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Impact of demonetization on shareholders' wealth: case of India

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ABSTRACT

This paper examines the impact of demonetization on shareholders' return in India. After the demonetization announcement in India (8 November 2016) money became a significant source of stress. It is documented that this announcement had various effects on individual, social, and economic levels. The data of shareholders' returns from before and after demonetization for 60 months from October 2012 to November 2017 were collected using a capital line database. The results depict that demonetization ruined shareholders' wealth for 12 months. However, in the long run it gives investors very attractive returns.

Contribution/ Originality
This study aims to understand the impacts of demonetization on shareholders' returns in India. Most literature explains the impact of demonetization on the overall economy by qualitative insights and the empirical side is still vacant.

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1. INTRODUCTION

The term *demonetization* is defined as an act of replacement of old currency with new one on the market (Mali, 2016). Boosting the economy requires a series of monetary steps (Dash, 2017; Kim and Pirttilä, 2004). Indian economy passed through a surgical transformation since 2014 as a new government was elected. Among several corrective steps demonetization has been a buzzword for the Indians since the Prime Minister of India took the brave step of withdrawing notes of 500 and 1,000 rupees from the market on 8 November 2016 (Ramdurg and Bassavaraj, 2016). However, such massive steps require fundamental planning from the grassroots (Shirley, 2017). Demonetization also requires a supportive infrastructure to ensure good results (Samuel and Saxena, 2017).

Demonetization improved the deposits of banks. While looking at the economic performance, it is essential to look at the impact of demonetization on the retail, real investment, Fast-Moving Consumer Goods (FMCG), and agricultural sector (Rani, 2016). The outcome suggested downtrend in all sectors in the short term, but positive outcomes in the longer term.

This study analyses the impact of the recent withdrawal of notes on shareholders' returns in India. The next part of the study discusses the literature on this massive step. The lateral part contains financial analysis of the stock market returns of shareholders.

The retail and agricultural sectors are completely cash dependent in India with more than 80% of cash-based transactions. The outcome of demonetization witnessed a horrifying situation when small entrepreneurs could not make the salaries of their employees due to lack of bank accounts (Krishnan, 2016). A major mass of the society suffered for trade of goods and services for cash.

It will be interesting to take the opinions of notable economists in India. Millions of Indians have been deprived of their money and suffering while getting their money back. It was also noted that demonetization would negatively affect small-scale industry and informal sectors of the economy. Indian banks will have more deposited money, hence can lend money to various sectors to speed up growth of the economy. Even the problem of Nonperforming Assets (NPA) can be sorted out with demonetization initiatives (Iyenger, 2016).

In reality the economy declined instead. On the other hand barely 1% of black money got destroyed and 99% of black money was deposited, so the withdrawal of the notes resulted in a boom of black money holders (Kumar, 2017). However, demonetization can be affected by economic growth. The Gross Domestic Product (GDP) of India reached 5.7% from 7% before the announcement. It also resulted in lowering the manufacturing rate. The effect of demonetization is still shaking the roots of the Indian economy. It can take long to recover the worsening situation in the country. In general the negative impact has been discussed, but few studies have tested the outcome of demonetization on the Indian economy empirically. This study aims to fill this gap. Its main objective is to understand the impact of demonetization on shareholders' returns for the 12 months after the announcement of demonetization in India.

2. RESEARCH METHODOLOGY

To establish the relationship between demonetization and shareholders' returns, the abnormal returns calculation method is used to analyze the impact before and after demonetization. Takeda and Yamazaki (2006) used the same method for pre- and post event returns comparison to prove an increase in stock returns in Japan. Similarly, abnormal returns were widely used in event studies around the world to understand the stock market returns pattern (Salinger, 1992; Ahmed and Boutheina, 2017; Reese and Robins, 2017).

2.1. Data ccollection

12-month returns before and 12-month returns after demonetization were taken as a sample to empirically test the impact of demonetization on shareholders' returns, since this period is equal to one financial year which is enough for adjustments to share prices. The data were taken from the National Stock Exchange (NSE) - the leading exchange in India. The key Index of NSE NIFTY50 was taken into consideration for calculating expected and abnormal returns for all NIFTY50 groups of companies. Hence adjusted monthly returns from October 2012 to October 2017 were taken from capital line database (60*51 = 3060 data returns). Using the data from the first 36 months the alpha and beta were calculated for every 50 stocks, and to calculate their expected returns for the next 24 months their characteristic line was used as follows:

$$Expected\ return = Alpha + Beta * Market\ return$$

After calculating expected returns (which normalize returns for any other short-term economic event) abnormal returns were calculated with the following formula:

$$Abnormal\ return\ (AR)_t = Actual\ return_t - Expected\ return_t$$

Here it is possible that any rise or fall of stock returns may result in overall bull or bearish market run. So abnormal returns were calculated to eliminate any common effect (see Appendix I).

