Does Popularity of Political Leaders Matter in the Indian Stock Markets? A Comparative Study of Four Lok Sabha Elections from 2004 to 2019

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ABSTRACT

This study explores the effects of investors' attention to popular political leaders on the daily stock market returns as well as realised trade volumes in the NSE Nifty and BSE Sensex stock markets in India. It uses the Google Search Value Index data for political attention variables in India along with the NSE Nifty and BSE Sensex data for market returns and trade-volume over the past four Lok Sabha (LS) Election periods in 2004, 2009, 1014 and 2019 separately. With the linear Autoregressive Regression (AR-1) method for augmentation of lagged dependent variable, firstly, the relevant market returns and trade-volumes both are separately explained by the attention search variables, a homogeneity factor of the competitive market, and the augmented lagged dependent variable. In a robustness test, the homogeneity factor is excluded. The same is cross-checked by adding a heterogeneity factor to the second approach and using a cross-market dynamics. Besides showing significant standalone granger casualty of the parameters in market dynamics and attention dynamics, it shows homogeneity and heterogeneity effects for the market returns and realised trade-volume in both the stock markets. This study can improve investors' understanding of the impacts of attention searches for popular political leaders in India. This study ingeniously contributes to the literature with an idea of investors' political attention impacts on the Indian stock markets. It shows that stock market dynamics at the LS Elections political attention dynamics, investors' adaptive long-memory, and the rest is a mixed one of the two.

Keywords: Investors' Political Sentiments, Attention Cointegration, Economics-Election-Politics Nexus, Investors' Attention Mania, Google Search Volume Index.

JEL Classification Codes: A120, E71, G120, G410

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1. INTRODUCTION

The 21st century financial behaviorists are exploring the behavioral finance terrains with the effects of cognition on finance choices in option markets (Zeqian, 2004; Wang, Busemeyer, Atmanspacher, & Pothos, 2013; Hao, Lefèvre, Tamturk, & Utev, 2019), those of sentiments on finance choices (Brown & Cliff, 2005; Ackert Church, & Deaves, 2003; Peterson, 2007), the presence of systematic noise in stocks' prices (Barber, Odean, & Zhu, 2009; Sinha, 2016; Sinha, Ghosh, & Chatterjee, 2013), and investors' attention effects on the stock market dynamics (Karlsson, Loewenstein, & Seppi, 2009; Andrei & Hasler, 2014; Tantaopas, Padungsaksawasdi, & Treepongkaruna, 2016). These breakthroughs in financial economics appear like those of quantum physicists: exploring physics but clubbing "matter" and "energy" into the "space-time" scale of the universe (Yukalov & Sornette, 2017). The 21st Century Nobel awards' lists (www.nobelprize.org) in the Literature, Economics and Physics also confirm the said apprehension of this present author (read with Segal & Segal, 1998). Amongst the original ideas, perceptive narrative, fragile experience, guises, emotional force, illusory sense, a quest for soul, scepticism or sensual ecstasy, information asymmetry, noise, psychology, markets with search frictions, behavioral biases and nudge effects are really "mind blowing". Do these behavioral dimensions reveal the fictions of financial economics?

This study seeks to sense the stated behavioral dimensions with reference to investors' political sentiment effects. Investors' sentiments matter in the stock markets (Baker & Wurgler, 2007; Bennet, Selvam, Vivek, & Shalin, 2012; Rashid, Fayyaz, & Karim, 2019). Investors' sentiments are linked to consumer confidence (Barsky & Sims, 2012), economic news (Starr, 2012), attention economy and media exposure (Tetlock, 2007; Engelberg & Gao, 2011), information search (Trichilli, Abdelhédi, & Boujelbène, 2018), and prospects of the economy and political party as well (Benhabib & Spiegel, 2018). Do investors' political sentiments about the political leader/s influence the stock market dynamics? Do they go crazy along with their ambitious political leaders? A behavioral analogy is that investors' sentiments reflect their perceptions about the markets while their perceptions move the stock markets (De Bondt, 1998). Here, investors' perceptions are guided by emotions and emotions induce noises in the markets (Ricciardi, 2008; Nofsinger, 2017). A cyclical flow of emotions, perceptions, sentiments and noise is likely to shape and reshape the stock markets' dynamics.

We hypothesise that investors' *political emotions*, *perceptions*, *sentiments* and *noises* shape the NSE and BSE stock market dynamics in India. We coin these *political emotions*, *perceptions*, *sentiments* and *noises* by popularity of political leaders and seek to explain the stock market dynamics empirically. We also adventure demand-supply dynamics of the stock markets at presence of popularity effects. In doing so, we use the Google search volume index (*SVI*) data for the eminent political leaders in India from the two mainstream national political parties viz., Bharatiya Janata Party (BJP) and Indian National Congress (INC) during the Lok Sabha Elections in 2004, 2009, 2014 and 2019. It has explored if popularity of political leaders has effects on the dynamics in the NSE Nifty and BSE Sensex. The dynamics suggest for return dynamics, realized volume dynamics, and return-volume dynamics. Our empirical observations reveal that during the said past four Lok Sabha Election periods from 2004 to 2019, there have been different stock market dynamics at the varied popularity of the imminent political leaders from the two popular mainstream national political parties in India.

In organizing the rest, the relevant literature is reviewed briefly in the following section, Section-2 and it is tailed by the research objective and the problem statement in Section-3. In Section-4, this research explores empirical data and methodology. In the next section, Section-5 depicts the results. In Section-6, we conclude and make the way forward as well.

2. LITERATURE REVIEW

This present study relates behavioral finance literature to those of the political behavior of citizens' emotion (Erisen, 2018), emotional voters and election campaigns (Kiss, 2013), electoral perception of election legitimacy (Daniller, 2016), and those of investors' behaviors in the stock markets (Lei, 2018). These researches envisage that voters' emotions, political perceptions, sentiments and election moods - all effect in union rather than in isolation. Such unification leads the present author towards exploring the personal popularity of the political leaders (Marcus, 2000) and their effects on the stock market returns and realised trade volume activity as well.

How do financial behaviorists perceive voter-investors' relationships with their political leaders? This quest motivates us exploring the behavioral finance arguments viz., election noise dynamics, investors' selective attention choice, and personalisation effects.

If viewed from the aspects of [rational] self-interests, there are many similarities of the triad consumer-broker-producer with that of voter-politicians-bureaucrats (Ekelund & Tollison, 1986 in Berg, 2004; p.18). One such similarity is presence of noise at information asymmetry between any two parties with the triad. Bendor, Taylor, and Gaalen (1987) have showed a basic duality in democratic election system at politicians' uncertainty about boreoarctic performances and bureaucrats' uncertainty about political agenda as well. Information asymmetry between voters and politicians leads corrupt politicians to win and re-win elections (Balán, 2014), pro-actively mis-inform voters about economic conditions of the country (Soroka, 2006), and also lead the politicians to remain unknown about voters' demands in election constituency (Pande, 2011). Furthermore, since an individual voter has an insignificant impact on the election results, there exists voters-bureaucrats information asymmetry (Booth, 2008) as well.

Given the huge information asymmetry between the voters and political leaders about their future courses of actions, the government's policy priority, its future hurdles, economic conditions etc., behavioral and psychological factors - belief and dis-belief, facts and rumours, trusts and mis-trusts etc create noises in voters' minds (McGregor, 2012; Kalai, 2010; Carro, Toral, & Miguel, 2016). Intraday traders in the stock markets also are not immune to these developments (Bialkowski, Gottschalk, & Wisniewski, 2007; 2008; Wong & McAleer, 2009). Besides the information asymmetry, the election process itself can create noise in the general elections of a country. It creates sports-like partisan hostility with political leaders myopically prioritising their political status rather than the general voters' wellbeing (Miller & Conover, 2015). This goal distortion creates media noise in the general elections and it results in biased manifestation of electoral outcome (Ross & Comrie, 2012; Allcott & Gentzkow, 2017;

Lawson, Lenz, Baker, & Myers, 2010). In the contexts of the European sovereign debt crisis, such political noise or political leaders' election myopia is otherwise called as election mania (Sinha, 2017; Acharya & Rajan, 2013; Szyszka, 2012).

The said arguments also explore investors' election expectations and noise dynamics. Pastor and Veronesi (2012) show that traders' response to political uncertainty has a larger risk premium at times of weaker economic conditions than that at normal economic conditions. Here, countries' political risk performs inverse proxy to implicit protection from future governments. With the elections data of 1930-2000 in the UK and USA, Leblang and Mukherjee (2005) have showed that stock market traders' expectations about the left (right)-wing governments to win the general elections have causal relationships with higher (lower) inflation rate and lower (higher) values of the realised trade volume as well. With the electoral system and political events in Belgium, Vuchelen (2003) has showed that the multi-party general election results contain less information in contrast to a single party government and partners' ideological composition hugely matters. For example, Döpke and Pierdzioch (2006) have found that the German stock markets' indices are high (low) at the times of left (right)-wing governments.

Now, investors should align their expectations with voters' perceptions. In doing so, investors can scan the influences and responses of the political parties across the voters. At the presence of multi-party or single party dominant politics, investors' political scanning is related to the theory of selective attention choices. In revealing the effects of voters' selective attention behavior on investors' perceptions, this study now reviews the selective attention theory in psychology and its links in behavioral finance as well.

With the ostrich effects, recent studies show that voters' selective attention choice can be viewed as such that the voters in the political markets are as good as the investors in the stock markets (Karlsson, Loewenstein, & Seppi, 2009 read with Howard, 2019 and Stone & Wood, 2018). The ostrich effects are constructed by the joint effects of cognitive dissonance – an inability to agree logically, motivated reasoning – objectives come ahead of logicality, and confirmation bias – no alternative justification to justify alternatives (Stone & Wood, 2018). In Howard (2019), ostrich effects are viewed as joint effects of investors' confirmation bias, motivated cognition, and backfire effects – longing to early beliefs. Therefore, in ostrich effects during the general elections, voters make their decisions predominantly given their adverse prior news and reject to revise by avoiding additional information.

Now, if the ostrich effects are too robust at given a piece of particular prior news, in a two-party dominant political democracy, voters' attention to political agenda brings in clarity to investors' minds and reduces their ambiguity in decision choices at additional news. Ostrich effects have longevity effects. In other words, the presence of strong opposition helps investors in focusing their selective attention. But, in a reverse situation with the multi-party democratic countries, Brader, Tucker, and Duell (2013) have showed that clarity and certainty in the ideology of the opposition party have greater impacts on investors' decision choice than the longevity effects. In brief, at the presence (absence) of dominant partisan messaging, attention ambiguity (clarity) rather than attention clarity (ambiguity) can pay the election pay-off as a winning strategy (Bräuninger & Giger, 2018). This discourse can lead us further exploring the theoretical argument of investors' selective political attention choices but we limit such temptation.

Finally, the argument of political personalisation or personalised politics has multifaced existence and it comes into three forms: institutional (state vs. party), mediated (controlled vs. uncontrolled) and behavioral (politicians vs. voters) ones and in general, it refers to the static sense of orders rather than a dynamic one. Personalisation of politics becomes the result of conflicting relationships amongst the political parties, society, and individuals (Rahat & Sheafer, 2007; Gibson & Römmele, 2009). Rahat and Sheafer (2007) have further showed that personalisation at the level of an institution results in media personalisation and in turn, it makes behavioral personalisation of the politicians. In an extreme case, McAllister (2007) has illustrated that personalised politics could transform the multi-party-political system into dominance of two-party political system, less democratic governance, and greater autonomy in policy making by popular political leaders, etc. (read with Swanson & Mancini, 1996; and Maddens & Fiers, 2004).

Now, what are the effects of political personalisation on the stock market's behaviors? In simplicity, the message of personalised politics goes against the efficient market hypothesis but aligns with those of behavioral biases. With micro and cross-country data, Guiso, Sapienza, and Zingales (2008) have showed that trust (lack of trust) on personalised politicians induce appetite (apathy) to buy stocks. This phenomenon can explain the intraday traders' limited participation puzzle in the stock markets but there is little research in the behavioral finance literature. Again, keeping in parity with the stated proposition, Luengo (2016) has illustrated that the presence of political personalisation can be positioned as a very workable strategy at times of the financial crisis of the nations. In moving forward, this study now sets forth its objectives and hence, proceeds to develop the empirical methodology and its related testable hypothesis.

