Available online at www.sciencedirect.com

ScienceDirect

Procedia Economics and Finance 15 (2014) 318 – 325

Procedia Economics and Finance

www.elsevier.com/locate/procedia

Emerging Markets Queries in Finance and Business

Could a trader using only "old" technical indicator be successful at the Forex market?

Viliam Vajda[a*]

Technical University of Kosice,Letná 9, Košice 040 01, Slovakia

Abstract

The use of technical analysis indicators for trading is widely known and discussed. Quite a large number of indicators and the long time period of their usage provide opportunities for creating profitable and successful trading strategies. On the other side technical analysis indicators were constructed for the stock market and therefore to traders on the Forex market it places the question. Can be a strategy based purely on technical analysis indicators profitable on the market with high volatility? Do we use the old, proven indicators, or use the newer ones? Will indicators generate good trading entries in time of crisis? The paper tries to find answers to some of these questions. On the basis of Moving Average Convergence Divergence (MACD) indicator, the trading strategies have been developed and back-tested at the Forex market with different timeframes. An important element of the research is to distinguish the time period of the crisis and beyond the crisis period and tested success of created strategies at the major, most traded currency pair. At the end of the paper the performance and profitability of the created strategies are discussed.

Selection and peer-review under responsibility of the Emerging Markets Queries in Finance and Business local organization

*Keywords:*Technical analysis; Foreign Exchange; MACD; Crisis; Timeframe

1. Introduction

According to Pring, the technical approach to investment is essentially a reflection of the idea that prices move in trends which are determined by the changing attitudes of investors toward a variety of economic, monetary, political and psychological forces…Since the technical approach is based on the theory that the price

* Corresponding author. Tel.: +421-55-602 3278; fax: +0-000-000-0000 .
E-mail address: viliam.vajda@tuke.sk

Selection and peer-review under responsibility of the Emerging Markets Queries in Finance and Business local organization
doi:10.1016/S2212-5671(14)00515-2

is a reflection of mass psychology in action, it attempts to forecast future price movements on the assumption that crowd psychology moves between panic, fear, and pessimism on one hand and confidence, excessive optimism, and greed on the other (Pring,1991). The technical approach, mostly averaging techniques, is also used for common determination of market movements according to country or sector indices (e.g. Glova, 2013). Stevens points that, there are plenty, in fact a majority, of successful money managers who say they don't use technical analysis at all, but there are also rich investors and speculators who rely mostly on technical analysis (Stevens, 2002). Despite the different views and opinions, relatively large number of traders focuses and creates strategies based just on technical analysis indicators.

Access to the Forex market and trading in this market for the individual client is now objectively simple. Reducing the requirements of a large initial capital, relatively high leverage meant, that Forex market has become attractive to the broad mass of the population, but on the other hand often without relevant theoretical and practical experiences. The huge number of retail brokers provides access to the Forex market and therefore some studies started to analyze the market and examine the different relationships from a statistical point of view, or focuses on the trading itself. E.g. Schulmeister, in his work, compared models based on moving average and momentum at the Forex market in the time periods 1973 – 1999 (DM/USD) and 2000 - 2004 (EUR/USD). From his research some interesting findings resulted e.g. that the number of profitable trades is lower than the number of unprofitable trades and the average return per day during profitable positions is smaller than the average loss. The objective of this research is to determine behavior of the developed strategy, based on one of the most popular indicator of the technical analysis, at Forex market in times of crisis and beyond.

2. Methodology

For the research purpose "classical" technical indicator, Moving Average Convergence and Divergence (MACD), was used. The MACD indicator was developed by Gerald Appel, in the late 1970s, and the basic concept is described in his book "Technical Analysis, Power Tools for Active Investors" (Appel, 2005). For testing there were used the basic parameters, 12-periods exponential moving average, 26-periods exponential moving average for MACD calculation and 9-periods exponential moving average for the Signal line.

