

ANALYSIS OF A STANDALONE USAGE AND LIMITATIONS OF RELATIVE STRENGTH INDEX INDICATOR IN STOCK TRADING

Sanel HALILBEGOVIC

*International Burch University, Bosnia and Herzegovina
sanel.halilbegovic@ibu.edu.ba*

Nedim CELEBIC

*International Burch University, Bosnia and Herzegovina
nedimcelebic@ibu.edu.ba*

Dzenan KULOVIC

*Ekonomski fakultet Univerziteta u Zenici
dzenan.kulovic@efunze.ba*

Abstract

In the stock trading community, a recent growth in number of traders, especially young ones, is quite visible and more and more investors are trying to find one turnkey tool that can work for rookie traders as well as seasoned professionals. The purpose of this research is to analyze one of the proclaimed magic tools of trading called Relative Strength Index (RSI). Researchers plan to examine and analyze a standalone usage of RSI as a sole determinant of investment decisions. RSI indicator is one of the five most popular technical indicators and it is very often used in assessment of stock direction but unfortunately some inexperienced investors are relying too much on this one tool and use it for analysis and trading of various securities. Secondary data will be used to analyze the signal strength and profit relation using regression and paired sample t-test. The outcome of the study portrays that RSI indicator is highly unreliable due to a very weak coefficient of determination; hence the tool should be used only when coupled with other technical analysis indicators. The main limitation of this study is in its breadth so in the future it could be used more widely across industries and various types of companies.

Keywords: *Relative Strength Index; Technical indicators; Limitations of RSI; Stock trading; Technical analysis; Profitability*

JEL Classification: *G11, G17*

I. INTRODUCTION

Is it because technical analysis doesn't have good coverage in academia or because most of the traders follow fundamental analysis superstars such as Warren Buffet, but technical analysis has been getting very little attention. In recent years, fueled with non-fundamental base commodities trading, technical analysis picks up on popularity especially among young traders in ex-Yugoslav and countries in transition as they are trying to select technical tools that will work well in managing investments. What is especially dangerous is that young traders are starting small investment firms and still rely on a very narrow set of technical investment tools that may put in danger their firm as well as their portfolio. Technical analysis tools are used for so-called chart reading or simply said detecting current and future movements of the stock price based on its historical performance. In a myriad of technical tools, one tool, Relative Strength Index (RSI) stands out for its simplicity, user friendliness and ingenuousness. In certain conditions technical analysis can provide much more input than fundamental analysis, and it is usually said that where fundamental stops, technical analysis continues as it is based purely on the relationship between supply and demand and not so much on the financial character of the traded instrument (Halilbegovic, 2016).

II. LITERATURE REVIEW

Today's investment as well as non-investment firms require constant adjustment to their approach to how they do business and that includes the way they behave on the open market, so they can be efficient and competitive in capital markets (Celebic et al, 2015). Technical tools that will be researched here are an unavoidable part of the arsenal of tools used in corporate as well as individual trading. What technicians (popular title of technical analysis masters) claim is that indicating ratios, dividend growth model, Black and Scholes model and other popular financial models mean nothing if there is no supply and demand (Stoft, 2002; Edwards and Magee 2007). One of the many available tools of technical trading is something popularly called

RSI or Relative Strength Index. RSI indicator is known as one of the most valuable tool in a technician's toolbox and without it most of technical analyses would be impossible. RSI indicator was developed by a legendary technician J. Welles Wilder who turned his obsession for so called momentum indicators into a RSI indicator as we know it today (Brown, 2012). This indicator basically depicts the speed and change of price movements over the set time period, and it technically oscillates between levels 0 to 100. RSI indicator is the type of oscillator that doesn't necessarily follow the price and it also doesn't follow volume spikes, but actually tracks the speed, inertia and momentum of the price (Ee Hwa, 2007). RSI indicator is very popular amongst novice traders because it is generally easy to follow. When this indicator dips below level of 20 the stock is considered oversold meaning that the selling pressure has been exhausted and that reversal can be expected. Likewise, if indicator penetrates level of 80, the stock is considered overbought meaning that the buying or upward pressure has been exhausted, and that reversal in price can be expected (Wilder J.W., 1978). Some traders use RSI indicator to look for divergences while some traders use RSI to look for a phenomena called failure swings. Besides the levels of 20 and 80, a significant event in RSI is centerline crossover because it is considered as a confirmation of a stock movement. Formula for RSI is quite simple and it consists of two parts:

