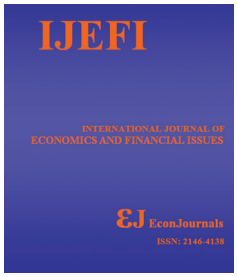

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Trading Volume Levels and Stock Returns: Empirical Behavioral Analysis

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ABSTRACT

The objective of this paper is to provide an empirical behavioral analysis of the relationship between the trading volume and the future evolution of stock returns. This subject has been examined empirically on the European financial market during 2000-2010. Our empiric findings suggest monotonous relationships between the trading volumes and the schemas of price evolution in terms of the continuity/reversal of prices that vary amongst the trading volume levels as well as amongst the winning and losing shares. Excess volume is thus more dependent on "momentum" profits for loser portfolios and on "contrarian" profits for winner portfolios.

Keywords: Trading Volume Levels, Momentum Profits, Contrarian Profits, Behavioral Analysis and Loser/Winner Portfolios
JEL Classifications: G12 G14

1. INTRODUCTION

The behavioral theory has highlighted that certain patterns in the evolution of the price trends directly jeopardize the hypothesis of their unpredictability. De Bondt and Thaler (1985) show that the equities having had the weakest performances (losers) in a past period, get better performances (winners) in subsequent periods and vice versa. Other researchers, principally Jegadeesh and Titman (1993) show an effect of "momentum" relative to equity prices which designate a relative continuity in the profitability of shares corresponding to the tendency of shares having known a good (bad) performance in the past to get a good (bad) performance in the future.

Moreover, several theoretical works have argued that volume is in a complex relationship with stock price; volume interacting with contemporaneous price movements was shown to influence the subsequent stock returns, with this relationship depending additionally on the agents' predominant motive to trade. In addition, trading activity is fundamental to a deeper understanding and to identifying the period in which either allocation or information shocks (Campbell et al. (1993), Lo and Wang (2000), Llorente et al. (2002) and Connolly and Stivers (2003)).

More recently, the interaction between the momentum/contrarian investment strategies and the measures of trading volumes then attracted the attention of certain studies. Chui et al. (2000) and Hameed and Kusnadi (2002) examined the relationship between trading volume of the previous week and the momentum profits during the subsequent week in the Pacific capital markets. As for an intermediate horizon their study found higher "momentum" profits for stocks with a higher turnover ratio in most of the Pacific Basin capital markets. Likewise more recently, Wongchoti et al. (2008) investigated the lead-lag patterns between trading volume and short horizon price in seven Asia-Pacific markets. They found that Lee and Swaminathan (2000) Momentum life cycle theory best explains the trading volume and price patterns. Cao et al. (2009) documents the trading imbalance metric and their associations with future "momentum" or reversals in returns.

In his paper, he suggests that it should be usable for investors in their trading decisions.

The objective of this paper is to analyze the relation between the trading volume and the evolution of stock returns within the framework of behavioral implications, more precisely by investigating the role of trading activity levels in terms of

the information it contains about future price movements for losers and winners. To the authors' knowledge, no study has investigated and compared the relationship between trading volume and stock returns in the European stock market using the behavioral explanations of momentum life cycle theory and those of an information diffusion process. This study does not aim to argue with the studies of Lee and Swaminthan (2000) and those of Hong and Stein (1999) but to examine to what degree their behavioral contributions play a part in apprehending the relationship volume/return and its evolution between the losers and winners. In this present paper, the relationship between the trading volume and the evolution of stock returns in terms of momentum and contrarian profits is explored in the developed European financial market through the stock index Euro-stoxx600. The International European financial market is shown by the number of listed companies, the annual turnover ratio and the ratio of market capitalization.

So, this paper, which examines the intra-region relationship between the market trading volume and market return, is based on the behavioral explanation of momentum life cycle theory and that of an information diffusion process.

The rest of the paper is organized as follows. Section 2 provides a review of the behavioral explanation of an information diffusion process and that of a momentum life cycle theory.

The data, samples and methodology are explained in section 3. Section 4 presents the results, while the last section concludes the paper.