The MACD was applied to the Forex data downloaded from MetaQuotes Software Corp. history centre (www.metaquotes.net) at the timeframe 15 minutes (M15), 30 minutes (M30), 1 hour (H1) and 4 hours (H4). The hypothesis was based on the assumption, that the different timeframes will extremely affect tested strategy. Time period for the testing was determined from 2000 to 2011 and was divided into three equally long periods. The first one from 2000 to 2003 represents the "dot.com" crisis. The second one, from 2004 to 2007, represents the "non-crisis" period and the third one, from 2008 to 2011, represents "financial crisis". The hypothesis was based on the assumption, that the performance of the strategy based on MACD indicator will be different in crisis and non-crisis time periods.

The freeware Forex Strategy Builder, developed by Miroslav Popov (forexsb.com), was used for testing.

The trading rules were set, on the basis of MACD and Signal line crosses, with the logic:

- Enter the position, when MACD cross the Signal line upward and both are below zero line (buy position).
- Enter the position only in the time period from 9:00 am to 11:00 pm CET (Central European Time).
- At the opposite direction signal – reverse.
- Close position at the end of the time period 11:00 pm CET.

Since the objective is to test whether it is possible, by using strategy based on technical indicator, to achieve profit and not his maximizing, in testing the money management will be abstracted. Constant volume of 1 lot will be used for each trading position. Position sizing will also not be taken into consideration.

The strategy will be applied to EUR/USD currency pair and all results will be reported in points. At the end, the results will be summarized for the entire test period and best strategy timeframe will be optimized in order

to determine Stop Loss (S/L) and Take Profit (T/P) levels. A usage of these orders should improve performance and profitability of the created strategy.

3. Tested period 2000-2003

Testing was performed according to defined rules, in the period from 1st Jan 2000 to 31st Dec 2003. The ratio between short and long trades was, as can be seen in Table 1, about the same level even when H4 timeframe slightly dominated by short positions.

Table 1 Number of trades in the period 2000 - 2003

Timeframe	Short positions (%)	Long positions (%)	Total
M15	969 (50%)	982 (50%)	1951
M30	580 (47%)	642 (53%)	1222
H1	301 (50%)	299 (50%)	600
H4	84 (56%)	65 (44%)	149

Fig. 1 shows trading balance of each timeframe for selected time period. As we can see, the only profitable was 1 hour timeframe, with total trading balance of 18,480 points (1,848 pips). Maximum of the trading account balance was close to the overall time period balance at the level 18,990 points. Minimum of account balance (1H) was at the level -3,050 points (-305 pips).

