The impact of Reserve Bank of India officials' resignations on financial sector returns: An event-study analysis

Ahmad Bash [1,] *, Reyadh Faras [2], Abdullah M. Al-Awadhi [1], Musaed S. AlAli [1]

[1]Insurance and Banking Department, College of Business Studies, Public Authority for Applied Education and Training, Ardiya, Kuwait
[2]Economics Department, College of Business Administration, Kuwait University, Al-Shadadiya, Kuwait

A B S T R A C T

In this study, we examine the short-term effects of the resignations of high-ranking officials from the Reserve Bank of India (RBI) on financial sector returns. We apply a commonly used event-study method to analyze financial sector stocks during the period from February 16, 2018, to July 22, 2019. The findings reveal that the financial sector was sensitive to the resignations of RBI Governor Urjit Patel and Deputy Governor Viral Acharya, both strong supporters of the RBI's independence. Patel's resignation caused a significant negative impact on cumulative abnormal returns, while Acharya's resignation led to a significant positive impact on these returns. Our results suggest that central bank independence (CBI) may have varied short-term effects on financial sector performance. It is, therefore, important for both politicians and investors to understand the implications of our findings in order to fully grasp the political and economic consequences of central bank independence and the credibility of monetary policy on financial sector outcomes. For future research, we suggest exploring the effects of these resignations on other financial indicators, such as bond yields, exchange rates, and interest rates, using alternative methods.

1. Introduction

Central banks' independence is credited with preserving economic stability and helping to avert financial disasters (Mishkin, 2004). Political and economic independence are the two variables that are typically used to measure it. Political independence is the ability of the central bank to formulate and carry out policies that are in line with the objective of monetary stability. Thus, such political independence protects the central bank from immediate political influences. However, economic independence refers to the central bank's discretion in selecting a set of tools that are consistent with monetary policy (Masciandaro and Romelli, 2015). In this study, we examine the connection between stock market returns and central bank independence. Viral Acharya, deputy governor of the Reserve Bank of India (RBI),

delivered a speech on October 26, 2018, as the A. D. Shroff Memorial Lecture in Mumbai in which he stated, "Governments that do not respect central bank's independence will sooner or later incur the wrath of financial markets, ignite economic fire, and come to rue the day they undermined an important regulatory institution. However, he also said, "Governments which invest in central bank independence will enjoy lower costs of borrowing, the love of international investors, and longer life spans." He added, "Basically, I am defending two main concepts: the independence of the central bank in our decision-making process and that the reserves should be used for monetary and financial stability."

In 2018, the government of India, led by Prime Minister Narendra Modi, wanted to have the RBI monetary policy adapted to its political requirements. Such a desire has led to turmoil in the RBI at the senior level. This conflict between the Ministry of Finance and the RBI is not the first, nor will it be the last. It has led to several resignations among the executives at the RBI. Such resignations are not the first in India but are the most recent since 1990. There have been five resignations of executives at the RBI in the past. For example, Sir Osborne Smith resigned in 1937, Sir Bengal Rama Rau resigned in 1957, and S. Jagannathan resigned in

1975. Moreover, K. R. Puri and Ram Narian Malhotra resigned in 1977 and 1990, respectively.

The theoretical framework of Ueda and Valencia (2014) showed that central bank independence is a crucial component of economic stability. During the past few years, many nations have allowed their monetary authorities to have more independence (Klomp and De Haan, 2010). Garcia and Costa (2019) asserted that a few characteristics of the central bank, such as its independence and the transparency of its monetary policy-making, may have an impact on stock market returns. An independent central bank may promote stock market returns by limiting inflation. Furthermore, a high degree of central bank independence may signal good governance to investors (Maxfield, 1997). In addition, the monetary policy of an independent central bank may limit budget deficits and, in turn, future expected taxes (Sargent and Wallace, 1981).

The independence of a central bank is essential for a country's economic stability and growth. Political influence on central bank decisions can negatively impact the entire economy, especially the stock market, as it reflects the economy's overall health. When top central bank officials resign due to political pressure or other reasons, the effect on the stock market tends to vary. Kuttner and Posen (2010) showed that when studying developed markets, the change in central bank governor does not have an effect on the stock market returns. On the other hand, Moser and Dreher (2010) found that in emerging economies, the resignation of a central bank governor negatively affects financial markets, reaching somewhere from 0.5 to 1.5 percent on the announcement day.

In accordance with empirical research, central banks' independence has an impact on the stock market's returns (Bash and Al-Awadhi, 2023; Förch and Sunde, 2012; Garcia and Costa, 2019), exchange rates and sovereign bond yields (Kuttner and Posen, 2010; Moser and Dreher, 2010), inflation (Alesina and Summers, 1993; Anwar, 2023; Berger et al., 2001; Gyeke-Dako et al., 2022; Strong, 2021), inflow of foreign investment (Mukhametov, 2021), and fiscal deficit (Agoba et al., 2019; Bhat et al., 2023; Bodea and Hicks, 2015; Strong and Yayi, 2021). The literature on the effect of central bank independence on stock market returns shows that there is a limited number of studies that examine this topic. For example, Förch and Sunde (2012) examined emerging economies and found that central bank independence has a positive effect on stock market performance. A significant positive relationship between central bank independence and stock market returns is also discovered by Kurihara et al. (2012). In a study on central bank independence in developed nations for a period of more than 20 years, Garcia and Costa (2019) discovered that central bank independence has a positive impact on stock market returns. The most recent study by Bash and Al-Awadhi (2023) considered the effect of central bank independence on stock market outcomes. They study the interference of President

Erdogan in the firing of officials of the central bank of Turkey, and the impact on Borsa Istanbul returns. The authors find that the first two cases of interference had a significant positive impact, whereas the later three cases of interference had a significant negative impact.

The motivation for this study originates from the unique case in which we have two resignations by officials of the central bank in a short period to protect central bank independence. Therefore, the aim of this study was to examine the consequences of these resignations on the short-term returns of the financial sector stocks listed on the National Stock Exchange in India using an event-study approach because we believed that there was a link between their actions and the stock market returns. According to the efficient market hypothesis, stock prices should quickly reflect the impact of events.

Our findings demonstrate that central bank independence could have mixed effects on financial sector outcomes. Therefore, it is crucial for politicians and investors to comprehend the implications of our study to fully appreciate the political impact of central bank independence and the credibility of monetary policy on stock market results.

The remainder of this study is structured as follows. The events' history is presented in the next section. We describe our data and approach in the third section of the paper. The descriptive data are in the fourth section. The findings and discussion are presented in the fifth section, and the study is wrapped up in the sixth section.

2. Background

In the past few years, the RBI has suffered from several cases of interference by the Indian government headed by Prime Minister Narendra Modi regarding the following three main issues: (1) the appointment of non-official directors, (2) public sector banks, and (3) the transfer of central bank excess capital to the government.