2. LITERATURE REVIEW

Before dealing with the actual trading process, it is important to talk about the implications of the diffusion of information. On one hand, Hong and Stein (1999) stipulate that an implicit behavioral explanation of the relationship between the trading volume and the evolution schemas (momentum/contrarian) of stock prices based on the gradual diffusion of the information process on financial markets. In their model, Hong and Stein (1999) focalize on the heterogeneity of investors who observe private information under different angles at distinct periods. They distinguish two types of investors in terms of their limited rationality, notably "news watchers" and the "momentum traders". The first type of investors is informed and continuously updates their news and their information on equities, but they are prudent (or rather conservative) regarding their share negotiations. Thus, the "news watchers" underact to new information and the price of their assets does not reflect their intrinsic values.

The second type of investor is less well informed and has the characteristic of a follower of the "news watchers". Thus the "momentum" investors follow the initial movements and their exchanges drive in further the "momentum" effect in the short term. However, the "momentum" investors have a tendency to exchange aggressively, to deviate the price beyond their fundamental price and consequently to lead to an over-reaction of market and a reversal of prices in the long term. In this manner the key implication of the Hong and Stein (1999) model is the effect of the speed in broadcasting the information about the markets. More explicitly, from one firm to another, the slow adjustment of information broadcast between investors, entails more pronounced "momentum" and "contrarian" profits respectively in the short and long term. Effectively, according to Hong and Stein (1999), the firms recognize a slow adjustment to recent information. Initially Hong and Stein (1999) examined private information but they also showed that the "momentum" of prices in the short term can be in the hands of public information. In the same way, in the results of their model, they demonstrate that the effect of continuity in profitability in the short term is more evident for the small firms or again for the equities with weak coverage. Hong et al. (2000) confirm these predictions in analyzing the coverage of information by the number of financial analysts following a given equity and the size of the equity as "proxies" of broadcasted information. They suggest that the equities of a low coverage or of a small size have a speed of information incorporation that is more important than that of equities of a high coverage and of a higher size. The study by Chordia and Swaminathan (2000) proves also that the shares of a weak volume have a slow rate of adjustment to public information. In the same framework as that of Hong and Stein (1999) it can be envisaged that in the short term, the "momentum" profit will be higher for the shares characterized by a low amount of transactions and that in the long term, on the contrary the profit will also become higher for shares characterized by low volumes.

At this point, the momentum life cycle theory is raised; Lee and Swaminthan (2000) aims at examining empirically the relationship between the phenomena of "momentum" of stock trading volumes, by taking an interest in the United States market in the period between 1965 and 1995. Lee and Swaminthan (2000) show that the volumes are provided with a predictive power of under-reaction phenomena in the short-term, (momentum), and that of over-reaction in the long term, (correction). Besides that, Lee and Swaminthan (2000) resume the interaction between the "momentum" effect and the trading volumes into a single framework that is called the "momentum" cycle of life theory. According to the "momentum" cycle of life, the shares show periods of favoritism and of negligence by the investors.

A share having momentum positive prices/revenues (winners in the past) would be on the left side of the cycle, whereas the shares having momentum negative prices/revenues (the losers in the past) would be on the right half side of the cycle. The growth shares that indicate positive news move up towards the top of the cycle, but thereafter these shares disappoint the market and are "torpedoed".

The shares, which have been disappointing, begin a tendency to decline and generally finish by a period of negligence. After an important fall in their price, these shares can attract contrarian investors. In this framework the results of Lee and Swaminthan (2000) show that the trading volume can furnish useful information to locate a given share in the "momentum" life cycle.

In general, when a share reveals disfavor, its trading volume diminishes. However, when a share has become "popular", its trading volume increases. Envisaged from this angle, the trading

volume furnishes information on the degree of favoritism or of negligence by an investor for a well-determined share. The "momentum" life cycle identifies the high volume winners and the low volume losers as the shares in the last "momentum" phase. In this sense the "momentum" effect is more likely to be reversed in the near future.

On the other hand, the low volume winners and the high volume losers constitute the first phase of the "momentum" shares. The "momentum" life cycle also implies that the trading volume should be correlated with the characteristics of the so-called "value" and "glamour" shares during the passage of a share towards the top of the cycle, its trading volume increases and becomes more "costly" in terms of value.

In this way Cannolly and Stivers (2003) show that the past trading volume can furnish an important link between the "momentum" and "value" strategies. According to them, the past trading volume can predict the magnitude and persistence of the "momentum" effect. More recently Wongchoti et al. (2008) investigated the lead-lag patterns between trading volume and short horizon price in seven Asia-Pacific markets. They found that Lee and Swaminathan (2000) MLC theory best explains the trading volume and price patterns. Likewise, Zhu (2012) analyzed the role of trading volume in predicting stock return in the China stock market referred to in the MLC theory. The main observation is that the MLC theory can be better supported over the longer horizon as it normally takes time for both the market and investors to assess new information.