$$RSI = 100 - \frac{100}{1 + RS} \quad (1)$$

While RS is:

$$RS = \text{average gain} / \text{average loss} \quad (2)$$

J. Welles Wilder suggested in his book that the period for the average gain and average loss, be 14 days and that is an ongoing standard among traders, although some traders claim that when they analyze certain stocks or industries it is better to apply some different value higher or lower than the standard which is 14 days. Gains are of course expressed as a positive value but in RSI losses are also expressed as a positive value. To calculate average gain or average loss we always have to start by calculating a 'simple' 14 day average.

$$\text{first average gain} = \text{sum of all gains over past 14 days} / 14 \quad (3)$$

$$\text{first average loss} = \text{sum of all losses over past 14 days} / 14 \quad (4)$$

Next we have to calculate the average gain or loss based on previous averages and current gain or loss:

$$\text{average gain} = \frac{(\text{previous average gain} \times 13) + \text{current gain}}{14} \quad (5)$$

$$\text{average loss} = \frac{(\text{previous average loss} \times 13) + \text{current loss}}{14} \quad (6)$$

"RS" portion of the RSI formula is fairly volatile and choppy but J. Welles Wilder normalized RS by converting average gain or average loss into an oscillator that oscillates between levels of 0 and a 100. Therefore for RSI to be at 0, it simply means that in the past 14 periods average gain is 0, and RSI is 100 when in the past 14 periods average loss is 0 (Wilson, 2014). The shear nature of RSI indicator and the fact that it is a range bound oscillator, it is used to identify something called overbought and oversold conditions. Overbought conditions happen when the financial instrument experiences a rise in price to such extent that it has gone 'over' a certain limit on a scale. When that happens and overbought condition has occurred and what follows (by the trading 'rule') is a reverse in direction, hence in this situation and investor should sell or short sell the securities. Opposite stands for oversold conditions and similarly when the price has gone so far down (basically hitting the price floor) it penetrated certain bottom level that is 'over' the limit, we call that oversold condition or the condition where the upward price reversal is expected (Halilbegovic 2016). The RSI indicator is an oscillator that always ranges from 0 to a 100, a no matter what happens with the price movements the oscillator will always stay within these limits. Most of the technicians use preset levels of 80/20 so that everything above 80 is consider overbought and everything below 20 is considered oversold, but some investors are 'loosening' this range to 70/30. It is very important to say that if the financial security goes into overbought region that does NOT necessarily mean that the prices will start going down (Palicka, 2012). The oscillator can go into overbought/oversold region and stay there for longer period of time. So investors should be cautious about this since it is more important to track and follow larger trend rather than relying on RSI indicator only. Sometimes (as seen on Graph 1) the RSI line can cross the important levels of 80 and 20, like in mid August when the RSI crossed 80 line hence being overbought, but stock kept going up without a reversal. (Dharamveer, 2014). On Graph two, we can see that Tesla motors price swung wildly over the period of a year ranging between \$140 to \$270 per share. In this period RSI generated two really good buy (oversold) and two sell (overbought) signals, that were confirmed by the price increase and decrease, respectively.