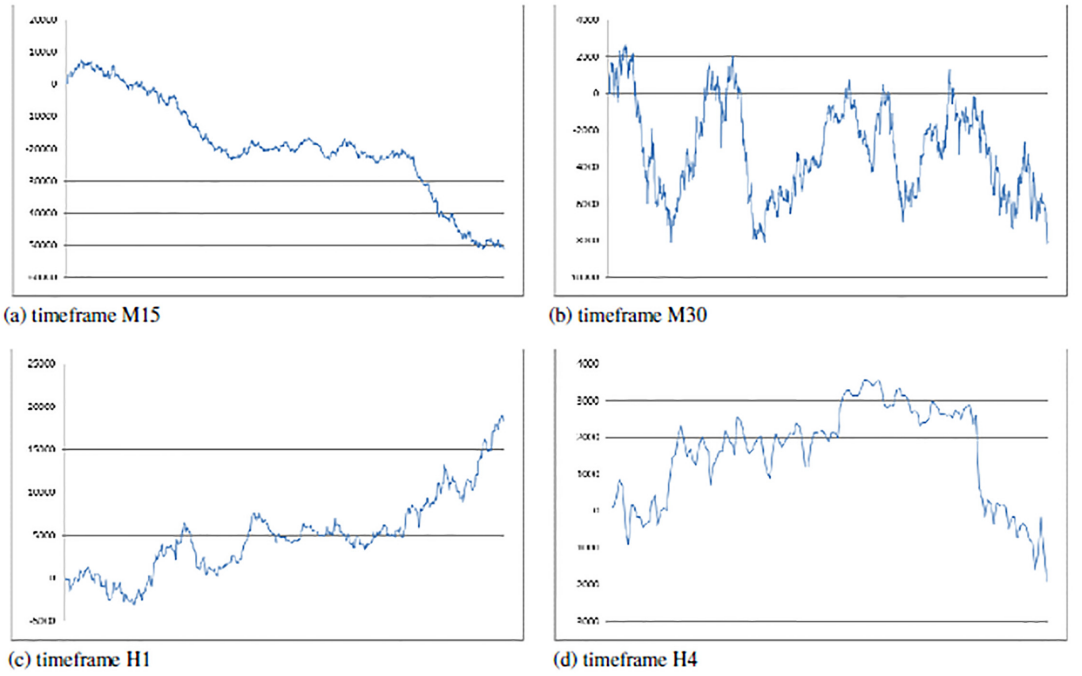


Fig. 1. Trading balance 2000-2003 (a) 15 min. timeframe; (b) 30 min. timeframe; (c) 1 hour timeframe; (d) 4 hours timeframe

The worst performance reached strategy at the 15-minute timeframe, where trading balance is constantly decreasing. Maximum of the trading balance was achieved at the beginning of testing period, first half year 2000, at the level 7,590 points, but then trading balance continuously declined to a value of -51,520 points. Trading balance of M30 timeframe, in the time period 2000-2003, has high level of volatility. Fig. 1 (b) shows that several falls of trading balance were followed by retracements although ultimately resulted in the loss of trading balance at the level -8,090 points. Longest timeframe H4, after the initial fall, has brought relatively stable growth of trading balance until February 2003 and strategy finally reached loss at the level minus 1,910 points.

4. Tested period 2004-2007

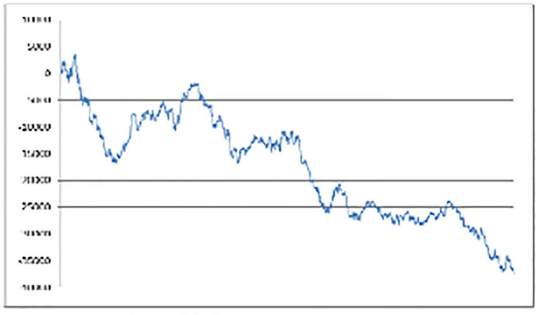
The period between 1st January 2004 and 31st December 2007, in terms of number trades, reached approximately the same levels as previous period. Also the ratio of short and long trades was at the same level again with the exception of H4 timeframe, where the short positions dominated over long positions Tab. 2.

Table 2 Number of trades in the period 2004 - 2007

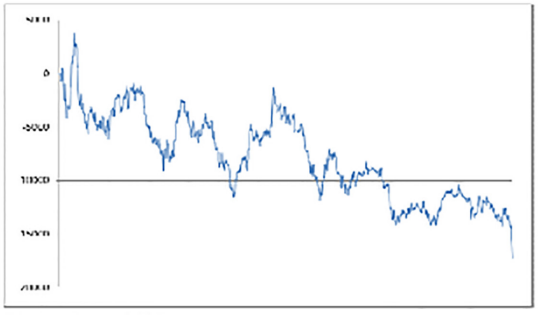
Timeframe	Short positions (%)	Long positions (%)	Total
M15	956 (51%)	936 (49%)	1892
M30	614 (50%)	620 (50%)	1234
H1	292 (53%)	262 (47%)	554
H4	102 (59%)	71 (41%)	172

Similar to the first, also in this tested period, trading balance at M15 timeframe almost continuously declined. Overall it is necessary to underline, that all timeframes except H1 and M30, achieved lower levels of losses than in the previous tested period. In H1 timeframe, see Fig. 2 (c), similar situation as in the previous H4 timeframe period occurred. After a good start, trading balance fell and maximum 7,420 points finally ended in the loss of minus 2,510 points, while the minimum was at -6,350 points. Strategy at the timeframe M30, like previous, shows high level of volatility, but in this case the level of losses was higher and account balance ended at the minimum with -17,210 points.

