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« Recommendation Value on an Emerging Market: The Impact of Analysts' Recommendations on Stock Prices and Trading Volumes in Tunisia»

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Recommendation Value on an Emerging Market: the Impact of Analysts' Recommendations on Stock Prices and Trading Volumes in Tunisia[1]

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Abstract

Financial analysts issue "buy", "sell" or "hold" recommendation about stocks. Recommendations have value if investors trade upon them, which should affect prices and trading volumes. We use the methodology of event study to analyze price and volume reaction to the recommendation release. With a database of 6646 recommendations about 55 companies on the Tunisian Stock Exchange (BVMT) from 2005 to 2009, we show that prices and volumes react significantly to recommendations level. However, we only provide a weak evidence of reaction to changes in recommendations. We explain this result by a special feature of this market place: the systematic release of monthly recommendations, in contrast to developed markets where new recommendations are issued only if new information is available. This can focus investors on the confirmation of the recommendation, rather than on their revisions. We also find a special feature of emerging stock markets, which is that volumes are abnormally low for most of the event period following a "sell" or "hold" recommendation, whereas in that case they are abnormally high in more liquid markets.

Key Words: Financial Analyst Recommendations, Broker, Emerging Stock Markets
JEL Classification Code : G24 ; O16 ; G10

Résumé

Les analystes financiers émettent des recommandations d'achat, de vente ou neutre sur les actions. Les recommandations ont de la valeur si les investisseurs échangent sur cette base, affectant ainsi les prix et les volumes. On utilise la méthodologie de l'étude d'évènement pour analyser la réaction des prix et des volumes sur la Bourse des Valeurs Mobilières de Tunis (BVMT) à des recommandations sur 55 sociétés de 2055 à 2009. Nous montrons que les prix et les volumes réagissent significativement aux niveaux des recommandations ; cependant, ils ne réagissent que faiblement à une révision des recommandations. Ceci contraste avec les marchés financiers des pays développés. Nous l'expliquons par un trait particulier du marché tunisien : les recommandations sont issues tous les mois de manière systématique, alors que sur la plupart des autres places une recommandation nouvelle n'est publiée que lorsque l'analyste estime disposer d'information nouvelle. Cela peut focaliser les investisseurs tunisiens sur la confirmation d'une recommandation plutôt que sur sa révision.

Mots clefs : Recommandation d'analystes financiers, Courtage, Marchés boursiers émergents.
Codes JEL : G24 ; O16 ; G10

1. INTRODUCTION

The question of the contribution of financial analysts' recommendations to market efficiency is still unanswered. On the one hand, analysts produce a valuable service, in the sense that their recommendations help stock market investors to price the stock of a firm (Jacquillat and Solnik 1997). Analysts are supposed to reduce information asymmetries between firms' management and investors. On the other hand, analysts are considered as a pure marketing device (Easley, O'Hara, Paperman 1998), because they frequently revise their recommendations in order to entice investors to generate high volumes of trade, which in turn generates trading commissions for the brokerage house they belong to (Irvine 2001)[2]. Moreover, analysts' recommendations can be biased by the relation between their brokerage house and its affiliated Investment Bank. When the Investment Bank is underwriting an IPO for example, analysts are pressured to tout the stock that is to be issued (Michaely and Womack 1999).

The value of recommendations is scrutinized by the lens of event studies. If a price or volume response to recommendations is detected in the data, recommendations are said to have value. Many articles have already shown that, although the response is brief (some days), prices and volumes react to recommendations.

But emerging markets have been much less studied. Furthermore, emerging stock markets are known to be less liquid than mature markets. Do recommendations have value in this special context? This paper addresses this question in the case of the Tunisian stock market (Bourse des Valeurs Mobilières de Tunis –BVMT).

Using a unique data set that covers recommendations released on the Tunisian stock market from 2005 to 2009, we find that the impact of recommendation is generally significant for prices and volumes around the recommendation's release date. However, recommendation level has much more impact than recommendation changes, on the 11-days event window that we study, suggesting a strong inertia to changes from investors. Investors wait for the revision to be confirmed in the subsequent periods.

The literature addresses the impact of recommendation level and recommendation changes on prices, on volumes, and furthermore tests for characteristics that affect the magnitude of recommendation impact.

[2] Irvine (2001) shows that brokerage houses record significantly higher volumes for the firms that their analysts cover than for uncovered firms.

Although analysts generally release their recommendations on a 5-items scale[3] (strong buy, buy, hold, sell, strong sell), earlier studies restrained on grouping "strong buy" and "buy" on one side, and "strong sell" and "sell" on the other side. Bjerring, Lakonishok and Vermaelen (1983) find a significant relationship between stock price and recommendation level from the main Canadian brokerage house. Elton, Gruber and Grossman (1986), using data with 720 analysts from 33 brokerage houses in the US markets in 1981-1983, show that firms with "buy" recommendations have an abnormal return during six months following the recommendation release. By analyzing 13 emerging countries in 1996-2005, Fariborz, Moshirian et al 2008) show that the price impact is significant at the day of release of the recommendation and also the subsequent days.

Consequently, investor can potentially earn "abnormal" return in excess of the market portfolio's return by following the recommendation published, if they quickly react on the day of release.

Nevertheless, following recommendations seems much more valuable for investors when acting on recommendations changes. Womack (1996) shows that the proportion of "buy" or "strong buy" recommendations is much too important[4] to be justified by the subsequent evolution of prices. The explanation is that analysts upward bias their recommendation, because of their reliance on the firms' management to obtain information (Lim 2001), or because their brokerage house is affiliated to an investment bank currently underwriting some corporate finance operation concerning the firm they recommend (Michaely and Womack 1999). Stickel (1995) studies 16,957 recommendations from 1,510 analysts from 80 brokers in 1988-1991. He uses an 11-days window centered on the day of announcement. "Buy" recommendations are associated with an average +1.16% of prices, whereas "sell" recommendations are associated with a -1.28% average decrease. With 1573 recommendation changes for 822 firms in the US markets in 1989-1991, Womack (1996) finds that the post-announcement price drift following an upward revision is +2.4% and lasts one month, however, the impact is deeper for downward revision as the post announcement price drift is -9.1% and lasts six months. This result is interpreted in terms of "information content": as the market reacts more on negative revision, we infer that they contain more information to investors than positive revisions.

[3] Throughout the paper we follow the usual numeric coding: *strong buy = 5, buy = 4, hold = 3, sell = 2, strong sell = 1*.
[4] Around 7 buy recommendations for 1 sell recommendation.

Turning to the impact of recommendations on volumes of stocks traded, Brennan and Subrahmanyam (1995) and Amihud and Mendelson (1986) showed that analysts influence volumes, and hence liquidity, and expected returns. Womack (1996) confirms the existence of abnormal volumes: a buy recommendation induce volumes that are 190% higher than in non-vent periods, and a sell recommendation induce volumes 300% greater than in non-event times. Belcredi, Bozzi and Rigamonti (2003) confirm this result for the Italian market.

Nevertheless many factors can influence the size and significance of the recommendations' impact. As seen above, the number of analyst covering a firm should increase the volume impact of a given recommendation. However, it means also that markets should be more efficient for these stocks: portfolios including the most covered stocks experience lower returns than portfolios including less covered stocks (Boni and Womack 2003, Dhiensiri & al 2005), suggesting that the price response is lower. Besides, the experience of an analyst is shown to affect the impact of recommendations. Sorin, Sorescu, Avanidhar and Subrahmanyam (2004) provide evidence that recommendation changes from experienced analysts induce higher returns to investors than less experienced analysts, illustrating the greater capacity of experienced analysts to forecast future returns. Individual reputation is another variable that affect recommendation: Stickel (1992) shows that analysts from the "all-american research team" have greater impact on prices following an upward revision. Dhiensiri and al (2005) tests the reputation of the financial intermediary the analysts belong to, in both upward or downward revisions, and shows that the market react more to high-reputation brokers.

Finally, the market place where the trades take place seems to have a role to play. Given that there is generally less information available for firms listed on the Nasdaq, Grant (1980) and Atlase (1987) show that the Nasdaq, Amex and Nyse markets react differently to the same type of event (earnings announcement). Focusing on "buy" recommendations that initiate a coverage, e.g. for newly listed firms, Kim, Lin and Slovin (1997) show that it takes on average 5 minutes for a recommendation to have an effect on the Amex and Nyse, whereas it takes 15 minutes on average for firms listed on the Nasdaq (Kim and al, 1997).Although it suggests that decentralized markets are less efficient information processor when the firm is less known, we retain the idea that the impact of recommendation depends on the type of markets. Indeed, stock markets in merging countries are often considered as riskier than in developed countries, because of greater information asymmetries, and because of worse market liquidity. In such environments, financial analysts are supposed to have a great impact.

Fariborz, Moshirian and al (2008) show that the abnormal returns following recommendations are significant in the 11 countries[5] under study.

The paper proceeds as follows. Section 2 describes the data and methodology, and the effects that are expected. Section 3 describes the price impact and the characteristics that affect this impact. Section 4 measures abnormal returns and abnormal volumes following recommendation disclosure, section 5 discusses the specific informational context in this market, and section 6 concludes.