Graph 1. Tesla 1yr chart showing oversold and overbought signals

For the purposes of this research the signal strength will be measured from 1-10, weakest to strongest, respectively. Signal strength concept is somewhat subjective in nature and it depends on the analyst or the viewer. What is common and standard for signal strength concept is the fact that the deeper below the center line the crossover happen, the stronger the buy signal is and vice versa. If the RSI line shows a reversal below zero line, technically it has generated a buy signal. The strength of that signal depends where reversal happened. For example if the reversal happens right on the center line or more precisely a 50-level, the signal strength is very low ie. Strength is '1'. We have to remember that RSI is an oscillating indicator type and it always oscillates between levels of 0 and 100. If the reversal happens at RSI level 25 the buy signal strength is medium or about '5' and finally if the reversal happens at the RSI level 0, it is said that the signal strength is at its highest level or a '10'. Same goes when measuring the sell signals except that the lowest level of sell signal will be at RSI level 50 and highest sell signal will be at the RSI level 100. Technically if the RSI is on the 0 level the buy signal strength will be 10 and if the reversal happens closer to center line signal strength will be very low. As an example Graph 2 shows RSI oscillator with price movements of Pfizer Corp. As it is shown in Graph 2 in one year period (Dec 2015 to Dec 2016) we had multiple buy signals based on RSI oscillator.



Graph 2. Pfizer Corp price/RSI movements with strength level depiction

Very interesting one is the crossover that occurred beginning of November 2016 that was so low that it basically occurred below the level 20, so it generated a signal strength of 10. Contrary in late March 2016, the crossover occurred near or at the center line and generated weakest signal of 1.

III. METHODOLOGY

The research title alone dictates the logical hypothesis. Key point is to prove or disprove that a standalone usage of RSI indicator is quite risky and dangerous.

H0 *RSI oscillator used as a standalone stock investment indicator, will not generate a consistent, considerable and sustainable profit*

This basically means that if the relation between generated profit yield and a signal strength derived by RSI, is not in direct proportion, it means that RSI, when used as a standalone investment decision maker, does not produce consistent or sizeable profit. The validity of the hypothesis will be determined by the correlation coefficient (*r*) or Pearson’s *r*, as well as *r*² which is the coefficient of determination. If it proves that the above-mentioned coefficients are rather high or much closer to 1 than to 0, then we can conclude that the hypothesis ‘stands’, while if opposite happens, the hypothesis ‘falls’. The reason why this study has even been initiated, is to try and prove that using so called ‘magic wand’ indicator is very dangerous to an investor. The goal of this study is to show that usage of a single indicator such as RSI is very inconsistent and its profitability questionable. Secondary data has been extracted from the www.marketwatch.com for 105 large cap companies with over \$100bln in market capitalization. Time span of the research is 5years and during that time RSI generated a total of 453 buy signals. Three largest companies in the sample will be analyzed in detail and entire sample as well. Tracking of the trading history will be done and important RSI events will be recorded. Those events will be represented in the form of signals ranging from 1 to 10. As mentioned before, critical points in RSI are 20 for oversold and 80 for overbought conditions. Deeper the crossover, or change of direction of RSI line happens, stronger the signal. Close the crossover happens to zero line weaker the signal. These signals are the typical example of ordinal data used on an arbitrary numerical scale where the exact numerical quantity of a particular value has no significance beyond its ability to establish a ranking over a set of data points. The percent profit yield will be calculated based on the signal of the RSI and the generated yield will be compared to the strength of the signal given by RSI, so in effect the analysis will portray yield/profit as a dependent variable while RSI signal strength will be depicted as an independent variable and in the end the connection between those variables will be used to do an inferential data analysis. With the main postulate of RSI, being that with the x signal strength one can expect to generate y profit, the relationship is assumed to be linear and the relation between signal strength and profit yield will be analyzed by statistical regression and paired sample t-test. Statistical regression will focus on the relationship between profit yield and the signal strength as a predicting variable in order to estimate the conditional expectation of profit yield given the particular signal strength.

IV. DATA ANALYSIS AND DISCUSSION

As mentioned before for each generated RSI signal, a strength level will be assigned from 1-10 (weakest – strongest). On the graph 3, shown below we have the depiction of the price movements of Amazon Inc with RSI plotted out. In the given period of 5 years (from 2008-2013), Amazon’s Stochastic oscillator generated a total of 20 signals. The price movement generally has a positive slope with the tendency to continue rising. There have been some periods of retraction especially in October-December 2011 and after that RSI confirmed a good opportunity to go long with its strong buy signal. Signal strengths are of a solid distribution ranging from three to ten.



