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INFLUENCE OF POLITICAL EVENTS ON STOCK MARKET VOLATILITY IN NEPAL

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Abstract: *The existing literature is dense with works relating share market volatility with political instability. For Nepal, we do not find thorough studies linking political unrests and fluctuations of the stock market. We attempt to fill this research deficit by performing a threefold analysis on the influence of politics on Nepali share market. First, we perform a survey on stock market investors and brokers for identifying probable factors that account the volatility of stock market. Majority of the investors and brokers think political unrest in the most influential determinant of stock market volatility. Second, we perform multivariate analysis on a quarterly dataset over one decade to test whether disturbances in stock index could be explained by a set of economic variables. The results show such a relation could not be described a linear model suggesting there are other factors other than the economic variables that is missing from the model; the missing variable may be a properly quantified variable representing political instability. Guided by this possibility, in the third step, we historically trace the relation between political instability and stock market volatility. The historical analysis shows a clear relation between political and stock market upheavals.*

Keywords: *NEPSE index, Dominant factors, Politics, Multiple Regression analysis, Multiple Correlation Coefficient.*

JEL classification: *G10, E10*

Contribution/ Originality: *The main contribution of this paper is the analysis of relation between political stability and Nepali stock market – up to our knowledge, such an analysis has not been done hitherto in the Nepalese context. The originality of this paper is its examination of the influence of political instability on NEPSE index using an indirect approach in combination with interviews and historical tracing of major political events.*

1. INTRODUCTION

The history of capital market in Nepal dates back to 1936 when the shares of Biratnagar Jute Mills Ltd. were floated for first time. The then His Majesty's Government of Nepal introduced the Company Act in 1964, and also made the first issue of government

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bonds through Nepal Rastra Bank to collect the developmental expenditures. Securities Exchange Center (SEC) was established in 1976 with an objective of facilitating and promoting the growth of capital market. It was the only capital market institution in Nepal. Securities Exchange Act came into force in 1984. Since then, SEC started to operate under this act with purpose of providing systematic and favorable market environment for securities. With the passage of time volume of investments greatly been increased, however the stock market still has to evolve in terms of expertise of investors and connoisseur brokers; the market has become more and more volatile and consequently the business more and more risky.

The establishment of security market in Nepal in 1985 and Nepal Stock Exchange (NEPSE) market in 1994 opened an avenue to both small and large investors to invest in the enterprise sector and participate in the secondary market. From the time of its implementation, concerned personalities have been complaining the negative effect of political events in Nepalese stock market stability. The brokers and investors of Nepali stock market almost unanimously regard politics as the major factor responsible for the markets' instability. During a political mess, small investors rush for selling stocks, while institutional investors remain in wait-and-see mode. This pulls the market drown. The situation of stock market in Nepal worsened from 1995/96 onwards with the onset of political instability. Both the investment climate as well as the operational climate suffered leading to poorer results in many companies. As a result, the price at NEPSE nose-dived and it incurred heavy losses. The worse period was 1997 to 1998, after which the situation improved somewhat with the commencement of operations by many finance companies, which paid out dividends. The improvement, however, was only marginal just to keep enough attentions. The economic and political scenario became more volatile with the rise in insurgency which led to slowing down of economic activities resulting at worsening performance in sectors like tourism and manufacturing, leading to a more volatile and vulnerable NEPSE. These incidents suggest politics has direct impact in the stability of stock market.

There is a rich literature on stock market behavior. Majority of the works have interlinked ups and downs in stock market with economic variables. Macro-economic variables are always found to be the leading influential factors in the stock market. Bilal and Talib (2013) show a significant long run relationship existed between gold prices and BSE stock index. Similarly, Naik (2013) concludes that the macroeconomic variables and the stock market index are co-integrated. However, there are other factors that are difficult to quantify but exert great influence on stock market such as changes in the government policy, elections; which directly or indirectly influence the investors perception and their transacting behavior (Füss, R., & Bechtel, M. M., 2008; Pastor and Veronesi ,2012). Some of the studies have considered only the real economic variables (Ghosh, A., Bandyopadhyay, G., & Choudhuri, K., 2011; Kumar, 2013) while some (Sapna & Dani (2014); and Brooks, R. M., Patel, A., & Su, T. (2003)) use non-economic variables to emphasize the affect on stock market volatility.