2. DATA AND METHODOLOGY

2.1 Recommendations on the Tunisian Stock Exchange (BVMT)

Our sample consists of 6 646 recommendations for 55 companies listed on the Bourse des Valeurs Mobilières de Tunis (BVMT) between January 2005 to December 2009. The recommendations come from the four intermediaries for whom data is publicly available: Amen Invest, Axis Capital, COFIB, Tunisie Valeurs. The recommendations from theses brokers are published each month. This is a particular feature of the Tunisian market, as in most other places, recommendations are published at any time, whenever the analysts thinks it is justified to publish one. We further discuss this point in section 5

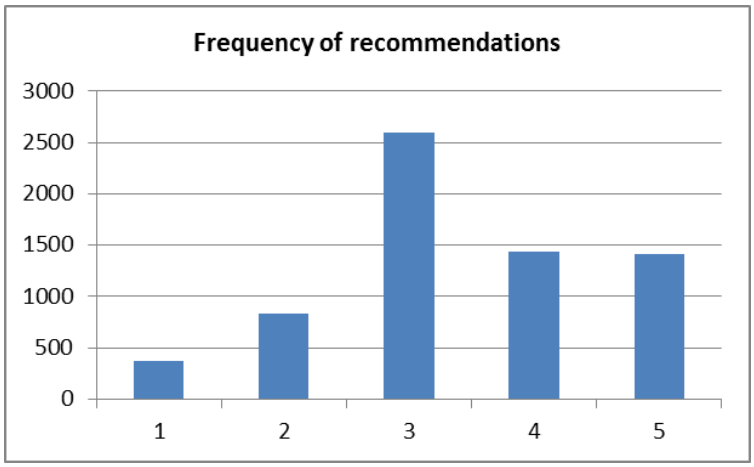
Although systematically published on a monthly basis, recommendations may not necessarily be released on the same day of the month. Furthermore, reactions on an emerging market are supposed to be slower than on developed ones. This is why we study an 11-days event window[6], i.e. from *t-5* to *t+5*. Returns are computed using closing prices. Hence the return in *t* is the log of the closing price of the recommendation announcement day *t*, to the closing price in the prior day *t-1*. As in other studies, we admit that analysts can privately release their recommendations to some of their clients a few days before the public release.

2.2 Descriptive statistics

First have a look on the distribution of recommendations.

[5] Argentina, Brazil, China, Chile, Hungary, India, Indonesia, Israël, Korea, Mexico and South Africa.
[6] These are working days.

Figure 1



This figure represents the frequency of recommendations (*strong buy = 5, buy = 4, hold = 3, sell = 2, strong sell = 1)* about stocks listed at the BVMT (Tunisian Stock Exchange) from January 2005 through December 2009.

As in all studies, sell recommendations (1 and 2) are much less frequent than others (374 and 835). But unlike studies on the US market, "hold" recommendation (3) are the most frequent (2592). Nevertheless buy (4) and strong buy (5) recommendations sum up to 2845 (1435 and 1410).

In order to analyze the recommendation change, we first compare a given recommendation with the previous one for the same firm and same broker.

Table 1

Recommendation & Recommendation Change

	To…					
From…	1	2	3	4	5	
1	342	7	7	0	1	*357*
2	11	746	52	4	2	*815*
3	8	50	2370	79	19	*2526*
4	0	4	61	1255	40	*1360*
5	3	1	21	53	1297	*1375*
	364	*808*	*2511*	*1391*	*1359*	*6433*

This table reports the number of recommendation reaching a certain level depending on the preceding level. The Data consists of 6433 recommendations about stocks listed at the BVMT (Tunisian Stock Exchange) from January 2005 through December 2009.

The total in the above table does neither take into account the first recommendation for a given firm-broker nor the initiation of coverage, but only the ones with a previous record. As in Barber & al. (2001, table II), the most frequent "change" is indeed the reiteration of "hold" recommendation, although our frequency is greater (37% of the total against 20% in

Barber & al, 2001). Reiterations of "buy" recommendations (4 and 5) are also the second most frequent change.

2.3 Abnormal Returns and Volumes

Abnormal returns are the difference between the actual return and a certain norm for a "normal" or "theoretical" return. If the theoretical return, for stock *i* at time *t*, is $E(R_{it})$, the actual return is R_{it}, then the abnormal return AR_{it} is defined as :

$$AR_{it} = R_{it} - E(R_{it})$$

We estimate $E(R_{it})$, the "normal" return in the absence of an event, according to two methods. First, we use the market return R_{mt}, i.e. a large market index[7]:

$$E(R_{it}) = R_{mt}$$

The second method uses the standard CAPM. First regress:

$$R_{it} - Rf = \alpha_i + \beta_i (R_{mt} - Rf) + \varepsilon_{it}$$

where Rf is the risk-free rate[8], and β is the coefficient that measures the link between stock *i* and the market :

$$\beta_i = \frac{COV(R_i, R_m)}{\sigma^2_{Rm}}$$

Finally define the expected return:

$$E(R_{it}) = Rf + \beta_i (R_{mt} - Rf)$$

β are estimated for each stock one year before the first event as in Green (2006). Then we add daily abnormal returns on the 11 days of the event window. If tau (τ) is the general length of the window:

$$CAR_{i\tau} = \sum_{t=-5}^{5} AR_{it}$$

[7] In our case it is the *Tunindex*.
[8] In our case, the return from a Mutual Fund fully invested in bonds (Amen Première Sicav), which was chosen as the less risky of our sample of Mutual Funds as of 2009.

Turning to abnormal volumes (AV_{it}), we define them as the scaled difference between actual volumes V_{it} and a normal volume $K_{it:}$

$$AV_{it}{}^{9} = (V_{it} - K_{it}) / K_{it}$$

There are many possibilities to measure the "normal volume", deriving it from a market model, using the average volume at the market level, or the average for stock *i* on the sample period. In the Tunisian case volumes can be very heterogeneous, that is why we retain the last solution:

$$K_{it} = \frac{1}{T}\sum_{i=1}^{T} V_{it}$$

with *T* the "non-event" periods of time. We ran two analyzes: one with T of 90 days, the other with T of 1 year, such that the last day is *t-6*. Finally, cumulated abnormal returns are the sum of abnormal volumes on the event window:

$$CAV_{i\tau} = \sum_{t=-5}^{5} AV_{it}$$

2.4 The Problem of low liquidity on Small Stock Markets

Concerning the conduct of event studies on small stock markets, we will follow Bartholdy, Olson and Peare (2007). This literature addresses two main statistical problems to this case.

First, if the distribution of returns does not follow a Normal distribution, non-parametric tests are generally preferable in order to test if abnormal returns differ from zero. We first ran a normality test on a total sample of daily returns for each of our 55 firms, from January 2005 through December 2009. Table 2 gives the results.

[9] Le volume anormal a été calculé en % d'évolution : $AV_{it} = (V_{it} - K_{it})/K_{it}$

Table 2

Descriptive Statistics	
Daily Return (%)	0,058
Standard deviation (%)	1,53
Skewness	0,15***
Kurtosis	23,3***
Nb. Obs.	58905

This table reports descriptive statistics for a sample of 58 905 daily returns for 55 stocks listed on the BVMT (Tunisian Stock Markets) from January 2005 to December 2009. The test for skewness indicates if the coefficient differ from zero (normality), and if kurtosis differ from 3 (normality) at the 1% level, indicated by stars (***).

The tests confirm that the returns do not follow a normal distribution. Still, our sample of returns exhibits a deviation from normality that is similar in magnitude to other cases in the literature (Bartholdy and al 2007, for the Danish case, or Mayne and Rumsey, 1993, for Canada, for example). Now as Bartholdy and al (2006) explains, parametric tests are not systematically inferior to non-parametric ones for a non-normal distribution: in their Table 3, their simulation shows that parametric tests exhibit a standard deviation higher than one, which can compensate their non-zero mean, hereby reducing the risk of identifying significant effects too often.

That is why we retain t-tests in the sections 3 and 4 of this paper. However, we conducted non-parametric tests[10] (sign tests and rank test) which yields qualitatively the same results. Additionally, we notice that, although mature developed markets have also proven non-normality of returns, most researchers use t-test for conducting event studies.

Second, small stock exchanges are characterized by the fact that many stocks does not trade every day –they are called “thinly traded stocks”. In this case, stock exchanges generally list the last observed transaction price as a stock’s price on non-trading days. Hence, this yields zero returns for non-trading days. This way of computing records is called “lumped returns”. The many zeros recorded induce a low variance of returns and then is likely to bias the test statistics used in the tests of abnormal returns. An alternative method is to use “trade to trade returns” to replace zero returns for thinly traded stocks (see Bartholdy et al 2007 for a description of this method). The main advantage of this method is that it does not bias downward the variance. Nevertheless, the drawback is that it ignores the information about, precisely, non-trading. Moreover Bartholdy and al (2007, section 4.2) admit that in their study “a lumped return adjustment [for thin trading] would perform nearly as well [as trade to trade adjustment]”.

[10] Available from authors upon request.

That is why we retain the lumped return adjustment in the remaining of the paper. We study, however, the proportion of "thin" trading in our case and the correlation between return and volumes, in order to confirm the use of "lumped returns". First Table 3 shows that "thin trading" is not the majority of our sample.

