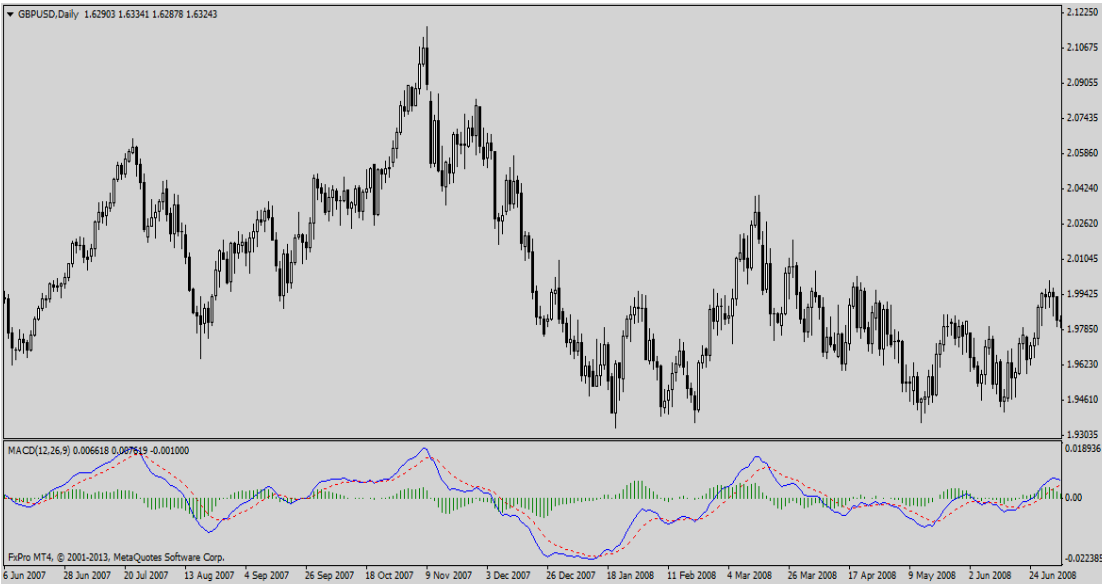

Figure 10: Moving Average Convergence Divergence, GBP/USD, Daily Chart

3.3.1.6 Relative Strength Index (RSI)

This indicator is invented by Welles Wilder in 1978. Whenever traders would like to know a currency that is overbought or oversold, RSI was the best indicator that could assist them. Overbought shows uptrend in market and traders buy the currency for a long time. After a period of time, saturation will happen and trend commences to reverse or at least consolidate.

Oversold shows downtrend. It means, traders sell a currency for a long time and now market is going to change its direction. After oversold, probability of uptrend or consolidation is going to be high.

RSI is limited between 0 and 100. If the RSI goes above the 70, it will show overbought and if the RSI goes under 30, it means the currency will oversold (Archer, 2012).

The main point to mention is that position should not be taken only by RSI signal. Traders should combine this signal with supplementary signals which are sent by other indicators or patterns in market in order to decrease their mistakes.

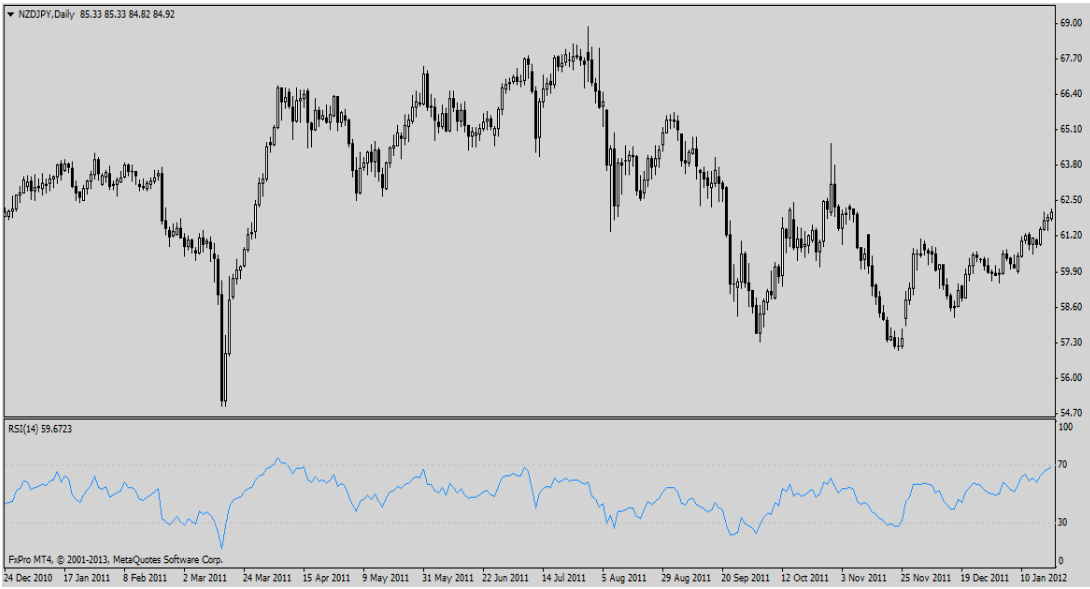

Figure 11: Relative Strength Index (RSI), NZD/JPY, Daily Chart

3.3.1.7 Fibonacci Retracement

Fibonacci sequence was invented by Leonardo de Pisa de Fibonacci who was a famous Italian mathematician in the thirteenth century. He was born in 1170 in Italy. Fibonacci was keen on numbers. The Fibonacci sequence is calculated by adding the last two numbers and it is equal to next number.

1 + 1 = 2   5 + 8 = 13

1 + 2 = 3	8 + 13 = 21
2 + 3 = 5	13 + 21 = 34
3 + 5 = 8	∞

The most important ratios which are used by trades are 23.6%, 38.2%, 50%, 61.8% and 100%. In bullish market, price makes higher highs and higher lows and in bearish market price makes lower highs and lower lows. In bullish market, price starts to increase. With passage of time, price commences to retrace and decrease until one of the Fibonacci ratios. After hitting them, price bounces again and makes new higher high. In contrast, in bearish market, when price decreases and makes lower low, starts to retrace until one of the Fibonacci ratios. After reaching that ratio, price changes its direction and keeps on making new lower low (Martinez, 2007).

Fibonacci ratios are one of the best tools for finding support and resistance line in FOREX market. With this tool, traders are able to distinguish the critical price and monitor the behavior of price in that zone. With monitoring price, traders can find out the best price for entering the market or closing their positions.

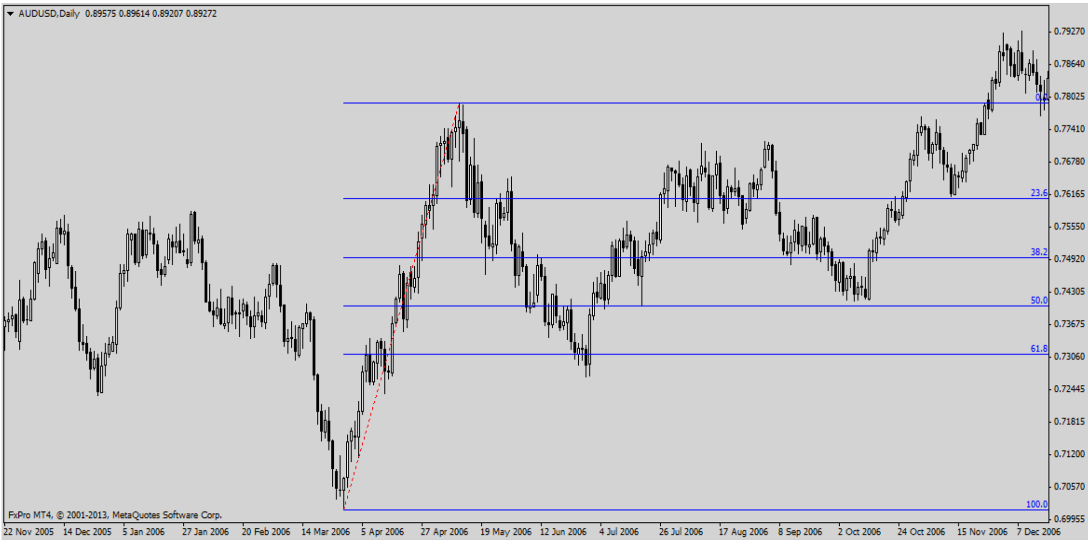

Figure 12: Fibonacci Retracement, AUD/USD, Daily Chart

3.3.2 Patterns

There are many types of patterns in the market. They are shaped in different timeframes like weekly or M5. Patterns are divided to two categories. First is reversal patterns and the second is continuous patterns. Distinguishing patterns in market is easy. For obtaining this ability, practicing is essential. The most important point is that traders should not trade only with finding this pattern. After finding these patterns and specifying important zone, traders should receive and combine supplementary signals. After gathering these signals and analyzing them, traders wait for choosing the best price and time for entering the market or closing their positions. The study will explain some of the most famous and common patterns in two separate part which are reversal patterns and continuous patterns.

3.3.2.1 Reversal Patterns

Reversal patterns are formed at the end of a trend. For example if market is bullish, reversal patterns can be seen at the top of the market. After that, it is most likely that market will change its direction and start to build a new downtrend. Bullish and bearish head and shoulders, double top, double bottom, triple top and triple bottom are the most famous reversal patterns which are discussed in the following statements.