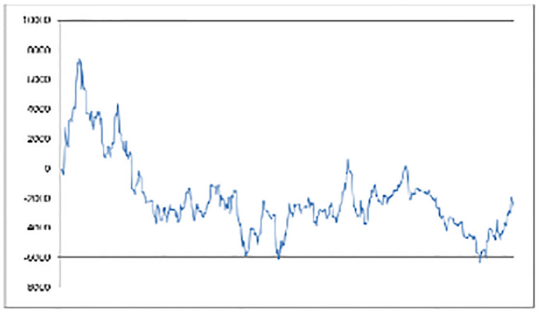
The best, in that tested period, was the timeframe H4, where trading balance reached minimum at -1,240 points, but at the end there was an increase at 3,920 points, with maximum at the level of 4,220 points.



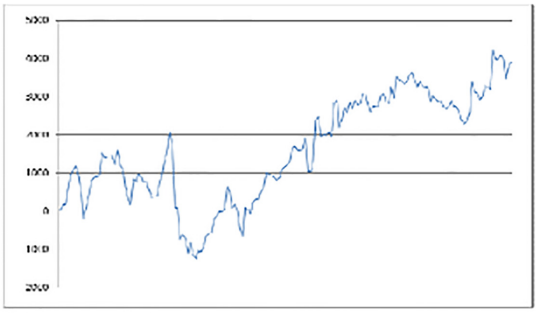
(a) timeframe M15



(b) timeframe M30



(c) timeframe H1



(d) timeframe H4

Fig. 2. Trading balance 2004-2007 (a) 15 min. timeframe; (b) 30 min. timeframe; (c) 1 hour timeframe; (d) 4 hours timeframe

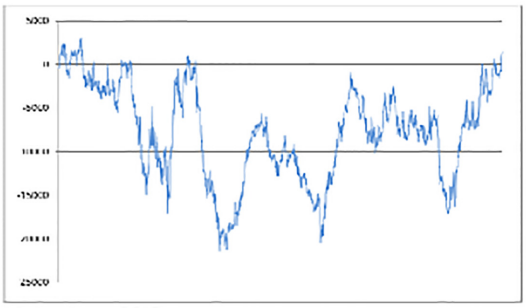
5. Tested period 2008-2011

The last tested period between 1st January 2008 and 31st December 2011 showed also the similar distribution of short and long trades as in previous period. The short positions slightly dominated over long positions only at the H1 timeframe.

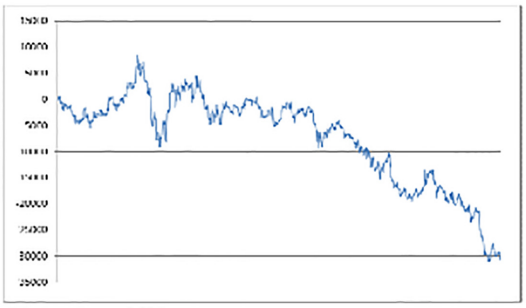
Table 3 Number of trades in the period 2008 – 2011

Timeframe	Short positions (%)	Long positions (%)	Total
M15	1000 (51%)	963 (49%)	1963
M30	656 (51%)	631 (49%)	1287
H1	336 (55%)	277 (45%)	613
H4	86 (50%)	87 (50%)	173