3. METHODOLOGY AND DATA

3.1. Methodology

To explore the relationship between the level of trading volume and the evolution of returns under the behavioral approach, we use the weighted relative strength scheme (WRSS) method by Lo and Mackinlay (1990) and the dimson beta regression model proposed by Chordia and Swaminathan (2000). We therefore pursued the following methodology.

As a start we determine the different trading volume levels firstly by classifying them. We use therefore the rate of turnover volume as an indicator for measuring the exchange activity that is equal to the relation of the equities exchanged and the number of shares in circulation. The use of this measurement of exchange volume enables to bring out the size effect of the firm simply incorporated in the exchange volume expressed by the number of equities exchanged (Hameed and Ting 2000, Lee and Swaminathan 2000 and Wongchoti et al., 2008). In order to facilitate the comparison of the price evolution models with the different trading volume levels throughout the different horizons of time, we classify the shares into three groups. To do this, at the beginning of each year *t*, the shares retained in the sample are allocated to three groups according to their previous year's monthly turnover. The first group contains the equities having the highest trading volume (turnover) (35%), the third group gathers the equities having the lowest trading volume (turnover) (35%) and the 30% remaining equities are allocated to the second group, considered to be the shares with a medium size trading volume.

In the next step of this paper, the stock return evolution is indicated by the trading profits on portfolios created using a WRSS suggested by Lo and Mackinlay (1990) as mentioned above.

We purport to clarify to what degree the implications of the "momentum" life cycle theory contribute to explaining the evolution of the relation between the trading volume levels and the evolution of returns in terms of the momentum and contrarian effect between the losers and winners of European shares. Particularly, this method allows us to test the proposal I as below: If losers/winners with high/low trading volume react differently to price momentum/reversals.

We are then going to proceed to make up the portfolios by adopting the method proposed by Lo and Mackinlay (1990) of which the periods involved are 1, 3 and 6 months, and those periods of holding are of 1, 3, 6, 9 and 12 months.

The WRSS method proposed by Lo and Mackinlay (1990) represents the share purchase investment strategy proportionate to their returns during the course of the period of classification. By using this method, the investor takes a long position in the shares having the highest returns and the highest weighting among the well performing shares. In parallel, a short position is taken on shares having the lowest performance and the highest weighting among the shares with negative returns during the same period.

According to the method proposed by Lo and Mackinlay (1990), the weight of equities *i* in the portfolio is expressed by:

$$w_{i,t} = \frac{1}{N}(r_{i,t-1} - r_{m,t-1}) \quad (1)$$

With
N: Number of equities
$r_{m,t-1}$: Thereturn of market index equiponderant in t-l
$r_{i,t-1}$: Thereturn of equity i in t-l

Thus, the winning shares are those, the performance of which, during the period *t* exceed the market performance ($r_{i,t}$-$r_{m,t}$>0) with $r_{i,t}$ is the return of equity *i* during the period *t* and $r_{m,t}$ is the market return during the same period. The losing shares are the shares that "under-perform" the market, the performance of these being inferior to that of the market.

The "momentum" or "contrarian" profits are expressed in this way:

$$\pi_t = \frac{1}{N}\sum_{i=1}^{N} r_{i,t}\left(r_{i,t-1} - r_{m,t-1}\right) \quad (2)$$

According to this equation, a positive (negative) result designates the profit of the "momentum" (contrarian) strategy and then the "momentum" (reversal) price; further on we shall evaluate the performance of the "momentum" strategy for each of the subsequent 12 months. The "momentum" (contrarian) profits during the monthly observations are determined in the following manner:

$$\pi_{j,t}(k) = \sum_{i=1}^{N_j} W_{i,t} r_{i,t+k-1} \quad (3)$$

With j=G, L, and C designate respectively winners' portfolio, losers' portfolio and contrarians' portfolio, $W_{i,t}$ the relative weight of equity i in the portfolio and N is the number of equities of each portfolio during each period of formation, $r_{i,t+k-1}$ average return of firm *i* during the period k. the relative weight of the equity doesn't vary during the holding period.

