Financial frauds and scandals in Indian banking sector and stock-prices volatility

Gurvinder Kaur
Assistant Professor, Department of Commerce, Sri Guru Tegh Bahadur Khalsa College,
University of Delhi 110007, INDIA

Aim: The aims is to quantify the influence of financial frauds and scandals in Indian banking sector, on their share-prices volatility in last 4 years period from April 2014 – March 2018.

Abstract: Liberalization of economy in 1991 has enabled to achieve considerable growth in Indian banking sector but at the same time also suffered at ethical practices, financial distress and corporate governance fronts which altogether leads to rising cases of non-performing assets (NPA) and frauds. Deterioration in asset quality arising either from delinquent loans or from fraudulent activities has significant impact on the profitability and credibility of banking system, which in turn negatively affectsthe share-prices as well. In this context, an empirical study was carried out to investigate the volatility in the share-prices values of bankson account of financial frauds and scandals by choosing purposely last four years from 01 April 2014– 28 March 2018 which also allowed to capture the effect of financially ″turbulent year 2015‶ in Indian economy.The study covered daily closing share-price data of five public sectors banks (PSBs) and five largest private sector banks.Share-price-return was estimated to localize the volatility clustering which deciphered the highest volatility in the year 2015 followed by year 2018. The former volatility clustering was credited to overall ″turbulent year 2015‶ whereaslater one was visible in few banks like PNB, SBI, CB due to huge amount of bank scam. In nutshell, the bank fraud has thrown remarkable volatility on the share-prices of that particular bank, and with no concrete evidence of volatility transmission on other banks.

Keywords: Indian banking sector, Closing share-price, PMLA, Financial fraud, Volatility, RBI.

INTRODUCTION

The story of financial frauds and scandals taking place in Indian banking sector as well as in other sectors is not a new which can be traced back to 1990s (1), but surprisingly the magnitude kept on increasing manifold decade-on-decade. Confining ourselves to the Indian banking sectors, there were nearly 25000 instances of financial misconduct at Indian lenders, between April 2014 and March 2018, aggregating to USD 16 billion, according to data published by the Indian central bank (Reserve Bank of India). Prima facie, it has been revealed from investigations the involvement of not only midlevel employees, but also of the senior most management. The costs of such financial misconduct can be manifold. First, it damages confidence in the banking sector leading to depositors to explore other nonbankingsources. Second, financial fragility and exacerbated systemic risks. Thirdly, bankmisconduct costs can erode capital and dampen lending capacity.In this context, the responsible regulatory body– Reserve Bank of India often took suo-moto regulatory actions from time to time to contain the mounting delinquent loans of banks as well financial frauds as per the resolution process of the Insolvency and Bankruptcy Code (IBC), 2016. For example, emphasizing on the digital payments, data-protection and cyber security, know your customer (KYC), effective and timely redressal of grievances of customers of non-banking financial corporations (NBFCs), an Ombudsman Scheme etc.Financial stability is ensured by undertaking the micro-prudential surveillance through the systematic stress tests and other related tools. And finally preparing a financial stability report for know-how monitoring and drafting the regulations. To strengthen the resilience and robustness of the banking system further, a harmonized regulatory and supervisory policies are need of hour with flexibility to keep accommodating the dynamic shortcoming evolving in due to course of time.

The statutory Prevention of Money Laundering Act (PMLA)come into force with effect from 1st July 2005 which was enacted in January 2003 (2). The Sec. 3 of PMLA defines the offence of money laundering(adopted as it is from Ref. because of Act content) as "*whosoever directly or indirectly attempts to indulge or knowingly assists or knowingly is a party or is actually involved in any process or activity connected with the proceeds of crime and projecting it as untainted property shall be guilty of offence of money-laundering. It prescribes obligation of banking companies, financial institutions and intermediaries for verification and maintenance of records of the identity of all its clients and also of all transactions and for furnishing information of such transactions in prescribed form to the*

Financial Intelligence Unit-India (FIU-IND). It empowers the Director of FIU-IND to impose fine on banking company, financial institution or intermediary if they or any of its officers fails to comply with the provisions of the Act as indicated above".PMLA empowers: (i) certain officers to attach the property involved in money laundering (ii) setting up of an Adjudicating Authority to exercise jurisdiction, power and authority conferred,(iii) setting up of an Appellate Tribunal to hear appeals against the order of the Adjudicating Authority, (iv) designation of one or more courts of sessions as Special Court or Special Courts to try the offences punishable under the Code of Criminal Procedure 1973, (v) allows Central Government to enter into an agreement with Government of any country outside India for enforcing the provisions etc.

As the Act set out guidelines and subsequent consequences, despite the number of financial irregularities and frauds have seen continuous rise with increased magnitude as evident from the leading news reports. A string of bank frauds and scams across India have rocked the year 2018 as reported dated back to March 2018(3). Another report from a leading International Asian newspapers '***The Japan Times***' dated back to 23 Feb 2018 cited '*How an Indian Bank's $1.8 billion fraud went unnoticed*'which is equivalent of staggering huge amount of (~Rs. 130,23 crore). In particular, the fraud was related to The Punjab National Bank branch in south Mumbai close to both the Bombay Stock Exchange and theReserve Bank of India, involving diamond merchant Nirav Modi and his uncle Mehul Choksi in the jewelry sector(4).The apparent failure of anyone to notice the largest PNB fraud in Indian banking history until Jan 2018 - which was executed by a lone middle-aged manager, lateraided by his young subordinateaccording to accounts from Punjab National Bank executives and government investigatorsfrom 2011 to 2017 (5-8). The modus operandi was alleged misuse of the SWIFT interbank messaging system andincomplete ledger entries — points to a breakdown in checks and balances, and standard banking practices(9). This ascertains the complete lack of accountability and standards in the country's public banking system.Incidentally, about 80 per cent of all the frauds occurred in public sectors banks (PSBs) during the year 2017-18 involved staggering amount of money more than Rs 50 crore,while 93 per cent of the frauds in terms of the amount were over Rs 1 lakh (10). At the same time, private sector bank frauds accounted for 6%.As per report, in 2017-18, frauds related to off-balance sheet operations, foreign exchange transactions, deposit accounts and

cyber-activity have taken the center stage. Charan Singh *et. al.*(11)presented a comprehensive survey of the frauds and scams in the Indian Banking Industry. The very same concerns was highlighted in several news reports from RBI (12-14).