Graph 3 – Amazon Inc daily trading over 5 years including RSI Indicator

On the graph 4, shown below we have the depiction of price movements of Apple Corp, and below the price movements, RSI indicator is plotted out with the most interesting events and signals. In the given period of 5 years (from 2008-2013), Apple's RSI generated a total of 15 signals that are shown on the graph 4. The price movement generally has a positive slope with the tendency to correct itself downwards because the price line looks like it almost reached the point of 'saturation' and it is ready to change direction.



Graph 4 – Apple Corp daily trading over 5 years including RSI Oscillator

On the graph 5, shown below we have the depiction of the price movements of IBM Corporation, and below the price movements, RSI indicator is plotted out. In the given period of 5 years (from 2008-2013), IBM's RSI generated a total of 14 signals that are shown on the graph 5. The price movement generally has a positive slope with the tendency to generally continue rising. There is a very good chance that the price will hit a very hard and psychological ceiling at \$200 per share as this resistance has been tested at least 5 times in the past 6 months. If the price penetrates the given ceiling and since it was tested on so many occasions, if the price goes upward from \$200, than \$200 level will become a super strong floor which would represent a good opportunity for a long term investment. Signal strengths are of a solid distribution ranging from one to nine with the most interesting event being the signal strength 9 occurred somewhere in the end of October 2008 where the RSI oscillator crossover (when RSI line changes direction) happened basically on the level 20, making it a perfect example of the oversold conditions and hence the opportunity/signal to buy.



Graph 5 – IBM daily trading over 5 years including RSI Oscillator

A tabular representation of consolidated RSI oscillator signals for all three companies, their strengths and corresponding profit margins are shown in the table 1. This table shows all the details such as the date of the signal, price when signal was generated, the actual signal strength and the achieved profit margin that

corresponds to the given signal. The table 1 will be used to generate a summarized table that will be then usable for the quantitative analysis, regression and paired sample t-test.

Table 1 – tabular depiction of signal strengths and profits for Amazon, Apple and IBM

AMAZON			APPLE			IBM		
Date of trade	Price	Signal / Profit	Date of trade	Price	Signal / Profit	Date of trade	Price	Signal / Profit
11/17/08	39.69	8	12/29/06	12.34	4	10/15/08	88.29	9
4/20/09	77.57	95%	1/12/07	12.92	5%	2/24/09	86.40	1
8/31/09	81.19	6	1/22/07	12.84	2	3/3/09	87.77	7%
11/16/09	131.59	62%	1/31/07	12.90	2%	7/21/09	117.04	13%
6/28/10	117.8	6	2/10/07	13.22	1	9/8/09	117.16	2
9/20/10	151.3	28%	3/1/07	15.02	14%	9/22/09	121.61	4%
10/14/10	155.53	8	9/12/07	18.09	4	10/5/09	119.75	4
11/11/10	170.37	10%	10/10/07	22.07	22%	12/29/09	131.85	10%
11/17/10	158.35	7	11/20/07	26.12	4	2/1/10	124.67	7
12/14/10	173.94	10%	12/5/07	28.01	7%	4/15/10	130.89	5%
1/26/11	175.39	8	2/7/08	20.07	7	5/10/10	126.27	7
2/25/11	177.24	1%	3/25/08	25.02	23%	5/14/10	131.19	4%
3/25/11	170.98	7	7/20/08	25.27	3	7/7/10	127.00	4
4/19/11	178.82	5%	7/29/08	25.91	8%	7/14/10	130.72	4%
6/22/11	191.63	8	9/22/08	131.05	7	11/30/10	141.46	4
7/20/11	215.55	13%	1/20/09	78.20	8	2/10/11	164.09	18%
8/24/11	193.73	8	3/25/09	106.49	9%	3/23/11	159.53	6
9/26/11	229.85	19%	3/27/09	106.85	13%	5/3/11	172.87	8%
10/10/11	231.32	1	5/14/09	122.95	6	6/20/11	165.02	6
10/25/11	227.15	-2%	6/8/09	143.85	17%	7/7/11	176.48	7%
11/23/11	188.99	8	7/9/09	136.36	7	8/25/11	165.58	8
2/9/12	184.98	2%	8/14/09	166.78	22%	2/27/12	197.53	10%
4/25/12	194.42	10	8/19/09	164.60	6	6/5/12	189.20	9
5/17/12	218.36	13%	9/25/09	182.37	11%	9/18/12	207.07	9%
6/6/12	217.64	5	12/9/09	197.80	9	10/24/12	190.72	9
7/10/12	219.5	1%	3/17/10	224.12	13%	1/25/13	204.97	7%
7/26/12	220.01	5	8/26/10	240.28	9	2/26/13	199.14	3
10/2/12	250.6	14%	9/30/10	283.75	18%	3/14/13	215.80	8%
10/24/12	228.49	10	11/19/10	306.73	8			
12/7/12	253.27	11%	1/14/11	348.48	18%			
12/28/12	245.18	7	1/25/11	341.40	4			
1/22/13	270.19	10%	2/11/11	356.85	5%			
3/26/13	260.31	9	6/22/11	322.61	10			
4/12/13	272.87	9%	7/29/11	390.48	11%			
8/21/13	284.57	9	11/28/11	376.12	9			
9/20/13	316.34	11.10%	3/7/12	530.69	41%			
			5/17/12	530.12	10			
			8/24/12	663.22	23%			
			11/16/12	527.68	4			
			12/4/12	575.85	9%			
			4/24/13	405.46	5			
			5/10/13	452.97	11.7%			
			6/28/13	396.53	10			
			8/23/13	501.02	26.4%			

