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Performance evaluation of treasury bills traded in the money market: A descriptive approach

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***Abstract*---**The financial market is combined with many instruments, which supports to function the market without any deviation and helps to develop the economy. The present paper aims to investigate the various types of treasury bills traded in the money markets and its performance and growth from the year 2011-12 to 2020-21. The secondary data were collected from various websites of Reserve Bank of India (RBI), Securities Exchange Board of India (SEBI), and Centre for Monitoring Indian Economy (CMIE). The collected data were analysed by applying simple percentage analysis, Annual Growth Rate (AGR), and Compound Annual Growth Rate to assess the performance of Treasury bill (T-Bills).

***Keywords*---**T-Bills, money market instruments, risk return.

Introduction

Money play very important role in all over the development of trade, commerce, and industry because these are fully depending upon money. In the world, each

and every operations run by the motive of getting money so that it is treated as one of the motivating factors among the human resource. Country's economic development, Agriculture and Industry pays major contribution to the GDP. The industrial as well as agricultural sector activity is based on either money or credit basis. Credit plays a fundamental part in the scheme of industrial production because the business process cannot be carried by cash basis alone so a high developed and organised credit system possible only in a well-developed money market to supply the adequate finance. "The industrial position of England, America and other Western countries has been achieved to a very great extent by the development of well-organized money and capital markets." Modern industrial structure and organization have become very complex and necessitate highly developed money markets. They have been facilitated by and in turn have facilitated the growth of highly organized money markets. A market where short-term funds (a maturity period of less than or up to one year) are borrowed and lent is called money market. It is a market for short-term financial assets (Instruments) those are near alternative for money. The instruments dealt with the money market are liquid and can be turned over quickly at low transaction cost and without loss. Money market represents the country's pool of short-term investible funds to meet the short-term requirements of the economy.

Money Market provides a mechanism for evening out short-term liquidity imbalances within an economy. Hence, the presence of an active and vibrant money market is an essential pre-requisite for growth and development of the economy. Money Market plays vital role in the economic development of the country as well as fulfilling the emerging requirements of the government and corporate. A very striking characteristic of Indian money market has been the seasonal monetary stringency and high rate of interest rate lending during busy season. The demand for money in Indian money market is seasonal in nature. India being an agricultural predominant economy, the demand for money is generated from the agricultural operations. During the period between October and April more agricultural activities, takes place leading to a higher demand for money. There are very wide fluctuations in the rates of interest in the money market from one period to another year. The wide fluctuations create problems in the money market (Dhaval.S). Indian Money Market has organised and unorganised sub markets. Unorganised money markets are catering the needs of the rural people. The unorganised money market is out of control of RBI. In organised money market, many participants are acting as lenders only. Banks with surplus funds cannot invest them profitability short period. On the other hand, those who require short-term funds are unable to raise them from the market at competitive rates (knockingpoint.blogspot.in). Bill Market provides short-term funds to businesspersons. In India, the bill market is not popular due to overdependence of cash transactions, high-discounting rates, and problem of dishonouring of accommodation bills and so on. The bill market in India has not yet been fully developed (Aparijitha Sinha). The underdeveloped money market hinders the development of trade, Commerce and Industries. With the view to develop money market, government and RBI have introduced money market instruments now and then. However, it noticed that Treasury Bills is active in trading than other instruments even though it fetch very low amount of yield. Some instruments are inactive in the market. Very limited movement of money market instruments creates a very serious problem since it affects the liquidity

position of government, banks and corporate and hinders economic development. These problems induced the researcher to take up the topic for the study.

Theoretical background

Money market plays vital role in the economic development of the country as well as fulfil the emerging requirements of the government through mobilize the fund from money market instruments not only government and also corporate. Even the money market provides many advantages but still the market faces several inconveniences in functioning. There are numerous problems have Indian money market. Under-development - Indian money market has not been organized into a single integrated all-Indian market. It is divided into small segments mostly catering to the local financial needs. Indian money market is underdeveloped compared with advanced money markets like New York Money Market and London Money Market. Dichotomy – in Indian money market is the existence of two markets namely organised and unorganised. The organised market control over by the RBI, Commercial bank, Financial Institutions and so on. Lack of Coordination & Integration – it is very difficult to incorporate the organised and unorganised Indian money market and unorganised market is out of control of RBI and also a less coordination between the commercial banks and cooperative bank as well as state bank and foreign banks.

