

## A COMPARITIVE STUDY OF DAY OF THE WEEK ANAMOLY IN ASIAN PAINTS LTD., AND AXIS BANK LTD.

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### ABSTRACT :

Identification of a particular stock for investing is a major challenge which many investor faces while trading in the stock market. Investing allows investor to fallow certain myths regarding the day of investment and the day to sell the stocks. The present paper examines whether such day of week effect exist in Indian Stock Market or not. To analyses whether anomalies exist in India the data has been collected for the period from January 2008 to December 2017 for two highly traded stocks. The results of this study show that the day of the week effect do exist in the Indian Stock Market and this market cannot be considered as informationally efficient. The study suggests to investors that the existence of anomalies may provide opportunities to formulate profitable trading strategies so as to earn the abnormal return and can adopt a fair return for risk strategy.

**KEYWORDS :** Day of Week effects, Stock Market efficiency, Friday Effect, Efficient Market Hypothesis.

### INTRODUCTION

In an era of scarcity of capital, the stock markets are vital economic institutions in developing countries. since Stock markets facilitate the transfer of private savings in to business investment efficiency plays a very important role. Market efficiency implies that stock prices reflect all available information so that prices are near their intrinsic value.

In an efficient market the stock prices must be independent of the day, week, month and other calendar dummies. When a market suffers from day of week effect anomaly, then the returns in that market follow a pattern and these returns are not independent of the day of week. Further, day of week effect shows evidence against random walk theory. The paper is designed as follows Section II reviews the literature and in section III The data base and the research methodology employed is presented. Section IV a report of the key results from the empirical investigation are presented, and in section V conclusions are drawn.

### LITERATURE REVIEW

Empirical studies of the US stock market such as French (1980) and Gibbon and Hess (1981), found that the mean return is significantly negative on Monday, but it is significantly positive on Friday.

Wong et al. (1992) examined the days-of-the-week in the stock market returns of five Asian countries for the period 1975–1988. They found a significantly negative Monday effect in Singapore, Malaysia and Hong Kong. Further, they reported a negative Tuesday effect in Thailand, and a positive Friday effect in the four markets.



Balaban (1995) investigated the day-of-the-week effects on the stock market returns of Istanbul Securities Exchange and found a significant positive Wednesday and Friday effect, and that Monday was the most volatile day for stock returns.

Wong and Yuanto (1999) found a significant negative effect on Tuesdays and a positive effect on Fridays in the daily stock market returns of Indonesia.

Mookerjee and Yu (1999) observed significant positive Thursday and Friday effects in the Shanghai securities exchange, but no day-of-the-week effect was found in the Shenzen securities exchange. Choudhry (2000) studied for seven emerging Asian stock markets that include India, Indonesia, Malaysia, Philippine, South Korea, Taiwan, and Thailand. The empirical findings proved a presence of the day-of-the-week effect on 5 seasonal pattern in return volatility.

Gregoriou et al. (2004) examined the stock returns of the UK stock market utilizing the FTSE 100 index. The empirical results provide evidence of the no day-of-the-week effect, suggesting that the UK stock market appears to be weak-form efficient.

Dicle and Hassan (2007) showed that returns on Mondays were negative and significant while returns on Thursdays and Fridays were significantly positive. Similar results were obtained by Chukwuogor-Ndu (2007) who tested the East Asian financial markets. Besides, they found insignificant daily returns and volatility in most of these markets.

For the Canadian stock market, Baker et al. (2008) found that the day-of-the-week effect is sensitive in both the mean and the conditional volatility. Similarly, for the Russian stock market, McGowan and Ibrihim (2009) found significant day-of-the-week effects.

Al-Mutairi (2010) found evidence of presence of the day-of-the-week effect in Kuwait stock exchange. The empirical findings showed that Saturday returns were positive and higher than other days of the week except for Wednesday, suggesting that Kuwait stock market is inefficient.

Hussain et al. (2011) analyzed the day-of-the-week effect on the Karachi stock exchange and revealed significant Tuesday effects.

