

**Recommendation Value on an Emerging Market: the Impact of Analysts'  
Recommendations on Stock Prices and Trading Volumes in Tunisia<sup>1</sup>**

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## **Recommendations on Stock Prices and Trading Volumes in Tunisia**

### **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 2359 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 confirm a special feature of emerging stock markets, which is that volumes are abnormally low following a “sell” recommendation, whereas in that case they are abnormally high in more liquid markets.

## 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)<sup>2</sup>. 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. Interestingly, we find that in case of conflicting recommendations (simultaneous upward and downward revision from two analysts on the same firm), investors tend to follow the bad news rather than the good news, suggesting a high loss aversion among investors.

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<sup>2</sup> Irvine (2001) shows that brokerage houses record significantly higher volumes for the firms that their analysts cover than for uncovered firms.

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.

Although analysts generally release their recommendations on a 5-items scale<sup>3</sup> (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<sup>4</sup> 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

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<sup>3</sup> Throughout the paper we follow the usual numeric coding: *strong buy* = 5, *buy* = 4, *hold* = 3, *sell* = 2, *strong sell* = 1.

<sup>4</sup> Around 7 buy recommendations for 1 sell recommendation.

content”: as the market reacts more on negative revision, we infer that they contain more information to investors than positive revisions.

In the same vein, Dhiensiri & al (2005) show that the revision of recommendations has less impact when there are simultaneous releases of diverging opinions. Barber & al (2001) extends the test to the aggregation of analysts’ recommendation (the “consensus” recommendation) and show that the strategy that buys following a favorable consensus revision and sells following an unfavorable consensus revision yields an abnormal return of 4% per year. We note the idea that the consensus contains information. As a consequence, a bold recommendation revision that would differ from the consensus is likely to be more informative than revisions that simply join up with the consensus.

Turning to the impact of recommendations on volumes of stocks traded, many studies show that the more numerous are the analysts following a firm, hence the more recommendation there are, the greater the volumes of stocks are traded (Irvine, 2003, Dhiensiri and Sayrak 2004). This is important because volumes are a determinant of the stocks’ liquidity, and as such, affect the firm’s cost of capital. Brennan and Subrahmanyam (1995) and Amihud and Mendelson (1986) showed that analysts influence liquidity and expected returns. Womack (1996) confirms the existence of abnormal volumes: a buy recommendation induce volumes that are 190% higher than in non-event 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 (??) 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 down ward revisions, and shows that the market react more to

high-reputation brokers. Finally, the market place where trades take place seem 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<sup>5</sup> 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 these 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. This is why we study an 11-days event

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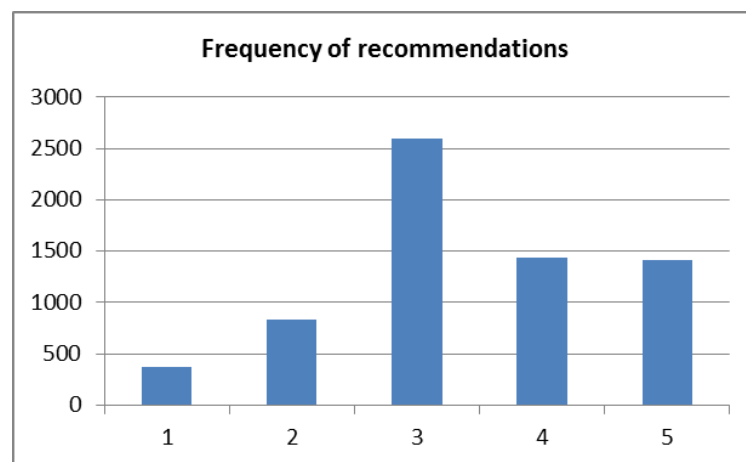
<sup>5</sup> Argentina, Brazil, China, Chile, Hungary, India, Indonesia, Israël, Korea, Mexico and South Africa.

window<sup>6</sup>, 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.