Table 3

Trading frequency for different trading groups

Year	Thick			Medium			Thin			Total Nb. stocks
	Nb. stocks	Average Nb. Days between trades	Average trading frequency (%)	Nb. stocks	Average Nb. Days between trades	Average trading frequency (%)	Nb. stocks	Average Nb. Days between trades	Average trading frequency (%)	
2005	22	0,08	93,07	11	0,42	71,14	4	1,76	36,57	37
2006	30	0,07	93,87	9	0,55	66,45	2	2,31	31,30	41
2007	31	0,07	93,96	13	0,75	60,40	0	-	-	44
2008	36	0,04	96,71	9	0,78	58,33	2	2,04	33,73	47
2009	37	0,04	96,25	9	0,82	56,62	0	-	-	46

Stocks are divided into trading groups based on trading frequency (*Thick*: traded more than 80% of days per year, *Medium*: traded between 40% and 80% of days a year, *Thin*: traded less than 40% of days a year). Frequency is calculated with working days (around 260 days per year). A trading day is day with a positive volume of exchange. Stocks may move from one group to another through the years, may exit or enter the market through the years. The stocks are those listed on the Tunindex, the main market index from the BVMT (Tunisian stock exchange) from January 2005 to December 2009.

We also tested for correlation between returns and volumes: the coefficient is positive (0.1015) and significant (at the 10% level). Hence, small volumes imply small price changes. In this case, zero returns on non-trading days are a reasonable estimate of the true unobserved return on that day, and hence "the bias in the lumped return may not be too large" (Bartholdy et al, 2007, footnote 4).

2.5 Expected Impacts of Recommendations on an Emerging Market

Concerning the returns, we expect positive returns following buy recommendations, and negative returns following sell recommendations. We expect "hold" recommendation to have no impact on returns. For recommendations changes, we expect a positive revision to have a positive impact on returns. Negative revisions are bad news and hence we expect them to be followed by negative returns. When the recommendation is unchanged ("conservation"), we expect that, prices having integrated all information, the returns will not react. Nevertheless the level toward which the recommendation is changed can have an effect. Revisions that do not change the general direction of the trade (4 to 5 or 5 to 4, etc.) are not

expected to impact the returns. In the contrary, we expect that revisions that deeply change the direction of the trade (from sell to buy and reciprocally) will have an impact. Revisions starting from, or going toward, “hold” recommendations, should have a minor impact.

Concerning the volumes, one generally expects that volume will rise during event periods, i.e. around recommendations publications, whatever the level or the revision of the recommendation. But the Tunisian market has, as an emerging financial market, the following feature: investors are not sure to find a counterpart if they massively react to a sell recommendation. Hence they prefer to hold their assets until a good news will offset the bad one. That is why it is also possible to expect a decrease in the trading volumes around negative recommendation (“sell” recommendation, or downward revision), but also for “hold” recommendation. We expect the usual increase in volumes for “buy” or upward revision, and no reaction when the recommendation is not revised (i.e. same recommendation repeated).

Turning to variable that can influence the impact of recommendation, we first expect the stock covered by numerous analysts to be less impacted by recommendations. In Tunisia, it is primarily the case for the financial sector. Financial companies have more liquid stocks, and better information disclosure than other sectors. Hence recommendation should bring less new information to investors. Second, we have to control for the reputation of the broker that employs the analyst. Remember that our database only contains the brokers that publicly disclose their recommendation, whereas it exist other brokers with well-developed research department that do not disclose their recommendations, or even announce that they do not produce recommendations. Nevertheless, the four brokers of our database are commonly viewed as high-reputation intermediaries. Hence, our results should not be biased by differences in the brokers’ reputation. Third, the specificity of an emerging markets is that information asymmetries are supposed to be greater that on developed markets. In that context, analysts’ recommendations are expected to have a great impact, because their information is precious to offset the usual lack of transparency of most firms on the BVMT.

3. THE PRICE IMPACT OF RECOMMENDATIONS AND ITS CHARACTERISTICS

3.1 The Price Impact of Recommendations

The following table shows that recommendations do have an impact on prices during their publication period.

Table 4

Price Impact Surrounding Recommendation Day Depending on the Level or Change of Recommendation

	Recommendation Levels				
	Strong Buy	Buy	Hold	Sell	Strong Sell
1-day return	0,17647 ***	0,13742 ***	0,18338 ***	-0,01839	0,08428
2-days return	0,23757 ***	0,11940 *	0,22600 ***	-0,11871	-0,02283
11-days return	1,25183 ***	1,19876 ***	0,75621 ***	0,12553	0,73452 *
	Recommendation Evolution				
	Upgrades	No Change - Buy	No Change - Hold	No Change - Sell	Downgrades
1-day return	0,19629	0,17016 ***	0,17050 ***	0,02009	0,00760
2-days return	-0,01540	0,19570 ***	0,20571 ***	-0,08618	0,22410
11-days return	1,58397 ***	1,22737 ***	0,72983 ***	0,31102	0,31132

This table reports the average of the log of price change at different windows surrounding the recommandation disclosure day t. The 1-day return is the price change between the closing price of the day before t and the closing price at day t, i.e. for t on $t-1$. The 2-days return is for $t+1$ on $t-1$, and the 11-day return is for the whole event window, i.e. $t+5$ on $t-5$. Returns are multiplied by 100 to express a percentage. We test whether returns differ from zero. Statistical significance is measured using t-statistics, significance is indicated at the 1% (***), 5% (**) or 10% (*) levels. The data consists of 1410 Strong Buy, 1435 Buy, 2592 Hold, 835 Sell, 374 Strong Sell recommendations; when comparing to the previous recommendation, these yields 211 Upgrades, 2549 No Change-Buy, 2370 No Change-Hold, 1088 No Change-Sell, and 211 Downgrades recommendations on stocks listed at the BVMT (Tunisian Stock Exchange) from January 2005 through December 2009.

Concerning recommendations levels, Buy and hold recommendations have more impact on prices compared to sell recommendations.

We note significant stock price increases, whatever the event window, from 0,17% to 1,25% for strong buy recommendations, from 0,13% to 1,19% for buy recommendations and from 0,18% to 0,75% for hold recommendations. Reactions to sell and strong sell recommendations are not significant, expect for a reaction of 0,73% to strong sell at the 11-day window.

Now turn to recommendations evolution. We note that unchanged (i.e. reiterated) recommendations have more impact than those characterized by several revisions. Upward revisions generate positive reaction during the eleven days period of 1,58%. Downward revisions do not have any impact on prices. Unchanged recommendations present significant and positive impact in the case of maintaining « buy » and « hold » recommendations with price increases reaching 1,22% and 0,72% respectively, on the 11-days window.

Results do not confirm earlier literature since reactions are more important for recommendations level than for revisions. Price variation due to recommendation revision is lower compared to reiterated recommendations.

In addition, price reactions obtained vary from –0,11% to 1,58%. This shows that price variation is less pronounced on the BVMT stock exchange than on developed stock markets. Green (2006) shows that the mean price response over the two-day event horizon is 5,74% following upgrades and –8,81% following downgrades and Womack (1996) shows that the mean three-day return for added-to-buy recommendations is 3,3% and the return for added-to-sell recommendations is –4,3%.

3.2 The Characteristics that affect the Price Impact

In this subsection we analyze the cases for which a significant price impact has been shown. The characteristics suspected to influence the price impact of recommendation are: the belonging to the financial sector (43% of the recommendations are concerned); recommendations about firm concerned by a corporation action (stock splits, dividend distribution, stock issues,…) in the event window (4% of recommendations are concerned); the reputation of the broker (according to our definition, 75% of recommendation are disclosed by the two reputed brokers of our database, the remaining 25% by the other two brokers); whether there are multiple recommendations about the same firm in the event window (whereas 90% of recommendations have another recommendation for the same firm in the 11-day window, 20% of recommendations have another recommendation for the same firm the same day); the size of the firm (using capitalization); the foreign participation in the capital of firms. The following table gives the results[11].

[11] Although rather low, the adjusted R2 are similar as those of Green (2006). Furthermore, the aim is not to build a strong explanatory model but to detect the factors affecting the price impact.

Table 5

Characteristics Affecting the Price Impact of Recommendations

	Recommendation Levels					
	1-day price impact			11-days price impact		
	Strong Buy	Buy	Hold	Strong Buy	Buy	Hold
Nb. of obs.	1403	1434	2592	1403	1433	2591
Adjusted R^2 (%)	0,68%	-0,25%	0,20%	2,96%	1,12%	1,34%
Coefficients						
Constant	.0029123 **	.0011471	.0010262 **	.0008339	.1066134 ***	-.0046497
FinancialSector	.0014509	.0000913	.0006508	.0095588 ***	.0015024	.006343 **
CorporateAction	.0044262 **	.0003378	.0016217	.0213547 ***	.0246276 ***	.0229285 ***
BrokerReputation	-.0005735	-.0008633	.0008176	.0082227 **	-.0050553 *	.0010553
MultipleReco	-.0012734	-.0005173	.000802	.0115524 ***	-.0888857 **	.0152246 ***
SmallFirm	-.0011267	.0003907	.0006445 *	-.0077579 **	-.0030521	.0004832
ForeignPart	-.0020818 **	.000998	.0006232 **	-.0177172 ***	-.006003 *	-.011339 ***

	Recommendation Evolution					
	1-day price impact			11-days price impact		
	Upgrades	No Change - Buy	No Change - Hold	Upgrades	No Change - Buy	No Change - Hold
Nb. of obs.	211	2551	2370	211	2551	2370
Adjusted R^2 (%)	1,96%	0,05%	0,33%	4,05%	1,15%	1,74%
Coefficients						
Constant	.0022323	.0025339 ***	.0023158 **	.0082884	.0077613	-.0046671
FinancialSector	-.0013023	.0006645	.0000011	-.0022133	.0060126 ***	.0061078 **
CoporateAction	.0100361 *	.00103	.0019256	.0721239 ***	.0174425 ***	.0258927 ***
BrokerReputation	.0018892	-.0005879	-.0009505	-.0323695 **	.0010329	.0026293
MultipleReco	.0070775 **	-.0015048 **	-.0000424	.0326971	.0083517 *	.0158502 ***
SmallFirm	-.002721	-.0004976	.0014752 **	-.0003819	-.005485 **	-.0019004
ForeignPart	-.003014	-.0005701	-.0013472 **	-.0025905	-.0106498 ***	-.0130054 ***