3. RESEARCH OBJECTIVES

This study assumes that investors' information searches about the political leaders in the mainstream political parties in India viz., the Indian National Congress (INC) and Bhartiya Janata Party (BJP) in the Google search engine are aligned to their attention interests. Given the said theoretical assumption into the context, the study seeks to empirically explore the following five objectives:

(i) To explore if there is any causality of investors' realised attention interest in the NSE Nifty Fifty and BSE Sensex and their respective market returns;

(ii) To explore if there is any attention causality of investors' attention interests to the main-stream political leaders in the INC and BJP in India;

(iii) To explain the popularity effects of the political leaders of the political parties viz., the INC and the BJP on the stock market dynamics at the presence of homogeneity in the NSE Nifty and BSE Sensex over the election days in 2004, 2009, 2014 and 2019;

(iv) To explain the standalone popularity effects of the political leaders on the market returns and the realised trade-volume activity at the NSE Nifty and BSE Sensex during the election days in 2004, 2009, 2014 and 2019; and

(v) To explain robustness check of popularity effects on the NSE Nifty and BSE Sensex market dynamics at heterogeneity during the years of 2004, 2009, 2014 and 2019.

4. VARIABLES, DATA & TIME PERIODS AND METHODOLOGY

The study now defines the dependent and independent variables. The logarithmic index values of the NSE Nifty and BSE Sensex are used to derive the market return variables for these two markets viz., $R_{N,t}$ and $R_{B,t}$. The realized presence of investors' attention interest in these two markets is defined by the logarithmic realised trade volume data of the respective markets viz., $V_{N,t}$ and $V_{B,t}$. For the BSE Sensex data along with realised trade volume data, the website of www.finance.yahoo.com is used. Besides, we have used the website of www.investing.com for the trade volume data of the NSE Nifty.

We have used the attention impact method for keywords' attention search interests. We have uses six political keywords that have robust influence for policy formulation for their respective political parties and robust attention data over the short-term time periods of the election years of 2004, 2009, 2014 and 2019. For the specific information of search attention interests, the online keywords search database of *Google Search*, that is, the *search volume index* (***SVI***) data of the different political leaders in the Google search engine are used. These attention search data are retrievable in the Google Trends database. The data time range and list of keywords search variable details are given in Table-1 as well.

The six political attention attributes: (i) three political personalities viz., “Atal Bihari Vajpayee” – ABV, “Lal Krishna Advani” - LKA, and “Narendra Modi” – NM are from the “Bhartiya Janata Party” - BJP and the other three political personalities viz., “Sonia Gandhi” - SG, “Manmohan Singh” - MS, and “Rahul Gandhi” -RG are from “Indian National Congress” - INC. The political attention variables for the BJP are coined as the variable set $SVIP_1$ and those for the INC are coined as $SVIP_2$.

Table-1: Google Search Keywords, Data Periods, and Attention Attributes

Daily Data Time Range:	**Attention Political Variables**	
	$SVIP_1$	***$SVIP_2$***
01.01.2004 to 22.05.2004, 02.03.2009 to 25.05.2009, 05.03.2014 to 26.05.2014, 10.03.2019 to 23.05.2019	"Atal Bihari Vajpayee", "Lal Krishna Advani", and "Narendra Modi".	"Sonia Gandhi", "Manmohan Singh", and "Rahul Gandhi"

4.1. Granger Causality of Market Returns & Trade Volume

In exploring the methodology for the relationships between the popularity effects of political readers in the NSE Nifty and BSE Sensex, the study firstly examines the possible causality effects of the market returns and trade volume. Since it seeks to investigate the directions of causal relationships between the market index returns and trade volumes and we apply the Granger causality tests for the NSE Nifty and BSE Sensex market returns along with the data of trade volumes in the NSE Nifty and BSE Sensex. We test the following null hypothesis H_{01} against the alternative hypothesis of H_{11}. The irrelevancy proposition in H_{01} suggests for non-consideration by an investor in primary scanning of the market.

H_{01} : There is no causal relationship of investors' realised attention interest (i.e., the realised trade volume) in the NSE Nifty Fifty and BSE Sensex with their respective market returns.

H_{11} : There is a significant causal relationship of investors' realised attention interest in the NSE Nifty Fifty and BSE Sensex with their respective market returns.

4.2. Causal Relationship of Political Attention Attraction

In exploring the directions of interrelated causality of the popular pollical leaders from the two national political parties viz., BJP and INC during the 2004, 2009, 2014 and 2019 Lok Sabha Elections, the study now examines the Granger causality effects of the market returns and trade volume. It tests the null hypothesis H_{02} against the alternative hypothesis H_{12} The irrelevancy proposition H_{02} suggests for investors' attention inertia with the popularity of the political readers.

H_{02} **:** There is no causal relationship of investors' attention interests towards the mainstream political leaders in the INC with those in the BJP in India.

H_{12} **:** There is a causal relationship of investors' attention interests about the political leaders in the INC with those in the BJP in India.

4.3. Popularity Effect and Homogeneity of Stock Market Dynamics

Since both stock markets' return dynamics involve short memory effects (Sinha, 2019), in exploring the third objective, the study now utilizes the following Autoregressive Regression (AR-1) models with augmented lagged dependent variables. It has two sets of search attention variables being explanatory variables viz., $SVIP_1$ and $SVIP_2$ each comprising of three attention variables for their respective political leaders. These attention search variables can explain their effects on the respective dependent variables of stock market returns and the realized trade volume at the NSE or BSE stock market. Thus, we have employed the simple linear multiple regression analysis methods for the returns (volume traded) in one market but augment the returns (volume traded) for the other market as the proxy for homogenised variable within the set of explanatory variables. Such homogenised effect shows the effects of the same variable at a distant market, while in contrast, heterogenised effect shows the effects of the other variable. It also justifies herd behaviours across the markets. The use of the first lagged dependent variable also addresses the possible autocorrelations in the models. The augmented factors further explain homogeneity effects on the market returns dynamics.

$$R_{N,t} = \alpha_{N_r 0} + R_{B,t} + R_{B,t-1} + R_{N,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_r j}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_r j}\, SVIP_{2kt} + \theta_{N_r t} \quad \dots (Eq-1)$$

$$R_{B,t} = \alpha_{B_r 0} + R_{N,t} + R_{N,t-1} + R_{B,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_r j}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_r j}\, SVIP_{2kt} + \theta_{B_r t} \quad \dots (Eq-2)$$

$$V_{N,t} = \alpha_{N_v 0} + V_{B,t} + V_{B,t-1} + V_{N,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_v j}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_v j}\, SVIP_{2kt} + \theta_{N_v t} \quad \dots . (Eq-3)$$

$$V_{B,t} = \alpha_{B_v 0} + V_{N,t} + V_{N,t-1} + V_{B,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_v j}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_v j}\, SVIP_{2kt} + \theta_{B_v t} \quad \dots . (Eq-4)$$

Now, we have the following null hypothesis H_{03} to test against the alternative hypothesis of H_{13}. The irrelevancy hypothesis, H_{03} suggests for the presence of homogeneity in the other markets along with investors' attention to popular political leaders scanning of the market.

H_{03} There is no homogeneity effect of the other markets along with an absence of any popularity effect of the political leaders on the stock market dynamics at the NSE Nifty and BSE Sensex during the election seasons in 2004, 2009, 2014 and 2019.

H_{13} There is presence of homogeneity effect of the other market along with the popularity effects of the political leaders on the stock market dynamics at the NSE Nifty and BSE Sensex during the election seasons in 2004, 2009, 2014 and 2019.

4.4. Popularity Effects on Market Returns & Trade Volume

In order to examine the fourth objective (i.e., standalone popularity effects), the study controls the homogeneity effects and thereby, it utilizes the following regression models. Each model has two sets of search attention variables being the explanatory variables viz., $SVIP_1$ and $SVIP_2$ along with augmented lagged dependent variable. Each of $SVIP_1$ and $SVIP_2$ comprises of three attention variables for the respective political leaders. The attention search variables can explain the effects of popularity on the stock market returns at the NSE or BSE stock market. We have employed the simple linear multiple regression analysis methods for the returns (volume traded) in the stock markets but augment the lagged returns (volume traded) of the same market within the set of explanatory variables in order to take care of the autocorrelation effects. We have the null hypothesis H_{04} and we test the same against the alternative hypothesis of H_{04}. The irrelevancy proposition for H_{04} simply suggests for the absence of popularity effects of investors' attention to political leaders.

$$R_{N,t} = \alpha_{N_r0} + R_{N,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_rj}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_rj}\, SVIP_{2kt} + \theta_{N_rt} \quad \dots (Eq-5)$$

$$R_{B,t} = \alpha_{B_r0} + R_{B,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_rj}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_rj}\, SVIP_{2kt} + \theta_{B_rt} \quad \dots (Eq-6)$$

$$V_{N,t} = \alpha_{N_v 0} + V_{N,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_v j}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_v j}\, SVIP_{2kt} + \theta_{N_v t} \;\ldots.(Eq-7)$$

$$V_{B,t} = \alpha_{B_v 0} + V_{B,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_v j}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_v j}\, SVIP_{2kt} + \theta_{B_v t} \;\ldots.(Eq-8)$$

$\boldsymbol{H_{04}}$**:** There is an absence of popularity effect of the political leaders on the market returns (realised volume) at the NSE Nifty and BSE Sensex during the elections in 2004, 2009, 2014 and 2019.

$\boldsymbol{H_{14}}$**:** There are effects of the political leaders on the market returns (realised volume) at the two NSE Nifty and BSE Sensex during the election days in 2004, 2009, 2014 and 2019.

4.5. Popularity Effect and Heterogeneous Cross Stock Market Dynamics

In order to examine the fifth objective, we utilize the following simple regression models. As earlier, these models have two sets of explanatory variables viz., $SVIP_1$ and $SVIP_2$ for search attention variables, the augmented lagged dependent variable, and cross-component for the price factor (i.e., market return) and demand factor (i.e., realised volume traded) along with their augmented lagged variables. The justification of the use of the said batch of variables is that the attention search variables explain the popularity impacts on the market returns or realised traded volumes along with the cross effects (viz., demand effect vis-a-vis price effect) of the heterogeneous effects of the other (NSE or BSE) stock market. We explore these attention effects along with the stated cross effects with the help of the simple linear multiple regression methods for the returns and volume traded variables. Two augment the lagged variables are also employed for the return variable and volume traded variable in addressing the autocorrelation effects. We test the null hypothesis H_{05} against the alternative hypothesis of H_{05}. The irrelevancy proposition simply suggests for the absence of popularity effects of investors' attention to political leaders along with the absence of cross-market heterogeneity effects.

$$R_{N,t} = \alpha_{N_r0} + V_{B,t} + V_{B,t-1} + R_{N,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_r j}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_r j}\, SVIP_{2kt} + \theta_{N_r t} \quad \dots (Eq-9)$$

$$R_{B,t} = \alpha_{N_r0} + V_{N,t} + V_{N,t-1} + R_{B,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_r j}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_r j}\, SVIP_{2kt} + \theta_{N_r t} \quad \dots (Eq-10)$$

$$V_{N,t} = \alpha_{N_v0} + R_{B,t} + R_{B,t-1} + V_{N,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_v j}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_v j}\, SVIP_{2kt} + \theta_{N_v t} \quad \dots . (Eq-11)$$

$$V_{B,t} = \alpha_{B_v0} + R_{N,t} + R_{N,t-1} + V_{B,t-1} + \sum_{j,t=1}^{p,l} \beta_{B_v j}\, SVIP_{1jt} + \sum_{k=1}^{h,l} \gamma_{B_v j}\, SVIP_{2kt} + \theta_{B_v t} \quad \dots . (Eq-12)$$

$\boldsymbol{H_{05}}$ **:** There is an absence of heterogeneity effect along with the popularity impacts of the political leaders on the market returns (realised volume) at the two NSE Nifty and BSE Sensex stock markets during the election days in 2004, 2009, 2014 and 2019.

$\boldsymbol{H_{15}}$ **:** There is a presence of heterogeneity effect along with the popularity impacts of the political leaders on the market returns (realised volume) at the two NSE Nifty and BSE Sensex stock markets during the election days in 2004, 2009, 2014 and 2019.

5. RESULTS AND FINDINGS

The study now reports the results and findings. It firstly discusses our observations on the causality effects between market returns and trade-volume in Table-1. Then, it discusses the observations on the causal relationships of the political leaders' attention attractions in Table-2. In Table-3, Table-4, Table-5, and Table-6 respectively our results on the popularity effect and stock market dynamics for the election days in 2004, 2009, 2014 and 2019 are depicted. We show the popularity effects on the market returns and trade volumes in Table-3A, Table-4A, Table-5A, and Table-6A respectively for election time 2004, 2009, 2014 and 2019. The results on the popularity effects and cross-market dynamics are given in Table-7. We now briefly discuss the results in the following paragraphs.

