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IMPACTS OF ECONOMIC EVENTS ON PERFORMANCE OF MUTUAL FUNDS: EVIDENCE FROM INDIA

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Abstract:

Recent years have witnessed phenomenal growth in both the number and size of diversified equity mutual funds in India. But performance of mutual fund in India has been volatile because of several macro-economic factors. In the top-down approach to evaluate the investment in stock markets, economic risk tops the list and its importance cannot be understated. Principally performance of equity diversified mutual fund depends upon the stock market performance. The purpose of this study is to examine the impact of economic events on the risk-adjusted returns/performance of mutual funds in India using event study methodology. For the calculation of impact, Researcher has selected two mutual fund schemes (ICICI Prudential Balanced fund- Direct Plan-Growth & ICICI Prudential Dynamic-Direct Plan-Growth). This methodology addresses the problems of multiple event days and calendar clustering. The economic event considered for the research are recent global or cross border event (BREXIT- Britain Exit from the European Union.) and Domestic event (GST- Goods and Services Tax). For the event study the event window of 11 days (i.e. 5 business days before and 5 business days after the event day including event day) will consider for abnormal return and estimation window of 11 days consider for normal return. The time gap for Normal and Abnormal return is 180 days. The event date of BREXIT has taken 24th June 2016 (National declaration of the European Union referendum result) and for GST has taken 03rd August 2016 (GST Amendment Bill passed in Rajya Sabha). In the proposed research Endeavour, researcher's shall made an attempt to identify that holder of equity mutual funds may earn abnormal return in response to above mentioned events and in the given period of time. **Key words:** Mutual Fund, Economic Event, Event Studies, Abnormal Return, BREXIT, GST JEL Classification: G 11, G 13, G14, G 23

INTRODUCTION

The dissemination of news or events into financial asset (like equity shares, Bonds & Mutual funds) prices has attracted the attention of financial economists for decades. Many studies examined the effects of various pieces of information (e.g. earnings announcement, macroeconomic news, political news etc.) on financial asset prices. The general conclusion in these studies is that financial asset prices are affected by new information regarding firms' expected future cash flows and/or future discount rates. In this paper, we have made an attempt to explore the relation between mutual funds performance in terms of change in NAV (Net Asset Value) and Economic News or events. In particular, for the purpose this study two major economic news or event has been taken into consideration one from Indian economy i.e. GST and other one from global economy i.e. BREXIT. We have observe that the allotment of units is dependent on the net



asset value of the mutual fund which again leads to move northward or southward as per the political and economic condition of the country and the world also. The whole world is watching latest economical event i.e BREXIT and GST. Brexit event effect the share prices of those companies especially who do the business from Europe. In case of India, IT sector is getting more affected and so do those mutual funds that is having the benchmark as an NSE IT or BSE IT or also having the IT companies stocks in their portfolio. In case of GST, it can affect both in a positive way as well as negative way depends on the industries. Several other researchers have done the research for seeing the affect of economic event or factors on the mutual funds in India.

REVIEW OF LITERATURE

In the past, lot of research work is done to establish the relationship between stock market and macro- economic factors like exchange rate, inflation and interest rate, political events etc. But economic events are also having equal rank in order to influence the trends of Stock Market. In this study evidence from Indian market as well as from Global market is collected to check whether economic events involve in movement of NAV of mutual funds which denotes the

performance of mutual funds in India.

MARKETS RESPONSE TO NEW INFORMATION

Fama (1969) published a paper in which he describes the theory of efficient capital markets that eventually led to a considerable amount of literature has been published the last decades. The primary concept of the hypothesis is “...that security prices [or market] at any time ‘fully reflect’ available information is called efficient.” However, a large and growing body of literature has challenged the market efficient hypothesis. According to **Shiller (2003)** “...to some observers /... / changes in prices occur for no fundamental reason at all, that they occur because of such things as ‘sunspots’, ‘animal spirits’ or just mass psychology”. **Brown (2011)**, claims that there are no underlying mechanism that drives prices to “fully reflect” new information, and that the hypothesis fails to act as a benchmark for detecting, e.g., when a bubble is forming and when it might collapse. **Malkiel (2003)**, who argues for the market efficiency hypothesis, although, states that pricing is not always perfect, and the market has done some mistakes due to the irrationality of market participants.



