

Reaction on Stock Market, Exchange Rate, oil-Price and Trade: Evidence from India's Demonetization

Gurvinder Kaur*

Assistant Professor, Department of Commerce, Sri Guru Tegh Bahadur Khalsa College, University of Delhi, India

Aim – The study aims to quantify the cross-sectional effects of India's demonetization policy enforced on 08 November 2016 on stock-market, exchange rate and oil-prices, import and export.

Abstract – We analyzed the effects of India's demonetization policy which made the currency notes of Rs. 500 and 1000 denomination illegal in the circulation from the intervening night of 08-09 November 2016. The cross-sectional causality was investigated for the duration of October 2016 - November 2017 on various parameters such as: (i) the overall fluctuations in the Bombay Stock Exchange (BSE) market, (ii) exchange rate of currencies such as US Dollar, British pounds, Euro and Japanese Yen, (iii) the share prices of six major Indian oil companies including Reliance Industries Limited (RIL), Gas authority India Limited (GAIL), Hindustan Petroleum Corporation Limited (HPCL), Indian Oil Corporation Limited (IOCL), and Oil and Natural Gas Corporation (ONGC), (iv) total import export of oil and non-oil commodities, and (v) finally the cash money in circulation, left with banks and with public. It was found that post-demonetization, the BSE Sensex nose-dived to almost 1500 points and remains constant until December 2016 and then started increasing. The closing share-price value of all six major oil-marketing companies didn't change much which was further corroborated from the total export and imports statics of oil (Rs. in crores) for the same duration of study. However, a significant difference was observed in import and export of non-oil commodities between pre- and post-demonetization period. During post-demonetization era, the cash money in circulation and cash money left with public was found significantly low while sharp increased deposit in PSBs was observed as public was flooded to deposit old currency notes but could not withdraw new currency notes due to paucity.

Keywords – BSE, PSBs, Oil-prices, Import and Export, Exchange Rate, RBI, Demonetization

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INTRODUCTION

The Government of India left everyone surprised on the intervening night of 08-09 November 2016 with the demonetization policy which declared around 86% of the existing currency notes in circulation, especially Rs. 500 and 1000 denomination notes, as illegal.[1] The key goals of this demonetization policy was manifold including curb corruption, counterfeiting, terrorist activities, target black-money, digitization of payment etc.[2] However, the November 8, 2016 demonetization in India was remarkably differed from the earlier episodes because of the surprise nature of the announcement which targeted fairly high worth notes that made up the vast amount of currency (86 percent is a frequently used estimate) in circulation.[3-5] Prior to demonetization, massive efforts were put by the government to enhance the number of people should be having identity cards (the "Aadhar" scheme), to open new bank accounts for people (the "Jan Dhan" initiative), to have more people with a personal account number ("PAN" card), and to enable more

mobile banking.[6-7] Knowing the seriousness of the issue of demonetization, only 10 people within the entire population of 1.25 billion people were taken into confidence.[8] Another pre-indication for demonetization appears to be the announcement of new Rs. 2000 denomination note months before November 2016.[9] All of these steps - although not necessarily, helped lay the groundwork for demonetization.

Episode of demonetization in India is not new. In the past, the Indian government had already demonetized bank notes on two occasions - once in 1946 and then in 1978, and in both the cases combating the *black money* was advocated. In 1946, the government hoped demonetization would erase the amassing fortunes collected and concealed by Indian businesses during World War II. In 1978, again the government of India demonetized banknotes of Rs. 1000, 5000 and 10,000 denominations in the hopes of curbing counterfeit money and unaccounted black money from the market. India is not the only country to have

demonetized currency, several other countries have embraced it in the past. For example, the United Kingdom in 1971, Ghana in 1982, Nigeria in 1984, Australia in 1996, Zimbabwe in 2015 and Pakistan in 2016. November 08, 2016 demonetization policy allowed people to deposit old currency notes of Rs. 500 and 1000 denominations at banks with "Know Your Customer" norms and set a deadline of December 31, 2016. Using the currency chest data, it was found that that 69% of the notes were returned by the end of November; 87% of notes were returned by December 15; and 97% of notes were returned by the end of December 2016.