5.1. Causality Effects of Market Returns & Trade Volume

In Table-1, in a matrix form of presentation, we have showed the results of Granger Causality tests for the NSE Nifty market returns, BSE Sensex market returns, NSE Nifty trade volume, and BSE Sensex trade volume. It shows the results for the four election years alongside.

For the election year 2004, the table shows that the BSE Sensex daily returns have both ways granger causality effects with the NSE Nifty daily returns while the same of BSE on the NSE is more robust in the terms of the F-statistics value and its level of significance. The daily trade volume in the BSE Sensex market has significant granger cause effects both on the BSE Sensex returns (at 3.5 percent level of significance) and the NSE Nifty trade volume (at 1.5 percent level of significance). The rest pairs of causality tests are not found to have significant causal influences. What do these cross effects of returns and that of the BSE Sensex trade-volume on the NSE Nifty returns and the BSE Sensex trade-volume as well reveal to us? Apparently, the above causality reveals the presence of significant inter-connections amongst market participants. This suggests for investors' perception causality relationship. On returns, such perception has both way causality. Besides, the perception about investors' active liveliness in the BSE Sensex market, that is, the realised presence of investors has significant perceptive effects on the returns of the same market and the liveliness of the other market – the NSE Nifty as well.

For the Lok Sabha election year of 2009, we find a different picture in Table-1. We find that none of the granger causality effects is significant at 10 percent level of significance. But, the NSE Nifty daily trade volume (NSE Nifty daily returns) has significant granger cause effect on the BSE Sensex daily returns (trade volume) at 12 percent (15 percent) level of significance only. These findings show that during the election season in 2009, there is less cross-section perception on returns and active presence of returns for both the markets. There is a seemingly very weak presence of the perceptive causality effects.

For the Lok Sabha election year of 2014, we find somewhat a different picture of the perceptive causality. Table-1 shows that the BSE Sensex stock market daily returns have significant granger causal effect on the NSE Nifty daily returns and NSE Nifty daily trade-volume at 4 percent and 7 percent level of significance respectively. Furthermore, it is found that the BSE Sensex (NSE Nifty) daily trade-volume has significant granger causal effects on the NSE Nifty (BSE Sensex) daily trade-volume at 1 percent (3 percent) level of significance. These results show while the BSE Stock market daily returns have a perceptive causal influence on both the price effects and demand effects in the NSE Nifty stock market, there is a unique observation that the investors in both the stock markets have bidirectional perceptive granger causal influences. Therefore, there is an apparently strong presence of perceptive causality effects in the two stock markets during the study period.

Again, with regard to the Lok Sabha election 2019, we find somewhat new development at the perceptive causality. Table-1 shows that the BSE Sensex stock market daily returns have significant granger causal effect on the NSE Nifty daily returns, NSE Nifty daily trade-volume, and BSE Sensex trade-volume respectively at 2 percent, 13 percent and 2 percent level of significance respectively. Furthermore, the BSE Sensex (NSE Nifty) daily trade-volume has significant (insignificant) granger causal effects on the NSE Nifty (BSE Sensex) daily trade-volume at 16 percent level of significance. These results show results different from those we have observed for the Lok Sabha election, 2009. These results suggest that the perceptive causal effects of the BSE Stock market daily returns are strongly felt in the NSE Nifty market daily returns and BSE Sensex trade-volume as well but weekly in the NSE Nifty trade-volume. Such diverse perceptive causal effects are also observed in the cross-market trade-volume causal effects. Now, what has caused this perceptive causal difference needs further examination. We explore the matter in the forthcoming sub-sections once we explore the causality for attention searches in the Google for the popular political leaders.

5.2. Causal Relationship of Political Attention Attraction

In Table-2, we have showed the results of Granger Causality tests in a matrix form for the political attention variables, that is, the names of six political leaders out of two competitive national political parties in India. These names are “Atal Bihari Vajpayee”, “Lal Krishna Advani” and “Narendra Modi” from the Bhartiya Janata Party (BJP) and “Sonia Gandhi”, “Manmohan Singh” and “Rahul Gandhi” from the Indian National Congress (INC). The table shows the results for the four Lok Sabha election years 2004, 2009, 2014 and 2019 alongside.

For the election year 2004 data, we find that the Google search attention for "Narendra Modi" is granger caused by those for "Atal Bihari Vajpayee" at 1.5 percent level of significance while the same for "Narendra Modi" granger causes searches for "Lal Krishna Advani" at 1 percent level of significance. Further, the attention searches for "Sonia Gandhi" granger cause the searches for "Manmohan Singh" at 0.1 percent level of significance. The search attention for "Atal Bihari Vajpayee" is weakly found to granger cause searches for "Sonia Gandhi" at 10 percent level of significance. These results for the six political leaders out of the two national parties show that investors voters' intra-party-political attention searches are robust in the terms of causality while inter-party-political attention searches are causally weak.

With the election year 2009, the results in Table-2 show that investor voters' attention search in the Google search for "Manmohan Singh" has significantly granger caused attention search for "Rahul Gandhi" and "Sonia Gandhi" at 1 percent level of significance. The searches for "Manmohan Singh" also granger cause Google attention search for "Atal Bihari Vajpayee" at 2 percent level of significance. Again, investor voters' attention search for "Rahul Gandhi" also granger cause Google search for "Atal Bihari Vajpayee" and "Lal Krishna Advani" at 5 percent and 10 percent level of significance. Besides, investor voters' Google attention search for "Lal Krishna Advani", "Atal Bihari Vajpayee" and "Narendra Modi" also granger cause their attention search for "Sonia Gandhi" at 5.7 percent, 8.93 percent, and 11.03 percent level of significance respectively. These observations during the Lok Sabha election days in 2009, therefore, validate our primary finding that there is robust (i.e., significant at 1 percent level of significance) attention causality at intra-party-political attention searches while the inter-party-political attention searches are causally weak.

Further, with the election year 2014 in Table-2, we find four instances of robust intra-party granger causality for the INC party viz., two pairs of two-way granger causality: one pair between "Manmohan Singh" and "Rahul Gandhi" and the other one between "Sonia Gandhi" and "Manmohan Singh". In another interesting observation, we find that the political leaders "Manmohan Singh" and "Narendra Modi" involve in robust inter-party attention searches resulting in two-way granger causality effects. There is also another robust causality effect of the Google attention search for

“Sonia Gandhi” causing attention search for “Lal Krishna Advani”. In the Table-2, we can also find two (six) weak intra-(inter-) party granger causality effects significant at 10 percent level of significance. These results show that investor voters are going through a dynamic environment where their co-attention are evolving through different causal relationships – robust in some cases and weak in some other cases.

Nonetheless, with the LS election year 2019 in Table-2, we can find a totally different causality environment that is unmatched with any of the earlier three Lok Sabha Elections. It shows that the Google attention search for the political keywords of “Narendra Modi” granger causes the investor voters' attention searches for “Atal Bihari Vajpayee”, “Sonia Gandhi”, and “Rahul Gandhi” robustly at 1 percent level of significance and that for “Manmohan Singh” at 2 percent level significance. The table also shows that the other political attention key words are just dimmed off from the attention redder of the investor voters even at 15 percent level of significance. That is, the key word “Narendra Modi” is a dominating attention search factor in the Google search engine during the relevant election days stated in the study period. These results suggest that the Google search attention data have a potentiality to illustrate the political polarisation of investors voters' attention search interests.

In the following, we move forward to explore if investor voters' Google political search attention could have attention footprints on the NSE Nifty and BSE Sensex index values, and thereby, on their market returns and realised traded volumes. In doing so, the study explains both the stock market returns and their realised traded volumes separately for the four Lok Sabha Elections in 2004, 2009, 2014 and 2019. For the stated purpose, the explanatory variables' set differs but it in common includes the two sets of political attention factors for the two dominant political parties in India viz., the BJP and the INC, where each comprises three of their populist leaders. We employ three different methodological approaches econometrically: firstly, with a homogeneity proxy for the dependent variable in the explanatory variable set; secondly, without the homogeneity proxy effect as just mentioned; and thirdly, with a heterogeneity proxy effect for the dependent variable in the explanatory variable set. In the following, we empirically explore these approaches one after another. We align the stated first (second) methodological endeavor to Table-3 (-3A), Table-4 (-4A), Table-5 (-5A) and Table-6 (-6A) respectively for the Lok Sabha Elections in 2004, 2009, 2014, and 2019; and the third one to Table-7.

5.3. Popularity Effect and Homogeneous Stock Market Dynamics

For the results as depicted in Table-3, Table-4, Table-5, and Table-6 in relation to the Lok Sabha Elections held in the years of 2004, 2009, 2014 and 2019 respectively, we report our findings of popularity effects of the political leaders on the stock market dynamics being the explained variable (viz., the NSE Nifty returns, BSE Sensex returns and the respective trade-volumes) along with the explanatory homogeneity effects of the other market for synchronicity of the two markets' co-movements.

The results depicted in Table-3 show that during 2004 Lok Sabha election periods, amongst the political leaders, "Lal Krishna Advani" has negative impact on NSE Nifty returns, "Manmohan Singh" ("Narendra Modi" and "Sonia Gandhi") has positive (negative) impacts on BSE Sensex returns while "Atal Bihari Vajpayee" ("Lal Krishna Advani") has negative (positive) impacts on NSE Nifty (BSE Sensex) trade-volume. In the table, the respective homogeneity factors have positive impacts on their relevant dependent variables out of NSE Nifty or BSE Sensex returns or trade-volumes. The regression models have robust magnitudes for R^2 and Adj. R^2 for their degree of explanatory power, and F-statistics for a good fit of the model along with the Durbin-Watson d-statistics values for stationarity.

Our results in Table-4 show that during the Lok Sabha Election days in 2009, amongst the six popular political leaders, "Manmohan Singh" has negative effect on NSE Nifty returns, "Sonia Gandhi" has negative impacts on BSE Sensex returns and "Rahul Gandhi" has negative impacts on BSE Sensex trade-volume while no political leader has any impact on NSE Nifty trade-volume. The homogeneity factor also has positive impacts on their relevant dependent variables as it is found in 2004 as well. The regression models also are sound and robust in the terms of explanatory power, good fit of the model, and stationarity effects.

Again, In Table-5, we find that during the Lok Sabha Election days in 2014, amongst the six popular political leaders, "Manmohan Singh" and "Rahul Gandhi" both have positive effects on NSE Nifty returns while "Manmohan

Singh" and "Lal Krishna Advani" both have negative impacts on BSE Sensex returns. Here, the Google attention search interest for "Sonia Gandhi" ("Rahul Gandhi") has significant positive impacts on NSE Nifty (BSE Sensex) trade-volume at 10 percent level of significance. The homogeneity factor of market returns or trade-volume also has a positive coefficient on the relevant dependent variables as we have already found in election days in 2004 and 2009 as well. The regression results are sound, robust, moderately stationarity along with a good fit of the model.

However, it is interesting to report that in Table-6, we find a totally different attention environment even though the homogeneity factors of the market returns or trade-volume for the NSE Nifty and BSE Sensex indices have positive impact factors as usual and the regression results are sound, robust, moderately stationarity along with a good fit of it. None of the popular political leaders have any impact in explaining the both market returns and their trade-volume as well. Having said that, the respective homogeneity factors could explain NSE Nifty (BSE Sensex) returns more than 60 percent (50 percent) in terms of adjusted R^2-value. Besides, the respective homogeneity factor could explain the NSE Nifty (BSE Sensex) returns mostly more than 30 percent (35 percent) with its Adj. R^2-value. All these results confirm that the homogeneity factor in their respective models has substantive synchrocity in explaining the stock market dynamics even at an absence of the impacts of political personalities.

Nonetheless, the said results do not distinguish the effects of the homogeneity factor from those of political leaders. The overall results show the homogeneity effect, referring to the synchronicity between the two markets which are persistent even if the attention effects of the political factors fade away. In the next sub-heading, the study identifies the specific effects of the popularity effects of the political leaders on the stock market returns and their respective trade-volumes.

5.4. Popularity Effects on Market Returns & Trade Volume

We report the results depicted in Table-3A, Table-4A, Table-5A, and Table-6A in relation to the LS Elections in 2004, 2009, 2014 and 2019 respectively. We discuss findings of the popularity effects of the political leaders on the stock market returns and trade-volume for both the markets.

