Research Journal of Finance and Accounting
ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online)
Vol.8 No.23 2017

Treasury Bond Market: Demonetization and Gst Shocks (An Event Study in India)

Shariq Ahmad Bhat
Junior research fellow, department of Commerce, Pondicherry University, 605014

Abstract
This study provides an evidence that recently announced monetary policy of demonetization and implementation of goods and services tax have negatively affected the Treasury bond market of India. The results show that average yields of treasury bonds were decreasing immediately after the announcement of demonetization and implementation of goods and services taxes in India. Therefore, it provides sufficient evidence that like other sectors of the Indian economy, the recently economic policy announcements have negatively affected Treasury bond market of India.

1. Introduction
Central banks play a vital role in the development of an economy. It uses different tools to control, regulate and supervise the financial markets and different economic activities in the country. The announcement of different policies by central banks or financial ministries are also called events. Recently Indian economy witnessed two most unexpected events such as demonetization of ₹500 and ₹1,000 notes and implementation of Goods and services taxes to reform oldest tax regime in India since independence. Demonetization refers to an economic policy where a certain currency notes of particular denomination are ceased to be recognize as a form of legal tender or it losses it status of currency as a legal tender. On November 8, 2016, the prime minister of India announced the demonetization of all ₹500 and ₹1,000 notes. The two biggest denominations in its currency system. These currency notes accounted for 86% of the country's circulating cash. The aim of the demonetization was to combat rising inflation, to control corruption and to stop the crime of counterfeiting and tax evasion and tackle terrorist financing in the country. The effects of announcement of demonetization left the country high and dry in each sector. it was so severe that India's well known economist and former Prime Minister Dr. Mohan Singh called it as an "organized loot and legal plunder of public wealth by government" The most sufferers of the demonetization were general public and informal sector as this sector mainly deals in cash were faced tough time due to this Demonetization. Sudden removal of cash from market created illiquidity and put their business on a dormant phase. It put a full stop on the production sector as they were facing shortage of cash to purchase raw materials for their production. The general masses were witnessing long serpentine queues in front of ATMs to withdraw cash and in front of banks to deposit the scrapped currency in banks before the expiry of time period permitted by government for depositing this scrapped currencies. Sometimes it took them to spend whole day in a queue to get ₹2000 or more. Nearly 150 people were killed either while standing in serpentine queues to withdraw or deposit cash or in quarrels among masses while getting their number for withdrawal of money from ATM. Similarly, its effects were traced in Indian financial markets. The Bombay Stock Exchange or SENSEX and National Stock exchange or its index NIFTY 50 fell by 6 percent on the day after the demonetization announcement. Similarly, on 1, July 2017 the government of India introduced the goods and services tax in the entire country to reform the oldest tax regime since independence. Goods & Services Tax bill covers the biggest indirect tax reform and is providing a uniform and simplified way of Indirect taxation. It has replaced a number of other taxes like VAT, CST, Service tax, CAD, SAD, Excise, Entry tax, purchase tax etc. in India.

2. EXPECTED CONTRIBUTION
Now the question ascends whether these policies, announcements, or events have affected the sovereign bond yields or not. This study is a humble attempt to examine the immediate effects of demonetization and implementation of GST on short term and long-term treasury bills of India. The study contribute the existed literature since, the literature on impact of these events or announcements are scarce in India. The current study expected to contribute by informing market participants about the effects of monetary policy events on sovereign bond yields in India.

3. EVENT STUDY
The event study has been employed to measure how short and long-term Treasury bond yield are effected by the announcements of the demonetization and implementation of GST. An Event study is the best and easiest way to examine the effects of an economic event (MacKinlay, 1997), therefore the methodology is also suitable for this study. Since, the purpose of this study is to examine the effect of demonetization and GST announcements.