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THE IMPACT OF MAJOR FINANCIAL AND ECONOMIC EVENTS

The financial crisis in the US in 2007/2008 due to the sub-prime mortgage lending, resulted not only to an economic turmoil within the nation, but countries across the globe also experienced collapse in their financial market as a consequence. The linkage between stock market prices and economical events are also further investigated by **Chen et al. (1986)**. The paper explores systematic economic factors, e.g. changes in inflation or industrial production, which has an influence on stock market return and pricing, specifically on the NYSE stock exchange. The conclusion of the study is that markets are systematically exposed to economic news, and that stock market pricing is in accordance with these. The study does not examine economical events as such, but enlighten the linkage between economic news and stock market pricing. **Narayan and Narayan (2012)** have conducted a similar paper, but examined particularly the impact on Asian stock markets of major macroeconomic events in the US between 2000-2010. The result is not unilateral, i.e. certain country stock markets tend to react to certain kind of macroeconomic events,

and some does not. Depreciation of the home currency compared to USD in all Asian markets did have a significant impact on their respective stock market, which also has been more comprehensive since the break-out of the 2007 financial crisis. When it comes to how the Asian stock market reacted to news regarding American monetary policy stands, only the Philippines stock market did react, positively, to that kind of information. The authors also provide evidence of that the economic depreciation in the USA caused by the outbreak of the financial crisis in 2007/2008 did have a significantly negative impact on stock markets in all seven countries in the study. However, conversely,

Shanmugham (2000) Among the various factors, economical, psychological and sociological factors dominated the economic factors in share investment decisions.

G. Dinesh Kumar, Mihir Dash (2008) A macroeconomic variable affects the return and variance of return of Franklin India Bluechip Fund – Growth, Reliance Tax Saver (ELSS) Fund - Growth Plan, Reliance Growth Fund - Growth Plan - Bonus Option. Macroeconomic variables were not affected the return and variance of return of 35.29% of sample scheme. Fund manager have taken



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several actions to minimize the return of mutual fund schemes by understanding that which factors affects and up to what extent? By using the Granger Casualty model, researcher can identify that which factors most affect the NAV. By identifying and monitoring the causes of returns, potential loss can be minimized and returns can be maximized, which gives the power to the fund manager to not only understand the risk of the market but also gives the idea about the which factors or events affect most. **Mohammadreza Monjazez and Esmaeel Ramazanpour (2013)** First hypothesis was that the model estimation is accepted and according to this there was a positive effect of exchange rate on the mutual fund return. Secondly that the effect of inflation on the mutual fund return was also found positive. When the price of the product rises, we expect that our wealth will also rise which leads to increase in consumption, national income etc. They found that in the long run macroeconomic factor will not affect the mutual fund return. Through this research fund manager will understand about the cause of the fluctuation in return and Investor will understand their risk taking capacity leads to take a decision of when to buy and when to sell shares. **Emily chelangat kariuki (2014)** indicate that

NAV of Kenyan's mutual fund gets affected by the five macroeconomic variables. They are money supply, interest rate, inflation rate, GDP and exchange rates. These factors almost represent 70.9% mutual fund performance in Kenya. Although Money supply, interest rates, inflation rates, GDP positively influence the return of Kenyan's mutual fund while the exchange rate negatively and significantly influence the return of Kenyan's mutual fund. **Rakesh Kumar & Mohammad Tamimi (2011)** they attempt to measure how equity markets of developed and developing countries are reacting to the volatility in international crude oil prices. They found that oil prices are normally distributed during the study time period. To analyze that how investor reacts about the crude oil price volatility which result in volatility in stock market. Two stages of GARCH (1,1) model is used for analysis. First stage defines that oil price volatility is influenced by the events in the international markets and second stage defines that oil price movement is significantly determine the movement in stock market, nationally and internationally both. **Jeremy C. Goh, Fuwei Jiang, Jun Tu, Yuchen Wang (November 20, 2012)** they examine that the US economic variables are leading indicators of the