3.3.2.1.1 Head and Shoulders

It consists of 4 elements, left and right shoulders, head and neckline which are depicted below. There are two types head and shoulders, bullish and bearish head and shoulders. Bullish head and shoulders is formed at the end of a downtrend and after it, most probably, market changes its way and commences to make a bullish market. Bearish head and shoulders are observed at the end of an uptrend and show the weakness of the bullish market. Traders are waiting for a bearish market after this pattern.

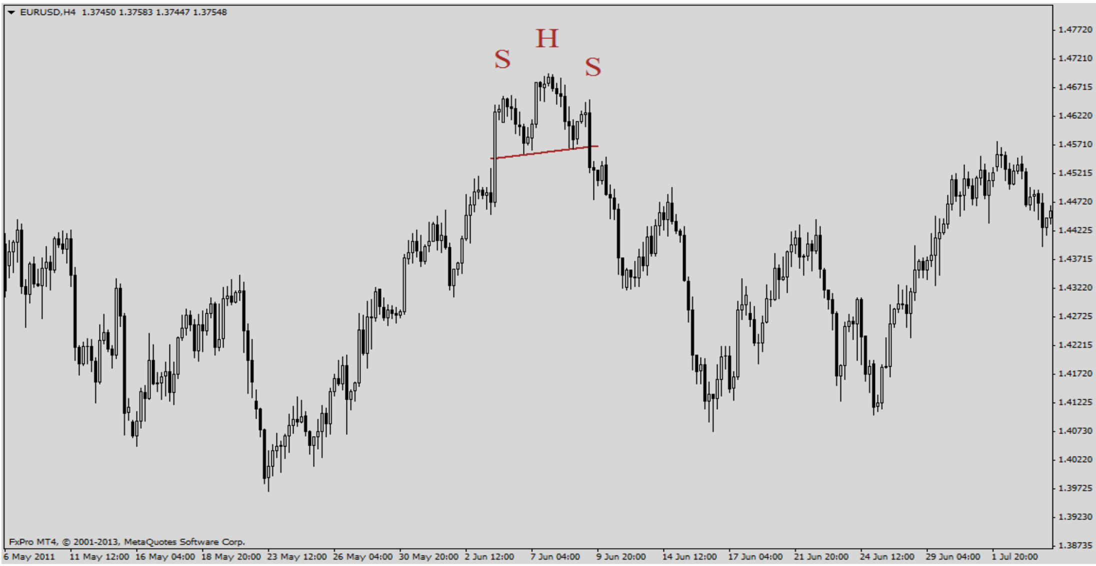

Figure 13: Bearish Head and Shoulders, EUR/USD, H4 Chart

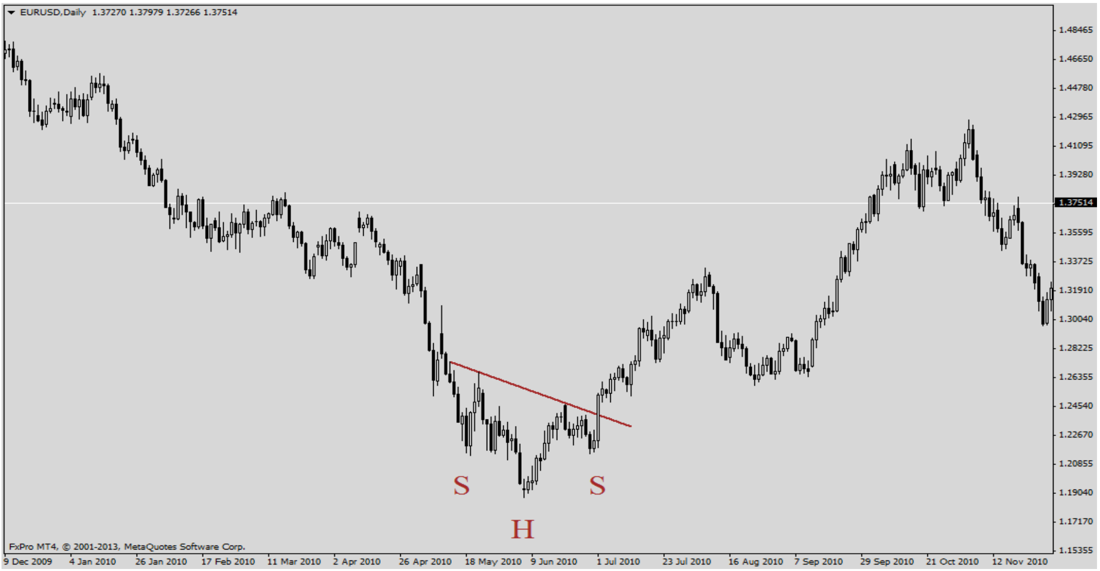

Figure 14: Bullish Head and Shoulders, EUR/USD, Daily Chart

3.3.2.1.2 Double Top and Double Bottom

Double top is shaped at the end of the bullish market. In this pattern, price tries to break a strong resistance twice and after that a fall can be seen in market. In contrast, double bottom is formed at the end of the bearish market. Like doublet top, this pattern tries two times to pass a strong support and after this attempt, market changes its direction and a new uptrend is made.

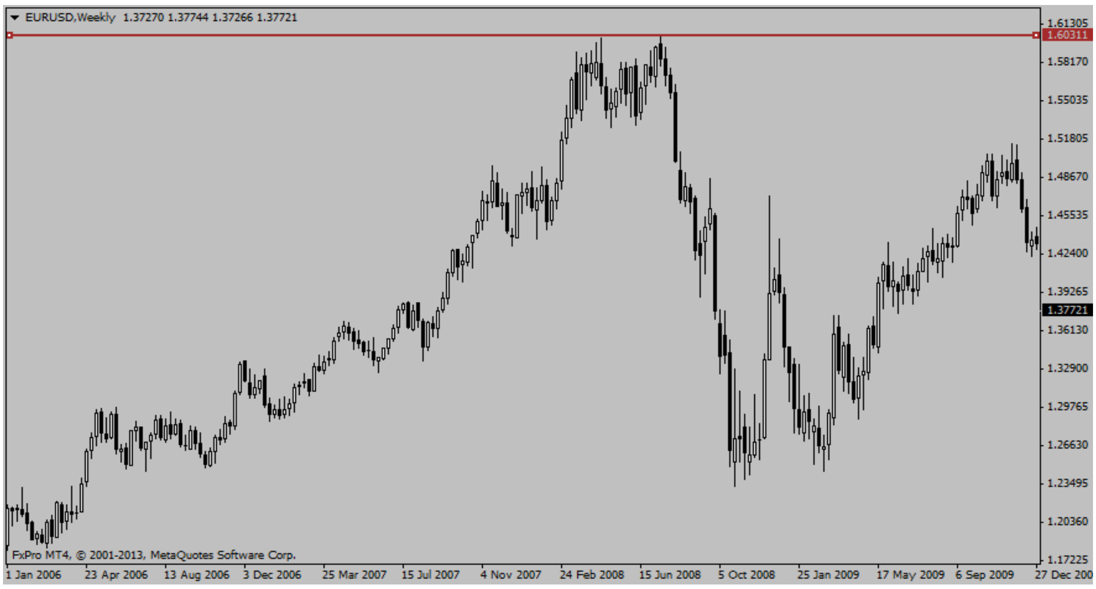

Figure 15: Double Top, EUR/USD, Weekly Chart

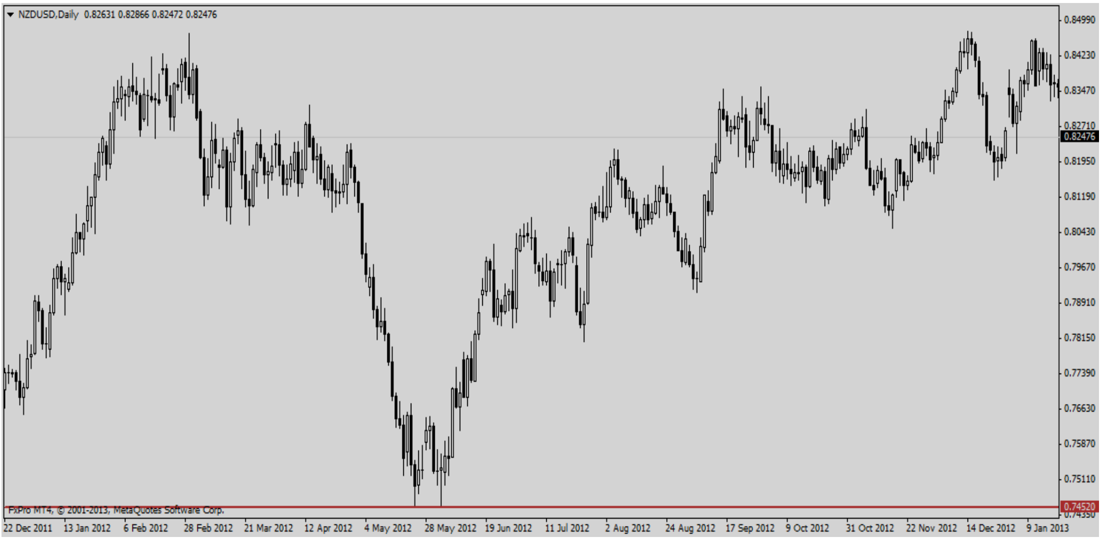

Figure 16: Double Bottom, NZD/USD, Daily Chart

3.3.2.1.3 Triple Top and Triple Bottom

These patterns are very similar to double top and bottom. The only difference of them is the number of their attempts. In triple top and bottom, price test the support and resistance for three times. After triple top, a downtrend can be formed and after triple bottom, an uptrend can be made in market.