A truncated table showing a summary of only the signal strength and the corresponding profit margin is shown in the table 2. This table will serve as the dataset for the quantitative analysis.

Table 2 – Truncated table showing signal strength and corresponding profit margins

AMAZON		Apple		IBM	
Signal	Profit	Signal	Profit	Signal	Profit
8	95%	4	5%	9	33%
6	62%	2	0%	1	2%
6	28%	1	14%	2	4%
8	10%	4	22%	4	10%
7	10%	4	7%	7	5%
8	1%	7	25%	7	4%
7	5%	3	3%	4	3%
8	12%	7	36%	4	16%
8	19%	8	-18%	6	8%
3	-2%	6	17%	6	7%
8	-2%	7	22%	8	19%
10	12%	6	11%	9	9%
5	1%	9	13%	9	7%
5	14%	9	18%	3	8%
10	11%	8	14%		
7	10%	4	5%		
9	5%	10	21%		
9	11%	9	41%		
		10	25%		
		4	9%		
		5	12%		
		10	26%		

Findings

Using the above tables, usable dataset is created and it can be used for the statistical tests that will numerically prove or disprove the hypothesis. For the 453 observations, the mean value of the profit is 14.2%, while minimum and maximum values are -20% and 95% respectively, so for the range of signal strengths of 1 to 10, the profits are from -20% to 95%.

Table 4 – Paired Sample t-Test

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 AMZNprofit	,2372	10	,30862	,09759
IBMprofit	,1400	10	,09791	,03096
Pair 2 AMZNprofit	,2524	9	,32201	,10734
APPLprofit	,1384	9	,14391	,04797
Pair 3 APPLprofit	,1540	10	,16600	,05249
IBMprofit	,1060	10	,08962	,02834

	N	Correlation	Sig.
Pair 1 AMZNprofit & IBMprofit	10	,028	,940
Pair 2 AMZNprofit & APPLprofit	9	-,715	,030
Pair 3 APPLprofit & IBMprofit	10	-,389	,267

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	AMZNprofit - IBMprofit	,09714	,32119	,10157	-,13263	,32691	,956	9	,364
Pair 2	AMZNprofit - APPLprofit	,11401	,43670	,14557	-,22167	,44969	,783	8	,456
Pair 3	APPLprofit - IBMprofit	,04798	,21714	,06866	-,10735	,20331	,699	9	,502

The profit yields and signal strength of three chosen companies, Amazon, Apple and IBM, were analyzed using paired sample t test.