Post-demonetization, printing of new currency notes and its nationwide distribution was prioritized. So, from November 09 to December 31, 2016, the Reserve Bank of India pumped in 23.8 billion pieces of bank notes into circulation aggregating Rs. 5,540 billion in value ([10], pp. 124). However, the value of banknotes in circulation declined by 20.2 per cent over the year amounting to Rs. 13,102 billion at the end of March 2017. The great efforts were made in printing the new currency notes and their distribution via airlifting or also by direct remittances from the presses to currency chests. But the constraints associated with printing capacity and distribution together have led the overall transactions and business activities drop sharply in following month (s). Thus, the availability of new currency notes varied tremendously across the geographical areas which led to huge hardships faced by common people and bank staff in service.[11-13] From the postmortem of the RBI annual report 2016-17,[14] it seems that RBI didn't allocated the distribution of the notes as per the economic conditions geographically, and heterogenous distribution was acknowledged to "the logistical difficulties in supplying banknotes to all currency chests in a short span". Importantly, currency in circulation in terms of number of pieces and value have been steadily rising since early January 2017. ([14], pp. 20). In value terms, the share of Rs. 500 and above banknotes, which had together accounted for 86.4% of the total value of banknotes in circulation at end-March 2016, stood at 73.4 per cent at end-March 2017. The share of newly introduced Rs. 2000 banknotes in the total value of banknotes in circulation was 50.2 per cent at end-March 2017 ([10], pp. 124).



Figure 1. Currency notes in circulation (value in Rs. billion, Source: RBI annual report 2016-17)

Nonetheless, overall liabilities of the Reserve Bank of India (RBI) or the target interest-rate remain largely unaffected due to demonetization. The wealth effect of demonetization could have impacted economic activity which can be summed up from the bi-monthly report of the RBI. The report says "The Reserve Bank in its Fifth Bi-monthly Monetary Policy Statement on December 7, 2016[15] placed the GVA growth for 2016-17 at 7.1 per cent, which was lower than 7.6 per cent GVA growth projected in its Fifth Bi-monthly Monetary Policy Statement of October 4, 2016.[16] The 50 basis points (bps) downward revision in GVA growth was on account of 35 bps loss in momentum, which was reflected in GVA growth in Q2 estimated by the Central Statistics Office (CSO) in November 2016 and 15 bps on account of the adverse impact of demonetization. The CSO in its first advance estimates released on January 6, 2017 placed the GVA growth for 2016-17 at 7.0 per cent.

The overall GVA growth in the Sixth Bi-monthly Monetary Policy Statement on February 8, 2017[17] was pegged lower at 6.9 per cent. The impact of demonetization on GVA growth was estimated at about 33 bps for the full year 2016-17. After the peak impact in Q3, GVA growth was estimated to strengthen with the progressive demonetization in Q4. As per the second advance estimates of the CSO released on February 28, 2017, GVA growth for 2016-17 is pegged at 6.7 per cent, which is about 30 bps lower than what was estimated on January 6, 2017. Importantly, Q3 growth (at 6.6 per cent) was only marginally lower than that recorded in Q2 (6.7 per cent), thereby suggesting that demonetization had only a modest impact on growth in Q3 of 2016-17. The underlying factors for GVA growth estimate of 6.9 per cent as presented in the Sixth Bi-monthly Monetary Policy Statement on February 8, 2017 ([14], pp. 7).

From the anecdotal news reports, almost 98% cash transactions were being made by middle class and lower middle who received demonetization brunt the most. Therefore, the concept of monetary-neutrality or cashless economy in case of India, can be easily rejected based on some of noticeable evidence. That is in complete contradiction to the New Keynesian synthesis,[18] which outlines that outcomes should depend only on the interest rate defined by the monetary policy, not on actual availability of cash money. That's why we conclude that in modern India, cash plays a special role and is integral part of many necessary activities. In this context, author has explored the transmissive effects of the demonetization on various economic activities.