As usual, recommendations are coded as “1” for strong sell, “2” for sell, “3” for hold, “4” for buy and “5” for strong buy.

## 2.2 Descriptive statistics

First have a look on the distribution of recommendations.



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.

Recommendation & Recommendation Change						
From...	To...					
	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

<sup>6</sup> These are working days.

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 (37% of the total), although its magnitude is even greater (only 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:

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

The second method uses the standard CAPM. First regress:

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

where  $\beta$  is the coefficient that measures the link between stock  $i$  and the market :

$$\beta_i = \frac{COV(R_i, R_m)}{\sigma_{R_m}^2}$$

and finally define the expected return:

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

$R_f$  and  $\beta$  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  $\tau$  is the general length of the window:



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

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

$$AV_{it}^7 = (V_{it} - K_{it}) / K_{it}$$

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 analysis: one with  $T$  of 90 days, the other with  $T$  of 1 year, such that the last days is  $d-6$ . 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 Expected Impacts of Recommendations on an Emerging Market*

The Tunisian market being relatively poorly liquid, it seems consistent to analyze both prices and volumes reaction.

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”),

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<sup>7</sup> Le volume anormal a été calculé en % d'évolution :  $AV_{it} = (V_{it} - K_{it})/K_{it}$

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 we 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 are not biased by differences in the brokers’ reputation. Third, the specificity of an emerging markets is that information asymmetries are supposed to be greater than 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.

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

Table X reports the average of the log of price change at different windows surrounding the recommendation 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.

For buy recommendations, we note significantly positive coefficients from the first date of publication to the day eleven. During all the period, the coefficients value increases from 0,17% to 1,25% for strong buy recommendations, from 0,13% to 1,19% for buy recommendations. from 0,18% to 0,75% for hold recommendations.

For sell recommendations, a small reaction of 0,73% is noted at a 90% level.

Now turn to recommendations evolution. We note that unchanged 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 don't have any impact on prices.

Unchanged recommendations present significant and positive impact in the case of maintaining « buy » and « hold » recommendations with coefficients reaching 1,22% and 0,72% respectively in the day eleven.

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

In addition, coefficient level obtained varies from 0,11% to 1,58%. This shows that price variation is less pronounced on the BVMT stock exchange. 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*

Results obtained show that some characteristics may affect prices. We should also note that price reaction is higher for event window on eleven days compared to those on one day. 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.

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 <sup>2</sup> (%)	0,68%	-0,25%	0,20%	2,96%	1,12%	1,34%
<i>Coefficients</i>						
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 ***
<i>Recommendation Evolution</i>						
	1-day price impact			11-days price impact		
	Upgrades	No Change - Buy	No Change - Hold	Upgrades	No Change - Buy	No Change - Hold
	211	2551	2370	211	2551	2370
Adjusted R <sup>2</sup> (%)	1,96%	0,05%	0,33%	4,05%	1,15%	1,74%
<i>Coefficients</i>						
Constant	.0022323	.0025339 ***	.0023158 **	.0082884	.0077613	-.0046671
FinancialSector	-.0013023	.0006645	.0000011	-.0022133	.0060126 ***	.0061078 **
CorporateAction	.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 ***

Table X shows the results of regressions of firm and recommendation characteristics on the price impact around the recommendation 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  $t - 5$ . *FinancialSector* is 1 if the firm is classified as "Financial" by the BVMT (Tunisian Stock Exchange), and 0 otherwise. *CorporateAction* is a dummy variable that is 1 if the firm issues stocks, splits stocks, distributes dividends or is involved in a merger or an acquisition 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.

## Recommendations levels

*Financial Sector.* Societies which belong to the financial sector are characterized by more important reaction for strong buy recommendations (0,95%) and hold recommendations (0,63%).

*Corporate Actions.* Stock offerings, stock splits, dividend distribution or other corporate actions generate higher price variation equal to 0,44% the day after the strong buy recommendations. The coefficient is equal to 2,2% for an event window of eleven days and concerning buy recommendations and hold ones.