Abnormal return helps in understanding the actual impact of demonetization on shareholders' returns. Not only abnormal, but cumulative abnormal returns are also calculated to understand the impact of demonetization on shareholders' returns (see Appendix II).

$$Cumulative\ Abnormal\ Returns\ (CAR)_t = Cumulative\ Abnormal\ Returns_t + Abnormal\ Return_t$$

2.2. Paired t-test

To check the effect before and after demonetization, returns were statistically compared using the paired t-test for pairs of months 12 months before and 12 months after. Here the paired t-test used for the same group of share returns before demonetization may be different from share returns after demonetization.

2.3. Hypothesis development

The following hypotheses were developed based on the objective of the study:

H_0(1-12): There is no significant difference between the average abnormal return (AAR) 1 to 12 months before and 1 to 12 months after.

H_0 (13-24): There is no significant difference between the average cumulative abnormal return (ACAR) 1 to 12 months before and 1 to 12 months after.

3. RESULTS AND DISCUSSION

As showed in Table 1, from the beginning of the 1st month after demonetization equity shares show significantly negative abnormal returns. However, due to the mixing effect of demonetization on different sectors of the Indian economy, demonetization shows an insignificant impact on abnormal returns for the 2nd to 4th month. Similarly, demonetization shows a significant negative impact on abnormal returns of NIFTY50 shares for the 5th, 6th, and 12th months. The 1st and 12th month created the biggest difference in abnormal returns of 3.158 and 3.325 percent for NIFTY50 shares. These results clearly show a negative impact on shareholders' returns because of demonetization in India.

Table 1: Paired t-test for abnormal returns

Pair AR-Month-Before/After	Mean difference	t-Statistics	Significance
AR1MB-AR1MA	3.1584	2.371	0.022*
AR2MB-AR2MA	-0.2048	-0.187	0.852
AR3MB-AR3MA	2.1026	1.743	0.088
AR4MB-AR4MA	1.5023	1.360	0.180
AR5MB-AR5MA	3.1458	2.415	0.020*
AR6MB-AR6MA	3.2462	2.145	0.037*
AR7MB-AR7MA	-0.8747	-0.656	0.515
AR8MB-AR8MA	1.4499	1.221	0.228
AR9MB-AR9MA	-1.4820	-0.877	0.385
AR10MB-AR10MA	0.0000	0.055	0.956
AR11MB-AR11MA	-0.0093	-0.006	0.995
AR12MB-AR12MA	3.3259	2.807	0.007*

Note: MB – Month Before and MA – Month After
* Significant at 5 percent

Further cumulative abnormal returns were compared with the paired t-test for robustness and the results are presented in Table 2. As showed in Table 2, from the beginning of the 1st month after demonetization equity shares show significantly negative abnormal returns. And this impact of demonetization on cumulative abnormal returns will continue until the 12th month after demonetization. In a holding period of 12 months one will be losing an average of 15.439 percent cumulative abnormal returns as against what one could earn before demonetization.

Table 2: Paired t-test for cumulative abnormal returns

Pair CAR-Month-Before/After	Mean difference	t-Statistics	Significance
CAR1MB-CAR1MA	3.1584	2.371	0.022*
CAR2MB-CAR2MA	2.9535	1.715	0.093
CAR3MB-CAR3MA	5.0562	2.260	0.028*
CAR4MB-CAR4MA	6.5585	2.513	0.015*
CAR5MB-CAR5MA	9.7043	3.396	0.001*
CAR6MB-CAR6MA	12.950	3.536	0.001*
CAR7MB-CAR7MA	12.075	3.333	0.002*
CAR8MB-CAR8MA	13.525	3.288	0.002*
CAR9MB-CAR9MA	12.043	2.994	0.004*
CAR10MB-CAR10MA	12.123	3.080	0.003*
CAR11MB-CAR11MA	12.113	2.951	0.005*
CAR12MB-CAR12MA	15.439	3.592	0.001*

* Significant at 5 percent

Figure 1 shows the ACAR for NIFTY50 based on 50 shares. The figure clearly indicates a reduction in shareholders' returns compared to the risk taken. Thus demonetization ruined shareholders' wealth on the Indian equity market.