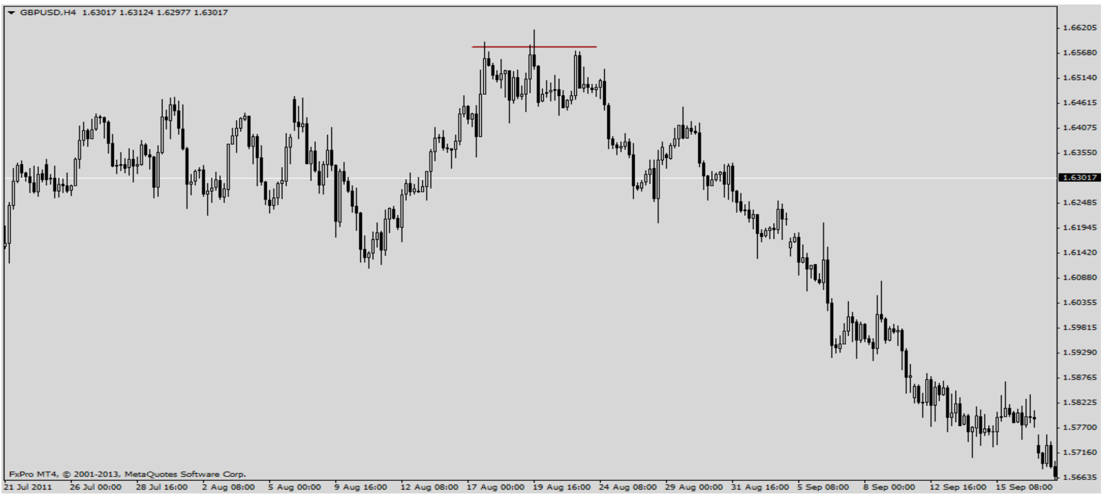

Figure 17: Triple Top, GBP/USD, H4 Chart

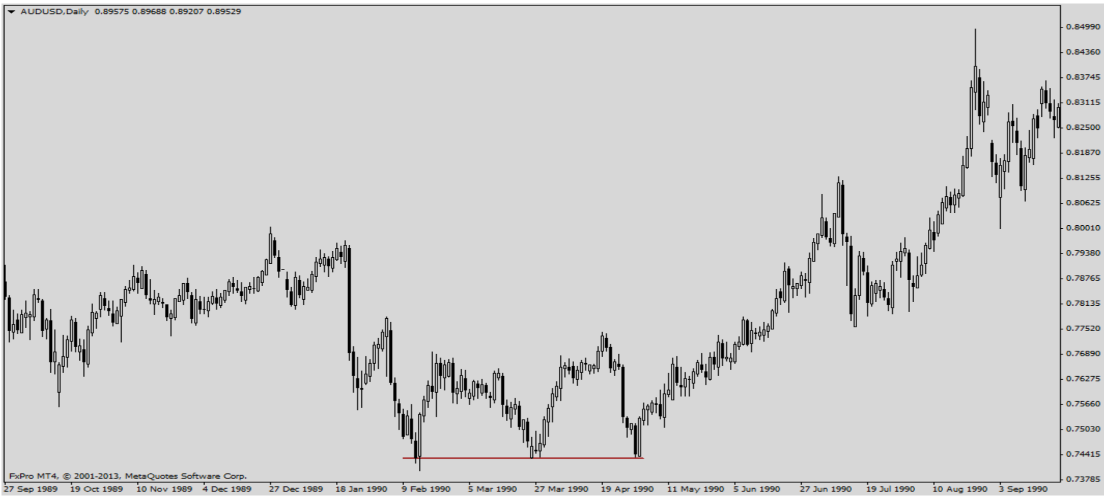

Figure 18: Triple Bottom, NZD/USD, Daily Chart

3.3.2.2 Continuous Patterns

Market usually goes up and down. Sometimes, it starts to move sideways. It is not going to occur that price goes up or down for a long time. After a movement, market needs some rest. Price moves sideways and during this time, buyers and sellers think about their positions, balance their profit or loss and analyze their strategies again. Additionally, market refuels itself and scampers again. This resting area is known as Congestion zones. At this time, continuous patterns are formed commonly (Kahn, 2006).

The study will depict some of the common and popular continuous patterns. Symmetrical triangle, ascending triangle, descending triangle, rectangle and flag will be discussed as it is in the following analyzes.

3.3.2.2.1Triangle

One of the famous congestion areas are triangles which are circumscribed by two lines. Depending on these two lines, there are three types of triangles.

Symmetrical triangles are made by two convergent lines. In this pattern, the challenge between sellers and buyers are clear. Supply and demand decreases, with passing time, price starts to move again.

Ascending triangles are also made by two lines. The upper line is horizontal and the lower line is rising. In this pattern, the flat line shows buyers' power and rising line shows the decrease of sellers' strength.

Descending triangles comprise of two lines which are the lower line that is horizontal and the other that is dropping. The horizontal line shows the power of the sellers which is constant and the other line shows the fall in buyers' capacity to raise the price (Elder, 1993).

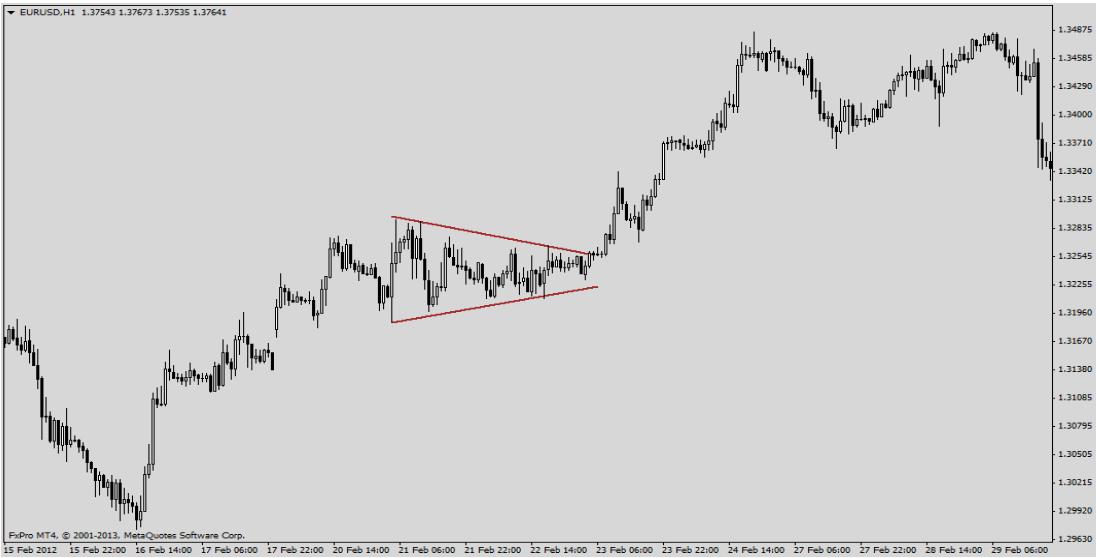

Figure 19: Symmetrical Triangle, EUR/USD, H4 chart

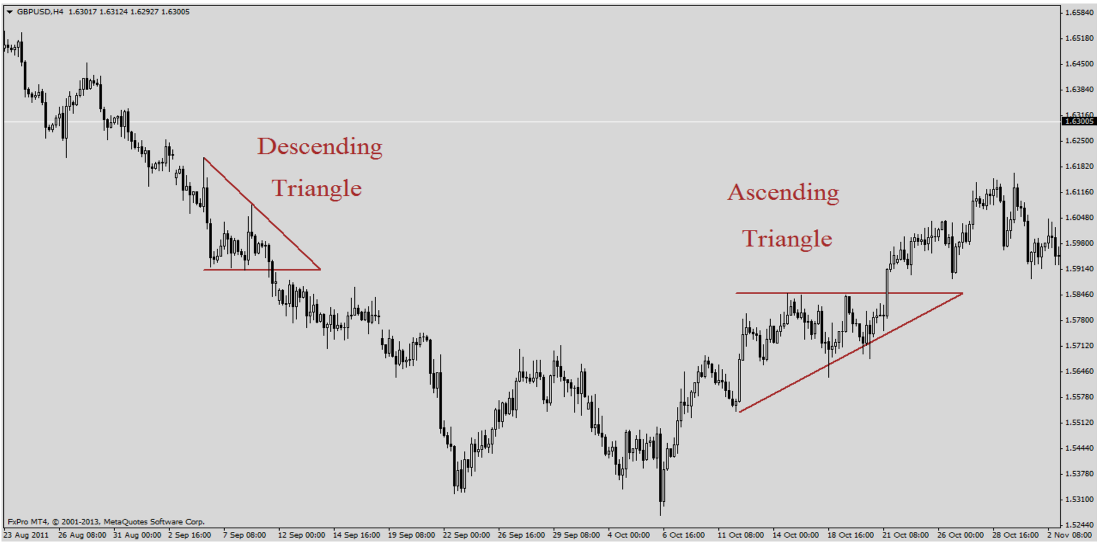

Figure 20: Ascending Triangles and Descending Triangle, GBP/USD, H4 chart

3.3.2.2.2 Rectangle

The other pattern which depicts congestion zone is rectangles. In this pattern, price is bounded between two parallel lines. The upper line should connect at least two high prices and lower line should connect at least two low prices. These lines play roll as resistance and support line. In this zone, the match between buyers and sellers can be seen obviously (Elder, 1993).