In 2018, the Modi government appointed two members to the board of the RBI as part-time non-official directors. The RBI board consists of official and non-official directors. The RBI governor and four deputy governors represent official directors, whereas the government appoints the other non-official directors. According to RBI law, the board can consist of up to 10 members. In the past, non-official directors were industry experts; however, recently, they have become politically tinged directors. The new non-official directors are proponents of economic nationalism, and they oppose foreign capital and foreign business. They believe in Indian people and think Indian small and medium businesses can advance the Indian economy. It is worth mentioning that the RBI board acts as a medium or place for dialogue. It is not a decision-making body, given that policy-making decisions, such as interest rate decisions, are undertaken in a distinct monetary policy committee. However, the

board works as a podium for critical public-facing decisions, such as terminating or changing the central bank's dividend policy.

In terms of public sector banks, the Modi government wants the RBI to relax the prompt corrective action (PCA) framework for the 11 government-owned banks so that weaker government banks can recover and stimulate credit growth among various sectors of the economy. The RBI opposes such a request because it may increase the risk of bad loans. In terms of central bank excess capital, the RBI believes that maintaining adequate reserves with the central bank contributes to enhancing the level of independence of the central bank.

Event 1: On December 10, 2018, Urjit Patel resigned from his role as governor of the RBI. The resignation came after working hours; therefore, we treat the next day, December 11, 2018, as the event day. This was nine months before the completion of his three-year contract because he was appointed in September 2016.

Event 2: On June 24, 2019, Viral Acharya, one of four RBI deputy governors, resigned from his role. He joined the RBI in January 2017 as a deputy governor. Before that, he was an economics professor at the Stern School of Business at New York University.

3. Data and methodology

3.1. Data

Our data are obtained from Bloomberg for the period from February 16, 2018, to July 22, 2019. They consist of the adjusted closing price for the financial sector stocks in NIFTY 500 according to the Global Industry Classification Standard (GICS). The financial sector stocks involve financial institutions, banks, insurance firms, housing finance, and other financial services.

3.2. Methodology

We employ a well-established event-study technique. Event studies use data from the financial markets to determine how a specific event may affect a firm's worth value. The benefit of this approach stems from the notion that the effect of an event is immediately reflected in security prices in a rational market. Thus, a vivid image of the event's economic impact can be provided by security prices that are recorded during a short period (Mackinlay, 1997).

The daily returns (DR_n) are calculated as follows:

$$DR_n = ln\left(\frac{P_{n,d}}{P_{n,d-1}}\right) \tag{1}$$

where, $P_{n,d}$ is the price of stock n at time d, ln is the natural logarithm, and $P_{n,d-1}$ is the price of stock n at time $d-1$. The daily rate of returns for stock n is represented by DR_n. The estimation period is [−200,

−11] days, and the observation window is [−10, 20] days (The use of 200 days in the estimation period is chosen to roughly correspond to the number of trade days in a year. It denotes a window of time before the event day that is long enough to provide a precise calculation of the parameters of the chosen return-generating mechanism). The mean-adjusted returns method is used to calculate the daily abnormal returns ($AR_{n,d}$) and the cumulative abnormal returns ($CAR_{n,d}$) for each day of the observation period, including the event day (Day 0). $CAR_{n,d}$ equals the summation of daily ARs in the event window. According to Nazir et al. (2014), mean-adjusted returns are an efficient model for market indexes. In addition, Ismail and Suhardjo (2001) suggested using a mean-adjusted returns model when studying the relationship between political instability and stock market returns, especially for emerging and developing markets. Therefore, we calculate the abnormal returns as follows:

$$AR_{n,d} = DR_{n,d} - \overline{DR}_n \tag{2}$$

where,

$$\overline{DR}_n = \frac{1}{189}\sum_{d=-200}^{-11} DR_{n,d} \tag{3}$$

where, $AR_{n,d}$ is the daily abnormal returns for stock n at time d, $DR_{n,d}$ is the daily rate of returns for stock n at time d, and $\overline{DR}_n$ is the average daily rate of returns for stock n during the observation period.

In addition to the mean-adjusted returns method, we employ the market model method as in Dodd and Warner (1983) and Brown and Warner (1985), in which the model is represented as:

$$AR_{n,d} = DR_{n,d} - (\alpha_n + \beta_n DR_{m,d}) \tag{4}$$

where, α_n and β_n are regression coefficients obtained from ordinary least squares method with an estimation period of [−200, −11]; and $DR_{m,d}$ is the daily returns for NIFTY 500 (India stock market index). It should be noted that the market model considers systematic factors denoted by market risk.

We employ the Wilcoxon–Mann–Whitney signed-rank median as our non-parametric test and the Satterthwaite–Welch *t*-test as our parametric test to determine the statistical significance of the cumulative abnormal returns. Bartholdy et al. (2011), Harris and Hardin (2013), and Maynes and Rumsey (1993) asserted that the median test is preferable when there is a small sample size and sparsely traded equities.

3.3. Robustness test

We also apply the event-study approach to the adjusted closing price for the whole market (NIFTY 50 index) and its constituents, which represent 50 stocks of the largest Indian firms that are listed on the national stock exchange. This robustness test is

used to examine whether the resignations influence the whole market as well. In addition, this robustness test assists us in avoiding potential weakness due to the selection of only specific types of data (financial sector stocks), as well as avoiding narrow interpretations that might not capture broader market sentiments.

4. Descriptive statistics

Figs. 1-4 show $AR_{n,d}$ and $CAR_{n,d}$ around the event day (Day 0). Figs. 1 and 2 refer to Patel's resignation, whereas Figs. 3 and 4 refer to Acharya's resignation. Figs. 1-4 show a negative trend in $CAR_{n,d}$

immediately following Patel's resignations, whereas they show positive trend immediately following Acharya's resignation.

Tables 1-4 show the descriptive statistics for the two resignations. Tables 1 and 2 show the results of Patel's resignation. They show that the mean and the median of $AR_{n,d}$ and $CAR_{n,d}$ under the two methods are negative on the event day (Day 0) for the financial sector stocks. Tables 3 and 4 show the descriptive statistics for Acharya's resignation. The mean and the median for $AR_{n,d}$ and $CAR_{n,d}$ under the two methods are positive on the event day.