LITERATURE REVIEW

Some of earlier studies has already used descriptive statistics[14,19-21] to infer the effect of demonetization on the Indian economy. In context to possible benefits of a cashless economy, Rogoff

(2016) articulated the societal costs of cash and facilitating illegal activity and tax evasion, and cautioned that any phase-out of cash should take place slowly, not overnight, with ample anticipation of public in general.[22]

Jain (2017) explored the effects of demonetization on India's banking sector and found a positive abnormal return for banks, with greater persistence of demonetization effect for state-owned enterprises (SOE) banks than non-SOE banks.[23] Jain et. al. (2017) also analyzed market reactions due to demonetization covering only for the hospitality industry[24]

Kumar (2017) studied the impact of the demonetization announcement on analysts' forecasts of Indian firms' earnings per share and found that there was no substantial change in these estimates after the demonetization policy announcement.[25] In the backdrop of existing available literature, the cross-sectional effects of demonetization on primary sectors, such as oil prices, exchange rate, import and export, and cash currency in circulation, which altogether represents the real implications of policy and has been presented in this article. In this sense, to the best of authors' knowledge, this report adds extra knowledge to the existing literature and is relevant in filling the required gap. However, with a caveat, author don't claim that this paper is only exhaustive study.

DATA COLLECTION AND METHODOLOGY

The historical stock index data was obtained from the Bombay Stock Exchange. Also, the closing share prices of the six major oil companies operating in India were obtained from the BSE.[26] The currency exchange rate data for USA Dollar, British pounds, Euro and Japanese Yen was obtained from the RBI.[27] Further, the secondary data of the total import and export of the oil and non-oil items was also retrieved from the same source mentioned above.[27] In addition to that, various annual reports for the duration of 2016 - 17 from the RBI were studied to derive a conclusion on the cross-sectional effects of the demonetization. Paper presents the findings from investigations based on simple data analysis of price-returns without using any economic model.

RESULTS AND DISCUSSION

SENSEX data reflects the overall economic health status of any country. Any significant policy change or shock occurred both at the national as well as International can be gauged from the Sensex volatility. Therefore, the Sensex was first cross-sectional measure to India's demonetization policy shock, which is well understood and also synchronizes with real-world entrepreneurial theory. As evident from Figure 2 (left column) shown below, the Sensex nose-dive on 08 November 2016 which keep on plummeting until 21 November and remained almost at the same figure till

26 December 2016 (see blue dotted rectangle with data tip).

Bombay Stock Exchange (BSE) daily closing index and index-to-return from October 2016 – September 2017



Figure 2. Bombay Stock Exchange SENSEX (daily data shown in the left column) from the 03 Oct. 2016 – 29 September 2017. The cumulative return is estimated w.r.t. to preceding datetime, so index-to-return values eventually starts one datetime lagged (shown in the right column).

The daily closing share-price value of six major oil-marketing companies in India listed on BSE was the second cross-sectional object to assess the demonetization shock, and their share-price values (left column) and price-return (right column) are shown in Figure 3, respectively. As it can be seen clearly that out of six major oil-marketing companies, the IOCL experienced the shock of demonetization policy. Because IOCL is the largest oil-marketing company in terms of market share and volume, and its diversified business covers household LPG, air-fuel and various other segments, (https://iocl.com/AboutUs/AnnualReports/IOCL-Annual_Report_2016-17.pdf). Whilst other oil-marketing companies didn't experienced shock in the vicinity of demonetization date. The very same volatility is further evidenced from IOCL's share price-return values (right column). The price-return volatility is also visible for other oil-marketing companies as well but at a different time scale.

