

Contrarian and Momentum Profits during Periods of High Trading Volume preceded by Stock Prices Shocks

Razvan Stefanescu

rstefanescu@ugal.ro

Ramona Dumitriu

rdumitriu@ugal.ro

Dunarea de Jos University of Galati, Romania

This paper approaches the opportunities for contrarian and momentum profits during the periods of high trading volume preceded by stock prices shocks. We investigate these aspects for ten stocks from New York Stock Exchange. We found that more than three quarters of the periods of high trading volume were preceded by shocks which occurred less than six working days before. The values of the average excess returns for these periods suggest that opportunities for momentum profits prevailed over those for contrarian profits.

Keywords: Contrarian Strategy, Momentum Strategy, High Trading Volume, Shocks

JEL Code: G11, G12, G14

1. Introduction

The evolution of capital markets after major price increases (positive shocks) and declines (negative shocks) is largely approached in the financial literature. In the Behavioral Finance Theory framework there were revealed two main types of reaction to shocks that could be exploited in successful trading rules: overreaction and underreaction.

Overreaction Hypothesis (OH) developed by De Bondt and Thaler (1985) presumes that traders exaggerate the importance of the recent information, displaying too much optimism in the case of good news and too much pessimism in the case of bad news. The shocks caused by the arrival of such news could temporary move the stock prices far from their intrinsic values. However, after the shocks, the equilibrium tends to be reestablished and the positive shocks are followed by price declines and the negative shocks are followed by price increases (Shefrin & Statman, 1985; Lo & MacKinlay, 1990; Jegadeesh & Titman, 1995). The overreaction phenomenon could be exploited by the contrarian strategies described by two trading rules: the selling after positive shocks and buying after negative shocks (De Bondt & Thaler, 1985; Chan, 1988; Lakonishok et al., 1994; Antoniou et al., 2005). Underreaction Hypothesis (UH) proposed by Jegadeesh and Titman (1993) presumes that investors react slowly to recent information which is incorporated gradually in the stock prices. In that case the positive shocks are followed by price increases and the negative shocks are followed by price declines. Such reactions to shocks could be exploited by momentum strategies which apply two trading rules: the buying after positive shocks and selling after negative shocks (Chan et al., 1996; Daniel et al., 1998; Hong & Stein, 1999; Jegadeesh & Titman, 2001; Lesmond et al., 2004).

OH and UH contradict Efficient Market Hypothesis (EMH) proposed by Fama (1970) which denies the possibility to predict future evolutions of stock prices based on their past values. The empirical researches on the capital markets reactions to shocks led to results that favored OH and UH but also EMH. They also found that some particularities of stocks could significantly influence the reactions to shocks (Zarowin, 1989; Abarbanell & Bernard, 1992; La Porta et al., 1997; Abarbanell & Bushee, 1998; Rouwenhorst, 1998; Hong et al., 2000; Grinblatt & Han, 2002; Chan, 2003; Lasfer et al., 2003; Zawadowski et al., 2006; Agyei-Ampomah, 2007; Galariotis et al., 2007; Spyrou et al., 2007; Chui et al., 2010; Novy-Marx, 2012; Savor, 2012; Caporale et al., 2014; Frisch et al., 2014; Govindaraj et al., 2014; Chaudhury & Piccoli, 2015; He & Li, 2015).

Sometimes, reactions to shocks are accompanied by substantial increase of the trading volume. Several studies found positive correlations between absolute values of returns and the volume

of transactions (Crouch, 1970; Tauchen & Pitts, 1983; Karpoff, 1986; Lakonishok & Smidt, 1986; Karpoff, 1987; Campbell et al., 1992; Gallant et al., 1992; Chordia et al., 2001; Marsh & Wagner, 2004). The trading volume was revealed as an important aspect of the reactions to shocks (Lee & Swaminathan, 2000; Weber & Rosenow, 2006).

The complexity of the reaction to shocks could be associated to the heterogeneous beliefs in financial markets (Zeeman, 1974; Beja & Goldman, 1980; Haltiwanger & Waldman, 1985; Brock & Hommes, 1997; Brock & Hommes, 1998). The Heterogeneous Agents Models (HAM) revealed the different behaviors of different categories of traders: fundamentalists, chartists, noise traders, contrarian investors, momentum investors etc. (DeLong et al., 1987; Schulmeister & Goldberg, 1989; Shleifer & Summers, 1990; Hommes, 2006; Bloomfield et al., 2009; He et al., 2009; Chiarella et al., 2011; Fischer, 2011; He & Li, 2015).

In this paper we investigate the capital markets behaviors during periods of high trading volume preceded by stock prices shocks. We presume that, in such situations, the trading volume increase is caused by the traders who regard the stock prices shocks as opportunities for contrarian or momentum investment. We identify the shocks taking into consideration the opportunist traders perceptions on the stocks evolutions. We presume that these perceptions are made based on the differences between the stock returns and the return of an index which reflect the general evolution of the market (a kind of excess return) for a specific period of time, named the remembering period. However, as time goes, the impact of these excess returns is dissipating so we adjust their values to reflect the distance from the day that follows the remembering period.