Table 1. highlights the amount of frauds in Indian bankingduring the financial year 2017-2018.

Name of Banks	Number of financial frauds and scams	The amount involved(inmillion) the year 2017-18
Public Sector banks (PSBs)	2885	382608.7
Private Sector banks (PVSBs)	1975	24782.5
Foreign banks	974	2560.9
Financial Institutions	12	1647.0
Small Finance banks	65	61.9
Payment banks	3	9.0
Local area bank	2	0.4
Total	5916	411670.4
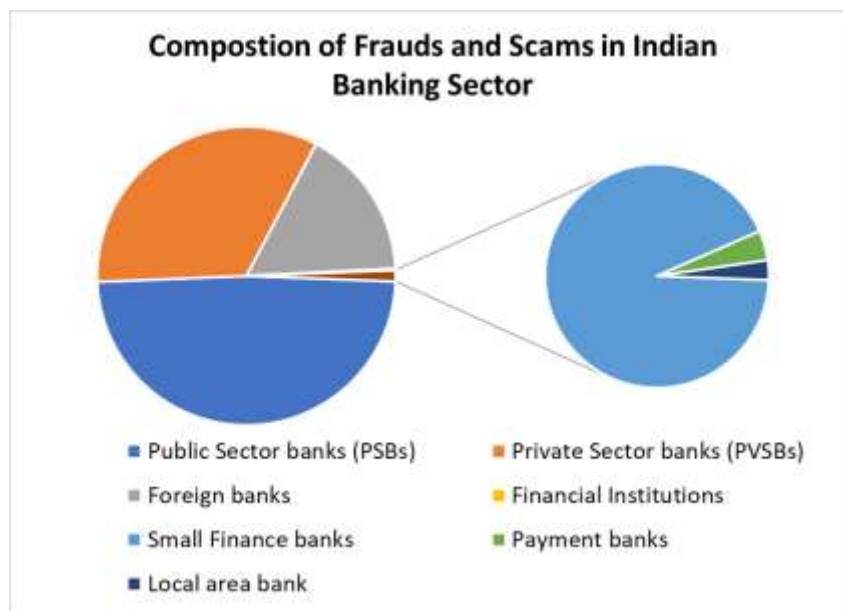
Figure 1. Sector wise representation of financial frauds and scams in Indian banking sector for the financial year 2017-18 alone.*Source*:Going through various reports available onhttps://www.rbi.org.in/scripts/AnnualReportMainDisplay.aspx (ref. 15)as well as news reports.

Country's banking and financial system is backbone that helps production and consumption of goods and services, and is a direct indicator of living standards of its citizens. Therefore, if banking system get plagued with financial frauds and scandals, it is worrisome and distressing situation to the Indian economy and overall development and opportunities. This served as the prime motivation for the author to carry out this detailed study of the aftermath effects of frauds inthe Indian banking system on their share-price values and shock transmission on other banks share-price. In this context, author has considered the closing share-price values of the five PSBs, i.e., Bank of Baroda (BOB), Punjab National Banks (PNB), State Bank of India (SBI), Union Bank of India (UBI), Canara Bank (CB) and five largest private sectors banks (PVBs), i.e., Housing Development Finance Corporation (HDFC), Industrial Credit and Investment Corporation of India (ICICI), Youth Enterprise Scheme (YES) bank, AXIS banks (erstwhile The United Trust of India (UTI)) and Karnataka Bank (KB)for the duration of 01 April 2014–28 March 2018.

Literature Review:

The great depression in 1930s in the USA enforced an objective to reduce risks to financial system and tackle existing lacunae in banking system via Glass-Steagall act (GSA). With globalization, Kohler (2002) stressed the need to increase transparency and robustness of financial structure (16). At international level, World Bank, jointly with the IMF created financial sector assessment program (FSAP) that laid out a well-defined strategy to tackle frauds and corruption, diagnosis and addressalmechanism to potential financial vulnerabilities. Dodd-Frank wall-street reform and consumer protection act (DFA) was enacted in 2010 to help monitor and prevent fraudulent practices in response to the 2008 financial crisis. Gandhi (2015) stressed on the basic principles of knowing the customer and employees as well as partners, and continuous monitoring (17). Suitably designedincentive scheme encourages the responsible loan officers within banking system to increase both the quality and quantityof lending (18). Motivating loan officers: An analysis of salaries and piece ratescompensation. Federal Reserve Bank of Chicago working paper), which is further evident from a study covering the impact of Prompt Corrective Action (PCA) standards on misconduct provisionswhich leads to a statistically significant decline in bank capital with (19).The bank's ownership do play an important role in financialMisconduct and it has been evidenced that higher governmentownership is detrimental to bank stability (20).However,

the same is not true across the advanced and emerging economies(21-26).Precisely, a critical analysis of the lapses in the banking regulatoryframework and their consequences on financial misconduct and systematic erosion has been presented by Ghosh andBagheri (27).

RESEARCH METHODOLOGY

Log-Return

Time series share-price data was converted into share-price-return dataset which is also called 'log-return'. Estimating log returns is essential because of several reasons as; (i) data is conveniently follows the normal distribution, (ii) when returns are very small, the following approximation ensures they are close in value to raw returns, i.e., *approximate raw-log equality* (iii)the product of normally distributed variables is *not normal, but* the sum of normally distributed variables is *normal*, i.e., *time-additivity* (iv) *mathematical ease*and (v)*numerical stability*. Thus log-return can be expressed as;

$$log - return = ln\left(\frac{P_t}{P_{t-1}}\right) \tag{1}$$

Where P_t is the price of asset at time $t$and $P_{t-1}$is the price of asset at time $t - 1$.

