European Journal of Political Economy 78 (2023) 102353

Contents lists available at ScienceDirect

European Journal of Political Economy

journal homepage: www.elsevier.com/locate/ejpe

Stock markets and economic uncertainty: Roles of legislative sessions and coalition strength

Avinash Ghalke [a], Rudra Sensarma [b,*], Sandip Chakraborty [c], Ram Kumar Kakani [d]

[a] Goa Institute of Management, India
[b] Indian Institute of Management Kozhikode, India
[c] National Stock Exchange Cogencis, India
[d] Indian Institute of Management Raipur, India

ARTICLE INFO

JEL classification:
H7
L1
L2
M2
N2
P16

Keywords:
Legislative sessions
Westminster parliament
Economic policy
Asset prices
Political risk
Coalition government

ABSTRACT

Legislative sessions constitute a critical component of the Westminster Parliamentary system, in a country like India. They play a crucial role in important policy decisions that have ramifications for the corporate sector's cash flows, leading to changes in stock price and volatility. Using data from India, we find that legislative session meetings influence stock price volatility, and the effect is inversely proportional to the strength of the ruling coalition government. These findings advance the theories of intraparty portfolio allocation and partisan trust discrimination in representative democracies based on intraparty and interparty competition in a ruling alliance. Our findings suggest that political competition reflected through government strength in legislative session meetings shapes the mechanism of economic uncertainty, i.e., the foundation of asset price volatility. We draw implications for the conduct of parliamentary business as well as stock investment strategy.

1. Introduction

Governments hold discretionary policy influence on economic outcomes which leads to political risk for private firms (Imai and Shelton, 2011). A number of studies have shown that policy uncertainty or political risk arising out of government actions affect stock prices (Beaulieu et al., 2005; Dimic et al., 2015; Lehkonen and Heimonen, 2015). Economic policy uncertainty feeds into changes in stock prices (Ko and Lee, 2015) as well as corporate actions like share repurchases (Pirgaip and Dinçergök, 2019; Anolick et al., 2021). In particular, stock market returns and volatility have been shown to depend on government partisanship (Mukherjee and Leblang, 2007), conduct of political events such as elections (Białkowski et al., 2008; Carnahan and Saiegh, 2021) and political processes such as legislative meetings (Lin and Wang, 2007; Wang et al., 2012). However, the roles of timing of legislative meetings and power of the ruling political formation are absent in the literature.

We argue that when it comes to legislative meetings, the extent of political risk may depend not only on conduct of congressional or parliamentary sessions but also relative strength of the party or coalition of parties (in case of a multi-party democracy) in power. If the ruling party or the ruling coalition has a bigger share of seats in the legislative house, the nature of political risk will be different as

* Corresponding author.
E-mail address: rsensarma@iimk.ac.in (R. Sensarma).

https://doi.org/10.1016/j.ejpoleco.2022.102353
Received 30 August 2022; Received in revised form 9 December 2022; Accepted 13 December 2022
Available online 19 December 2022

compared to a weaker ruling formation due to the former's advantages such as smoother passage of bills with less delays or dilutions caused by intensive scrutiny from the opposition.

While a few studies have shown that ideology of the ruling party has an effect on stock markets (Siokis and Kapopoulos, 2007; Białkowski et al., 2008), there are no studies on the role of strength of a ruling party or coalition in the house. This paper extends the literature on political risk and stock markets by studying the impact of coalition power on stock price movements during Parliament meetings in a vibrant developing economy, viz. India.

We specifically choose India because it is the largest democracy in the world in terms of population. It has 1.38 billion people, with 912 million people eligible to vote, making its elections the world's largest (https://www.nytimes.com/2019/05/19/world/asia/india-election-results.html). Secondly, it is one of the fastest growing major economies in the world and had clocked a 5-year average GDP growth of 7% before the COVID-19 pandemic. Its economic success has concurrently witnessed a boom in stock markets with the BSE SENSEX- India's bellwether index - growing by 100% in the past 5 years. These political and economic trends justify our choice of India as a case study for the analysis.

We study the Indian Parliament that meets thrice in a calendar year for pre-defined sessions (known as 'Budget', 'Monsoon' and 'Winter' sessions). We focus on the impact of strength of the ruling government on the domestic stock market, during the three types of parliamentary sessions. We employ three alternate measures of government strength that are based on the Herfindahl–Hirschman Index (using the seat share of the top 5 parties in the Parliament), the relative strength of the ruling party and the relative strength of the ruling coalition. The econometric estimation relies on the Exponential Generalised Auto-Regressive Conditional Heteroscedasticity (EGARCH) model to analyse the effects on stock returns and volatility. We use publicly available data on the Indian Parliament and alternate stock market indices. The main analysis is for the period February 1999 to March 2022 (for BSE500 – a broad-based index) while additional results are presented for September 2005 to March 2022 (using BSE SENSEX – the bellwether index and BSE SmallCap, along with BSE500 for the same period).

Our results show that legislative session meetings lead to a rise in stock market volatility for the broader market and the effect is inversely proportional to strength of the ruling coalition government. Segmenting the indices by market capitalization, we observe that smaller capitalisation stocks are more sensitive to parliamentary activity and strength of the government. We also create a portfolio to evaluate the economic importance of our results. We find that avoiding equity markets during legislative sessions yields higher profits than participating in them. Our findings contribute to the growing literature on government's role in asset prices that has important implications for investors which we discuss at the end of the paper. In the spirit of Carnahan and Saiegh (2021), we contribute to the international political economy literature by establishing a relationship between financial market volatility and political developments.

The remainder of the paper is organised as follows. In Section 2, we review the relevant literature for the study. In Section 3, we provide a brief background of the Indian political system and develop the study hypotheses. In Section 4, we discuss the data and methodology employed in the empirical analysis. We present the results and discussion in Section 5 and provide concluding remarks in Section 6.

2. Literature review

Researchers (Mei and Guo, 2004) show that significant political events such as wars and revolutions cause market volatility. However, even routine political events such as election cycles or government transitions boost stock market volatility (Boutchkova et al., 2012). Pástor and Veronesi (2013) propose that political uncertainty causes investors to demand larger returns on stock holdings, based on their theory of political uncertainty. The fact that the government frequently tinkers with the rules and regulations that affect businesses leads to such expectations for higher returns. Financial market's reaction to such changes is determined by investors' expectations; anticipated changes elicit a mild response, whereas unanticipated changes generate a large response (Pástor and Veronesi, 2012). Economic policy uncertainty has been found to increase share repurchases as a way to overcome information asymmetry and the buyback announcements lead to higher abnormal returns (Pirgaip and Dinçergök, 2019; Anolick et al., 2021).

Political uncertainty has far reaching consequences not only for voters' perception but also the industrial policies of the government in power (Fortunato, 2019). Governments are more inclined to prioritise voter interests over commercial interests, undermining business interests (Paster, 2018). For example, Canes-Wrone and Park (2012) found that irreversible investment is observed to occur due to policy differences of political parties taking part in elections. We extend this argument to suggest that such opportunistic positioning and competing would be reflected during legislative meetings of elected officials. As a consequence, among elected officials of weaker coalitions, vast rival partisan trust gaps will erode incentives to co-operate across party lines. Worried about being dubbed 'appeasers' at election time, these elected members of Parliament may evade compromise and hotly contest legitimacy of the policies that their partisan rivals propose or implement. Such actions could even risk undermining the 'politics of robust civility' and compromise the very premise of democracy. A breakdown of trust among members of Parliament (in public during legislative sessions) is likely to fuel uncertainty and thereby generate volatile behaviour among financial investors. Notably, Sáez and Sinha (2010) studied some unique characteristics of Indian democracy which, in contrast to western democracies, is found to be more prone to electoral cycles; ruling political parties focus on maximising chances to get re-elected through channelizing public expenditure in education, health, agriculture etc. Uncertainty about such spending across various domains is expected to create anxiety among financial investors due to the ramifications for businesses across the spectrum.

We therefore enhance the extant literature on 'where', 'how' and 'when' political risks influence asset price movements. On the 'where' aspect, we note that previous studies have been skewed towards OECD countries and presidential regimes (Beaulieu et al., 2005; Wang et al., 2012). Siokis and Kapopoulos (2007) extended the context to study the partisan structure of Greece and found that

political events, elections and governments are important in explaining behaviour of the stock exchange. Our study focusses on a relatively unexplored system i.e., the developing country context with Westminster Parliamentary democracy. We consider the case of the Indian Parliament and the domestic stock market for this study.