One such study which investigates the day of the week effect at individual stocks level is Dicle and Levendis (2014). Dicle and Levendis (2014) document the evidence for the day of the week effect, in a unified study of 51 markets, both at the market and individual stock level.

### III DATA BASE AND METHODOLOGY

#### 3.1. OBJECTIVES OF THE STUDY

1. To analyze the day of the week effect in returns of Asian Paints Ltd
2. To analyze the day of the week effect in returns of Axis Bank Ltd
3. To compare the risk and return for investment purpose

#### 3.2. HYPOTHESES FOR THE STUDY

1. Returns are same for all days of the week in Asian Paints Ltd.,
2. Returns are same for all days of the week in Axis Bank Ltd.,
3. Risk remains the same among all days of the week in Asian Paints Ltd
4. Risk remains the same among all days of the Week in Axis bank Ltd.

#### 3.3. METHODOLOGY

The daily stock price data has been taken for the study period from January 1, 2008 upto December, 31 2017. Daily closing share prices have been taken from PROWESS (the online database maintained by the Center for Monitoring of Indian Economy (CMIE)), which contains the information of all the actively traded stock at any given time on both BSE as well as NSE. In addition to the PROWESS, web resources such as [www.bseindia.com](http://www.bseindia.com) have been used.

Daily stock prices have been converted to daily returns. The present study employs the logarithmic difference for the first order as the logarithmic difference is symmetric between up and down Movements

and is expressed in percentage terms for ease of comparability with the idea of percentage change. While computing daily returns, multi-period returns have been excluded to avoid any bias on account of holiday effect. For instance, as Saturday and Sunday are non-trading days, the returns on Monday have been excluded. In the same way, if any other trading day is holiday, the returns on next day to that holiday have been excluded. If  $P_t$  is the closing price on date  $t$  and  $P_{t-1}$  be the same for the previous business day, then the one day return on the market portfolio is calculated as:  $R_t = \log (P_t / P_{t-1})$

Time series data often encounters with nonstationary series. If any regression analysis is performed on a non-stationary series, it results in spurious or nonsense regression hence **unit root test** is conducted to detect whether both the returns are nonstationary and then converted to stationary series.

#### **Dummy Variable Regression Model:**

It enables to test the significant difference between mean values of different categories. A constant term may also be included in the regression equation but in that case one has to eliminate any one of the dummy variables from the equation

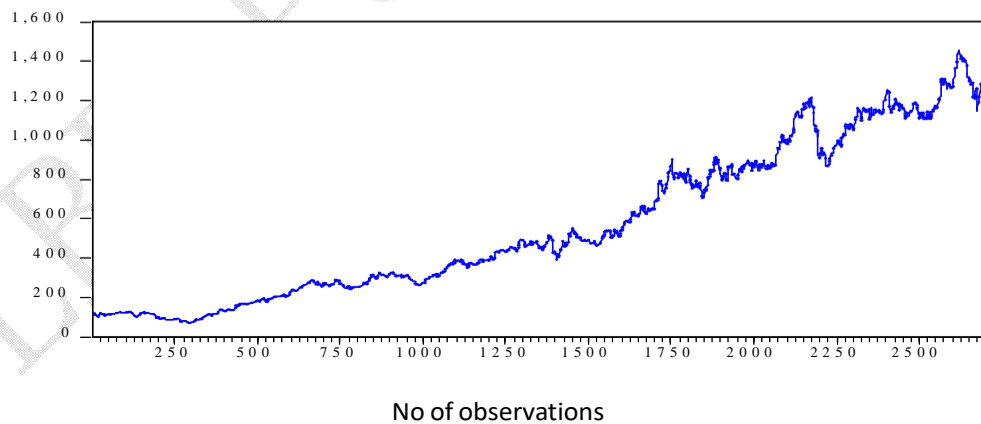
$$Y_t = \alpha_1 + \alpha_2 D_{Tue} + \alpha_3 D_{Wed} + \alpha_4 D_{Thu} + \alpha_5 D_{Fri} + e_1$$

After running the equation, the specified model is checked for any systematic process for the disturbance term or residual term. Therefore, residual autocorrelation and/or heteroskedasticity are primarily considered as an indication of specification errors in the systematic part of the model. Normality check is also necessary which is taken care of by Jarque-Berra (JB) statistic. The null hypothesis of normal distribution is rejected at 5% level of significance if  $JB > 5.99$ .