Paired Samples Test is used to test the difference between profits of the three companies, with respect to the signal strength. In this case profit yields in relation to signal strength of one company are paired to that of another company, e.g. Amazon profit yields are paired with profit yields of Apple and IBM. Table 3 above demonstrates the results of paired sample t test for three chosen companies.

Based on the obtained results, significance value is much higher than 0.05, what indicates that there are no statistically significant differences between profits of three respective companies. The differences in the mean values of the Amazon, Apple and IBM are likely due to chance or subject to many other factors and not likely due to the IV manipulation, the signal strength.

Besides using Paired Sample Test, the regression tool is also used in order to explain the strength of the relationship between independent variable (signal strength) and dependent variable (profit margin). The relationship between the two variables will be mainly explained by a coefficient of determination or r^2 . R^2 is a statistical measure of how close the data are to the fitted regression line. Coefficient of Determination is calculated as Explained variation / Total variation and in that sense, R^2 is a number that is always between 0 and 100%:

0% indicates that the model explains none of the variability of the response data around its mean.

100% indicates that the model explains all the variability of the response data around its mean.

First each of the three firms will be analyzed via linear regression and then the analysis of combined results of all three firms will be analyzed as well.

Table 5 – Coefficients of determination for Apple, Amazon and IBM

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,361 ^a	,131	,064	,13472	,131	1,952	1	13	,186

a. Predictors: (Constant), Signal

AMAZON Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,031 ^a	,001	-,061	,25027	,001	,016	1	16	,901

a. Predictors: (Constant), Signal

IBM Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,484 ^a	,234	,171	,0746357	,234	3,673	1	12	,079

a. Predictors: (Constant), Signal

Each company is separately observed, with the aim of testing the relationship between profit and signal strength. The results indicated that in none of the three companies signal strength was significantly related to the profit as their coefficient of determination is very low 0.131, 0.001 and 0.234 for Apple, Amazon and IBM respectively. This simply means that signal strengths and the profit on an investment initiated by RSI have no causal relationship.

Lastly, data from all three companies will be compiled and analyzed via linear regression.

Table 6 – Linear regression analysis of combined data for all three firms

Correlations

		profit	Signal
Pearson Correlation	profit	1,000	,234
	Signal	,234	1,000
Sig. (1-tailed)	profit	.	,057
	Signal	,057	.
N	profit	47	47
	Signal	47	47

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,077	1	,077	2,605	,113 ^a
	Residual	1,334	45	,030		
	Total	1,411	46			

a. Predictors: (Constant), Signal

b. Dependent Variable: profit

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,234 ^a	,055	,034	,17218	,055	2,605	1	45	,113

a. Predictors: (Constant), Signal

Source: SPSS table generated by author

Linear regression is used to test the relationship between profit and signal strength for three companies: Amazon, Apple and IBM, where profit is used as a dependent variable and signal as an independent variable. According to the obtained results profit does not depend on the signal strength. Actually, signal strength explains only 5,5% of the variance in the dependent variable – profit. Correlation between profit and signal strength is weak – 0.234, all in all showing that there is no correlation between profit and signal strength and also confirming validity of null hypothesis.

After a small sample detail analysis a full sample analysis of 105 large cap companies that totaled 453 RSI signal instances, as shown in table 3. Results of the analysis corresponds to the above commented analysis of a sample of 3 companies.