The results in Table-3A show that during the election days in 2004, attention in Google search for popular political leaders "Sonia Gandhi" and "Manmohan Singh" have respectively negative and positive impacts on the NSE Nifty (BSE Sensex) daily returns significantly at 3.27 percent and 0.22 percent (0.41 percent and 2.33 percent) level of significance while their respective regression models explain at an extent of 18.149 percent (9.9337 percent) variations in the return variables. Besides, the table depicts that Google search for "Atal Bihari Vajpayee" ("Lal Krishna Advani") has significantly negative (positive) impacts in explaining NSE Nifty (BSE Sensex) trade-volumes at 5.9 percent (2 percent) level of significance with Adj. R^2-value of 56.4475 percent (56.1073 percent). The F-values for these cases are all significant at least at 0.3452 percent level of significance. The respective F-values confirm a good-fit of the models. The Durbin-Watson (D-W) statistics for stationarity confirm stationarity of the empirical data as well. These results suggest for a robust presence of the popularity effects of the political leaders from both the political parties. But it appears interesting that the political attentions do not have synchronous effects of the market returns with that on volume traded.

Besides the above, the results in Table-4A show that during the election days in 2009, the Google attention searches for "Lal Krishna Advani", "Sonia Gandhi", and "Rahul Gandhi" have positively, negatively and positively significant impacts respectively on the NSE Nifty (BSE Sensex) returns at the level of significance of 7.9 percent, 5.2 percent and 0.60 percent (10.80 percent, 0.40 percent, and 1.1 percent). In addition to the above, the said table also shows that the Google attention search keyword "Rahul Gandhi" has negatively significant impacts on the NSE Nifty (BSE Sensex) volume traded at 4.3 percent (0.5 percent) level of significance. The stated table, furthermore, shows that the explanatory variables can explain 17.2441 percent and 14.1705 percent (4.8126 percent and 10.8 percent) variations in the NSE Nifty and BSE Sensex returns (NSE Nifty and BSE Sensex volume traded) respectively. In all the cases, the empirical models are of good fit and sound. The DW statistics confirm the stationarity of the data.

We now report the results for LS Election in 2014 in Table-5A It shows that the Google attention search for the popular political leader "Rahul Gandhi" only has a positively significant impact in explaining the NSE Nifty returns at 1 percent level of significance along with the explanatory power of 34.4652 in the terms of Adj. R^2-value. In explaining the BSE Sensex returns (NSE Nifty trade-volume), we find that none of the six explanatory political attention variables is significant even at 15 percent level of significance while the augmented lagged dependent variables can explain 41.668 percent (38.8668 percent) variations in the dependent variable. Nonetheless, our results in the table also show that the search attention keyword “Lal Krishna Advani” (“Rahul Gandhi”) has negatively (positively) significant impact on the volume traded in the NSE Nifty at 7.04 percent (10.75 percent) level of significance with an explanatory power of 52.621 percent in the Adj. R^2-value. In the above four cases, the empirical models are of good fit and supportive for stationarity of the data.

Furthermore, in reporting the results for the LS election 2019 as depicted in Table-6A, we find that none of the explanatory Google search variables for political attention is significant even at 15 percent level of significance while their respective augmented lagged dependent variables have significant positive impacts at 5 percent level of significance. These can explain 10.7367 percent, 4.323 percent, 26.9705 percent and 27.378 percent variations in NSE Nifty returns, BSE Sensex returns, NSE Nifty trade-volume, and BSE Sensex trade-volume. These exceptional results confirm that apart from the impact effects of the popularity of the political leaders in the Google search, the effect of lagged memory is profound in both the stock market dynamics. Such a positive effect of lagged memory of the market returns as well as trade-volume suggests for investors' adaptive learning behaviors. Such learning can explain at its most to one-fourth of the current variations in the dependent variables.

Out of the sixteen cases over the four election years, in brief, the results on the popularity effects of political leaders show us three different worlds' views: two relate to the polarisation of attention searches and a mixed one.

Out of the polarisations, in the first-worlds' view, there is such an attention framework that investors' adaptive long memory performs only and attention popularity has no effects. We call this as the “adaptive world view”. In six such cases, two in the year of 2014 and four in the year of 2019, we find the first-worlds' view. For example, in the 2014 LS Election, we find that there is no political attention impact on BSE Sensex daily returns but one-day lagged memory of market return can explain return dynamics at about more than 40 percent. Again, in 2019 LS Election, all the four cases – two for return dynamics and two for volume traded dynamics, are examples of this first-worlds' view.

In the second-worlds' view, interestingly, we can find the opposite of the former one. We describe this as such that only political attention variables move the market dynamics and the market has no memory and the investors are not adaptive but chaotic. We call this as the "attention polarisation view" We have found four such cases – one case in the election year 2004 and three cases in the election year, 2009. For example, in 2004 LS Election, the political attention search variables "Sonia Gandhi" and "Rahul Gandhi" had played opposite impacts in explaining the dynamics in BSE Sensex returns but at an absence of adaptive effect of the market participants.

In the rest six cases, we can find a mixed view of the two-worlds. Here, both the adaptive lagged memory of the market and the Google search political attention have impacts on the market dynamics. We call this as the "mixed world view". For example, during the election days in 2004, both the lagged return variable and the political attention keyword "Sonia Gandhi" and "Manmohan Singh" have impacts in explaining the NSE Nifty returns. Nonetheless, we discuss the results of the popularity effects on the cross-market dynamics with the above three worlds' view in the following.

5.5. Popularity Effect and Heterogeneous Cross Stock Market Dynamics

The study reports the impacts of the Google search attention for the political leaders as depicted in Table-7. It also categorically discusses the three worlds' views as prescribed earlier. Here, the point of emphasis is given in examining if the long memory of the market dynamics could explain the NSE Nifty or BSE Sensex market returns and their respective trade-volumes as well.

The table shows that during the election days in 2004, there is an attention polarisation equilibrium in explaining the NSE Nifty daily returns with insignificant impact of cross market demand from the BSE Sensex trade-volume. None of the two augmented lagged variables is significant in this environment of cross-market dynamics. The Google attention search keyword "Narendra Modi" and "Sonia Gandhi" ("Manmohan Singh") have coefficients those are negatively (positively) significant at 5 percent and 2 percent (2 percent) level of significance respectively. This "attention polarisation view" of cross stock market dynamics can reveal mostly 10 percent variations in the NSE Nifty returns only in the terms of the Adj. R^2-value. The values of the F-statistics (of 2.761387) and Durbin Watson DW statistics (of 2.006583) confirms the stability of the model, stationarity of the data, and a good fit of variable specifications as well.

Besides, the table shows that there exists a "mixed view world" with the election days in 2009. Here, the attention popularity of the political leaders on the Google searches shows that the keywords "Lal Krishna Advani" and "Rahul Gandhi" ("Sonia Gandhi") have positively (negatively) significant impacts on the BSE Sensex daily returns at 15 percent (2 percent) level of significance. Along with the sated attention impacts, the cross-market i.e, NSE Nifty trade-volume has a negatively significant impact at 1 percent level of significance. Nonetheless, the adaptive long memory effects of the NSE Nifty trade-volume and the BSE Sensex returns have positive impacts on the BSE Sensex returns at 15 percent and 1 percent level of significance respectively. The model can explain 34.1897 percent variations in the BSE Sensex returns. The model has a good-fit at an F-statistics value of 5.79117 and the DW statistics value of 2.158341.

Apart from the above two views, the results for election days in 2014 and 2019 as well show that in both the cases none of the attention search keywords representing the popularity of the political leaders on the Google search platform is significant at 15 percent level of significance. More interestingly, in both the cases of explaining NSE Nifty volume traded and BSE Sensex volume traded, we find that the adaptive long memory effects are significant along with significant cross-market dynamic effects. Such cross-market dynamics and adaptive long-memory effects are significant at 2.4 percent and 0.10 percent (10.70 percent and 0.10 percent) level of significance with the LS Election days in 2014 (2019) respectively. The respective explanatory power of the model, 38.4151 percent (34.31 percent) for the election days 2014 (2019) along with the F-statistics value of 6.61398 (5.2367) and the D-W statistics of 1.76832 (1.8136) confirm stability and a good-fit of the model but subject to the adaptive long memory effects. None of the political attention keywords are significant in both the cases. These results confirm that during the LS Election days of 2014 and 2019, the realised presence of traders in both the NSE Nifty and BSE Sensex has influenced by the adaptive long memory effects not by the Google search attention effects of the popular political leaders from the two political parties viz., the BJP and the INC. Taking the three worlds' view into considerations, the study concludes in the following section.

6. CONCLUSION

The study has put forward with an ingenious research agenda whether the LS election days' stock market dynamics in the NSE Nifty and BSE Sensex can be explained by the political attention dynamics of the investors towards the leaders of two competitive political parties or not. The basic theoretical underpinning is that attention to political information is useful for investors' decision making in the two stock markets in India. It has shown a robust presence of political attention impacts along with adaptive long-memory dynamics and a mixed picture of the two as well. Investors' attraction to political information is very noisy across the political leaders and this can cast serious implications on their pay-offs in trading.

The study, now, briefly highlights a few managerial implications of the findings. Since different election years pose varied patterns of causal relationships of the realised trade volumes and market returns of the two premier stock markets in India, the fund managers need to restrain themselves from identifying any reference bias in looking for causality. They should not also use one political leader as the performance predictor of another political leader since the causality of the political leaders from the two mainstream national political parties viz., the BJP and INC show dynamics at different election seasons. On the popularity effects and return dynamics, furthermore, the study shows huge managerial implications. Here, the popularity effects of the political leaders on the market returns as well as their realised trade volumes become different depending on the presence or absence of the homogeneity and heterogeneity factors. Therefore, the fund managers should control the homogeneity and heterogeneity effects for predicting the political attention effects.

The study has a few limitations. The empirical data that we have used itself limits its utility within the LS Election days in 2004, 2009, 2014 and 2019 as mentioned in the study. Since it has used the Google SVI data to proxy for the popularity of six political leaders out of two political parties only, generalisation of the observation is avoided here. Further, the study has used the linear Autoregressive Regression (AR-1) method for augmentation of the lagged dependent variable methodologically, an improvement in the results is expected if the GARCH models could have been used with longer timed periods for the data. Keeping the stated limitations into considerations, investors can improve their behavioral finance understanding about the impacts of attention searches for popular political leaders. To highlight the original contributions to the literature, the study comes with the idea of investors' political attention impacts on the NSE and BSE stock markets. Its empirical observations on the three-worlds' view in the stock market dynamics at the LS Elections are also innovative in the literature. This study can be extended further towards exploring the global political attention effects vis-à-vis national political attention effects on the performances of the Indian stock markets and in this direction of research, Latha and Kumar (2016) could be used for methodological development.

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Table 1. F-statistics in Granger Causality Test of Market Returns and Trade Volume at NSE Nifty and BSE Sensex at LS Elections 2004 -2019

Election Year 2004 (df = 139)

Explained Variables	Explanatory Variables R_{NSE}	R_{BSE}	V_{NSE}	V_{BSE}
R_{NSE}	-	**18.757 * (0.0001)**	0.2938 (0.8816)	1.4890 (0.2092)
R_{BSE}	**3.702 * (0.0069)**	-	1.2713 (0.2846)	**2.677 * (0.0347)**
V_{NSE}	0.6844 (0.6040)	0.4148 (0.7977)	-	**3.226 * (0.0146)**
V_{BSE}	1.4324 (0.2269)	0.4696 (0.7579)	1.7792 (0.1369)	-

Election Year 2009 (df = 81)

Explained Variables	Explanatory Variables R_{NSE}	R_{BSE}	V_{NSE}	V_{BSE}
R_{NSE}	-	0.795 (0.533)	1.762 (0.146)	0.619 (0.651)
R_{BSE}	1.081 (0.372)	-	*1.936 (0.114)*	1.219 (0.310)
V_{NSE}	1.885 (0.122)	0.964 (0.433)	-	0.135 (0.969)
V_{BSE}	*1.744 (0.150)*	1.144 (0.343)	0.157 (0.959)	-

Election Year 2014 (df = 79)

Explained Variables	Explanatory Variables R_{NSE}	R_{BSE}	V_{NSE}	V_{BSE}
R_{NSE}	-	**2.719 * (0.0364)**	0.31366 (0.8679)	0.20949 (0.9323)
R_{BSE}	0.3092 (0.87709)	-	0.99541 (0.4159)	0.07034 (0.9908)
V_{NSE}	0.85858 (0.4932)	**0.596 * (0.0667)**	-	**8.769 * (0.0001)**
V_{BSE}	0.81451 (0.5202)	0.7049 (0.5912)	**2.753 * (0.0346)**	-

Election Year 2019 (df = 71)

Explained Variables	Explanatory Variables R_{NSE}	R_{BSE}	V_{NSE}	V_{BSE}
R_{NSE}	-	**3.130 * (0.0207)**	0.06309 (0.9925)	0.41802 (0.795)
R_{BSE}	1.00442 (0.4122)	-	0.57029 (0.6852)	1.25893 (0.2957)
V_{NSE}	1.34088 (0.2647)	*1.87798 (0.1255)*	-	1.70153 (0.161)
V_{BSE}	1.21683 (0.3128)	**3.369 * (0.0147)**	1.16398 (0.3354)	-

* Mark indicates the most significant Granger Causality Effects. The values in cells of each dependent and independent variables' combinations show the F-statistics value of Granger Causality Tests and the values in their parenthesis are their respective levels of significance (α). "df" is degree of freedom for both the variables.