*Broker reputation.* Broker reputation affect prices for event window of eleven days and concerning buy and strong buy recommendations. The impact is mitigated with a positive coefficient for strong buy recommendations (0,82%) and a negative coefficient for buy recommendations (-0,50%).

*Multiple recommendations.* Multiples publications in the same date generate a positive reaction concerning strong buy recommendations and hold recommendations and negative reaction for buy recommendations.

*Small firm.* The price reaction for smaller firms is more pronounced for stocks with hold recommendations the day after recommendation and less pronounced for event window of eleven days and concerning stocks with strong buy recommendations

*Foreign participation.* In the case of foreign participation in the capital of firms, we note a negative reaction for event window of eleven days for strong buy recommendations (-1,77%), buy recommendations (-0,6%), and hold recommendations (-1,13%). For the day after recommendations, a negative reaction is detected for strong buy recommendations and positive reaction for hold recommendations.

### **Recommendations evolution**

*Financial Sector.* Societies which belong to the financial sector are characherised by more important reaction for unchanged buy recommendations (0,6%) and unchanged hold recommendations (0,61%).

*Corporate actions.* They generate higher price variation equal to 1 % the day after the upgrades recommendations. The coefficient is equal to 7,2% for an event window of eleven days and concerning upgrades recommendations, unchanged buy recommendations (1,7%) and unchanged hold recommendations (2,5%).

*Broker reputation.* Broker reputation affect prices for event window of eleven days and concerning upgrades recommendations (-3,23%).

*Multiple recommendations.* Multiple publications in the same date generate a positive reaction concerning no change buy recommendations and no change hold recommendations. Results are similar in Green (2006), multiple recommendations do not significantly influence the price impact following upgrade recommendations.

*Small firm.* The price reaction for smaller firms is more pronounced for stocks with no change hold recommendations the day after recommendations and less pronounced for event window of eleven days and concerning stocks with no change buy recommendations and no change hold ones.

Results do not confirm earlier literature (Green, 2006) since recommendations have a larger impact on smaller firm.

*Foreign participation.* In the case of foreign participation in the capital of firms, we note a negative reaction for event window of eleven days for unchanged buy recommendations (-1%) and unchanged hold recommendations (-1,3%). For the day after recommendations, a negative reaction is detected for unchanged hold recommendations.

#### **4. EXCESS RETURNS AND EXCESS VOLUMES CAUSED BY THE RECOMMENDATIONS**

##### *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 returns.

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	-0,0177	-0,0177	-0,0033	-0,0033	-0,0276	-0,0276	0,03246	0,03246
t - 4	0,00634	-0,0113	0,04506 *	0,04173	-0,0348	-0,0624	0,06172 *	0,09342 *
t - 3	0,01232	2,45644	0,04578 *	0,08751 *	-0,0839 ***	-0,1463 **	-0,0312	0,06215
t - 2	0,02065	0,02164	0,06421 **	0,15172 ***	-0,0426	-0,1889 ***	0,01689	0,08093
t - 1	0,02667	0,0483	0,07671 ***	0,22843 ***	-0,0445	-0,2334 ***	0,02921	0,11139
t	-0,0064	0,04194	0,02999	0,25843 ***	-0,0067	-0,2418 ***	0,07429 **	0,18508 **
t + 1	-0,0148	0,02714	-0,0112	0,24727 ***	-0,0719 **	-0,3136 ***	-0,0346	0,14922
t + 2	-0,0032	0,02241	0,02194	0,26922 ***	-0,1059 ***	-0,4171 ***	-0,069 **	0,0791
t + 3	0,03717	0,05964	0,01326	0,28248 ***	-0,0147	-0,4324 ***	-0,0108	0,06749
t + 4	0,02923	0,09113	0,04375	0,32623 ***	-0,0779 ***	-0,5116 ***	-0,0173	0,05019
t + 5	0,00455	0,09518	0,00347	0,32969 ***	-0,0361	-0,5465 ***	-0,0153	0,03526
"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	-0,049	-0,049	-0,0082	-0,0082				
t - 4	-0,1234 ***	-0,1724 ***	0,0399	-0,0481				
t - 3	-0,0399	-0,2122 **	0,03193	-0,0161				
t - 2	-0,0817 *	-0,2939 ***	-0,0177	-0,0338				
t - 1	-0,1706 ***	-0,4646 ***	-0,0682	-0,102				
t	-0,1363 ***	-0,6008 ***	-0,0577	-0,1597				
t + 1	-0,1815 ***	-0,7823 ***	-0,1403 ***	-0,3 **				
t + 2	-0,1292 ***	-0,9116 ***	-0,0668	-0,3669 **				
t + 3	-0,0108	-0,9223 ***	-0,019	-0,3859 **				
t + 4	0,03356	-0,8888 ***	0,05956	-0,3263 *				
t + 5	0,02161	-0,8672 ***	0,04095	-0,2853				