This table shows the results of regressions of firm and recommendation characteristics on the price impact around the recommandation disclosure day *t* . The 1-day return is the price change between the closing price of the day before *t* and the closing price at day *t* , i.e. for *t* on *t – 1* . The 11-day return is for the whole event window, i.e. *t + 5* on *t – 5* . *Financial Sector* is 1 if the firm is classified as "Financial" by the BVMT (Tunisian Stock Exchange), and 0 otherwise. *Corporate Action* is a dummy variable that is 1 if the firm increases its share capital (SEO), splits stocks, distributes dividends within the 11-day event window surrounding the recommendation date *t* , and 0 otherwise. *BrokerReputation* is 1 for the two brokers which have a long historical background in the market place (Tunisie Valeur and Amen Invest) and 0 for the two other brokers (Axis Capital and Cofib) more recently created and of smaller size. *MultipleReco* is a dummy that refers to more than one recommendation for the stock made at day *t* for the 1-day return, and for the 11 days around *t* for the 11-day return. *SmallFirm* is 1 if the firm has a capitalization under the sample median. *ForeignPart* is 1 if the foreign participation in the capital is more than 1% (the sample median). Statistical significance is measured using t-statistics, and is indicated at the 1% (***), 5% (**) or 10% (*) levels. The data consists of 1410 Strong Buy, 1435 Buy, 2592 Hold, 835 Sell, 374 Strong Sell recommendations; when comparing to the previous recommendation, these yields 211 Upgrades, 2549 No Change-Buy, 2370 No Change-Hold, 1088 No Change-Sell, and 211 Downgrades recommendations on stocks listed at the BVMT from January 2005 through December 2009.

At a glance, we note that the 1-day price impact is much less affected by those factors than the 11-days price impact. We can state that details about the event of a recommendation are integrated more slowly than on developed markets[12].

The reputation of the broker does not seem to play a role in the strength of the price impact. Being a small firm, or belonging to the financial sector have a weak importance. In the contrary, implementing a corporate action in the time of the recommendation seems to strengthen the price impact, as the coefficient of the regression is significantly positive in

[12] Factors are more often significant in Green (2006, table IV) on a *t-1;t+2* window.

most cases. Firms with important foreign ownership react less than others (negative coefficients). This may stem from the fact that those firms are probably also followed by analysts from developed countries, and hence local analysts have less weight on the market place.

The case of multiple recommendations at the same time is more complicated. In the study of Green (2006) this factor is not significant, expect for downgrades, where it is negative and hence leads to larger price declines. Here, multiple recommendations contributes to an increase in price for upgrades or reiterated hold (whereas at different windows). Although for reiterated buy, this factor yields a negative sign at 1-day, but positive sign at 11-days window. Again, at the 11-days window, the sign is not consistent: positive for strong buy, negative for buy, positive for hold. We interpret this result as the fact that multiple recommendations bring noise to the market place.

4. EXCESS RETURNS AND EXCESS VOLUMES CAUSED BY THE RECOMMENDATIONS

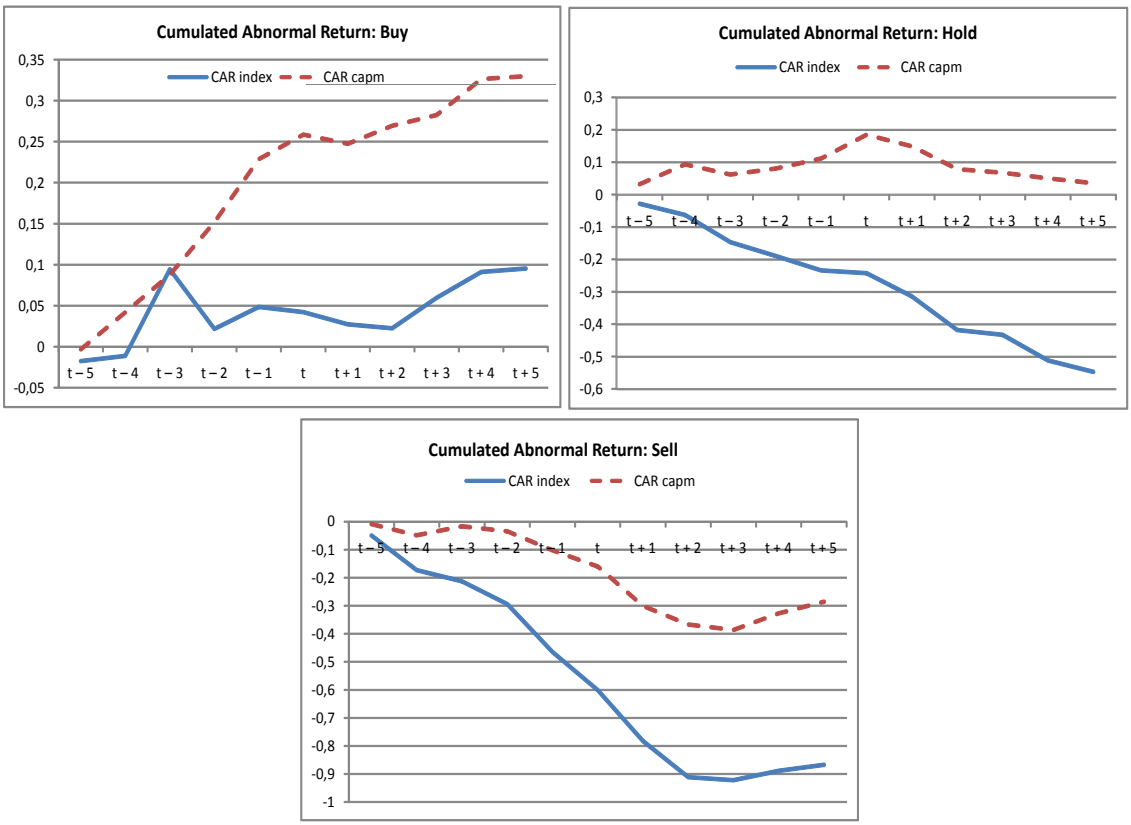
We have shown that most recommendations do have an impact on prices, and what are the factors affecting this impact. We now assess whether recommendations generate abnormal returns and volumes or not. For expository convenience, we group Strong Buy and Buy recommendations as “Buy”, and Strong Sell and Sell recommendations as “Sell”. This does not modify the main results.

4.1 Abnormal Returns and Cumulated Abnormal Returns

Results are generally corresponding to what was expected. Let us first examine the effect of the level of recommendations on the cumulated abnormal returns on Figure 2 (for detailed figures and tests see Table 6 in the Appendix).

For recommendations with a “buy” level, we record positive abnormal returns at least three days before, and 5 five days after the recommendation. However Table 6 in the appendix shows that only the CAPM shows Cumulated Abnormal Returns that are significantly different from zero. Moreover, the gain is relatively small as a strategy that would buy at the start, and sell at the end of the event window, would generate only 0,35% excess return.

Figure 2



This figure plots the Cumulated Abnormal Returns around the recommendation announcement day *t*, i.e. the sum of abnormal returns across the 11-days window. Abnormal returns are the mean difference between actual returns and returns from the Market Index, or from the CAPM model. The market index is the Tunindex from the BVMT (Tunisian Stock Exchange). The returns from the CAPM model are calculated with coefficients estimated on a period of 2 years before *t*. The data consists of 2845 "Strong Buy" and "Buy" recommendations grouped as "Buy", 2592 Hold recommendations, and 1209 "Strong Sell" and "Sell" recommendations grouped as "Sell", on stocks listed on the BVMT from January 2005 through December 2009.