The influential variables have positive or negative effect on stock market performance depending on the behavior of the variables. In past two and half decades, researchers have endeavored to identify such relationship by applying the quantitative analysis techniques like regression and correlation coefficient such as in Sopipan et. al. (2012), and Heins and Allison (1996).

McGillivray (2003) made a study on fourteen stock markets from 1973 to 1996. He observed how political institutions compare in affecting the governments' incentives to enrich one group of industries at the expense of another. The conclusion was the timing of the stock market reaction varies across electoral system, with the reaction being more immediate in Majoritarian systems and longer run and more diffuse in proportional representation (PR) systems. A study by Julio and Yook (2010) had examined the investment behavior of firms around national elections and the verdict of this paper showed lower firm level corporate investment just before national elections for a large sample of countries around the world. Similarly, within the countries, the reduction in capital expenditures is larger when the election outcome is more difficult to predict. These studies supported the idea of analyzing the affect of political factor in the share market.

It is evident that most of the works cited above consider economic variables as the key factors for identifying their influence on stock market like inflation, interest rate, exchange rate etc. The possible factor responsible for stock market volatility like political upheavals and temperaments of people, are often ignored mostly because of difficulty in quantification. However we find some works like considering the role of political environment in stock market behavior. For instance, Bollen, J., Mao, H., & Zeng, X. (2011) have investigateg whether the measurement of collective mood states derived from large twitter feed are correlated to the value of the Dow Johns Industrial Average.

In a politically unstable country like Nepal, overall economic behavior cannot be simple enough to be predictable through the adaptation of purely mathematical models. Nepal has high frequency of government change. The national constitution itself has changed three times in period of last 50 years, and the political unrest and protest for constitution amends has occurred innumerable times. Pastor and Veronesi (2012) mention government policy and event of election are featured to identify their influence on the stock market using numerous empirical predictions, and also found that there is a link between stock price and the policy change in which stock prices rise or fall at the announcement of policy change. In this paper, we argue any model of stock market volatility that excludes political factor cannot be applicable to politically unstable countries like Nepal.

This study seeks to identify the major factors influencing the share market in Nepal; specially the role of the political events on the variation of NEPSE index. We believe that the outcomes of this study are helpful to several stakeholders such as shareholders, brokers, market makers and future researchers for the promotion of their business and studies.

The remaining part of the paper is organized as follows; the second section includes theoretical framework. The third section deals with the model and methods. The fourth section discusses about the analysis of data and its presentation and the fifth section makes the concluding remarks.

2. THEORETICAL FRAMEWORK

2.1. The Basic Theory

Following the growth of stock market worldwide, researchers have developed several theories for describe stock market behavior. The Dow-theory, a prominent doctrine that explains stock market, was derived from *255 Wall street journal* editorials written by Charles H. Dow (1851-1902). Dow never published his complete theory but several followers and associates have published works that have expanded on the editorials which is explained in details in the paper of George W. & Bishop Jr. (1961). The first basic premise of this theory suggest that past, current and even future is discounted into the markets and reflected in the prices of stock and indexes. Second principle defines three major trends within the market: primary, secondary and minor. A primary trend lasts for more than a year, while a secondary trend lasts three weeks to three and finally the minor trend often lasts less than three weeks. Third tenet states that there are three phases to every primary trend which is applicable to both bull and bear market. In first accumulation (distribution) phase, informed buyers buy (sell) their position, in public participation phase it lasts the longest representing largest part of the move and in panic phase, market filled up with panic leading large buy or sell off.