We then proceed to the third stage of the process that we have undertaken, and in order to study to what degree the implications of the broadcast of information process contribute to explain the relation between the trading volume levels and the share return evolution between emerging and developed countries, we shall test proposition II: If losers/winners with high trading volume adjust to the new faster than losers/winners with low volume. If this proposal is true the price momentum will be more assigned to stocks with low volume.

For doing this we use the Bêta Dimson Regression proposed by Chordia and Swaminathan (2000). We are going to apply a strategy which consists of building a portfolio with zero investment, that is to say buy the equities with high (+ sign) trading volume and sell those with low (− sign) trading volume; the difference constitutes the portfolio return at zero investment.

To measure the speed of price adjustment of different portfolio volume levels, in the model, the speed of price adjustment to information for diverse categories of firms depends at the same time on contemporary and lagged betas.

In using then the portfolio return at zero-investment and the market return we shall estimate Beta Dimson by the following model:

$$r_{O,t} = \alpha_O + \sum_{-K}^{K} \beta_{O,K} r_{M,t-K} + \varepsilon_{O,t} \quad (4)$$

With: $r_{O,t}$, is the portfolio return at zero-investment, $\beta_{O,0}$ is the portfolio contemporary beta O, $\sum_{-K}^{K} \beta_{O,K}$, is the sum of the portfolio lagged betas O, α_O and $\varepsilon_{O,t}$ are respectively the constant and the terms of errors, in order to check thereby if portfolio B (high volume portfolio) adjusts to market returns more quickly than portfolio A (low volume portfolio), we can simply test if $\beta_{O,0}>0$ and $\sum_{K=-1}^{K} \beta_{O,K} < 0$.

As put forward by Chordia and Swaminathan (2000), the speed of adjustment to public information can also be a result of the effect of size. Therefore we also examine if the difference of the speed of adjustment of shares with the different levels of trading volume persists in all the sizes of groups. In this framework, all the shares considered in our sample are classified small and large in size in accordance with their capitalization in the previous year. The shares of a large size refer to those that have a stock capitalization higher than the median capitalization and vice-versa. The categorization of these shares in a double dimension (size/volume) is presented in Table 1.

3.2. Data

Our empirical study is carried out on monthly data of shares constituting each stock in our sample Euro stoxx 600 index. The data relative to trading volumes number of "outstanding" equities, the ratio book-to-market value or accounting value/market value, the stock capitalization, the daily and monthly equity prices are collected from the Datastream International database. Consequently, our sample regroups only the firms regularly negotiated and procuring all the variables mentioned above during the period of the study going from 2000 to 2010. We consider then a total of 200 firms. The returns of shares are calculated by using the following formula:

$$R_{i,t} = \ln\left(\frac{p_{i,t}}{p_{i,t-1}}\right) \quad (5)$$

4. RESULTS

In the same frame of mind as that in the introduction of methodology, we shall take interest in analyzing the results obtained in two paragraphs. A first paragraph analyses the relation between the trading volume levels and the profits from the momentum/contrarian strategy. A second paragraph, introduces empirical evidence of the relation between the levels of volume and the speed of price adjustments.

4.1. Relationship between the Trading Volume Levels and Price Evolution Schemas

Implication of the life cycle momentum: The momentum and contrarian profits are thus determined by the (WRSS) method proposed by Lo and Mackinlay (1990).

Table 2 illustrates the relation between the trading volumes and the profitability of momentum/contrarian strategies separately for the winning and losing shares, based on a setting-up period of 3, 6 and 12 months for the international stock index Euro-stoxx 600. Following this, we can observe that a monotonous relation between the trading volumes and the profitability of momentum/contrarian strategies (Figures 1-3) is established if we consider the winners and losers separately. Each of the winning and losing shares seem to show a specific price model, which implies that there is an asymmetrical reaction to good and bad news.

Table 1: Categorization of these shares in a double dimension (size/volume)

Size of shares	High volume	Medium volume	Low volume
Large size	High/large	Medium/large	Low/large
Small size	High/small	Medium/small	Low/medium

Thus we are going to estimate the beta-dimson regressions for each low volume and high volume portfolio for each country at the same time controlling for each the size effect

The foundations of the life cycle momentum proposed by Lee and Swaminathan (2000) for explaining the relation between the trading volumes and the momentum effect of prices constitute the most crucial behavioral implications tested in our study. In order to analyze the results of our study within the framework of the life cycle momentum, we first of all recall that the life cycle momentum envisages that the winners (losers) at high (low) volumes will know contrarian profits, whereas the losers (winners) at high (low) volumes generate momentum profits.