Table X 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 announcement 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.

For recommendation with a “buy” level, positive abnormal returns are recorded according to the CAPM model during the event period. The table shows a 0.07% daily abnormal return in d-1 for the CAPM model. Cumulated abnormal returns are also significant, with 0.33% excess return in t+5 according to the CAPM.

“Sell” recommendation generate negative price reaction. The cumulated abnormal return is for example -0.38% in t+3 for the CAPM model and -0,92% for the market index model.

“Hold” recommendation are followed by generally negative cumulated returns, although we record a positive reaction according the CAPM in 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 returns. Contrarily to most of our hypothesis, from the following table it appears that recommendation changes often do not affect prices and volumes as expected. Nevertheless a weak evidence of impact is detected for some days. Globally, unchanged recommendations have more significant impact than other revisions. This is surprising because no revision should represent a *status quo* for investors. Abnormal returns are alternatively negative or positive; however abnormal volumes are generally negative.

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	-0,0214	-0,0214	-0,0115	-0,0115	0,00967	0,00967
t-4	0,10409	0,13676	0,16812	0,14673	-0,0137	-0,0252	0,02044	0,03011
t-3	0,18105	0,31782	0,25449 **	0,40122 *	0,01313	-0,0121	0,04483 *	0,07494
t-2	0,11857	0,43638 *	0,20019	0,60141 **	-0,0027	-0,0148	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	-0,2711 **	0,24446	-0,292 **	0,52057	-0,0108	-0,0054	-0,0081	0,21749 ***
t+2	-0,0717	0,17279	-0,04	0,48053	0,01598	0,01055	0,0391	0,25659 ***
t+3	0,02822	0,20102	-0,0435	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	-0,0074	0,06801	-0,0053	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	-0,0307	-0,0307	0,03533	0,03533	-0,0526	-0,0526	-0,012	-0,012
t-4	-0,0468	-0,0775	0,05436	0,08969 *	-0,0972 *	-0,1498 *	-0,0124	-0,0244
t-3	-0,0981	-0,1756 ***	-0,0479	0,04176	-0,0355	-0,1853 *	0,04416	0,01977
t-2	-0,0366	-0,2122 ***	0,01949	0,06125	-0,0583	-0,2435 **	0,01141	0,03119
t-1	-0,0446	-0,2568 ***	0,02359	0,08484	-0,1802 ***	-0,4237 ***	-0,0753	-0,0441
t	-0,0177	-0,2745 ***	0,0663 **	0,15114 *	-0,132 ***	-0,5557 ***	-0,0523	-0,0964
t+1	-0,0772 **	-0,3518 ***	-0,0363	0,11483	-0,1874 ***	-0,7431 ***	-0,146 ***	-0,2424
t+2	-0,111 ***	-0,4627 ***	-0,0784 **	0,03639	-0,1568 ***	-0,8999 ***	-0,0944 *	-0,3368 **
t+3	-0,0192	-0,4819 ***	-0,0131	0,02329	-0,0063	-0,9063 ***	-0,0101	-0,3469 **
t+4	-0,0865 ***	-0,5684 ***	-0,0254	-0,0021	0,02114	-0,8851 ***	0,05261	-0,2943
t+5	-0,0379	-0,6063 ***	-0,0157	-0,0179	0,01146	-0,8736 ***	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	-0,1094	-0,1094				
t-4	-0,0299	-0,1217	0,03379	-0,0756				
t-3	-0,1307	-0,2524	-0,1488	-0,2244				
t-2	-0,1109	-0,3632	-0,052	-0,2764				
t-1	0,01503	-0,3482	0,05496	-0,2214				
t	-0,1275	-0,4757	-0,0753	-0,2967				
t+1	0,03843	-0,4373	0,12715	-0,1695				
t+2	-0,0675	-0,5047	-0,0295	-0,199				
t+3	-0,0288	-0,5335	-0,0592	-0,2581				
t+4	-0,0068	-0,5403	-0,0133	-0,2714				
t+5	-0,0055	-0,5458	-0,0416	-0,3129				