Diversity in the Interest rates – there are many different interest rate in organised money market itself and different rate of interest rates existing in different segments and also in rural the interest rate of unorganised money market is high. Shortage of funds – the supply of Indian money market is less than the actual demand; the shortage accrued an account of various factors like inadequate banking facilities, low savings, lack of banking habits, existence of parallel economy and there is vast amount of black money in a county, which leads to shortage of fund in Indian money market. Absence of organised bill market - a bill market provides short-term funds to businesspersons. In India, the bill market is not popular due to overdependence of cash transactions, high-discounting rates, problem of dishonour of bills and so on. Inefficient and Corrupted management – it is one of the major problem in Indian Money Market. Inefficiency is due to faulty selection, lack of training, poor performance appraisal, faulty promotions. There is need for well-trained and dedicated workforce in banks for growth and success but in India, some of the bank officials are inefficient and corrupt. Inadequate banking facility – the commercial banks opened large scale but the rural area is not covered due to poverty because of their savings are small and mobilise of small savings is very difficult. The involvement of banking system in different scams and the failure of RBI to prevent these abuses of banking system shows that Indian banking system is not yet a well organised sector.

Seasonality of Money market – India is an agricultural based country such agriculture is busy during November to June. During the period the demand of fund is high but the money market suffers from Monetary Shortage which resulting in high rate of interest. During slack season rate of interest falls & there are plenty of funds available. The Indian money market is not as developed as market in western countries. This is very handicap to Indian trade, Commerce, and Industries. The amount of money available is not sufficient to satisfy the all

the demands and resort is had to borrowing money from London money market, which is the international financial centre. Therefore, the researcher come to conclusion, the present study about the Developments and challenges of Indian Money Market is necessary and this study provides some suggestions to resolve the problems faced by the Indian Money market through the analysis.

Review of literatures

Vipul Bhatt and Arvind Virmani (2005) summarised that the short-term money markets in India are getting progressively integrated with those in the USA even though the degree of integration is far from perfect. Covered interest parity is found to hold for, while uncovered interest parity fails to hold. The difference between the two can be attributed to the existence of an exchange risk premium over and above the expected depreciation of the currency. Analysis of RBI interventions in response to foreign exchange shocks suggested that these may play a role in the deviations from interest parity and the study needs further work to be done on this as well as on instruments of other maturity such as 1 month and 6 month but the consistent data was not available to continue. Saurabh Ghosh and Narayan Chandra Pradhan (2008) used monthly real and financial sector variables over the period from April 2002 to September 2007 to analyse the determinants of weighted average discount rate after taking into account the seasonal fluctuations in the commercial paper issuances.

The empirical result of the study indicated that there is an increase in the average monthly issuances of Commercial Paper, weighted average discount rate and volatility of weighted average discount rate over the years. The study found that the Weighted Average Discount Rate was followed a weak seasonal pattern with high rates during January to June, WADR generally remained higher followed by a decline during the rest of the year. They concluded that the increase in call rate and cut off yield represent tight liquidity conditions and therefore, have a positive impact on the WADR. The issue amount on the other hand has a negative impact on WADR indicating large issues when the cost of fund raising through the CP route is low. Bhupal Singh and Sarat C. et.al, (2008) illustrated the money market reaction to repo-auctions and points out whether such reaction is consistent with applied auction rules. The policy implications are analysed in the light of alternative rules pertaining to discriminatory price auctions and fixed rate repos.

The study summarised that the bank moved over to a fixed rate repos system since November 1997, under which the rates are pre-announced and banks or financial institutions are required to submit bids indicating the volume of repos. The study also revealed that the money market rates adjusted to both a relatively low and high repo rate and the degree of adjustment being higher in the case of the former than latter. The results of the study suggested that the fixed rate repos provided a floor rate for money market and provided effective in stabilising the money market rates around the level of comparison to discriminatory price auctions. Saurabh Ghosh and Indranil Bhattacharyya (2009) attempted to find relationship between spread and volatility in the overnight segment of the money market and tried to assess the impact of various monetary policy instruments used by the Reserve bank of India on market volatility. The study found that the spread in the money market was positively related to conditional volatility.