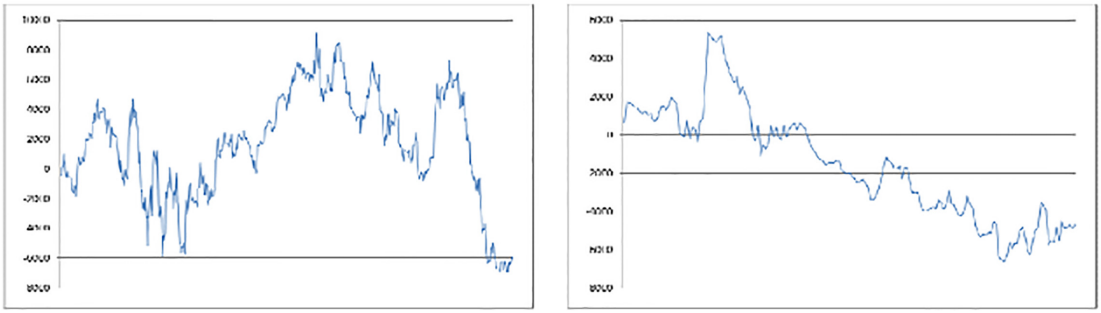
Interesting results provided the strategy at the timeframe M15. After two periods, when the strategy showed steady decrease, the trading balance moved to extremely low levels, but at the end of the selected period ended in positive numbers at 1,414 points. A significant decline was observed at M30 timeframe, where trading balance ended at -30,323 points despite an initial increase to 8,520 points.



(a) timeframe M15



(b) timeframe M30



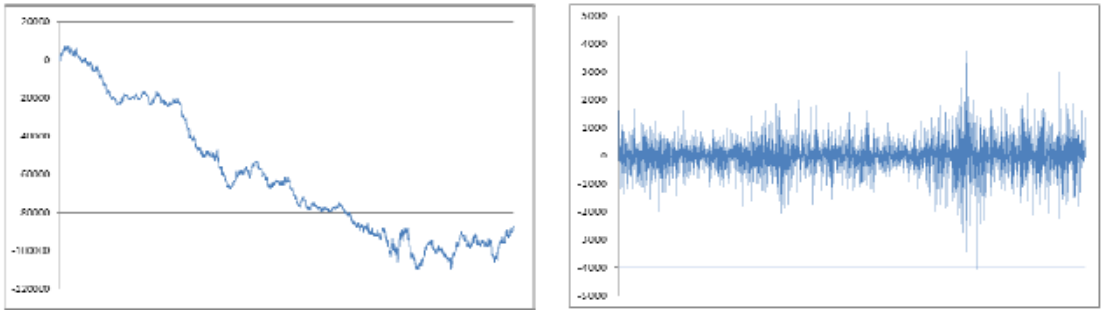
(c) timeframe H1 (d) timeframe H4

Fig. 3. Trading balance 2008-2011 (a) 15 min. timeframe; (b) 30 min. timeframe; (c) 1 hour timeframe; (d) 4 hours timeframe

Strategy at the timeframe H1 showed a considerable volatility, during the selected period, and volatility of trading balance ranged from maximum 9,166 points to the final status -5,948 points, with the minimum level of -6,940 points. Similarly ended in negative range also strategy at timeframe H4, where from 5,360 points balance dropped to a minimum at -6,629 points and trading was closed at -4,691 points.

6. Overall testing results and optimization

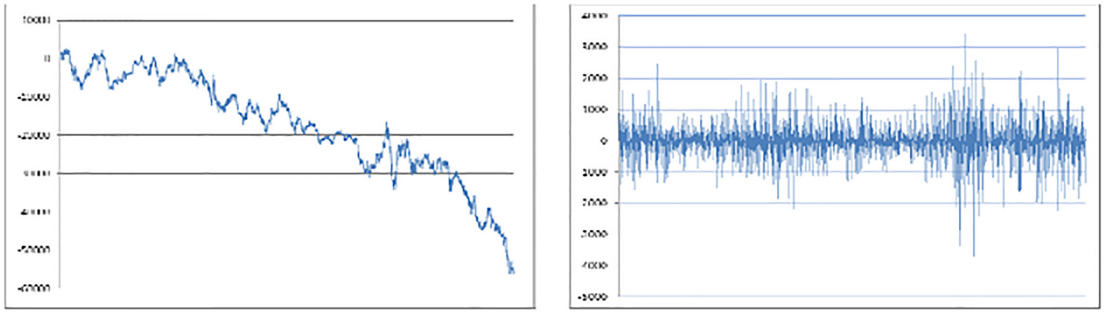
Next figures (a) show trading balances according to timeframes for the whole testing period and (b) distribution of profitability in points for each trade in selected period. As it can be seen, the testing strategy was profitable only in 1 hour timeframe Fig. 6 (a).