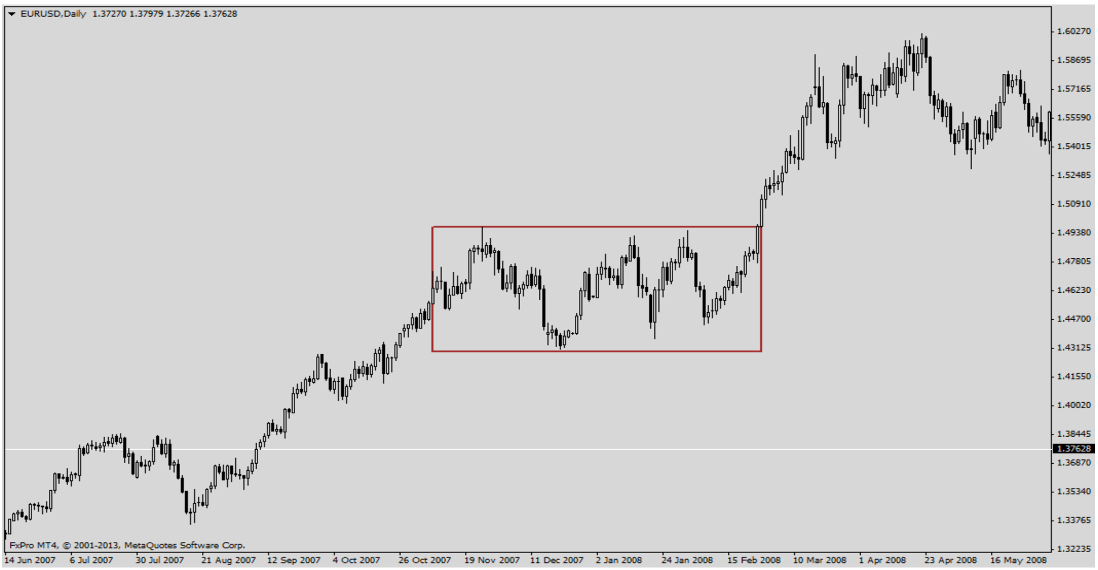

Figure 21: Bullish Rectangle, AUD/USD, H1 Chart

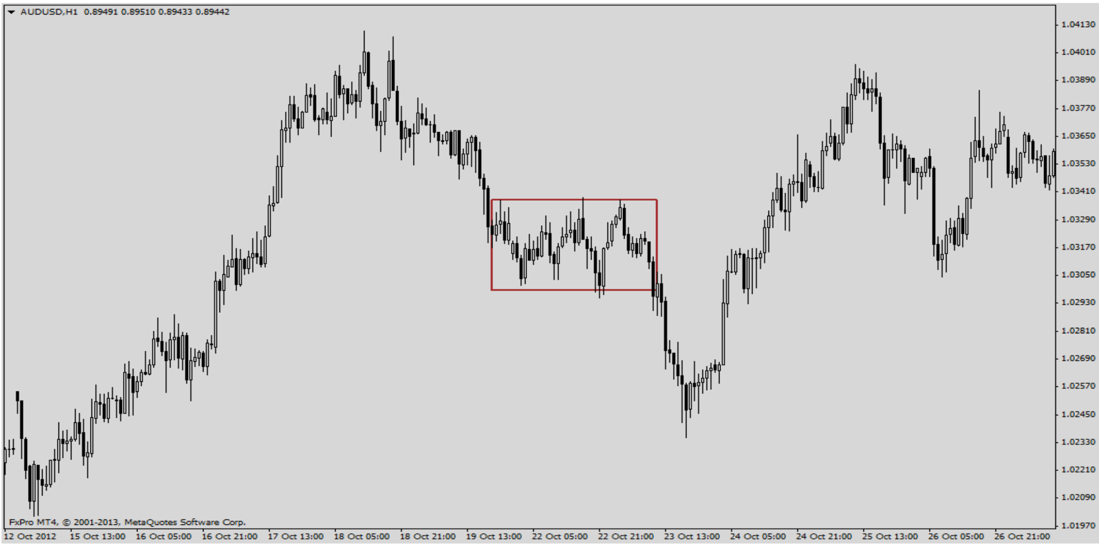

Figure 22: Bearish Rectangle, AUD/USD, H1 Chart

3.3.2.2.3 Flag

Flags are very similar to rectangles. The difference is that in rectangles, two parallel lines are horizontal while in flags, these lines are slanted.

If the slope of flag is upward, most probably, price will drop after this pattern and if the slope is downward, traders will expect a bullish market (Elder, 1993).

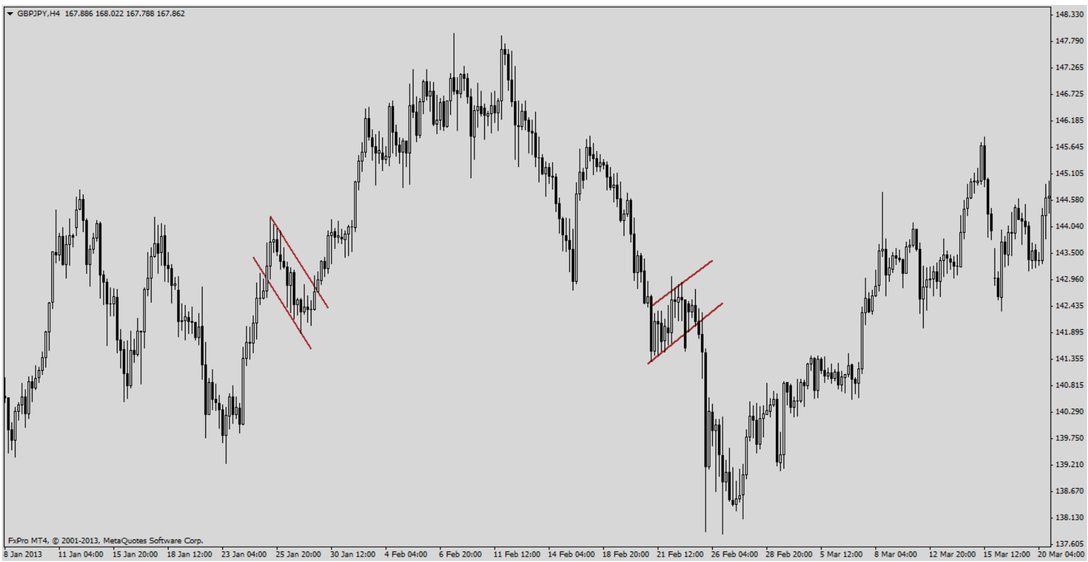

Figure 23: Flag, AUD/USD, H1 chart

Chapter 4

DATA AND ANALYSIS

4.1 Data

The study examines four currency pairs EUR/USD, GBP/USD USD/JPY and AUD/USD in November 2013. Statistical information is depicted for each currency pair separately like daily closing price and average price.

- **EUR/USD**

It would appear from Figure 24 that EURUSD has appreciated during November. The average of the month is 1.34924. In the first week, price has moved very close to average. Even so, a marked shift immediately observes in 7th of November and reaches a dip on 9th at 1.3364. From then onward, appreciation can be seen until the end of the month. On 28th of November, price reaches a pick at 1.3603.

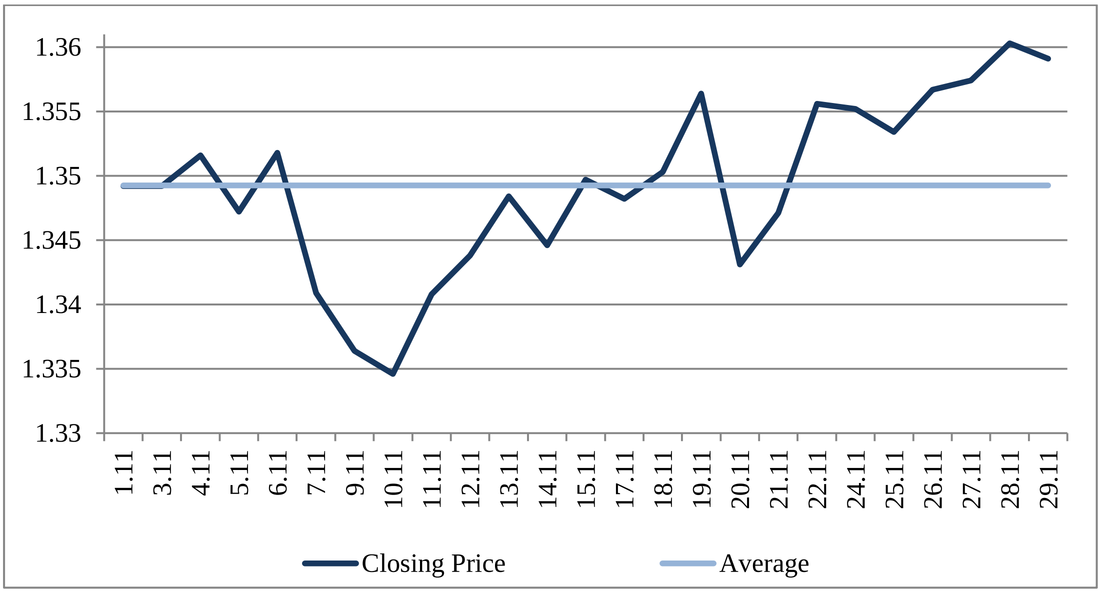

Figure 24: Closing Price of EURUSD in November 2013

- **GBP/USD**

As can be seen in Figure 25, GBPUSD has appreciated slightly during the month and the average is 1.6104. In the first half of the month, price has changed below the average and hit the lowest in 12th at 1.5890. In the second half, average broke; price moved above it and reached a pick on 29th at 1.6372.