Fig. 1: Abnormal returns ($AR_{n,d}$) and cumulative abnormal returns ($CAR_{n,d}$) after Patel's resignation—mean-adjusted returns

Fig. 2: Abnormal returns ($AR_{n,d}$) and cumulative abnormal returns ($CAR_{n,d}$) after Patel's resignation—market model
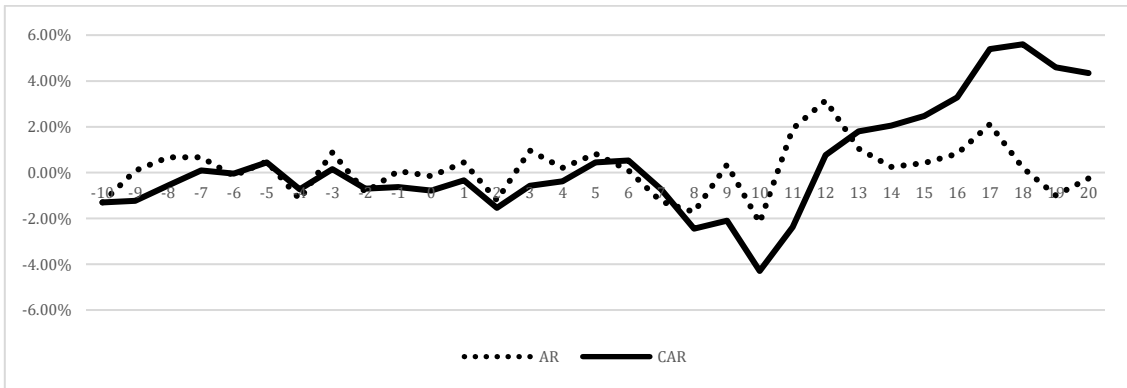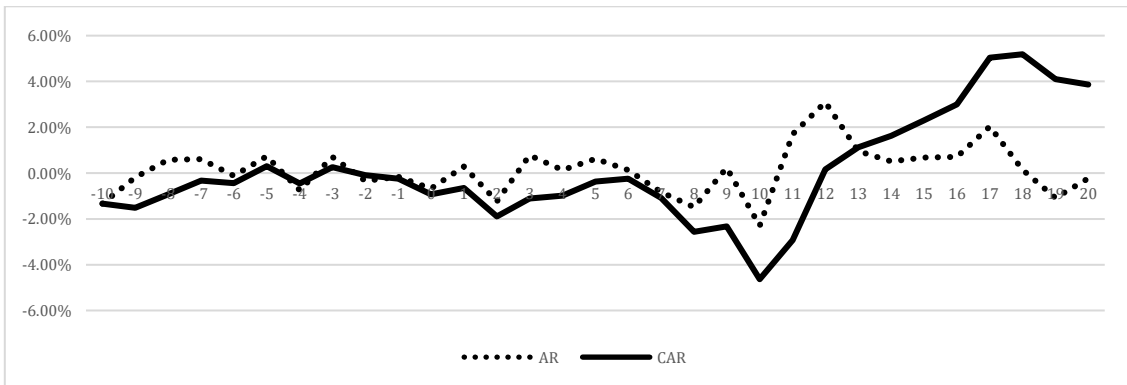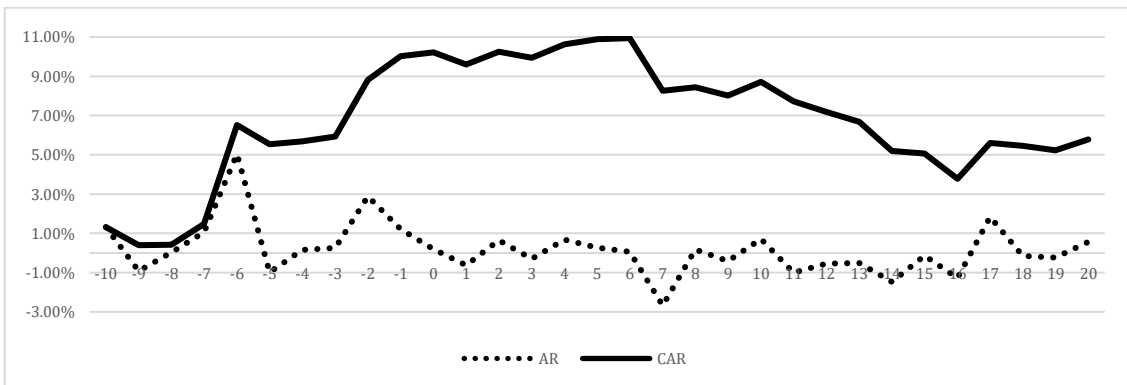

Fig. 3: Abnormal returns ($AR_{n,d}$) and cumulative abnormal returns ($CAR_{n,d}$) after Acharya's resignation—mean-adjusted returns
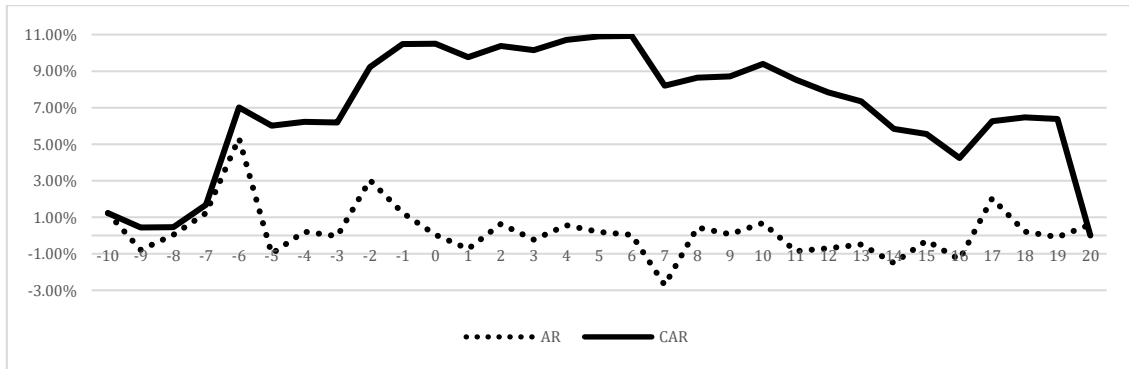
Fig. 4: Abnormal returns ($AR_{n,d}$) and cumulative abnormal returns ($CAR_{n,d}$) after Acharya's resignation—market model

Table 1: Patel's resignation—AR and CAR using mean-adjusted returns - financial sector

