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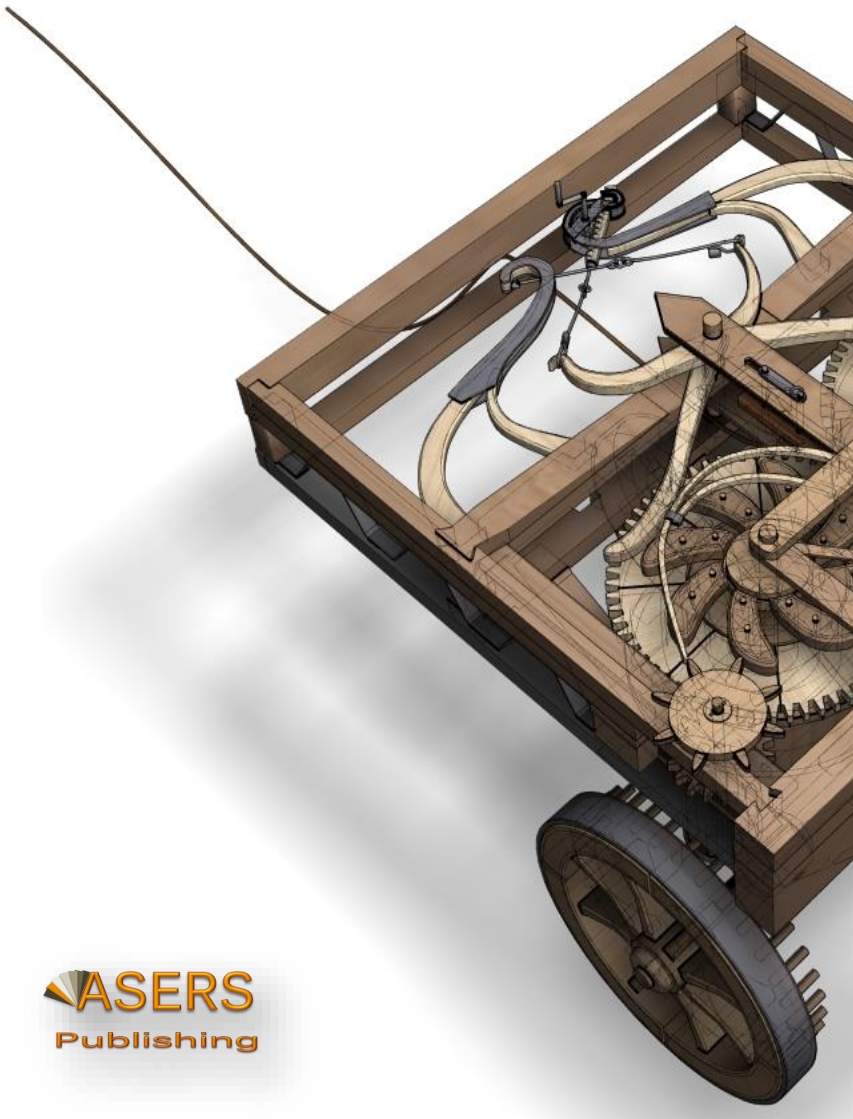

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Contents:

1 **Analyzing the Dynamics of Gross Domestic Product Growth. a Mixed Frequency Model Approach** ...117
Ray John Gabriel FRANCO, Dennis S. MAPA

2 **Estimates of Income Inequality are Biased or Misinterpreted** ...142
Ivan KITOV

3 **Differential Effects of Target Price Releases on Stock Prices: Psychological Aspects** ...153
Andrey KUDRYAVTSEV, Shosh SHAHRABANI, Aviad DIDI, Eyal GESUNDHEIT

4 **Study on Pre-Assessment and Evaluation System Indicators Energo - Mining Complex in Basin of Oltenia** ...167
Elena BICĂ

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DIFFERENTIAL EFFECTS OF TARGET PRICE RELEASES ON STOCK PRICES: PSYCHOLOGICAL ASPECTS

Andrey KUDRYAVTSEV
The Economics and Management Department, The Max Stern Yezreel Valley College, Israel
andreyk@yvc.ac.il
Shosh SHAHRABANI
The Economics and Management Department, The Max Stern Yezreel Valley College, Israel
shoshs@gmail.com
Aviad DIDI
The Max Stern Yezreel Valley College, Israel
Eyal GESUNDHEIT
The Max Stern Yezreel Valley College, Israel

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Abstract:

In the present study, we attempt to shed light on potential factors affecting how investors react to target price announcements made by security analysts. More specifically, the study focuses on cross-sectional differences between the magnitude of reactions for stocks whose prices have increased and reactions for stocks whose prices decreased immediately prior to such announcements. Employing a sample of target price announcements classified as "buy" (positive) recommendations for Israeli stocks, we document their significantly positive effect on stock prices both on the day of the announcement and during a short period following the announcement. The effect of target price releases is also found to be significantly stronger for smaller stocks. Moreover, we document that those stocks that have experienced positive cumulative abnormal returns prior to target price releases yield significantly higher abnormal returns on average, both on the event day and during a short subsequent period. We explain this finding by the effect of the availability heuristic on investors' perceptions and decisions. Namely, we suggest that investors may expect target price releases to have a stronger effect on stock prices if these releases are preceded by stock returns of the same sign as the recommendation itself (making the recommendation more available, or in other words, subjectively more informative).