Table 2. F-statistics in Granger Causality Test of Popularity of Political Leaders During Four LS Elections 2004 -2019

Election Year 2004 (df = 139)

Granger Caused	Granger Cause ABV	LKA	NM	SG	MS	RG
ABV	-	0.71677 (0.5819)	0.28967 (0.8843)	1.0326 (0.393)	0.2724 (0.895)	1.52868 (0.1976)
LKA	1.0361 (0.391)	-	**3.52255 (0.0092)**	0.1255 (0.973)	0.42553 (0.79)	0.91411 (0.4579)
NM	**3.2472 (0.014)**	0.8591 (0.4905)	-	0.9423 (0.442)	1.44012 (0.224)	***2.11181 (0.083)***
SG	0.2515 (0.908)	0.50758 (0.7302)	0.23445 (0.9185)	-	0.80975 (0.521)	0.58811 (0.58811)
MS	***2.0844 (0.087)***	0.6651 (0.6173)	0.93367 (0.4466)	**26.607 (0.001)**	-	**7.3159 (0.0001)**
RG	0.4323 (0.785)	0.97502 (0.4236)	0.62866 (0.6429)	1.08703 (0.3657)	1.54467 (0.1931)	-

Election Year 2009 (df = 81)

Granger Caused	Granger Cause ABV	LKA	NM	SG	MS	RG
ABV	-	1.7166 (0.156)	0.3214 (0.8628)	0.23222 (0.9194)	**3.37013 (0.0138)**	***2.7427 (0.0349)***
LKA	0.69707 (0.5965)	-	1.47784 (0.2179)	1.92475 (0.1155)	*1.23941 (0.3019)*	***2.06262 (0.0946)***
NM	0.556 (0.6953)	0.3577 (0.838)	-	0.36108 (0.8355)	0.74522 (0.5644)	0.3246 (0.8606)
SG	***2.10225 (0.0893)***	***2.4017 (0.057)***	***1.957 (0.1103)***	-	**3.75708 (0.0078)**	1.16227 (0.3347)
MS	1.1376 (0.3458)	0.4209 (0.793)	0.56117 (0.6916)	0.8808 (0.4799)	-	1.09006 (0.368)
RG	1.71233 (0.1566)	0.5541 (0.697)	0.22008 (0.9264)	0.09714 (0.9831)	**6.78733 (0.0001)**	-

Election Year 2014 (df = 79)

Granger Caused	Granger Cause ABV	LKA	NM	SG	MS	RG
ABV	-	0.53733 (0.7088)	***2.20528 (0.0772)***	1.62914 (0.1766)	**2.52488 (0.0484)**	***2.45852 (0.0533)***
LKA	0.64365 (0.6332)	-	***2.57468 (0.045)***	**4.53929 (0.0026)**	**3.0775 (0.0215)**	**2.93256 (0.0266)**
NM	**3.37024 (0.014)**	0.64472 (0.6324)	-	0.88453 (0.4778)	**3.96891 (0.0058)**	***2.11422 (0.0881)***
SG	0.64184 (0.6344)	0.59583 (0.6668)	0.18557 (0.9452)	-	**4.11773 (0.0047)**	0.40849 (0.8019)
MS	0.61861 (0.6507)	***2.15608 (0.0829)***	**15.8421 (0.0001)**	**8.92754 (0.0001)**	-	**17.9813 (0.0001)**
RG	1.04105 (0.3924)	0.61326 (0.6545)	0.40985 (0.801)	0.43532 (0.7827)	**13.6873 (0.0001)**	-

Election Year 2019 (df = 71)

Granger Caused	Granger Cause ABV	LKA	NM	SG	MS	RG
ABV	-	0.23392 (0.9182)	**4.03184 (0.0057)**	0.16301 (0.9563)	0.48699 (0.7452)	0.1708 (0.953)
LKA	1.63484 (0.1768)	-	1.13631 (0.3478)	0.43668 (0.7816)	0.40326 (0.8056)	0.2274 (0.922)
NM	0.74391 (0.5658)	0.28461 (0.8869)	-	0.25207 (0.9073)	0.20568 (0.9343)	0.2402 (0.915)
SG	1.28869 (0.2842)	0.05657 (0.9939)	**3.97726 (0.0062)**	-	1.01138 (0.4085)	0.2818 (0.889)
MS	0.61507 (0.6534)	0.23231 (0.9192)	**3.27133 (0.0169)**	1.08523 (0.3716)	-	1.2984 (0.281)
RG	1.1315 (0.35)	0.08635 (0.9864)	**4.49145 (0.003)**	0.27255 (0.8946)	1.09801 (0.3656)	-

* Mark indicates the most significant Granger Causality Effects. The values in cells of each dependent and independent variables' combinations show the F-statistics value of Granger Causality Tests and the values in their parenthesis are their respective levels of significance (α). "df" is degree of freedom for both the variables.

Table 3. Popularity Effects of Political Leaders on Stock Market Dynamics at the NSE Nifty and BSE Sensex During LS Election, 2004

Dependent Variable: R_NSE				Dependent Variable: R_BSE				Dependent Variable: V_NSE				Dependent Variable: V_BSE			
Variables	**Coefficient**	**Std. Err.**	**t-Stat (Prob.)**	**Variables**	**Coefficient**	**Std. Err.**	**t-Stat (Prob.)**	**Variables**	**Coefficient**	**Std. Err.**	**t-Stat (Prob.)**	**Variables**	**Coefficient**	**Std. Err.**	**t-Stat (Prob.)**
C	-0.012114	0.08842	-0.137 (0.891)	**C**	**0.784303**	**0.10235**	**7.66273 (0.001)**	**C**	**1.7280140**	**0.4126**	**4.1879 (0.001)**	C	-0.173643	0.319014	-0.5443 (0.5871)
R_BSE	**0.350503**	**0.05461**	**6.4175 (0.001)**	**R_NSE**	**0.678465**	**0.10572**	**6.41746 (0.001)**	**V_BSE**	**0.7028150**	**0.1029**	**6.8316 (0.001)**	**V_NSE**	**0.371664**	**0.054404**	**6.83159 (0.001)**
R_BSE(-1)	**0.477475**	**0.06557**	**7.2811 (0.001)**	**R_NSE(-1)**	**-0.317094**	**0.09249**	**-3.4284 (0.001)**	**V_BSE(-1)**	**-0.4705250**	**0.1098**	**-4.2872 (0.001)**	**V_NSE(-1)**	**-0.133785**	**0.062941**	**-2.1255 (0.0354)**
R_NSE(-1)	**0.184013**	**0.06750**	**2.7261 (0.007)**	R_BSE(-1)	-0.145475	0.10727	-1.3562 (0.177)	**V_NSE(-1)**	**0.6563540**	**0.066964**	**9.8016 (0.001)**	**V_BSE(-1)**	**0.613154**	**0.066398**	**9.23451 (0.001)**
ABV	0.00000304	0.0000103	0.2959 (0.768)	ABV	0.0000030	0.0000143	0.21074 (0.833)	**ABV**	**-0.0009740**	**0.000508**	**-1.9182 (0.0572)**	ABV	0.00020	0.000374	0.5351 (0.5935)
LKA	**-0.0000129**	**0.00000795**	***-1.6246 (0.107)***	LKA	0.0000146	0.0000111	1.31669 (0.190)	LKA	-0.0005150	0.000409	-1.2586 (0.2104)	**LKA**	**0.00088**	**0.000290**	**3.03855 (0.0029)**
NM	0.0000016	0.00000654	0.2445 (0.807)	**NM**	**-0.0000142**	**0.00000902**	***-1.5685 (0.119)***	NM	-0.0002090	0.000323	-0.6469 (0.5188)	NM	-0.0000745	0.000235	-0.3167 (0.752)
SG	0.0000129	0.00000907	1.4259 (0.156)	**SG**	**-0.0000426**	0.0000122	**-3.503 (0.001)**	SG	0.0003660	0.000425	0.8615 (0.3905)	SG	0.000275	0.000309	0.88885 (0.3757)
MS	-0.0000089	0.00001300	-0.6832 (0.496)	**MS**	**0.0000325**	0.0000179	**1.81558 (0.072)**	MS	0.0000580	0.000581	0.0997 (0.9207)	MS	-0.000107	0.000423	-0.2538 (0.8001)
RG	0.0000046	0.00000819	0.5596 (0.577)	RG	0.0000085	0.0000114	0.74782 (0.456)	RG	0.0001180	0.000419	0.2813 (0.7789)	RG	-0.000294	0.000304	-0.9686 (0.3345)
R^2	**0.587415**	Mean dependent variance	0.999	**R^2**	**0.374772**	Mean dependent variance	0.99	**R^2**	**0.694802**	Mean dependent variance	8.0524	**R^2**	**0.707996**	Mean dependent variance	4.5222
Adj. R^2	**0.559284**	S.D. dependent variance	0.002	**Adj. R^2**	**0.332143**	S.D. dependent variance	0.0025	**Adj. R^2**	**0.673993**	S.D. dependent variance	0.1266	**Adj. R^2**	**0.688086**	S.D. dependent variance	0.0941
S.E. of regression	0.001454	Akaike info criterion	-10.16	S.E. of regression	0.002023	Akaike info criterion	-9.501	S.E. of regression	0.072271	Akaike info criterion	-2.349	S.E. of regression	0.052556	Akaike info criterion	-2.9861
Sum squared residuals	0.000279	Schwarz criterion	-9.953	Sum squared residuals	0.00054	Schwarz criterion	-9.293	Sum squared residuals	0.689451	Schwarz criterion	-2.141	Sum squared residuals	0.364596	Schwarz criterion	-2.7779
Log likelihood	731.4567	Hannan-Quinn criterion	-10.08	Log likelihood	684.5638	Hannan-Quinn criterion	-9.416	Log likelihood	176.7765	Hannan-Quinn criterion	-2.2644	Log likelihood	222.0109	Hannan-Quinn criterion	-2.9015
F-statistic	**20.88155**	**Durbin-Watson statistics**	**1.942**	**F-statistic**	**8.791444**	**Durbin-Watson statistics**	**1.916**	**F-statistic**	33.38961	**Durbin-Watson statistics**	**1.606**	**F-statistic**	**35.5609**	**Durbin-Watson statistics**	**2.0795**
α of F-Stat		**0.0001**		**α of F-Stat**		**0.00001**		**α of F-Stat**		**0.00001**		**α of F-Stat**		**0.0001**	

Table 3A. Popularity Effects on Stock Market Returns and Realized Trade Volume at NSE Nifty and BSE Sensex During LS Election, 2004