Hypothesis of the Study

H0: There is significance difference between the mean of share-price-returns before and the after the reference date of event (time-window of 29 January 2018 - 05 February 2018 is treated as reference because of reporting and onset of legal investigation of fraud and scam, assumed as $t = 0$,), i.e., $(\mu_1 = \mu_2)$.

H1: There is no significance difference between the mean of share-price-returns before and the after the (the legal reporting and onset of investigation of fraud and scam window 29 January 2018 - 05 February 2018, assumed as $t = 0$) i.e., $(\mu_1 \neq \mu_2)$.

To assess the volatility clustering from the share-price-return dataset, we have postulated two hypothesis as described above, and then tested for Null-hypothesis decision at 5% significance level. The test results have been tabled in Table 2 as below.

Table 2. Null hypothesis test decision and other statistical parameters of share-price return dataset for two different time windows (21 December 2017 - 29 January 2018, assumed as t_1) and (06 February 2018-31 March 2018, assumed as t_2) with respect to the reference date of event (time-window of legal reporting and onset of investigation of fraud and scam window, i.e., 29 January 2018 - 05 February 2018, assumed as $t = 0$) for various PSBs and Private banks.

Name of Banks	Null hypothesis test (at 5% S.L.)	p-value	Confidence Bound (Lower)	Confidence Bound (Upper)	t-test statistic	Standard deviation	Mean of share-price (t1)	Mean of share-price (t2)	Variance (21 Dec - 29 Jan)	Variance (06 Feb - 28 March)	Skewness	Kurtosis
Bank of Baroda	0	0.46104	-0.00954	0.00437	-0.74160	0.02807	164.09423	164.09423	0.00068	0.00093	0.33493	3.95297
Punjab National Bank	1	0.03865	-0.01859	-0.00051	-2.11211	0.03618	174.38654	112.33143	0.00100	0.00164	-1.11521	5.66773
State Bank of India	0	0.13280	-0.00889	0.00120	-1.52283	0.02019	308.52115	264.30857	0.00037	0.00046	0.40155	3.23461
Union Bank of India	1	0.03818	-0.01381	-0.00040	-2.11739	0.02683	143.18654	105.11000	0.00043	0.00101	-0.08503	4.09741
Canara Bank	0	0.17054	-0.01284	0.00232	-1.38631	0.03034	360.40192	283.49000	0.00060	0.00118	0.25550	3.98521
HDFC Bank	0	0.92170	-0.00225	0.00248	0.09868	0.00948	1894.45769	1870.18714	0.00006	0.00009	0.32034	3.45554
Karnataka Bank	0	0.12495	-0.00997	0.00124	-1.55502	0.02244	156.47115	126.83286	0.00047	0.00053	-0.46762	4.79577
ICICI Bank	0	0.36396	-0.00637	0.00237	-0.91447	0.01749	327.11923	306.98429	0.00025	0.00032	0.36878	2.37525
YES Bank	0	0.91001	-0.00487	0.00435	-0.11348	0.01845	333.41154	314.62286	0.00023	0.00041	0.36575	3.84921
AXIS Bank	0	0.52617	-0.00536	0.00277	-0.63740	0.01628	571.96538	531.03143	0.00023	0.00026	0.16088	3.74733

DATA ANALYSIS AND DISCUSSION

Figure 2 (a-j)shows daily closing price-value of shares of listed banks (left-column) and their respective returns (right column) for the duration of study considered here 01 April 2014 – 02 April 2018.A most probable time-window coinciding with the important event happening was chosen to investigate the share-price volatility which has been marked with dotted rectangle(orange) in each price-return graph (figures on right-column).Each share-price return exhibited two prominent volatility regions as evidenced from Figure 2. The first prominent volatility was occurred around the year 2015 which is credited to several concomitant reasons such as, the state electoral results in Delhi and Bihar, critical bills like Land Acquisition Amendment Bill and GST Bill failed to the parliamentary approval etc. (28). This trend shows that Government policies and elections have a significant role influencing the share-prices of stock-market. The second volatility clusteringis visible from the end month of year 2017 until March 2018 which is credited to the frauds and scams for a consortium of PNB, Union Bank of India, SBI, Canara. No other bank exhibited volatility for the said duration. To quantify further for various statistically significant parameters like; type of price-return distribution, mean, variance, skewness, kurtosis etc., time-window covering 21 December 2017 – 31 March 2018 (orange dotted rectangle) was divided into two groups. The first time-window was considered from 21 December 2017 - 29 January 2018 (assumed as t_1) and second time-window was 06 February 2018-31 March 2018 (assumed as t_2) with respect to actual event time-window 29 January 2018 - 05 February 2018 (legal reporting and onset of investigation of fraud and scam window, assumed as $t = 0$,transition period). The reason to bifurcate time-window was that on 29 January 2018, Punjab National Bank (PNB) files police complaint against Nirav Modi, Mehul Choksi and others accusing fraud to the tune of Rs 11,400 crore and subsequently investigation was launched by The Central Bureau of Investigation (CBI) on 05 February 2018

From the listed values of various statistical parameters in Table 2, it can be seen that the mean value of the share-price is quite different for all banks in both the time-window, except Bank of Baroda. Alternatively, share-values have plummeted due to initiation of legal action against the banks involved in financial fraud and scam. From two tailed $student\ t-test$, it is clear that skewness value is negative, i.e., exhibited left-tailed distribution, for only those banks (PNB, UBI, Karnataka Bank) which were found involved in fraud and scams. Additionally, their variance values for both the time-window was also found to be relatively higher than other banks. With the help of statistical parameters-based analysis, we found that share-prices values plummeted for only those banks which were involved in fraud and scam. Its effects was not transmitted to other banks.