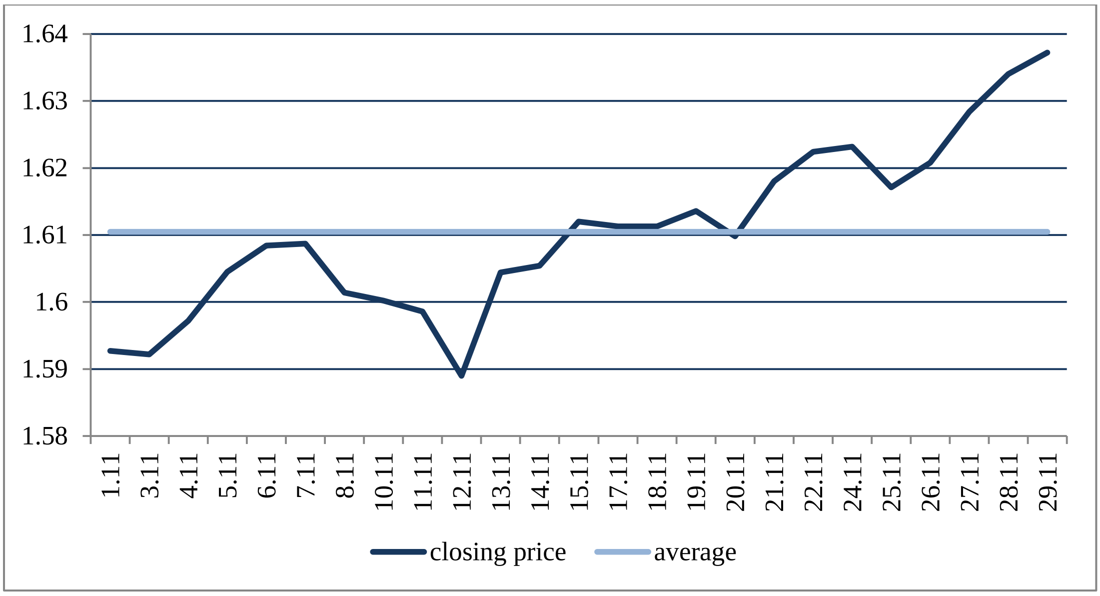

Figure 25: Closing Price of GBPUSD in November 2013

- **USD/JPY**

Upward trend in Figure 25 is able to be observed clearly. The average price is placed at 100.08. During November 2013, USDJPY has increased moderately and no marked movement can be seen. The price has dropped at 98.17 on 7th and from then onward commenced to rise slightly. Few days in mid-November, price has moved closely near average. Thereafter, price has continued its upward movement and reached a pick at 102.45 on 29th of November.

Figure 26: Closing Price of USDJPY in November 2013

- **AUD/USD**

There is a clear contrast among AUDUSD and other currency pairs. During November, AUDUSD has depreciated and average price is 0.9320. For two thirds of the month, price has stayed above the average. Afterward, the price represented a sudden drop and reached a dip at 0.9078 in 28^{th}. On the contrary, the highest price hits at the beginning of the month, on 4^{th} of November at 0.9512.

Figure 27: Closing Price of AUDUSD in November 2013

4.2 Analysis

Analysis is based on the explanations where data are collected from FOREX market. The study is assisted by platform Meta Trader 4 from FxPro Company and its tools and indicators. All trades have been executed for one month in November 2013. According to report which is announced in September 2013 by the Bank of International Settlement, four major currency pairs which are the most traded currency pair in FOREX market are chosen; EUR/USD, GBP/USD USD/JPY and AUD/USD respectively. These currency pairs have been analyzed based on the technical analysi during this month. The aim of this study is to investigate the power of technical analysis and finds out the currency pair which is concordant with this method.

As described before, the study categorizes trades into three categories, hourly, midday and daily. If the time between opening and closing position is less than 12 hours, it will be placed in hourly. If it is between 12 and 24 hours, it will be placed in midday and if it is more than 24 hours, it will belong to daily category. According to this issue, the time of every opening and closing position is specified in table below and the length of each position time is written in floating time column. It should be noticed that no trades are closed manually and all of them are terminated automatically by hitting the stop loss or taking profit which is performed by platform. Moreover, 40 pips are determined for taking profit and stop loss in each position.

Positions are executed by signals which are sent by indicators, tools and patterns which are explained in previous chapters. If most of the signals show the same zone, that zone will be selected as a critical zone and behavior of price is monitored accurately and the best opening price is chosen for entering the market.

As can be seen below, in AUDUSD chart, tools and indicators are specifying a critical zone where the price will probably change its direction afterwards. RSI is oversold, in MACD, signal line and MACD lines cross each other. Support line and Fibonacci levels are drawn; a bullish candle passes from simple moving average and closes above it. The closing price from bullish candle which is closed above the SMA is selected as opening price in the tables below. This example explains how the study tests this method.

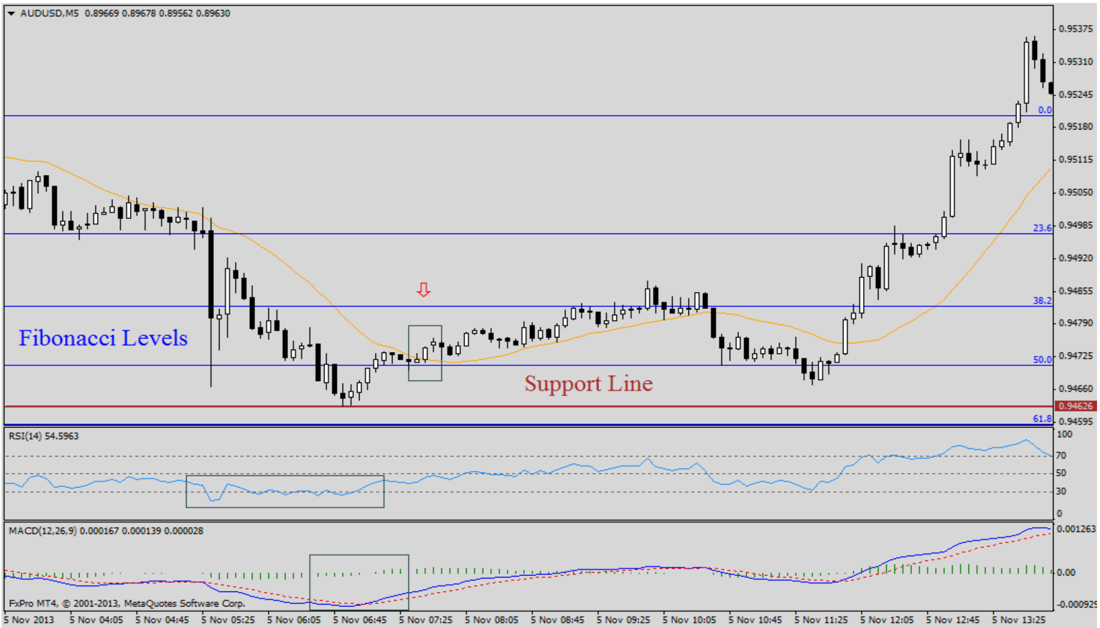

Figure 28: Sending Signal by Tools and Indicators, AUD/USD, M5 Chart

Data are classified by the type of their currency pairs in following four tables. In each table, type of transactions, date, time and price of opening and closing positions are specified. Floating time means the difference between closing and opening price, on the other hand, the length of position time. In category column, positions are categorized based on the time of the position. In the status column, the status of each position is stated. It explains that position is closed by profit (✓) or loss (×).