Closing price and price-return (in INR/share) of six major Oil-Companies in India from 03 October 2016 – 29 September 2017

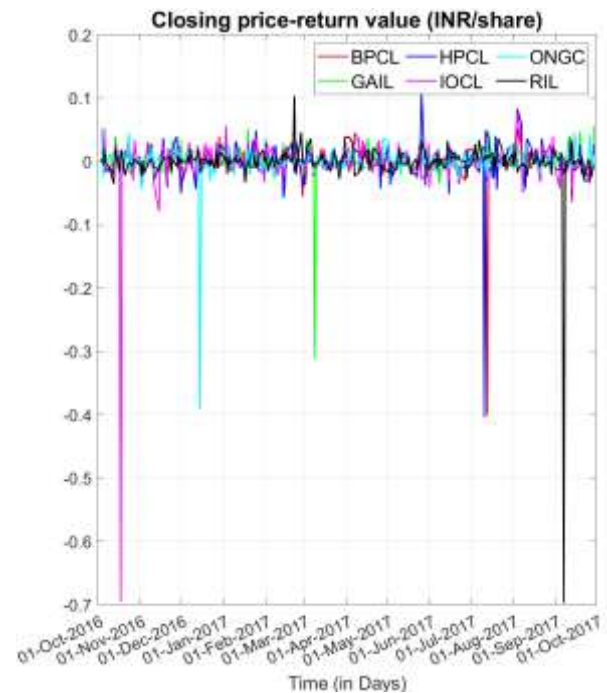
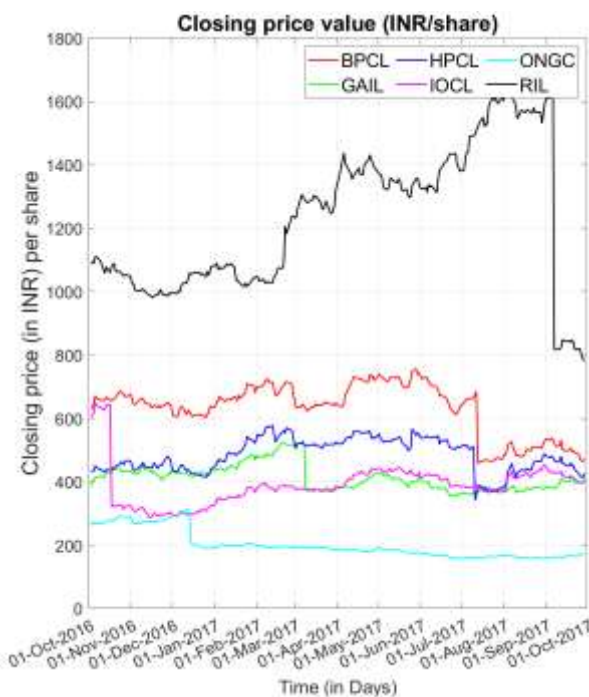


Figure 3. Closing price and price-values of the six major oil companies listed on the BSE in India and their respective price-return values (in INR)

The currency exchange-rate was the third cross-sectional measure to gauge demonetization shock. For that, we studied the monthly (average) exchange-rate which has been shown in the Figure 4. As clear from figure, there is hardly any noticeable fluctuations in the exchange rate, except Yen.

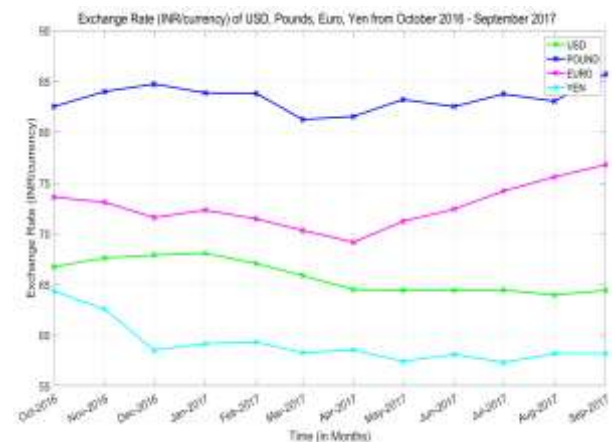


Figure 4. Exchange rate of six major foreign currencies from the (-group of) countries who all together constitute significant chunk of India' international trade. (Source: RBI, <https://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics>)

The fifth cross-sectional measure was total import and export of the both the oil and non-oil commodity. The remarkable difference in total import and export of non-oil commodities can be

observed from the Figure 5 in the month of November 2016.