Bank of Baroda (BOB) daily share-price and share price-returns from April 2014 - March 2018
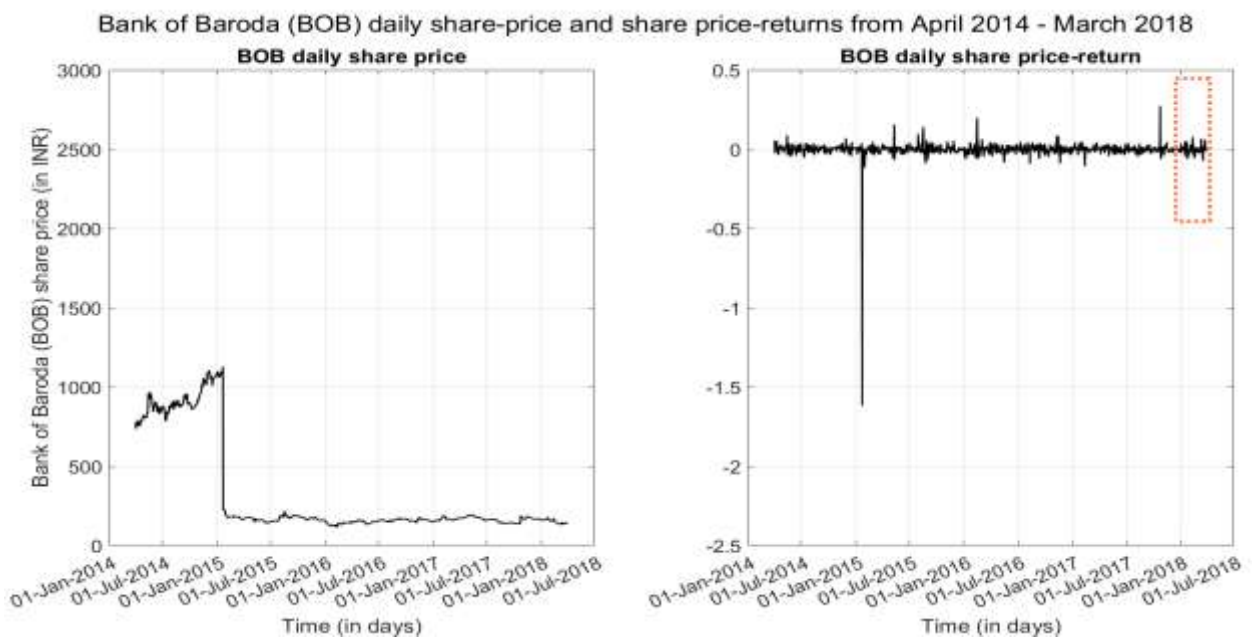
(a)