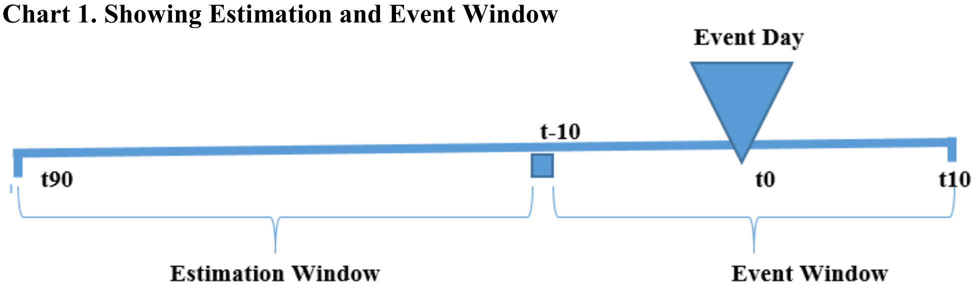
4. EVENT WINDOW

In order to conduct an event study it is important for researcher to identify and specify the event in question. Once the event is identified, the researcher is required to determine the event window. The researcher should kept in mind that event window should be the time period in which the impact had took place. It is always important to select an event window that is greater than the event itself. (MacKinlay, 1997) In this study an event window of one day should be enough as the event is nothing but release of information about a particular event, which happens instantaneously.

5. METHODOLOGY AND DATA:

Event study were employed to examine the effect of announcements of demonetization and implementation of GST on short term and long term treasury bonds of India.. The entire sample period is divided into two parts i.e. the estimation window and event window. The event window again were classified as event window before the event day (t 0 to t-10) and event window after the event days (t 0 to t+10). The estimation window is created with the aim of calculating expected return by considering past experience of the market on the selected Treasury bond returns and the event window is the actual study period. The data is secondary in nature and has been collected from national stock exchange. The frequency of data is daily and sample period is from January 2016 to November 2017.

Chart 1. Showing Estimation and Event Window



The three well-known methods of market models to calculate normal return computation are as follows
(1) Mean Adjusted Returns (2) Market Adjusted Returns (3) Conditional Risk Adjusted Returns. In this study the researcher has employed, "mean adjusted return model" for the analysis. Followed by following tools that are used to apply event study methodology;

- The daily returns (R)
- Abnormal returns (AR)
- Average abnormal returns (AAR)
- Cumulative average abnormal returns (CAAR)

The daily actual return was calculated by using the following formula for treasury bonds in the sample.

$$Rb,t = \frac{p_b t - p_b, t-1}{p_{b,} t-1}$$

$R_{b,}$ is the actual yield of a Treasury bond at time T
$P_{b,}$ is the closing price of a Treasury bond at a time T
P_b-1 is closing price of a Treasury bond at a time T-1 i.e. previous trading day.
The expected return of each Treasury bond is calculated using the average returns obtained from the estimation window of the study i.e. the period of 90 observations. Then abnormal returns were calculated by deducting expected return from actual return earned. Finally, Cumulative Abnormal Return (CAR) is estimated using cumulative value of Abnormal Return estimated.

6. ANALYSIS AND INTERPRETATION

The event study methodology is used both the events of demonetization and GST and the results are discussed below.

It considered 9th October, 2016 (t0) as event day and 26th October, 2016 (t-10) to 24th November 2016 (t+10) as event window; and 13th June 2016 (t-90) to 25th October, 2016 (t-11) as estimation window

Demonetization and its Announcement by Prime Minster of India on 8 November 2016

Since Prime Minister of India, Mr. Narendra Modi made a surprising announcement of demonetization ₹ 500 and ₹ 1000 notes on 8 November 2016 to combat corruption, black money, terror financing and forgeries in India. Long serpentine queues of people were witnessed at the banks through out to deposit their scrapped currency notes as government gave them very limited period of one and half month to deposit the same in the banks. This led the enhancement in the liquidity in banks all over the country. This abrupt move by the Indian government to withdraw nearly 86% of the currency in circulation gave a boost to the bond market and it extended till the end of November with the expectation reduction in monetary rates by the Resave bank of India on 7th December through sixth Bi-Monthly monetary policy announcement. As per the reports by financial analysts, the demonetization has a positive impact on the bond market. Because due to demonetization, the liquidity increased in the entire banking system due to which their Net Demand and Time Liability (NDTL) had gone up. If NDTL goes up, the banks are required to buy bonds. When banks buy bonds, price of bonds goes up. Like other monetary policy announcements, event study methodology is applied to assess the impact of demonetization announcement on Indian Treasury bond market. Even though demonetization announced on 8 November 2016, it was announced after the working hours of Indian financial markets. So, the researcher considered 9th October, 2016 (t0) as event day and 26th October, 2016 (t-10) to 24th November 2016 (t+10) as event window; and 13th June 2016 (t-90) to 25th October, 2016 (t-11) as estimation window. The averages of abnormal returns are calculated for event window separately for before and after the happening of the event.