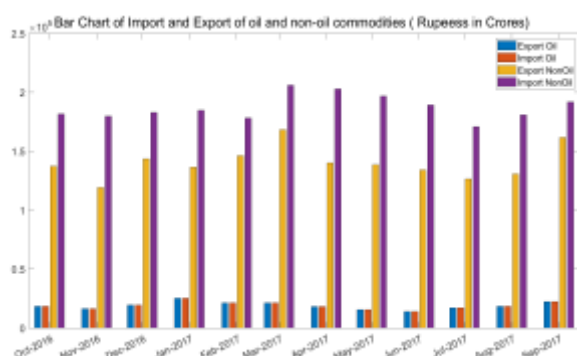


Figure 5. India's total import and export (Rupees in Crores) (Source: RBI, <https://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics>)

The sixth and last cross-sectional measuring entity was amount of cash money in circulation pre- and post-demonetization. Here, as anticipated, the significant drop cash money in circulation and cash money with public in general is very well evident. This further substantiated from the several news reports, including from the RBI, citing the huge difficulty faced by common man just after demonetization shock.

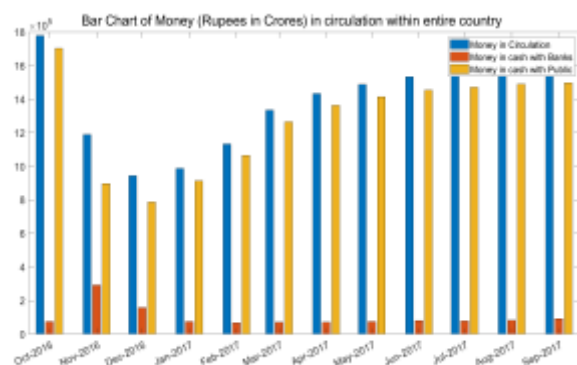


Figure 6. Total currency notes (value in Rupees in Crores) in circulation, cash with all PSBs and cash left with public in general. (Source: RBI, <https://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics>).

CONCLUSION

The cross-sectional causality of the sudden demonetization policy was studied for the duration of October 2016 - September 2017 on various economic entities including (i) the overall fluctuations in the Bombay Stock Exchange (BSE) market, (ii) exchange rate of various currencies such as USA Dollar, British pounds, Euro and Japanese Yen, (iii) the closing share prices of six major Indian oil companies including. The biggest noticeable shock was experience by stock-market (SENSEX), IOCL, net import and export of the non-oil commodities for each household, and flux of cash money either with PSBs, or in circulation or with common man.

DECLARATION:

Some of the content was taken as it is, without changing any words because of gravity of content, from the 2016-17 annual reports published by Reserve Bank of India.

REFERENCES

1. Reserve Bank of India. (2016). Withdrawal of Legal Tender Status for ₹ 500 and ₹ 1000 Notes: RBI Notice. Retrieved from https://www.rbi.org.in/scripts/bs_pressreleasedisplay.aspx?prid=38520
2. Gopakumar G., and Nair V., "Rs 500, Rs 1000 Notes May Be Back, If History Is a Guide," Live Mint, November 9, 2016. <https://www.livemint.com/Politics/uzZltqeHdM PHHgFJaq2BnM/A-history-of-demonetization-in-India.html>
3. National Institute of Public Finance and Policy, Aspects of Black Money (1985) <http://www.nipfp.org.in/book/927/>
4. Ministry of Finance, Department of Revenue, Measures to Tackle Black Money in India and Abroad (2012a) (available at: http://www.dor.gov.in/sites/upload_files/revenue/files/Measures_Tackle_BlackMoney.pdf).
5. Ministry of Finance, Department of Revenue, White Paper on Black Money (2012b) (available at: http://www.finmin.nic.in/reports/whitepaper_blackmoney2012.pdf)
6. Aadhar Act 2016. Aadhar is the world's largest biometric ID system with over 1 billion people being a part of it (it is a 12-digit unique identity number issued to all Indian residents). See Public Data Portal State Wise Saturation, <https://uidai.gov.in/>
7. The "Jan Dhan" initiative (formally "Pradhan Mantri Jan-Dhan Yojana") is the government of India's program for enhancing availability of financial services to the population in an affordable manner—thus far (April 2017) about 280 million bank accounts have been opened under the initiative since it started in August 2014, though a number of the accounts have a zero balance (about 24% and on the latest figures from April 2017). See www.pmfjd.gov.in.
8. Roy Choudhury A., "Demonetisation: In the Works for 6 Months, 10 People in the Loop, Including Raghuram Rajan," Business Standard India, November 10, 2016,