(a) without S/L and T/P (b) profitability of trades in points

Fig. 4. (a) Trading balance 2000-2011 15 minutes timeframe without S/L and T/P; (b) profitability of trades in points

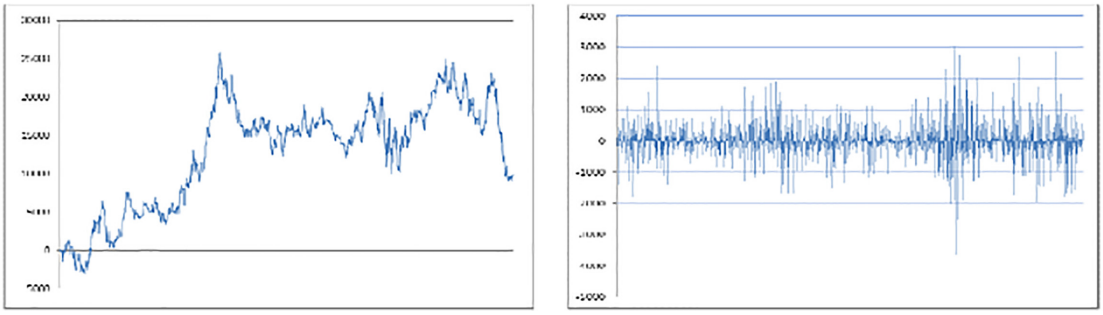
As it was mentioned above, a balance decreasing in the first two periods at M15 timeframe also caused an overall negative result of the tested strategy. Even after optimizing and subsequent testing, by using S/L order on a given timeframe, strategy resulted in a loss.



(a) without S/L and T/P (b) profitability of trades in points

Fig. 5. (a) Trading balance 2000-2011 30 minutes timeframe without S/L and T/P; (b) profitability of trades in points

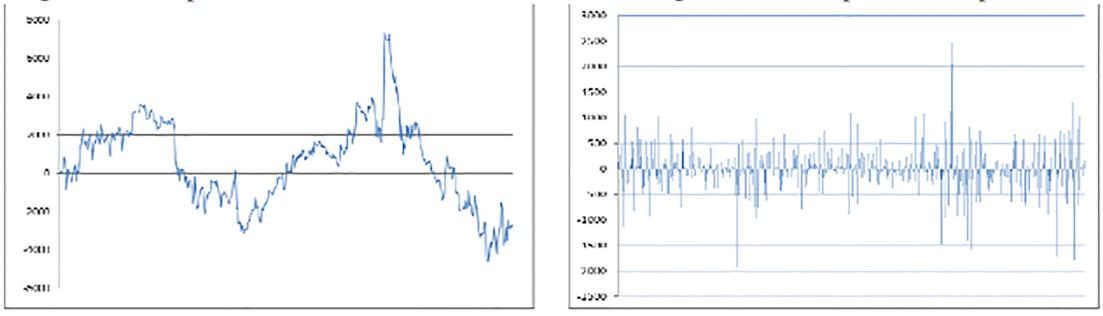
The same situation shows Fig. 5 (a) at the timeframe M30. The overall decline in trading balance was 55,623 points with an average loss of 14.86 points for each trading position.



(a) without S/L and T/P (b) profitability of trades in points

Fig. 6. (a) Trading balance 2000-2011 1 hour timeframe without S/L and T/P; (b) profitability of trades in points