As for 'how', erstwhile studies (Leblang and Mukherjee, 2005; Białkowski et al., 2008; Cohen et al., 2013; Sever and Yücel, 2022) have examined political events such as elections, legislations and shocks. For instance, McGillivray (2003) compared fourteen stock markets with different electoral systems and found majoritarian systems to be more responsive to political changes and economic shocks than proportional representative systems. Shambaugh (2004) suggested that the level of democracy in developing countries matters more than who gets elected or when elections occur. The last few decades have seen a shift across the globe to an era of coalition politics (White, 2018). Many parliamentary setups now involve multiple political parties – national and/or regional – coming together to create a ruling coalition. Consequently, political factors such as 'narrow winning margin' and 'lack of majority', are instrumental in generating shocks, given that coalition partners jostle among themselves to win or just to retain and/or maximise their power in ruling the country (Białkowski et al., 2008). Ono (2012) used portfolio allocation theory to show that core leaders of the ruling party prevent rivals from usurping their power by using cabinet portfolios as a form of selective incentive. Carlin and Love (2018) used partisan trust discrimination theory to explain that political competition shapes the contours of partisanship in coalition-driven democracies, involving interpersonal trust and cooperation. Using British Parliament data, Russell and Cowley (2016) showed that the Westminster Parliament has a significant policy influence at continual stages of the policy process in terms of intra-party negotiation on the government side, inter-cameral negotiations, the legislative process, select committees, parliamentary questions, private members' bills and non-legislative debates, among others.

Finally, on the issue of 'when', Calvo and Murillo (2004) found using data from Argentina that incumbent governments engage in partisan-based policy for creation of opportunistic electoral cycles in real macroeconomic activity. This work laid the foundation for future research to identify other mechanisms of partisan play such as irreversible investment (Canes-Wrone and Park, 2012). Carlin and Love (2018) extended this discussion for a representative democracy based on multiparty electoral competition, to show that groups form and compete on the basis of identities that represent distributional preferences as opposed to specific political or social identities (such as race, ethnicity and region). The dynamics of such inter-group competition play out during parliamentary meetings, culminating in creation or amendment of laws. Breen et al. (2021) found that political news has a significant impact on bond market activity in the UK, suggesting that political competition provides investors an opportunity to gain insights into future economic outcomes.

Fortunato (2019) observed that though political convergence is essential in coalition politics, yet it ends up in inclusion of parties with conflicting political motives. In representative electoral democracies, this partisanship behaviour (among coalition partners) becomes more relevant in the institutionalised competition for resources and power during legislative session meetings. Due to the complex interplay of the issues mentioned above, there is often an uncomfortable equilibrium within a ruling coalition of parties. The complexities are heightened as the coalition weakens, resulting in economic uncertainty.

Table 1
Government of India: brief descriptive of political regimes during 1990–2021. The table shows tenure and government strength across political regimes. Ruling coalition acronyms are: BJDA is Bharatiya Janata Dal Alliance; SJP is Samajwadi Party-led coalition, INC is Indian National Congress-led coalition; UF is United Front; NDA is National Democratic Alliance; UPA is United Progressive Alliance. For the top five political parties, names of national parties are in italics and those of regional parties are in regular font. The political power concentration is measured using the Herfindahl–Hirschman Index (HHI) – a widely used measure of market concentration in industrial economics. Stock returns and stock market volatility are measured using average daily returns and volatility of daily returns (computed based on the BSE SENSEX). Standard deviation captures volatility of stock index returns.

Government Tenure	Ruling Coalition Strength	Top Five Political Parties in Parliament	Political Power Concentration (*HHI*)	Stock Returns	Standard Deviation
03/12/1989–09/11/1990	BJDA-277	*INC-195,JD-142,BJP-89,CPI(M)-34, CPI-12*	0.23	0.36%	2.43%
10/11/1990–20/06/1991	SJP-259	*INC-195,JD-142,BJP-89,CPI(M)-34, CPI-12*	0.20	−0.02%	2.51%
21/06/1991–16/05/1996	INC-243	*INC-252, BJP-121, JD-63, CPI(M)-36, CPI-14*	0.29	0.10%	1.99%
17/05/1996–19/03/1998	UF-121	*BJP-163, INC-140, CPI(M)-32, JD-30,* TMC(M)-20	0.16	−0.05%	1.55%
20/03/1998–13/10/1999	NDA-254	*BJP-182, INC-141, CPI(M)-32, SP-20, AIADMK-18*	0.19	0.06%	1.84%
14/10/1999–21/05/2004	NDA-270	*BJP-180, INC-114, CPI(M)-33, TDP-29, SP-26*	0.18	−0.01%	1.68%
22/05/2004–21/05/2009	UPA-218	*INC-141, BJP-130, CPI(M)-43, SP-36, RJD-24*	0.17	0.09%	1.93%
22/05/2009–26/05/2014	UPA-229	*INC-211, BJP-119,* AIADMK-37, SP-23, AITC-21	0.21	0.05%	1.17%
26/05/2014–23/05/2019	NDA-337	*BJP-280, INC-44,* AIADMK-37, AITC-34, BJD-20	0.28	0.04%	0.84%
24/05/2019–31/03/2022	NDA-353	*BJP-303, INC-52,* DMK-23, AITC-22, YSRCP-22	0.33	0.07%	1.66%

Source: Government of India websites, Parliament library (http://loksabhaph.nic.in) and authors' computations

Our work aims to contribute to the above mentioned literature. We delve into the hitherto unexplored economic impact of the nature of legislative sessions on account of strength of the ruling party or coalition, to build insights into how a majoritarian parliamentary government impinges on asset prices. Therefore, our study captures asset price ramifications stemming from legislative meetings of elected representatives, their conflicts, legislative posturing, their perception of formal business and the final decisions on significant national issues with bearing on the economy.

We argue that the resulting uncertainty from partisanship behaviour gets transmitted to the stock markets. In terms of a standard asset price valuation model, the impact of economic policy uncertainty is to either reduce cash flows to a firm or increase the risk premium or required rate of return. In either case, asset prices will go down. Studies (Benton and Philips, 2020; Leblang and Mukherjee, 2005; Pástor and Veronesi, 2013) have shown that economic policy uncertainty feeds into asset prices, resulting in lower returns and higher volatility. According to Hillier and Loncan (2019), policy uncertainty can reduce consumer demand, and therefore sales and profits. Lower cash flows reduce market value of a firm and therefore a trader would be willing to pay less for its shares. Higher uncertainty also increases perceived risk and thereby the discount rate used by traders to value a firm, leading to lower equity price.

When financial market participants are not sure whether a legislative session will result in favourable or unfavourable policies for the economy or a particular company, they may delay their decision to buy or sell. Following Carnahan and Saiegh (2021), we argue that if a trader waits for too long to decide, s/he may end up chasing the market but if s/he takes an early decision and places the wrong bet, s/he may incur substantial losses. This uncertainty causes different traders to act differently, resulting in swings in the realized equity prices, manifesting in higher volatility.

3. Background and hypotheses

The Westminster Parliamentary System works well for countries with a limited number of political parties e.g. in the United Kingdom (UK) which has two main political parties. However, the Indian political system supports multiple political parties and a large number of them are regional players. These regional parties are often able to win enough seats in their respective regions, denting the chances for a single political party to emerge as a clear winner and form the government at the national level. As a result, the last three decades have seen 10 different governments in India, ranging from weak coalitions to absolute majorities (see the first three columns of Table 1 for details of select government tenures over the period 1990–2021). Government formation requires a simple majority in the Parliament, specifically in the lower house known as the Lok Sabha which has 545 elected members representing constituencies across the country. Any party with at least 273 members can form the government. A coalition of big and small parties can also stake claim for forming the government if they can put together the required number. The coalition partners have to manage conflicts and negotiations that often lead to electoral alignments (or misalignments), realignments, pacts and new possibilities for cooperation.

Table 1 also shows the changing strength of ruling governments in India (see the fourth column of the table). Here we measure government strength using the Herfindahl–Hirschman Index (HHI)[1] which is a standard measure of concentration in industrial economics (Rhoades, 1993). The HHI index is the inverse of the Laakso-Taagepera Index that is widely used in the political science literature to measure the 'effective' number of political parties (Feld and Grofman, 2007). The HHI figures for India in Table 1 show that political concentration of the ruling alliance came down in the 1990s and then picked up again in the last decade. In 2014, the BJP emerged as the single largest party with a clear majority to form the government on its own, a feat no party could achieve in the last 30 years.

Regional parties with their own agendas play an important role in the multi-party democracy of India. Political and social concerns are viewed very differently by various political parties. Despite having a left-leaning economic stance, all political parties have different views on the specific kind of public policy that should be implemented (see Table A1 in Appendix for some basic information on the main political parties). Political and social considerations drive policy measures, with the party having a greater say in the ruling coalition or even in opposition dominating during parliamentary debates. To make their point, parties use various tactics such as slogan shouting and walkouts from Parliament. Such moving pieces create uncertainty about the policy environment since smooth functioning of Parliament suffers.