- available at: http://www.business-standard.com/article/economy-policy/demonetisation-in-the-works-for-6-months-10-people-in-the-loop-including-raghuram-rajn-116111000009_1.html
9. Shakil Marya, "Don't Panic, Printing of New Currency Notes Began Months Ago," CNN-News18, available at: <http://www.news18.com/news/india/dont-panic-the-printing-of-new-currency-notes-began-months-ago-1309747.html>
 10. RBI annual report 2016-17, <https://rbi.org.in/scripts/AnnualReportPublications.aspx>
 11. Roy Debayan. (2016, November 22). Demonetization Rush at Banks has Cashiers 'Weeping', Say Bank Unions. News18.com. Retrieved from <https://www.news18.com/news/business/demonetisation-rush-at-banks-has-cashiers-weeping-complain-bank-trade-unions-1314593.html>
 12. Biswas Soutik. (2016, November 12). How India's currency ban is hurting the poor. BBC Retrieved from <https://www.bbc.co.uk/news/world-asia-india-37947029>
 13. TNN. (2016, November 30). Poor lose earnings and time by being in the queue. Times of India. Retrieved from <https://timesofindia.indiatimes.com/city/noida/poor-lose-earnings-and-time-by-being-in-the-queue/articleshow/55695083.cms>
 14. Reserve Bank of India, Technical Report, 2017b "Macroeconomic Impact of Demonetization—A Preliminary Assessment," (pp. 132)
 15. https://rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=38818
 16. https://rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=38224
 17. https://rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=39505
 18. Woodford, Michael (2003). Interest and Prices: Foundations of a Theory of Monetary Policy. Princeton: Princeton University Press.
 19. Krishnan Deepa, and Stephan Siegel (2017). "Survey of the Effects of Demonetization on 28 Slum Neighborhoods of Mumbai," Economic & Political Weekly, 52.
 20. Aggarwal Nidhi, and Sudha Narayanan (2017). "Impact of India's Demonetization on Domestic Agricultural Markets," Indra Gandhi Institute of Development Research Working Paper.
 21. Banerjee, Abhijit, and Namrata Kala (2017). "The Economic and Political Consequences of India's Demonetization," 2017. <https://www.theigc.org/blog/economic-political-consequences-indias-demonetisation/>
 22. Rogoff, Kenneth S. (2016). The Curse of Cash: How Large-Denomination Bills Aid Crime and Tax Evasion and Constrain Monetary Policy (Princeton, NJ: Princeton University Press).
 23. Jain, Ritika (2017). "Is Demonetization a Windfall for the Banking Sector? Evidence from the Indian Stock Market," 37 Economics Bulletin 712.
 24. Jain S. K., Chandra Shekhar, & Deshpande S. (2017). "Market Reaction to Demonetization: An Empirical Study Using Event Study Technique," 3(5) International Educational Scientific Research J. 39
 25. Kumar Rajnish, (April 10, 2017) Effect of Demonetization on Analysts' Estimates: A Natural Experiment. <https://ssrn.com/abstract=2949789>
 26. https://www.bseindia.com/market_data.html
 27. <https://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics>

Corresponding Author

Gurvinder Kaur*

Assistant Professor, Department of Commerce, Sri Guru Tegh Bahadur Khalsa College, University of Delhi, India