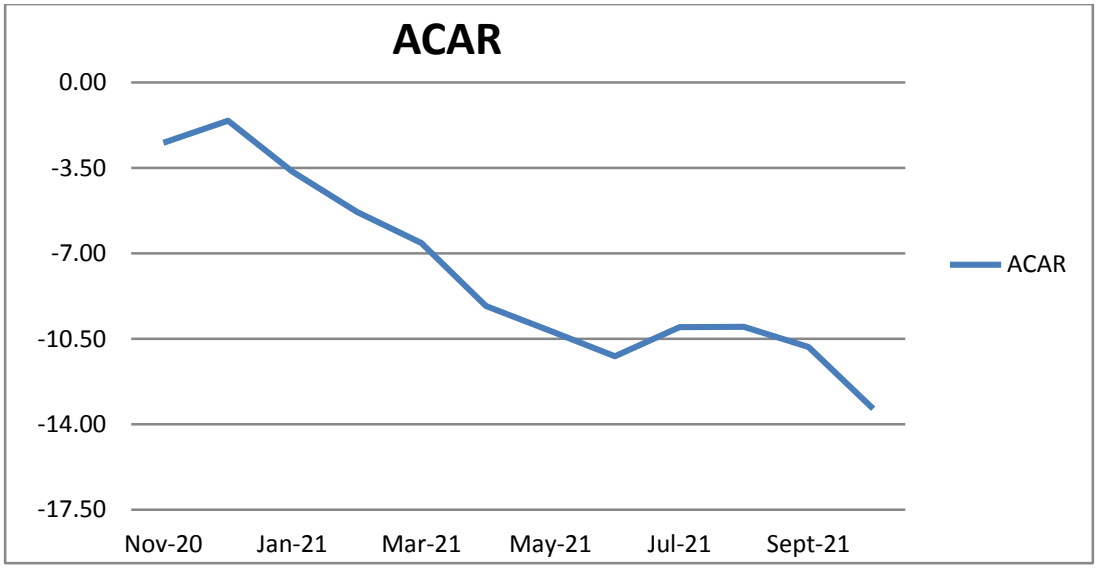

Figure 1: Postdemonetization average cumulative abnormal return

4. CONCLUSION

Demonetization by the Indian government on 8 November 2016 has become the most favorite topic among researchers for deciding its pros and cons. This study found a continuous buildup of negative abnormal returns throughout 12 months after demonetization. So this study concludes that demonetization had ruined investors' wealth compared to the risk they took after demonetization.

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Appendix – I

Sr. No.	AR1MB	AR1MA	AR2MB	AR2MA	AR3MB	AR3MA	AR4MB	AR4MA	AR5MB	AR5MA	AR6MB	AR6MA
1	-4.77	-8.51	-8.53	1.97	1.85	-0.32	0.71	-0.49	4.54	1.53	-1.15	-2.69
2	-1.06	-0.48	-1.39	-2.03	1.06	-1.33	6.77	-1.01	2.25	-7.72	4.20	-10.01
3	-8.16	-2.91	-7.88	-4.88	7.40	-4.56	-5.37	-2.76	6.82	-4.40	-2.49	0.15
4	-5.56	-0.55	-3.78	6.45	-5.99	-3.38	1.40	0.16	2.31	3.19	10.67	-5.03
5	-3.42	0.27	-1.53	2.95	1.12	-3.97	0.17	5.81	4.81	0.57	-0.63	-1.81
6	-2.52	-4.12	-2.56	-0.01	-2.66	-4.63	8.59	-0.56	-3.17	1.26	0.70	9.55
7	25.89	-9.32	-0.40	17.63	0.56	-6.56	18.54	2.78	4.35	1.92	16.23	-2.49
8	3.62	-2.37	-4.10	-0.79	-4.44	-2.39	-2.61	2.00	-1.35	0.76	4.03	10.75
9	-1.91	4.03	-0.05	4.75	-6.45	-0.10	2.18	5.39	0.88	-1.53	4.17	10.60
10	3.58	-0.75	3.37	-0.99	-0.62	-4.91	-5.52	1.49	-3.33	9.10	-0.73	-5.27
11	-6.11	-0.03	-6.90	-0.04	-0.73	1.91	-4.09	-5.45	-1.81	2.02	6.25	2.48
12	-0.26	2.19	-5.37	-2.84	-3.75	-9.14	-6.89	-0.65	2.84	-2.16	-2.08	-4.70
13	-1.04	9.93	-3.04	-7.89	4.36	14.86	2.86	3.51	0.62	4.33	-0.26	-7.19
14	21.18	-3.39	19.52	13.47	5.65	-0.19	3.15	4.05	21.59	-11.17	21.64	-4.20
15	-8.87	2.65	-1.40	4.88	1.14	-17.78	4.19	-2.55	3.94	-3.82	-2.59	-0.90
16	9.79	-3.41	9.71	14.74	5.23	1.65	4.00	-2.12	7.08	-6.83	-3.78	10.11
17	-1.95	0.41	-4.52	-4.35	-4.36	5.73	-11.07	4.45	-3.24	-5.47	1.00	7.31
18	-4.00	-5.69	5.39	-4.31	-0.39	-8.28	3.19	-10.20	-16.04	-3.25	4.21	-5.49
19	9.34	-1.53	3.01	-3.31	3.83	-2.42	7.82	3.89	-1.89	-2.98	4.77	-5.77
20	3.19	-1.94	7.46	-2.56	3.79	-9.94	-2.91	-10.52	1.38	6.61	5.02	-4.43
21	7.64	-7.37	7.99	7.65	6.18	-5.72	-8.52	-10.36	16.81	-2.57	5.07	-4.92
22	-4.11	-5.47	4.07	1.43	-2.82	-1.59	2.62	3.97	-5.73	0.66	-0.66	2.23
23	-7.59	-0.68	-0.05	4.32	4.21	-7.73	-2.62	-5.25	6.24	6.31	-12.36	0.30
24	-4.17	1.72	-5.21	-10.42	-1.73	6.79	-5.60	-1.22	-10.55	-12.14	-8.28	4.12
25	-3.09	-4.29	-1.09	-5.28	-2.51	-3.77	-18.38	-5.87	8.89	-10.90	0.87	-17.18
26	-10.05	-1.78	-6.88	2.81	1.33	-0.33	5.57	0.96	4.05	-4.31	0.17	-6.52
27	-12.49	-11.18	-1.21	14.18	-4.99	-1.00	0.74	-1.70	21.21	3.91	0.14	-3.52
28	-6.43	-13.34	-1.50	-2.82	-6.06	4.63	-9.05	-1.47	5.77	-9.17	-2.44	-24.70
29	-13.17	-15.68	-10.75	-6.94	2.98	-9.00	-7.30	-8.40	-2.02	-17.20	-12.59	-13.53
30	1.12	0.88	-1.98	0.86	0.75	3.29	1.29	-0.49	0.55	5.24	-2.60	1.42
31	-8.07	1.72	-3.69	-6.69	-5.80	9.43	-5.80	-2.67	1.55	-8.27	-2.34	10.78
32	5.22	-2.29	10.25	-2.51	2.14	-3.48	-4.35	-5.30	2.10	-1.35	-3.90	11.56