Given that stock market investors aim to maximise their wealth, capital market-based asset valuation process is dependent, among other things, on the ruling party's power of economic policy decision-making. Stock returns and volatility effects of economic policy uncertainty may get influenced by the strength of the ruling coalition. Conflict between weak ruling coalitions and an entrenched bureaucracy, about fiscal and monetary policies, may add to the asset price dynamics in terms of uncertainty of future economic outcomes. In a stable government, asset price volatility is expected to be lower during the economic policy decision making process while in a weak coalition setup, the volatility may be higher.

A preliminary look at the stock market data (as presented in the last two columns of Table 1) suggests that there are certain episodes when the ruling coalition's strength may have influenced stock markets. For instance, the United Front (UF) coalition that was in power during 1996–1998 had the weakest coalition strength (shown by the lowest HHI value of 0.16) and this was also the period of lowest stock returns (−0.05%). On the other hand, the two strongest coalitions are recent ones (NDA during 2019–2022 and INC during 1991–1996) when the second and fourth highest levels of stock returns were experienced. However, there are exceptions such as the 1989–90, when stock returns were the highest but the ruling coalition was not very strong (HHI value of 0.23).

[1] We define HHI based on the top-5 parties in the Parliament as follows: $\sum_{i=1}^{n} x_{it}^2$, where x_{it} is the seat share of the ith party in the tth period.

Admittedly, there are other confounders associated with stock returns such as market patterns, macroeconomic factors and international stock movements, that are not captured in this kind of descriptive analysis. The association of coalition strength with stock price volatility is even less clear in this preliminary examination of data. Therefore, we test the linkage between coalition strength and stock markets more rigorously using suitable econometric techniques in the subsequent sections. Moreover, a ruling party heading/leading a coalition has to not only manage public perception, but also build relationships with coalition partner(s), during Parliament 'in-session' periods, and to a lesser extent, even during Parliament 'in-recess' periods. In India, parliamentary sessions are sequenced in three established categories – (a) 'Winter' for setting budget policy agenda (October–January); (b) 'Budget' for vital policy planning and implementation decisions (February–May); and, (c) 'Monsoon' for matters of public interest (June–September). In this paper we study the relationship between parliamentary sessions and asset prices, and explore whether coalition strength moderates this relationship. Based on the above discussion, we propose the following hypotheses:

Hypothesis-1a. : Stock market return is lower during the periods that Parliament is in session.

Hypothesis-1b. : Stock market volatility is higher during periods when Parliament is in session.

Hypothesis-2a. : Strength of the ruling coalition moderates lower return of the stock market during parliamentary sessions.

Hypothesis-2b. **:** *Strength of the ruling coalition moderates higher volatility of the stock market during parliamentary sessions.*

4. Data and methodology

We employ data for the period February 1999 to March 2022. We collect the parliamentary data from Government of India websites and Parliament library (http://loksabhaph.nic.in) and the stock market data from Bloomberg database. We use daily data for the BSE500, a broad-based index provided by the Bombay Stock Exchange (BSE). Consisting of the top 500 companies listed on the exchange, the BSE500 index represents around 93% of total market capitalization. This index was launched in 1999 and data is available from February 1999. Fig. 1 shows movement of the BSE500 over the analysis period, across different political regimes. Table 2 presents the descriptive statistics of returns on BSE500 across parliamentary sessions. We split the parliamentary sessions into three categories i.e., ***Winter***, ***Budget*** and ***Monsoon***, representing each type of session. When it comes to the stock market performance in the specific types of sessions, Table 2 shows that Budget session has lower mean returns (−0.125%) and higher volatility (1.61%) compared to the other types of sessions. However, this notion of volatility based on standard deviation is only a static one and is different from the dynamic volatility measure that is subsequently used in the main empirical analysis. The measures of Skewness and Kurtosis and the Jarque-Bera test indicate departure from normality.

We use the Exponential Generalised Auto-Regressive Conditional Heteroscedasticity (EGARCH) model to jointly analyse stock returns and volatility (Nelson, 1991; Füss and Bechtel, 2008; Tsay, 2010). The EGARCH(1,1) model can be specified as follows:

$$\boldsymbol{Index}_t = \boldsymbol{\beta} * \boldsymbol{Index}_{t-1} + \varepsilon_t \tag{1}$$

$$\ln\left(\boldsymbol{h}_t^{\boldsymbol{Index}}\right) = \varpi + \boldsymbol{\theta} * [|\varepsilon_{t-1}| - \boldsymbol{\lambda} * \varepsilon_{t-1}] + \varphi * \ln\left(\boldsymbol{h}_{t-1}^{\boldsymbol{Index}}\right) \tag{2}$$

where $\boldsymbol{Index}_t$ is daily returns on the Index and ε_t is the error term such that $\varepsilon_t \,|F_{t\text{-}1} \sim N(0, \boldsymbol{h}_t^{\boldsymbol{Index}})$ where $F_{t\text{-}1}$ denotes all available information at t-1. $\ln(\boldsymbol{h}_t^{\boldsymbol{Index}})\Big|\boldsymbol{F}_{t-1}$ is the conditional logarithmic volatility term available at information set $\boldsymbol{F}_{t-1}$, while $\ln(\boldsymbol{h}_t^{\boldsymbol{Index}})$ can be rewritten as $\boldsymbol{h}_t^{\boldsymbol{Index}} = \boldsymbol{exp}[(1 - \varnothing(\boldsymbol{L})^{-1}(\boldsymbol{h}_t^{\boldsymbol{Index}})]$ and L is the lag operator. Equation (1) is referred to as the mean equation as it captures stock return behaviour while Equation (2) is known as the variance equation as it represents volatility of returns. Białkowski et al. (2008) estimated the conditional volatility $\boldsymbol{h}_t$ of stock returns around national elections using GARCH(1,1), and subsequently used the estimated volatility for the purpose of an event study analysis. However, we prefer EGARCH over GARCH in our study, since the stock index return data is negatively skewed (See Table 2); in such cases, the EGARCH model is known to capture information asymmetry better (Nelson, 1991; Füss and Bechtel, 2008; Tsay, 2010). In fact, the EGARCH model was developed as a response to such asymmetric volatility induced by big "positive" and "negative" asset returns (Tsay, 2010). Siokis and Kapopoulos (2007) had examined the impact of political risk on volatility of the Athens Stock Exchange (ASE) index through an EGARCH model. Leverage effect of the EGARCH is able to capture asymmetric volatility as volatility increases are associated more with large negative returns than positive returns of similar magnitude (Siokis and Kapopoulos, 2007). In the specification of this study, $\varpi, \theta, \lambda,$ and φ are EGARCH terms capturing the intercept, ARCH, leverage and GARCH terms respectively. Given the stock market returns are leptokurtic (see Table 2) and not normally distributed, the error term is assumed to follow the student's t distribution (Kinateder et al., 2019). While selecting optimal lags for the EGARCH model, we rely on the minimum value of the Bayesian Information Criterion (BIC) since BIC is the recommended criterion for model selection (Chakrabarti and Ghosh, 2011).

We augment the basic EGARCH model with parliamentary session dummies $\boldsymbol{S_i}$ (for Winter, Budget and Monsoon sessions)[2] and coalition strength. We use three alternate measures of government strength. The first measure of government strength is based on HHI that was defined and discussed in Section 2. The next two measures rely on relative strength of the ruling party or of the ruling coalition in Parliament, as follows:

[2] Omitted or default category represents the period when Parliament is not in session (i.e. in-recess).

Fig. 1. Movement of the BSE 500 over 1999–2022, under different regimes.

Table 2
Parliament Sessions vis-à-vis asset price risk and return summary, 1999-2022
This table uses BSE500 index data adjusted for dividends, bonus issues and stock splits. Daily average and standard deviation represent the average return and standard deviation of daily stock returns over the respective periods. Standard deviation captures volatility of stock index returns.