Table 1: EUR/USD

Number	Type	Opening Date	Opening Time	Opening Price	Closing Date	Closing Time	Closing Price	Floating Time	Category	Status
1	Buy	1/11/2013	4:05	1.35477	1/11/2013	11:35	1.35077	7:30	Hourly	×
2	Buy	1/11/2013	16:40	1.34917	4/11/2013	5:10	1.34517	>24h	Daily	×
3	Buy	4/11/2013	5:50	1.34754	4/11/2013	17:00	1.35154	11:10	Hourly	✓
4	Sell	4/11/2013	18:55	1.35142	5/11/2013	15:35	1.34742	20:40	Midday	✓
5	Buy	5/11/2013	17:50	1.34640	6/11/2013	5:30	1.35040	11:40	Hourly	✓
6	Sell	6/11/2013	6:40	1.35112	7/11/2013	14:45	1.34712	8:05	Hourly	✓
7	Buy	7/11/2013	16:05	1.33441	7/11/2013	18:05	1.33841	2:00	Hourly	✓
8	Sell	7/11/2013	22:00	1.34221	8/11/2013	15:30	1.33821	17:30	Midday	✓
9	Buy	8/11/2013	17:55	1.33494	11/11/2013	11:20	1.33894	>24h	Daily	✓
10	Sell	11/11/2013	10:15	1.33690	11/11/2013	15:45	1.34090	5:30	Hourly	×
11	Sell	11/11/2013	16:40	1.33975	12/11/2013	15:50	1.34375	11:10	Midday	×
12	Sell	12/11/2013	16:35	1.34305	13/11/2013	16:45	1.33905	0:10	Daily	✓
13	Sell	13/11/2013	18:55	1.34506	13/11/2013	23:50	1.34906	4:55	Hourly	×
14	Sell	14/11/2013	00:55	1.34808	14/11/2013	12:00	1.34408	11:05	Hourly	×
15	Buy	14/11/2013	13:50	1.34329	14/11/2013	18:15	1.34729	4:25	Hourly	✓
16	Buy	15/11/2013	12:50	1.34441	15/11/2013	15:45	1.34841	2:55	Hourly	✓
17	Sell	15/11/2013	17:10	1.34818	18/11/2013	16:05	1.35218	>24h	Daily	×
18	Buy	18/11/2013	21:10	1.35109	20/11/2013	1:10	1.35509	>24h	Daily	✓
19	Sell	20/11/2013	2:25	1.35536	20/11/2013	15:30	1.35136	13:05	Midday	✓
20	Buy	20/11/2013	20:45	1.34411	21/11/2013	10:00	1.34011	13:15	Midday	×

Table 2: (Continue)

Number	Type	Opening Date	Opening Time	Opening Price	Closing Date	Closing Time	Closing Price	Floating Time	Category	Status
21	Buy	21/11/2013	10:25	1.34240	21/11/2013	13:30	1.34640	3:05	Hourly	✓
22	Sell	21/11/2013	15:25	1.34583	22/11/2013	11:00	1.34983	19:35	Midday	×
23	Sell	22/11/2013	12:35	1.35131	22/11/2013	23:35	1.35531	11:00	Hourly	×
24	Sell	25/11/2013	1:00	1.35495	25/11/2013	12:25	1.35095	11:25	Hourly	✓
25	Sell	26/11/2013	11:40	1.35514	27/11/2013	5:40	1.35914	18:00	Midday	×

Table 3: GBP/USD

Number	Type	Opening Date	Opening Time	Opening Price	Closing Date	Closing Time	Closing Price	Floating Time	Category	Status
1	Buy	1/11/2013	10:55	1.60092	1/11/2013	13:20	1.59692	2:25	Hourly	×
2	Buy	1/11/2013	14:45	1.59729	1/11/2013	16:05	1.59329	1:20	Hourly	×
3	Buy	1/11/2013	18:45	1.59229	4/11/2013	11:45	1.59629	>24h	Daily	✓
4	Buy	4/11/2013	6:25	1.59207	4/11/2013	11:30	1.59607	5:05	Hourly	✓
5	Sell	4/11/2013	23:10	1.59676	5/11/2013	11:25	1.60076	12:15	Midday	×
6	Sell	5/11/2013	13:20	1.60422	6/11/2013	5:10	1.60822	15:50	Midday	×
7	Buy	6/11/2013	10:40	1.60718	6/11/2013	11:30	1.61118	0:50	Hourly	✓
8	Sell	6/11/2013	12:45	1.61009	7/11/2013	14:00	1.60609	1:15	Daily	✓
9	Buy	7/11/2013	16:35	1.60423	7/11/2013	18:15	1.60823	1:40	Hourly	✓
10	Sell	7/11/2013	21:45	1.60905	8/11/2013	15:30	1.60505	17:45	Midday	✓
11	Buy	8/11/2013	17:55	1.59930	12/11/2013	8:45	1.59530	>24h	Daily	×
12	Sell	12/11/2013	7:00	1.59802	12/11/2013	10:35	1.59402	3:35	Hourly	✓
13	Buy	12/11/2013	12:55	1.58803	12/11/2013	16:40	1.59203	3:45	Hourly	✓
14	Sell	12/11/2013	17:55	1.59254	12/11/2013	22:05	1.58854	4:10	Hourly	✓
15	Buy	12/11/2013	22:35	1.58995	13/11/2013	11:30	1.59394	12:55	Midday	✓
16	Sell	13/11/2013	13:30	1.59421	13/11/2013	14:20	1.59821	0:50	Hourly	×
17	Sell	13/11/2013	20:10	1.60214	13/11/2013	23:50	1.60614	3:40	Hourly	×
18	Sell	14/11/2013	00:50	1.60416	14/11/2013	11:30	1.60016	10:40	Hourly	✓
19	Buy	14/11/2013	12:50	1.60134	14/11/2013	15:05	1.60534	2:15	Hourly	✓
20	Sell	14/11/2013	17:10	1.60694	15/11/2013	16:00	1.61094	22:50	Midday	×
21	Sell	15/11/2013	17:25	1.61005	18/11/2013	8:10	1.61405	>24h	Daily	×
22	Sell	18/11/2013	8:50	1.61298	18/11/2013	19:35	1.60898	10:45	Hourly	✓

Table 4: (Continue)

Number	**Type**	**Opening Date**	**Opening Time**	**Opening Price**	**Closing Date**	**Closing Time**	**Closing Price**	**Floating Time**	**Category**	**Status**
23	Sell	19/11/2013	10:30	1.61064	19/11/2013	13:15	1.60664	2:45	Hourly	✓
24	Buy	19/11/2013	14:20	1.60826	19/11/2013	19:25	1.61226	5:05	Hourly	✓
25	Sell	20/11/2013	2:30	1.61252	20/11/2013	16:05	1.61652	13:35	Midday	×
26	Buy	20/11/2013	22:55	1.61042	21/11/2013	17:10	1.61442	18:15	Midday	✓
27	Sell	22/11/2013	1:25	1.61883	25/11/2013	00:40	1.62283	>24h	Daily	×
28	Sell	25/11/2013	2:00	1.62273	25/11/2013	11:05	1.61873	9:05	Hourly	✓
29	Buy	25/11/2013	12:00	1.61981	25/11/2013	16:55	1.61581	4:55	Hourly	×
30	Buy	25/11/2013	19:35	1.61423	26/11/2013	10:10	1.61823	14:35	Midday	✓
31	Sell	26/11/2013	11:45	1.61844	26/11/2013	15:25	1.61444	3:40	Hourly	✓
32	Buy	26/11/2013	16:45	1.61565	26/11/2013	21:05	1.61965	4:20	Hourly	✓
33	Sell	26/11/2013	22:55	1.62102	27/11/2013	11:45	1.62502	12:50	Midday	×
34	Sell	27/11/2013	14:40	1.63005	27/11/2013	19:00	1.62605	4:20	Hourly	✓
35	Sell	28/11/2013	8:00	1.63109	28/11/2013	13:20	1.63511	5:20	Hourly	×

Table 5: USD/JPY

Number	Type	Opening Date	Opening Time	Opening Price	Closing Date	Closing Time	Closing Price	Floating time	Category	statue
1	Buy	1/11/2013	7:50	97.954	1/11/2013	13:55	98.354	6:05	Hourly	✓
2	Sell	1/11/2013	18:10	98.750	5/11/2013	3:35	98.350	>24h	Daily	✓
3	Buy	5/11/2013	5:15	98.320	6/11/2013	5:35	98.720	0:20	Daily	✓
4	Sell	6/11/2013	7:00	98.636	7/11/2013	15:30	99.036	8:30	Daily	×
5	Sell	7/11/2013	17:05	99.201	7/11/2013	18:10	98.801	1:05	Hourly	✓
6	Buy	7/11/2013	22:05	97.886	8/11/2013	15:25	98.286	17:20	Midday	✓
7	Sell	8/11/2013	18:05	98.920	12/11/2013	3:05	99.320	>24h	Daily	×
8	Sell	12/11/2013	6:05	99.508	13/11/2013	23:30	99.108	17:25	Daily	✓
9	Sell	14/11/2013	6:50	99.658	14/11/2013	16:20	100.058	9:30	Hourly	×
10	Sell	14/11/2013	16:55	99.935	15/11/2013	10:20	100.335	17:25	Midday	×
11	Sell	15/11/2013	13:35	100.366	18/11/2013	7:40	99.966	>24h	Daily	✓
12	Buy	18/11/2013	11:45	99.941	21/11/2013	2:35	100.341	>24h	Daily	✓
13	Sell	21/11/2013	4:10	100.336	21/11/2013	8:05	100.736	3:55	Hourly	×
14	Sell	21/11/2013	9:55	100.721	21/11/2013	21:40	101.121	11:45	Hourly	×
15	Sell	22/11/2013	2:15	101.176	25/11/2013	3:30	101.576	1:15	Daily	×
16	Sell	25/11/2013	4:55	101.626	26/11/2013	19:55	101.226	15:00	Daily	✓
17	Buy	26/11/2013	21:00	101.325	27/11/2013	9:30	101.725	12:30	Midday	✓
18	Sell	27/11/2013	13:00	101.749	27/11/2013	16:55	102.149	3:55	Hourly	×
19	Sell	27/11/2013	19:45	102.114	29/11/2013	3:35	102.514	>24h	Daily	×
20	Sell	29/11/2013	5:15	102.515	29/11/2013	9:35	102.115	4:20	Hourly	✓