Table 2 shows the relation between the trading volume and the price evolution movements for European shares; the negative WRSS numbers (losers + winners) represent "contrarian" profits (price reversals). On the other hand, the positive WRSS numbers represent "momentum" profits (momentum prices). The profit figures are calculated as from the portfolios with high (weak) weights attributed during a setting-up period of 1, 3 and 6 months (Figures 1-3). We then calculate the monthly returns of these portfolios of more than the nine following months. The figures shown are average returns (Rmoy 1) on the period of holding for each portfolio.

Based on the Table 2, the high volume winners experience reversals of price for $k = 1$ with a return of −0.0193, −0.0385, −0.0833 respectively for the high, medium and low levels of trading volumes during the period of setting-up $t = 3$ months. During the same period of setting-up, the price reversals are also more attached to low volume losers; the contrarian profits are respectively −0.1152; 0.0027 and 0.00405 for high, medium and low volume losers. This latter result is again experienced during the same setting-up period for $k = 6$, where losers display significant contrarian profits for low volume portfolios (for $k = 1$).

However, we note that the momentum profits are the more eminent for the winners and losers for the rest of the periods of observation. Significant momentum profits are experienced during

Table 2: Portfolio returns based on the Lo and Mackinlay (1990) method for all the trading strategies

Losers/winners portfolios	Rmoy 1	Rmoy 2	Rmoy 3	Rmoy 6	Rmoy 9	Rmoy 12
T=3						
Winners						
High	0.0193**	−0.1337	−0.0522**	−0.2021**	−0.1667**	−0.0999**
Medium	−0.0385	−0.0783	−0.0419**	−0.1017	−0.1114**	0.0632
Weak	−0.0833	0.0709**	0.0515**	0.0722**	−0.0065	0.1312**
Losers						
High	−0.1152	0.2660**	0.1431	0.2455	0.2884	0.1296
Medium	0.0027**	0.1199	0.0502**	0.0063	0.009	0.0378
Weak	0.00405*	−0.0455*		−0.0587	−0.1051	−0.0236
WRSS						
High	−0.0959	0.1323	0.0909	0.0434	0.1217	0.0297
Medium	−0.0358	0.0416	0.0083	−0.0954	−0.1024	0.101
Weak	−0.07925	0.0254	0.0257	0.0135	−0.1116	0.1076
T=6						
Winners						
High	−0.01771**	0.00628**	−0.01417**	−0.05485	−0.04526	0.02712
Medium	0.00073**	−0.02126	−0.01136**	−0.02761**	−0.02761	0.01716
Weak	0.0011	0.01924**	0.01399**	0.01961**	−0.00177	0.03561**
Losers						
High	−0.03237***	0.0722**	0.03885**	0.06664**	0.024	0.03518**
Medium	−0.022**	0.03256**	0.01362	0.00171	0.00244	−0.01026
Weak	−0.01044**	−0.01234	−0.00702**	−0.01594**	−0.02852	−0.00641
WRSS						
High	−0.05008	0.07848	0.02468	0.01179	−0.02126	0.00806
Medium	−0.02187	0.0113	0.00226	−0.0259	−0.02516	0.02742
Weak	−0.00934	0.0069	0.00697	0.00367	−0.03029	0.0292
T=12						
Winners						
High	0.10498**	−0.215028**	−0.083984**	−0.325076	−0.268242	−0.160728**
Medium	0.004344**	−0.125976	−0.067332	−0.163624	−0.163624**	0.101722**
Weak	−0.006516	0.11403**	0.082898**	0.116202**	−0.010498**	0.211046**
Losers						
High	−0.119186	0.427884**	0.230232**	0.394942**	0.292266	0.208512
Medium	−0.13394	0.192946	0.080726	0.010136	0.01448	0.060816**
Weak	−0.091902**	−0.073124	−0.04163	−0.094482**	−0.169054	−0.03801**
WRSS						
High	−0.014206	0.212856	0.146248	0.069866	0.024024	0.047784
Medium	−0.129596	0.06697	0.013394	−0.153488	−0.149144	0.162538
Weak	−0.098418	0.040906	0.041268	0.02172	−0.179552	0.173036