Descriptive Statistics	Parliament In-Recess	Parliament In-Session	Monsoon Session	Winter Session	Budget Session	All Days
# Stock Market Trading Days	3828	1710	458	409	843	5538
	69.12%	30.88%	6.16%	5.50%	11.33%	100.00%
Daily Average, %	0.089	−0.031	0.043	0.058	−0.125	0.051
Standard Deviation, %	1.45	1.43	1.11	1.33	1.61	1.45
Skewness	−0.29	−0.87	−0.61	−1.66	−0.56	−0.46
Kurtosis	13.06	7.79	5.14	13.02	6.06	11.52
Jarque-Bera	16207	1860	116	1899	370	16907
Jarque-Bera Prob.	0.00	0.00	0.00	0.00	0.00	0.00

Source: Authors' computations

$$\boldsymbol{strength}_t = \left[\frac{\boldsymbol{Seats\ Secured\ by\ the\ Ruling\ Party\ or\ Ruling\ Coalition}}{\boldsymbol{Total\ Number\ of\ Seats\ in\ Parliament}}\right]_t \tag{3}$$

Additionally, we employ well-known control variables from the domain of financial economics such as global stock market vibrancy indicator (S&P 500 Index or *SNP*), global volatility measure (VIX), USD-INR nominal foreign exchange rate (*FOREX*), dummies for days of the week ($\boldsymbol{D}_i$ for Monday through Friday dummies to capture the popular day of the week effect) and dummies for months of the year ($\boldsymbol{M}_i$ for January through December dummies to capture the popular month of the year effect). The augmented EGARCH model is specified as follows:

$$\boldsymbol{Index}_t = \boldsymbol{\beta} * \boldsymbol{Index}_{t-1} + \sum_{i=1}^{3} \boldsymbol{k}_i * \boldsymbol{S}_{it} + \boldsymbol{m}_0 * \boldsymbol{strength}_t + \sum_{i=1}^{3} \boldsymbol{m}_i * \boldsymbol{S}_{it} * \boldsymbol{strength}_t + \boldsymbol{\gamma}_1 * \boldsymbol{SNP}_{t-1} + \boldsymbol{\gamma}_2 * \boldsymbol{VIX}_{t-1} + \boldsymbol{\gamma}_3 * \boldsymbol{FOREX}_t + \sum_{i=1}^{5} \boldsymbol{\delta}_i * \boldsymbol{D}_{it} + \sum_{i=1}^{12} \boldsymbol{\eta}_i * \boldsymbol{M}_{it} + \varepsilon_t \tag{4}$$

$$\ln\left(h_t^{Index}\right) = \varpi + \boldsymbol{\theta} * [|\varepsilon_{t-1}| - \boldsymbol{\lambda} * \varepsilon_{t-1}] + \varphi * \ln\left(h_{t-1}^{Index}\right) + \sum_{i=1}^{3} \boldsymbol{k_i} * \boldsymbol{S_{it}} + \boldsymbol{m_0} * \boldsymbol{strength_t} + \sum_{i=1}^{3} \boldsymbol{m_i} * \boldsymbol{S_{it}} * \boldsymbol{strength_t} \quad (5)$$

where, $\boldsymbol{Index_t}, \boldsymbol{SNP_{t-1}}$, $\boldsymbol{VIX_{t-1}}$ ***and*** $\boldsymbol{FOREX_t}$ are continuously compounded returns on the Index, S&P 500 and the USD-INR exchange rate, $\boldsymbol{\beta}, \boldsymbol{\gamma_1}, \boldsymbol{\gamma_2}$, ***and*** $\boldsymbol{\gamma_3}$ are respectively the sensitivities of one-period lagged Index returns, SNP returns at time 't-1', VIX returns[3] at time 't-1', and FOREX returns at time 't' respectively.[4] The 'k' coefficients capture the effects of the three types of parliamentary sessions, '$\boldsymbol{m_0}$' shows the effect of coalition strength and the other 'm' coefficients represent the interactive effects of parliamentary sessions and coalition strength on stock returns. Using the Augmented Dickey-Fuller (ADF) test, Phillips-Perron (PP) test and the KPSS test, we confirm that the BSE500 returns series is stationary, not fractionally integrated and does not contain unit roots (see Table A2 in Appendix). Among the controls, we find that returns on SNP and Forex are also stationary but VIX returns show mixed results. While the ADF and PP tests indicate that the VIX returns series is stationary, the KPSS test suggests otherwise. However, since VIX returns is only a control variable, we proceed with the analysis considering that the dependent variables and all other control variables are confirmed to be stationary series.

Finally, we construct a portfolio strategy based on our hypotheses, in order to assess the economic significance of the findings. The strategy involves creation of two portfolios: (a) the first portfolio is designed around investing in the index when Parliament is in-session, and investing in the risk free 10-year government bonds when there are no legislative sessions ('In-Strategy'); and, (b) the second portfolio involves investing in the index when Parliament is not in-session, and investing in the risk free 10-year government bonds when legislature is in-session ('Out-Strategy'). For both portfolio strategies, we assume that the initial amount invested is INR100 (approximately equal to USD1.13 as on March 31, 2022).

5. Results and discussion

Results from the estimation of Equations (4) and (5) based on EGARCH(1,1) model[5] are shown in Table 3 under 'mean analysis' and 'variance analysis' panels respectively. We observe that parliamentary session dummies and coalition strength do not have any statistically significant effect on stock returns. However, the variance equation shows that winter session has a positive and significant effect on volatility of stock returns across all three specifications with different measures of coalition strength (although only at the 10% level of significance in the second specification with ruling coalition strength). Budget session also has a positive effect on volatility although the coefficient is significant at the 1% level only in the first specification with ruling party strength and at the 5% level for the last specification with the HHI. These results indicate that the two sessions where policy agendas are set and policy decisions are implemented seem to be associated with higher stock market volatility. The results so far provide support for Hypothesis H1b that parliamentary sessions have a statistically significant impact on market volatility (as seen for the winter and budget sessions) but we do not find any effect of the sessions on market returns (Hypothesis H1a). Hillier and Loncan (2019) argued that policy uncertainty hurts consumer demand and thereby, sales and cash flows of firms. Policy uncertainty also increases perceived risk and the discount rate, leading to lower asset prices and higher asset volatility. Higher policy uncertainty has been found to be associated with enhanced risk and market volatility (Banker et al., 1997; Leblang and Mukherjee, 2005; Carnahan and Saiegh, 2021). These channels serve to explain our results for the winter and budget sessions which are found to be associated with higher volatility.[6] The monsoon session does not show a significant effect on volatility, possibly because this session typically deals with issues of low economic interest, and therefore is devoid of any market implications.

Interestingly, it is also observed from the variance equation that interaction between strength variable on the one hand and winter and budget sessions on the other, have negative and significant coefficients at different levels of significance. This implies that the rise in stock market volatility during winter and budget sessions get moderated when the government is run by a stronger ruling party. This finding supports our hypothesis H2b that strength of the ruling coalition reduces the volatility effect of parliamentary sessions. Similar to the previous instance, even with the strength variable, we find no evidence for hypothesis H2a for stock returns. The leverage terms are negative and statistically significant indicating the presence of asymmetric behaviour in stock market returns. The significant GARCH terms suggest volatility persistence. The information criteria (AIC and BIC) have the same values up to two decimal places in all the specifications and therefore do not distinguish among the models in terms of information content.

Our results build on the intraparty portfolio allocation framework (Ono, 2012) and partisan trust discrimination theory (Carlin and Love, 2018), affirming that in coalition-led representative governments, interpersonal trust hinges on social identification of political parties with core political groupings. As a consequence, during periods of legislative session meetings of coalitions, a form of

[3] We employ VIX returns, rather than VIX levels in our analysis. We confirm that addition of VIX returns, along with SP500 returns, does not pose serious multicollinearity issues since the Variance Inflation Factor (VIF) scores are less than 10. We thank an anonymous reviewer for suggesting this check.

[4] Lagged values of SNP return and VIX returns are taken to capture lagged effects of global stock markets on the Indian market returns. However, FOREX is not lagged because forex market data is concurrent with domestic stock prices.

[5] EGARCH(1,1) model is recommended by the information criteria for optimal lag selection (see Table A3 in Appendix).

[6] We tried including a measure of economic policy uncertainty in our model by using the policy uncertainty index of Baker et al. (2016). However, the coefficient of the index turned out to be statistically insignificant in both the mean and variance equations in all models. A possible reason could be that the index includes information pertaining to legislative sessions and therefore introduces multi-collinearity in the model. Therefore, we do not report these results in the paper.

Table 3
Impact of parliamentary session type and government strength on BSE 500
The empirical results cover 5538 equity-trading days between February 1999 and March 2022. Dummy variables are employed to represent different parliamentary session types. We interact the session dummies with strength of the government using three measures viz., strength of the ruling party, strength of the ruling coalition and Herfindahl–Hirschman Index. Figures in brackets represent standard errors. *Significance Level: *** 1%, ** 5%, * 10%.*