	Mean-adjusted returns $AR_{n,d}$				Mean-adjusted returns $CAR_{n,d}$			
	Mean	Median	Skewness	Kurtosis	Mean	Median	Skewness	Kurtosis
−10	-0.0130524	-0.0117004	0.16266701	0.74568311	-0.0130524	-0.0117004	0.16266701	0.74568311
−9	0.0007736	0.00232698	-1.3737665	4.38843192	-0.0122788	-0.009497	-1.4867642	6.02433043
−8	0.00666182	0.0075515	1.76287392	8.33870516	-0.005617	-0.0059811	0.92747026	5.34860898
−7	0.00662385	0.00758045	-0.4641346	5.6244924	0.00100689	0.00034595	0.25783349	1.39595236
−6	-0.0014561	-0.0022413	-0.6757105	2.25525098	-0.0004492	0.00432295	-0.3694649	3.33384349
−5	0.00486178	0.00227664	1.46752315	4.33463786	0.00441261	0.00441852	0.35064575	3.39228617
−4	-0.0116694	-0.010483	-0.2117528	1.50346227	-0.0072568	-0.0078746	0.14549958	3.84273791
−3	0.00878205	0.00439977	0.64689481	-0.0542423	0.00152522	0.00479472	0.01091052	3.14089058
−2	-0.0085012	-0.0112048	1.55315738	5.50793866	-0.006976	-0.0112884	0.21086239	3.10891307
−1	0.00067817	0.00070226	0.03798443	-0.0631068	-0.0062978	-0.0100502	0.23499261	3.11876129
0	**-0.0015489**	**-0.0008739**	**0.02495358**	**0.43459175**	**-0.0078467**	**-0.0092048**	**-0.2251403**	**2.73465511**
+1	0.00443244	0.00288924	-0.1405098	3.49627027	-0.0034142	0.0001573	-0.4349922	1.92816182
+2	-0.0119956	-0.0074133	-1.2275432	2.61887449	-0.0154099	-0.011468	-1.2743665	4.51793169
+3	0.00960368	0.0047043	1.15198443	4.46914494	-0.0058062	-0.0013794	-0.8691199	2.75922224
+4	0.00203059	0.00139518	-0.3611346	1.79098831	-0.0037756	0.00360512	-0.7302924	1.52048123
+5	0.00815676	0.00096277	1.90531865	5.08101476	0.00438116	0.00593802	-0.2602515	1.486166
+6	0.00092917	-0.0008195	0.79214686	2.01170436	0.00531033	0.00324206	-0.1106574	1.54934082
+7	-0.0126593	-0.0109639	-0.9759148	1.39189071	-0.0073489	-0.0088279	-0.1028704	1.20595456
+8	-0.0171813	-0.0165515	-0.2742903	-0.1364934	-0.0245302	-0.031644	-0.0262621	0.85337919
+9	0.00347763	-0.0002411	2.47955117	11.1273358	-0.0210526	-0.0229978	-0.1579598	1.04647142
+10	-0.0219121	-0.0187575	-1.3231122	2.90394448	-0.0429647	-0.0271364	-0.4636455	1.75812408
+11	0.01915292	0.01649925	0.8732048	0.87028582	-0.0238118	-0.015923	-0.2816875	1.15783813
+12	0.03145748	0.02855292	0.67729237	1.92908274	0.0076457	0.0154865	-0.342639	0.82455732
+13	0.01041141	0.00822059	0.32916092	3.67125191	0.01805712	0.02416522	-0.5198617	0.96611025
+14	0.00243637	0.00020332	0.54136457	0.64725709	0.02049348	0.02530991	-0.3595567	0.64862365
+15	0.00417924	0.00201959	0.74753742	1.01698744	0.02467272	0.03168112	-0.1745416	0.54058391
+16	0.00818565	0.00719716	0.60036518	0.81682852	0.03285838	0.03841406	-0.1930354	0.62781489
+17	0.02111407	0.01963915	0.3091615	0.26465558	0.05397244	0.05321108	-0.4107603	0.90970107
+18	0.00203752	0.0004599	0.44102161	1.04519385	0.05600997	0.05183516	-0.0630959	0.42071648
+19	-0.0100108	-0.0102984	0.48218664	0.85464585	0.04599917	0.04524824	-0.0991417	0.51174594
+20	-0.0025879	-0.0011195	-0.1670343	0.80459818	0.04341129	0.04069621	-0.1589266	0.63568012

Table 2: Patel's resignation—AR and CAR using market model - financial sector

	Market model $AR_{n,d}$				Market model $CAR_{n,d}$			
	Mean	Median	Skewness	Kurtosis	Mean	Median	Skewness	Kurtosis
−10	-0.0133437	-0.0116097	0.14598116	0.71052236	-0.0133437	-0.0116097	0.14598116	0.71052236
−9	-0.0018328	8.9322E-05	-1.2844083	4.01559867	-0.0151765	-0.012715	-1.4294737	5.35122507
−8	0.00585417	0.00652593	1.73203113	8.30868701	-0.0093223	-0.0087979	0.70109802	5.23240154
−7	0.00609403	0.00712268	-0.478524	5.68034447	-0.0032283	-0.0028163	0.07101012	1.57121839
−6	-0.001173	-0.0017883	-0.6409942	2.14055746	-0.0044013	0.00040378	-0.6141334	4.11081186
−5	0.00735141	0.0045926	1.50794271	4.07844783	0.00295011	0.00377845	0.28654853	3.48044326
−4	-0.007433	-0.0075657	0.22998414	0.78474829	-0.0044829	-0.0055247	0.25671987	3.70763492
−3	0.00706644	0.00334306	0.73060266	0.16600561	0.00258358	0.00496786	0.04839151	3.06801273
−2	-0.0034922	-0.0065608	1.76878011	6.18520739	-0.0009086	-0.0020884	0.42447662	2.69957916
−1	-0.0016032	-0.0016331	-0.9857397	4.57861928	-0.0025119	-0.0052108	0.37772965	2.85410076
0	**-0.0068082**	**-0.0058393**	**-0.2499901**	**1.55022974**	**-0.0093201**	**-0.0101713**	**-0.2885306**	**2.89798476**
+1	0.00279238	0.0021705	-0.1448321	3.2791101	-0.0065277	-0.0047654	-0.5557069	2.31116939
+2	-0.0124187	-0.0080565	-1.2447514	2.663491	-0.0189464	-0.0166982	-1.4088545	5.07843827
+3	0.00777519	0.00341699	0.82626616	2.99664397	-0.0111712	-0.0041721	-1.0054229	3.14188807
+4	0.00134111	0.00029994	-0.4109968	1.81556801	-0.0098301	-0.0044027	-0.8794795	1.95169209
+5	0.00615056	0.00094385	1.89115996	5.31634022	-0.0036795	-0.001465	-0.4386573	1.86691903
+6	0.00126227	-0.0005768	0.84840122	2.25224055	-0.0024173	-0.0071326	-0.2250413	1.7375118
+7	-0.0083551	-0.0068486	-0.6488136	0.41743954	-0.0107723	-0.0117857	-0.1605986	1.31646
+8	-0.0148819	-0.0145761	-0.1816493	-0.0867228	-0.0256543	-0.0327187	-0.0481916	0.89447719
+9	0.00231423	-0.0013604	2.41698274	10.9433297	-0.02334	-0.0257102	-0.2024196	1.14794853
+10	-0.023008	-0.0198025	-1.4832104	3.80454475	-0.046348	-0.0320519	-0.5653146	2.07035196
+11	0.0170007	0.01485172	0.94540976	1.07934355	-0.0293473	-0.0191371	-0.4481049	1.65083468
+12	0.0309387	0.02810334	0.63350193	1.80574238	0.00159136	0.01031621	-0.4578081	1.0323859
+13	0.00959416	0.00714977	0.26869252	3.84036849	0.01118552	0.01705012	-0.6408437	1.2358746
+14	0.00511804	0.00250726	0.52355603	0.46635638	0.01630356	0.02034138	-0.4353955	0.81231176
+15	0.00671865	0.00402981	0.99982019	2.28256773	0.02302221	0.02751145	-0.1940106	0.58012208
+16	0.00699905	0.0047242	0.53882003	0.75341841	0.03002126	0.03396686	-0.2337306	0.71248868
+17	0.02033453	0.01863173	0.30411366	0.28606453	0.0503558	0.04575532	-0.4813826	1.04274125
+18	0.00151336	5.851E-05	0.40498157	1.05301653	0.05186916	0.04803657	-0.1384278	0.50386157
+19	-0.0108603	-0.0105013	0.4432533	0.74867539	0.04100885	0.04006284	-0.1845471	0.54997927
+20	-0.002374	-0.0009981	-0.1501436	0.79636105	0.03863488	0.03841062	-0.2503435	0.71495581