Keywords:analyst recommendations, availability heuristic, economic psychology, event study, stock market efficiency, target prices.

JEL Classifications:C12, G02, G14, G17, G19.

1. Introduction

In recent years and especially in the wake of the 2008 world financial crisis, low interest rates on all developed markets caused people to look for new ways of maintaining the real value of their money and gaining returns on their assets. One of these ways is to invest money in the capital market. Many investors chose to invest their money independently, without employing the services of an investment advisor or portfolio manager to make investment decisions for them. Yet in many cases, these individual investors lack professional knowledge in the field of investments in general and

concerning capital markets in particular. Therefore, many of them rely heavily on recommendations issued by security analysts, who are assumed to possess much more profound knowledge than individual investors as well as professional skills in processing and analyzing data.

Security analysts play an important role in the capital market. Two of the most commonly used vehicles for conveying information from equity analysts are analyst earnings estimates and analyst recommendations. Over the years, many studies devoted to these two channels have focused either on documenting market response to these analyst forecasts or on cross-sectional differences in the performance of analysts or brokerages (e.g., Stickel, 1995; Womack, 1996; Barber *et al.*, 2001; Jagadeesh *et al.*, 2004; Bae *et al.*, 2008; Loh and Stulz, 2011).

Yet, a third metric issued by analysts, known as target price, has received relatively little attention in academic literature. Target prices convey sell-side analysts' assessment of the future value of underlying stocks and are presumably the culmination of analysts' research efforts. In recent years, analysts have increasingly issued target prices alongside earnings forecasts and stock recommendations in their equity research reports. An emerging body of literature has examined the information content of target prices (e.g., Bonini *et al.*, 2010; Da and Schaumburg, 2011; Bradshaw *et al.*, 2013). Yet despite the substantial increase in disclosure of target prices in analyst reports and the incremental role of release of these target prices in the price discovery process, the claim made by Brav and Lehavy (2003) that "their role in conveying information to market participants and their contribution to the formation of equity prices have remained largely unexplored" is still probably still true today.

In the present study, we attempt to shed light on the mechanism governing the effect of target price releases on stock prices by examining the impact of stock returns registered *before* target price announcements on stock price reactions to the announcements. We suggest that the availability heuristic[3] has an impact on investors' decisions, so that stock price reactions to target price announcements should be stronger if these announcements were preceded by stock returns of the same sign as the announcement itself, thus making the announcement more available, or in other words, subjectively more informative. Employing a sample of recent target price announcements (released after the global financial crisis) classified as "buy" (positive) recommendations (the target price is substantially higher than the current price)[4] for stocks traded on the Tel Aviv Stock Exchange, we document that target prices have a significant effect on the respective stock prices both on the day of the announcement itself and during the two weeks following the announcement. The effect of target price releases is also found to be significantly stronger for smaller stocks. Moreover, in line with our research hypothesis, we detect that the price of a stock shows a significantly stronger reaction to a positive target price announcement if the stock yielded positive excess returns over a short period preceding the announcement day.

The rest of the paper is structured as follows. In Section 2, we briefly review the literature on target prices and their informational value, as well as the literature dealing with the availability heuristic and its economic applications. Section 3 defines our research hypothesis. In Section 4, we describe the database and the basic methodology. Section 5 provides the empirical tests and the results. Section 6 concludes and provides a brief discussion.

---

[3] According to the availability heuristic (Tversky and Kahneman, 1973), people tend to determine the likelihood of uncertain events according to the ease of recalling similar instances.

[4] The majority of target prices released by Israeli analysts fall into this category, consistent with the worldwide phenomenon of an optimistic bias in target prices relative to current trading prices (Asquith *et al.*, 2005; Brav and Lehavy, 2003; Bradshaw *et al.*, 2013). We have not included target prices classified as "hold" recommendations, as they, in fact, imply that the current stock price is approximately "correct" so that no action concerning the stock has to be taken, while we are interested in target prices, which may be regarded as "news" and have the potential to affect stock prices. We also have not included target prices classified as "sell" recommendations, since in general there are very few such recommendations and in almost all cases may be suspected of being biased (are not properly announced in the mass media, refer to small or highly distressed stocks, etc.).

2. Literature review

2.1. Analysts' estimates and forecasts; target prices

As information intermediaries, security analysts provide three main quantitative outputs for investors: earnings forecasts, stock recommendations and target prices.

An extensive body of literature has examined the role of security analysts on capital markets and has documented the informative value of various components of analyst research, with the focus mainly on earnings forecasts and stock recommendations. The evidence in support of the value of analysts' work is substantial.[5] A number of studies have demonstrated immediate and delayed responses to analyst earnings forecast revisions (Stickel, 1991; Elgers *et al.*, 2001; Gleason *et al.*, 2003). Francis and Soffer (1997) find that stock recommendation revisions contain information incremental to the information in earnings forecast revisions, and that investors assign significantly greater weight to earnings forecast revisions accompanied by buy recommendations than by those accompanied by sell or hold recommendations. Ivkovic and Jegadeesh (2004) show that analysts' upward stock recommendations and earnings forecast revisions issued shortly before earnings announcements contain more new information than forecast revisions issued shortly after earnings announcements. Asquith *et al.* (2005) find that the combination of earnings forecast revisions, stock recommendations, target price revisions and the strength of analysts' (positive or negative) arguments in support of stock recommendations explain a quarter of the return variation around the release of analysts' research reports. Boni and Womack (2006) show that analyst recommendation changes lead to more profitable trading strategies within industries than across industries, suggesting that analysts are more capable of distinguishing performance within an industry. Green (2006) finds that early access to analyst recommendation changes facilitates profitable trades for brokerage firm clients. According to Barber *et al.* (2010), abnormal returns to analysts' recommendations stem both from assigned rating levels and from changes in those ratings. A number of studies have documented return drifts subsequent to analyst recommendations (e.g., Barber *et al.*, 2001). Another matter of interest is how market responses to analyst forecast revisions or stock recommendation revisions vary in the cross-section or across event time with various firm or analyst characteristics (e.g., Gleason *et al.* 2003; Jegadeesh and Kim, 2010). Overall, this line of research suggests that analyst earnings forecast revisions and recommendation revisions convey significant information to the capital market, yet the capital market does not immediately incorporate such information in full.