Dependent Variable: R_NSE				Dependent Variable: R_BSE				Dependent Variable: V_NSE				Dependent Variable: V_BSE			
Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)
C	**0.64894700**	**0.08066**	**8.0452 (0.001)**	**C**	**0.875164**	**0.09311**	9.3993 **(0.001)**	**C**	**2.1304430**	**0.463131**	**4.600089 (0.001)**	**C**	**1.224437**	**0.272024**	**4.501 (0.001)**
R_NSE(-1)	**0.35113300**	**0.08066**	**4.3527 (0.001)**	R_BSE(-1)	0.125034	0.09308	1.3432 (0.1815)	**V_NSE(-1)**	**0.7363990**	**0.057493**	**12.80858 (0.001)**	**V_BSE(-1)**	**0.728090**	**0.060048**	**12.125 (0.001)**
ABV	0.00001200	0.000014	0.8594 (0.3916)	ABV	0.00000422	0.0000166	0.2547 (0.7994)	ABV	-0.0011130	0.000586	-1.90128 (0.059)	ABV	-0.000203	0.000437	-0.464 (0.643)
LKA	-0.0000143	0.0000108	-1.323 (0.188)	LKA	0.00000662	0.0000128	0.5163 (0.6065)	LKA	0.0001190	0.000458	0.260018 (0.795)	**LKA**	**0.000798**	**0.000340**	**2.350 (0.020)**
NM	-0.00000601	0.0000088	-0.681 (0.4971)	NM	-0.0000195	0.0000104	-1.8719 (0.0634)	NM	-0.0003340	0.00037	-0.90171 (0.368)	NM	-0.000159	0.000277	-0.573 (0.567)
SG	**-0.00002460**	**0.0000114**	**-2.159 (0.0327)**	**SG**	**-0.0000411**	**0.0000141**	**-2.9218 (0.0041)**	**SG**	**0.0006990**	**0.000473**	**1.47658 (0.142)**	**SG**	**0.000554**	**0.000364**	**1.525 (0.130)**
MS	**0.00004980**	**0.000016**	**3.1223 (0.0022)**	**MS**	**0.0000464**	**0.0000202**	**2.2944 (0.0233)**	MS	-0.0000334	0.000672	-0.04966 (0.961)	MS	-0.000137	0.000501	-0.272 (0.786)
RG	-0.00000248	0.0000109	-0.2267 (0.821)	RG	0.0000128	0.0000131	0.9713 (0.3332)	RG	-0.0000500	0.000463	-0.10808 (0.914)	RG	-0.000223	0.000358	-0.623 (0.534)
R^2	**0.222126**	Mean dependent variance	0.999	**R^2**	**0.144051**	Mean dependent variance	0.9999	**R^2**	**0.586097**	Mean dependent variance	8.052	**R^2**	**0.5829**	Mean dependent variance	4.522
Adj. R^2	**0.18149**	S.D. dependent variance	0.0022	**Adj. R^2**	**0.099337**	S.D. dependent variance	0.0025	**Adj. R^2**	**0.564475**	S.D. dependent variance	0.127	**Adj. R^2**	**0.561073**	S.D. dependent variance	0.0941
S.E. of regression	0.001981	Akaike info criterion	-9.555	S.E. of regression	0.002349	Akaike info criterion	-9.215	S.E. of regression	0.083533	Akaike info criterion	-2.07	S.E. of regression	0.0623	Akaike info criterion	-2.658
Sum squared residuals	0.000526	Schwarz criterion	-9.388	Sum squared residuals	0.000739	Schwarz criterion	-9.049	Sum squared residuals	0.93502	Schwarz criterion	-1.91	Sum squared residuals	0.5208	Schwarz criterion	-2.491
Log likelihood	686.4341	Hannan-Quinn criterion	-9.487	Log likelihood	662.2631	Hannan-Quinn criterion	-9.147	Log likelihood	155.1447	Hannan-Quinn criterion	-2.01	Log likelihood	196.6892	Hannan-Quinn criterion	-2.590
F-statistic	**5.46633**	**Durbin-Watson statistics**	**1.939**	**F-statistic**	**3.221622**	**Durbin-Watson statistics**	**2.037**	**F-statistic**	**27.10673**	**Durbin-Watson statistics**	**1.822**	**F-statistic**	**26.7483**	**Durbin-Watson statistics**	**2.293**
α of F-Stat	**0.000015**			**α of F-Stat**	**0.003452**			**α of F-Stat**	**0.000001**			**α of F-Stat**	**0.00001**		

Table 4. Popularity Effects of Political Leaders on Stock Market Dynamics at the NSE Nifty and BSE Sensex During LS Election, 2009

Dependent Variable: R_NSE				ependent Variable: R_BSE				Dependent Variable: V_NSE				Dependent Variable: V_BSE			
Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)
C	-0.0380790	0.0993460	-0.38 (0.70)	C	0.392297	0.0859650	4.563 (0.001)	C	2.377400	0.567996	4.186 (0.001)	C	-0.860210	0.537054	-1.602 (0.114)
R_BSE	0.777588	0.0770800	10.09 (0.001)	R_NSE	0.744605	0.0738100	10.088 (0.001)	V_BSE	1.023813	0.062473	16.388 (0.001)	V_NSE	0.765749	0.046726	16.388 (0.001)
R_BSE(-1)	0.1848960	0.1103030	1.68 (0.10)	R_NSE(-1)	-0.0793330	0.1020970	-0.777 (0.440)	V_BSE(-1)	-0.279676	0.130922	-2.136 (0.036)	V_NSE(-1)	-0.209724	0.099736	-2.103 (0.039)
R_NSE(-1)	0.0752490	0.1043930	0.72 (0.47)	R_BSE(-1)	-0.0572500	0.1097660	-0.522 (0.604)	V_NSE(-1)	0.304835	0.113307	2.690 (0.009)	V_BSE(-1)	0.181247	0.114747	1.580 (0.119)
ABV	0.0000054	0.0000102	0.53 (0.60)	ABV	-0.0000052	0.0000100	-0.513 (0.610)	ABV	0.000055	0.000645	0.085 (0.932)	ABV	-0.000250	0.000557	-0.449 (0.655)
LKA	0.0000127	0.0000127	1.00 (0.32)	LKA	0.0000035	0.0000125	0.280 (0.780)	LKA	-0.000273	0.000802	-0.341 (0.734)	LKA	0.000368	0.000693	0.531 (0.597)
NM	-0.0000088	0.0000109	-0.80 (0.42)	NM	0.0000084	0.0000107	0.785 (0.435)	NM	0.000942	0.000701	1.344 (0.183)	NM	-0.000531	0.00061	-0.870 (0.387)
SG	0.0000064	0.0000209	0.31 (0.76)	SG	-0.0000418	0.0000199	-2.103 (0.039)	SG	0.001094	0.001278	0.856 (0.395)	SG	-0.000220	0.00111	-0.198 (0.844)
MS	-0.0000308	0.0000174	-1.76 (0.08)	MS	0.0000280	0.0000171	1.634 (0.107)	MS	-0.000728	0.001112	-0.654 (0.515)	MS	0.000751	0.000961	0.782 (0.437)
RG	0.0000309	0.0000270	1.15 (0.26)	RG	0.0000194	0.0000265	0.731 (0.467)	RG	0.000950	0.001751	0.542 (0.589)	RG	-0.002681	0.001485	-1.806 (0.075)
R^2	0.697016	Mean dependent variance	1.0011	R^2	0.669682	Mean dependent variance	1.001139	R^2	0.817647	Mean dependent variance	8.4824	R^2	0.8242	Mean dependent variance	4.652
Adj. R^2	0.660166	S.D. dependent variance	0.00314	Adj. R^2	0.629508	S.D. dependent variance	0.002943	Adj. R^2	0.795469	S.D. dependent variance	0.2576	Adj. R^2	0.8029	S.D. dependent variance	0.227
S.E. of regression	0.001831	Akaike info criterion	-9.6568	S.E. of regression	0.001792	Akaike info criterion	-9.70017	S.E. of regression	0.11648	Akaike info criterion	-1.351	S.E. of regression	0.1007	Akaike info criterion	-1.641
Sum squared residuals	0.000248	Schwarz criterion	-9.3674	Sum squared residuals	0.000238	Schwarz criterion	-9.41079	Sum squared residuals	1.003999	Schwarz criterion	-1.062	Sum squared residuals	0.7509	Schwarz criterion	-1.352
Log likelihood	415.5866	Hannan-Quinn criterion	-9.5405	Log likelihood	417.407100	Hannan-Quinn criterion	-9.58384	Log likelihood	66.73583	Hannan-Quinn criterion	-1.235	Log likelihood	78.9341	Hannan-Quinn criterion	-1.525
F-statistic	18.91522	Durbin-Watson statistics	2.1965	F-statistic	16.669620	Durbin-Watson statistics	2.137554	F-statistic	36.86742	Durbin-Watson statistics	2.046	F-statistic	38.5603	Durbin-Watson statistics	2.070
α of F-Stat	0.0001			α of F-Stat	0.0001			α of F-Stat	0.0001			α of F-Stat	0.0001		

Table 4A. Popularity Effects on Stock Market Returns and Realized Trade Volume at NSE Nifty and BSE Sensex During LS Election, 2009

Dependent Variable: R_NSE				Dependent Variable: R_BSE			
Variable	**Coefficient**	**Std. Err.**	**t-Stat (Prob.)**	**Variable**	**Coefficient**	**Std. Err.**	**t-Stat (Prob.)**
C	**0.7247580**	**0.1052240**	**6.888 (0.001)**	**C**	**0.8533800**	**0.1052480**	**8.108 (0.001)**
R_NSE(-1)	**0.2750310**	**0.1051740**	**2.615 (0.011)**	R_BSE(-1)	0.1467580	0.1052040	1.395 (0.167)
ABV	0.0000018	0.0000160	0.114 (0.910)	ABV	-0.0000020	0.0000152	-0.131 (0.896)
LKA	**0.0000345**	**0.0000194**	**1.781 (0.079)**	**LKA**	**0.0000298**	**0.0000184**	**1.626 (0.108)**
NM	-0.0000032	0.0000170	-0.188 (0.851)	NM	0.0000046	0.0000163	0.280 (0.781)
SG	**-0.0000608**	**0.0000309**	**-1.971 (0.052)**	**SG**	**-0.0000876**	**0.0000294**	**-2.976 (0.004)**
MS	-0.0000213	0.0000272	-0.784 (0.435)	MS	0.0000120	0.0000259	0.463 (0.644)
RG	**0.0001150**	**0.0000402**	**2.852 (0.006)**	**RG**	**0.0001000**	**0.0000384**	**2.609 (0.011)**
R^2	**0.242235**	Mean dependent variance	1.0011	**R^2**	**0.214092**	Mean dependent variance	1.001139
Adj. R^2	**0.172441**	S.D. dependent variance	0.00314	**Adj. R^2**	**0.141705**	S.D. dependent variance	0.00294
S.E. of regression	0.002857	Akaike info criterion	-8.788	S.E. of regression	0.002727	Akaike info criterion	-8.881
Sum squared residuals	0.00062	Schwarz criterion	-8.55625	Sum squared residuals	0.000565	Schwarz criterion	-8.649
Log likelihood	377.0856	Hannan-Quinn criterion	-8.69469	Log likelihood	381.0021	Hannan-Quinn criterion	-8.7879
F-statistic	**3.470705**	**Durbin-Watson statistics**	**2.181661**	**F-statistic**	**2.957629**	**Durbin-Watson statistics**	**2.144**
α of F-Stat	**0.0001**			**α of F-Stat**	**0.008526**		

Dependent Variable: V_NSE				Dependent Variable: V_BSE			
Variable	**Coefficient**	**Std. Err.**	**t-Stat (Prob.)**	**Variable**	**Coefficient**	**Std. Err.**	**t-Stat (Prob.)**
C	**7.7553420**	**0.925646**	**8.378 (0.001)**	**C**	**4.846757**	**0.501628**	9.662 **(0.001)**
V_NSE(-1)	0.0804200	0.110104	0.730 (0.467)	V_BSE(-1)	-0.03932	0.10839	-0.363 (0.718)
ABV	-0.0010260	0.001384	-0.742 (0.461)	ABV	-0.00094	0.00118	-0.799 (0.427)
LKA	0.0000356	0.001704	0.021 (0.983)	LKA	0.000669	0.001468	0.455 (0.650)
NM	0.0020550	0.001501	1.369 (0.175)	NM	0.000958	0.001277	0.750 (0.455)
SG	0.0036910	0.002722	1.356 (0.179)	SG	0.002726	0.002314	1.178 (0.243)
MS	0.0004110	0.002393	0.172 (0.864)	MS	0.000936	0.002042	0.458 (0.648)
RG	**-0.0072310**	**0.003506**	**-2.062 (0.043)**	**RG**	**-0.00876**	**0.002998**	**-2.920 (0.005)**
R^2	**0.128404**	Mean dependent variance	8.4824	**R^2**	**0.183**	Mean dependent variance	4.652
Adj. R^2	**0.048126**	S.D. dependent variance	0.2576	**Adj. R^2**	**0.108**	S.D. dependent variance	0.227
S.E. of regression	0.251282	Akaike info criterion	0.1659	S.E. of regression	0.214	Akaike info criterion	-0.153
Sum squared residuals	4.798839	Schwarz criterion	0.3974	Sum squared residuals	3.489	Schwarz criterion	0.079
Log likelihood	1.031761	Hannan-Quinn criterion	0.259	Log likelihood	14.419	Hannan-Quinn criterion	-0.060
F-statistic	**1.599482**	**Durbin-Watson statistics**	**2.1436**	**F-statistic**	**2.438**	**Durbin-Watson statistics**	**2.221**
α of F-Stat	**0.148461**			**α of F-Stat**	**0.026133**		