33	15.00	-3.47	-0.62	8.42	-1.36	-10.83	2.96	-0.45	3.79	4.31	7.47	-3.26
34	-4.65	-0.22	5.30	0.77	9.79	-8.05	1.19	-6.25	4.20	3.94	-4.16	2.53
35	-1.55	1.81	-1.40	3.59	3.46	-2.99	-3.25	1.49	-3.01	-2.23	-3.09	-4.79
36	7.40	-3.15	-10.35	-7.42	-4.59	-0.19	5.16	-11.07	-7.77	0.41	-0.22	-7.31
37	1.40	-0.13	-7.13	-4.96	-0.45	0.60	0.35	1.14	0.13	-9.99	-4.32	3.18
38	8.16	1.38	13.75	0.33	12.91	-8.67	6.13	-8.04	-3.24	0.04	1.62	-8.89
39	14.02	2.67	3.08	1.06	-3.80	-8.10	0.00	-0.36	-1.87	-1.18	8.77	-4.94
40	-1.88	5.50	10.05	7.59	2.15	0.75	3.20	-3.44	18.64	11.47	3.63	-6.46
41	2.66	-0.93	1.91	-2.30	0.67	-0.02	0.42	-12.63	-0.07	-6.31	6.36	-8.78
42	3.19	4.29	15.56	2.68	-0.08	7.33	-0.62	-5.47	-4.46	11.56	2.92	-5.14
43	7.43	-4.68	1.98	9.73	-2.55	1.60	-9.54	-6.98	-5.11	0.72	3.39	1.57
44	9.59	-1.51	2.23	-11.61	-12.16	6.65	-6.98	-11.70	-7.49	-12.14	-9.41	-10.14
45	-5.80	-4.37	17.31	3.30	-1.82	-2.25	10.02	7.83	6.73	-6.34	4.67	-1.36
46	-1.79	-9.04	2.69	6.50	-1.25	-3.63	5.70	0.40	2.40	4.43	3.28	-6.58
47	5.16	-0.25	0.45	8.36	-2.83	-5.96	7.63	-2.45	-1.48	1.55	2.94	-21.39
48	-0.42	-1.55	-0.13	2.88	-3.08	-6.61	8.47	-1.66	-4.00	0.57	1.07	-4.19
49	-6.36	-17.08	-0.48	6.80	0.91	8.56	2.26	7.53	5.74	-2.60	-11.31	7.02
50	11.15	-9.39	-6.35	-20.14	4.73	-8.10	-14.24	10.18	9.25	6.17	-10.68	-1.21

Source: Author's own compilation

Sr. No.	AR7MB	AR7MA	AR8MB	AR8MA	AR9MB	AR9MA	AR10MB	AR10MA	AR11MB	AR11MA	AR12MB	AR12MA
1	7.55	-3.82	-3.11	-3.27	-12.36	1.66	6.20	-2.44	3.74	-3.92	4.20	-2.51
2	-14.87	6.99	3.15	-2.94	-6.42	1.74	-9.73	1.99	-8.83	3.44	-0.20	-4.86
3	-17.39	-7.90	-1.85	-0.93	-17.25	2.27	20.01	-3.40	0.21	-8.57	-3.82	-10.08
4	-0.45	4.48	-5.71	0.63	11.65	9.47	6.51	-2.36	3.09	-0.14	2.93	-4.46
5	9.18	3.81	-3.33	4.19	-7.71	0.83	-2.00	-0.73	-1.56	-8.31	3.98	-0.91
6	3.22	-0.98	-3.40	-6.46	8.75	9.90	2.81	-5.12	-1.60	-3.02	-0.92	-5.42
7	5.28	-1.56	9.24	8.33	14.10	12.43	10.36	4.76	-8.04	4.81	11.57	-6.77
8	-6.07	1.35	-1.99	1.75	-4.51	6.14	7.06	-3.38	-2.14	0.31	5.95	3.01
9	6.24	4.14	-1.72	-14.46	6.34	-0.48	-4.53	-8.04	-0.37	0.38	-4.47	-3.29
10	10.50	-1.35	1.07	-4.52	-7.16	-0.98	13.32	3.82	-3.45	-3.11	-6.72	2.35
11	-4.77	-4.29	8.16	-1.83	-11.88	-3.13	6.26	-5.95	0.99	1.57	-7.39	5.14
12	6.63	0.44	-8.63	-6.21	6.94	-7.77	6.04	-5.67	-0.01	-7.20	-1.30	-2.72
13	-6.35	4.10	-7.29	11.33	-2.50	0.43	1.11	-0.62	6.99	15.03	5.04	-0.87