Much less attention, however, has been paid to market responses to target price revisions. In recent years, analysts have been including these revisions more and more in their reports, alongside earnings forecasts and stock recommendations. These target prices explicitly convey analysts' assessments of the expected value of underlying stocks, usually over the next twelve months from the date of issuance. Based on a sample of 114 Canadian firms, Bandyopadhyay *et al.* (1995) find that analysts derive their price forecasts from their earnings forecasts. Bradshaw (2002) examines analysts' use of target prices to justify their stock recommendations. Using a database of analysts' target prices for the period 1997-1999, Brav and Lehavy (2003) find a significant market reaction to the information contained in analysts' target prices, even after controlling for contemporaneously issued stock recommendations and earnings forecasts. Asquith *et al.* (2005) find that target prices and the strength of arguments in analysts' research reports have stronger impacts on prices than do earnings forecast revisions and stock recommendations alone. Bianchini *et al.* (2008) find that investment strategies based on target prices deliver positive abnormal returns. Huang *et al.* (2009) find that portfolios based on changes both in consensus recommendations and in target prices are more profitable than those based merely on changes in recommendations or on target prices. Da and Schaumburg (2011) document that the relative within-industry valuations that are implicit in analyst target prices provide

[5]For excellent reviews, see Schipper (1991), Brown (1993) and Ramnath *et al.* (2008), which focus on analysts' earnings forecasts and/or on stock recommendations only.

investors with valuable information, although the implied absolute valuations themselves are much less informative.

While the above literature review indicates that target prices are informative, the value of target prices is somewhat in doubt (e.g., Lyssimachou *et al.*, 2009; Demirakos *et al.*, 2010). According to Bradshaw *et al.* (2013), analysts seem unable to provide consistent target prices and indeed lack incentive to do so. Similarly, Bonini *et al.* (2010) find that target prices lack accuracy. Prior research has also demonstrated a significant optimistic bias in target prices relative to current trading prices. Studies by Asquith *et al.* (2005) and Brav and Lehavy (2003) both document an implied average return of 32.9% from analyst target prices for the period from 1997 to 1999, while Bradshaw *et al.* (2013) document an implied return of 24.0% from analyst target prices for the period from 2000 to 2009. In contrast, Mehra (2003) finds that from 1802 to 1998, the real annual U.S. equity return was only 7.0% and that the equity returns in other developed countries were even lower.

2.2. Availability heuristic: Psychological aspects and economic applications

The availability heuristic (Tversky and Kahneman, 1973) refers to the phenomenon of determining the likelihood of an event according to the ease of recalling similar instances. In other words, the availability heuristic may be described as a rule of thumb people use to estimate the probability of an outcome based on how easy that outcome is to imagine. As such, possibilities that are vividly described and emotionally charged will be perceived as being more likely than those that are harder to picture or difficult to understand. Tversky and Kahneman (1974) provide examples of ways in which availability may provide practical clues for assessing frequencies and probabilities. They argue that "recent occurrences are likely to be relatively more available than earlier experiences" (p. 1127), and thus conclude that people assess probabilities by overweighting current information as opposed to processing all relevant information.

A number of studies have discussed the influence of the availability heuristic on market investors. Shiller (1998) argues that investors' attention to investment categories (e.g., stocks versus bonds or real estate) may be affected by alternating waves of public attention or inattention. Similarly, Barber and Odean (2008) find that when choosing which stock to buy, investors tend to consider only those stocks that have recently caught their attention (stocks in the news, stocks experiencing high abnormal trading volume, stocks with extreme one-day returns). Daniel *et al.* (2002) conclude that investors and analysts are on average too credulous. That is, when examining an informative event or a value indicator, they do not adequately take into account the incentives of others to manipulate this signal. Credulity may be explained by limited attention and by the fact that the availability of a stimulus causes it to be weighed more heavily. Frieder (2003) finds that stock traders seek to buy following large positive earnings surprises and to sell following large negative earnings surprises. He explains this tendency by the availability heuristic, assuming that the salience of an earnings surprise increases its magnitude. Ganzach (2001) offers support for a model in which analysts base their judgments of risk and return for unfamiliar stocks upon a global attitude. If stocks are perceived as good, they are judged to have high return and low risk, whereas if they are perceived as bad, they are judged to be low in return and high in risk. Lee *et al.* (2007) discuss the "recency bias," or people's tendency to make judgments about the likelihood of events based on their recent experience. They find that analysts' forecasts of firms' long-term growth in earnings per share tend to be relatively optimistic when the economy is expanding and relatively pessimistic when the economy is contracting. This finding is consistent with the availability heuristic, indicating that forecasters overweigh the current state of the economy in making long-term growth predictions. Kliger and Kudryavtsev (2010) find thatpositive stock price reactions to analyst recommendation upgrades are stronger when accompanied by positive stock market index returns, and negative stock price reactions to analyst recommendation downgrades are stronger when accompanied by negative stock market index returns. They designate this finding as the "outcome availability effect" and explain it by the higher availability of positive (negative) outcomes on days of market index rises (declines). Moreover, Kliger and Kudryavtsev (2010) document weaker

(stronger) reactions to recommendation upgrades (downgrades) on days of substantial stock market moves. They designate this finding as the "risk availability effect" and explain it by the greater availability of risky outcomes on such "highly volatile" days.