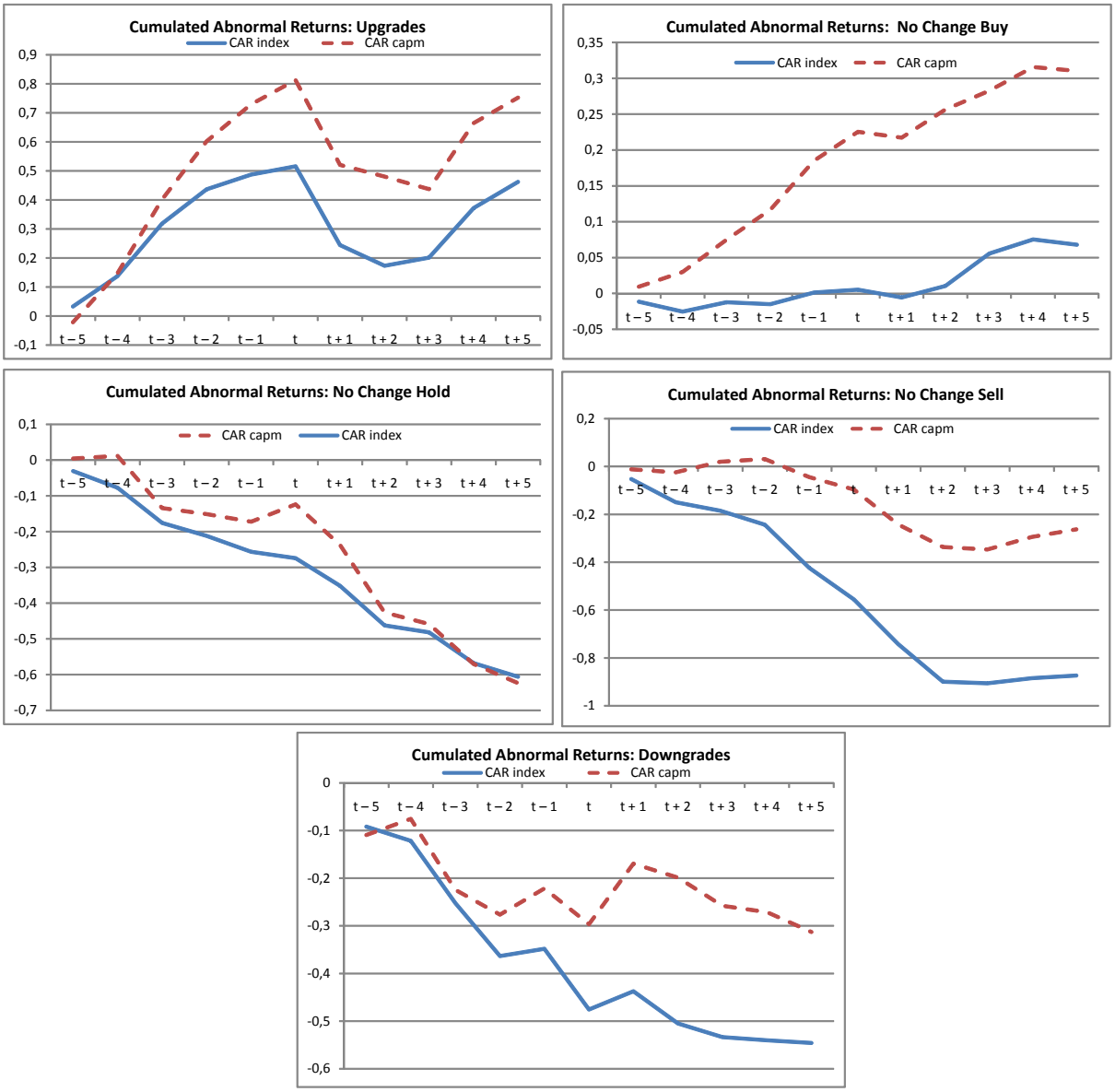
"Sell" recommendations generate negative, and most of the time significant, returns. The cumulated abnormal return is -0.28% when comparing to the CAPM model and -0,86% comparing with the market index model.

"Hold" recommendation entails negative cumulated returns. Comparing with the CAPM exhibit positive returns but they are not significant except for *t-4* and *t*. This is not surprising as this recommendation can have a very different meaning depending on the previous recommendation level. Nevertheless, cumulated returns are -0.54% for the market index model.

Second, let us turn to the impact of recommendation changes on the cumulated returns on Figure 3 (for detailed figures and tests, see table 7 in the appendix). At first sight, returns seem to react as expected: they are positive around upgrades or reiterated buy, and negative for reiterated sell or downgrades. Negative returns around reiterated hold recommendations

clearly indicate that this evolution is interpreted as a bad news by investors. However a look at table 7 in the appendix indicates that the negative returns following downgrades are not significant, ant positive returns are weakly significant following upgrades. This interesting result is contrary to what was expected and is a distinguishing feature of our case compared to the literature: reiterated recommendations seem to have much more impact on returns than real changes (upgrades or downgrades). Although we must remain cautious given the discrepancy in the total number of observations for up- and downgrades compared to reiterations, this indicates that investors adopt a “wait and see” attitude towards changes in recommendations. Instead of staring at moves from the analysts, they prefer to wait for a confirmation before trading.

Figure 3



This figure plots the Cumulated Abnormal Returns around the recommendation announcement day *t*, i.e. the sum of abnormal returns across the 11-days window. Abnormal returns are the mean difference between actual returns and returns from the Market Index, or from the CAPM model. The market index is the Tunindex from the BVMT (Tunisian Stock Exchange). The returns from the CAPM model are calculated with coefficients estimated on a period of 2 years before *t*. The data consists of 211 upgrades, 2549 No change-Buy, 2370 No change-hold, 1088 No change-Sell and 211 Downgrades recommendations on stocks listed on the BVMT from January 2005 through December 2009.

When no revision takes place, i.e. when the same recommendation is posted from one month to another, investors seem to react more saliently: a reiterated buy entails +0,31% excess return across the event window, a reiterated hold yields -0,60%, and a reiterated sell gives -0,87%. Although significant, these figures are globally weaker than those we reviewed in the literature.

4.2 Abnormal Volumes and Cumulated Abnormal Volumes

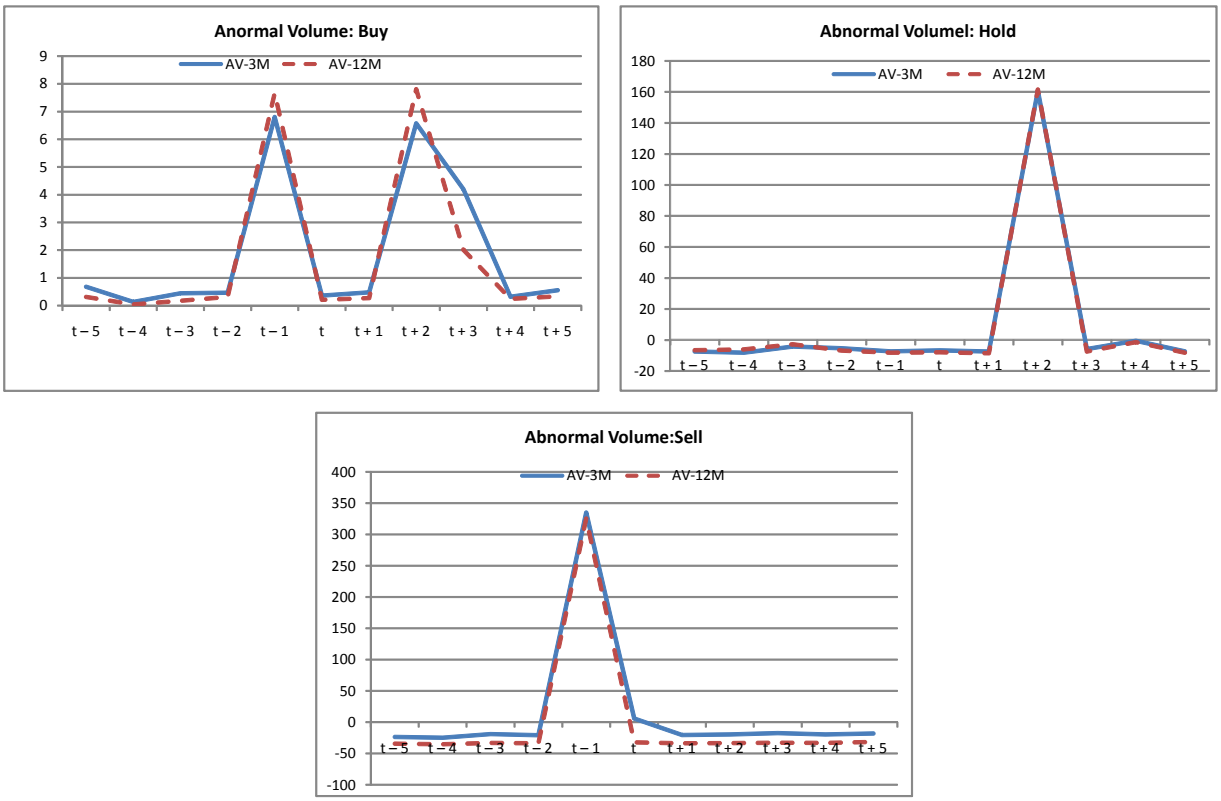
In the case of volumes, Cumulated Volumes are less meaningful than Cumulated Returns, hence we retain the (not cumulated) abnormal volumes. For detailed figures and tests see Table 8 in the appendix.

First, Figure 4 shows that concerning the impact of recommendation levels on the volumes, the "buy" level generates weak, but significant abnormal volumes, from 6 to 8% more volumes than on non-event periods. We can note two peaks of positive returns: one day before and two days after the recommendation. This can illustrate the impact of insider trading, as the clients of the broker that employs the analyst can be informed of the recommendation before the public release.

Around Sell recommendations, we confirm a rise in volumes (+300%) that was highlighted in the literature, although this rise is concentrated on *t-1*. However the most significant abnormal volumes are the negative ones, meaning that, before and after *t-1*, the volumes traded are unusually low (between 20% to 40% lower than the norm). This again comforts the idea of conservative investors that freeze their decision before obtaining the information.

Around hold recommendations, whereas we see an increase in volumes of +160% around day *t+2*, the surprising fact is again that volumes are significantly lower than the average on most of the event period (from -6 to -9%).