We consider that a positive shock occurs when the excess return is significant larger than the maximum of the remembering period, while a negative shock occurs when the excess return is significant smaller than the minimum of the remembering period. We identify a day of high trading volume (DHTV) by comparing with the average of a past period. In a period of high trading volume (PHTD) we include such days but also days with low trading volume under condition that they are framed, at few days, between DHTVs. We associated shocks to a PHTD if they occur during them or precede it by few days.

We study the behavior of share prices for ten companies listed on New York Stock Exchange (NYSE). We investigate the returns from the PHTDs in order to reveal the opportunities of the contrarian and momentum profits.

The remainder of this paper is organized as follows: the second part describes the data and methodology employed to investigate the contrarian and momentum profits during the PHTDs preceded by shocks, the third part presents the empirical results and the fourth part concludes.

2. Data and Methodology

2.1. Data

In this investigation about the contrarian and momentum profits during periods of high trading volume we employ daily closing values and trading volume of ten stocks from NYSE: Alcoa Inc. (AAA), Bank of America Corporation (BAC), The Walt Disney Company (DIS), EMC Corporation (EMC), Freeport-McMoRan Inc. (FCX), The Gap, Inc. (GPS), Pfizer Inc. (PFE), United Health Group Incorporated (UNH), Wells Fargo & Company (WFC) and Williams Companies, Inc. (WMB). We also use the daily closing values of a representative index of NYSE: the well known Standard & Poor's 500 (S&P 500). For all eleven items the data is provided by Yahoo! Finance. The sample of data covers the period January 2012 - March 2016.

2.2. Computing the excess returns

We start by calculating, for each item (the ten stocks and the S&P 500 index), the simple return ($R_{i,t}$) as:

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \times 100 \quad (1)$$

where P_t and P_{t-1} are the closing values of the item i on the days t and $t-1$, respectively.

We also determine, for all ten stocks, the excess return ($Z_{i,t}$) using the Standard & Poor's 500 index as a value of a reference asset:

$$Z_{i,t} = R_{i,t} - R_{S\&P,t} \quad (2)$$

2.3. Identifying the shocks

For the shocks identification we take into consideration a 30 days period of remembering that precedes a day t :

$$REM = [t - 1; t - 30] \quad (3)$$

For all the days of a remembering period we adjust the excess returns to reflect their dissipating impact as time goes. We use the formula of a geometric progression with a less than one common ratio (ρ):

$$adj_t^k(Z_{i,t-k}) = Z_{t-k} \times \rho^k, k = 1 \dots 30 \quad (4)$$

where $adj_t^k(Z_{i,t-k})$ is the adjusted excess return for a day from remembering period that precedes with k days the day t . In this paper we use a common ratio $\rho = 0.9$.

For each period of remembering we calculate three values:

- the minimum value of the adjusted excess returns:

$$m_{i,t}^{REM} = \min(adj_t^k(Z_{i,t-k})), k = 1 \dots 30 \quad (5)$$

- the maximum value of the adjusted excess returns:

$$M_{i,t}^{REM} = \max(adj_t^k(Z_{i,t-k})), k = 1 \dots 30 \quad (6)$$

- the amplitude of the remembering period:

$$A_{i,t}^{REM} = M_{i,t}^{REM} - m_{i,t}^{REM} \quad (7)$$

We identify the shocks by imposing the conditions:

$$\text{- for positive shocks: } Z_{i,t} > M_{i,t}^{REM} + 0.2 \times A_{i,t}^{REM} \quad (8)$$

$$\text{- for negative shocks: } Z_{i,t} < m_{i,t}^{REM} - 0.2 \times A_{i,t}^{REM} \quad (9)$$

2.4. Characterizing the periods of high trading volume

In this investigation we reveal some characteristics of PHTDs:

- number and length (in days) of PHTDs;
- the PHTDs preceded by positive or negative shocks;
- excess return for the first days of a PHTD;
- excess return for the whole PHTD.

We consider that a DHTV occurs when the trading volume (VT) exceeds, by 25 percents, the average of the precedent 30 days:

$$- VT_{i,t}^{DHTV} > 1.25 \times AVERAGE(VT_{i,t-30} \dots VT_{i,t-1}) \quad (10)$$

A PHTD includes DHTVs identified but also some days with low trading volume, under the condition that low trading volume couldn't last more than five consecutive days.

We associate a shock to a PHTD only if it occurs during that period or precedes it by less than six working days. In case of multiple shocks that precede a PHTD we chose, for assigning to the positive or negative ones, the earliest shock.