Table 6: AUD/USD

Number	Type	Opening Date	Opening Time	Opening Price	Closing Date	Closing Time	Closing Price	Floating Time	Category	status
1	Buy	1/11/2013	17:55	0.94358	4/11/2013	2:15	0.94758	>24h	Daily	✓
2	Sell	4/11/2013	3:40	0.94800	5/11/2013	2:15	0.95200	22:35	Midday	×
3	Buy	5/11/2013	7:40	0.94741	5/11/2013	13:05	0.95141	5:25	Hourly	✓
4	Sell	5/11/2013	15:20	0.95240	5/11/2013	17:00	0.94840	1:40	Hourly	✓
5	Buy	5/11/2013	19:10	0.94909	6/11/2013	11:30	0.95309	16:20	Midday	✓
6	Sell	6/11/2013	12:50	0.95297	7/11/2013	2:30	0.94897	13:40	Midday	✓
7	Buy	7/11/2013	4:10	0.94787	7/11/2013	22:45	0.94387	18:35	Midday	×
8	Buy	8/11/2013	3:15	0.94535	8/11/2013	15:30	0.94135	12:15	Midday	×
9	Buy	8/11/2013	17:55	0.93733	12/11/2013	3:30	0.93333	>24h	Daily	×
10	Buy	12/11/2013	5:30	0.93354	12/11/2013	18:55	0.92954	13:25	Midday	×
11	Buy	12/11/2013	19:50	0.92988	13/11/2013	23:30	0.93388	3:40	Daily	✓
12	Sell	14/11/2013	00:50	0.93470	14/11/2013	11:30	0.93070	10:40	Hourly	✓
13	Buy	14/11/2013	13:50	0.92931	14/11/2013	18:15	0.93331	4:25	Hourly	✓
14	Sell	15/11/2013	6:15	0.93424	18/11/2013	5:00	0.93824	>24h	Daily	×
15	Sell	18/11/2013	8:40	0.94019	18/11/2013	22:30	0.93619	13:50	Midday	✓
16	Buy	18/11/2013	23:10	0.93777	19/11/2013	9:55	0.94177	10:45	Hourly	✓
17	Sell	19/11/2013	11:30	0.94169	20/11/2013	15:00	0.93769	3:30	Daily	✓
18	Buy	20/11/2013	16:15	0.93862	20/11/2013	21:00	0.93462	4:45	Hourly	×
19	Buy	20/11/2013	22:50	0.93360	21/11/2013	3:45	0.92960	4:55	Hourly	×
20	Buy	21/11/2013	13:30	0.92728	21/11/2013	16:25	0.92328	2:55	Hourly	×
21	Sell	22/11/2013	3:40	0.92335	22/11/2013	5:40	0.91935	2:00	Hourly	✓
22	Buy	22/11/2013	7:25	0.91864	22/11/2013	19:55	0.91464	12:30	Midday	×

Table 4: (Continue)

Number	Type	Opening Date	Opening Time	Opening Price	Closing Date	Closing Time	Closing Price	Floating Time	Category	status
23	Buy	22/11/2013	20:40	0.91566	26/11/2013	2:00	0.91966	>24h	Daily	✓
24	Sell	26/11/2013	2:30	0.91849	26/11/2013	11:40	0.91449	9:10	Hourly	✓
25	Buy	26/11/2013	17:20	0.91030	28/11/2013	12:15	0.91430	>24h	Daily	✓
26	Sell	28/11/2013	13:00	0.91323	28/11/2013	16:15	0.90923	3:15	Hourly	✓
27	Buy	28/11/2013	19:30	0.90962	29/11/2013	3:10	0.90562	7:40	Hourly	×
28	Buy	29/11/2013	4:30	0.90667	29/11/2013	8:15	0.91067	3:45	Hourly	✓

Table 7: Summery of Categories

Category	No. of Positions	Positions in Percent (%)	No. of Positive Result	Positive Result in Percentage (%)	No. of Negative Result	Negative Result in Percentage (%)
Hourly	54	50	35	32	19	18
Midday	27	25	12	11	15	14
Daily	27	25	16	15	11	10
Total	108	100	63	58	45	42

As can be seen in table 5, 108 positions have been executed during this month. 50% of all transactions which are equal to 54 are allotted to hourly categories and the others are divided equally between midday and daily. Dispersion among these categories is illustrated below:

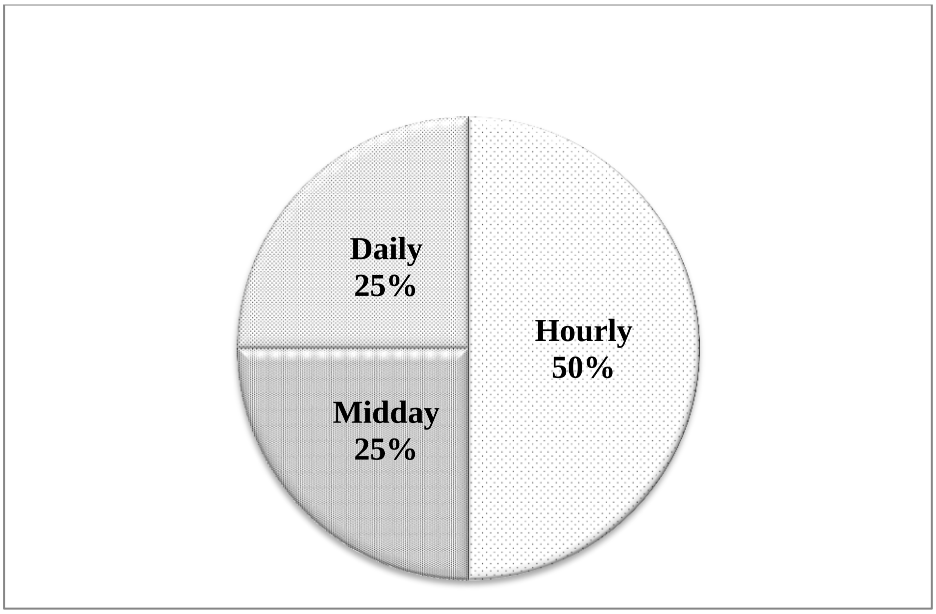

Figure 29: Dispersion of Categories

Table 5 of the study demonstrates that 65% of hourly positions are executed successfully (35 out of 54). In addition, 45% of midday positions has (12 out of 27) ended with profit and 59% of daily positions (16 out of 27) are closed satisfactory. The result shows that hourly positions at 32% have the most harmony and success with technical analysis while, daily and midday lies in second and third places at 15% and 11% respectively. Furthermore, 56% of all the positive positions belong to hourly category (35 out of 63). Midday positions at 19% (12 out of 63) and daily positions at 25% (16 out of 63) are stood in next level respectively. In general, numbers of 63 transactions out of 108 are terminated with profit. In other word, 58%

of all transactions are hit take profit and closed successfully. This result is depicted below:

Figure 30: Profit and Loss Ratio

Table 8: Dispersion of Currency Pair

Currency pair	No. of Positions	Positions in Percent (%)	No. of Positive Result	Positive Result in Percentage (%)	No. of Negative Result	Negative Result in Percentage (%)
EUR/USD	25	23.15	14	12.96	11	10.19
GBP/USD	35	32.40	21	19.44	14	12.96
USD/JPY	20	18.52	11	10.19	9	8.33
AUD/USD	28	25.93	17	15.74	11	10.19
TOTAL	108	100	63	58.33	45	41.67

As can be seen in table 6, GBP/USD at 19.44% out of 58.33% has the most harmony and success with technical analysis. AUD/USD, EUR/USD and USD/JPY are placed at 15.74%, 12.96% and 10.19% respectively. In addition, the most positive positions among currency pairs belong to GBP/USD at 33% (21 out of 63). AUD/USD, EUR/USD and USD/JPY are ranked at 27% (17 out of 63), 22% (14 out of 63) and 18% (11 out of 63) respectively. Because of the higher economic stability of Great Britain relative to European countries, GBP/USD is placed in the first place among other currency pairs. There are many problems in Eurozone like debt which is the most important. Many of the countries in Eurozone are challenging with this unsolved problem. All these problems make Euro become a sensitive currency (Roudgar, 2012). For example, big and rapid movements can be seen in Euro chart against even less important news. These rapid movements cause the big losses in market. Due to this fact, traders are encouraged to trade a currency which is more stable than others.