Table 3: Acharya's resignation—AR and CAR using mean-adjusted returns - financial sector

	Mean-adjusted returns $AR_{n,d}$				Mean-adjusted returns $CAR_{n,d}$			
	Mean	Median	Skewness	Kurtosis	Mean	Median	Skewness	Kurtosis
−10	0.0131491	0.00760135	0.73141217	0.51519507	0.0131491	0.00760135	0.73141217	0.51519507
−9	-0.0091942	-0.0027063	-1.5316544	3.84673813	0.00395491	0.00237693	-0.0906876	1.55668118
−8	0.00028418	-0.00049905	-0.4405059	1.1826343	0.00423909	0.0093401	-0.1223016	1.05080373
−7	0.01050717	0.01001973	-0.0772067	1.82221228	0.01474626	0.01645547	-0.3549784	0.78139086
−6	0.05033749	0.047237	0.66806431	0.23066074	0.06508375	0.06751583	0.1315258	0.3671038
−5	-0.0097728	-0.0091171	-0.0256169	-0.0924417	0.05531095	0.05548693	0.31760819	1.08442794
−4	0.00153284	0.00019752	1.2709089	3.04744828	0.05684378	0.05718041	-0.0154429	0.43443406
−3	0.00246285	0.00222464	0.8220681	2.73249879	0.05930663	0.06184123	0.11866028	0.33366994
−2	0.02883528	0.02293393	0.32164973	-0.1569562	0.08814191	0.08036177	0.20921337	-0.2604518
−1	0.01210781	0.01283912	0.06231738	-0.1770363	0.10024972	0.10118317	0.25584796	0.01265721
0	**0.00192632**	**5.8692E-05**	**0.29778688**	**0.29188446**	**0.10217604**	**0.09110631**	**0.34184058**	**-0.1313156**
+1	-0.0062146	-0.0056703	0.41734246	1.33681611	0.09596143	0.09739237	0.18258743	-0.2851768
+2	0.00645433	0.00607349	0.68513989	0.9546335	0.10241576	0.09751863	0.16944336	-0.5424362
+3	-0.0030677	-0.003104	-1.3756433	5.3293332	0.09934805	0.10375229	0.07346126	-0.8610416
+4	0.00681724	0.00376605	-0.1041415	1.18615577	0.10616529	0.1095564	0.04548184	-0.7322304
+5	0.0026584	0.0031867	0.38041099	5.6399634	0.10882369	0.11637854	-0.1765983	-0.8018086
+6	0.00058968	0.00054859	0.00133076	1.12059848	0.10941337	0.11604466	-0.1481826	-0.8322128
+7	-0.0267375	-0.0220835	-0.3597819	-0.8560781	0.08267585	0.09043453	-0.3797872	-0.6321591
+8	0.0016865	0.00142044	0.38707877	1.8282401	0.08436235	0.09199627	-0.1899637	-0.9949437
+9	-0.0041852	-0.0039261	0.04729318	2.88990128	0.08017776	0.09154104	-0.3995124	-0.9733349
+10	0.00705716	0.00667272	-0.9479278	4.13380697	0.08723432	0.09677307	-0.3491019	-0.4971899
+11	-0.0099979	-0.0075754	-1.8544571	6.33590285	0.07723638	0.09152617	-0.5428485	0.08720719
+12	-0.0053878	-0.0034793	0.14742261	11.9228285	0.07184861	0.08769919	-0.7092603	0.07728833
+13	-0.005082	-0.0056514	0.39450054	1.72169508	0.06676666	0.08231109	-0.5716262	0.2120689
+14	-0.0148048	-0.014212	-0.4279667	1.85632245	0.05196145	0.06494765	-0.5400398	0.10302127
+15	-0.0013556	0.00045143	-1.5036461	3.76383618	0.05060618	0.06380935	-0.728609	0.54503073
+16	-0.0128608	-0.0074828	-1.3395951	1.80272303	0.03774537	0.05198399	-0.9079717	0.95996163
+17	0.01828019	0.01180027	1.39010115	3.56463658	0.05602556	0.06962847	-0.5644695	-0.1982296
+18	-0.0015434	-0.0011312	-0.3233153	0.46286722	0.05448217	0.06811868	-0.738505	0.07705551
+19	-0.0022786	-0.0025726	0.40167488	0.39528753	0.05220356	0.06432792	-0.6810721	-0.0936029
+20	0.00560007	0.00676429	-0.3787585	5.05084457	0.05780363	0.06974018	-0.6526885	0.04818643

