MONTHLY CURRENT ANOMALIES IN INDIAN AND US STOCK MARKETS

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Abstract

For decades the researchers believed that the markets are fully efficient, but after the prominent studies in the field of behavioral finance, the efficient market hypothesis was criticized and rejected by several studies. The calendar anomalies were one of the major tools of behaviouralists who rejected the efficient market hypotheses and the rationality of the investors. Later on, some scholars began to argue that the calendar anomalies have been disappeared from the stock markets now the markets are fully efficient. The current study analyses the presence of calendar anomalies in US and Indian stock markets especially monthly calendar anomalies. Using the index returns of the S&P 500 and Nifty 500. The tests like T-test and ANOVA have been used for analysis. The study couldn't identify any kind of calendar anomalies in Indian and US stock markets during the study period.

Keywords: stock market, calendar anomalies, behavioral finance

Introduction

The calendar anomalies are not new to the field of finance even before the emergence of behavioral finance as a complete branch of study the calendar anomalies were revolving with researchers but, when behavioral finance started to dominate the field of research in finance and the very existence of the efficient market hypothesis got questioned, the calendar anomaly came to the forefront of the academic community. Fama, (1970) came with the idea of three types of capital markets in the light of efficiency. In his thesis, he argued that the strong form of efficient markets absorbs all information so the investor cannot beat the market at any cost but the semi-strong form of the market does not absorb the insider information but all public information and past data, and the weak form of the market does not absorb the public information but the past data so the past data cannot be sued to beat the market. So all over the efficient market hypothesis says that it is almost impossible to earn a return than the market return inconsistent manner.

Calendar anomalies questioned the efficiency of the efficient market hypothesis. As there are several discrepancies in the market which are against the very basic idea of efficient market hypotheses like the January effect which says that the stocks perform more in January any less in December which is known as the December effect or tax effect. There are some small stocks that ill performed in the last quarter outperforms in the first quarter of the next year these kinds of calendar anomalies were against the very existence of efficient market anomalies The current study is also an attempt to answer such questions regarding the presence of calendar anomalies in the modern world. because some of the researchers and academicians believe that the calendar anomalies have disappeared from the market. They believe that the market now is efficient and they go with the norm of efficient market hypothesis.

Review of literature

Sarma,(2004)analyzed the Indian stock market by using the return data from 1996 to 2002 and concluded that there are significant seasonal fluctuations in the Indian stock markets.Cross, (1973) identified the weekly anomalies in the US market on par with findings of Gibbons & Hess, (1981)and Jaffe & Westerfield, (1985) who also observed the same findings on the US market. several studies

proposed that the Indian stock market is not efficient like Poshakwale, (1996)

Many studies exclusively analyzedtheAsia pacific stock markets and identified the presence of seasonality and other calendar anomalies in Indian and other Asia pacific stock markets like Lean et al., (2007)and Yakob et al., (2005) the first one identifies the difference in the returns of months in Indianstock markets

It is important to note the new studies which deny the presence of calendar anomalies likePlastun et al., (2019) who studied the US market and observed that calendar anomalies have disappeared from the markets. Cheung & Coutts, (1999) studied the Hong Kong stock market and rejected the presence of monthly calendar anomalies.

Objectives

The current study titled monthly calendar anomalies in Indian and US stock markets aims to check the presence of calendar anomalies in India and the US stock market. Especially monthly current anomalies like the January effect, December effect, and April effect. the study also searches for the presence of quarterly anomalies.

Methodology

The study period ranges from 01/01/2015 to 31/12/2019. the indexes selected are S&P 500 from the US and the Nifty 500

from India. For calculating the daily returns, the closing prices of indexes are used.

The daily index returns are calculated using the formula, Ln (Today's closing price/yesterday's closing price). And the same is converted to the percentage for better understanding. T-test and ANOVA havebeen used to know the significant difference between the indexes in different situations.

Analysis and interpretations

The study period consists of 1256 trading days in the USA market and 1226 trading days in the Indian market. This difference is because the Indian stock market has more holidays than the USA. The major statistics regarding the same is depicted in the table below

Statistics			
	N	Mean	Std. Deviation
S & P 500	1256	.0357%	.84826%
Nifty 500	1226	.0296%	.87464%

The mean return in the USA market is slightly higher than in the Indian market. Even though the standard deviation is more or less the same. Indian market is comparatively more volatile.

Year-wise comparison										
Year	S & P 500					Nifty 500				
	Mean	Rank	N	Std. Deviation	Rank	Mean	Rank	N	Std. Deviation	Rank
2015	-.0028%	4	251	.97894%	2	-.0037%	4	246	1.02540%	1
2016	.0361%	3	252	.82598%	3	.0153%	3	246	.97746%	2
2017	.0707%	2	251	.42126%	5	.1237%	1	248	.60726%	5
2018	-.0257%	5	251	1.07713%	1	-.0140%	5	246	.84392%	4
2019	.0999%	1	251	.78774%	4	.0256%	2	240	.86027%	3

While analyzing the daily returns year-wise. The average trading days in the US stock market is 252 and Indian market it is 246. The highest and lowest daily return in the us market was in 2019 and 2018 respectively. In the Indian market, it was 2017 and 2018

respectively. So, 2018 seems the lowest return given year in both markets. Considering the volatility, in the US market 2018 was with the highest volatility and in the Indian market 2015 was the most volatile.