3. Research hypothesis

As shown in the previous section, recent studies dealing with target prices concentrate mainly on the accuracy of the target prices or on their information value, that is, on the effects they have on the prices of the respective stocks. In the present study, we shed light on the mechanism governing the effect of target price releases on stock prices. Namely, we focus on the effect of stock returns registered *before* target price announcements on stock price reactions to the announcements.

As explained in the next section, in our analysis we employ target price announcements classified as "buy" recommendations, that is, target prices that are substantially higher than the current stock price at the time of the announcement. These announcements may be regarded as "good news." We hypothesize that because of the effects of the availability heuristic, investors may expect positive stock recommendations ("good news") to have greater potential to lead to positive stock returns if the stock being recommended experienced positive abnormal returns during a short period immediately preceding the release of the recommendation. In other words, we expect that if a stock's price increased before the stock was positively recommended by an analyst, it may be easier for investors to think about a scenario in which the stock's price will continue to increase as a result of the recommendation (i.e., such a scenario becomes more available or more subjectively probable). Such a perception of positive recommendations may make the respective stocks more attractive and increase the positive stock price reactions to the recommendations. This hypothesis is in line with the findings of Lee *et al.* (2007) and Kliger and Kudryavtsev (2010) with respect to people's tendency to make judgments about the likelihood of events based on their recent experience or on the similarity of the events to current states.

Thus, our study's main hypothesis may be formulated as:

Hypothesis: *A positive stock price reaction to a stock's target price release classified as a "buy" recommendation should be stronger if the stock's abnormal returns prior to the day of the release were positive.*

In the next section, we explain how the abnormal stock returns are calculated, and in Section 5, we test the hypothesis empirically.

4. Data description and methodology

For the purposes of this study, we employed all target prices for the stocks listed on Tel Aviv Stock Exchange (TASE) released by sell-side analysts during the period from August 2011 to March 2013. To minimize the effect of potential biases in target prices and other potential side effects, we applied a number of sample filters and included only the following target price announcements in our analysis:

- Announcements classified as "buy" recommendations, that is, target prices that are substantially higher than the current stock price at the time of the announcement.[6] The majority of target prices released by Israeli analysts fall into this category, consistent with the worldwide phenomenon of an optimistic bias in target prices relative to current trading prices (Asquith *et al.*, 2005; Brav and Lehavy, 2003; Bradshaw *et al.*, 2013). A possible reason for this bias may be that analysts strive to optimally "serve their clients," who are in general considered to be more interested in identifying "stocks to buy" than "stocks to sell." We have not included target prices classified as "hold" recommendations, as these in fact imply that the current stock price is approximately "correct" so that no action concerning the stock has to be taken. In contrast, we are interested in target prices that may be regarded as "news" and have

[6] All target price announcements for Israeli stocks are explicitly attributed to a specific "recommendation category" according to the relation of the target price to the current stock price.

the potential to affect stock prices. We also have not included target prices classified as "sell" recommendations, since there are generally very few such recommendations and almost all the cases may be suspected of being biased (not properly announced in the mass media, refer to small or highly distressed stocks, etc.).

- Announcements for the stocks included in TA-25 or TA-75 stock market indexes.[7] We have not included target price releases for small stocks, which are usually highly volatile and quite difficult to predict (even for security analysts).
- Announcements for the stocks listed on TASE only. We have excluded the target prices for dually listed stocks, since their prices on foreign stock exchanges may be virtually unaffected by local analysts' opinions.
- Announcements that appeared on at least three major Israeli financial websites.[8] All these websites are free and represent well-known and widely accepted channels of financial information in Israel. In this way we ensure that the announcements we examine have the highest exposure rate among the available recommendations.
- "Stand alone" announcements, meaning that there were no other analyst recommendations related to a given stock during the period ranging from 7 days before to 14 days after the announcement. This condition allows us to "isolate" stock price reaction to the announcement, ensuring that it was not driven by any other report released by the same or another security analyst.
- Announcements for stocks that were included in the TA-100 index[9] for at least one year prior to the release of the target price. This condition allows us to calculate the Market Model parameters of the stock, describing its "normal" performance conditional to contemporaneous stock market performance.

Our filtered working sample consists of 65 target price releases for 43 different stocks, including 26 releases for 17 different stocks included in the TA-25 Index and 39 releases for 26 different stocks included in the TA-75 Index. The average ratio of the target price to the current stock price is 1.228 (implied expected return of 22.8%), with a maximum of 1.457 and a minimum of 1.124.