	Ruling Party Strength	Ruling Alliance Strength	HHI
Mean Analysis			
Winter	0.2346 (0.24)	0.0962 (0.29)	0.2057 (0.21)
Budget	−0.2054 (0.18)	−0.1451 (0.22)	−0.2445 (0.17)
Monsoon	−0.1945 (0.22)	−0.3733 (0.25)	−0.2237 (0.21)
Strength	0.2917 (0.39)	0.179 (0.27)	0.4961 (0.7)
Strength*Winter	−0.8653 (0.65)	−0.3943 (0.6)	−1.42 (1.1)
Strength*Budget	−0.1738 (0.56)	−0.2025 (0.49)	−0.1173 (1)
Strength*Monsoon	−0.0093 (0.63)	0.3681 (0.53)	0.124 (1.1)
SNP(-1)	−0.0246 (0.02)	−0.0237 (0.02)	−0.0243 (0.02)
VIX(-1)	0.0043**(<0.01)	0.0042**(<0.01)	0.0043**(<0.01)
FOREX	−0.817***(0.03)	−0.8214***(0.03)	−0.8182***(0.03)
Index(-1)	0.1151***(0.01)	0.1149***(0.01)	0.115***(0.01)
Weekday Dummies	Yes	Yes	Yes
Month Dummies	Yes	Yes	Yes
Variance Analysis			
Winter	0.1671***(0.06)	0.1314*(0.08)	0.1544***(0.06)
Budget	0.1051***(0.04)	0.0727 (0.05)	0.0961**(0.04)
Monsoon	0.0133 (0.05)	0.0181 (0.07)	0.013 (0.05)
Strength	0.2523 (0.24)	0.204 (0.18)	0.4574 (0.44)
Strength*Winter	−0.6701**(0.29)	−0.4612*(0.24)	−1.1582**(0.52)
Strength*Budget	−0.527**(0.27)	−0.3502*(0.21)	−0.91*(0.48)
Strength*Monsoon	−0.3493 (0.28)	−0.2868 (0.22)	−0.6312 (0.51)
Constant	−0.157***(0.01)	−0.1614***(0.01)	−0.158***(0.01)
ARCH	0.2129***(0.02)	0.2179***(0.02)	0.2142***(0.02)
Leverage	−0.1123***(0.01)	−0.1065***(0.01)	−0.1119***(0.01)
GARCH	0.9677***(<0.01)	0.9704***(<0.01)	0.9679***(<0.01)
AIC	3.014709	3.017016	3.014962
BIC	3.062527	3.064834	3.06278

institutionalised competition involving economic decisions occurs among elected representatives. Partisanship becomes more pertinent for distributing economic resources and power. Our study uncovers a mechanism for how interpersonal trust hinges on identification with core political groupings (political parties) in electoral democracies. Our findings build on the work of Pástor and Veronesi (2012), by showing that asset risks rise not just as a result of policy changes but also as a result of legislative gatherings, debates, deliberations, and standoffs by the elected body of policy makers. The amplified asset price volatility associated with policy decisions get moderated by ruling party strength and coalition dynamics.

Białkowski et al. (2008) studied 27 OECD countries to find that stock price volatility is higher around election period. Our work adds to this evidence by showcasing that stock price volatility is higher during legislative meeting periods involving economic decisions. We add to the list of political factors studied in the literature by identifying power of a ruling party and ruling coalition strength as important drivers in representative democracies. Our results show that weaker ruling coalitions tainted by partisan biases take a toll on economic development and shake investor confidence during legislative sessions involving exchange of views on budgetary allocations and economic policy decisions. We posit that systemic political risk gets intensified by the degree of coalition politics.

We performed two additional analyses to ensure robustness of our findings. First, we looked at how opposition party strength affects stock market volatility by including the proportion of seats with the principal opposition party in Parliament as a variable in the mean and variance equations of the EGARCH model. Our results suggest that strength of the main opposition party has a positive impact on stock market volatility. Despite the presence of opposition party strength in the regression, government strength continues to have a moderating effect on stock market volatility during the winter session in case of two out of the three government strength measures. Therefore, these results are qualitatively similar to our main findings described earlier. Second, we controlled for two major

exogenous events that impacted the global economy during the study period viz., the Global Financial Crisis (2008) and the COVID crisis (2020). We included a dummy variable capturing the two crisis events in our EGARCH model. Even after adding the crisis dummies, our main findings regarding the parliamentary sessions and government strength remain qualitatively unchanged (but the coefficients of the crisis dummy in both the mean and variance equations turned out to be statistically insignificant).[7]

Next, we present the results from the two stock investment strategies described in Section 4 viz. 'In-Strategy' and 'Out-Strategy' (Fig. 2). The former involves investing in the index when the Parliament is in-session (and in risk free bond investment at other times) and the latter considers stock investment when the Parliament is in-recess (and in risk free bond investment at other times). We find that 'Out-Strategy' outperforms the 'In-Strategy' by a substantial amount for the BSE500. A capital of INR100 invested with the 'Out-Strategy' increases in value to INR2903 through the period of the study, while INR100 invested with the 'In-Strategy' increases to INR107 in the same period. Thus, the results agree with our earlier observation that the average returns during sessions is negative while average returns during the recess period is positive (Table 2).

We now extend the EGARCH analysis that was conducted with BSE500 to examine the role of market capitalization in the effect of parliamentary sessions and coalition strength on asset prices. Our interest is to unpack the previous results by exploring whether the size of stocks matter for the results that we obtained with BSE500. We employ a large cap index (BSE SENSEX) along with a small cap index (BSE SmallCap) to test our hypotheses. The analysis is conducted for the period September 2005–March 2022 which is the period for which data on the BSE SmallCap was available. Therefore, results for BSE500 are also reproduced for this reduced period to enable a comparison. For each measure of the government strength, we ran the analysis separately for the BSE500, BSE SENSEX and BSE SmallCap. The results are presented in Tables 4–6.

Table 4 based on ruling party strength shows that, as in the case of the previous results for BSE500 for the full sample period, winter and budget sessions have a positive effect on BSE500 returns. In case of the large-cap index (SENSEX), we find that the budget session is associated with higher volatility. Finally, the small-cap index shows a positive and significant effect of winter session on market volatility while the effect reduces when a strong government is in power.

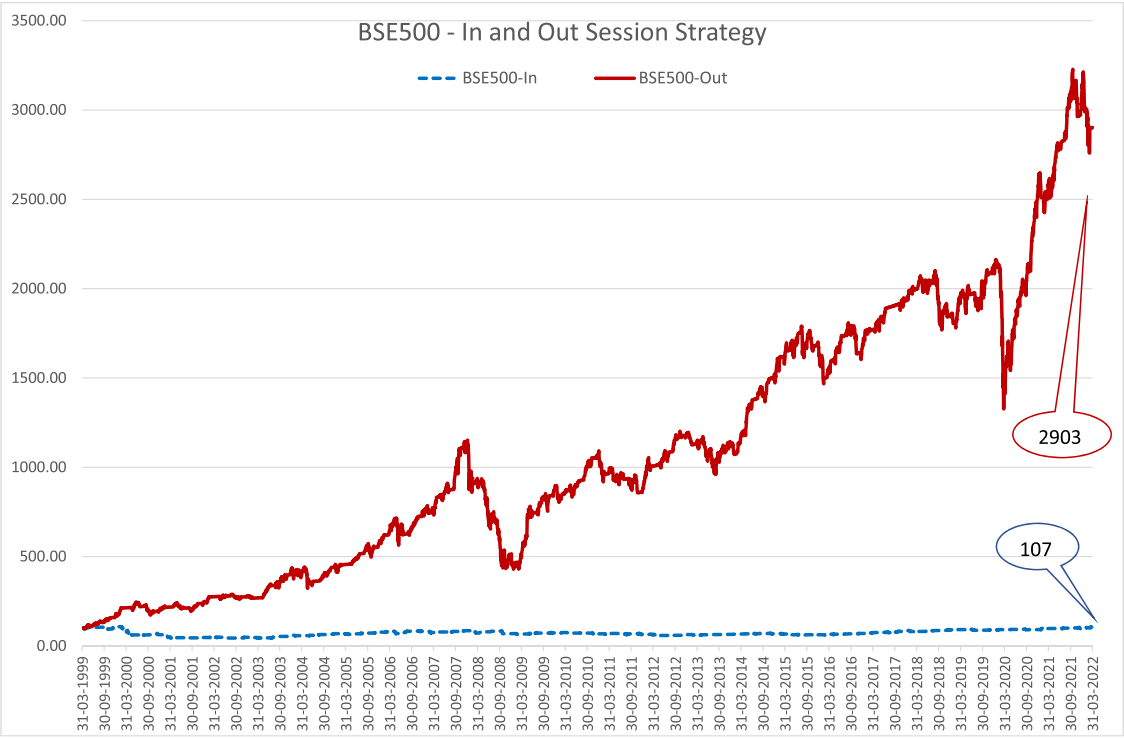
The fact that the results for BSE500 and BSE SmallCap are more pronounced compared to the case of BSE SENSEX suggests that smaller firms' stocks are more sensitive to parliamentary sessions and government strength. It may mean that larger firms are able to better manage their business risk using their political connections, thereby making themselves immune to policy uncertainties (Oetzel, 2005; Füss and Bechtel, 2008). However, smaller businesses are more exposed to political risk, that is reflected in the greater sensitivity of the broader BSE500 index and the small-cap index to the legislative sessions compared with the large-cap index. The findings are thereby in line with our hypotheses that parliamentary sessions result in higher volatility of asset prices, but the effects get weakened when such sessions overlap with a stronger coalition in power. In other words, weaker coalitions in power would increase stock market volatility during winter and budget sessions of Parliament due to heightened uncertainty about the business environment. This indicates that while the economic policy agenda is being set and later implemented, there is an intense political bargaining process, which is accentuated in the face of weaker coalitions. Thus, our study provides new evidence for when, where and how political uncertainty flows into financial market risks.