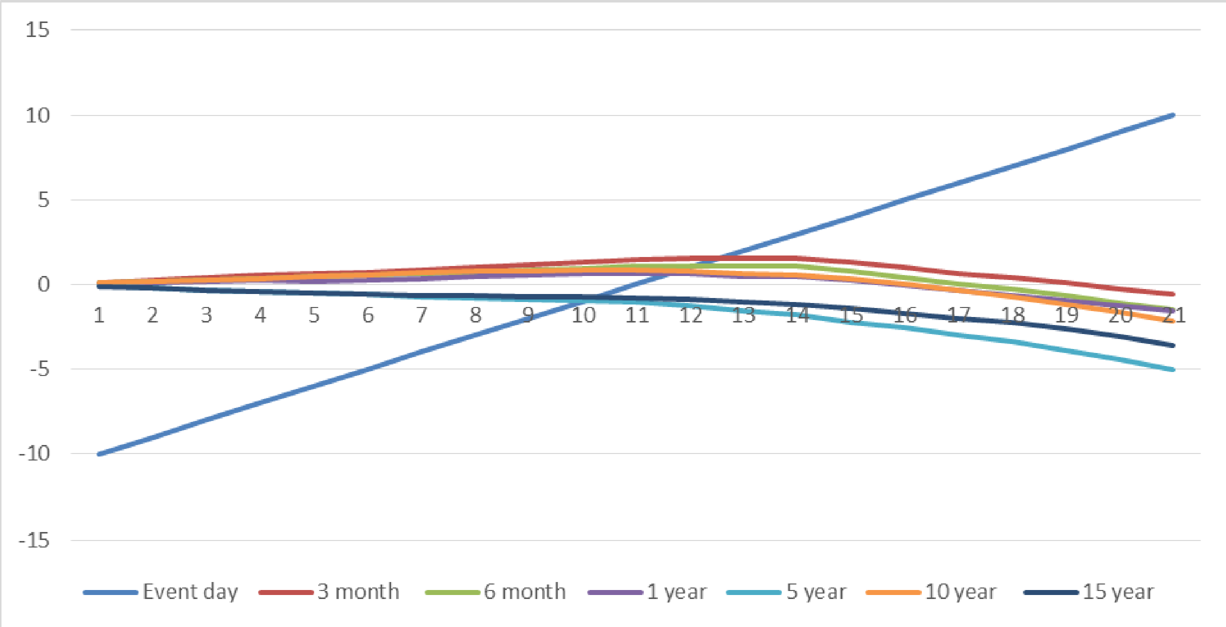
Table 1. Shows Average of abnormal yields of Treasury bonds of India during pre and post demonetization

