

## **Stock Market Analysis in Practice: Is It Technical or Fundamental?**

**Gil Cohen<sup>1</sup>, Andrey Kudryavtsev<sup>2</sup> and Shlomit Hon-Snir<sup>3</sup>**

### **Abstract**

Investors use various tools in the investment process. Some use technical or fundamental analysis, or both in that process. The aim of the following survey research is first, to examine differences between professional portfolio managers to amateur investors in their approach towards technical and fundamental analysis. Second, we want to study the difference of use of fundamental and technical tools in the buying versus selling stocks. We used online survey in one of the leading business portals in addition to asking professional investors in a leading investment house in Israel. Our results show no significant difference between professional and non-professional investors in terms of how frequently they use fundamental and technical investment tools. Both groups of investors use more frequently fundamental tools than technical when they make buy/sell decisions. We also found that non-professional investors use more fundamental tools such as "analysts' recommendations" when they buy stocks and more technical tools such as "support and resistance lines" when they sell stocks. Moreover, our study

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<sup>1</sup> Economics and Management Department, The Max Stern Academic College of Emek Yezreel, Emek Yezreel 19300, Israel, e-mail: gilc@yvc.ac.il

<sup>2</sup> Economics and Management Department, The Max Stern Academic College of Emek Yezreel, Emek Yezreel 19300, Israel, e-mail: Kudryavtsev: andreyk@yvc.ac.il

<sup>3</sup> Economics and Management Department, The Max Stern Academic College of Emek Yezreel, Emek Yezreel 19300, Israel, e-mail: shlomith@yvc.ac.il.

indicates that investors use financial statements and support and resistance lines together as a primary tool for their investment behavior. This result breaks a common hypothesis arguing that fundamental and technical tools do not mix.

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## 1 Introduction

Fundamental and technical analyses are known for many years as leading investment decisions tools. However, to the best of our knowledge, no past research examined to what extent those tools are used from dual point of view: professional versus non-professional investors, and buying versus selling of stocks. The questions raised in our current research are: 1. Are professional portfolio managers different from non-professional investors in their use of well known investment tools and 2. Do investors behave differently when they buy and sell stocks. We expect to find a more extensive use of well known investment tools by professional relatively to non-professional investors. With regard to question 2, the prediction is quite puzzling. We argue that an investor is more objective when he buys a stock than when he sells it because of the endowment effect that was first mentioned by Daniel Kahneman, Jack Knetsch and Richard Thaler [6]. Therefore, we expect a more extensive use of known objective tools in the buying process and less in the selling. Another interesting aspect of our research is to examine whether the investor's self characteristics such as age, gender and capital markets experience influence the intensity of using the investment tools.

## 2 Literature Review

For many years investors used various tools to support their buying and selling stocks decisions. Two sets of tools are commonly used by investors: fundamental and technical analysis. The first uses the firm's economics data such as profits, dividends and growth projection, and the second method is based on the Dow Theory (Murphy [11]) and uses historic price movements, and mathematical formulas to predict future returns. While fundamental analysis has been extensively researched in the finance literature, not many academics have investigated whether common practice use of technical tools can outperform the "buy and hold strategy". Example for the work that has been done in the field of technical analysis is the work of Kwon and Moon [9] who tried to predict future price changes using technical indicators. Their prediction was based on regression with neural networks tested with 36 stocks for 13 years and was able to beat the "buy and hold" strategy. Skabar and Cloete [12] used generic algorithm and neural networks to determine buy and sell points of commodities in the stock exchange. Fernandez-Rodriguez et al. [4] optimized the parameters of moving averages using generic algorithm. Lin et al. [10] exempted to find the best parameter combination for filter trading rule, and De La Fuente et al. [2] who optimized parameters in three known technical indicators. Subramanian et al. [13] designed agents that are based on composite trading rules. The performances of the agents were evaluated by making them compete with other automated agents.

Other researchers have focused on the firm's fundamental data such as profit and growth rate. Kothari [8], Easton et al. [3], and more recently by Frankel et al. [5], have agreed that earnings forecasts are more than ever a crucial topic for investors, since it is highly correlated to stocks returns. They analyzed the determinants of the magnitude of stock price reaction to analyst reports. Keane and Runkle [7] that analysts forecast of earnings-per-share are rational, despite evidence to the contrary by earlier researchers (see De Bondt and Thaler [1]).

Our aim in the current research is not to judge which of the two investment tools (fundamental or technical) better predicts stock returns, but rather to identify to what extent they are used by professional and non-professional investors. Moreover, we want to examine whether different sets of tools are used to buy a stock and to sell it.

### 3 Database and Survey design

We gathered the data for this study in the framework of a computerized survey, consisting of two stages:

First, we asked a group of professional portfolio managers (41 managers) at one of the major Israeli investment houses to fill in a short questionnaire.

Second, we conducted online survey via one of the leading financial portals in Israel. The portal we used is widely recognized for being regularly visited by market investors, not necessarily professional. We got responses from 305 users<sup>4</sup>.