To estimate the effect of target price releases on stock prices, we calculate abnormal (excess) stock returns around the announcement day. We employ the well-known event study methodology (Campbell *et al.*, 1997). Based on the Market Model for each stock that experienced an event (target price announcement), we first calculate its "normal" performance conditional upon contemporaneous market returns. That is, using daily data over an "estimation window" of roughly one year prior the event (Days -250 to -8 relative to the event[10]), we run the following regression:

$$SR_{it} = \alpha_i + \beta_i MR_t + \varepsilon_{it} \quad (1)$$

where SR_{it} is the stock's return on day *t* within the "estimation window" preceding event *i*, and MR_t is the general stock market (TA-100 Index) return on day *t* within the "estimation window."

Thus for each stock we calculate its Market Model parameter estimates, $\widehat{\alpha}_i$ and $\widehat{\beta}_i$, relative to event *i*, and subsequently, for each day within the "event window" (Days -7 to 14 relative to event), we calculate the stock's abnormal returns as follows:

$$AR_{it} = SR_{it} - [\widehat{\alpha}_i + \widehat{\beta}_i MR_t] \quad (2)$$

[7]TA-25 Index tracks the share prices of the 25 companies with the highest market capitalization on the TASE. TA-75 Index tracks the 75 companies with the highest market capitalization that are not included in the TA-25 Index.

[8]There are four major financial websites in Israel: Globes (http://www.globes.co.il); TheMarker (http://www.themarker.co.il); Bizportal (http://www.bizportal.co.il); Calcalist (http://www.calcalist.co.il).

[9] TA-100 Index tracks the share prices of the 100 companies with the highest market capitalization on the TASE.It includes the TA-25 and TA-75 Indexes, and represents a widely recognized proxy for the "market portfolio" of the TASE.

[10]The event day (the day of the target price announcement) is defined as Day 0.

where AR_{it} is the stock's abnormal return on day *t* within the "event window" surrounding event *i*, SR_{it} is the stock's return on day *t* within the "event window" surrounding event *i*, and MR_t is the general stock market (TA-100 Index) return on day *t* within the "event window."

Finally, in order to estimate stock price reactions over a number of days within the "event window," we calculate each stock's cumulative abnormal returns for the respective time interval:

$$CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it} \qquad (3)$$

where $CAR_i(t_1, t_2)$ is the stock's cumulative abnormal return between day *t1* and *t2* within the "event window" surrounding event *i*.

The ratios of the cross-sectional means of ARs and CARs to their respective standard deviations serve as t-statistic values for estimating the statistical significance of the results.

5. Results description

5.1. Effect of target price releases on stock prices: General sample

Table 1 shows the means and the standard deviation of the abnormal returns for all the days within the "event window" and of the cumulative abnormal returns for a number of time intervals within this period. It also shows the respective t-statistic values and their statistical significance. The table demonstrates that positive target price announcements are a valuable source of information and have a significant effect on stock prices. The Day-0 effect amounts to 0.65% on average and is statistically significant. Moreover, the reaction continues, though not homogeneously, until Day 14. The mean cumulative abnormal returns for Days 1 to 4 and Days 1 to 14 are 1.831% and 2.487% respectively and are highly significant. These findings contradict the semi-strong form of stock market efficiency, indicating that a significant profit potential still exists from the point of view of the investors who buy positively recommended stocks after the recommendations have been released. Another point worth mentioning is the significantly positive (1.593%) mean cumulative abnormal return for Days -7 to -1. This finding has two possible explanations. First, it may be a result of dissemination of private (insider) information prior to the announcement of the analyst report. If this is the case, it seems to contradict the strong form of stock market efficiency, indicating that a company's insiders are able to gain abnormal returns. Alternatively, the price increase itself may, at least in some cases, drive security analysts to provide positive recommendations due to the expectation that the price momentum may continue.

Table 1: Abnormal and cumulative abnormal returns within the "event window": General sample

Days relative to event	Mean, %	Standard Deviation, %	t-statistic
Abnormal Returns:			
-7	0.623	0.392	1.589
-6	0.694	0.428	1.623
-5	0.132	0.312	0.423
-4	0.236	0.348	0.680
-3	-0.175	0.359	-0.487
-2	-0.001	0.343	-0.002
-1	0.082	0.342	0.241
0	0.650	0.323	**2.014
1	0.614	0.399	1.541
2	0.065	0.276	0.235
3	0.710	0.399	*1.781
4	0.441	0.325	1.358
5	-0.028	0.337	-0.084
6	0.144	0.258	0.560
7	-0.319	0.333	-0.956

Days relative to event	Mean, %	Standard Deviation, %	t-statistic
8	-0.293	0.349	-0.841
9	0.047	0.302	0.156
10	0.112	0.283	0.397
11	-0.048	0.277	-0.172
12	0.215	0.311	0.692
13	0.270	0.293	0.921
14	0.555	0.335	1.658
Cumulative Abnormal Returns:			
Days -7 to -1	1.593	0.787	**2.025
Days 0 to 4	2.481	0.891	***2.784
Days 1 to 4	1.831	0.762	***2.401
Days 0 to 14	3.137	1.260	***2.489
Days 1 to 14	2.487	1.235	**2.013

Asterisks denote two-tailed p-values: *p<0.1, **p<0.05, ***p<0.01.