Event day	3 month	6 month	1 year	5 year	10 year	15 year	Average
-10	0.128963585	0.098459	0.058824	-0.07645	0.07442	-0.11783	0.027732
-9	0.267927171	0.186919	0.126647	-0.19989	0.16384	-0.20766	0.056297
-8	0.396890756	0.275378	0.188471	-0.31634	0.254261	-0.31949	0.079863
-7	0.535854342	0.373838	0.244294	-0.40978	0.362681	-0.40232	0.117428
-6	0.664817927	0.472297	0.221118	-0.51023	0.467101	-0.48815	0.137827
-5	0.753781513	0.560756	0.298941	-0.60167	0.596521	-0.55597	0.175392
-4	0.872745098	0.639216	0.370765	-0.69312	0.716941	-0.6138	0.215458
-3	0.991708683	0.737675	0.452588	-0.78756	0.756361	-0.67663	0.24569
-2	1.160672269	0.866134	0.563412	-0.85601	0.816782	-0.71446	0.306088
-1	1.329635854	0.974594	0.621235	-0.93745	0.870202	-0.74729	0.35182
0	1.46859944	1.073053	0.673059	-1.0459	0.887622	-0.78512	0.378552
1	1.547563025	1.081513	0.638882	-1.25534	0.774042	-0.89595	0.315118
2	1.556526611	1.079972	0.503706	-1.53979	0.651462	-1.03778	0.20235
3	1.555490196	1.078431	0.468529	-1.77124	0.595882	-1.14461	0.130415
4	1.294453782	0.766891	0.265353	-2.19368	0.348303	-1.39944	-0.15302
5	0.983417367	0.39535	-0.05982	-2.56513	0.012723	-1.68827	-0.48695
6	0.672380952	0.03381	-0.36	-2.98057	-0.34986	-1.9791	-0.82722
7	0.391344538	-0.28773	-0.63418	-3.38902	-0.70344	-2.26092	-1.14732
8	0.080308123	-0.66927	-0.93335	-3.92046	-1.18102	-2.62775	-1.54192
9	-0.24072829	-1.07081	-1.24053	-4.45091	-1.6536	-3.07058	-1.95453
10	-0.60176470	-1.50235	-1.57271	-5.02035	-2.15518	-3.59741	-2.40829
Average	0.752885154	0.341148	0.04263	-1.69147	0.109812	-1.20622	-0.2752
Pre-Average	0.71029972	0.518527	0.314629	-0.53885	0.507911	-0.48436	0.171359
Post-Average	0.72389916	0.09058	-0.29241	-2.90865	-0.36607	-1.97018	-0.78714
Table Showing Average of abnormal yields of Treasury bonds of India during pre and post demonetization							

Source: calculated by authors

The results in the table clears shows the negative impact of demonetization on Treasury bond market of India. The average abnormal returns of bond indices were positive and nominal before the event (demonetization). The Overall average abnormal return slipped from 0.1713% to -0.7871%. The average return of 6 month treasury bill (0.51% to0.09%), one treasury bond index (0.31% to -0.29%), five year treasury bond index (-0.53% to -2.90%), ten year treasury bond index (.50% to-0.36%) and Fifteen year treasury bond index (-0.48% to -1.97%) were reduced due to announcement of demonetization. Thus, it can be claimed that like other sectors of the economy, demonetization had a negatively impacted Treasury bond market of India. The results are inconsistent with those of financial analysts, who claim that demonetization had positive impacts on Treasury bond market of India.

Graph 1 shows the average yields during Pre and post demonetization



The graph clearly show that average yields of treasury bonds in India falls with the announcement of demonetization. Thus, it provides sufficient evidence to prove that demonetization has negatively affected Treasury bond market of India.

Table 2. Shows Average of abnormal yields of Treasury bonds of India during pre and post Goods and services tax