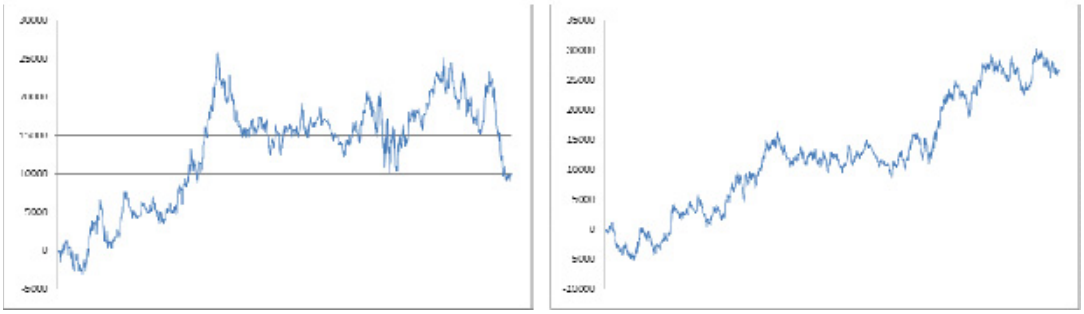
The strategy only at H1 timeframe achieved profit with an average only 5.65 points per trade. The Fig. 6 (a) shows that trading balance growing steadily but swings of trading balance represent a significant obstacle to achieve better performance at a given timeframe. As can be seen in Fig. 7 (a) at H4 timeframe strategy amounted total loss. This was due mainly of the last period, where trading balance fell from 7,370 points to the final negative 2,681 points. Due to the drawdowns in the trading balance was performed optimization and



(a) without S/L and T/P (b) profitability of trades in points

Fig. 7. (a) Trading balance 2000-2011 4 hour timeframe without S/L and T/P; (b) profitability of trades in points

determined levels of S/L and T/P. Fig. 8 shows trading balance before (a) and after (b) optimization. After setting levels of S/L and T/P orders the tested strategy has, at H1 timeframe, avoided significant drops in trading balance and the balance ended with the total profit of 26.665 points.



(a) without S/L and T/P (b) optimized with S/L and T/P

Fig. 8. Trading balance 2000-2011 1 hour timeframe (a) without S/L and T/P; (b) without S/L and T/P

7. Conclusion

Globally we can claim that the ratio between the short and long positions in the entire period did not change significantly. Despite price movements and increased volatility, the short and long positions in all examined timeframe fluctuated at around 50%. The assumption, that the price fall at the currency pair EUR/USD in 2008 cause predominance of short positions, in the last tested period, was not confirmed. It was also not confirmed a speculation, that in the time out of the crisis, the number of trading positions is significantly lower. Between crises, the number trades decreased, but the average difference in all timeframes was at the level 0.66 trade per month, which cannot be considered as significant.

The strategy showed better results especially at timeframe with higher parameter and mainly at timeframe H1, where we had a positive trading balance without the use of Stop Loss and Take Profit orders at 9,995 points. In the subsequent optimization of the strategy, the profit of 26,665 points was achieved by using permanent S/L 415 points and permanent T/P 845 points. The ratio also respects the rule of 1:2.

The difference in strategy behavior in the times of crisis and non-crisis periods was confirmed only at 1 hour and 4 hours timeframe. In conclusion, it can be argued that the trader is able to achieve a profit by using strategies based at technical analysis indicators, but in the Forex market, which is highly volatile, it is necessary to include money management, and of course it is advisable to follow the fundamental information.

Acknowledgements

Paper was supported by the scientific grant agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic under the contract No. VEGA 1/0795/13.

References

Appel, G., 2005. Technical analysis, Power tools for active investors Financial Times Prentice Hall. Pearson Education, Inc p.165 - 173

Glova, J., 2013. Exponential Smoothing Technique in Correlation Structure Forecasting of Visegrad Country Indices, Journal of Applied Economic Sciences, Vol. 8, No. 2(24), p. 185 - 190

Pring, Martin J., 1991. Technical Analysis Explained. McGraw-Hill, New York, NY. p. 2-3.

Stevens, L. 2002. Essential Technical Analysis: Tools and Techniques to Spot Market Trends. John Wiley & Sons, Inc., New York

Schulmeister, S. 2008. Components of the Profitability of Technical Currency Trading. Applied Financial Economics Volume 18, Issue 11, p.3.

Historical Data, MetaQuotes Software Corp. history center, www.metaquotes.net

Miroslav Popov - Forex Strategy Builder v.2.76.0.0, http://forexsb.com