Table 4: Acharya's resignation—AR and CAR using market model - financial sector

	Market model $AR_{n,d}$				Market model $CAR_{n,d}$			
	Mean	Median	Skewness	Kurtosis	Mean	Median	Skewness	Kurtosis
−10	0.01222549	0.0071144	0.72747149	0.53255428	0.01222549	0.0071144	0.72747149	0.53255428
−9	-0.0079428	-0.0021722	-1.4918394	3.6868029	0.00428267	0.00267986	-0.0776838	1.54240958
−8	0.0003341	0.00053952	-0.4358687	1.16883014	0.00461677	0.00964893	-0.1098901	1.03287708
−7	0.01227399	0.01127103	-0.1201877	1.88062257	0.01689076	0.01774022	-0.299141	0.74530322
−6	0.05326719	0.05203558	0.59743432	0.04161005	0.07015795	0.07005246	0.23591089	0.4035211
−5	-0.0099731	-0.0092708	-0.0192643	-0.0953118	0.06018484	0.05582042	0.44853197	1.12374413
−4	0.00210953	0.00041007	1.2340054	2.88756107	0.06229437	0.06179145	0.12101844	0.47594911
−3	-0.0003906	-0.0017652	0.66021902	2.68464541	0.06190378	0.06373762	0.16139811	0.28726121
−2	0.03032385	0.02478799	0.30263065	-0.1204319	0.09222763	0.08358944	0.27121384	-0.2655385
−1	0.01250257	0.01312786	0.05835713	-0.1835638	0.1047302	0.10822904	0.32965726	0.04939506
0	**0.00028795**	**-0.0013454**	**0.29110562**	**0.28717227**	**0.10501815**	**0.09173586**	**0.39184293**	**-0.1019532**
+1	-0.0074012	-0.0070355	0.3906525	1.32076103	0.0976169	0.09742872	0.21686453	-0.2916178
+2	0.00621472	0.00604251	0.66491602	0.85072651	0.10383162	0.09754971	0.20456275	-0.5159519
+3	-0.0022844	-0.0029728	-1.2543359	4.74932668	0.1015472	0.10518215	0.11155426	-0.8740144
+4	0.00551455	0.00329009	-0.1166813	1.3053197	0.10706174	0.11026068	0.06038798	-0.7442494
+5	0.00190168	0.00223035	0.44818844	5.93634435	0.10896343	0.11645222	-0.1746533	-0.8040499
+6	0.00028438	0.0002248	-0.2459669	0.49095983	0.1092478	0.11595737	-0.1503909	-0.8297915
+7	-0.0272054	-0.0226748	-0.3553899	-0.8583502	0.0820424	0.09000652	-0.3910749	-0.6238896
+8	0.00441791	0.00435005	0.69028148	3.16744746	0.0864603	0.0922124	-0.1338329	-0.9692271
+9	0.00069822	-0.0004919	0.55437589	3.31397704	0.08715852	0.09236689	-0.2625712	-0.9913187
+10	0.0068526	0.00676409	-0.9707506	4.18247287	0.09401112	0.09847873	-0.1889268	-0.4820546
+11	-0.0086901	-0.0062841	-1.8302475	6.14238238	0.08532098	0.08979184	-0.3606674	0.03611865
+12	-0.0069956	-0.0054228	0.06021291	11.9787258	0.07832533	0.09111772	-0.5606241	-0.0151187
+13	-0.004893	-0.0055819	0.39722275	1.73921263	0.0734323	0.08771531	-0.4083098	0.14698626
+14	-0.0150939	-0.0144288	-0.4394581	1.84073125	0.05833844	0.06854394	-0.4142024	0.05452812
+15	-0.0028185	-0.0009542	-1.5261476	3.80560716	0.05551991	0.0662215	-0.6576915	0.47162281
+16	-0.0131975	-0.0075335	-1.3458928	1.81930877	0.04232245	0.05664384	-0.8324885	0.87539963
+17	0.02032378	0.01440626	1.42550784	3.44089135	0.06264622	0.06667133	-0.429715	-0.1908784
+18	0.00205277	0.00249989	-0.2710066	0.34449343	0.064699	0.06737249	-0.5502308	0.03938053
+19	-0.0009166	-0.0016446	0.45424037	0.43908864	0.0637824	0.07274099	-0.4665594	-0.1827478
+20	0.00592921	0.00720458	-0.3723395	5.04580503	0.06971161	0.07304154	-0.4052763	-0.0380021

5. Results and discussion

After Patel's resignation, the mean and median equality tests for $CAR_{n,d}$ in the NIFTY 500 index (Table 5) shows that the impact is significantly negative in event windows [−2, 2] and [−10, 10]. Disagreement about monetary policy between Patel and the government, namely, the prime minister and the minister of finance, rose to the surface a couple of months before his resignation (Patel's resignation). For example, on October 30, 2018, the Minister of Finance Arun Jaitley "accused the central bank of sleeping on the job for its failure to check indiscriminate lending by public sector banks between 2008 and 2014." One day after these remarks (on October 31, 2018), rumors of Patel's resignation were circulated in the media. Therefore, his resignation on December 10, 2018, was not unexpected. Moreover, the appointment of Shaktikanta Das (a non-economist bureaucrat) as the new governor only one day after Patel's resignation (on December 11, 2018) signaled that the government was aware of Patel's intention to resign. This quick move by the government to appoint a new

governor to ensure the stability of the top position at the RBI may justify the negative reaction of the stock market in the days after Patel's resignation. This effect is like the negative relationship found between central bank independence and financial stability (Berger and Kißmer, 2019). This may lead to the conclusion that the market does not like the government's interference in RBI's stability and independence. The negative effect could also be linked to the fact that traders, after a few days of the event, realized that there were some risks associated with the relaxation of the PCA norms and the non-performing loans (NPLs) standards that may take

place after the resignation of Patel. The NPLs could repeat what has happened in the past few years, during which a significant portion of corporate debt has become toxic. Moreover, uncertainties about the governance principles of the RBI for financial institutions in terms of bad loans may also contribute to this negative effect on $CAR_{n,d}$. In addition, given that the Indian stock market is a developing market, the negative effect obtained supports Moser and Dreher (2010), in which the resignation of the central bank's top official would have a negative effect on stock market returns.

Table 5: Mean and median equality tests for ($CAR_{n,d}$) After Patel's resignation—financials only

Event window	Mean	t-test	Median	W/M
	Mean-adjusted returns			
[-1, 1]	0.0036	1.1136	0.0012	1.8298*
[-2, 2]	-0.0169	-2.9964***	-0.0107	-3.1694***
[-3, 3]	0.0015	0.2418	0.0037	0.7188
[-4, 4]	-0.0082	-1.1298	-0.0044	-0.5293
[-5, 5]	0.0048	0.8231	0.0013	0.8691
[-7, 7]	-0.0017	-0.2168	-0.0073	-0.2940
[-10,10]	-0.0430	-4.0225***	-0.0271	-3.9014
	Market model			
[-1, 1]	-0.0056	-1.5638	-0.0029	-1.0783
[-2, 2]	-0.0215	-3.6033***	-0.0147	-3.8098***
[-3, 3]	-0.0067	-1.0522	-0.0050	-0.6992
[-4, 4]	-0.0128	-1.7273*	-0.0101	-1.0848
[-5, 5]	0.0007	0.1228	-0.0039	-0.13069
[-7, 7]	-0.0014	-0.1817	-0.0070	-0.2548
[−10, 10]	-0.0463	-4.2687***	-0.0321	-4.0974***

The Satterthwaite–Welch *t*-test is referred to as the *t*-test and measures equality between two groups. The Wilcoxon–Mann–Whitney signed-rank median test is abbreviated as W/M; ∗, ∗∗, and ∗∗∗ denote statistical significance at the 10%, 5%, and 1% levels, respectively

In terms of Acharya's resignation (Table 6), the effect on $CAR_{n,d}$ is significantly positive in all the event windows. Again, like in the case of Patel's resignation, Acharya's resignation was not unexpected. According to a research report by the State Bank of India, Acharya's resignation was not a surprise and would not shake the markets because traders were anticipating his resignation after Patel's resignation. This time, Acharya's resignation emerged due to the conflict with Das regarding

monetary policy. Das supported a repo rate cut that could boost economic growth, whereas Acharya objected to this idea because of the high inflation. We think traders shared similar ideas to Das and were in favor of another interest-rate cut that produced a positive effect. As mentioned above, Förch and Sunde (2012) found that central bank independence has a positive effect on stock market performance centered more on economic than political independence.