Forth principle states that market indexes must confirm each other. Unless all indexes show the same trend, it is not assumed that new trend has begun. Similarly, fifth tenet states that volume is also used as a secondary indicator to help confirm what the price movement is suggesting. Finally, last principle suggests that trend remains in effect until clear reversal occurs. Even in today's highly technologically developed market, Dow Theory holds its basic tenets. It acts as a guide to timing the stock market and making money in it. These principles highly reflected the Nepalese stock market. Therefore, this theory has been taken as a basic theory for this study.

The figure No.1 shows first principle of Dow-theory where three trends in both bull and bear market are depicted.

Even though the root of this theory was evolved two century back their basic principles are still applicable and are not infallible in 21st century (Schannep, J., 2008). Figure No.2 shows three phases in the primary trend of both bull and bear market.

2.2. Conceptual Framework

We first perform a survey on stock market investors and brokers to identify probable factors that account the volatility of stock market. Then, we analyze the secondary data

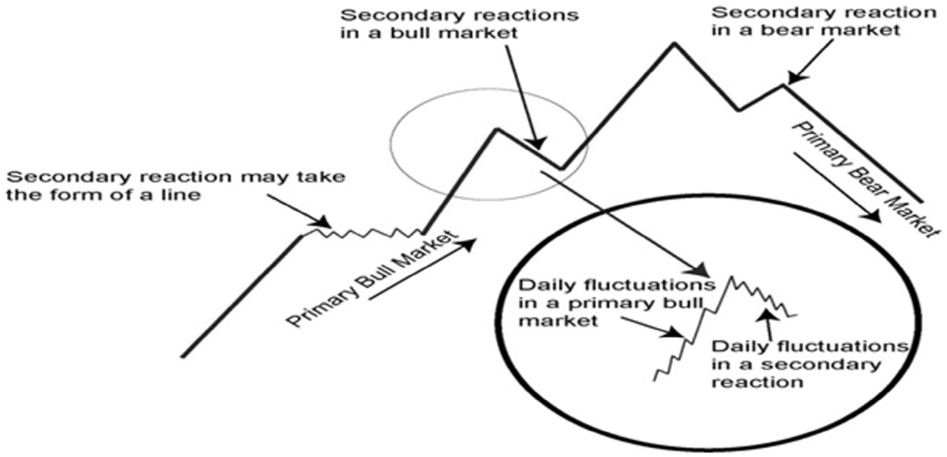

Figure 1: Three trends within the market

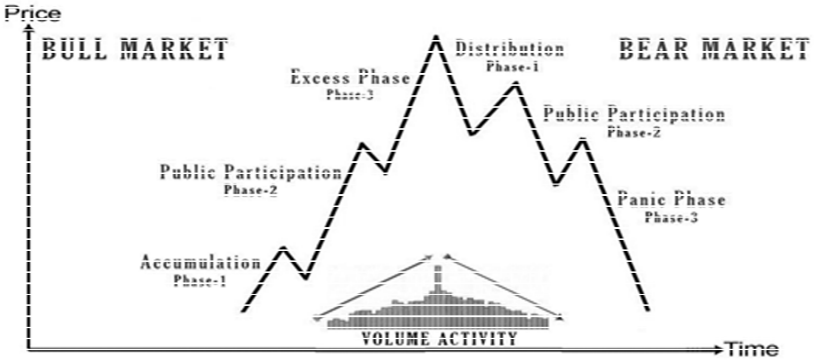

Figure 2: Three phases of primary trend in both bull and bear market

to test whether disturbances in stock index could be explained by the set of variables other than political stability. This is done using multiple linear regressions. Further; we trace historically whether political instability and stock market volatility are correlated.

We performed regression analysis of quarterly secondary data from 2003 to 2013 A.D. The primary variable was the NEPSE index.Our conceptual framework of Fig.No-3 is based on the paper Ghosh, A., Bandyopadhyay, G., & Choudhuri, K. (2011), they examined the relative influence of the factors affecting Bombay Stock Exchange (BSE).

Apart from the listed quantitative variables, political factor has a significant impact on NEPSE index. However, our indirect analysis of the secondary data used the quantifiable variables listed above; we attempted to prove any combination of these quantitative variables cannot explain changes in the NEPSE index. Such combination would force to conclude that there are non-quantifiable variables affecting the stock market of which politics could be an influential one.