5.2. Cross-sectional differences in the effect of target price releases: Large versus small stocks

Having established the effect of target price announcements on stock prices, we proceed to analyze the cross-sectional differences in the magnitude of the effect. First of all, we distinguish between large and (relatively) small stocks. Table 2 compares the mean abnormal and cumulative abnormal returns between the stocks included in the TA-25 and TA-75 indexes by presenting the respective return differences and their statistical significance. The results show that the effect of target price announcements is substantially stronger for smaller stocks. The difference between the mean abnormal returns for stocks on the TA-75 and the TA-25 for Day 0 (immediate reaction to the event) amounts to 0.966% and is statistically significant. The differences between the mean cumulative abnormal returns for Days 1 to 4 and Days 1 to 14 (stock price drifts following the event) are 1.850% and 1.387% respectively and are also significant. Figure 1 visualizes the mean cumulative abnormal returns for stocks on both indexes starting with Day 0[11] and once again demonstrates that smaller stocks are much more affected by target price releases, in line with the well-documented phenomenon of a generally stronger reaction among small stocks to different kinds of company-specific news.

Table 2: Cross-sectional differences in abnormal and cumulative abnormal returns: Large versus small stocks

Days relative to event	Mean, %		
	TA-75 (Small stocks)	TA-25 (Large stocks)	Difference
Abnormal Returns:			
-7	0.429	1.136	-0.707
-6	0.642	0.619	0.023
-5	0.491	-0.046	0.537
-4	0.422	-0.014	0.435
-3	-0.123	-0.154	0.031
-2	0.251	-0.478	0.729
-1	-0.147	0.397	-0.544
0	0 .974	0.007	**0.966
1	0.731	0.580	0.151
2	0.328	-0.374	*0.702
3	0.697	0.666	0.031
4	0.957	-0.010	*0.966
5	-0.033	-0.001	-0.032
6	-0.050	0.507	-0.556
7	-0.304	-0.348	0.044
8	-0.222	-0.524	0.302
9	-0.166	0.337	-0.503
10	0.115	-0.086	0.201

[11] That is, CAR (0, t) for each day t within the "event window".

Days relative to event	Mean, %		
	TA-75 (Small stocks)	TA-25 (Large stocks)	Difference
11	-0.268	-0.019	-0.249
12	0.381	0.041	0.341
13	0.274	0.265	0.009
14	0.547	0.565	-0.018
Cumulative Abnormal Returns:			
Days -7 to -1	1.964	1.460	0.505
Days 0 to 4	3.687	0.870	***2.816
Days 1 to 4	2.713	0.863	**1.850
Days 0 to 14	3.960	1.606	***2.354
Days 1 to 14	2.986	1.599	**1.387

Asterisks denote two-tailed p-values: *p<0.1, **p<0.05, ***p<0.01.

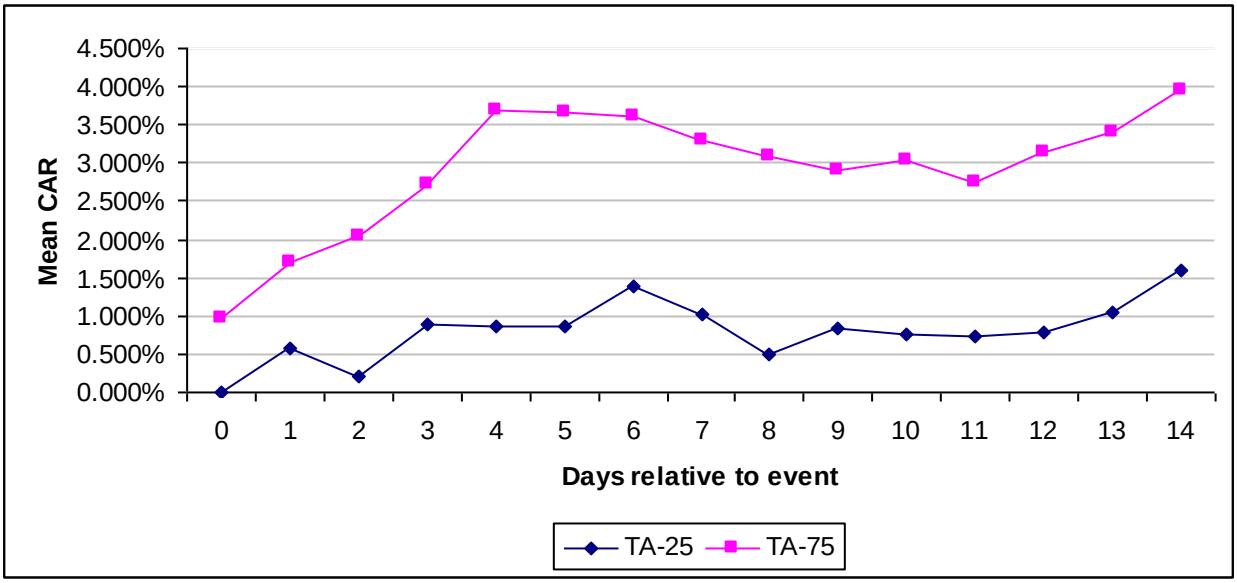

Figure 1. Mean cumulative abnormal returns starting from Day 0 for stocks in TA-25 and TA-75

5.3. *Cross-sectional differences in the effect of target price releases: Stocks with positive versus negative abnormal returns before the event day*

At this stage, we continue the cross-sectional analysis of the effect of target price announcements and proceed to explicit testing of our main research hypothesis that positive stock price reactions to positive target price releases should be stronger if the abnormal returns of the respective stocks before the day of the release were positive. For each of the sample stocks, we employ the sign of its cumulative abnormal return over Days -7 to -1 as a proxy for the direction of change in stock price before the event.[12] Table 3 compares the mean abnormal and cumulative abnormal returns between the stocks that registered positive and negative CARs (-7, -1) and presents the respective return differences and their statistical significance.