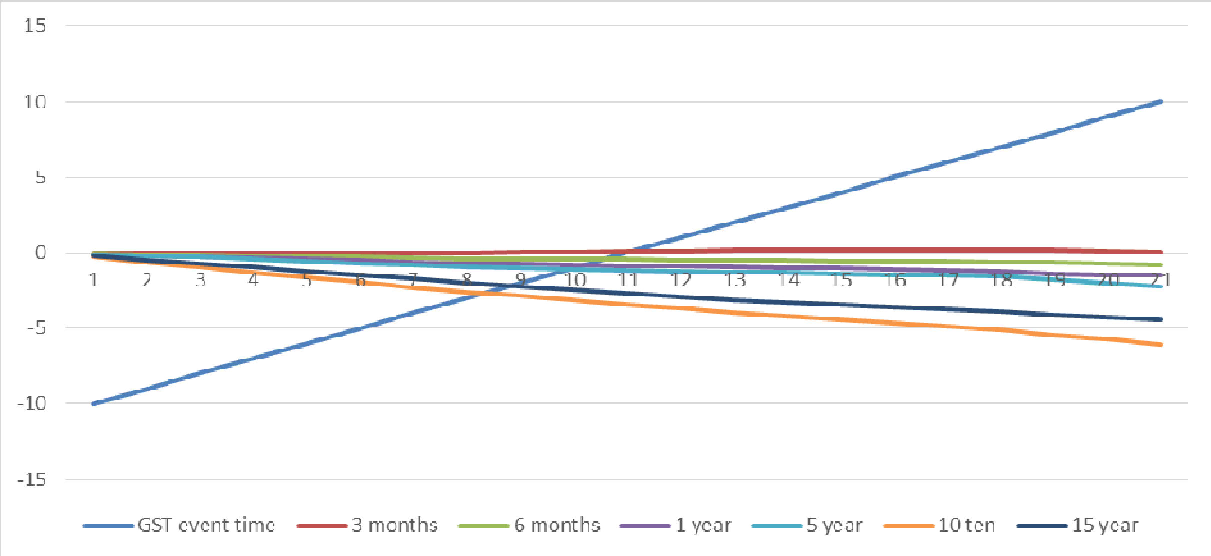
GST event time	3 months	6 months	1 year	5 year	10 ten	15 year	average
-10	-0.011036415	-0.05154	-0.09518	-0.09645	-0.29258	-0.21983	-0.12777
-9	-0.012072829	-0.09308	-0.18235	-0.19489	-0.60716	-0.45466	-0.25737
-8	-0.023109244	-0.14462	-0.28653	-0.29934	-0.94274	-0.71549	-0.40197
-7	-0.044145658	-0.18616	-0.37071	-0.42678	-1.29632	-0.97832	-0.55041
-6	-0.045182073	-0.2377	-0.44688	-0.55023	-1.6249	-1.22615	-0.68851
-5	-0.046218487	-0.28924	-0.52906	-0.68667	-1.94648	-1.47997	-0.82961
-4	-0.047254902	-0.34078	-0.61124	-0.82312	-2.26806	-1.7338	-0.97071
-3	-0.008291317	-0.38232	-0.68541	-0.94856	-2.58664	-1.99763	-1.10148
-2	0.030672269	-0.40387	-0.72559	-1.04101	-2.86822	-2.23846	-1.20775
-1	0.069635854	-0.42541	-0.78376	-1.12545	-3.1448	-2.48029	-1.31501
0	0.10859944	-0.44695	-0.84294	-1.1909	-3.41538	-2.70812	-1.41595
1	0.147563025	-0.46849	-0.90212	-1.25634	-3.68596	-2.93595	-1.51688
2	0.166526611	-0.49003	-0.96129	-1.32179	-3.95654	-3.16378	-1.62115
3	0.185490196	-0.51157	-0.98547	-1.34824	-4.17912	-3.31461	-1.69225
4	0.204453782	-0.54311	-1.04165	-1.38668	-4.4117	-3.44944	-1.77135
5	0.223417367	-0.55465	-1.10282	-1.44013	-4.64328	-3.60027	-1.85295
6	0.222380952	-0.58619	-1.155	-1.48457	-4.88586	-3.7511	-1.94006
7	0.201344538	-0.61773	-1.24918	-1.54902	-5.13544	-3.91692	-2.04449
8	0.180308123	-0.64927	-1.36235	-1.74546	-5.44702	-4.09175	-2.18592
9	0.109271709	-0.72081	-1.45353	-1.97891	-5.7416	-4.25858	-2.34069
10	0.028235294	-0.78235	-1.49471	-2.21735	-6.06318	-4.42541	-2.49246
Average	0.078123249	-0.42504	-0.82227	-1.10057	-3.29252	-2.5305	-1.3488
Pre-Average	-0.01370028	-0.25547	-0.47167	-0.61925	-1.75779	-1.35246	-0.74506
Post-Average	0.16689916	-0.59242	-1.17081	-1.57285	-4.81497	-3.69078	-1.94582
Shows Average of abnormal yields of Treasury bonds of India during pre and post Goods and services tax							

Source: calculated by authors

The results in the table clears shows that there was negative impact of implementation of GST on Treasury bond market of India. The average abnormal returns of bond indices were negative and nominal before the event

(GST). The Overall average abnormal returns slipped from -0.74% to -1.94%. The average return of 6 month Treasury bill (-0.25% to -0.59%), one Treasury bond index (-0.47% to -1.17%), five year Treasury bond index (-0.61% to -1.57%), ten year Treasury bond index (-1.75% to -4.81%) and Fifteen year Treasury bond index (-1.35% to -3.69%) were reduced due to announcement of implementation of GST. Thus, it can be claimed that implementation of Goods and services tax had a negatively impacted Treasury bond market of India.