Table 2 shows the relation between the trading volume and the price evolution movements for European shares; the negative WRSS numbers (losers+winners) represent "contrarian" profits (price reversals). On the other hand, the positive WRSS numbers represent "momentum" profits (momentum prices). The profit figures are calculated as from the portfolios with high (weak) weights attributed during a setting-up period of 1, 3 and 6 months [Figures 1-3]. We then calculate the monthly returns of these portfolios of more than the nine following months. The figures shown are average returns (Rmoy 1) on the period of holding for each portfolio.***,**,* respectively denote the significance 1%, 5%, 10%

Figure 1: Momentum/contrarian profits winners and losers and the different volume levels for T=3

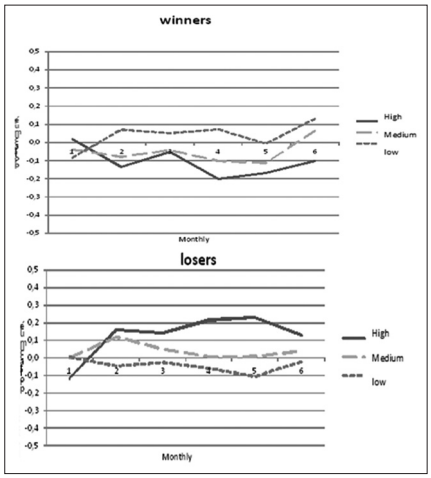


Figure 2: Momentum/contrarian profits winners and losers and the different volume levels for T=6

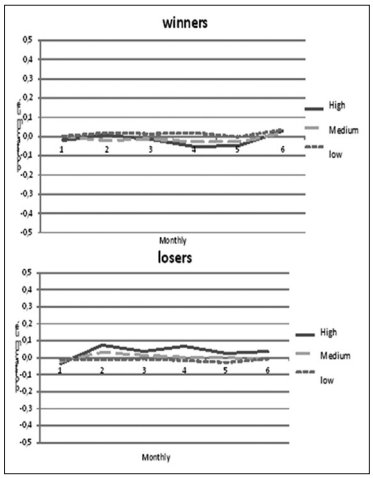
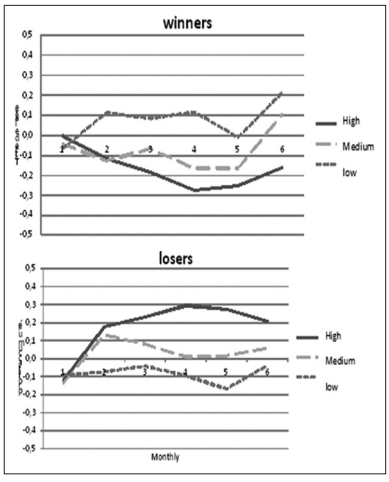


Figure 3: Momentum/contrarian profits winners and losers and the different volume levels for T=12



the setting-up period T=3 for the winners of −0.0522; −0.0419 and of 0.0515 respectively for the high, medium and low volume portfolios $k = 3$. For the losers, the respective momentum profits are of 0.1431; 0.0502 and of −0.0259. These values thus indicate that the momentum profits are more attractive for the high volume losing portfolios and for the low volume winning portfolios. The same tendency continues throughout the greater part of the following observations during the same period of setting-up.

As Table 2 indicates, the winning shares display momentum profits during the sixth observation that are more eminent for the losing high volume portfolio.

Even if the setting-up period is extended to 6 and 12 months, the relation between volume of transactions and the price evolution modes stays the same. In general, the magnitude of the price patterns varies globally towards an increase with the duration of the setting-up period. Moreover, we detect a projection that is compatible with the momentum life cycle where the momentum profits are significant and the highest for the low volume winning portfolios, during the third observation of the setting-up period T=6 and T=12. A similar tendency of the profits takes place by the losing shares where the high volume losing portfolios reveal the highest momentum profits. These results are presented in the (Table 3). The momentum life cycle proposed by Lee and Swaminthan (2000) justifies these price models by thus revealing that the last phase of momentum profits, including the high volume winners and the low volume losers, endures price reversals, which is profitable when using a contrarian strategy, whereas the first momentum phase of the profitability of this strategy, including the low volume winners and the high volume losers, displays a profitable momentum effect in such a strategy.

In general, the empirical evidence of our results indicates in this manner that the contrarian strategy is more pronounced for high volume winners and the low volume losers. Whilst the momentum strategy is more favorable for the low volume winners and the high volume losers, this establishment of fact is thus in conformity with the forecasts of the life cycle momentum and more pronounced in the third observation, and persists nearly through all the subsequent periods of observation (notably for the setting-up periods (T=6 and T=12).