[12]Alternatively, we employed a number of other proxies, including the sign of CAR (-5, -1), CAR (-3, -1), and CAR (-2, -1). The results of the AR and CAR differences analysis as presented in Table 3 remained qualitatively similar.

Table 3: Cross-sectional differences in abnormal and cumulative abnormal returns: Stocks with positive CAR (-7, -1) versus stocks with negative CAR (-7, -1)

Days relative to event	Mean, %		
	Stocks with positive CAR (-7, -1)	Stocks with negative CAR (-7, -1)	Difference
Abnormal Returns:			
0	0.992	0.137	**0.854
1	0.762	0.393	0.369
2	0.564	-0.683	**1.247
3	0.717	0.700	0.017
4	0.845	-0.164	**1.009
5	-0.022	-0.038	0.015
6	0.076	0.247	-0.171
7	-0.459	-0.109	-0.350
8	-0.307	-0.272	-0.036
9	-0.306	0.577	-0.883
10	0.163	0.037	0.125
11	-0.076	-0.005	-0.071
12	0.276	0.124	0.152
13	0.241	0.313	-0.072
14	0.671	0.382	0.288
Cumulative Abnormal Returns:			
Days 0 to 4	3.879	0.383	***3.497
Days 1 to 4	2.888	0.245	***2.642
Days 0 to 14	4.134	1.640	***2.494
Days 1 to 14	3.143	1.503	**1.640

Note: Asterisks denote two-tailed p-values: *p<0.1, **p<0.05, ***p<0.01.

The results strongly corroborate our hypothesis. The stocks that experienced positive cumulative abnormal returns before target price releases yield on Day 0 impressively higher (by 0.854%) mean abnormal returns than the stocks that experienced negative cumulative abnormal returns before target price releases. Subsequent stock price drifts are also substantially affected, showing highly significant mean cumulative abnormal differences in returns of 2.644% and 1.640% for Days 1 to 4 and 1 to 14, respectively. Figure 2 graphically visualizes the mean cumulative abnormal returns for both groups of stocks, starting with Day 0.

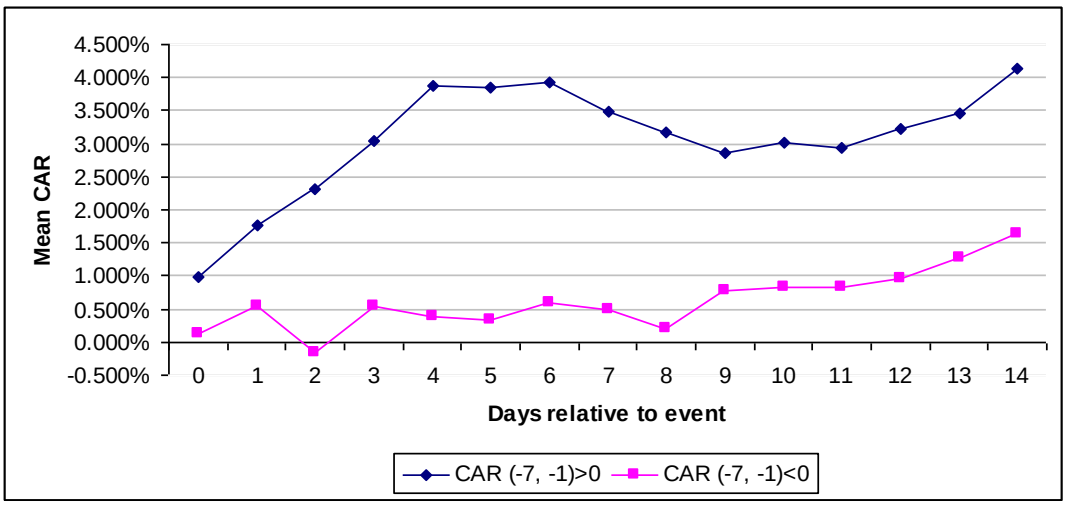

Figure 2. Mean cumulative abnormal returns starting from Day 0 for stocks with positive and negative CAR (-7, -1)

Thus, in line with our research hypothesis, we document that investors react more strongly to positive target price announcements in cases when there are positive stock price moves prior to the announcements. Following these moves, stock price increases in general become more psychologically available. As a result, the subjective probability of positive stock price reactions to the announcements increases, strengthening the reactions themselves.

Conclusion

In the present study, we shed light on potential factors affecting investors' reactions to target price announcements by security analysts. We focus on cross-sectional differences in the magnitude of the reaction between stocks whose prices increased immediately prior to the announcements and those whose prices decreased. We suggest that investors' perceptions and decisions may be affected by the availability heuristic, leading them to expect target price releases to have a stronger effect on stock prices if preceded by stock returns of the same sign as the recommendation itself.

Employing a sample of target price announcements classified as "buy" (positive) recommendations for Israeli stocks, we document their significantly positive effect on stock prices both on the day of the announcement (in line with the findings of Brav and Lehavy (2003), and Da and Schaumburg (2011)) and during a short period following the announcement. This finding regarding the period following the announcement is consistent with the conclusions of Bianchini *et al.* (2008), suggesting that investment strategies based on target prices may deliver positive abnormal returns even for investors who do not manage to react to news immediately. Interestingly, we document that positive target price announcements are on average preceded by short periods of positive abnormal stock returns. Potential explanations for this finding include dissemination of private (insider) information prior to the announcement of analyst reports and an explicit effect of stock price momentum on the contents of the reports themselves.