In Table 5, we present the results for government strength measured by the ruling alliance's seat share. The results are similar to those in Table 4, but considerably weaker. We do not find a positive effect of winter session on volatility of BSE500. In case of BSE SmallCap, we find a moderating effect of coalition strength on the effect of the winter session on volatility, even though winter session by itself has a significant and positive coefficient in the variance equation. Finally, in Table 6, we show the results for government strength measured by HHI. For the BSE500, we find only the budget session impacting volatility but no moderation role of government strength. However, statistical significance is obtained only at 10%. BSE SENSEX shows a similar role of parliamentary sessions (the coefficient of budget session is positive and statistically significant at 10%). In case of the BSE SmallCap we find a statistically significant effect of the winter session that enhances market volatility, but the increase is less when there is a stronger government in power. This is in line with the results obtained in Table 5 suggesting that smaller companies are more prone to political upheavals compared to larger companies (represented in the BSE SENSEX).

6. Conclusion

Governance systems across the world are influenced by power struggles between conflicting parties, political or economic. Our empirical results from India show that struggle for power and the scramble to be part of ruling coalition alliances by elected political representatives, both inter and intra party, have implications on asset pricing dynamics in financial markets. The power of partisanship and party competition to shape trust (Carlin and Love, 2018) creates serious unwanted tension for economic participants. During Parliament sessions, playing to the electorate's sentiment is an important characteristic of an elected representative's behaviour. At the same time, these sessions are the breeding ground for policy debates, strategic musings and the resultant discomfiture to the corporate sector seeking economic stability. On the other hand, there are private rent seeking opportunities from such engagements for elected officials in a developing country context. A combination of electorate's benefits and elected officials' private gains results in unpleasant quibbling among political powers (Martin, 2004) and adherence to the coalition compromise model (Martin and Vanberg, 2014). Such one-upmanship posturing by political parties wooing their electorate across the board results in plummeting business confidence and surging economic uncertainty. As a result, during session days, the stock market experiences negative pressures in terms of increased

[7] We thank the reviewers for suggesting these additional pieces of analysis. We do not report the detailed results to save space but they are available on request.



The figure shows the portfolio values (in INR) starting with INR100 as the base portfolio value for both the In- and Out- strategies. 'Out-Strategy' outperforms the 'In-Strategy' by ~27x.

Fig. 2. Gains from portfolio strategy based on the legislative sessions for the BSE500.

volatilities.

We empirically probe these conjectures by dividing parliamentary sessions based on the nomenclature of the meetings during the year i.e., budget, monsoon and winter. We observe that sessions held during fiscal and pre-fiscal budgeting time of the year (usually known as budget session and winter session respectively), asset prices experience upward escalation in volatility. Monsoon session yielded statistically insignificant results for both stock returns and volatility, corroborating the fact that this session is devoted to matters of low economic interest. Partisan behaviour among coalition partners over economic policies during legislative meetings could to be a reason for the transmission of political risk to stock markets. We find that weak coalitions are possibly constrained in the speed of taking decisions, adding to the nation's policy paralysis and passing on the political uncertainty to economic participants. We believe that our findings can raise awareness among policymakers about how democratic processes boost financial market instability (Hartwell, 2018). Based on the findings, policymakers and other key stakeholders in parliamentary democracies may want to reassess the macro-level governance structures and decision-making processes. Our findings imply that policymakers put off crucial policy decisions until the last minute (in the legislative sessions), resulting in a higher level of uncertainty. Instead, policymakers should spread out policy discussions over a longer period of time, allowing markets to process information over an enhanced time frame, thereby minimizing unexpected spikes in uncertainty.

Our results will particularly appeal to policymakers in low- and middle-income democratic countries which frequently battle with pangs of changing growth plans and uncertainty; they can incorporate the implications of this research into policymaking. Our findings have economic implications such as providing insights on the timing of potential systemic risk, political power dynamics inflection points, corporate financial risk management and refining financial engineering models used by desk traders and investment bankers. Moreover, our analysis builds on the theoretical work done in the existing literature on parliamentary governments' comparative dynamics (Baron, 1998) that incorporates attributes of the institutional system in a country.

Our work has a couple of limitations. First, our analysis is based on an emerging economy where institutional features are relatively less constraining on politicians and share of informed voters in the electorate is less compared to in developed countries. Second, we did not explore the role of economic conditions in the effect of legislative sessions on stock markets. Exploring the above gaps can be interesting avenues for future research. More generally, we hope our study will spur greater interest in building bridges between *asset price dynamics* and *political science*.

Table 4
Impact of parliamentary session type on different indices with government strength measured by seat share of the ruling party
We employ three indices namely, BSE500-broad based index, BSE SENSEX - a large cap index and BSE SmallCap - a small cap index. The empirical results cover 3930 equity-trading days between September 2005 and March 2022 (data for small cap index is available only for this period). Dummy variables are employed to represent different parliamentary session types. We interact the session dummies with strength of the government, measured using ruling party strength. Figures in brackets represent standard errors. *Significance Level: *** 1%, ** 5%, * 10%.*

	BSE500	SENSEX	BSE SmallCap
Mean Analysis			
Winter	0.0288 (0.28)	−0.0018 (0.27)	−0.0693 (0.37)
Budget	−0.1051 (0.24)	−0.0555 (0.25)	−0.1677 (0.26)
Monsoon	−0.1214 (0.31)	−0.1252 (0.32)	0.214 (0.34)
Strength	0.6275 (0.56)	0.4533 (0.62)	0.9196 (0.56)
Strength*Winter	−0.7356 (0.83)	−0.5529 (0.85)	−0.8665 (0.98)
Strength*Budget	−0.6984 (0.77)	−0.6664 (0.82)	−0.91 (0.82)
Strength*Monsoon	−0.4455 (0.85)	−0.2853 (0.9)	−1.4546 (0.92)
SNP(-1)	−0.0443**(0.02)	−0.035*(0.02)	−0.0689***(0.02)
VIX(-1)	0.0027 (<0.01)	0.0025 (<0.01)	0.0021 (<0.01)
FOREX	−0.8098***(0.03)	−0.8548***(0.03)	−0.6275***(0.03)
Index(-1)	0.1179***(0.02)	0.0711***(0.02)	0.2523***(0.02)
Weekday Dummies	Yes	Yes	Yes
Month Dummies	Yes	Yes	Yes
Variance Analysis			
Winter	0.1175*(0.06)	0.0753 (0.06)	0.2915**(0.12)
Budget	0.114**(0.05)	0.0955**(0.05)	0.146 (0.09)
Monsoon	0.0105 (0.07)	−0.0243 (0.06)	−0.0545 (0.12)
Strength	0.2665 (0.34)	0.0633 (0.26)	0.4189 (0.53)
Strength*Winter	−0.5834 (0.37)	−0.2766 (0.29)	−1.113*(0.6)
Strength*Budget	−0.5565 (0.36)	−0.2921 (0.28)	−0.7609 (0.57)
Strength*Monsoon	−0.3459 (0.38)	−0.0497 (0.29)	−0.3499 (0.59)
Constant	−0.1331***(0.01)	−0.1185***(0.01)	−0.2026***(0.02)
ARCH	0.1748***(0.02)	0.1587***(0.02)	0.2815***(0.02)
Leverage	−0.1345***(0.01)	−0.1103***(0.01)	−0.1532***(0.02)
GARCH	0.9689***(<0.01)	0.9787***(<0.01)	0.9021***(0.01)
AIC	2.817397	2.909553	2.934268
BIC	2.881293	2.973448	2.998164

Declaration of competing interest

None.

Data availability

Data will be made available on request.

Appendix

Table A.1
Key National Political parties in India and their leanings

National Party*	Social	Economic
All India Trinamool Congress	Left	Left
Bharatiya Janata Party	Right	Left
Communist Party of India	Left	Left
Communist Party of India (Marxist)	Left	Left
Indian National Congress	Left	Left
Nationalist Congress Party	Left	Left

Source: https://blog.ipleaders.in/concept-political-ideology-left-wing-right-wing/

Table 5
Impact of parliamentary session type on different indices with government strength measured by seat share of the ruling alliance
We employ three indices namely, BSE500-broad based index, BSE SENSEX - a large cap index and BSE SmallCap - a small cap index. The empirical results cover 3930 equity-trading days between September 2005 and March 2022 (data for small cap index is available only for this period). Dummy variables are employed to represent different parliamentary session types. We interact the session dummies with strength of the government, measured using ruling alliance strength. Figures in brackets represent standard errors. *Significance Level: *** 1%, ** 5%, * 10%.*