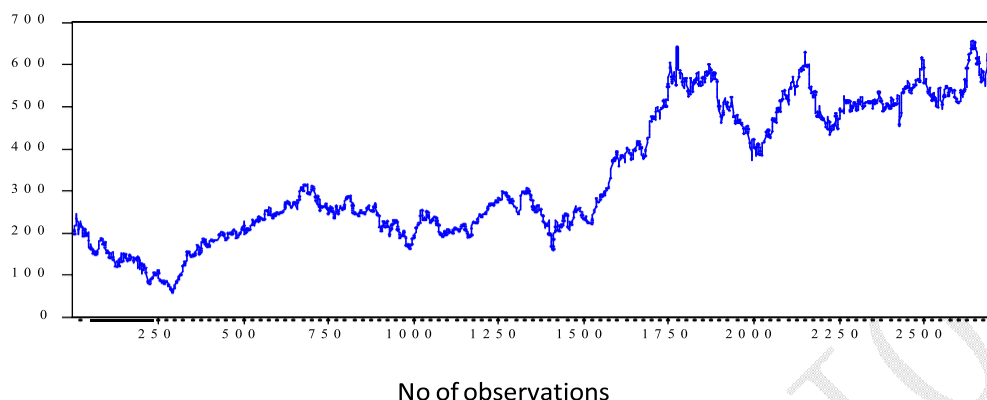
#### **IV SECTION: DATA ANALYSIS AND INTERPRETATION**

Time series data are often non stationary. These series follow a random Walk and if any regression analysis is performed on a non-stationary series, it results in spurious or nonsense regression. Therefore, to avoid such a situation, it is necessary to know, first whether the series is stationary or not. Graphical method is used to test for stationary.

**Graph 4.1: AVERAGE RETURNS OF ASIAN PAINTS LTD FOR 2008-2017**



**Graph 4.2: AVERAGE RETURNS OF AXIS BANK LTD FOR 2008-2017**



In both the graph above, the time series data, gives an initial indication about the non-stationary nature of the series. If the series shows some upward or downward trend, it suggests, that the mean of the series is changing. but it is reverting back to its mean. i.e. it is showing mean reversion.

**ADF Unit root test for stationary**

After conducting analysis based on the above mentioned methods i.e. Graphical method, if we found the series nonstationary, we can make the stationary through integration. One can take first differences of the series to make it stationary. Some of the series are required to be differenced twice to make them stationary, which means they are integrated of order 2 i.e.  $I(2)$ .

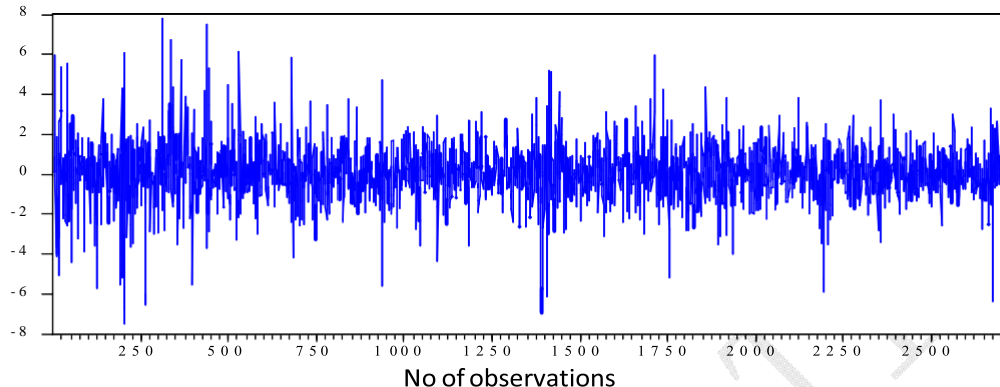
<b>ASIAN PAINTS Ltd</b>					
	Type	t-value	Critical values		
			1%	5%	10%
Level	With Intercept	0.5775	-3.4327	-2.8625	-2.5673
	With trend & Intercept	-2.7936	-3.9617	-3.4116	-3.1276
	None	2.4516	-2.5658	-1.9409	-1.6166
First difference	With Intercept	-35.057	-3.4328	-2.8625	-2.5673
	With trend & Intercept	-35.084	-3.9617	-3.4116	-3.1276
	None	-34.926	-2.5658	-1.9409	-1.6166
<b>Axis bank Ltd</b>					
	Type	t-value	Critical values		
			1%	5%	10%
Level	With Intercept	-0.6819	-3.4327	-2.8625	-2.5673
	With trend & Intercept	-3.065	-3.9617	-3.4116	-3.1276
	None	0.6969	-2.5658	-1.9409	-1.6166
First difference	With Intercept	-35.28	-3.4328	-2.8625	-2.5673
	With trend & Intercept	-35.28	-3.9617	-3.4116	-3.1276
	None	-35.28	-2.5658	-1.9409	-1.6166