Table 6 – Descriptive statistics and regression analysis for the entire sample

Descriptive Statistics				Correlations			
	Mean	Std. Deviation	N		Profit	BuySignal	
Profit	,077605	,0920478	453	Pearson Correlation	Profit	1,000	-,065
BuySignal	8,17	1,535	453		BuySignal	-,065	1,000
				Sig. (1-tailed)	Profit	.	,085
					BuySignal	,085	.
				N	Profit	453	453
					BuySignal	453	453
Model Summary							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	,065 ^a	,004	,002	,0919575	,004	1,888	1
ANOVA ^a							
Model	Sum of Squares	df	Mean Square	F	Sig.		
Regression	,016	1	,016	1,888	,170 ^a		
Residual	3,814	451	,008				
Total	3,830	452					
Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.		
	B	Std. Error	Beta				
(Constant)	,109	,023		4,665	,000		
BuySignal	-,004	,003	-,065	-1,374	,170		

a. Dependent Variable: Profit

As mentioned before table 9 is a verbatim of small sample analysis as the coefficient of determination is 0.004 which indicates that RSI's buy signal does not explain the variance in the dependent variable - profit.

As far as Pearson coefficient goes, the correlation coefficient between buy signal and profit is -0.065, what means that there is very weak negative correlation, which in effect is not statistically significant at the 0.05 significance level. With respect to the regression analysis, the coefficient for Buy signal is -0.004 what means that the increase in the independent variable (signal) will lead to the decrease in the dependent variable (profit). However, it is not statistically significant since the p value is 0.17, that is greater than level of significance, which is 0.05.

V. CONCLUSION

Based on the above research and analysis, we can conclude that the conclusion is that the null hypothesis "RSI oscillator used as a standalone stock investment indicator, will not generate a consistent, considerable and sustainable profit" stands and is accepted, as the statistical tools have shown that the relationship between signal strength and the generated profit is very weak and that the whole model of using RSI oscillator as an only tool in investing is only 12.95% reliable which is way under the limit of even the most risk-loving investors. This applies mainly to young and upcoming investors who are lured mainly by Forex brokers who claim that huge profits can be made using simple tools and indicators such as RSI oscillator. Investments in any kind of financial instruments must be based on multiple indicators and even if all selected indicators 'agree' on the signal, the investor should be cautious and protect themselves via stops, hedging or other loss-prevention techniques. The limitations of this research come mainly in the form of the lack of width across industries and across the markets as it would be interesting to see whether the same situation happens over the World's markets and different industries. These limitations can serve as an igniter for the upcoming graduates and master and PhD candidates who could develop and further explore this topic deeper.

VI. REFERENCES

1. Brown C., (2012). *Technical Analysis for the Trading Professional*, McGraw-Hill Education, 90-108
2. Celebic N, Sunje A., Kulovic Dz, (2015). Percepcija o ulozi srednjeg menadzmenta u procesu strateskih odlucivanja, *Socioeconomica – The scientific journal for theory and practice of socio-economic development*, 208-209
3. Dharamveer D., (2014). *Technical Analysis of Indian Forex Market*, *GE-International Journal of Management Research*, 4-6.
4. Ee Hwa N., (2007). *Trading Strategies Using Stochastics*, *Chart Nexus Market Strategist*, 40-42
5. Edwards R., Magee J., (2007). *Technical Analysis of Stock Trends*, AMACOM, 36-54.
6. Halilbegovic S., (2016). MACD – Analysis of weaknesses of the most powerful technical analysis tool, *Independent Journal of Management and Production*, 2-3
7. Halilbegovic S., Buljubasic E., (2016). Limitations and Inconsistencies of a standalone usage of Stochastic indicator in stock trading, *International Journal of Economics, Commerce and Management*, 8-9
8. Palicka J, (2012). *Fusion Analysis: Merging Fundamental and Technical Analysis for Risk-Adjusted Excess Returns*, McGraw Hill, 81-108
9. Stoft S., (2002). *Power System Economics*, Wiley/InterScience, 54-63.
10. Wilder JW., (1978). *New Concepts in Technical Trading Systems*, *Trend Research*, 27-36
11. Wilson G., (2014). *RSI Trading: How to build a profitable trading system using RSI*, Amazon Digital Services LLC, 15-16
12. Source of graphs: <http://bigcharts.marketwatch.com>
13. Source of tables: SPSS and author's work