We asked all the respondents to indicate their gender, age, and number of years of active experience in the capital market. Table 1 (in Appendix 1) reports the basic descriptive statistics of our sample. The majority of our participants were males (78.05% and 74.10% in the professionals and non-professionals groups, respectively), 30 to 40 years old (53.66% and 55.08%, respectively), and had more than 10 years of experience in stock market investments (39.02% and 40.98%, respectively).

Our survey questionnaire consisted of 14 questions, 4 questions involving fundamental investment tools and 10 questions related to technical tools (the questions appear in Appendix 2). In each question, participants were asked to rate appropriateness of a statement on a Likert scale between 1 (strongly disagree) and 5 (strongly agree).

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<sup>4</sup> The first stage of the survey took place in January 2011, and the second one in March-April 2011. The "Bizportal" (<http://www.bizportal.co.il/>) web-site was involved.

## 4 Results

Table 1 summarizes the differences and the similarities between professional and non-professional investors when they make decisions to buy/sell stocks. The Table shows in general that investors make more extensive use of fundamental tools than of technical ones when they make buy/sell decisions. This result might imply that both professional and non-professional investors adapt a long run investment point of view rather than a shorter one that is represented better by technical tools. No statistically significant behavior differences have been found between the two groups examined. That is, professionals and non-professionals make approximately the same use of the examined investment tools. One may argue, that we examined only the most common fundamental and technical tools available to investors and that professional investors may be using a more advanced set of tools along with the examined traditional tools.

The most popular buying and selling tool is a fundamental one analyzing the firm's financial statements for both professional and non-professional investors. The second most usable tool which is technical in type is "support and resistance lines", third, again a fundamental tool "analysts' recommendations", forth, "Moving averages" followed by the other technical tools. The described results show that investors, both professional and non-professional, use both fundamental and technical tools as a mix for achieving the best possible decisions. Next, we address the buying versus selling issue for each of the two discussed groups of investors: professional and non-professional. Table 2A summarizes the results for the former group, and Table 2B for the latter.

Table 2A shows that non-professional investors use more extensively investment tools when they buy stocks than when they sell stocks. This result agrees with our expectation that because of the "endowment effect", investors are more rational when they buy the stock and more emotional when they sell it.

Moreover, they use more fundamental than technical tools when they buy stocks, while the opposite occurs when they sell it.

Table 1: Professional versus Non- professional use of known investment tools.

Investment Tool		Non-professional	Professional	T statistics
Analysts' recommendation	Buy	3.25	3.20	0.18
	Sell	3.08	3.07	0.22
Financial Statements	Buy	3.63	3.68	0.52
	Sell	3.55	3.63	0.29
Mean fundamental		3.32	3.36	0.37
Support and Resistance lines	Buy	3.04	3.24	0.75
	Sell	3.10	3.20	0.32
Moving Averages	Buy	2.72	2.78	0.00
	Sell	2.71	2.78	0.19
Stochastic Oscillator	Buy	1.93	1.95	0.43
	Sell	1.98	1.90	0.65
RSI Oscillator	Buy	2.32	2.34	0.08
	Sell	2.30	2.34	0.07
MACD Oscillator	Buy	2.30	2.21	0.33
	Sell	2.29	2.19	0.16
Mean technical		2.47	2.49	0.23
Total Mean		2.78	2.75	
ST.D		0.55	0.60	
High		3.63	3.68	
Low		1.93	1.95	

With respect to specific tools, non-professional investors make relatively frequent use of analysts' recommendations when they buy a stock and of two technical tools ("stochastic oscillator" and "support and resistance lines") when they sell it.

Table 2A: Buy versus Sell use of Investment tools by non-professional investors.

	Buy	Sell	T statistics
Analysts recommendation	3.25	3.08	3.66**
Financial Statements	3.63	3.65	1.45
Mean fundamental	3.43	3.32	3.15**
Support and Resistance lines	3.04	3.10	1.6***
Moving Averages	2.72	2.71	0.40
Stochastic Oscillator	1.93	1.98	2.86**
RSI Oscillator	2.32	2.30	0.55
MACD Oscillator	2.30	2.29	0.36
Mean Technical	2.46	2.47	0.78
Total Mean	2.74	2.71	1.75***

Notes: \*\* significance<0.05, \*\*\* significance<0.10

Table 2B: Buy versus Sell use of Investment tools by professional investors.

	Buy	Sell	T statistics
Analysts recommendation	3.20	3.07	1.09
Financial Statements	3.68	3.63	0.35
Mean fundamental	3.43	3.34	1.02
Support and Resistance lines	3.24	3.20	0.62
Moving Averages	2.78	2.78	0.00
Stochastic Oscillator	1.95	1.90	0.57
RSI Oscillator	2.34	2.34	0.00
MACD Oscillator	2.21	2.19	0.57
Mean Technical	2.51	2.49	0.66
Total Mean	2.77	2.73	1.17

Table 2B demonstrates that professional investors also use investment tools more frequently when they buy stocks than when they sell them. However, this difference and all other differences in employing specific investment tools (fundamental and technical) have not proven statistical significance.