Graph 1 shows the average yields during Pre and post implementation of Goods and services tax in India.



The graph clearly show that average yields of treasury bonds in India falls with the announcement of implementation of Good and Services tax in India. Thus, it provides sufficient evidence to prove that implementation of Goods and service tax has negatively affected Treasury bond market of India.

Conclusion

Like other sectors of the economy, the financial markets are also affected by the economic policies and reforms. This study provides a sufficient evidence that recently monetary and economic reforms have negatively affected the Treasury bond market of India. The results show that average yields of treasury bonds were decreasing due to the announcement of demonetization and implementation of goods and services taxes in India. Therefore, it is concluded that like other sectors of the economy, the recently economic policy announcements have negatively affected Treasury bond market of India.

References

MacKinlay, Craig A. "Event Studies in Economics and Finance." *Journal of Economic Literature* 35.1 (1997): 13-39. Web.

Bomfim, A. N. (2003). Monetary Policy and the Yield Curve, (202).

Chauhan, S., & Kaushik, N. (2017). Impact of Demonetization on Stock Market : *Indian Journal of Accounting (IJA)*, *XLIX*(1), 127–132.

Chun, A. L. (2007). Expectations , Bond Yields and Monetary Policy, (February), 1–47.

Cioran, Z. (2014). Monetary Policy , Inflation and the Causal Relation between the Inflation Rate and Some of the Macroeconomic Variables. *Procedia Economics and Finance*, *16*(May), 391–401. http://doi.org/10.1016/S2212-5671(14)00818-1

Fransson, L., & Tysklind, O. (2016). The effects of monetary policy on interest rates. *Sveriges Riksbank Economic Review*, *1*, 38–60.

Kontonikas, A., & Maio, P. (2016). Monetary Policy and Corporate Bond Returns *.

Kotnal, J. R. (2017). Demonetization impact the Indian economy : A descriptive study. *International Journal of Applied Research*, *3*(3), 599–603.

Marin, D., & Schnitzer, M. (2005). Disorganization and ÿnancial collapse. *European Economic Review*, *49*(49), 387–408. http://doi.org/10.1016/S0014-2921(03)00033-3

Measures, S., & Remonetization, F. O. R. (2017). Impact of Demonetization on Economy , Businesses And People Suggestive Measures For Remonetization Phd Chamber of Commerce And Industry. *Phd Research Bureau Phd Chamber Of Commerce And Industry*, 23.

Nadu, T., Nadu, T., Nadu, T., & Nadu, T. (2017). Impact of Demonetization on Indian. *International Journal of Management (IJM)*, *8*(3), 75–82.

Narain, & Rani, A. (2017). The Stability of Indian Stock Market After Demonetisation. *Business Analyst*, *37*(2), 39–56.
Prabhu, M., Girish, V., & Mamatha, R. (2017). " Demonetization and its effect on Banking Sector ." *IOSR Journal of Business and Management (IOSR-JBM)*, *7668*, 20–22.
Radhakrishnan, S. (2017). Impact of Demonetisation on Construction Industry. *SSRG International Journal of Economics and Management Studies (SSRG-IJEMS)*, *4*(January), 24–27.
Road, B. (2017). " Impact of Demonetisation on Indian Stock Market ." *International Journal of Research in IT and Management (IJRIM)*, *7*(5), 89–99.
Singh, P., & Singh, V. (2016). Impact of Demonetization on Indian Economy. *3rd International Conference on Recent Innovations in Science, Technology, Management and Environment*, (November 2016), 290–300.
Uke, L. (2017). Demonetization and its effects in India. *SSRG International Journal of Economics and Management Studies (SSRG-IJEMS)*, *4*(February), 18–23.