Table 5. Popularity Effects of Political Leaders on Stock Market Dynamics at the NSE Nifty and BSE Sensex During LS Election, 2014

Dependent Variable: R_NSE				Dependent Variable: R_BSE				Dependent Variable: V_NSE				Dependent Variable: V_BSE			
Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)
C	-0.074308	0.148228	-0.501 (0.618)	**C**	**0.272572**	**0.079566**	**3.426 (0.001)**	**C**	**4.985185**	**0.961092**	**5.187 (0.000)**	**C**	**1.382142**	**0.94250**	**1.466 (0.147)**
R_BSE	**0.873601**	**0.176046**	**4.962 (0.0001)**	**R_NSE**	**0.291725**	**0.058788**	**4.962 (0.000)**	**V_BSE**	**-0.237795**	**0.135935**	**-1.749 (0.085)**	**V_NSE**	**-0.171448**	**0.098008**	**-1.749 (0.085)**
R_BSE(-1)	0.207824	0.199484	1.042 (0.301)	R_NSE(-1)	0.058541	0.059682	0.981 (0.330)	V_BSE(-1)	-0.031472	0.136243	-0.231 (0.818)	**V_NSE(-1)**	**0.185191**	**0.095300**	**1.943 (0.056)**
R_NSE(-1)	-0.008049	0.103963	-0.077 (0.939)	**R_BSE(-1)**	**0.377703**	**0.107273**	**3.521 (0.001)**	**V_NSE(-1)**	**0.524993**	**0.097105**	**5.406 (0.000)**	**V_BSE(-1)**	**0.639781**	**0.087796**	**7.287 (0.000)**
ABV	0.000005	0.000006	0.763 (0.448)	ABV	0.000001	0.000004	0.332 (0.741)	ABV	-0.000684	0.001163	-0.588 (0.558)	ABV	-0.000086	0.000989	-0.087 (0.931)
LKA	0.000005	0.000006	0.804 (0.424)	**LKA**	**-0.000006**	**0.000004**	**-1.701 (0.093)**	LKA	-0.000084	0.001121	-0.075 (0.941)	**LKA**	**-0.001532**	**0.000935**	**-1.639 (0.106)**
NM	0.000012	0.000013	0.918 (0.362)	NM	-0.000005	0.000007	-0.731 (0.467)	NM	0.003286	0.002364	1.390 (0.169)	NM	0.001073	0.002030	0.528 (0.599)
SG	-0.000022	0.000023	-0.954 (0.343)	SG	0.000009	0.000013	0.704 (0.484)	**SG**	**-0.007005**	**0.004192**	**-1.671 (0.099)**	SG	-0.002946	0.003611	-0.816 (0.417)
MS	**0.000036**	**0.000017**	**2.112 (0.038)**	**MS**	**-0.000022**	**0.000010**	**-2.194 (0.032)**	MS	0.003906	0.002966	1.317 (0.192)	MS	0.001245	0.002544	0.489 (0.626)
RG	**0.000041**	**0.000022**	**1.884 (0.064)**	RG	0.000000	0.000013	0.038 (0.970)	**RG**	**0.005875**	**0.003916**	**1.500 (0.138)**	**RG**	**0.006393**	**0.003292**	**1.942 (0.056)**
R^2	**0.62366**	Mean dependent variance	1.000	**R^2**	**0.609381**	Mean dependent variance	1.000375	**R^2**	**0.455276**	Mean dependent variance	8.210	**R^2**	**0.59281**	Mean dependent variance	4.0438
Adj. R^2	**0.57662**	S.D. dependent variance	0.002	**Adj. R^2**	**0.560553**	S.D. dependent variance	0.000896	**Adj. R^2**	**0.387186**	S.D. dependent variance	0.238	**Adj. R^2**	**0.54192**	S.D. dependent variance	0.2342
S.E. of regression	0.00103	Akaike info criterion	-10.810	S.E. of regression	0.000594	Akaike info criterion	-11.9066	S.E. of regression	0.186688	Akaike info criterion	-0.405	S.E. of regression	0.15852	Akaike info criterion	-0.732
Sum squared residuals	0.00008	Schwarz criterion	-10.516	Sum squared residuals	0.000025	Schwarz criterion	-11.6131	Sum squared residuals	2.509373	Schwarz criterion	-0.111	Sum squared residuals	1.80923	Schwarz criterion	-0.439
Log likelihood	453.20260	Hannan-Quinn criterion	-10.692	Log likelihood	498.171900	Hannan-Quinn criterion	-11.7888	Log likelihood	26.60118	Hannan-Quinn criterion	-0.287	Log likelihood	40.01358	Hannan-Quinn criterion	- 0.6142
F-statistic	**13.25728**	**Durbin-Watson statistics**	**2.248**	**F-statistic**	**12.480300**	**Durbin-Watson statistics**	**1.894307**	**F-statistic**	**6.686338**	**Durbin-Watson statistics**	**1.944**	**F-statistic**	**11.64699**	**Durbin-Watson statistics**	**2.3025**
α of F-Stat	**0.0001**			**α of F-Stat**	**0.0001**			**α of F-Stat**	**0.0001**			**α of F-Stat**	**0.0001**		

Table 5A. Popularity Effects on Stock Market Returns and Realized Trade Volume at NSE Nifty and BSE Sensex During LS Election, 2014

Dependent Variable: R_NSE			
Variable	Coefficient	Std. Err.	t-Stat (Prob.)
C	**0.678074**	**0.102133**	**6.639 (0.0001)**
R_NSE(-1)	**0.321959**	**0.102129**	**3.152 (0.002)**
ABV	0.000004	0.000008	0.545 (0.587)
LKA	-0.000004	0.000007	-0.567 (0.573)
NM	0.000017	0.000016	1.067 (0.289)
SG	-0.000035	0.000028	-1.266 (0.209)
MS	0.000015	0.000021	0.733 (0.466)
RG	**0.000070**	**0.000026**	**2.644 (0.010)**
R^2	**0.401287**	Mean dependent variance	1.0005
Adj. R^2	**0.344652**	S.D. dependent variance	0.0016
S.E. of regression	0.001278	Akaike info criterion	-10.394
Sum squared residuals	0.000121	Schwarz criterion	-10.16
Log likelihood	434.1669	Hannan-Quinn criterion	-10.3
F-statistic	**7.085482**	**Durbin-Watson statistics**	**2.219**
α of F-Stat	**0.0001**		

Dependent Variable: R_BSE			
Variable	Coefficient	Std. Err.	t-Stat (Prob.)
C	**0.336590**	**0.090452**	**3.721 (0.001)**
R_BSE(-1)	**0.663704**	**0.090370**	**7.344 (0.001)**
ABV	0.000004	0.000004	0.855 (0.396)
LKA	-0.000006	0.000004	-1.451 (0.151)
NM	-0.000004	0.000008	-0.501 (0.618)
SG	0.000005	0.000015	0.358 (0.722)
MS	-0.000010	0.000010	-0.987 (0.327)
RG	0.000014	0.000014	0.991 (0.325)
R^2	**0.46709**	Mean dependent variance	1.00038
Adj. R^2	**0.41668**	S.D. dependent variance	0.00090
S.E. of regression	0.00068	Akaike info criterion	-11.6448
Sum squared residuals	0.00003	Schwarz criterion	-11.41
Log likelihood	485.43680	Hannan-Quinn criterion	-11.551
F-statistic	**9.26588**	**Durbin-Watson statistics**	**1.7892**
α of F-Stat	**0.0001**		

Dependent Variable: V_NSE			
Variable	Coefficient	Std. Err.	t-Stat (Prob.)
C	**3.772166**	**0.793184**	**4.756 (0.001)**
V_NSE(-1)	**0.540834**	**0.09679**	**5.588 (0.001)**
ABV	-0.00085	0.001195	-0.710 (0.480)
LKA	0.000211	0.001134	0.186 (0.853)
NM	0.002269	0.002388	0.950 (0.345)
SG	-0.00482	0.004208	-1.147 (0.255)
MS	0.002225	0.00294	0.757 (0.452)
RG	0.004547	0.00396	1.148 (0.255)
R^2	**0.404956**	Mean dependent variance	8.2098
Adj. R^2	**0.348668**	S.D. dependent variance	0.2385
S.E. of regression	0.192466	Akaike info criterion	-0.365
Sum squared residuals	2.741182	Schwarz criterion	-0.131
Log likelihood	22.97857	Hannan-Quinn criterion	-0.271
F-statistic	**7.194364**	**Durbin-Watson statistics**	**1.8032**
α of F-Stat	**0.0001**		

Dependent Variable: V_BSE			
Variable	Coefficient	Std. Err.	t-Stat (Prob)
C	**1.450349**	**0.341657**	**4.245 (0.001)**
V_BSE(-1)	**0.650042**	**0.085159**	**7.633 (0.001)**
ABV	0.000112	0.001002	0.112 (0.9113)
LKA	**-0.00171**	**0.000944**	**-1.812 (0.074)**
NM	0.00086	0.002022	0.425 (0.6719)
SG	-0.00221	0.003599	-0.613 (0.5416)
MS	0.001268	0.002498	0.508 (0.6132)
RG	**0.005395**	**0.003312**	**1.629 (0.1075)**
R^2	**0.567155**	Mean dependent variance	4.0438
Adj. R^2	**0.52621**	S.D. dependent variance	0.2342
S.E. of regression	0.161213	Akaike info criterion	-0.7197
Sum squared residuals	1.923235	Schwarz criterion	-0.4849
Log likelihood	37.50818	Hannan-Quinn criterion	-0.6254
F-statistic	**13.8517**	**Durbin-Watson statistics**	**2.04178**
α of F-Stat	**0.0001**		

Table 6. Popularity Effects of Political Leaders on Stock Market Dynamics at the NSE Nifty and BSE Sensex During LS Election, 2019