Figure 4



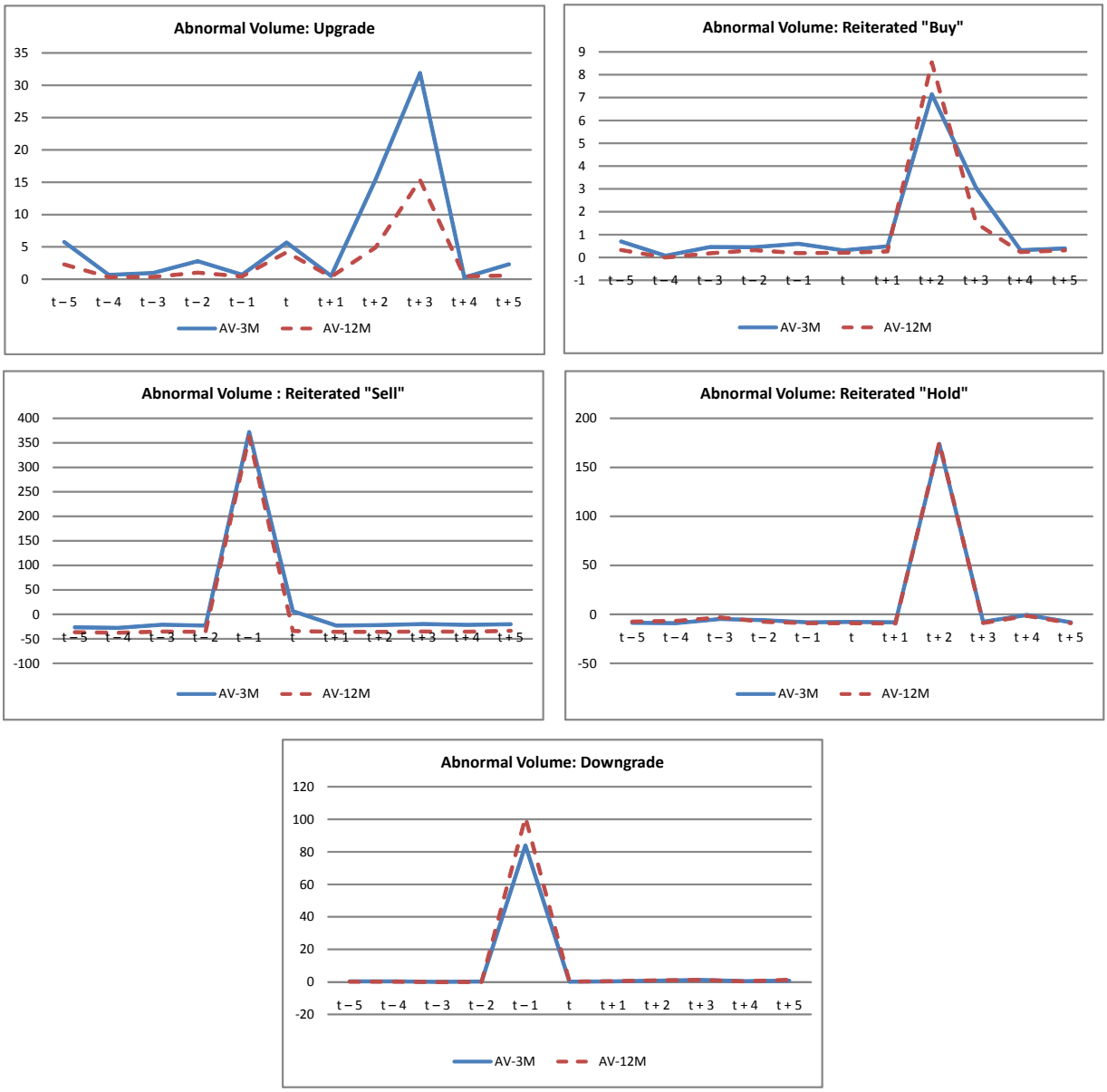
This Figure reports Abnormal Volumes around the recommendation release date *t*, across the 11-days event window. Abnormal Volumes are the mean difference between actual volumes and daily averages volumes calculated over a period of 3 Months, or 12 Months. For example +100 indicates that the volume on that day is 100% above the norm, i.e.is twice the norm, and -50 indicates that the volume is 50% less than the average on that day. The data consists of 211 upgrades, 2549 No change-Buy, 2370 No change-hold, 1088 No change-Sell and 211 Downgrades recommendations on stocks listed on the BVMT from January 2005 through December 2009.

Second, we turn to the impact of recommendation revisions plotted on Figure 5. For detailed figures and tests, see table 9 in the appendix. First note that impact of upgrades is weaker than expected: volumes only increase by around +30% at most; furthermore this is not statistically significant. This builds on our previous results about returns: upgrades do not entice a strong response from investors. It is the same for downgrades with a insignificant peak at *t-1*.

Again, volumes that are statistically different from zero are rather for reiterated recommendations. Although small in magnitude, reiterated buy recommendations induce abnormal volumes of around +6% to +8% some days after *t*. Reiterated Hold recommendations exhibit a high +150% in *t+2*, whereas the abnormally low volumes on the rest of the period (from -3% to -9%) are also significant. Finally, sell reiteration show around +365% above the norm on *t-1*, which seems to indicate massive sells from the investor before

the recommendation release. But again, investors seem to freeze their trading decision on the rest of the period, as the abnormally low volumes (from -20% to -40%) are significant.

Figure 5



This Figure reports Abnormal Volumes around the recommendation release date *t*, across the 11-days event window. Abnormal Volumes are the mean difference between actual volumes and daily averages volumes calculated over a period of 3 Months, or 12 Months. For example +100 indicates that the volume on that day is 100% above the norm, i.e.is twice the norm, and -50 indicates that the volume is 50% less than the average on that day. The data consists of 2845 "Strong Buy" and "Buy" recommendations grouped as "Buy", 2592 Hold recommendations, and 1209 "Strong Sell" and "Sell" recommendations grouped as "Sell", on stocks listed on the BVMT from January 2005 through December 2009.

Globally, volumes react as if investors where quicker to integrate downgrades and sell reiteration, than reiterated "hold" or "buy" or upgrades. This is in line with the literature, which generally present deeper impacts for negative news than for positive ones.

5. EXPLAINING THE "WAIT AND SEE" ATTITUDE: THE INFORMATIONAL CONTEXT MATTERS

Throughout the paper we have shown the compelling evidence that the Tunisian Stock Market adopts a "wait and see" attitude following the recommendations. In order to provide some explanation to this phenomenon, we now explore the informational context in more detail. Contrarily to what happens on mature Stock Markets, Brokers send their recommendations every month. But, furthermore, the recommendations are sent all at once, generally at the beginning of the month.

Let us take the case of May 2009 from our database. One broker sent 49 recommendations on the 30th of April. The following sent his 47 recommendations on the 4th of May. The third one released 50 recommendations the 6th of May, and the last one issued 50 recommendations on May the 8th. Taking this events as a whole, 46 firms where cited 4 times, while only 3 firms were recommended by 3 brokers, 1 firm by only 2 brokers, and no firm is recommended by only one broker.

The following Figure shows the frequency of recommendations per day of the month.

Figure 6

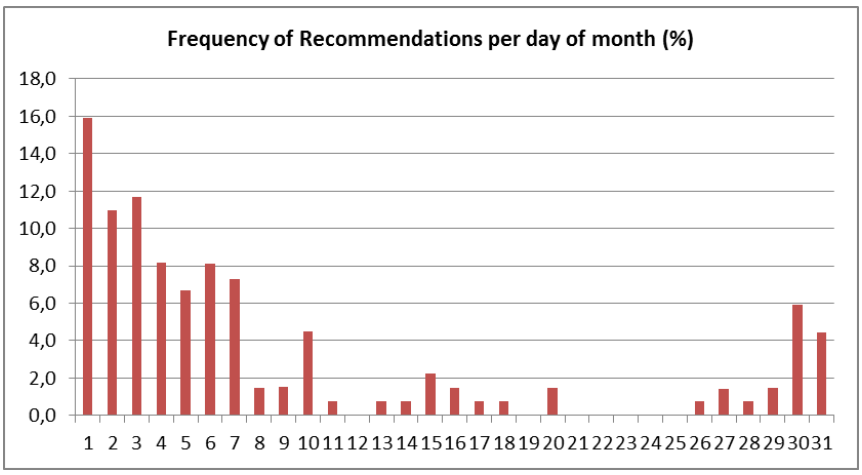


Figure 6 reports the number of recommendations per day of the month. The data consists of 6646 recommendations on stocks listed at the Tunisian Stock Exchange (BVMT) from January 2005 through December 2009

In this context, we can better understand the reaction of the stock market to recommendations. First, Suppose a Fund Manager following a particular firm. She would

probably wait until all brokers have spoken before taking a decision. This would considerably diminish the impact of the recommendations of the first three Brokers who issued their recommendations before. As such, it can explain low (although significant) impact we measured in the previous sections, when compared to articles studying the US or European markets.

Second, as all the firms under study are recommended the same day by a given Broker, we can imagine that it takes some time for the investors to treat the information. This can probably delay the trading decision toward the second, if not the third, decade of the month. Nevertheless it would probably not delay the trade longer, because new recommendations are expected at the turn of the end of the month. This can although dilute the price and volume impact of the recommendation all along the month.

Third, this informational context is likely to encourage a sort of "confirmatory bias" (see Rabin and Shrag, 1999): if one Broker "moves" and changes its recommendation, it is prudent for investors to wait for a confirmation by other brokers on the next month. This could explain that the "upgrades" have less impact than "no change" reiterated recommendations.

6. CONCLUSION

The results show that our hypotheses are partially verified. We show evidence of impact of recommendation level on prices and volumes, although recommendation changes exhibit a much weaker evidence of impact.

"Buy" recommendation generate positive abnormal returns and volumes. "Sell" recommendations generate negative returns and, consistently with the particular features of an emerging market, abnormally low trading volumes. "Hold" recommendations have a mitigated impact on returns and no effect on volumes.