Furthermore, we detect that the effect of target price announcements on stock prices is significantly stronger for smaller stocks, in line with the well-documented phenomenon of a generally stronger reaction of small stocks to different kinds of company-specific news. Finally, we find supportive evidence for our main research hypothesis. We document that the stocks that experienced positive cumulative abnormal returns prior to target price releases yield significantly higher mean abnormal returns, both on the event day and during a short subsequent period, than do the stocks that experienced negative cumulative abnormal returns prior to target price releases. These findings continue the line of research of economic psychology (Lee *et al.*, 2007; Kliger and Kudryavtsev, 2010), which considers people's tendency to make judgments about the likelihood of events based on recent experience or on the similarity of the events to current states. This demonstrates that if a stock's price has increased before the stock has been positively recommended by an analyst, it may be easier for investors to consider a scenario in which the stock's price increase continues as a result of the recommendation.

To summarize, our study demonstrates that target price releases contain valuable information for stock market investors, and that stock price reactions to these releases systematically differ in the cross-section. These results may prove to be valuable both for financial theoreticians in their eternal discussion about stock market efficiency and for practitioners in search of potentially profitable investment strategies. Potential directions for further research may include expanding the analysis to other stock exchanges and to target price announcements classified as "sell" recommendations.

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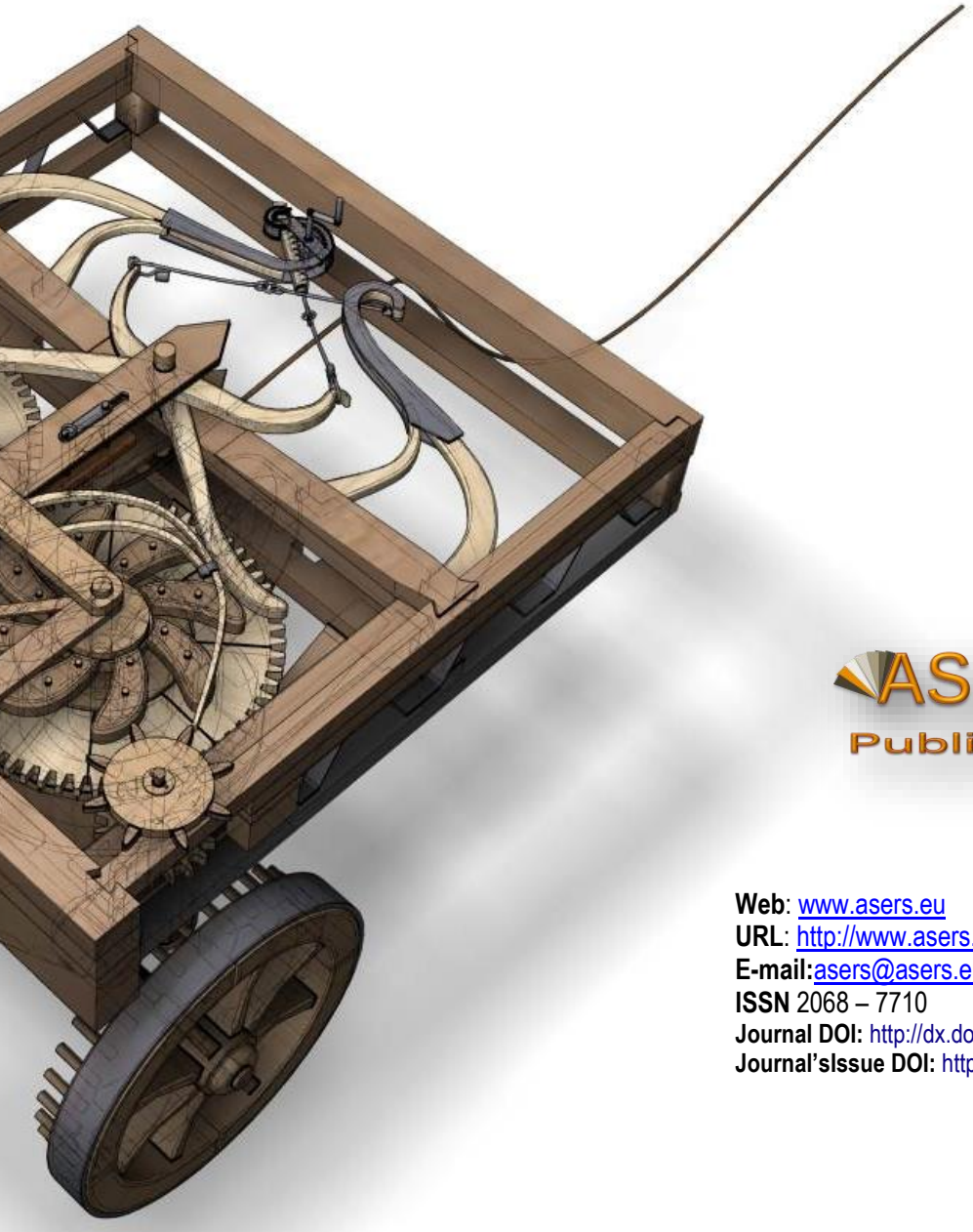

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