Since, as mentioned above, no statistically significant difference of behavior between professional and non-professional investors has been found, we gathered all the available data and used factor analysis to identify bundles of tools used together (not mutually exclusive) . Table 3 shows those bundles:

Table 3: Bundle of tools used together to Buy or sell stocks.

	Bundle A	Bundle B	Bundle C
Analysts recommendation	Buy		
	Sell		
Financial Statements		Buy	
		Sell	
Support and Resistance lines		Buy	Buy
		Sell	Sell
Moving Averages			Buy
			Sell
Stochastic Oscillator			Buy
			Sell
RSI Oscillator			Buy
			Sell
MACD Oscillator			Buy
			Sell
T statistics			
Bundles B-A		17.32**	
Bundle C-B			-2.69**
Bundle A-C	9.27**		

Note: \*\* significance<0.05



Table 3 shows that investors use financial statements and support and resistance lines together as primary tools in their investment behavior. This result breaks a common hypothesis arguing that fundamental and technical tools do not mix. Our findings demonstrate that investors use some technical along with fundamental tools, and they are not necessarily split into two groups: those who believe and those who do not believe that technical tools can improve investment decisions. Our results also confirm that investors value "support and resistance line" as a valid and important tool for buy/sell decisions. Second, investors use analysts' recommendations when they buy and sell stocks and third, several technical tools are used together (all the examined technical tools are included in bundle C). Again here, we did not find any significant difference of preferences for the described bundles of tools between professional and non-professional investors.

Finally, we investigated whether investors' personal characteristics, like gender, age, and financial market experience influence his/her preferences of the described investment tools bundles. The results indicate that: 1. No gender differences have been found. 2. Bundle B that included financial statements and "support and resistance lines" is used more frequently by investors aged 40 and above, and by investors having 5 or more years of experience in financial markets, than by younger and less experienced investors.

## **5 Summary and conclusions**

In the current study we used an online survey published at one of the leading Israeli financial portals and a questionnaire that was distributed among professional portfolio managers. Our research goal was two-fold: first, we want to examine to what extent professional investors differ from non-professional investors in using well known fundamental and technical investment tools, when

they buy and sell stocks. Second, we want to study whether there are differences in investors' buying and selling behavior.

We did not find significant differences between professional and non-professional investors in terms of how frequently they use fundamental and technical investment tools. It might be the case that professional investors use a more sophisticated non conventional set of tools that are not available to non-professional investors. Both groups of investors use fundamental tools more frequently than technical ones when they make buy/sell decisions. This result may indicate a relatively long investment horizon suitable to fundamental analysis relatively to short-run investment preferences in which technical analysis is needed.

We found that non-professional investors use more fundamental tools such as analysts' recommendations when they buy stocks and more technical tools such as "support and resistance lines" when they sell stocks. Such difference in buying and selling behavior between has not been found for the professional investors group.

Moreover, our study indicates that investors use financial statements and support and resistance lines together as primary tools of their behavior. This result breaks a common hypothesis arguing that fundamental and technical tools do not mix. Future studies can split circumstances to bear and bull markets and add other technical and fundamental tools to their sample.

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## Appendix 1

### Sample descriptive statistics

Panel A: Portfolio managers (41 respondents)		
Category	Number	Percent of total
1. Gender:		
Men	32	78.05
Women	9	21.95
2. Age:		
18-30	9	21.95
30-40	22	53.66
40-50	9	21.95
50-60	1	2.44
60+	0	0.00
3. Capital market investor for:		
Less than 3 years	5	12.20
3 to 5 years	10	24.39
5 to 10 years	10	24.39
More than 10 years	16	39.02
Panel B: Market investors (305 respondents)		
Category	Number	Percent of total
1. Gender:		
Men	226	74.10
Women	79	25.90
2. Age:		
18-30	76	24.92
30-40	168	55.08
40-50	49	16.07
50-60	11	3.61
60+	1	0.33
3. Capital market investor for:		
Less than 3 years	107	35.08
3 to 5 years	29	9.51
5 to 10 years	44	14.43
More than 10 years	125	40.98

## Appendix 2

### Questionnaire

1. I use Analysts recommendations when I buy stocks.
2. I use Analysts recommendations when I sell stocks.
3. I use financial statements when I buy stocks.
4. I use financial statements when I sell stocks.
5. I use support and resistance lines when I buy stocks.
6. I use support and resistance lines when I sell stocks.
7. I use moving averages when I buy stocks.
8. I use moving averages when I sell stocks.
9. I use the stochastic oscillator when I buy stocks.
10. I use the stochastic oscillator when I sell stocks.
11. I use the RSI oscillator when I buy stocks.
12. I use the RSI oscillator when I sell stocks.
13. I use the MACD oscillator when I buy stocks.
14. I use the MACD oscillator when I sell stocks.