From the above table, it can be understood that ADF test which was conducted for both the companies separately to test for stationarity shows that the returns were notstationary in level series and the t-value was rejected at 1% , 5% and 10%. ( $H_0$  : assumed returns are stationary). By differentiation of

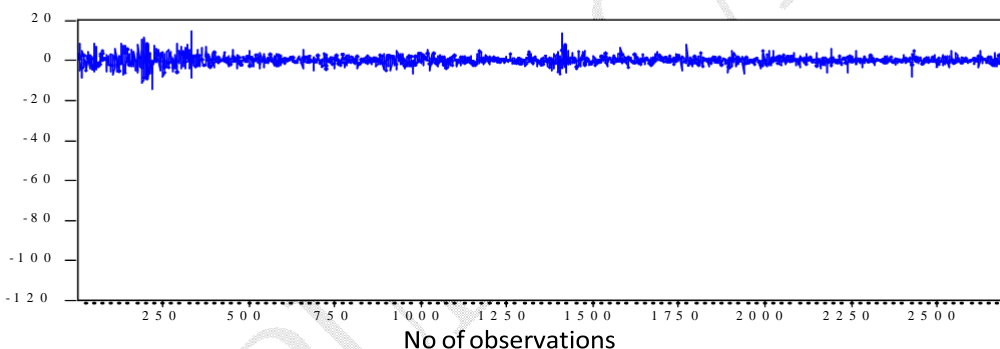
order I non stationary data was converted into stationary data and it is accepted at 1%, 5% and 10%. Level of significance.

**Graph 4.3: AVERAGE RETURNS OF ASIAN PAINTS LTD FOR 2008-2017**

The graph below shows how stationary data looks for both the companies,



**Graph 4.4: AVERAGE RETURNS OF AXIS BANK LTD FOR 2008-2017**



**Descriptive statistics**

<b>Table 1:ASIAN PAINTS Ltd.,</b>						
	Monday	Tuesday	Wednesday	Thursday	Friday	All days
Mean	0.0423	0.0611	0.1229	0.094	0.1428	0.1027
Maximum	6.1765	6.1715	7.8190	8.147	5.554	8.147
Minimum	-6.56	-6.64	-5.95	-7.2024	-5.406	-7.202
Std. Deviation	1.4210	1.4425	1.45	1.3897	1.2676	1.3939
Skewness	-0.024	-0.27	0.250	0.204	-0.186	0.001
Kurtosis	6.005	6.513	7.519	9.0123	4.905	6.983
No of observations	542	547	547	535	533	2717
<b>Table 2: Axis Bank Ltd.,</b>						
	Monday	Tuesday	Wednesday	Thursday	Friday	All days
Mean	0.0132	0.118	0.1947	0.102	0.158	0.0292
Maximum	14.55	10.61	10.30	13.683	11.329	14.55
Minimum	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Std. Deviation	4.97	4.753	4.789	4.688	4.750	2.87