Dependent Variable: R_NSE				Dependent Variable: R_BSE				Dependent Variable: V_NSE				Dependent Variable: V_BSE			
Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)
C	-0.002673	0.108495	-0.025 (0.980)	**C**	**0.3996590**	**0.1050560**	**3.804 (0.001)**	**C**	**3.7452640**	**0.87179**	**4.296 (0.001)**	C	-0.697264	0.9435	-0.739 (0.463)
R_BSE	**0.659017**	**0.082494**	**7.989 (0.001)**	**R_NSE**	**0.7576260**	**0.0948380**	**7.989 (0.001)**	**V_BSE**	**0.3581020**	**0.12263**	**2.920 (0.005)**	**V_NSE**	**0.328336**	**0.1124**	**2.920 (0.005)**
R_BSE(-1)	**0.323229**	**0.121212**	**2.667 (0.010)**	R_NSE(-1)	-0.0913020	0.1255820	-0.727 (0.470)	V_BSE(-1)	-0.1389750	0.12823	-1.084 (0.283)	V_NSE(-1)	0.046315	0.1252	0.370 (0.713)
R_NSE(-1)	0.020298	0.117580	0.173 (0.864)	R_BSE(-1)	-0.0660150	0.1367460	-0.483 (0.631)	**V_NSE(-1)**	**0.4530180**	**0.11802**	**3.839 (0.001)**	**V_BSE(-1)**	**0.394555**	**0.1137**	**3.471 (0.001)**
ABV	-0.000007	0.000018	-0.378 (0.706)	ABV	0.0000153	0.0000189	0.806 (0.423)	ABV	-0.0001120	0.00233	-0.048 (0.962)	ABV	0.000763	0.0022	0.343 (0.733)
LKA	0.000003	0.000004	0.623 (0.535)	LKA	-0.0000042	0.0000046	-0.919 (0.362)	LKA	-0.0001330	0.00058	-0.231 (0.818)	LKA	0.000017	0.0006	0.031 (0.975)
NM	-0.000026	0.000021	-1.250 (0.216)	NM	0.0000164	0.0000224	0.734 (0.465)	NM	0.0014650	0.00282	0.520 (0.605)	NM	0.001991	0.0027	0.740 (0.462)
SG	0.000022	0.000035	0.637 (0.526)	SG	0.0000047	0.0000376	0.126 (0.900)	SG	-0.0007220	0.00470	-0.154 (0.878)	SG	-0.001014	0.0045	-0.225 (0.823)
MS	0.000009	0.000010	0.917 (0.363)	MS	-0.0000048	0.0000105	-0.455 (0.650)	MS	-0.0003130	0.00135	-0.232 (0.818)	MS	0.000158	0.0013	0.123 (0.903)
RG	0.000028	0.000035	0.796 (0.429)	**RG**	**-0.0000552**	**0.0000372**	**-1.482 (0.143)**	RG	0.0007770	0.00467	0.166 (0.869)	RG	0.000316	0.0045	0.071 (0.944)
R^2	**0.656567**	Mean dependent variance	1.000232	**R^2**	**0.571775**	Mean dependent variance	1.000201	**R^2**	**0.41737**	Mean dependent variance	8.551	**R^2**	**0.4512**	Mean dependent variance	4.228
Adj. R^2	**0.608272**	S.D. dependent variance	0.00082	**Adj. R^2**	**0.511556**	S.D. dependent variance	0.000787	**Adj. R^2**	**0.335438**	S.D. dependent variance	0.086	**Adj. R^2**	**0.3740**	S.D. dependent variance	0.084
S.E. of regression	0.000513	Akaike info criterion	-12.1875	S.E. of regression	0.000550	Akaike info criterion	-12.0481	S.E. of regression	0.069761	Akaike info criterion	-2.362	S.E. of regression	0.0668	Akaike info criterion	-2.449
Sum squared residuals	1.68E-05	Schwarz criterion	-11.8762	Sum squared residuals	0.000019	Schwarz criterion	-11.7367	Sum squared residuals	0.311466	Schwarz criterion	-2.051	Sum squared residuals	0.2856	Schwarz criterion	-2.138
Log likelihood	460.9383	Hannan-Quinn criterion	-12.0633	Log likelihood	455.779	Hannan-Quinn criterion	-11.9239	Log likelihood	97.40815	Hannan-Quinn criterion	-2.238	Log likelihood	100.6191	Hannan-Quinn criterion	-2.325
F-statistic	**13.59486**	**Durbin-Watson statistics**	**1.791102**	**F-statistic**	**9.494905**	**Durbin-Watson statistics**	**1.889389**	**F-statistic**	**5.09408**	**Durbin-Watson statistics**	**1.909**	**F-statistic**	**5.8461**	**Durbin-Watson statistics**	**2.002**
α of F-Stat	**0.0001**			**α of F-Stat**	**0.0001**			**α of F-Stat**	**0.0001**			**α of F-Stat**	**0.0001**		

Table 6A. Popularity Effects on Stock Market Returns and Realized Trade Volume at NSE Nifty and BSE Sensex During LS Election, 2019

Dependent Variable: R_NSE				Dependent Variable: R_BSE				Dependent Variable: V_NSE				Dependent Variable: V_BSE			
Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)	Variable	Coefficient	Std. Err.	t-Stat (Prob.)
C	**0.675015**	**0.120991**	**5.579 (0.001)**	C	**0.7534700**	**0.1209480**	**6.230 (0.001)**	C	**3.9618290**	**0.910299**	**4.352 (0.001)**	C	**2.0413140**	**0.45692**	**4.468 (0.001)**
R_NSE(-1)	**0.324519**	**0.121080**	**2.680 (0.009)**	**R_BSE(-1)**	**0.2462920**	**0.1210490**	**2.035 (0.046)**	**V_NSE(-1)**	**0.5334030**	**0.105399**	**5.061 (0.001)**	**V_BSE(-1)**	**0.5058680**	**0.10717**	**4.720 (0.001)**
ABV	0.000017	0.000027	0.633 (0.529)	ABV	0.0000187	0.0000264	0.707 (0.482)	ABV	0.0001790	0.002430	0.074 (0.942)	ABV	0.0008840	0.00239	0.369 (0.713)
LKA	-0.000002	0.000006	-0.259 (0.797)	LKA	-0.0000043	0.0000064	-0.671 (0.505)	LKA	-0.0001450	0.000601	-0.240 (0.811)	LKA	-0.0000430	0.00059	-0.072 (0.943)
NM	-0.000017	0.000031	-0.535 (0.594)	NM	-0.0000033	0.0000308	-0.107 (0.916)	NM	0.0024720	0.002926	0.845 (0.401)	NM	0.0029400	0.00288	1.020 (0.311)
SG	0.000063	0.000052	1.212 (0.230)	SG	0.0000484	0.0000518	0.934 (0.354)	SG	-0.0012330	0.004926	-0.250 (0.803)	SG	-0.0017060	0.00484	-0.352 (0.726)
MS	0.000006	0.000015	0.410 (0.683)	MS	0.0000027	0.0000146	0.186 (0.853)	MS	-0.0002850	0.001392	-0.205 (0.839)	MS	-0.0004530	0.00136	-0.332 (0.741)
RG	-0.000041	0.000052	-0.783 (0.436)	RG	-0.0000719	0.0000518	-1.386 (0.170)	RG	0.0010070	0.004897	0.206 (0.838)	RG	0.0011320	0.00481	0.235 (0.815)
R^2	**0.192962**	Mean dependent variance	1.000232	**R^2**	**0.13498**	Mean dependent variance	1.000201	**R^2**	**0.339733**	Mean dependent variance	8.551	**R^2**	**0.343418**	Mean dependent variance	4.228
Adj. R^2	**0.107367**	S.D. dependent variance	0.00082	**Adj. R^2**	**0.04323**	S.D. dependent variance	0.000787	**Adj. R^2**	**0.269705**	S.D. dependent variance	0.086	**Adj. R^2**	**0.27378**	S.D. dependent variance	0.084
S.E. of regression	0.000774	Akaike info criterion	-11.3872	S.E. of regression	0.00077	Akaike info criterion	-11.399	S.E. of regression	0.07313	Akaike info criterion	-2.291	S.E. of regression	0.071948	Akaike info criterion	-2.324
Sum squared residuals	3.96E-05	Schwarz criterion	-11.1381	Sum squared residuals	0.00004	Schwarz criterion	-11.1499	Sum squared residuals	0.35297	Schwarz criterion	-2.042	Sum squared residuals	0.341652	Schwarz criterion	-2.075
Log likelihood	429.3263	Hannan-Quinn criterion	-11.2878	Log likelihood	429.76400	Hannan-Quinn criterion	-11.2997	Log likelihood	92.77977	Hannan-Quinn criterion	-2.192	Log likelihood	93.98561	Hannan-Quinn criterion	-2.225
F-statistic	**2.254368**	**Durbin-Watson statistics**	**1.948762**	**F-statistic**	**1.47122**	**Durbin-Watson statistics**	**2.062808**	**F-statistic**	**4.851374**	**Durbin-Watson statistics**	**1.825**	**F-statistic**	**4.931507**	**Durbin-Watson statistics**	**1.930**
α of F-Stat	**0.040471**			**α of F-Stat**	**0.192918**			**α of F-Stat**	**0.000187**			**α of F-Stat**	**0.000159**		

Table 7. Robustness Check of Popularity Effects on Cross Stock Market Dynamics at NSE Nifty and BSE Sensex at LS Elections, 2004-19

Lok Sabha Election, 2004				Lok Sabha Election, 2009				Lok Sabha Election, 2014				Lok Sabha Election, 2019			
Dependent Variable: R_NSE				Dependent Variable: R_BSE				Dependent Variable: V_NSE				Dependent Variable: V_BSE			
Explanatory Variables	Coefficient	Std. Err.	t-Stat (Prob.)	Explanatory Variables	Coefficient	Std. Err.	t-Stat (Prob.)	Explanatory Variables	Coefficient	Std. Err.	t-Stat (Prob.)	Explanatory Variables	Coefficient	Std. Err.	t-Stat (Prob.)
C	**0.9059650**	**0.0956940**	**9.467 (0.001)**	C	**0.7438570**	**0.1103730**	**6.740 (0.001)**	C	**-43.8175**	**27.088**	**-1.618 (0.110)**	C	**-38.5799**	**13.59725**	-2.837 **(0.006)**
V_BSE	-0.0007900	0.0032690	-0.242 (0.809)	**V_NSE**	**-0.0055320**	**0.0011130**	**-4.968 (0.001)**	**R_BSE**	**74.53485**	**32.2768**	**2.309 (0.024)**	**R_NSE**	**17.98389**	**10.99132**	**1.636 (0.107)**
V_BSE(-1)	-0.0027950	0.0033150	-0.843 (0.401)	**V_NSE(-1)**	**0.0018110**	**0.0012030**	**1.504 (0.137)**	R_BSE(-1)	-27.1462	33.6964	-0.806 (0.423)	**R_NSE(-1)**	**22.83409**	**11.40408**	**2.002 (0.050)**
R_NSE(-1)	0.1104650	0.0941880	1.173 (0.243)	**R_BSE(-1)**	**0.2877100**	**0.1066570**	**2.698 (0.009)**	**V_NSE(-1)**	**0.560256**	**0.09755**	**5.744 (0.001)**	**V_BSE(-1)**	**0.465659**	**0.104868**	**4.440 (0.001)**
ABV	0.0000031	0.0000166	0.185 (0.854)	ABV	-0.0000061	0.0000133	-0.457 (0.649)	ABV	-0.00096	0.00119	-0.808 (0.422)	ABV	-0.00102	0.002375	-0.427 (0.671)
LKA	0.0000070	0.0000131	0.531 (0.596)	**LKA**	**0.0000251**	**0.0000164**	**1.528 (0.131)**	LKA	0.000832	0.00113	0.736 (0.464)	LKA	0.000178	0.00057	0.312 (0.756)
NM	**-0.0000209**	**0.0000105**	**-1.997 (0.048)**	NM	0.0000131	0.0000145	0.903 (0.369)	NM	0.002439	0.00233	1.049 (0.298)	NM	0.00253	0.002747	0.921 (0.360)
SG	**-0.0000352**	**0.0000147**	**-2.395 (0.018)**	**SG**	**-0.0000633**	**0.0000263**	**-2.405 (0.019)**	SG	-0.00461	0.00414	-1.112 (0.270)	SG	-0.00253	0.004637	-0.545 (0.588)
MS	**0.0000481**	**0.0000203**	**2.372 (0.019)**	MS	0.0000153	0.0000227	0.671 (0.504)	MS	0.002492	0.00289	0.862 (0.392)	MS	-0.00023	0.001303	-0.174 (0.862)
RG	0.0000067	0.0000137	0.491 (0.624)	**RG**	**0.0000522**	**0.0000351**	**1.489 (0.141)**	RG	0.003309	0.00389	0.852 (0.397)	RG	0.003801	0.004675	0.813 (0.419)
R^2	**0.158445**	Mean dependent variance	0.999905	**R^2**	**0.413257**	Mean dependent variance	1.001139	**R^2**	**0.452579**	Mean dependent variance	8.20979	**R^2**	**0.4241**	Mean dependent variance	4.2283
Adj. R^2	**0.101066**	S.D. dependent variance	0.002475	**Adj. R^2**	**0.341897**	S.D. dependent variance	0.002943	**Adj. R^2**	**0.384151**	S.D. dependent variance	0.23848	**Adj. R^2**	**0.3431**	S.D. dependent variance	0.08443
S.E. of regression	0.002347	Akaike info criterion	-9.20376	S.E. of regression	0.002388	Akaike info criterion	-9.12564	S.E. of regression	0.18715	Akaike info criterion	-0.3999	S.E. of regression	0.0684	Akaike info criterion	-2.401
Sum squared residuals	0.000727	Schwarz criterion	-8.99561	Sum squared residuals	0.000422	Schwarz criterion	-8.83626	Sum squared residuals	2.521798	Schwarz criterion	-0.1065	Sum squared residuals	0.2997	Schwarz criterion	-2.0896
Log likelihood	663.4672	Hannan-Quinn criterion	-9.11918	Log likelihood	393.2768	Hannan-Quinn criterion	-9.00931	Log likelihood	26.39868	Hannan-Quinn criterion	-0.2821	Log likelihood	98.8369	Hannan-Quinn criterion	-2.2768
F-statistic	**2.761387**	**Durbin-Watson statistics**	**2.006583**	**F-statistic**	**5.791117**	**Durbin-Watson statistics**	**2.158341**	**F-statistic**	**6.61398**	**Durbin-Watson statistics**	**1.76832**	**F-statistic**	**5.2367**	**Durbin-Watson statistics**	**1.8136**
α of F-Stat	**0.005433**			**α of F-Stat**	**0.0001**			**α of F-Stat**	**0.0001**			**α of F-Stat**	**0.0001**		

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