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Chinese stock market especially after 2001 because China officially entered in WTO in December 2001 which define the closed integration of Chinese and United States economy. **Komain Jiranyakul (Dec 2009)** this paper mainly examines the macroeconomic variables and their effect on the stock market index in Thailand. Four set of indicators they used Real GDP, Money Supply, Nominal effective exchange rate, Price level of index. Found that the first three indicators have significantly imposed a positive impact and fourth one has insignificantly imposed a negative impact on the stock market index. **Christian D. Dick and Qingwei Wang** by using event study they found that positive and significant effect of the announcement of Olympic Games on the stock market. Examine and concluded that the around 2% change in the abnormal return of stock market especially announcement of Olympic summer games rather than winter games.

RESEARCH GAP

By analyzing the literature available on mutual fund and the economic factors, researcher found that only few literatures is available that is tuned towards the economic factors i.e inflation, interest rates, foreign exchange rates, GDP etc. but firstly researcher have taken the latest events not

factors as others have taken. Secondly researchers also consider the national and international both events to make investor and fund manager understand about the effect of those events and also accordingly adopt the strategies for the asset allocation in future.

OBJECTIVES OF STUDY

This research proposal has been designed while keeping very clear-cut objectives, which may be classified as follows:

1. To analyze the impacts of economic events on mutual fund performance;
2. To select equity diversified and balanced mutual fund for analyzing the effect on performance.
3. To define the national and global economic events and their effect on performance.
4. To ascertain the degree of relationship between the events and the performance of mutual funds in India.

RESEARCH METHODOLOGY

Since we are interested in investigating whether major economic events (BREXIT & GST) have an impact on performance of selected mutual funds, in combination of limited theoretical and empirical



contribution, this study therefore uses an exploratory approach. In order to measure impact of economic event on mutual fund NAV, an event study methodology has been conducted according to the procedure of **Mackinlay (1997)**. The approach plays a vital role in capturing any “abnormal” or “residuals” (a significant deviation from average) value changes in an index prices, regardless underlying explanations from market efficacy hypothesis, behaviour finance perspective or other scholars. For the study purposes two categories of mutual fund have been shortlisted, i.e. Equity Diversified Mutual Fund and Balanced Mutual Fund. In equity diversified fund category data of ICICI Prudential Dynamic Fund- Regular Plan- Growth and in balanced mutual fund category data of ICICI Prudential Balanced Fund- Regular Plan- Growth have been taken. For statistical analysis purpose Regression, Factor Analysis and Event study have been used. **Brown & Warner (1985)** Event study technique is way to check the impact of different events for short time horizon that how much abnormal returns are generated after happening of an event. Event study is most common technique to check the impact of various events on the efficiency of stock market. **Bhagat et al.**

(1985) According to this method it is measured how market trends are going on before happening of an event and what changes occur after happening of an event. For the event study the event window of 11 days (i.e. 5 business days before and 5 business days after the event day) will consider for abnormal return and estimation window of 11 days consider for normal return. The time gap for Normal and Abnormal return is 180 days. It is expected that economic events will affect the market returns for the short time period (for 10-15 days) not for longer time period.