Skewness	-15.57	-16.95	-16.51	-17.60	-16.93	-15.40
Kurtosis	5.828	6.58	4.08	7.93	5.96	50.38
No of observations	549	549	549	549	549	2717

In the data in table 1 we can identify the following features

1. The average return was maximum on Friday and least on Monday.
2. The range between maximum and minimum is maximum on Thursday,
3. The risk level is least on Fridays.
4. All the stocks show a leptokurtic distribution means that the investor will experience occasional large fluctuations more often than predicted by the normal distribution.
5. Negative skewness represents meaning frequent small gains and a few extreme losses and positive skewness represents frequent small losses and a few extreme gains

In the data in table 2 we can identify the following features

1. The average return was maximum on Wednesday and least on Monday.
2. The range between maximum and minimum is maximum on Monday,
3. The risk level is least on Monday.
4. all the stocks show a leptokurtic distribution means that the investor will experience occasional large fluctuations more often than predicted by the normal distribution.
5. Negative skewness represents meaning frequent small gains and a few extreme losses and positive skewness represents frequent small losses and a few extreme gains

### Estimation Results of Dummy variables for Asian Paints Return Series

Dependent Variable: RETURN

Method: Least Squares

Date: 12/26/18 Time: 18:53 Sample

(adjusted): 2 2717

Included observations: 2716 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MONDAY(C)	0.139948	0.059289	2.360454	0.0183
FRIDAY	-0.065068	0.084630	-0.768857	0.4420
THURSDAY	-0.055513	0.084549	-0.656573	0.5115
TUESDAY	-0.089185	0.084076	-1.060768	0.2889
WEDNESDAY	-0.026188	0.084038	-0.311623	0.7554
R-squared	0.000502	Mean dependent var		0.092998
Adjusted R-squared	-0.000973	S.D. dependent var		1.393550
S.E. of regression	1.394227	Akaike info criterion		3.504397
Sum squared resid	5269.831	Schwarz criterion		3.515271
Log likelihood	-4753.971	Hannan-Quinn criter.		3.508328
F-statistic	0.340191	Durbin-Watson stat		1.501925
Prob(F-statistic)	0.850957			

**Estimation Results of dummy variables for Axis Bank Return Series**

Dependent Variable: RETURN  
 Method: Least Squares  
 Date: 12/26/18 Time: 20:11  
 Sample (adjusted): 2 2717  
 Included observations: 2716 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MONDAY(C)	0.143084	0.091156	1.569659	0.1166
FRIDAY	-0.140676	0.130118	-1.081140	0.2797
THURSDAY	-0.079984	0.129994	-0.615288	0.5384
TUESDAY	-0.101484	0.129268	-0.785068	0.4325
WEDNESDAY	-0.179413	0.129208	-1.388555	0.1651
R-squared	0.000809	Mean dependent var		0.043084
Adjusted R-squared	-0.000666	S.D. dependent var		2.142916
S.E. of regression	2.143629	Akaike info criterion		4.364717
Sum squared resid	12457.44	Schwarz criterion		4.375591
Log likelihood	-5922.285	Hannan-Quinn criter.		4.368648
F-statistic	0.548586	Durbin-Watson stat		1.469023
Prob(F-statistic)	0.700079			

Table shows the results of dummy variables estimated for both the stocks. Results indicate a clear Monday and Tuesday relationship as coefficients for these two days are positive and negative respectively. But other statistics are not that much statistically significant. Adjusted R2 is very low. The F-Statistic with a low p-value is also indicating poor fit of the model. The D-W statistics is indicating existence of positive autocorrelation as it is less than 2. Positive autocorrelation means that residuals of current periods are positively correlated with residuals of prior periods.

**CONCLUSION**

Thus investments in stocks requires careful analysis. Although theoretically Friday has more return and Monday has less return it may vary for different stocks and over different span of time. Stock market anomalies do present in Indian capital market. One golden strategy cannot be applied for all stocks. Asian paints when compared with Axis bank has more return. Hence it is advisable for investor to analyze properly before investing.

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