The average daily returns for half years are given below. January to June is considered as the first half and July December second half

S&P 500					Nifty 500				
Half Year	N	Mean	Rank	Std. Deviation	half year	Mean	N	Rank	Std. Deviation
1	622	.0458%	1	.84023%	1	.0403%	612	1	.84561%
2	634	.0257%	2	.85661%	2	.0188%	614	2	.90321%
Total	1256	.0357%		.84826%	Total	.0296%	1226		.87464%

In both us and Indian markets first half of the year has given more return than the second half and the second half seem to be more volatile in both markets

ANOVA-Half Year S&P 500						ANOVA- Half Year Nifty 500					
	Sum of Squares	df	Mean Square	F	Sig.		Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.215	3	.072	.099	.960	Between Groups	.142	1	.142	.185	.667
Within Groups	902.819	1252	.721			Within Groups	936.978	1224	.766		
Total	903.034	1255				Total	937.120	1225			

While testing for significant difference between the half years regarding daily average return the difference seems to be insignificant. So, we can infer that there is no calendar anomaly in half-year returns in both us USA and Indian markets.

The quarter wise return for each market has given below with average daily returns and volatility

S&P 500						Nifty 500					
Quarter	N	Mean	Rank	Std. Deviation	Rank	Quarter	N	Mean	Rank	Std. Deviation	Rank
1	305	.0579%	1	.96132%	1	1	304	.0345%	2	.89410%	2
2	317	.0341%	2	.70575%	4	2	308	.0460%	1	.79627%	4
3	318	.0254%	4	.82778%	3	3	312	.0044%	4	.97238%	1
4	316	.0261%	3	.88600%	2	4	302	.0338%	3	.82707%	3
Total	1256	.0357%		.84826%		Total	1226	.0296%		.87464%	

In the USA market,the first quartile has given more returns with the highest volatility, unlike India where the second quartile has given more returns with the lowest volatility.the ANOVA test to know the difference between quartiles regarding return has given below.

ANOVA- Quarter S&P 500						ANOVA-Quarter- Nifty 500					
	Sum of Squares	df	Mean Square	F	Sig.		Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.215	3	.072	.099	.960	Between Groups	.294	3	.098	.128	.944
Within Groups	902.819	1252	.721			Within Groups	936.826	1222	.767		
Total	903.034	1255				Total	937.120	1225			

In both the USA and Indian markets, the quarter returns seem to be more or less the same. As the Anova is insignificant we can conclude that there is no significant difference between quarters regarding the average daily return.

The monthly statistics of the average daily returns are given below with corresponding standard deviations. And the same has been ranked for better understanding.

Month wise classification

Month	S & P 500					Nifty 500				
	Trading Days	Mean	Rank	Std. Deviation	Rank	Trading Days	Mean	Rank	Std. Deviation	Rank
January	100	.0649%	4	1.03459%	2	106	.0510%	6	.86367%	7
February	96	.0785%	3	1.00419%	4	98	-.0830%	12	.94466%	3
March	109	.0335%	7	.85559%	6	100	.1322%	1	.87041%	6
April	103	.0597%	5	.66377%	11	95	.0891%	3	.73226%	10
May	107	-.0089%	10	.69750%	10	108	.0690%	5	.91261%	4
June	107	.0523%	6	.75601%	8	105	-.0165%	9	.72382%	11
July	105	.1163%	1	.53667%	12	109	.1091%	2	.68393%	12
August	112	-.0480%	11	1.02778%	3	105	-.0245%	10	1.06548%	2
September	101	.0123%	9	.82777%	7	98	-.0810%	11	1.12824%	1
October	111	.0273%	8	.87009%	5	97	.0720%	4	.90786%	5
November	103	.1097%	2	.72845%	9	101	-.0138%	8	.81560%	8
December	102	-.0597%	12	1.03599%	1	104	.0442%	7	.76241%	9
Total	1256	.0357%		.84826%		1226	.0296%		.87464%	

While analyzing the month-wise average daily returns. The highest monthly return nthe Indian market is in July and November respectively and the lowest returns are in December and august respectively. In the US market highest returns are in march and July respectively and in the lowest returns February and September respectively. In the US market, December was most volatile and in India, September was the most volatile

Below given are ANOVA tests for the difference between months in both us and Indian markets

ANOVA for Months-S&P-500						ANOVA for Months-Nifty 500					
	Sum of Squares	df	Mean Square	F	Sig.		Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.585	11	.326	.451	.933	Between Groups	5.654	11	.514	.670	.768
Within Groups	899.448	1244	.723			Within Groups	931.465	1214	.767		
Total	903.034	1255				Total	937.120	1225			

From the ANOVA it is obvious that there is no significant difference between the months considering the average daily returns so the monthly calendar anomalies are not prevailing in Indian and US stock markets as expected.

Findings

The US stock market has more trading days than the Indian stockmarket. The S&P 500 has given more returns than the Nifty 500 with more or less the same volatility. In the five years considered for the study, 2019 and 2017 gave good returns in both markets and 2018 gave the least returns.The first two quarters gave more return than the third and fourth quarters in both US and Indian markets.in the Indian market, November and July gave more return, and December and august gave less return with high volatility. And in the US market march and July gave more return and September and February gave less return with high volatility.

There is no significant differencebetween the half-year, quarters, and months considering the average daily returns. So that it is observed that there is an absence of calendar anomalies considering the anomalies like quarterly and monthly. So, we can say considering the anomalies studied in this period of study the US and Indian markets are more or less efficient.This study is par with findongs of Plastun et al., (2019)and Cheung & Coutts, (199

Conclusion

From the current study, it can be concluded that the Indian stock market and the US stock market sare are more or less efficient considering the calendar anomalies studied. It is understood the anomalies which were persistent in the stock markets in the early 60s Have disappeared from themarkets. May be due to the availability of sophisticated trading knowledge or information or due to the investor educations.

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