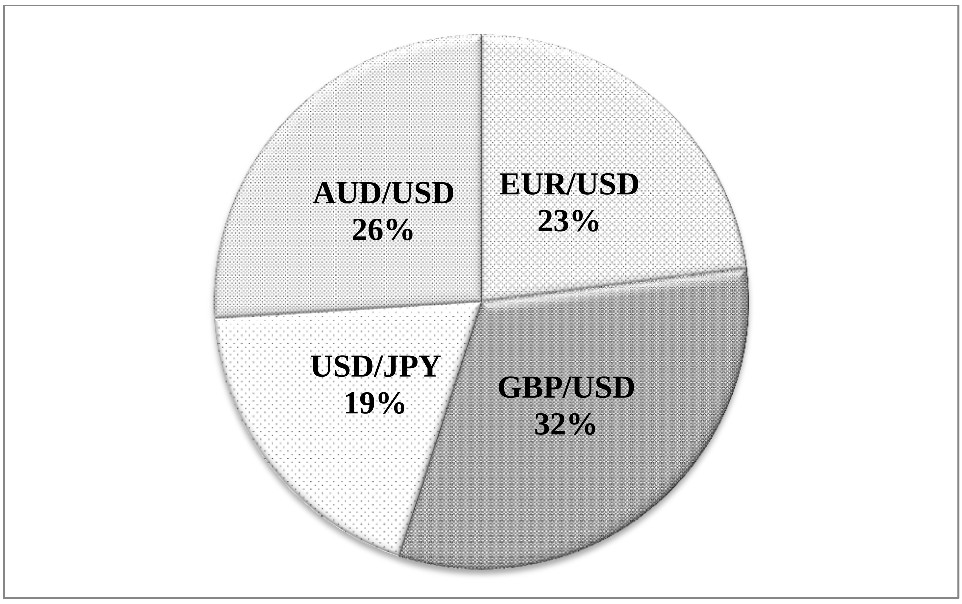

Figure 31: Dispersion of currency pair

Figure 31 represents the currency pair's dispersion during the time of study. GBP/USD at 32% of all of the transactions has stood in first place. AUD/USD, EUR/USD and USD/JPY are placed at 26%, 23% and 19% respectively.

As explained before, hourly category at 32% has the most harmony and success with technical analysis. The reason is related to market volatility. In FOREX market, volatility is very high. According to this issue, the probability of volatility and rapid movement become less with decreasing the length of time of the position. In the other words, if a position lasts for 2 days, announcing of news will be more probable than a position which is executed in 8 or 10 hours.

Another study which is done by Roudgar (2012), investigate the success of technical analysis in FOREX market. This study analyzes the transactions in three different timeframes, daily (less than one week), weekly (less than one month) and monthly (more than 30 days). 60% of these transactions belong to daily and 63.33% of positions are executed successfully. In addition, the study recommends that technical analysis which is a necessary method for predicting the future of the market. One of the other result is about GBP/USD. Most of the positive transactions are related to GBP/USD pair which is mentioned that this currency pair is stable and reliable among the others.

Chapter 5

CONCLUSION

The objective of this thesis has been to test the power of technical analysis for forecasting the market trend and future prices in FOREX market. According to the Bank for International Settlements the preliminary global results from 2013 show that trading in foreign exchange markets averaged $5.3 trillion per day in April 2013. High volatility is one of the most important characteristic of FOREX market. With this volatility and fluctuations, traders may be making profit or lose money. Forecasting the future price and movement is the most anxiety of traders. In order to be able to enter to the Forex market and opening positions one needs experience and knowledge. One of the most popular methods for analyzing the FOREX market is the technical analysis. Traders utilize this method for analyzing the market. Traders are assisted by different tools, indicators and patterns in this method. These tools, indicators and patterns provide various signals for traders. These signals are incorporated into reversal pattern. Whenever the price reaches that zone, traders monitor its movement and select the best time and price for entering the market.

The thesis tests technical analysis in a period of one month, November of 2013. According to the report which was announced in September 2013 by the Bank of International Settlement, four major currency pairs which are the most traded currency pairs in FOREX market are chosen, EUR/USD, GBP/USD USD/JPY and AUD/USD respectively.

The study divided all the transactions into three categories. If the time between opening and closing position is less than 12 hours, it will be placed in hourly. If it is between 12 and 24 hours, it will be placed in midday and if it is more than 24 hours, it will belong to daily category. The main focus of this study is about shorter timeframes and short term trading.

During November of 2013, 108 positions were executed. 58% of positions (63 out of 108) were closed with positive results and 42% of them (45 out of 108) showed negative result. This rate of success shows that more than half of the positions are terminated with profitability. The result of the study shows that hourly positions at 32% of total positions (35 out of 108) have the most harmony and success with technical analysis. Furthermore, daily and midday positions at 15% (16 out of 108) and 11% (12 out of 108) stand after hourly respectively.

Moreover, GBP/USD has the highest rate of harmony with technical analysis at 19.44% out of 58.33%. Then AUD/USD at 15.74 is placed on the second level. Finally, EUR/USD and USD/JPY at 12.96% and 10.19% has stood in following levels respectively. The most positive positions among currency pairs belong to GBP/USD at 33% (21 out of 63). AUD/USD, EUR/USD and USD/JPY are ranked at 27% (17 out of 63), 22% (14 out of 63) and 18% (11 out of 63) respectively. The study recommends to traders that GBP/USD is the most stable and reliable currency pair among the others. AUD/USD, EUR/USD and USD/JPY are rated in the next levels.

The thesis confirmed that technical analysis is one of the most effective methods in the FOREX market. For entering the market and specifying the price and time, technical analysis is very useful and functional. The study shows that using the history of market prices and analyzing them can be crucial for traders. Traders utilize these data with various tools and indicators. The study has also affirmed that hourly positions are the most profitable relative to others. This is due to the lower probability of volatility and rapid movement with decreasing length of time of the position. In general, with technical analysis, traders are able to mitigate their risk in FOREX market and execute most of their positions with profit.

REFERENCES

Archer, M. D. (2012). *Getting Started in Currency Trading,+ Companion Website: Winning in Today's Market* (Vol. 95): John Wiley & Sons, 2012.

Bank for International Settlements (BIS), 2013, Report on Global Foreign Exchange Market Activity, < http://www.bis.org/publ/rpfx13.htm>

Bickford, J. L. (2008). Forex shockwave analysis. New York: McGraw-Hill Professional, Inc., U.S.A.

Booker, R. (2006). The Currency Trader"s Handbook: Strategies for Forex Success, LULU.

Bulkowski, T. N. (2005). Encyclopedia of Chart Patterns (Vol. 225). John Wiley & Sons, Inc., U.S.A..

Chen, J. (2009). Essentials of Foreign Exchange Trading (Essentials Series), John Wiley & Sons, Inc., U.S.A.

Cofnas, A. (2004). Classic tools for trading forex. *Futures-Cedar Falls Iowa Then Chicago-*, *33*, 36-41.

Duddella, Suri (2008). Trade chart patterns like the pros : specific trading techniques. [S.l.]: Surinotes.com. ISBN 978-1-60402-721-1.

Elder, A. (1993). *Trading for a living: psychology, trading tactics, money management* (Vol. 31): John Wiley & Sons.

Fischer, R., & Fischer, J. (2003). Candlesticks, fibonacci, and chart pattern trading tools: Estados Unidos, John Wiley & Sons.

Grabbe, O. (1996). International Financial Markets, Third Edition, Prentice Hall

Kahn, M. (2006). *Technical analysis plain and simple: charting the markets in your language*: FT Press.

LeBaron, B. (1998). Technical trading rules and regime shifts in foreign exchange. *Advanced trading rules*, 5-40.

MacLean, G. (2005). *Fibonacci and Gann Applications in Financial Markets: Practical Applications of Natural and Synthetic Ratios in Technical Analysis*: John Wiley & Sons.

Martinez, J. (2007). *The 10 Essentials of Forex Trading*: McGraw-Hill Companies.

Macfarlin, M. (2011). Top forex fundamentals. *Futures Magazine 101 (Cedar Falls, IA),* 46-47.

Menkhoff, L., & Taylor, M. P. (2007). The obstinate passion of foreign exchange professionals: technical analysis. *Journal of Economic Literature,* 936-972.

MetatTrader 4 [Computer Program]. Version: 4.00 Build 509. England : FXPRO Financial Services LTD; 2013.

Miyazaki, H. (2007). Between arbitrage and speculation:an economy of belief and doubt, Economy and Society, 36:3, 396-415, DOI: 10.1080/03085140701428365

Moffett, M. H., Stonehill, A. I., & Eiteman, D. K. (2012). *Fundamentals of multinational finance*: Addison-Wesley.

Oberlechner, T. (2001). Importance of technical and fundamental analysis in the European foreign exchange market. *International Journal of Finance & Economics, 6*(1), 81-93.

Rosenstreich, P. (2005). *Forex Revolution: An Insider's Guide to the Real World of Foreign Exchange Trading*: FT Press.

Roudgar, E. (2012). *Forecasting Foreign Exchange Market Trends: Is Technical Analysis Perspective Successfu?,* Unpublished Master Thesis, Eastern Mediterranean University (EMU).

Shamah, S. (2003). A Foreign Exchange Primer (Vol. 518), John Wiley & Sons, Inc., England. ISBN 0-470-85162-7.

Sulistiawan, D., & Hartono, J. (2014). Can Technical Analysis Signals Detect Price Reactions Around Earnings Announcement?: Evidence From Indonesia. *International Journal of Business & Finance Research (IJBFR), 8*(1).

Taylor, M. P., & Allen, H. (2007). The use of technical analysis in the foreign exchange market. *Journal of international Money and Finance, 11*(3), 304-314.

Vyun, V. (2011). Top Forex News, New Zealand Dollar Tumbles After Earthquake, 22nd February 2011,< http://www.topforexnews.com/2011/02/22/new-zealand-dollar-tumbles-after-earthquake/>