Table X 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 announcement 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.

When no revision takes place, i.e. when the same recommendation is posted from one month to another, investors seem to react more saliently. The stocks which are maintained at a buy level show a positive cumulated return of +0.31% according to the CAPM.

Recommendations maintained at the “hold” level have less impact, albeit abnormal cumulated returns are negative from t+2 to t+5. We observe a weak negative reaction on abnormal volumes.

When recommendations are unchanged at a sell level, cumulated abnormal returns are negative in t+5 at -0.87%.

The table indicates that no impact on returns is recorded for downward revisions.

#### 4.2 Abnormal Volumes and Cumulated Abnormal Volumes

First, concerning the impact of recommendation levels on the volumes, the “buy” level generates abnormal volumes, from 24% to 657%, compared to non-event periods, as indicated in the following table.

Abnormal Volumes and Cumulative Abnormal Volumes Following Analyst Recommendations								
	"Buy" Recommendations				"Hold" Recommendations			
	3 Months		one year		3 Months		one year	
	Abnorm	Cumul.	Abnorm	Cumul.	Abnorm	Cumul.	Abnorm	Cumul.
	Volume	Abnorm	Volume	Abnorm	Volume	Abnorm	Volume	Abnorm
t-5	0,67389 ***	0,67389 ***	0,31112 **	0,31112 **	-7,5067 *	-7,5067 *	-6,6353 ***	-6,6353 ***
t-4	0,1295 *	0,80378 ***	0,04064	0,35221 **	-8,2635 **	-15,773 **	-6,2166 **	-12,852 **
t-3	0,44161 *	1,24636 ***	0,1724	0,52518 ***	-4,2726	-20,047 *	-2,8569	-15,709 *
t-2	0,46284 ***	1,71165 ***	0,3115 ***	0,83719 ***	-5,369	-25,418	-6,9788 **	-22,69 **
t-1	6,80326	8,52876	7,66095	8,50881	-7,4018 **	-32,825 *	-8,3036 ***	-31,001 **
t	0,35869 ***	8,88979	0,20926 **	8,71776	-6,8218 *	-39,665 *	-8,0322 ***	-39,039 **
t+1	0,47636 ***	9,36692	0,27132 ***	8,98854	-7,5569 **	-47,245 *	-8,6606 ***	-47,707 ***
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 *	-5,8577	107,855 ***	-7,5376	106,497
t+4	0,3183 ***	20,4859 **	0,24048 ***	19,0583 *	-0,5808	107,274	-1,4412	105,053
t+5	0,55499 ***	21,038 **	0,33004 ***	19,3876 *	-7,4241 **	99,8418 ***	-8,2758	96,7668
"Sell" Recommendations								
	3 Months		one year		3 Months		one year	
	Abnorm	Cumul.	Abnorm	Cumul.	Abnorm	Cumul.	Abnorm	Cumul.
	Volume	Abnorm	Volume	Abnorm	Volume	Abnorm	Volume	Abnorm
	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume
t-5	-23,767 **	-23,767 **	-34,309 ***	-34,309 ***				
t-4	-25,017 ***	-48,784 **	-35,289 ***	-69,598				
t-3	-19,197 **	-67,981 **	-33,137 ***	-102,73 ***				
t-2	-20,88 **	-88,878 **	-33,779 ***	-136,51 ***				
t-1	335,055	246,456	325,515	189,001				
t	5,74278	252,205	-32,179 ***	156,822				
t+1	-20,747 **	231,441	-33,683 ***	123,139				
t+2	-19,871 **	211,752	-33,402 ***	89,7374				
t+3	-17,692 *	194,046	-32,792 ***	56,9455				
t+4	-19,689 **	174,342	-33,274 ***	23,6711				
t+5	-18,123 **	156,204	-31,475 ***	-7,8038				