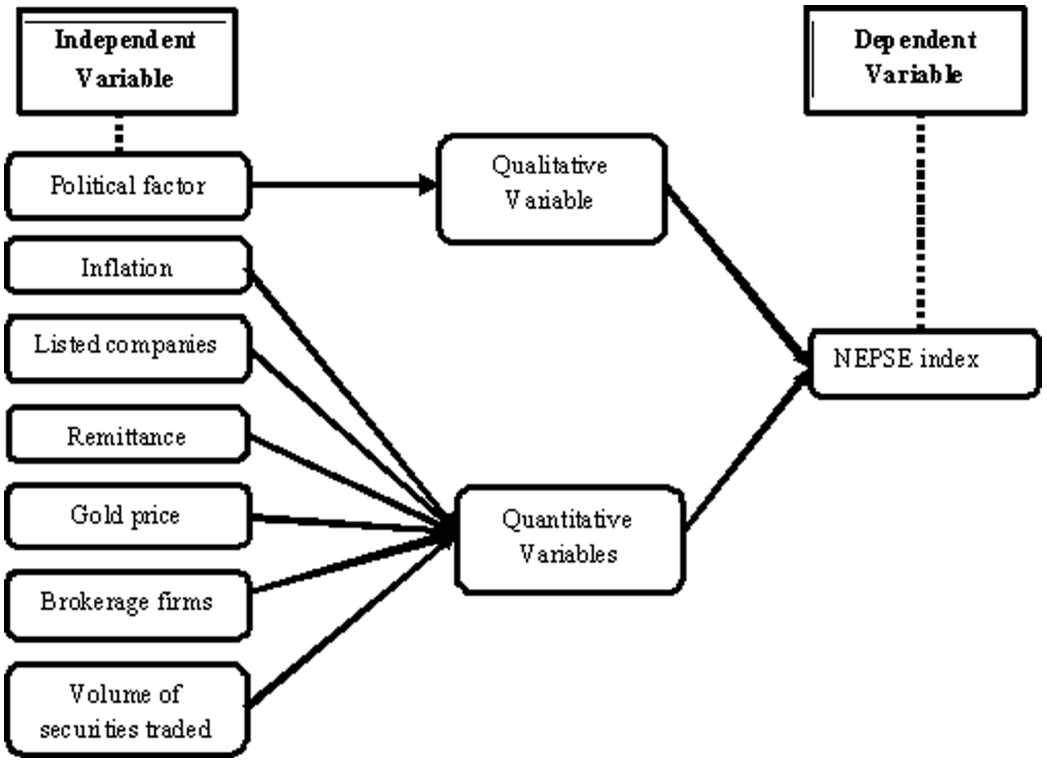

Figure 3: Conceptual Framework

3. THE METHODOLOGY

This section is synchronized in the way that first primary and secondary data were collected from various sources to analyze those data and then generalized the findings to link political factor with NEPSE index.

3.1. The Model

For the case of secondary data, simple linear multivariate regression analysis was done whereas political events have been analyzed through qualitative study through the primary survey. They are explained as follows;

$$y = \beta_0 + \beta_1 x \tag{1}$$

Regression is the method for finding the best values of the coefficients β_0 and β_1. The mostly used method for linear regression is the method of least square error. Suppose the variables x and y have n corresponding values $x_1, x_2, \ldots, x_n$ and $y_1, y_2, \ldots, y_n$. For each x_1, the predicted value of y is given as:

$$\hat{y} = \beta_0 + \beta_1 x_i + e_i \tag{2}$$

3.2. The Data

We surveyed on 111 stock market investors with an objective of identifying the most influential factors responsible for stock market fluctuations. There are mainly two types of investors in the share market: Investor holding promoter shares and investor holding public shares. The number of promoters hardly exceeds 6-7 thousands. This group does not come to the market, where as investors holding public share visit the market regularly. The number of this second class of investors runs into hundreds of thousands. We have thus adopted non-probability convenience sampling.