	BSE500	SENSEX	BSE SmallCap
Mean Analysis			
Winter	−0.0066 (0.29)	0.0053 (0.28)	−0.1888 (0.38)
Budget	−0.1129 (0.25)	−0.0397 (0.25)	−0.2389 (0.27)
Monsoon	−0.375 (0.28)	−0.2985 (0.29)	−0.1044 (0.35)
Strength	0.4564 (0.43)	0.3456 (0.48)	0.5971 (0.43)
Strength*Winter	−0.4857 (0.68)	−0.4427 (0.7)	−0.3234 (0.82)
Strength*Budget	−0.5055 (0.63)	−0.5589 (0.66)	−0.4548 (0.68)
Strength*Monsoon	0.1362 (0.65)	0.0976 (0.69)	−0.4631 (0.75)
SNP(-1)	−0.0441**(0.02)	−0.0346*(0.02)	−0.0686***(0.02)
VIX(-1)	0.0026 (<0.01)	0.0024 (<0.01)	0.002 (<0.01)
FOREX	−0.8121***(0.03)	−0.8558***(0.03)	−0.6268***(0.03)
Index(-1)	0.1163***(0.02)	0.0708***(0.02)	0.2513***(0.02)
Weekday Dummies	Yes	Yes	Yes
Month Dummies	Yes	Yes	Yes
Variance Analysis			
Winter	0.1057 (0.07)	0.0509 (0.06)	0.3118**(0.13)
Budget	0.0764 (0.06)	0.0761 (0.05)	0.0971 (0.1)
Monsoon	0.0313 (0.07)	−0.0056 (0.06)	−0.0387 (0.13)
Strength	0.208 (0.26)	0.0441 (0.2)	0.3599 (0.4)
Strength*Winter	−0.449 (0.3)	−0.1744 (0.24)	−0.9817**(0.48)
Strength*Budget	−0.379 (0.28)	−0.2 (0.23)	−0.553 (0.45)
Strength*Monsoon	−0.3096 (0.3)	−0.066 (0.24)	−0.3314 (0.46)
Constant	−0.135***(0.01)	−0.1203***(0.01)	−0.205***(0.02)
ARCH	0.1775***(0.02)	0.161***(0.02)	0.2852***(0.02)
Leverage	−0.131***(0.01)	−0.1087***(0.01)	−0.1521***(0.02)
GARCH	0.9703***(<0.01)	0.9796***(<0.01)	0.9015***(0.01)
AIC	2.818509	2.910383	2.934963
BIC	2.882405	2.974278	2.998858

* National Parties as recognised by Election Commission of India.

Table A.2
Unit Root Tests for Financial Variables (Returns)

	BSE500	SNP	VIX	Forex
ADF	−49.08***	−61.14***	−7.69***	−86.72***
PP	−4715.41***	−7689.80***	−132.06***	−7743.40***
KPSS	0.0542	0.135*	1.59***	0.161**

Note: *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level; ADF and PP stand for Augmented Dickey-Fuller and Phillips-Perron tests respectively. The null hypothesis of non-stationarity is rejected for all the variables (computed as returns) and therefore we infer that they do not contain unit roots. KPSS stands for Kwiatkowski–-Phillips–Schmidt–Shin test, for which the null hypothesis is stationarity. BSE500 is found to be stationary in the KPSS test, confirming the results from ADF and PP tests. But the KPSS test rejected the null of stationarity for SNP, VIX and Forex at 10%, 1% and 5% levels respectively, suggesting the possibility of fractional integration. GPH (Geweke and Porter-Hudak) test of fractional integration does not reject the null of $d = 0$ for SNP and Forex, indicating stationarity with short memory. But the GPH test for VIX produces $d > 0.5$, suggesting a long memory process.

Table A.3
Optimal lag order based on information criteria

Ruling Party		EGARCH(1,1)	EGARCH(1,2)	EGARCH(2,1)	EGARCH(2,2)
	AIC	3.0147	3.0146	3.0150	3.0143

(*continued on next page*)

Table 6
Impact of parliamentary session type on different indices with government strength measured by the Herfindahl–Hirschman Index
We employ three indices namely, BSE500-broad based index, BSE SENSEX – a large cap index and BSE SmallCap - a small cap index. The empirical results cover 3930 equity-trading days between September 2005 and March 2022 (data for small cap index is available only for this period). Dummy variables are employed to represent different parliamentary session types. We interact the session dummies with strength of the government, measured using the Herfindahl–Hirschman Index. Figures in brackets represent standard errors. *Significance Level: *** 1%, ** 5%, * 10%.*

	BSE500	SENSEX	BSE Smallcap
Mean Analysis			
Winter	0.0386 (0.26)	0.0001 (0.24)	−0.0669 (0.33)
Budget	−0.1522 (0.22)	−0.0951 (0.23)	−0.216 (0.24)
Monsoon	−0.1979 (0.28)	−0.1658 (0.3)	0.163 (0.33)
Strength	1.0814 (0.99)	0.7827 (1.11)	1.5447 (0.99)
Strength*Winter	−1.3188 (1.4)	−0.9695 (1.45)	−1.4582 (1.63)
Strength*Budget	−1.0249 (1.32)	−1.0182 (1.42)	−1.333 (1.41)
Strength*Monsoon	−0.4875 (1.43)	−0.3261 (1.56)	−2.3107 (1.6)
SNP(-1)	−0.044**(0.02)	−0.0348*(0.02)	−0.0689***(0.02)
VIX(-1)	0.0027 (<0.01)	0.0025 (<0.01)	0.002 (<0.01)
FOREX	−0.8105***(0.03)	−0.8555***(0.03)	−0.6273***(0.03)
Index(-1)	0.1169***(0.02)	0.0713***(0.02)	0.2522***(0.02)
Weekday Dummies	Yes	Yes	Yes
Month Dummies	Yes	Yes	Yes
Variance Analysis			
Winter	0.0948 (0.06)	0.0557 (0.05)	0.269**(0.12)
Budget	0.0897*(0.05)	0.0801*(0.04)	0.1175 (0.09)
Monsoon	0.0101 (0.07)	−0.0259 (0.06)	−0.0714 (0.12)
Strength	0.4767 (0.6)	0.1135 (0.46)	0.7813 (0.94)
Strength*Winter	−0.9517 (0.66)	−0.415 (0.51)	−1.9377*(1.07)
Strength*Budget	−0.8967 (0.63)	−0.4602 (0.5)	−1.2784 (1)
Strength*Monsoon	−0.6138 (0.67)	−0.0808 (0.53)	−0.589 (1.04)
Constant	−0.1347***(0.01)	−0.12***(0.01)	−0.2039***(0.02)
ARCH	0.177***(0.02)	0.1606***(0.02)	0.2837***(0.02)
Leverage	−0.1327***(0.01)	−0.1096***(0.01)	−0.1532***(0.02)
GARCH	0.9698***(<0.01)	0.9793***(<0.01)	0.9015***(0.01)
AIC	2.818271	2.91018	2.934666
BIC	2.882167	2.974075	2.998562

Table A.3 (*continued*)

Ruling Party		EGARCH(1,1)	EGARCH(1,2)	EGARCH(2,1)	EGARCH(2,2)
	AIC	3.0147	3.0146	3.0150	3.0143
	BIC	3.0625*	3.0636	3.0640	3.0645
	BIC	3.0625*	3.0636	3.0640	3.0645
Ruling Alliance		**EGARCH(1,1)**	**EGARCH(1,2)**	**EGARCH(2,1)**	**EGARCH(2,2)**
	AIC	3.0170	3.0169	3.0173	3.0166
	BIC	3.0648*	3.0659	3.0664	3.0668
HHI		**EGARCH(1,1)**	**EGARCH(1,2)**	**EGARCH(2,1)**	**EGARCH(2,2)**
	AIC	3.0150	3.0148	3.0153	3.0146
	BIC	3.0628*	3.0638	3.0643	3.0648

Note: AIC stands for Akaike Information Criterion and BIC stands for Bayesian Information Criterion. AIC and BIC values are reported from estimated EGARCH models of different lag orders with three types of strength variables. *Optimal lag order selected based on minimum value of BIC.

References

Anolick, N., Batten, J.A., Kinateder, H., Wagner, N., 2021. Time for gift giving: abnormal share repurchase returns and uncertainty. J. Corp. Finance 66, 101787. https://doi.org/10.1016/j.jcorpfin.2020.101787.
Baker, Scott R., Bloom, Nicholas, S.J.D., 2016. Measuring economic policy uncertainty. Q. J. Econ. 131, 1593–1636. https://doi.org/10.1093/qje/qjw024.