In the contrary, upward revisions show very little impact, whereas we expected a positive reaction of prices and volumes. Also for downward revisions: the expected negative impact on prices and volumes is not observed. Only unchanged recommendations have an impact, especially on the volumes, with abnormally low volumes.

These results lead to at least four remarks on the value of analysts' recommendation on the Tunisian market.

1– Investors react more on the level of recommendation than on recommendation changes. This is the contrary in developed stock markets, where revisions are considered as more informative.

2– Information is not processed in the same way in all markets. On the Tunisian market, it seems that an upward revision from “strong sell” to “sell” is not interpreted as good news, as the level is still interpreted as a negative opinion. Only the downward revision from “strong buy” to “buy” leads to a negative reaction –although very weak.

3– The particular features of systematic monthly release of recommendations give much weight on the repetition of the same recommendation. Unlike in most Market places, where a new recommendation is released only in case of new information underlying it, the signal is clearly interpreted differently in the case of systematic release, as in the Tunisian market. A stock confirmed at a buy (sell) level shows positive (negative) reaction of the market, whereas upgrades and downgrades lead to more mitigated results.

4– We confirm that negative opinion generate abnormally low levels of trading volumes, whereas it is the contrary on mature markets. It seems that Tunisian investors post-pone their decision when confronted to a negative opinion, waiting for a confirmation on the following month.

Finally future research should explore more specifically the informational context of the Tunisian market. For example, one could verify if the first broker to release a recommendation has the same impact as the broker which releases it lastly. As a complement, more is to be done about whether multiple recommendations around the same date are divergent (some tells buy, other tells sell) or convergent. This should help explain how multiple recommendations about a stock at the same time affect its price.

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APPENDIX :

Table 6

Abnormal Returns and Cumulative Abnormal Returns Following Analyst Recommendations

	"Buy" Recommendations				"Hold" Recommendations			
	Using Market Index		Using CAPM		Using Market Index		Using CAPM	
	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return
t – 5	-0,01766	-0,01766	-0,00334	-0,00334	-0,02763	-0,02763	0,03246	0,03246
t – 4	0,00634	-0,01133	0,04506 *	0,04173	-0,0348	-0,06243	0,06172 *	0,09342 *
t – 3	0,01232	0,09421	0,04578 *	0,08751 *	-0,08387 ***	-0,1463 **	-0,03119	0,06215
t – 2	0,02065	0,02164	0,06421 **	0,15172 ***	-0,0426	-0,18892 ***	0,01689	0,08093
t – 1	0,02667	0,0483	0,07671 ***	0,22843 ***	-0,04446	-0,23335 ***	0,02921	0,11139
t	-0,00636	0,04194	0,02999	0,25843 ***	-0,00673	-0,24175 ***	0,07429 **	0,18508 **
t + 1	-0,01484	0,02714	-0,01115	0,24727 ***	-0,0719 **	-0,31363 ***	-0,03462	0,14922
t + 2	-0,00321	0,02241	0,02194	0,26922 ***	-0,10593 ***	-0,41714 ***	-0,06898 **	0,0791
t + 3	0,03717	0,05964	0,01326	0,28248 ***	-0,01467	-0,43235 ***	-0,01077	0,06749
t + 4	0,02923	0,09113	0,04375	0,32623 ***	-0,0779 ***	-0,5116 ***	-0,01726	0,05019
t + 5	0,00455	0,09518	0,00347	0,32969 ***	-0,03614	-0,54651 ***	-0,01531	0,03526

	"Sell" Recommendations			
	Using Market Index		Using CAPM	
	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return
t – 5	-0,04896	-0,04896	-0,00817	-0,00817
t – 4	-0,1234 ***	-0,17236 ***	0,0399	-0,04806
t – 3	-0,03988	-0,21223 **	0,03193	-0,01613
t – 2	-0,08171 *	-0,29394 ***	-0,01767	-0,0338
t – 1	-0,17062 ***	-0,46456 ***	-0,06822	-0,10202
t	-0,13626 ***	-0,60082 ***	-0,05765	-0,15967
t + 1	-0,18149 ***	-0,78231 ***	-0,14034 ***	-0,30001 **
t + 2	-0,12924 ***	-0,91155 ***	-0,06684	-0,36685 **
t + 3	-0,01077	-0,92232 ***	-0,019	-0,38585 **
t + 4	0,03356	-0,88876 ***	0,05956	-0,32629 *
t + 5	0,02161	-0,86715 ***	0,04095	-0,28534

This table reports Abnormal returns, i.e. the mean difference between actual returns and returns from the Market Index or from the CAPM model, around the recommendation annoucement day *t*. Returns are multiplied by 100 to express a percentage. The Market Index is the Tunindex from the BVMT (Tunisian Stock Exchange). The return from the CAPM model is calculated on a period of 2 years before *t* . Cumulative Abnormal Returns are the sum of abnormal returns across the event window.The *t-statistics* are calculated and stars indicate if abnormal returns are significantly different from zero at the 1% (***), 5% (**) or 10% (*) levels. The data consists of 1410 Strong Buy and 1435 Buy recommendations grouped as "Buy", 2592 Hold recommendations, 835 Sell and 374 Strong Sell recommendations grouped as "Sell" recommendations listed at the BVMT from January 2005 through December 2009.

Table 7

Abnormal Returns and Cumulative Abnormal Returns Following New Analyst Recommendations

	Upgrade Recommendations				No Change - "Buy" Recommendations			
	Using Market Index		Using CAPM		Using Market Index		Using CAPM	
	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return
t – 5	0,03267	0,03267	-0,02139	-0,02139	-0,01151	-0,01151	0,00967	0,00967
t – 4	0,10409	0,13676	0,16812	0,14673	-0,01369	-0,0252	0,02044	0,03011
t – 3	0,18105	0,31782	0,25449 **	0,40122 *	0,01313	-0,01207	0,04483 *	0,07494
t – 2	0,11857	0,43638 *	0,20019	0,60141 **	-0,00274	-0,01481	0,04195	0,11689 **
t – 1	0,05043	0,48682	0,12755	0,72896 **	0,01627	0,00146	0,06853 **	0,18541 ***
t	0,02875	0,51557	0,08356	0,81252 **	0,00393	0,00539	0,04022	0,22563 ***
t + 1	-0,27111 **	0,24446	-0,29195 **	0,52057	-0,01083	-0,00543	-0,00814	0,21749 ***
t + 2	-0,07167	0,17279	-0,04004	0,48053	0,01598	0,01055	0,0391	0,25659 ***
t + 3	0,02822	0,20102	-0,04347	0,43706	0,04521	0,05576	0,02611	0,28271 ***
t + 4	0,17038	0,3714	0,22702	0,66409	0,01962	0,07539	0,03317	0,31587 ***
t + 5	0,0908	0,4622	0,08807	0,75216	-0,00737	0,06801	-0,00534	0,31053 ***

	No Change - "Hold" Recommendations				No Change - "Sell" Recommendations			
	Using Market Index		Using CAPM		Using Market Index		Using CAPM	
	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return
t – 5	-0,03069	-0,03069	0,03533	0,03533	-0,05262	-0,05262	-0,01202	-0,01202
t – 4	-0,04681	-0,07749	0,05436	0,08969 *	-0,09718 *	-0,1498 *	-0,01237	-0,02439
t – 3	-0,09812	-0,17562 ***	-0,04793	0,04176	-0,03548	-0,18527 *	0,04416	0,01977
t – 2	-0,03658	-0,2122 ***	0,01949	0,06125	-0,05826	-0,24353 **	0,01141	0,03119
t – 1	-0,04458	-0,25678 ***	0,02359	0,08484	-0,18018 ***	-0,42371 ***	-0,07529	-0,04411
t	-0,01774	-0,27452 ***	0,0663 **	0,15114 *	-0,13202 ***	-0,55573 ***	-0,05226	-0,09637
t + 1	-0,07724 **	-0,35175 ***	-0,03631	0,11483	-0,18741 ***	-0,74313 ***	-0,146 ***	-0,24237
t + 2	-0,11098 ***	-0,46274 ***	-0,07844 **	0,03639	-0,1568 ***	-0,89993 ***	-0,0944 *	-0,33677 **
t + 3	-0,01916	-0,4819 ***	-0,0131	0,02329	-0,00631	-0,90625 ***	-0,01012	-0,34688 **
t + 4	-0,08646 ***	-0,56835 ***	-0,02542	-0,00212	0,02114	-0,8851 ***	0,05261	-0,29427
t + 5	-0,03791	-0,60626 ***	-0,01573	-0,01785	0,01146	-0,87364 ***	0,03146	-0,2628

	Downgrade Recommendations			
	Using Market Index		Using CAPM	
	Abnorm. Return	Cumul. Abnorm. Return	Abnorm. Return	Cumul. Abnorm. Return
t – 5	-0,0918	-0,0918	-0,10938	-0,10938
t – 4	-0,02989	-0,12169	0,03379	-0,07559
t – 3	-0,1307	-0,25238	-0,14878	-0,22437
t – 2	-0,11085	-0,36323	-0,05199	-0,27637
t – 1	0,01503	-0,3482	0,05496	-0,2214
t	-0,12749	-0,47569	-0,07525	-0,29665
t + 1	0,03843	-0,43726	0,12715	-0,1695
t + 2	-0,06748	-0,50474	-0,02946	-0,19896
t + 3	-0,02876	-0,5335	-0,05915	-0,2581
t + 4	-0,00681	-0,54032	-0,01329	-0,27139
t + 5	-0,00545	-0,54577	-0,04155	-0,31294

This table reports Abnormal returns, i.e. the mean difference between actual returns and returns from the Market Index or from the CAPM model, around the recommendation annoucement day *t*. Returns are multiplied by 100 to express a percentage. The Market Index is the Tunindex from the BVMT (Tunisian Stock Exchange). The return from the CAPM model is calculated on a period of 2 years before *t* . Cumulative Abnormal Returns are the sum of abnormal returns across the event window.The *t-statistics* are calculated and stars indicate if abnormal returns are significantly different from zero at the 1% (***), 5% (**) or 10% (*) levels. The data consists of 211 Upgrades, 2549 No Change-Buy, 2370 No Change-Hold, 1088 No Change-Sell, and 211 Downgrades recommendations on stocks listed at the BVMT from January 2005 through December 2009.