Out of 60 brokerage firms in Nepal, six brokerage firms are targeted which is 10% of the total brokerage houses. Six brokerage firms from where data was collected through questionnaires are given in table 1:

Table 1
List of sample brokers

S No.	*Name of Brokers*	*Code no.*
1.	Market Securities Exchange Company Pvt. Ltd.	5
2.	Ashutosh Brokerage and Securities Pvt. Ltd.	8
3.	Pragyan Securities Pvt. Ltd.	10
4.	Midas Stock Broking Company Pvt. Ltd.	21
5.	Sani Securities Co. Ltd.	42
6.	Dynamic Money Managers Securities Pvt. Ltd.	44

Similarly, secondary data were collected from different sources like newspaper, websites and field visit to the organization like Nepal Rastra bank, Nepal Gold and Silver Dealers' Association, Nepal stock exchange and others.

3.3. NEPSE Behavior and Political Events

We analyzed the political events and NEPSE index trends during the period 2003-2014 to extract any possible relation between the two variables. Since there is extremely large variety of political events, our focus was on the change of prime minister. This is because change in prime minister is the period of change in political party coalition forming the government, which is a political even of utter importance. We analyzed NEPSE trend 5 days before and after the appointment of each prime minister in the selected period.

4. DATA ANALYSIS AND INTERPRETATION

This section dealt with the quantitative as well as qualitative analysis of factors affecting the NEPSE index. In section (4.1) descriptive analysis of primary data in accordance with investors' and brokers' view point was analyzed. In section (3.2), regression and correlation analysis was done to determine whether there is a relationship between the NEPSE index and the relevant variables. And finally in section (3.3) we analyze the major political events (Transitional change in the government) to see whether NEPSE index is influenced by political upheavals.

4.1. Perception of Investors and Brokers

Both the investors and brokers of the share market considered political events as the most influential factor for the stability of NEPSE index. The relative ranking of factors is shown in table 2 where majority of the users considered political events as the major factor, with mode of 1, and gold price as the least influential factor, with mode 9.

Similarly, data collection was done to gather the viewpoints of brokers. Table 3 shows the result of survey on brokers of the Nepali stock market.

From the table 3 we can infer that brokers considered political factor and dividend declaration and distribution as the major factors influencing the share market which is reflected by their respective mode value i.e. 1.67 and 2.5. Similarly, for them gold price is the least influencing factor for the share market as its mode value is 8.

4.2. Analysis of Influential Factors

In this section, we analyze whether there is a linear relation between NEPSE index and the variables such as inflation, remittance, gold price, volume of securities

Table 2
Investors' perception of influential factors

S. no.	*Factor*	*Frequency of each rank*									*Mode*
		1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	
(a)	Inflation (Inf)	9	11	11	12	10	13	13	13	8	6
(b)	Dividend declaration or distribution (DD)	29	30	12	11	3	5	1	5	4	2
(c)	Gold price (Gold)	3	6	12	7	14	11	10	15	22	9
(d)	Remittance (Rem)	1	10	8	11	7	15	21	7	10	7
(e)	Volume of securities traded (VS)	8	9	26	21	11	10	10	3	2	3
(f)	Number of brokerage firms (NB)	1	4	4	15	19	15	17	11	14	5
(g)	Number of listed companies (NL)	0	3	11	9	20	10	15	15	17	5
(h)	Political events (PE)	43	23	9	6	6	6	2	1	4	1
(i)	Speculation (Spec)	6	5	8	9	8	14	12	20	18	8

Table 3
Broker's perception of the influential factors

Statistics	*Inflation*	*Dividend Declaration and Distribution*	*Gold Price*	*Remittance*	*Volume of Securities Traded*	*Number of Brokerage Firms*	*Number of Listed Companies*	*Political Events*	*Speculation*
N	6	6	6	6	6	6	6	6	6
Mean	5.83	2.5	7.5	6	3.5	7.17	6	1.67	4.83
Mode	7	1	8	6	3	7	4	1	2

traded, number of brokerage firms, and the number of listed company as mentioned in table 4.