14	1.73	7.63	15.76	7.20	16.08	14.31	9.74	5.33	-12.73	0.75	2.33	-7.68
15	7.26	-8.60	3.27	-4.73	15.73	-14.12	-2.77	7.49	-8.92	-0.51	-8.38	-5.09
16	-7.64	11.13	9.90	-1.18	17.48	16.14	10.49	5.58	3.55	3.06	14.76	1.64
17	-2.57	-5.15	-3.06	10.94	8.42	1.98	-10.10	-7.98	-1.64	4.18	-3.82	-2.38
18	0.30	5.34	-0.23	-14.74	-4.85	-16.28	-1.48	14.07	-0.20	1.02	-1.58	-7.18
19	2.20	-2.44	-4.47	4.60	4.04	-7.53	2.58	-5.50	-10.50	11.33	-9.75	7.42
20	-8.41	-13.49	4.05	-1.57	-3.47	13.67	-1.51	-10.02	7.37	3.28	-2.79	-6.54
21	-0.59	-7.87	1.24	-0.22	-7.54	28.49	-3.32	-12.07	4.69	-7.60	-2.64	-6.75
22	-1.36	-1.19	2.59	-0.58	-4.74	-4.02	-0.89	2.84	-1.16	-4.92	2.61	-2.53
23	3.63	-4.61	7.99	-4.55	11.43	-7.25	-8.44	-7.91	1.30	-6.00	2.04	-10.67
24	1.11	-6.07	-2.87	5.68	9.56	-11.30	-8.21	-3.45	3.88	0.05	-0.32	4.06
25	-12.29	-11.69	5.14	-7.08	-21.19	-7.96	0.98	0.60	-9.06	-3.01	-0.42	-23.44
26	2.19	-5.32	4.52	4.11	-6.06	-4.45	-6.97	-0.44	-1.74	-1.75	5.45	4.09
27	2.96	1.43	-6.46	13.56	0.23	3.24	6.07	1.42	1.22	-12.20	5.48	-6.12
28	-8.92	8.79	-3.52	-7.62	-8.18	-11.39	-2.94	2.65	5.15	6.62	10.19	-4.33
29	-5.12	13.53	-5.06	-4.53	1.41	-4.49	-23.50	-10.20	-8.39	0.53	1.81	-14.54
30	-0.66	1.99	3.72	0.68	-3.07	1.23	1.58	2.99	2.62	-6.86	0.00	3.53
31	0.22	-9.59	-1.14	4.84	16.36	-2.31	-12.97	-4.84	-5.17	7.01	0.99	-1.86
32	-3.42	0.41	-1.86	-5.90	5.18	2.14	-2.52	-4.07	-2.26	-1.22	-4.44	5.14
33	0.79	2.77	1.96	0.22	-4.13	0.28	-3.49	-1.96	10.30	-5.16	3.97	-1.21
34	0.74	-0.15	-2.45	-4.84	-5.94	0.05	-9.77	3.82	-5.06	-8.85	-1.97	4.50
35	-3.11	0.78	4.75	-0.45	-4.15	2.55	2.33	2.92	3.68	-14.53	2.34	3.06
36	-0.41	3.09	2.89	-13.50	-7.49	-0.01	10.15	4.83	2.39	-10.61	-4.65	4.81
37	-4.36	-4.70	-10.89	2.05	-2.59	-6.27	-9.47	-2.07	-2.05	-5.07	-4.93	-4.07
38	-7.57	-8.25	0.64	0.29	-4.43	-3.67	-1.50	12.19	2.10	4.77	4.36	-2.57
39	-0.13	1.50	7.82	-1.55	-2.11	5.60	-7.02	1.78	3.59	3.66	12.78	2.23
40	-8.51	-10.26	7.84	-10.84	-3.75	24.21	-2.52	-11.64	-2.62	-2.31	0.73	-5.25
41	-3.30	-4.30	-2.21	-5.17	-20.30	-1.26	9.27	17.14	5.08	-1.03	0.76	-1.03
42	-0.50	-11.26	0.18	-0.87	7.04	2.35	-9.55	12.45	3.27	6.16	3.05	2.13
43	-6.87	3.96	2.79	4.82	0.48	4.42	17.55	-6.90	-9.08	22.42	2.32	1.62
44	7.28	-4.11	-0.60	-3.55	7.96	9.10	-16.80	4.97	-4.58	0.82	-4.70	-0.56
45	-24.68	6.70	-6.69	1.83	13.84	-0.61	-1.21	-4.26	-15.31	7.26	-4.11	-7.91
46	-4.11	-3.97	-4.32	-6.66	-0.21	1.11	9.46	-1.59	9.72	5.46	-0.93	-2.81
47	-1.10	5.02	5.11	7.92	-3.37	1.10	12.71	3.30	15.81	-25.25	-5.92	0.46
48	0.95	-0.91	2.04	-5.44	-1.80	1.77	1.76	11.76	-2.62	-1.04	1.92	2.51