Table X 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 announcement day  $t$ . 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.

We confirm negative abnormal volumes and cumulated abnormal volumes around sell recommendation events. Abnormal volumes present a high level during event window.

For Hold recommendation, volumes exhibit either a negative value or no significant abnormal volumes. This is consistent with the nature of a “hold” recommendation.

Second, turning to the impact of recommendation revisions, the following table indicates that upward revisions generate positive abnormal volumes: 68% in t-1 and 100% in t-2.

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	Cumul. Abnorm	Abnorm	Cumul. Abnorm	Abnorm	Cumul. Abnorm	Abnorm	Cumul. Abnorm
	Volume	Volume	Volume	Volume	Volume	Volume	Volume	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 ***	-0,0017	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	Cumul. Abnorm	Abnorm	Cumul. Abnorm	Abnorm	Cumul. Abnorm	Abnorm	Cumul. Abnorm
	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume
t-5	-8,6983 *	-8,6983 *	-7,4233 ***	-7,4233 ***	-26,421 **	-26,421 **	-36,492 ***	-36,492 ***
t-4	-9,0851 *	-17,787 *	-6,8004 **	-14,224 **	-27,593 **	-54,013 **	-37,426 ***	-73,918 ***
t-3	-4,7676	-22,556 *	-3,1601	-17,384 *	-21,195 **	-75,208 **	-35,045 ***	-108,96 ***
t-2	-6,0917	-28,65 *	-7,6877 ***	-25,075 **	-22,976 **	-98,204 **	-35,748 ***	-144,71 ***
t-1	-8,1191 **	-36,775 *	-9,0684 ***	-34,151 **	372,206	274,345	362,549	217,839
t	-7,9004 *	-44,699 *	-9,1016 ***	-43,26 ***	6,55742	280,91	-34,027 ***	183,812
t+1	-8,2739 **	-53,001 *	-9,4573 ***	-52,726 ***	-22,879 **	258,011	-35,698 ***	148,114
t+2	173,935	121,157	175,542	123,044	-22,018 **	236,217	-35,494 ***	112,62
t+3	-7,6525 *	113,495	-8,9511 ***	114,082	-19,639 *	216,562	-34,851 ***	77,7683
t+4	-0,6824	112,812	-1,6091	112,47	-21,694 **	194,849	-35,234 ***	42,5348
t+5	-8,1131 **	104,69	-9,0357 ***	103,422	-20,109 **	174,722	-33,475 ***	9,0595
	Downgrade Recommendations							
	3 Months		one year					
	Abnorm	Cumul. Abnorm	Abnorm	Cumul. Abnorm				
	Volume	Volume	Volume	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	-0,0194	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				

Table X 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 announcement day  $t$ . 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.