Table 5 shows regression results of pNEPSEchange done separately with each of the variables listed in above table 4. The coefficient of correlation of inflation, remittance, gold price, brokerage firms, and number of listed companies is very low and significance. It is much larger than the acceptable level of 0.05. However, in case of volume of securities traded, there is a significant linear relation with NEPSE index, but this is only with a moderate correlation of 0.378 which shows that there is no clear linear correlation between dependent variable (NEPSE index) and independent variables (inflation, gold price, remittance, number of brokerage firms and number of listed companies and volume of securities traded).

We further performed multivariate regression analysis to examine whether the NEPSE index depends linearly on some or all of the selected variables. Since it is not clear whether all the six independent variables or one of their combinations should be included in the linear model, considered all possible combinations of 2, 3, 4, 5 and 6 variables, which is a total of 56 possibilities. After performing multiple regressions with all these possible combinations of the variables, we selected the best combination on the basis of highest adjusted value. The result is summarized as follows in the table 6.

As table 6 shows, all six variables taken into the linear model gives the least value for adjusted. It was seen that the second model with three independent variables pVolChange, pRemChange, and pGoldChange gives the largest value

Table 4
The variables used in this section

Variable	*Description*
pNEPSEchange	Percentage change in NEPSE index
Inflation	Inflation
pRemChange	Percentage change in Remittance
pGoldChange	Percentage change in gold price
PVolChange	Percentage change in volume of securities traded
pBrokChange	Percentage change in number of brokerage change
pComChange	Percentage change in number of listed companies

Table 5
Results of separate regressions of pNEPSEchange with other variables

Independent Variable	*Coefficient* (β_1)	*Intercept* (β_0)	R^2	*Sig*
Inflation	0.138	0.023	0.008	0.594
Remittance	0.151	0.025	0.025	0.329
Gold Price	0.062	0.031	0.001	0.873
Volume of securities traded	0.043	0.014	0.143	0.016
Number of Brokerage firms	0.088	0.036	0.005	0.674
Number of Listed companies	0.206	0.037	0.001	0.841

Table 6
Best multiple regression models with increasing number of variables

Model no.	*No. of Variables*	*Best combination of variables*	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	2	pVolChange, pRemChange	0.425	0.181	0.136	0.1384821
2	3	pVolChange, pRemChange, pGoldChange	0.451	0.204	0.137	0.1384045
3	4	pVolChange, Inflation, pRemChange, pGoldChange	0.456	0.208	0.118	0.1399601
4	5	pBrokChange, pVolChange, Inflation, pRemChange, pGoldChange	0.458	0.210	0.094	0.1418348
5	6	(All six variables)	0.459	0.211	0.067	0.1439026

Table 7
Regression coefficients for the best model of table 6

Variable	*Corresponding Coefficient*	*Value*	*Significance*
Constant	β_0	-0.016	0.603
pRemChange	β_1	0.181	0.214
pGoldChange	β_2	0.380	0.314
pVolChange	β_3	0.051	0.007

of, thus this is the best fit model shown in table 7. But for even this best model is much below than any acceptable value, and we can conclude changes in remittance, volume of securities traded, and gold price do not explain the changes in NEPSE index.

It should be noted in table 7 that pVolChange have significance value much higher than the acceptable level 0.05. This shows that only pVolChange has significant partial effect on the dependent variable pNEPSEchange. But we also emphasize that though pVolChange has a significant effect; its basic correlation with pNEPSEchange is still lower. Thus, though there is a significant linear relationship between pVolChange and pNEPSEchange, the degree of correlation is found in moderate level.

The inferences from this analysis suggest us that there is not the simple linear correlation between the variables so there could be more complex relationship between them and the linear regression model may not be sufficient to analyze these complex relation. Similarly, there could be other factors which are likely to influence the share market of Nepal. From the survey, it seems that majority of investors agree that political factor is the major influential factor. So, the analysis continued to extend another section i.e. analysis of political factor.