49	-4.18	-8.60	2.12	-1.06	-3.69	2.79	-11.40	-1.71	-0.47	-6.84	4.42	-4.39
50	-5.18	1.84	-4.52	0.29	-4.48	-6.34	4.70	6.11	-12.36	4.35	9.86	-13.53

Source: Author's own compilation

Appendix – II

Sr. No.	CAR1MB	CAR1MA	CAR2MB	CAR2MA	CAR3MB	CAR3MA	CAR4MB	CAR4MA	CAR5MB	CAR5MA	CAR6MB	CAR6MA
1	-4.77	-8.51	-13.30	-6.53	-11.45	-6.86	-10.74	-7.35	-6.20	-5.82	-7.35	-8.50
2	-1.06	-0.48	-2.45	-2.51	-1.38	-3.84	5.39	-4.85	7.64	-12.58	11.84	-22.59
3	-8.16	-2.91	-16.04	-7.79	-8.64	-12.36	-14.01	-15.12	-7.20	-19.52	-9.69	-19.38
4	-5.56	-0.55	-9.35	5.90	-15.33	2.52	-13.93	2.68	-11.62	5.87	-0.95	0.84
5	-3.42	0.27	-4.95	3.22	-3.83	-0.75	-3.65	5.06	1.15	5.63	0.52	3.82
6	-2.52	-4.12	-5.08	-4.13	-7.75	-8.76	0.84	-9.32	-2.33	-8.07	-1.63	1.49
7	25.89	-9.32	25.49	8.32	26.05	1.75	44.59	4.53	48.94	6.46	65.18	3.97
8	3.62	-2.37	-0.48	-3.17	-4.91	-5.56	-7.53	-3.55	-8.88	-2.80	-4.85	7.95
9	-1.91	4.03	-1.96	8.78	-8.41	8.68	-6.24	14.07	-5.35	12.54	-1.18	23.14
10	3.58	-0.75	6.95	-1.74	6.33	-6.65	0.82	-5.15	-2.52	3.94	-3.25	-1.33
11	-6.11	-0.03	-13.01	-0.07	-13.74	1.84	-17.82	-3.61	-19.63	-1.59	-13.38	0.89
12	-0.26	2.19	-5.63	-0.65	-9.39	-9.79	-16.27	-10.44	-13.43	-12.60	-15.51	-17.29
13	-1.04	9.93	-4.08	2.03	0.28	16.90	3.14	20.40	3.76	24.74	3.50	17.55
14	21.18	-3.39	40.69	10.08	46.34	9.89	49.49	13.94	71.08	2.77	92.71	-1.42
15	-8.87	2.65	-10.27	7.53	-9.13	-10.25	-4.95	-12.80	-1.00	-16.62	-3.59	-17.53
16	9.79	-3.41	19.50	11.33	24.74	12.98	28.74	10.86	35.82	4.03	32.05	14.14
17	-1.95	0.41	-6.47	-3.93	-10.82	1.80	-21.89	6.25	-25.12	0.78	-24.12	8.09
18	-4.00	-5.69	1.39	-10.00	1.00	-18.28	4.18	-28.48	-11.86	-31.73	-7.65	-37.22
19	9.34	-1.53	12.36	-4.84	16.19	-7.26	24.01	-3.37	22.12	-6.35	26.89	-12.12
20	3.19	-1.94	10.64	-4.50	14.44	-14.44	11.53	-24.96	12.90	-18.34	17.93	-22.77
21	7.64	-7.37	15.63	0.27	21.82	-5.45	13.30	-15.81	30.11	-18.38	35.19	-23.30
22	-4.11	-5.47	-0.04	-4.04	-2.86	-5.63	-0.24	-1.66	-5.97	-1.01	-6.63	1.23
23	-7.59	-0.68	-7.64	3.64	-3.43	-4.10	-6.06	-9.35	0.19	-3.04	-12.17	-2.74
24	-4.17	1.72	-9.37	-8.70	-11.10	-1.90	-16.70	-3.13	-27.25	-15.27	-35.53	-11.15
25	-3.09	-4.29	-4.18	-9.57	-6.69	-13.33	-25.07	-19.21	-16.18	-30.11	-15.31	-47.29
26	-10.05	-1.78	-16.93	1.03	-15.61	0.70	-10.03	1.65	-5.98	-2.66	-5.81	-9.18
27	-12.49	-11.18	-13.70	2.99	-18.69	1.99	-17.96	0.29	3.25	4.20	3.38	0.68
28	-6.43	-13.34	-7.93	-16.16	-13.99	-11.53	-23.05	-13.00	-17.27	-22.17	-19.71	-46.86