Banker, R.D., Das, S., Ou, C.S., 1997. Shareholder wealth effects of legislative events: the case of airline deregulation. Publ. Choice 91, 301–331. https://doi.org/10.1023/a:1017958205632.
Baron, D.P., 1998. Comparative dynamics of parliamentary governments. Am. Polit. Sci. Rev. 92, 593–609. https://doi.org/10.2307/2585483.
Beaulieu, M.C., Cosset, J.C., Essaddam, N., 2005. The impact of political risk on the volatility of stock returns: the case of Canada. J. Int. Bus. Stud. 36, 701–718. https://doi.org/10.1057/palgrave.jibs.8400160.
Benton, A.L., Philips, A.Q., 2020. Does the @realDonaldTrump really matter to financial markets? Am J Pol Sci 64, 169–190. https://doi.org/10.1111/ajps.12491.
Białkowski, J.J., Gottschalk, K., Wisniewski, T.P., 2008. Stock market volatility around national elections. J. Bank. Finance 32, 1941–1953. https://doi.org/10.1016/j.jbankfin.2007.12.021.
Boutchkova, M., Doshi, H., Durnev, A., Molchanov, A., 2012. Precarious politics and return volatility. Rev. Financ. Stud. 25, 1111–1154. https://doi.org/10.1093/rfs/hhr100.
Breen, M., McMenamin, I., Courtney, M., McNulty, G., 2021. Daily judgement: political news and financial markets. New Polit. Econ. 26, 616–630. https://doi.org/10.1080/13563467.2020.1806221.
Calvo, E., Murillo, M.V., 2004. Who delivers? Partisan clients in the Argentine electoral market. Am J Pol Sci. https://doi.org/10.1111/j.0092-5853.2004.00099.x.
Canes-Wrone, B., Park, J.-K., 2012. Electoral business cycles in OECD countries. Am. Polit. Sci. Rev. 106, 103–122. https://doi.org/10.1017/S0003055411000529.
Carlin, R.E., Love, G.J., 2018. Political competition, partisanship and interpersonal trust in electoral democracies. Br. J. Polit. Sci. 48, 115–139. https://doi.org/10.1017/S0007123415000526.
Carnahan, D., Saiegh, S., 2021. Electoral uncertainty and financial volatility: evidence from two-round presidential races in emerging markets. Econ. Polit. 33, 109–132. https://doi.org/10.1111/ecpo.12163.
Chakrabarti, A., Ghosh, J., 2011. Philosophy of statistics. In: Bandyopadhyay, P., Forster, M. (Eds.), Philosophy of Statistics. Elsevier, pp. 583–605. https://doi.org/10.1017/cbo9780511581250.012.
Cohen, L., Diether, K., Malloy, C., 2013. Legislating stock prices. J. Financ. Econ. 110, 574–595. https://doi.org/10.1016/j.jfineco.2013.08.012.
Dimic, N., Orlov, V., Piljak, V., 2015. The political risk factor in emerging, frontier, and developed stock markets. Finance Res. Lett. 15, 239–245. https://doi.org/10.1016/j.frl.2015.10.007.
Feld, S.L., Grofman, B., 2007. The Laakso-Taagepera index in a mean and variance framework. J. Theor. Polit. 19, 101–106. https://doi.org/10.1177/0951629807071021.
Fortunato, D., 2019. The electoral implications of coalition policy making. Br. J. Polit. Sci. 49, 59–80. https://doi.org/10.1017/S0007123416000430.
Füss, R., Bechtel, M.M., 2008. Partisan politics and stock market performance: the effect of expected government partisanship on stock returns in the 2002 German federal election. Publ. Choice 135, 131–150. https://doi.org/10.1007/s11127-007-9250-1.
Hartwell, C.A., 2018. The impact of institutional volatility on financial volatility in transition economies. J. Comp. Econ. 46, 598–615. https://doi.org/10.1016/j.jce.2017.11.002.
Hillier, D., Loncan, T., 2019. Political uncertainty and stock returns: evidence from the Brazilian political crisis. Pac. Basin Finance J. 54, 1–12. https://doi.org/10.1016/j.pacfin.2019.01.004.
Imai, M., Shelton, C.A., 2011. Elections and political risk: new evidence from the 2008 Taiwanese presidential election. J. Publ. Econ. 95, 837–849. https://doi.org/10.1016/j.jpubeco.2010.12.009.
Kinateder, H., Weber, K., Wagner, N.F., 2019. Revisiting calendar anomalies in BRICS countries. Bulletin of Monetary Economics and Banking 22, 213–236. https://doi.org/10.21098/bemp.v22i2.1092.
Ko, J.-H.H., Lee, C.-M.M., 2015. International economic policy uncertainty and stock prices: wavelet approach. Econ. Lett. 134, 118–122. https://doi.org/10.1016/j.econlet.2015.07.012.
Leblang, D., Mukherjee, B., 2005. Government partisanship, elections, and the stock market: examining American and British stock returns, 1930-2000. Am J Pol Sci 49, 780–802. https://doi.org/10.1111/j.1540-5907.2005.00155.x.
Lehkonen, H., Heimonen, K., 2015. Democracy, political risks and stock market performance. J. Int. Money Finance 59, 77–99. https://doi.org/10.1016/j.jimonfin.2015.06.002.
Lin, C.T., Wang, Y.H., 2007. The impact of party alternative on the stock market: the case of Japan. Appl. Econ. 39, 79–85. https://doi.org/10.1080/00036840500427882.
Martin, L.W., 2004. The government agenda in parliamentary democracies. Am J Pol Sci 48, 445–461. https://doi.org/10.1111/j.0092-5853.2004.00080.x.
Martin, L.W., Vanberg, G., 2014. Parties and policymaking in multiparty governments: the legislative median, ministerial autonomy, and the coalition compromise. Am J Pol Sci 58, 979–996. https://doi.org/10.1111/ajps.12099.
McGillivray, F., 2003. Redistributive politics and stock price dispersion. Br. J. Polit. Sci. 33, 367–395. https://doi.org/10.1017/S0007123403000176.
Mei, J., Guo, L., 2004. Political uncertainty, financial crisis and market volatility. Eur. Financ. Manag. 10, 639–657. https://doi.org/10.1111/j.1354-7798.2004.00269.x.
Mukherjee, B., Leblang, D., 2007. Partisan politics, interest rates and the stock market: evidence from American and British returns in the twentieth century. Econ. Polit. 19, 135–167. https://doi.org/10.1111/j.1468-0343.2007.00306.x.
Nelson, D.B., 1991. Conditional heteroskedasticity in asset returns: a new approach. Econometrica 59, 347. https://doi.org/10.2307/2938260.
Oetzel, J., 2005. Smaller may be beautiful but is it more risky? Assessing and managing political and economic risk in Costa Rica. Int. Bus. Rev. 14, 765–790. https://doi.org/10.1016/j.ibusrev.2005.09.002.
Ono, Y., 2012. Portfolio allocation as leadership strategy: intraparty bargaining in Japan. Am J Pol Sci 56, 553–567. https://doi.org/10.1111/j.1540-5907.2012.00586.x.
Paster, T., 2018. How do business interest groups respond to political challenges? A study of the politics of German employers. New Polit. Econ. 23, 674–689. https://doi.org/10.1080/13563467.2018.1384453.
Pástor, Ľ., Veronesi, P., 2012. Uncertainty about government policy and stock prices. J. Finance 67, 1219–1264. https://doi.org/10.1111/j.1540-6261.2012.01746.x.
Pástor, Ľ., Veronesi, P., 2013. Political uncertainty and risk premia. J. Financ. Econ. 110, 520–545. https://doi.org/10.1016/j.jfineco.2013.08.007.
Pirgaip, B., Dinçergök, B., 2019. Share repurchases under uncertainty: U.S. evidence. Finance Res. Lett. 30, 130–138. https://doi.org/10.1016/J.FRL.2019.03.036.
Rhoades, S.A., 1993. The herfindahl-hirschman index. Fed. Reserv. Bull. 79, 188, 188.
Russell, M., Cowley, P., 2016. The policy power of the westminster parliament: the "parliamentary state" and the empirical evidence. Governance 29, 121–137. https://doi.org/10.1111/gove.12149.
Sáez, L., Sinha, A., 2010. Political cycles, political institutions and public expenditure in India, 1980–2000. Br. J. Polit. Sci. 40, 91–113. https://doi.org/10.1017/S0007123409990226.
Sever, C., Yücel, E., 2022. The effects of elections on macroprudential policy. J. Comp. Econ. 50, 507–533. https://doi.org/10.1016/j.jce.2021.12.001.
Shambaugh, G.E., 2004. The power of money: global capital and policy choices in developing countries. Am J Pol Sci 48, 281–295. https://doi.org/10.1111/j.0092-5853.2004.00070.x.
Siokis, F., Kapopoulos, P., 2007. Parties, elections and stock market volatility: evidence from a small open economy. Econ. Polit. 19, 123–134. https://doi.org/10.1111/j.1468-0343.2007.00305.x.
Tsay, R.S., 2010. Analysis of Financial Time Series, *Analysis Of Financial Time Series*. wiley. https://doi.org/10.1002/9780470644560.
Wang, Y.H., Hung, J.C., Lee, Y.H., Chuang, C.C., 2012. Computing regression quantiles to analysis the relationship between market behavior and political risk. Qual. Quantity 46, 1047–1055. https://doi.org/10.1007/s11135-011-9447-8.
White, J., 2018. The ethics of political alliance. Br. J. Polit. Sci. 48, 593–609. https://doi.org/10.1017/S0007123417000709.