Data Analysis & Interpretation:

Analysis of affect of Economic events on ICICI Prudential Dynamic- Direct Plan Growth: Multiple Regression Model – 1 (Refer Model -1)

For this model set of dependent and independent variables were:

Dependent Variable	Independent Variable
Estimation window for normal return	BREXIT(Britain Exit from European Union)(X1)



On the basis of classification of dependent and independent variables, shown in table above, the following multiple regression models were hypothesized:

Estimation Window for normal

$$\text{return} = \beta_0 + \beta_1 X_1$$

TESTING ASSUMPTIONS FOR REGRESSION MODEL:

The assumptions of Regression that are identified as primary concern in the research include linearity and normality in case of simple regression equation. This section will specifically define each assumption and review consequences of assumption failure.

LINEARITY

As per above discussion, firstly we check the linearity in data with scatter plot (Figure 1) and then with the help of Analysis of Variance (ANOVA) (Box 1).

ANALYSIS OF VARIANCE (ANOVA)

The null hypothesis we want to investigate is that there is no relation between the response and the regressor against the alternative that H0 is false, that is:

$$H_0: \beta_1 = 0$$

$$H_1: \beta_1 \neq 0$$

INSERT FIGURE 1 ABOUT HERE

Interpretation: Scatter plot of Fig.1 shows that relationship between predictor and response variables is almost linear, but presence of few outliers is also observed in the data. These outliers cannot be treated as the data is collected from secondary sources (www.amfiindia.com, website of Association of Mutual Funds in India), so we have to accept the model with outliers.

INSERT Box 1 ABOUT HERE

Interpretation: As we can see in Box 1, p-value for regression is 0.121 which is far greater than $\alpha = .05$, so we accept null hypothesis and conclude that explanatory variable don't have any predictive values.

NORMALITY:

Simple regression assumes that variables have normal distributions. This means if you plot the values in the curve it will show a normal curve structure.

INSERT FIGURE 2 ABOUT HERE

Normal probability plot (Refer Figure 2) shows that the predicted model was approximately the best



fitted model as we can see from the graph that maximum values lies near the regression line. Hence the basic assumption of regression, which was linearity, gets fulfilled.

INSERT FIGURE 3 ABOUT HERE

Histogram of residuals (Figure 3) depicts that population distribution of sample taken for the study is skewed towards left; small sample size could be a reason for the same. The entire assumption underlying Simple Regression models are analyzed so far. Regression equation for the model is:

REGRESSION EQUATION:

Estimation Window for Normal
Return = 96.8 + 0.438 Brexit

Interpretation of Regression Model:

Value of constant (β_0) is 96.80 which show that if all the considered independent variable turns out to be zero then also there is 96.80 chance of return of investment. Value of coefficient term (β_1) for X1 is 0.438, which shows that in case of happening of event BREXIT, it increased the Estimation Window for Normal Return by 0.438 units.

Multiple Regression Model - 2

For this model set of dependent and

independent variables were:

Dependent Variable	Independent Variable
Estimation window for normal return	GST(Goods and Services Tax)(X2)

On the basis of classification of dependent and independent variables, shown in table above, the following multiple regression models were hypothesized:

Estimation Window for normal
return = $\beta_0 + \beta_1 X_2$

Analysis of Variance (ANOVA)

The null hypothesis we want to investigate is that there is no relation between the response and the regressor against the alternative that H0 is false, that is:

H0: $\beta_1 = 0$

H1: $\beta_1 \neq 0$

INSERT BOX 2 ABOUT HERE

Interpretation: As we can see in Box 2, p-value for regression is .285 which is far



bigger than $\alpha = .05$, so we accept null hypothesis and conclude that explanatory variable don't have any predictive values.

Regression equation for the model is:

Estimation Window for Normal Return = 354 - 0.869 GST

Interpretation of Regression Model:

Value of constant (β_0) is 354.0 which show that if all the considered independent variable turns out to be zero then also there is 354.0 chance of return of investment.

Value of coefficient term (β_1) for X2 is - 0.869, which shows that in case of happening of event GST, it decreased the Estimation Window for Normal Return by 0.869 units.