29	-13.17	-15.68	-23.92	-22.62	-20.94	-31.62	-28.24	-40.02	-30.26	-57.23	-42.85	-70.76
30	1.12	0.88	-0.87	1.74	-0.11	5.03	1.18	4.54	1.73	9.78	-0.87	11.20
31	-8.07	1.72	-11.76	-4.98	-17.56	4.45	-23.35	1.79	-21.80	-6.48	-24.15	4.30
32	5.22	-2.29	15.47	-4.79	17.61	-8.27	13.26	-13.57	15.36	-14.93	11.46	-3.37
33	15.00	-3.47	14.38	4.95	13.03	-5.87	15.98	-6.33	19.78	-2.01	27.24	-5.27
34	-4.65	-0.22	0.65	0.55	10.44	-7.50	11.63	-13.75	15.84	-9.81	11.67	-7.28
35	-1.55	1.81	-2.95	5.40	0.51	2.40	-2.73	3.89	-5.74	1.67	-8.83	-3.12
36	7.40	-3.15	-2.96	-10.57	-7.54	-10.76	-2.38	-21.83	-10.14	-21.42	-10.36	-28.73
37	1.40	-0.13	-5.72	-5.09	-6.17	-4.49	-5.82	-3.35	-5.69	-13.34	-10.00	-10.16
38	8.16	1.38	21.92	1.70	34.83	-6.97	40.96	-15.01	37.72	-14.97	39.34	-23.86
39	14.02	2.67	17.11	3.73	13.30	-4.37	13.30	-4.73	11.43	-5.91	20.20	-10.85
40	-1.88	5.50	8.17	13.08	10.32	13.84	13.52	10.40	32.16	21.87	35.79	15.41
41	2.66	-0.93	4.57	-3.23	5.24	-3.25	5.66	-15.88	5.59	-22.19	11.96	-30.97
42	3.19	4.29	18.75	6.97	18.67	14.30	18.06	8.83	13.60	20.39	16.52	15.25
43	7.43	-4.68	9.41	5.05	6.86	6.65	-2.69	-0.33	-7.80	0.39	-4.41	1.96
44	9.59	-1.51	11.82	-13.11	-0.34	-6.46	-7.32	-18.16	-14.81	-30.30	-24.22	-40.44
45	-5.80	-4.37	11.51	-1.07	9.69	-3.32	19.71	4.51	26.44	-1.83	31.11	-3.19
46	-1.79	-9.04	0.90	-2.54	-0.35	-6.17	5.35	-5.77	7.75	-1.34	11.03	-7.92
47	5.16	-0.25	5.61	8.11	2.78	2.16	10.41	-0.30	8.93	1.26	11.87	-20.13
48	-0.42	-1.55	-0.55	1.33	-3.63	-5.28	4.84	-6.95	0.84	-6.38	1.90	-10.57
49	-6.36	-17.08	-6.84	-10.27	-5.94	-1.71	-3.68	5.82	2.06	3.22	-9.25	10.23
50	11.15	-9.39	4.80	-29.53	9.53	-37.63	-4.70	-27.45	4.54	-21.28	-6.14	-22.48

Source: Author's own compilation

Sr. No.	CAR7MB	CAR7MA	CAR8MB	CAR8MA	CAR9MB	CAR9MA	CAR10MB	CAR10MA	CAR11MB	CAR11MA	CAR12MB	CAR12MA
1	0.20	-12.33	-2.91	-15.60	-15.28	-13.94	-9.07	-16.39	-5.33	-20.31	-1.13	-22.82
2	-3.03	-15.60	0.12	-18.54	-6.31	-16.80	-16.04	-14.80	-24.87	-11.36	-25.07	-16.22
3	-27.08	-27.28	-28.93	-28.21	-46.18	-25.93	-26.17	-29.33	-25.96	-37.90	-29.78	-47.99
4	-1.41	5.32	-7.12	5.95	4.53	15.42	11.04	13.06	14.12	12.92	17.05	8.46
5	9.70	7.63	6.37	11.83	-1.34	12.66	-3.34	11.93	-4.90	3.61	-0.92	2.70
6	1.59	0.50	-1.81	-5.95	6.93	3.94	9.74	-1.18	8.13	-4.20	7.21	-9.62
7	70.46	2.40	79.70	10.73	93.80	23.16	104.16	27.93	96.12	32.74	107.69	25.97
8	-10.92	9.31	-12.91	11.06	-17.42	17.19	-10.35	13.81	-12.49	14.13	-6.54	17.13
9	5.06	27.28	3.34	12.82	9.68	12.34	5.15	4.30	4.78	4.68	0.31	1.39