Punjab National Bank (PNB) daily share-price and share price-returns from April 2014 - March 2018
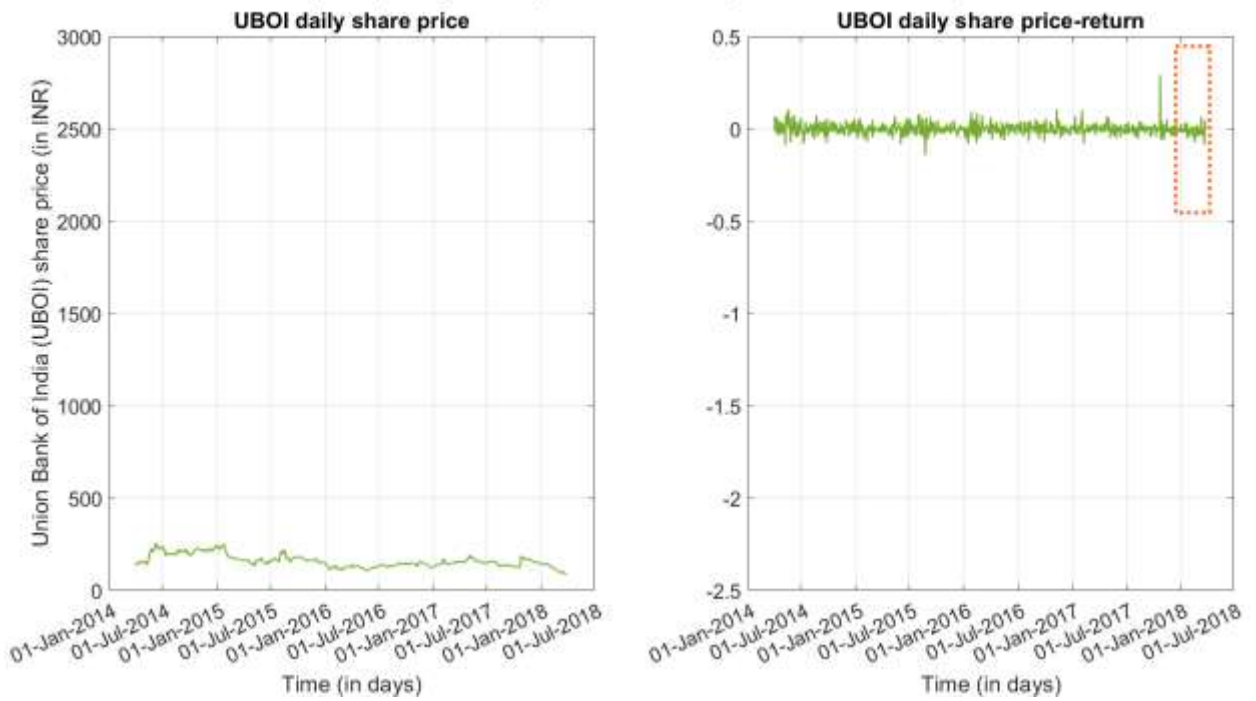
(b)
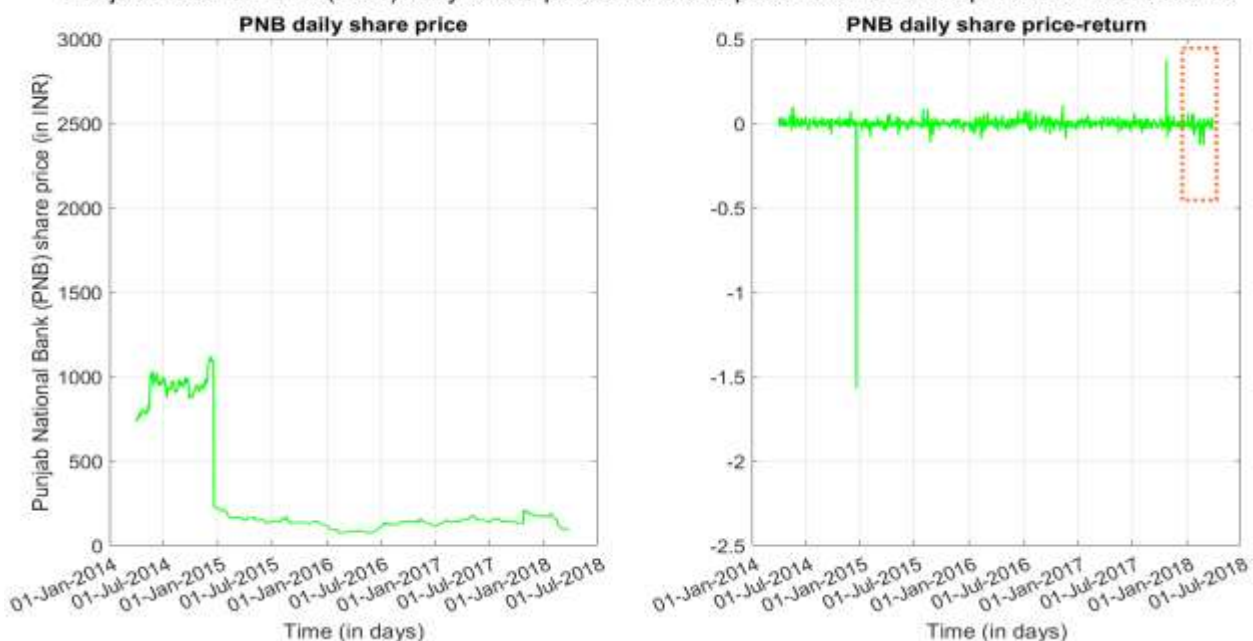
State Bank of India (SBI) daily share-price and share price-returns from April 2014 - March 2018
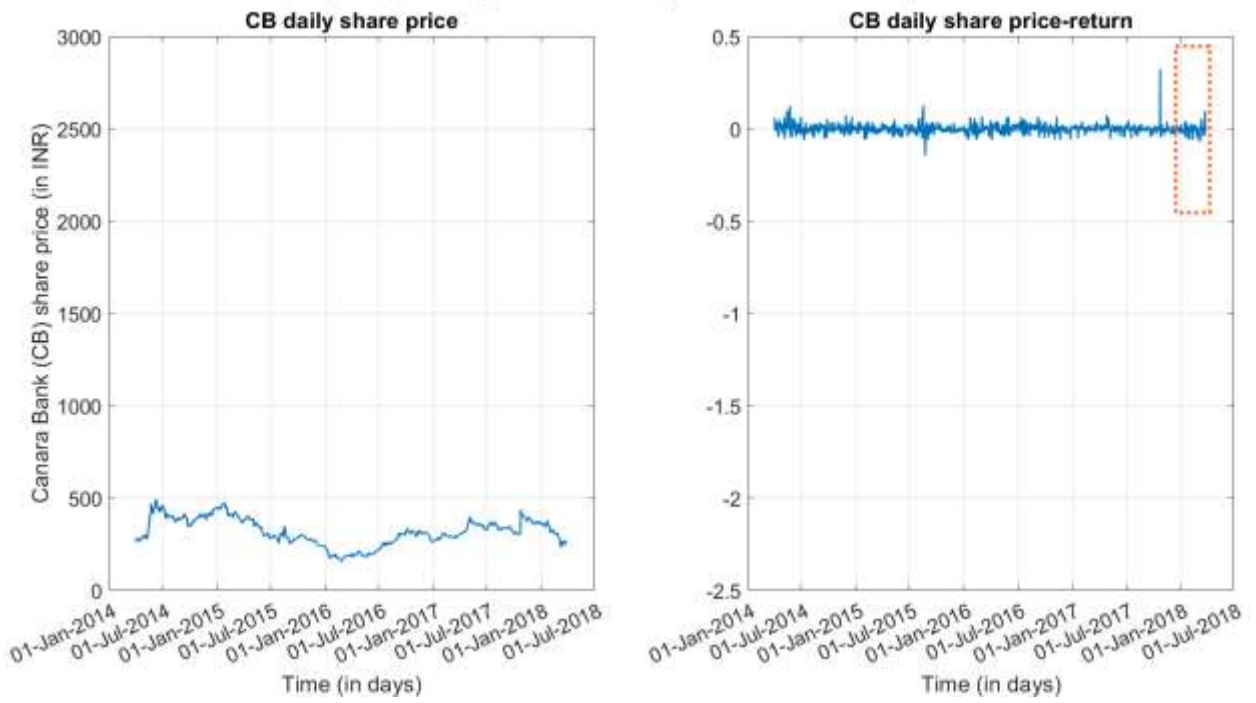
(c)