Table 6: Mean and median equality tests for ($CAR_{n,d}$) after Acharya's resignation—financials only

Event window	Mean	t-test	Median	W/M
	Mean-adjusted returns			
[-1, 1]	0.0078	2.1753**	0.0061	2.1042**
[-2, 2]	0.0431	8.7632***	0.0381	6.3388***
[-3, 3]	0.0425	7.8641***	0.0379	5.8749***
[-4, 4]	0.0509	8.5010***	0.0516	6.0579***
[-5, 5]	0.0437	6.5523***	0.0490	5.3978***
[-6, 6]	0.0946	11.3533***	0.0932	6.5545***
[-7, 7]	0.0784	9.7009***	0.0894	6.3388***
[-10,10]	0.0872	9.2405***	0.0968	6.1298***
	Market model			
[-1, 1]	0.0054	1.5123	0.0034	1.5422
[-2, 2]	0.0419	8.6008***	0.0351	6.2539***
[-3, 3]	0.0393	7.2285***	0.0319	5.6527***
[-4, 4]	0.0469	7.7808***	0.0483	5.9010***
[-5, 5]	0.0388	5.7489***	0.0414	5.0645***
[-6, 6]	0.0923	11.0969***	0.0912	6.5284***
[-7, 7]	0.0774	9.5856***	0.0887	6.3127***
[−10, 10]	0.0952	9.8862***	0.0996	6.3258***

The Satterthwaite–Welch *t*-test is referred to as the *t*-test and measures equality between two groups. The Wilcoxon–Mann–Whitney signed-rank median test is abbreviated as W/M; ∗, ∗∗, and ∗∗∗ denote statistical significance at the 10%, 5%, and 1% levels, respectively

The different market reactions to Patel's and Acharya's resignations are not surprising. Although traders expected both resignations, each occurred under distinct circumstances. Patel resigned due to conflicts between the RBI and the government over the RBI's role in supervising public banks, which the

market saw as a threat to RBI's independence. In contrast, Acharya resigned because he disagreed with the RBI governor on reducing the interest rate. His resignation signaled to the market that a rate cut would likely follow, positively impacting the stock market.

The results of the robustness test are shown in Tables 7 and 8. Table 7 shows mean and median equality tests for $CAR_{n,d}$ after Patel's resignation and the effect on the NIFTY 50 and components, while

Table 8 shows mean and median equality tests for $CAR_{n,d}$ after Acharya's resignation and the effect on the NIFTY 50 and components.

Table 7: Mean and median equality tests for ($CAR_{n,d}$) after Patel's resignation— NIFTY 50 and components

Event window	Mean	t-test	Median	W/M
Mean-adjusted returns				
[-1, 1]	0.0347	1.2510	0.0355	1.8498
[-2, 2]	0.0228	1.4013	0.0201	1.3632
[-3, 3]	0.0362	1.3682	0.0349	1.5892
[-4, 4]	0.0202	1.3272	0.0207	1.8033
[-5, 5]	0.0152	0.9668	0.0147	1.8380
[-7, 7]	0.0010	0.1448	-0.0064	-0.4247
[-10,10]	0.0101	1.5067	0.0088	1.6410
Market model				
[-1, 1]	0.0103	1.365218	0.0095	1.243502
[-2, 2]	0.0072	1.849504	0.0079	1.592791
[-3, 3]	0.0084	1.922751	0.0089	1.143028
[-4, 4]	0.0036	0.893806	0.0065	1.061861
[-5, 5]	0.0073	1.607772	0.0030	0.762609
[-7, 7]	0.0124	1.900192	0.0085	1.670017
[−10, 10]	0.0013	0.185461	0.0031	0.405438

The Satterthwaite–Welch *t*-test is referred to as the *t*-test and measures equality between two groups. The Wilcoxon–Mann–Whitney signed-rank median test is abbreviated as W/M; ∗, ∗∗, and ∗∗∗ denote statistical significance at the 10%, 5%, and 1% levels, respectively

Table 8: Mean and median equality tests for ($CAR_{n,d}$) after Acharya's resignation—NIFTY 50 and components

Event window	Mean	t-test	Median	W/M
Mean-adjusted returns				
[-1, 1]	-0.0023	-0.9119	-0.0032	-0.13514
[-2, 2]	0.0156	0.3082	0.0123	0.405438
[-3, 3]	0.0141	0.5542	0.0141	0.598503
[-4, 4]	0.0141	1.2502	0.0142	1.110127
[-5, 5]	0.0031	0.3725	0.0097	0.386131
[-6, 6]	-0.0528	-0.5863	-0.0571	-0.154452
[-7, 7]	-0.0017	-0.9556	-0.0080	-0.202719
[-10,10]	-0.0380	-1.1242	-0.0357	-0.897755
Market model				
[-1, 1]	0.0011	0.3991	0.0001	0.1351
[-2, 2]	0.0036	0.8730	0.0018	0.4054
[-3, 3]	0.0030	0.5954	0.0012	0.5985
[-4, 4]	0.0062	1.1425	0.0048	1.1101
[-5, 5]	0.0017	0.3037	0.0086	0.3861
[-6, 6]	8.19182E-05	0.0158	-0.0038	-0.1544
[-7, 7]	0.0003	0.0495	-0.0053	-0.2027
[−10, 10]	-0.0082	-1.1424	-0.0094	-0.8977

The Satterthwaite–Welch *t*-test is referred to as the *t*-test and measures equality between two groups. The Wilcoxon–Mann–Whitney signed-rank median test is abbreviated as W/M; ∗, ∗∗, and ∗∗∗ denote statistical significance at the 10%, 5%, and 1% levels, respectively

The findings show that the resignations of the top officials of RBI have no effect on the whole market, as both mean and median equality tests yield insignificant results. We can infer that the effect is only related to the financial sector stocks, and we should not generalize these findings to other central banks or financial contexts if the political and economic environments significantly differ.

6. Conclusion

We examined how the resignations of top RBI officials affected financial sector returns using an established event-study method for financial sector stocks between February 16, 2018, and July 22, 2019. Our findings revealed that the financial sector responded sensitively to both Patel's and Acharya's resignations: Patel's resignation had a significant negative effect on cumulative abnormal returns, while Acharya's resignation had a significant positive effect. These results suggest that central bank independence can have varied effects on financial sector performance and emphasize the importance of preserving this independence. They also highlight the need for policymakers to understand how

political interference may influence financial outcomes. Additionally, our findings indicate that market participants value central bank stability.

The primary policy recommendation of our study is to enhance the RBI's independence and safeguard it from political pressures.