4.2. Concerning the Speed of Adjustment to Public Information, the Results of the Dimson Beta Regressions are Carried Forward to Table 3

We have created the returns of the zero-beta portfolio by subtracting a return from one extreme portfolio to the other. In other words, for a given level of size, we have built the zero-beta portfolio by subtracting the returns of low volume portfolios from the returns of high volume portfolios. Chordia and Swaminthan (2000) shows that if the high volume portfolio is more rapidly adjusted than the low volume portfolio, the contemporary beta should be positive and the sum of the delayed betas should be negative. In Table 3, the $\beta_{O,0}$ and $\sum_{k=-1}^{K} \beta_{O,K}$ represent respectively the contemporary betas and the sum of the delayed betas.

The results of Table 3 reveal in total that the high volume shares are more rapidly adjusted to public information (indicated by the market returns) than the low volume shares. The shares of a small size thus present a contemporary beta (0.165298) significant and positive,

Table 3: Demson beta estimation for firms of different sizes

Portfolios	Beta contemporaneous	Sum of lagged betas
H-L (all)	0.785390*	−0.600191*
Probability	(0.0164)	(0.0602)
H-L (big)	0.723310*	−1.192958
Probability	(0.01590)	(0.0226)
H-L (small)	0.165298**	−0.176124*
Probability	(0.0024)	(0.0567)

This table shows the results of the Dimson beta regressions. To examine the hypothesis that high trading volume stocks adjust to market information (as proxied by market returns) faster than low trading volume stocks. Portfolio O has a long (short) position in high (low) volume stocks. H (L) represents returns on portfolios of high (low) volume stocks. ***,**,* respectively denote the significance 1%, 5%, 10%

and the sum of the delayed betas is equally significant and positive (−0.176124). According to the implicit forecasts of the Hogg and Stein (1999) model, this result suggests higher momentum profits for low volume shares. When based on Table 3), more specifically for the returns of the third observation, the Hong and Stein (1999) explanations are solely valid for the winning shares. In this way, the losers and winners present momentum profits, whereas these are only (0.0515) higher for the winning low volume portfolio group. The implicit behavioral predictions by Hogg and Stein (1999) explain partially the relation existing between the levels of volume of transactions and of the price evolution schemas.

5. CONCLUSION

The existing literature which deals with market anomalies, notably the reversal effects and those of momentum, is principally focalized to analyze the consequences of these latter effects on the cyclical evolution of the prices and to determine the profitability of the strategies from which it is derived. In this paper, we have explored the relation between the trading volumes and the dynamic evolution of the prices in terms of "momentum" and "reversal" effects, by referring notably to certain implicit behavioral previsions of the models by Lee and Swaminthan (2000) and Hong and Stein (1999).

The behavioral theories studied were originally elaborated to explain the "momentum" effect or the continuity of prices in the medium term (from 3 months to 1 year) and the reversal of prices in the long term (from 1 to 3 years up to 5 years).The originality of this study is the empiric study of behavioral previsions, notably the implications of the momentum life cycle theory and the process of broadcasting information to explain the role of trading activity levels in terms of the information it contains about future price movements for losers and winners, and it is not a direct test of these models.

In all, this empiric illustration has shown overall the monotonous relationships between trading volumes and price evolution schemas in terms of continuity/reversal of prices which vary on one hand amongst trading volume levels (high, medium, low), and on the other amongst winning as well as losing shares.

More precisely, we have shown that the last phase of "momentum" profits, including high volume winners and low volume losers, undergo price reversals. These results indicate that the foundations of the "momentum" life cycle proposed, better describe the relation between the levels of trading volume and the price evolution schemas in our sample. However the implicit behavioral predictions of Hong and Stein (1999) are validated for the winning low volume portfolio. The behavioral predictions of Hong and Stein (1999) have contributed to explaining the interaction of the trading volume levels and the "momentum" profits more than for the winning shares. Overall, our results have shown that excess volume is thus more dependent on "momentum" profits for losing portfolios and on "contrarian" profits for losing portfolios. To take into consideration other variables simultaneously to explain the levels of volume and momentum/contrarian profits, such as the informational content of the volume and other macroeconomic variables of the markets, this can be the subject of future research for this center of interest.

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