Union Bank of India (UBOI) daily share-price and share price-returns from April 2014 - March 2018
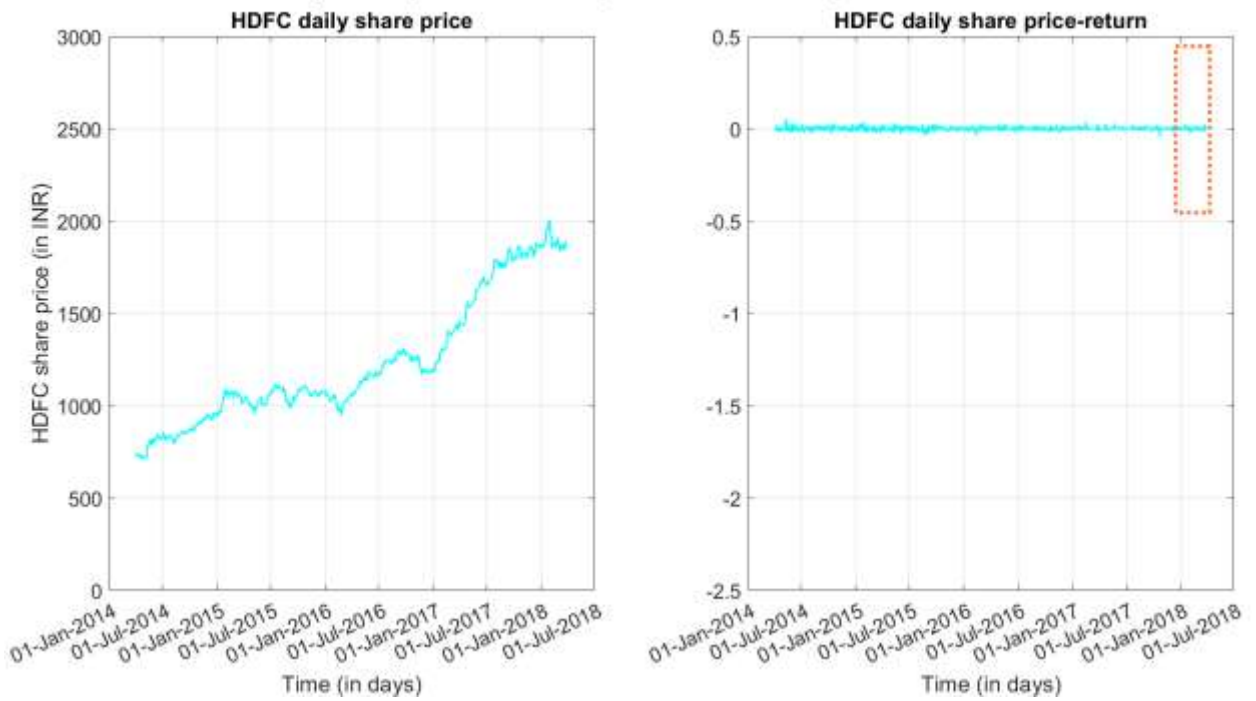
(d)

Canara Bank (CB) daily share-price and share price-returns from April 2014 - March 2018
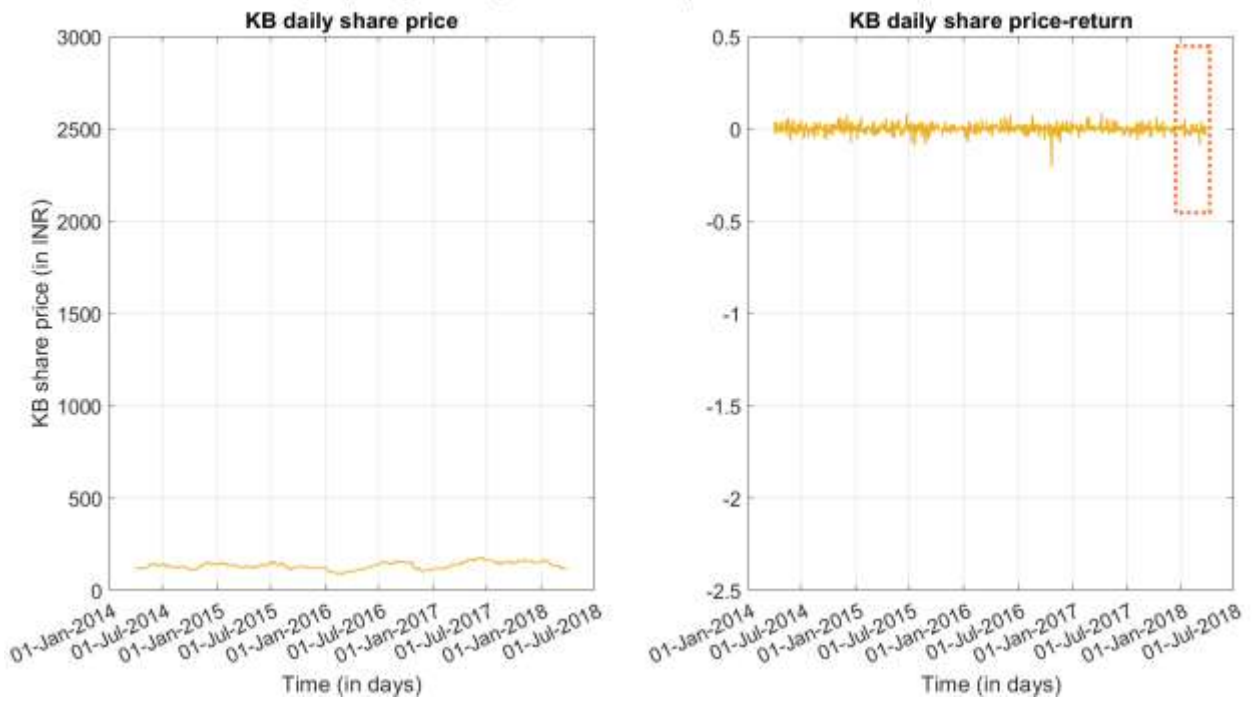
(e)