4.3. Real evidence for politics effecting stock market

The influence of politics on the stock market is analyzed by considering *"Transitional political situation"* which reflect the changing government of Nepal. The primary data analysis revealed that the investor's and broker's decisions are greatly influenced by the changing government of Nepal. So, we first identified term period of each prime ministers of Nepal during the period of 2003/04 to 2013/14. Then, the NEPSE index of ±5 days from the starting and ending term period date of those prime ministers are identified. Then, percentage change in the index is calculated and average of the change was identified. Then the change in the NEPSE index of ±5days with respect to the average change is considered to make the inferences about its influence on the stock market.

The summary of the average change in NEPSE index with the transitional change in the government is given below:

Based on table-8, the change in NEPSE index with respect to term period of each Prime Minister is given below:

Table 8
Average NEPSE index during the term period of Prime Ministers

List of Nepali Prime Ministers					*Average NEPSE Index For 5 Days*			
SN	*Name*	*Political Party*	*Term start*	*Term end*	*Before term start*	*After term start*	*Before term end*	*After term end*
1	Surya Bahadur Thapa (SU)	Rastriya Prajatantra Party	05 June 2003	03 June 2004	–	–	206.43	212.54
2	Sher Bahadur Deuba (SH)	Nepali Congress (Democratic)	03 June 2004	01 February 2005	206.43	212.54	246.73	249.69
3	Direct rule by King Gyanendra (KG)	–	01 February 2005	25 April 2006	246.73	249.69	333.99	364.03
4	Girija Prasad Koirala (GPK)	Nepali Congress	25 April 2006	18 August 2008	333.99	364.03	1082.76	1061.92
5	Pushpa Kamal Dahal (PKD)	UCPN (Maoist)	18 August 2008	25 May 2009	1082.76	1061.92	680.89	716.21
6	Madhav Kumar Nepal (MKN)	Communist Party Nepal (UML)	25 May 2009	06 February 2011	680.89	716.21	409.24	406.01
7	Jhala Nath Khanal (JNK)	Communist Party Nepal (UML)	06 February 2011	29 August 2011	409.24	406.01	346.50	337.74
8	Dr. Babu Ram Bhattarai (BRB)	UCPN (Maoist)	29 August 2011	14 March 2013	346.50	337.74	540.50	530.74
9	Khil Raj Regmi (KRR)	Chief Justice	14 March 2013	11 February 2014	540.50	530.74	779.87	801.32

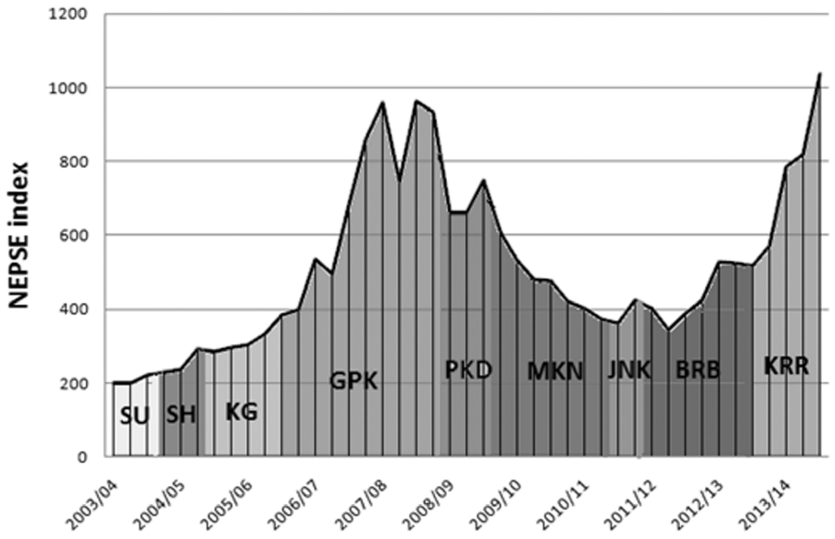

Figure 4: Trends of NEPSE index during the period of 2003-2014

From the analysis of the chart given above we can infer that from 2003/04 to the second quarter 2007/08, NEPSE index had been raised to the maximum level of 963 points (based on quarterly data). This reflects that during those periods the investors and other members in the stock market were optimistic towards the market condition. During the fiscal year 2006-07, the secondary market was ascended by 295.79 points to 539.66 points, the highest surge in the last four years. It was the result of hope and confidence on the part of investors following the signing of the comprehensive peace agreement.