Our study has some limitations. First, we focused only on the short-term impact of these resignations on stock market returns, and we suggest that future research explore their long-term effects. Second, as our analysis relies on quantitative data, it may overlook qualitative insights that could be gained from expert interviews or policy analysis. We recommend future research incorporate qualitative studies through questionnaires or interviews with key stakeholders. Third, our study does not account for other factors that might influence returns. Future research could improve upon this by including variables like international economic events, other domestic policy changes, or market sentiment indicators in the models. It would also be valuable to study the effects of these resignations on other financial indicators, such as bond yields, exchange rates, and interest rates, using alternative methodologies.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Agoba AM, Abor JY, Osei K, Sa-Aadu J, Amoah B, and Dzeha GCO (2019). Central bank independence, elections and fiscal policy in Africa: Examining the moderating role of political institutions. International Journal of Emerging Markets, 14(5): 809-830. https://doi.org/10.1108/IJOEM-08-2018-0423

Alesina A and Summers LH (1993). Central bank independence and macroeconomic performance: Some comparative evidence. Journal of Money, Credit and Banking, 25(2): 151. https://doi.org/10.2307/2077833

Anwar CJ (2023). Heterogeneity effect of central bank independence on inflation in developing countries. Global Journal of Emerging Market Economies, 15(1): 38-52. https://doi.org/10.1177/09749101221082049

Bartholdy J, Olsen D, and Peare P (2011). Conducting event studies on a small stock exchange. European Journal of Finance, 13(3): 227-252. https://doi.org/10.1080/13518470600880176

Bash A and Al-Awadhi AM (2023). Central bank independence and stock market outcomes: An event study on Borsa Istanbul. Cogent Economics and Finance, 11(1): 2186032. https://doi.org/10.1080/23322039.2023.2186032

Berger H, De Haan J, and Eijffinger SC (2001). Central bank independence: An update of theory and evidence. Journal of Economic Surveys, 15(1): 3-40. https://doi.org/10.1111/1467-6419.00131

Berger W and Kißmer F. (2019). Central bank independence and financial stability: A tale of perfect harmony? European Journal of Political Economy, 31: 109-118. https://doi.org/10.1016/j.ejpoleco.2013.04.004

Bhat AA, Khan JI, Bhat SA, and Parray WA (2023). Central bank independence and its impact on fiscal deficit: Evidence from India. Studia Universitatis "Vasile Goldis" Arad–Economics Series, 33(2): 71-94. https://doi.org/10.2478/sues-2023-0009

Bodea C and Hicks R (2015). Price stability and central bank independence: Discipline, credibility, and democratic institutions. International Organization, 69(1): 35-61. https://doi.org/10.1017/S0020818314000277

Brown SJ and Warner JB (1985). Using daily stock returns: The case of event studies. Journal of Financial Economics, 14(1): 3-31. https://doi.org/10.1016/0304-405X(85)90042-X

Dodd P and Warner JB (1983). On corporate governance: A study of proxy contests. Journal of Financial Economics, 11(1-4): 401-438. https://doi.org/10.1016/0304-405X(83)90018-1

Förch T and Sunde U (2012). Central bank independence and stock market returns in emerging economies. Economics Letters, 115(1): 77-80. https://doi.org/10.1016/j.econlet.2011.11.030

Garcia MTV and Costa PMMR (2019). Central bank independence and stock market returns in developed countries. International Review of Applied Economics, 33(3): 335–352. https://doi.org/10.1080/02692171.2018.1493093

Gyeke-Dako A, Agbloyor EK, Agoba AM, Turkson F, and Abbey E (2022). Central bank independence, inflation, and poverty in Africa. Journal of Emerging Market Finance, 21(2): 211–236. https://doi.org/10.1177/09726527221078434

Harris T and Hardin JW (2013). Exact Wilcoxon signed-rank and Wilcoxon Mann–Whitney ranksum tests. The Stata Journal, 13(2): 337–343. https://doi.org/10.1177/1536867X1301300208

Ismail I and Suhardjo H (2001). The impact of domestic political events on an emerging stock market: The case of Indonesia. In the Proceedings of Asia Pacific Management Conference, Singapore, Singapore: 235–262.

Klomp J and De Haan J (2010). Inflation and central bank independence: A meta-regression analysis. Journal of Economic Surveys, 24(4): 593–621. https://doi.org/10.1111/j.1467-6419.2009.00597.x

Kurihara Y, Morikawa K, and Takaya S (2012). Central bank's independence and stock prices. Modern Economy, 3(6): 793–797. https://doi.org/10.4236/me.2012.36101

Kuttner KN and Posen AS (2010). Do markets care who chairs the central bank? Journal of Money, Credit and Banking, 42(2–3): 347–371. https://doi.org/10.1111/j.1538-4616.2009.00290.x

Mackinlay AC (1997). Event studies in economics and finance. Journal of Economic Literature, 35(1): 13–39.

Masciandaro D and Romelli D (2015). Ups and downs of central bank independence from the great inflation to the great recession: Theory, institutions and empirics. Financial History Review, 22(3): 259–289. https://doi.org/10.1017/S0968565015000177

Maxfield S (1997). Gatekeepers of growth: The international political economy of central banking in developing countries. Princeton University Press, Princeton, USA. https://doi.org/10.1515/9781400822287

Maynes E and Rumsey J (1993). Conducting event studies with thinly traded stocks. Journal of Banking and Finance, 17(1): 145–157. https://doi.org/10.1016/0378-4266(93)90085-R

Mishkin F (2004). Can Inflation targeting work in emerging market countries? NBER Working Paper, National Bureau of Economic Research, Cambridge, USA. https://doi.org/10.3386/w10646

Moser C and Dreher A (2010). Do markets care about central bank governor changes? Evidence from emerging markets. Journal of Money, Credit and Banking, 42(8): 1589–1612. https://doi.org/10.1111/j.1538-4616.2010.00355.x

Mukhametov O (2021). Relationship between central bank independence and foreign direct investment inflows. Asian Economic and Financial Review, 11(5): 396–405. https://doi.org/10.18488/journal.aefr.2021.115.396.405

Nazir M, Younus H, Kaleem A, and Anwar Z (2014). Impact of political events on stock market returns: Empirical evidence from Pakistan. Journal of Economic and Administrative Sciences, 30(1): 60–78. https://doi.org/10.1108/JEAS-03-2013-0011

Sargent T and Wallace N (1981). Some unpleasant monetarist arithmetic. Federal Reserve Bank of Minneapolis Quarterly Review, 5(1): 1–17. https://doi.org/10.21034/qr.531

Strong C and Yayi C (2021). Central bank independence, fiscal deficits and currency union: Lessons from Africa. Journal of Macroeconomics, 68: 103313. https://doi.org/10.1016/j.jmacro.2021.103313

Strong CO (2021). Political influence, central bank independence and inflation in Africa: A comparative analysis. European Journal of Political Economy, 69: 102004. https://doi.org/10.1016/j.ejpoleco.2021.102004

Ueda K and Valencia F (2014). Central bank independence and macro-prudential regulation. Economics Letters, 125(2): 327–330. https://doi.org/10.1016/j.econlet.2013.12.038