Table 8

Abnormal Volumes and Cumulative Abnormal Volumes Following Analyst Recommendations

	"Buy" Recommendations						"Hold" Recommendations			
	3 Months		one year		3 Months		one year			
	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume		
t – 5	0,67389 ***	0,67389 ***	0,31112 **	0,31112 **	-7,50668 *	-7,50668 *	-6,63525 ***	-6,63525 ***		
t – 4	0,1295 *	0,80378 ***	0,04064	0,35221 **	-8,26352 **	-15,773 **	-6,21665 **	-12,8519 **		
t – 3	0,44161 *	1,24636 ***	0,1724	0,52518 ***	-4,27257	-20,0469 *	-2,8569	-15,7088 *		
t – 2	0,46284 ***	1,71165 ***	0,3115 ***	0,83719 ***	-5,36899	-25,4176	-6,97876 **	-22,6904 **		
t – 1	6,80326	8,52876	7,66095	8,50881	-7,40184 **	-32,8246 *	-8,30362 ***	-31,0009 **		
t	0,35869 ***	8,88979	0,20926 **	8,71776	-6,82185 *	-39,6651 *	-8,03221 ***	-39,0391 **		
t + 1	0,47636 ***	9,36692	0,27132 ***	8,98854	-7,55689 **	-47,2445 *	-8,66063 ***	-47,7066 ***		
t + 2	6,57403	15,9576 *	7,80611	16,8134	160,775	113,719	161,558	114,043		
t + 3	4,19979 **	20,1657 **	2,0088 **	18,8193 *	-5,85766	107,855 ***	-7,53756	106,497		
t + 4	0,3183 ***	20,4859 **	0,24048 ***	19,0583 *	-0,58083	107,274	-1,44125	105,053		
t + 5	0,55499 ***	21,038 **	0,33004 ***	19,3876 *	-7,42412 **	99,8418 ***	-8,27579	96,7668		

	"Sell" Recommendations			
	3 Months		one year	
	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume
t – 5	-23,767 **	-23,767 **	-34,309 ***	-34,309 ***
t – 4	-25,0165 ***	-48,7835 **	-35,289 ***	-69,598
t – 3	-19,1974 **	-67,9809 **	-33,1367 ***	-102,73 ***
t – 2	-20,8803 **	-88,8777 **	-33,7792 ***	-136,51 ***
t – 1	335,055	246,456	325,515	189,001
t	5,74278	252,205	-32,1793 ***	156,822
t + 1	-20,7475 **	231,441	-33,6826 ***	123,139
t + 2	-19,8713 **	211,752	-33,4016 ***	89,7374
t + 3	-17,6916 *	194,046	-32,7919 ***	56,9455
t + 4	-19,689 **	174,342	-33,2745 ***	23,6711
t + 5	-18,1234 **	156,204	-31,4749 ***	-7,80384

This table reports Abnormal volumes, i.e. the normalized mean difference between actual volumes and daily average volumes calculated over a period of three months or one year , around the recommendation annoucement day *t.* For example: 0,75 means that the volume is 75% superior to the norm, -0,33 means that it is 33% under the norm, etc. Cumulative Abnormal Volumes are the sum of abnormal volumes across the event window.The *t-statistics* are calculated and stars indicate if abnormal volumes are significantly different from zero at the 1% (***), 5% (**) or 10% (*) levels. The data consists of 211 Upgrades, 2549 No Change-Buy, 2370 No Change-Hold, 1088 No Change-Sell, and 211 Downgrades recommendations on stocks listed at the BVMT from January 2005 through December 2009.

Table 9

Abnormal Volumes and Cumulative Abnormal Volumes Following New Analyst Recommendations

	Upgrade Recommendations				No Change - "Buy" Recommendations			
	3 Months		one year		3 Months		one year	
	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume
t – 5	5,7474	5,7474	2,26245	2,26245	0,70228 **	0,70228 **	0,32429 **	0,32429 **
t – 4	0,66097 *	6,40837	0,30045	2,5629	0,07453	0,77723 ***	-0,00168	0,32305 **
t – 3	0,97117	7,37954	0,3387	2,9016	0,45494 *	1,23325 ***	0,17961	0,5033 **
t – 2	2,7838	10,1633	1,00229 *	3,90388	0,45176 ***	1,6877 ***	0,31729 ***	0,82116 ***
t – 1	0,68451 *	10,8479	0,42131	4,32519	0,59967	2,29034 ***	0,18933 ***	1,00683 ***
t	5,6828	16,5307 *	4,14506	8,47025 *	0,31308 ***	2,60588 ***	0,20792 **	1,2144 ***
t + 1	0,49389 *	17,0245 *	0,36769	8,83794 *	0,48585 **	3,09261 ***	0,26457 ***	1,47834 ***
t + 2	15,3725	32,3971	4,89712	13,7351 *	7,14806	10,2607	8,54646	10,048
t + 3	31,9079	64,305 *	15,3724	29,1075 **	3,04145 *	13,3081 *	1,49746 *	11,5405
t + 4	0,25909	64,5641 *	0,42583	29,5333 **	0,31931 ***	13,6296 *	0,23772 ***	11,7763
t + 5	2,29634	66,8604 *	0,5302	30,0635 **	0,39451 ***	14,0204 **	0,31163 ***	12,0866

	No Change - "Hold" Recommendations				No Change - "Sell" Recommendations			
	3 Months		one year		3 Months		one year	
	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume
t – 5	-8,69835 *	-8,69835 *	-7,42325 ***	-7,42325 ***	-26,4207 **	-26,4207 **	-36,4921 ***	-36,4921 ***
t – 4	-9,08505 *	-17,7868 *	-6,80039 **	-14,2236 **	-27,5925 **	-54,0132 **	-37,4255 ***	-73,9177 ***
t – 3	-4,76759	-22,556 *	-3,16007	-17,3837 *	-21,1949 **	-75,2081 **	-35,0449 ***	108,96 ***
t – 2	-6,09172	-28,6499 *	-7,68768 ***	-25,0748 **	-22,9758 **	-98,2041 **	-35,7478 ***	-144,71 ***
t – 1	-8,11911 **	-36,7753 *	-9,06843 ***	-34,151 **	372,206	274,345	362,549	217,839
t	-7,9004 *	-44,6991 *	-9,10157 ***	-43,2601 ***	6,55742	280,91	-34,0265 ***	183,812
t + 1	-8,27387 **	-53,0006 *	-9,45735 ***	-52,7256 ***	-22,8789 **	258,011	-35,6983 ***	148,114
t + 2	173,935	121,157	175,542	123,044	-22,0181 **	236,217	-35,4941 ***	112,62
t + 3	-7,65252 *	113,495	-8,95114 ***	114,082	-19,6386 *	216,562	-34,8513 ***	77,7683
t + 4	-0,68243	112,812	-1,60909	112,47	-21,6939 **	194,849	-35,2336 ***	42,5348
t + 5	-8,11305 **	104,69	-9,03571 ***	103,422	-20,1086 **	174,722	-33,4753 ***	9,0595

	Downgrade Recommendations			
	3 Months		one year	
	Abnorm. Volume	Cumul. Abnorm. Volume	Abnorm. Volume	Cumul. Abnorm. Volume
t – 5	0,38724	0,38724	0,21434	0,21434
t – 4	0,33924	0,72648	0,15894	0,37328
t – 3	0,03797	0,76445	-0,01939	0,35389
t – 2	0,2677	1,03215	0,12627	0,48016
t – 1	83,9511	84,9833	101,207	101,687
t	0,09647	85,0797	0,25643	101,943
t + 1	0,33283	85,4125	0,50542	102,449
t + 2	0,74203 *	86,1546	1,05264 *	103,501
t + 3	1,19018	87,3448	1,30804	104,809
t + 4	0,49501	87,8398	0,37999	105,189
t + 5	0,80205	88,6418	1,39834	106,588

This table reports Abnormal volumes, i.e. the mean difference between actual volumes and daily average volumes calculated over a period of three months or one year , around the recommendation annoucement day *t*. For example: 0,75 means that the volume is 75% superior to the norm, -0,33 means that it is 33% under the norm, etc. Cumulative Abnormal Volumes are the sum of abnormal volumes across the event window.The *t-statistics* are calculated and stars indicate if abnormal volumes are significantly different from zero at the 1% (***), 5% (**) or 10% (*) levels. The data consists of 211 Upgrades, 2549 No Change-Buy, 2370 No Change-Hold, 1088 No Change-Sell, and 211 Downgrades recommendations on stocks listed at the BVMT from January 2005 through December 2009.