HDFC daily share-price and share price-returns from April 2014 - March 2018
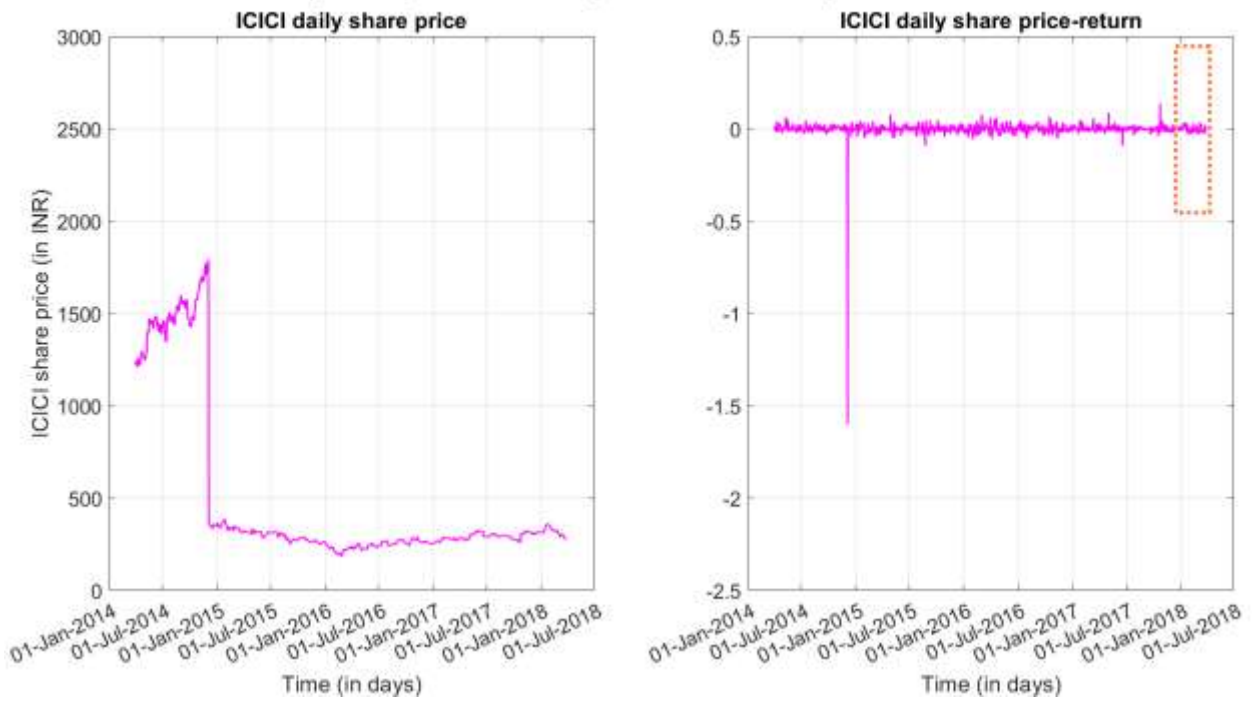
(f)

Karnataka Bank (KB) daily share-price and share price-returns from April 2014 - March 2018

(g)

ICICI daily share-price and share price-returns from April 2014 - March 2018

(h)

YES daily share-price and share price-returns from April 2014 - March 2018

(i)

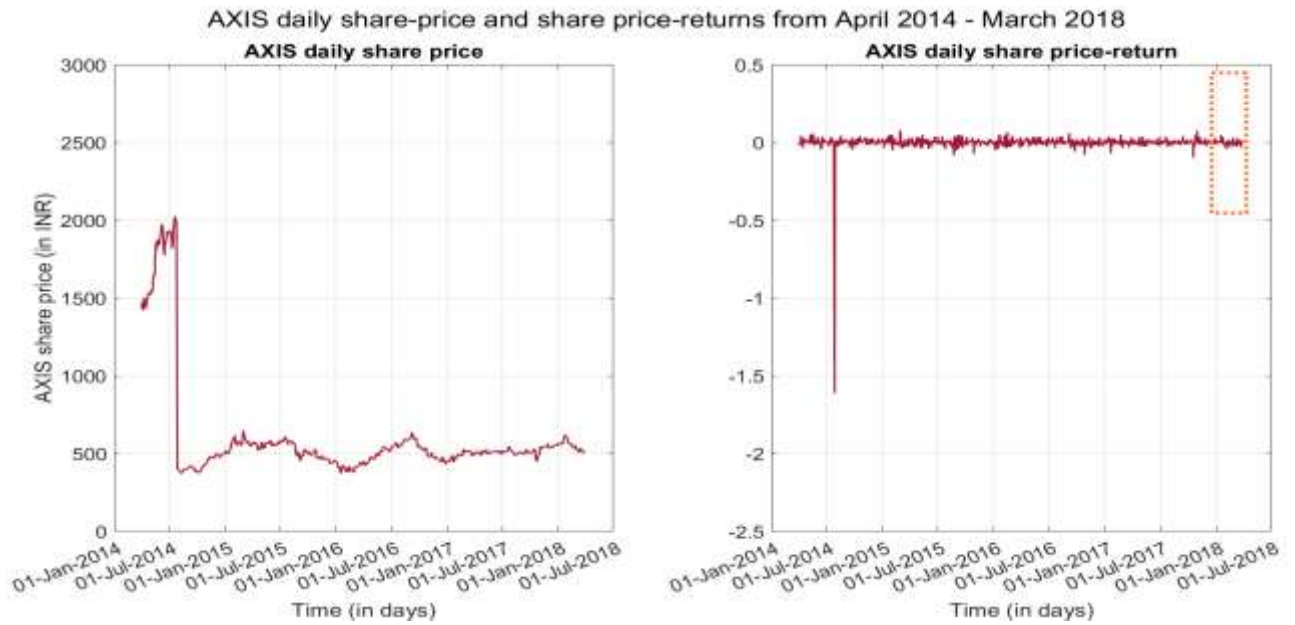AXIS daily share-price and share price-returns from April 2014 - March 2018

(j)

Figure 2. Time-series (daily) share-price data for various banks (left column), and their respective share-price-return (right column). The dotted rectangle (orange color) shows the region of volatility when big financial frauds and scam was reported for a consortium of banks including PNB, SBI, and Canara Bank on 29 January 2018.