The excess return for the first days of a PHTD could be calculated using the formula (2). For the whole period we compute the excess return (Z_i^{PHTD}) as:

$$Z_i^{PHTD} = \frac{P_{i,f}^{PHTD} - P_{i,-1}^{PHTD}}{P_{i,-1}^{PHTD}} \times 100 - \frac{P_{S\&P,f}^{PHTD} - P_{S\&P,-1}^{PHTD}}{P_{S\&P,-1}^{PHTD}} \times 100 \quad (11)$$

where:

- $P_{i,f}^{PHTD}$ is the closing value of the stock i at the end of PHTD;
- $P_{i,-1}^{PHTD}$ is the closing value of the stock i for the day that precedes the PHTD;

- $P_{S\&P,f}^{PHTD}$ is the closing value of the S&P 500 at the end of PHTD;
- $P_{S\&P,-1}^{PHTD}$ is the closing value of the S&P 500 for the day that precedes the PHTD.

For these excess returns we calculate the averages and we test their significance by employing the t test.

3. Empirical Results

The Table 1 presents the shocks and the high trading volume periods identified for the ten stocks. In general, the number of negative shocks was larger than the number of positive shocks. The results indicate that, for each stock, more than a half of shocks, positive or negative, were associated to PHTD.

Table 1. Shocks of stock prices and high trading volume periods

Stock	Positive shocks of stock prices	Positive shocks associated to high trading volume periods	Negative shocks of stock prices	Negative shocks associated to high trading volume periods
AAA	130	88	173	117
BAC	112	73	187	96
DIS	167	87	173	76
EMC	153	91	142	90
FCX	139	98	171	113
GPS	149	100	161	118
PFE	134	71	162	96
UNH	137	81	153	93
WFC	137	70	170	91
WMB	125	76	197	118

The Table 2 reports some characteristics of PHTDs. For each stock, more than three quarters of PHTDs were preceded by shocks. Excepting one stock, the number of PHTDs preceded by negative shocks and the days included in these periods is larger than in the case of PHTDs preceded by positive shocks.

Table 2. Characteristics of the high trading volume periods preceded by shocks

Stock	High trading volume periods	High trading volume periods preceded by shocks	High trading volume periods preceded by positive shocks		High trading volume periods preceded by negative shocks	
			Number of periods	Number of days	Number of periods	Number of days
AAA	49	44	20	187	24	120
BAC	57	53	22	78	31	131
DIS	57	49	22	76	27	104
EMC	59	52	28	109	24	137
FCX	64	54	24	111	30	121
GPS	59	51	23	115	28	148
PFE	56	47	19	99	28	106
UNH	48	43	14	98	29	125
WFC	48	44	22	108	22	75
WMB	50	48	18	85	30	200

The average values of the excess returns for the PHTDs preceded by positive or negative shocks are presented in the Table 3. For the first day of PHTDs we found, in general, significant positive averages for the periods preceded by positive shocks and significant averages for those preceded by negative shocks. In the case of whole periods the results are mixed. For the PHTDs preceded by positive shocks we found significant positive averages for seven stocks and significant negative averages for three stocks. For the PHTDs preceded by negative shocks we found significant positive

averages for one stock and significant negative averages for eight stocks. These results suggest that, for both positive and negative shocks, the opportunities for momentum profits dominate those for contrarian profits.

Table 3. Average excess returns for the high trading volume periods preceded by shocks

Stock	Average excess return for the first day of the period		Average excess return for the whole period	
	High trading volume periods preceded by positive shocks	High trading volume periods preceded by negative shocks	High trading volume periods preceded by positive shocks	High trading volume periods preceded by negative shocks
AAA	2.1312***	-0.6492*	-1.2514***	-0.1703*
BAC	2.1323***	-0.3722*	2.9010***	-0.4065**
DIS	0.2234*	0.0183	0.2864*	0.4325**
EMC	-0.0506	-0.7194**	-0.2797*	-0.3772*
FCX	2.0080***	-1.9106***	2.3510***	-3.2372***
GPS	1.6446**	-0.8032**	1.1064**	-0.9757**
PFE	0.7839*	-0.5579*	1.3185**	-0.5132**
UNH	0.8118*	-0.6309*	1.7292**	-0.6942**
WFC	0.2031*	-0.2196*	-0.3752*	-0.0796
WMB	1.5182**	-1.8848***	1.8851**	-2.5239***

Note: ***, **, *, mean significant at 0.01, 0.05, and 0.1 levels, respectively.

4. Conclusions

The relation between the shocks and PHTDs is characterized by complexity. In this investigation we found that more than a half of shocks were associated to PHTDs, while more than three quarters of the PHTDs were preceded by shocks. These aspects could be related to the opportunist traders' behaviors which are attracted by shocks. Perhaps most of them could be considered as chartists but, in some circumstances, fundamentalist traders who perceived the stock prices as too under or overvalued could also react to the shocks.

The averages of excess returns indicate that, for most of the stocks, the opportunities for momentum strategies prevail over those for contrarian strategies. However, in the case of long PHTDs (some of them could last for 4-5 weeks) an opportunist trader could pass from momentum to contrarian strategies and vice versa.

This investigation could be extended to other developed or emerging capital markets. It could also approach some aspect of the long PHTDs.

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