A slight reaction is observed for downward revisions : 74% in t+2 for measure based on three months and 105% for annual measure.

Unchanged recommendations have more significant impact than other revisions.

Recommendations maintained at the “buy” level exhibit positive Abnormal volumes during event window.

Recommendations maintained at the “sell” level generate Abnormal volumes are deeply negative and recommendations maintained at the “hold” level present negative reaction on abnormal volumes.

## 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 30<sup>th</sup> of April. The following sent his 47 recommendations on the 4<sup>th</sup> of May. The third one released 50 recommendations the 6<sup>th</sup> of May, and the last one issued 50 recommendations on May the 8<sup>th</sup>. Taking this events as a whole, 46 firms were 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.

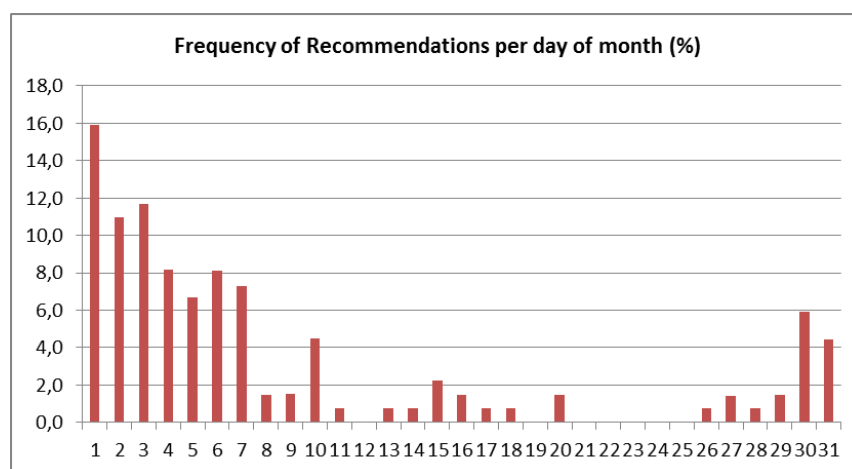


Figure 1 reports the number of recommendations per day of the month. The data consists of 6646 recommendations on stocks listed at the Tunisian Stock Exchange (BVMT) from January 2005 through December 2009

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 no revision leads to 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 postpone their decision when confronted to a negative opinion, waiting for a confirmation on the following month.



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## Appendix : expected correlations

Event		Descriptions	Expected sign				
<b>Monthly disclosure of recommendations</b>	<b>REC</b>	Monthly recommendations by every Broker on each of the 55 stocks, Scale: 1 ="strong sell", 2 ="sell", 3 ="hold", 4 ="buy", 5 ="strong buy"	Sell		Hold		Buy
				1	2	3	4
<b>Market return of the stock</b>							
	$AR_{it}$	Abnormal return of stock i at date t, centered on an 11-day event window		-			+
	$CAR_{iT}$	Cumulated abnormal return of stock i at period T		-			+
<b>Trading volume for the stock</b>							
	$AV_{it}$	Abnormal volume of stock i at date t, centered on an 11-day event window		+/-		-	+
	$CAV_{iT}$	Cumulated abnormal volume of stock i at period T		+/-		-	+
Event		Descriptions	Expected sign				
<b>Monthly disclosure of recommendations</b>	<b>VRECO</b>	Revision of the recommendations release by a broker, 2 = upward revision, 1 = conservation, no change, 0 = downward revision	Downward		Conservation	Upward	
				0	1	2	
<b>Market return for the stock</b>							
	$AR_{it}$	Abnormal return of stock i at date t, centered on an 11-day event window		-		+	
	$CAR_{iT}$	Cumulated abnormal return of stock i at period T		-		+	
<b>Trading volumes for the stock</b>							
	$AV_{it}$	Abnormal volume of stock i at date t, centered on an 11-day event window		+/-		+	
	$CAV_{iT}$	Cumulated abnormal volume of stock i at period T		+/-		+	