CONCLUSION

The Indian banking sector have seen several financial frauds and scandals in the past with increasing magnitude in successive years. So, we have investigated whether frauds and scandals taken place in one banks affects the share-price of other banks as well and hence the overall price-volatility? Our finding, with the help of statistical parameters obtained from daily share-price data analysis following two-tailed student t-test, revealed that only those banks' share-prices experience volatility which were directly involved in financial frauds and scams. This deleterious effects doesn't transmit to other banks. However, the Union bank of India (UBI) exhibited the highest volatility among all banks whilst HDFC bank exhibited no volatility for the entire duration of study. In case of YES bank, the volatility was slightly shifted to later years. However, it has also been observed that any contemporary events at national level such as, the state electorates, policy-uncertainty definitely do cast aspersions on the banks share-price. Hopefully, finding from this study will help in strengthening bank's financial credibility by undertaking prompt and appropriate micro-prudential measures through effective systematic stress test.

REFERENCES

1. https://en.wikipedia.org/wiki/List_of_scandals_in_India

2. https://dor.gov.in/preventionofmoneylaundering/overview

3. https://www.ibtimes.co.in/7-bank-frauds-that-have-rocked-indian-banking-sector-2018-765432

4. https://www.japantimes.co.jp/news/2018/02/23/business/indian-banks-1-8-billion-fraud-went-unnoticed/

5. SinghS.,"Fraud effect: LIC, investor in PNB, Gitanjali, loses Rs 1400 crore in three days"Posted: 2018-02-17

6. SarkarA., "PNB Fraud Case: Axis Bank discloses Rs. 200 crore exposure to Nirav Modi, Gitanjali Gems Accounts"Posted: 2018-03-06

7. Gems and Jewellery -Shutdown and its impact Posted: 2018-02-27

8. DasS."Fitch, Moody's place PNB under review for downgrade"Posted: 2018-02-20

9. https://www.ft.com/content/c14fbc34-2b75-11e8-9b4b-bc4b9f08f381

10. https://www.outlookindia.com/newsscroll/frauds-cost-rs-18170-cr-to-banking-sector-in-fy17-report/1279817

11. Singh C., Pattanayak D., Dixit D. S., Antony K., Agarwala M., Kant R., Mukunda S., Nayak S., Makked S., Singh T., Mathur V.(2016), "Frauds in the Indian Banking Industry", WORKING PAPER NO: 505.
    https://www.iimb.ac.in/sites/default/files/2018-07/WP_No._505.pdf

12. Framework for dealing with loan frauds. Reserve Bank of India-RBI Circulars Posted: 2015

13. P J Chairman, NayakReport of the Committee to the Review Governance of Boards of Banks in India. Reserve Bank of IndiaPosted: 2014.

14. Monitoring of large value frauds by the Board of Directors. Reserve Bank of India -RBI CircularsPosted: 2015

15. https://www.rbi.org.in/scripts/AnnualReportMainDisplay.aspx

16. Kohler H. (2002), "Working for a better globalization", Remarks by Horst Kohler at the Conference on Humanizing the Global Economy.

17. Gandhi R. (2015), "Financial Frauds-Prevention: A Question of Knowing Somebody", 2nd National Conference on Financial Frauds Risks & Preventions organized by ASSOCHAM on June 26, 2015 at New Delhi.

18. Agarwal S., and Wang, F. (2008). "Motivating loan officers: An analysis of salaries and piece rates compensation". Federal Reserve Bank of Chicago working paper.

19. Aggarwal R. and Jacques K.T., "Assessing the Impact of Prompt Corrective Action on Bank Capital and Risk (October 1998)". Economic Policy Review, Vol. 4, No. 3, October 1998,

    SSRN: https://ssrn.com/abstract=1024839 or http://dx.doi.org/10.2139/ssrn.1024839

20. La Porta R., F. Lopez-de-Silanes and ShleiferA. (2002). "Government ownership of commercial banks". *Journal of Finance* 57, 265-301.

21. Das A., and Ghosh S. (2006). "Financial deregulation and efficiency: An empirical analysis of Indian banks". *Review of Financial Economics* 15, 193-221

22. Laeven L., and Levine, R. (2009). "Bank governance, regulation and risk taking". *Journal of Financial Economics,* 93(2), 259-275

23. Barry T.A., Lepetit L. and Tarazi A. (2011). "Ownership structure and risk in publicly held and privately owned banks". *Journal of Banking and Finance* 35, 1327-1340.

24. Iannotta G., Nocera G. and Sironi A. (2013). "The impact of government ownership on bank risk". *Journal of Financial Intermediation* 22, 152-76.

25. Ferri G., Kalmi P. and Kerola E. (2014). "Does bank ownership affect lending behavior? Evidence from the Euro area". *Journal of Banking and Finance* 48, 194– 209.

26. Zhu W., and Yang J. (2016). "State ownership, cross-border acquisition, and risk-taking: Evidence from China's banking industry". *Journal of Banking and Finance* 71, 133–153

27. Ghosh S. and Bagheri M. (2006). "The Ketan Parekh fraud and supervisory lapses of the Reserve Bank of India: A case study". *Journal of Financial Crime* 13, 107-124

28. https://www.business-standard.com/article/markets/2015-a-turbulent-year-for-indian-stock-markets-115123100566_1.html