As mentioned by majority of investors during the survey, Late Girija Prasad Koirala was an active leader of Nepali Congress. His political career had many ups and downs but at the same time people had positive and optimistic behavior during his term. This is reflected in the stock market where NEPSE index had reached its height.

During his tenure, the fiscal year 2007-08 also witnessed a significant rise in the secondary market. The market which began at 696.58 points in July 17, 2007 climbed by 266.78 points to 963.36 points on July 15, 2008. With that bullish trend continuing, the NEPSE index touched the highest ever 1175.38 points till 31st August, 2008.

The case on 30 December 2007, before Pushpa Kamal Dahal became the Prime Minister, Unified CPN (Maoist) had rejoined the government after an agreement to abolish the monarchy following the election and to have a system of partial proportional representation in the election. Nepal Maoists rejoin cabinet after monarchy deal. Sunday, 30th December.

On July 23, 2008 Girija Prasad Koirala tendered his resignation to the President Ram Baran Yadav. From that day till the date of August 18, 2008 when UCPN (Maoist)

chairman Pushpa Kamal Dahal became the Prime Minister of Nepal, the market was almost at the constant phase as NEPSE index had shown very less movement.

Following the formation of the Maoist-led government, NEPSE index started to slide. Initially, the situation was different; during the survey majority of investors said that they were hopeful with the Maoist government and belief that they will revive the political scenario bringing favorable environment for the investors to invest. But soon they lose their confidence as maoist government which was supposed to be peoples' best hope was not living up their promises. The downslide in the stock market started from the fiscal year 2007-08 onwards, showing no sign of stopping.

The downfall of stock market continued till the period of Madhav Kumar Nepal then after small swing it again revitalized during the period of Dr. Babu Ram Bhattarai-UCPN government. From the feedback of investors and brokers during the survey, it was found that people were motivated because of his development outlook of Nepal which he shared with the young scholars of Nepal. To some extent, Nepal has benefited during his term period like road extension program and others. He even initiated the system of salary increment for the government employees. These are the things investors usually consider and make their own inferences about the future stability of their government.

October 2011 onwards, NEPSE index took the upward movement. According to the investors, during those periods they were regaining their confidence and becoming optimistic of having more stable and robust Nepali government. The market that once had plunged to the lowest of 292.31 points on June 15, 2011, started to regain momentum after the announcement of the second CA election. This political approach soon influenced the share market where market started to revive. Following a successful election, it reached 1,083.55 points on July 21, 2014, highest in the past six years.

5. CONCLUDING REMARKS

The survey on stock market investors and broker performed in this study pointed politics as the most crucial factor describing the fluctuations in the NEPSE index. A total of 96% of investors and 100% of brokers agreed that politics influence the share market. Our analysis of secondary data further shows there is no straightforward linear relation that could describe the role of usual economic variables on the variation of NEPSE index. Out of 56 possible combinations of the predictor variables in the linear model describing NEPSE index, the best model had adjusted R-squared of only 0.36. And the examination of overall political history during the selected time period further confirmed the role of politics.

Our analysis has a weakness that it could not quantify political influence and include it directly in the regression model. Moreover, our analysis is by no means complete as there are several factors other than economic variables and politics that guide the behavior of the stock market. For instance, the decisions of brokers and investors might be influenced by the news as well as rumors on the social media; analysis of this sort is far more complicated and is beyond the scope of this work. Nonetheless, this work opens

two specific topics for future research. First is the quantification of political influence and examination of its role in the stock market vulnerability. Second is the effect of social media on the fluctuations of stock market exchange.

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