Analysis of affect of Economic Events on ICICI Prudential Balanced fund-Direct Plan-Growth:

Multiple Regression Model – 3

For this model set of dependent and independent variables were:

Dependent Variable	Independent Variable
Estimation window for normal return	BREXIT(Britain Exit from European Union)(X3)

On the basis of classification of dependent and independent variables, shown in table above, the following multiple regression model was hypothesized:

Estimation Window for normal return = $\beta_0 + \beta_1 X_3$

Analysis of Variance (ANOVA)

The null hypothesis we want to investigate is that there is no relation between the response and the regressor against the alternative that H0 is false, that is:

$$H_0: \beta_1 = 0$$

$$H_1: \beta_1 \neq 0$$

INSERT BOX 3 ABOUT HERE

Interpretation: As we can see in Box 3, p-value for regression is .386 which is greater than $\alpha = .05$, so we accept null hypothesis and conclude that explanatory variable don't have any predictive values.

Regression equation for the model is:

Estimation Window for Normal Return = 119.4 - 0.263 BREXIT

Interpretation of Regression Model:

Value of constant (β_0) is 119.4 which show that if all the considered independent variable turns out to be zero then also there



is 119.4 chance of return of investment. Value of coefficient term (β_1) for X3 is - 0.263, which shows that in case of happening of event BREXIT, it decreased the Estimation Window for Normal Return by 0.263 units.

Multiple Regression Model - 4

For this model set of dependent and independent variables were:

Dependent Variable	Independent Variable
Estimation window for normal return	GST(Goods and Services Tax)(X4)

On the basis of classification of dependent and independent variables, shown in table above, the following multiple regression models were hypothesized:

Estimation Window for normal return = $\beta_0 + \beta_1 X_4$

Analysis of Variance (ANOVA)

The null hypothesis we want to investigate is that there is no relation between the response and the regressor against the alternative that H0 is false, that is:

H0: $\beta_1 = 0$

H1: $\beta_1 \neq 0$

INSERT BOX 4 ABOUT HERE

Interpretation: As we can see in Box 4, p-value for regression is .832 which is much bigger than $\alpha = .05$, so we accept null hypothesis and conclude that the explanatory variable do not have any predictive values.

Regression equation for the model

is:

Estimation Window for Normal Re = $105.7 - 0.154 \text{ GST}$

Interpretation of Regression

Model:

Value of constant (β_0) is 105.7 which show that if all the considered independent variable turns out to be zero then also there is 105.7 chance of return of investment.

Value of coefficient term (β_1) for X4 is - 0.154, which shows that in case of happening of event GST, it decreased the Estimation Window for Normal Return by 0.154 units.

FINDINGS:

The findings of this research are as follows:

1. During analysis of impact of economic events on ICICI Prudential Dynamic-Direct Plan- Growth: I found that these two economic events which I select affects in several ways as per the P value:
 - i) Independent variable (BREXIT) is not



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related to Dependent variable (Estimation window of Normal Return) means there is no effect of Brexit event on the normal return of selected mutual fund NAV.

ii) Independent variable (GST) is not related to Dependent variable (Estimation window of Normal Return) means there is no effect of GST event on the normal return of selected mutual fund NAV.

2. During analysis of impact of economic events on ICICI Prudential Balanced fund-Direct Plan- Growth: I found that these two selected economic events affects in several ways as per the P value:

i) Independent variable (BREXIT) is not related to Dependent variable (Estimation window of Normal Return) means there is no effect of Brexit event on the normal return of selected mutual fund NAV.

ii) Independent variable (GST) is not related to Dependent variable (Estimation window of Normal Return) means there is no effect of GST event on the normal return of selected mutual fund NAV.

CONCLUSIONS:

Most of the time researcher have seen that economic events have not significantly

affect the mutual fund NAV as per the p-value is far greater on 5% significance level($\alpha=.05$) but in case of regression equation of ICICI Prudential Dynamic-Direct Plan-Growth, as an independent variable (Brexit), it concludes as a positive effect on dependent variable. Rest other independent variable in case of both the plan have a negative effect on estimation window of normal return. However, this conclusion may be not accurate due to the selection of 180 days GAP between the event window and the estimation window. There is a further scope for research by continuous doing regression analysis based on different gap internals to know more about the effect on the estimation window of normal return.