10	7.25	-2.67	8.32	-7.19	1.17	-8.17	14.49	-4.35	11.03	-7.47	4.31	-5.12
11	-18.16	-3.39	-10.00	-5.22	-21.88	-8.35	-15.62	-14.30	-14.64	-12.73	-22.02	-7.59
12	-8.89	-16.85	-17.52	-23.06	-10.58	-30.83	-4.54	-36.50	-4.55	-43.70	-5.85	-46.42
13	-2.85	21.66	-10.14	32.99	-12.63	33.41	-11.52	32.80	-4.53	47.82	0.51	46.95
14	94.44	6.21	110.20	13.41	126.27	27.72	136.01	33.05	123.28	33.80	125.61	26.12
15	3.68	-26.13	6.95	-30.85	22.68	-44.97	19.91	-37.48	10.99	-37.99	2.61	-43.08
16	24.41	25.27	34.31	24.09	51.79	40.23	62.28	45.81	65.82	48.87	80.58	50.51
17	-26.69	2.94	-29.75	13.88	-21.33	15.86	-31.43	7.88	-33.07	12.06	-36.88	9.68
18	-7.35	-31.87	-7.59	-46.61	-12.44	-62.90	-13.92	-48.83	-14.12	-47.81	-15.70	-54.99
19	29.09	-14.56	24.61	-9.96	28.65	-17.49	31.23	-22.99	20.73	-11.66	10.98	-4.24
20	9.52	-36.26	13.57	-37.83	10.10	-24.17	8.59	-34.19	15.96	-30.91	13.17	-37.45
21	34.59	-31.17	35.83	-31.39	28.30	-2.90	24.97	-14.97	29.66	-22.56	27.03	-29.31
22	-7.98	0.03	-5.39	-0.54	-10.13	-4.56	-11.02	-1.72	-12.19	-6.64	-9.57	-9.17
23	-8.54	-7.35	-0.55	-11.90	10.88	-19.15	2.45	-27.07	3.74	-33.07	5.78	-43.74
24	-34.43	-17.22	-37.30	-11.55	-27.74	-22.84	-35.95	-26.29	-32.08	-26.24	-32.39	-22.18
25	-27.60	-58.98	-22.46	-66.06	-43.65	-74.02	-42.67	-73.42	-51.73	-76.43	-52.15	-99.87
26	-3.62	-14.50	0.90	-10.39	-5.16	-14.83	-12.13	-15.27	-13.88	-17.02	-8.43	-12.93
27	6.35	2.11	-0.11	15.67	0.12	18.90	6.19	20.33	7.41	8.13	12.88	2.01
28	-28.63	-38.07	-32.15	-45.69	-40.34	-57.08	-43.28	-54.43	-38.12	-47.81	-27.94	-52.14
29	-47.97	-57.23	-53.03	-61.76	-51.62	-66.25	-75.12	-76.45	-83.51	-75.93	-81.69	-90.47
30	-1.53	13.19	2.19	13.88	-0.88	15.11	0.70	18.09	3.32	11.23	3.31	14.76
31	-23.92	-5.30	-25.06	-0.46	-8.70	-2.77	-21.67	-7.61	-26.83	-0.60	-25.85	-2.46
32	8.04	-2.96	6.18	-8.86	11.36	-6.72	8.83	-10.79	6.57	-12.01	2.13	-6.87
33	28.03	-2.50	29.99	-2.28	25.87	-2.00	22.38	-3.96	32.68	-9.12	36.65	-10.32
34	12.41	-7.43	9.96	-12.28	4.01	-12.23	-5.76	-8.40	-10.82	-17.26	-12.79	-12.76
35	-11.94	-2.34	-7.20	-2.78	-11.35	-0.23	-9.02	2.69	-5.34	-11.84	-3.00	-8.78
36	-10.77	-25.63	-7.89	-39.14	-15.38	-39.15	-5.23	-34.32	-2.84	-44.94	-7.49	-40.12
37	-14.36	-14.86	-25.26	-12.81	-27.85	-19.08	-37.32	-21.15	-39.38	-26.21	-44.31	-30.28
38	31.77	-32.11	32.41	-31.82	27.98	-35.48	26.48	-23.29	28.58	-18.52	32.94	-21.10
39	20.07	-9.36	27.89	-10.90	25.78	-5.30	18.75	-3.52	22.34	0.14	35.12	2.37
40	27.28	5.14	35.11	-5.70	31.37	18.51	28.85	6.87	26.23	4.57	26.96	-0.68
41	8.66	-35.27	6.45	-40.44	-13.84	-41.69	-4.57	-24.56	0.51	-25.59	1.26	-26.62
42	16.02	3.99	16.20	3.12	23.24	5.47	13.69	17.92	16.97	24.08	20.01	26.20
43	-11.28	5.92	-8.49	10.74	-8.01	15.16	9.54	8.26	0.46	30.68	2.78	32.30
44	-16.94	-44.55	-17.55	-48.10	-9.58	-39.00	-26.39	-34.03	-30.96	-33.21	-35.66	-33.78

45	6.43	3.50	-0.26	5.33	13.58	4.72	12.37	0.45	-2.94	7.72	-7.05	-0.19
46	6.92	-11.89	2.61	-18.55	2.40	-17.44	11.85	-19.03	21.57	-13.57	20.65	-16.38
47	10.78	-15.11	15.88	-7.19	12.52	-6.10	25.23	-2.80	41.03	-28.05	35.11	-27.59
48	2.86	-11.48	4.90	-16.92	3.10	-15.14	4.85	-3.38	2.23	-4.43	4.16	-1.92
49	-13.43	1.63	-11.31	0.57	-15.00	3.36	-26.40	1.65	-26.86	-5.19	-22.45	-9.58
50	-11.32	-20.64	-15.84	-20.35	-20.32	-26.69	-15.62	-20.58	-27.98	-16.23	-18.12	-29.76

Source: Author's own compilation