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List of Results, Figures and Tables with Legends

Figure 1 Scatter plot of linear relationship between Estimation Window for normal return and Brexit (X1)

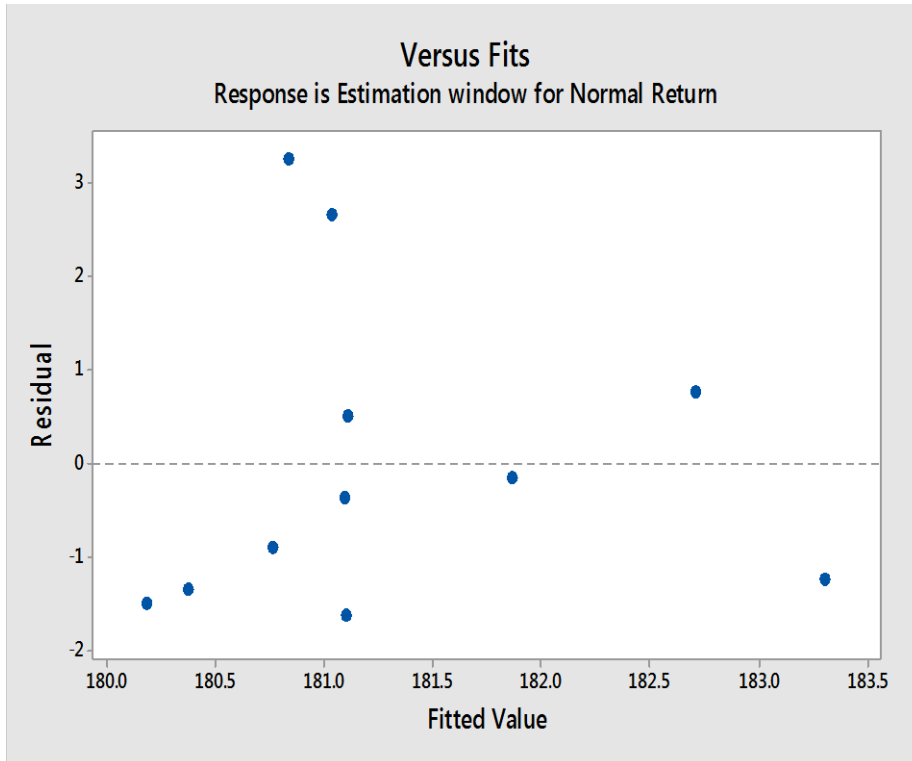


Figure 2: Normal Probability Plot for Regression model

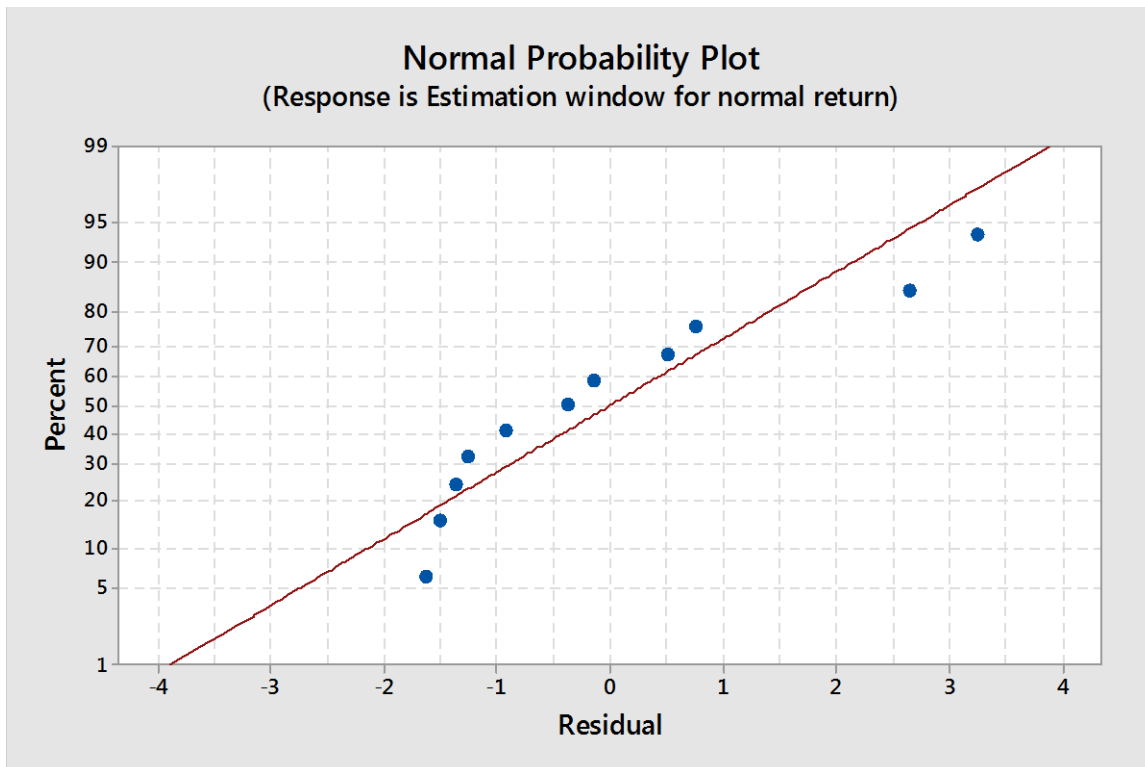
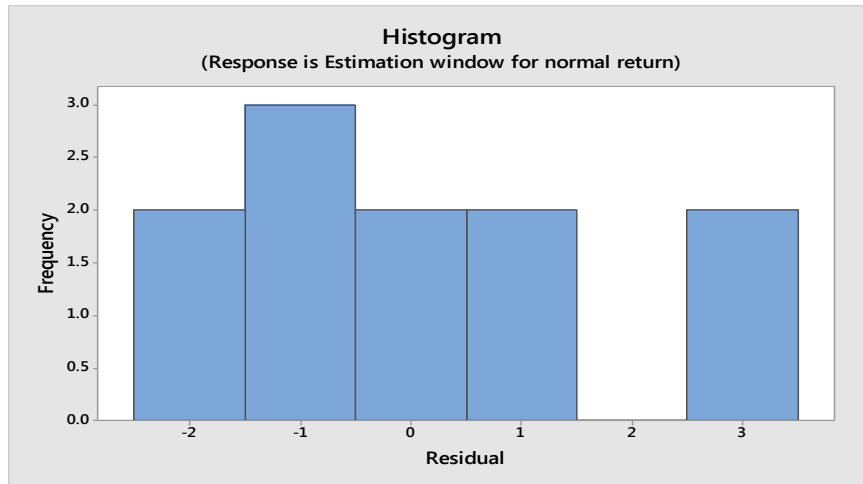




Figure 3: Histograms for Regression model



Box 1: Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	9.079	9.079	2.94	0.121
Brexit	1	9.079	9.079	2.94	0.121
Error	9	27.824	3.092		
Total	10	36.903			

Box 2: Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	12.23	12.228	1.29	0.285
GST	1	12.23	12.228	1.29	0.285
Error	9	85.23	9.470		
Total	10	97.46			



Box 3: Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	0.9090	0.9090	0.83	0.386
Brexit	1	0.9090	0.9090	0.83	0.386
Error	9	9.8421	1.0936		
Total	10	10.7512			

Box 4: Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	0.0650	0.06504	0.05	0.832
GST	1	0.0650	0.06504	0.05	0.832
Error	9	12.2228	1.35809		