Therefore, this relation has undergone a change in recent years and lagged spread plays an important role in modelling spread along with conditional variance of call rate.
Regarding monetary policy and money market volatility, the empirical findings indicated that expansionary monetary policy reduce volatility of spread and weighted call rate. Among individual policy instruments, announcement of CRR changes have a negative impact on the volatility of spread and call rate. The other policy variable like bank rate, repo and reverse repo rates have mixed impact on volatility of call rate and spread. Rao M.S. and Pillai K.R. (2011) stated that among the various alternatives of short-term financing, commercial paper is an important first choice debt instrument. The present article makes an attempt to make a comparative analysis on the effect of financial crisis on the returns of Commercial Paper in India and America based on secondary data source. The study depicted that the behaviour of rate of return and risk associated with Commercial Paper against the backdrop of the global financial crisis.

Neha Puri (2012) analysed the real effects of financial markets subsequent to financial liberalisation in an economy with risk averse savers and learning by lending. Transition from full financial repression to full financial liberalisation might initially slow down the growth process or even induce a recession, whenever the initial level of valuable investments known by the financial institutions is sufficiently scanty. However, lending activity leads to accumulation of information regarding valuable investments. The main purpose of the paper is to advocate and encourage financial market in the overall development of the economy. Stephen D'Silva and Bernadette D'Silva (2012) aimed to analyse the effect of rising inflation rates on the Indian Money Markets so thus the research was conducted to explore the relationship between short-term lending instruments and WPI prices. The study concluded that the several growths in prices it has greatly affected the lending rates of short-term financial instruments thus making borrowings costlier for the market participants. It is suggested that government should take quick steps to combat with this rising inflation, as it not only affects the money markets but also make it difficult for the country to achieve the sustainable economic growth.

Deepak Mohanty (2012) summarised that the development of domestic financial markets and gradual deregulation of interest rates, monetary policy operating procedure in India in the recent years has evolved towards greater reliance on interest rates to signal the stance of monetary policy. This process is buttressed by significant evidence that policy rate changes transmit through the term structure of interest rates, though the intensity of transmission varies across financial markets. The modus operandi of policy rate change by which it affects the output and inflation remains is studied. By following a quarterly structural vector auto regression model, the study found evidence that policy rate increases have a negative effect on output growth with a lag of two quarters and moderating impact on inflation with a lag of three quarters. The overall impact persists through 8-10 quarters. These results are found to be robust across alternative specifications with different measures of output, inflation and liquidity. Moreover, significant unidirectional causality was found from policy interest rate to output, inflation and various measures of liquidity except broad money (M3), underlining the importance of interest rate as a potent monetary policy tool.

GolakaNath and Aparna Raja N (2012) stated that the short term market is an important source for banks and institutions to secure funds to align their short term asset liability mismatches. Central bank uses the market to signal policy stance changes. In India, RBI uses monetary policy not only to signal the policy stance but also uses the same to map growth dynamics of the economy. The article looked at creating an indexed rate taking into account all three segments into consideration rather than picking up only one rate. The liquidity was estimated as ratio of LAF and NDTL. The relationship between indexed rate and liquidity was tested and found to be rational. The article also found a rational relationship between the spread and ratio of LAF and NDTL along with money market transaction volume.

Lekha S. Chakraborty (2012) analysed Interest Rate Determination in India: Empirical Evidence on Fiscal Deficit-Interest Rate Linkages and Financial Crowding Out from FY 2006-07 (April) to FY 2011-12 (April). Contrary to the debates in policy circles, the paper finds that an increase in the fiscal deficit does not cause a rise in interest rates. Using the asymmetric vector auto regressive model, the paper establishes that the interest rate is affected by changes in their serve currency, expected inflation, and volatility in capital flows, but not by the fiscal deficit. This result has significant policy implications for interest rate determination in India, especially since the central bank has cited the high fiscal deficit as the prime reason for leaving the rates unchanged in all of its per cent policy announcements. The paper analyses both long and short-term interest rates to determine the occurrence of financial crowding out, and finds that the fiscal deficit does not appear to be causing either shorts or long. This study concluded that is any evidence of financial crowding out in the recent years of financially deregulated interest rate regime. The econometric result revealed that neither the long-term interest rate is determined by fiscal deficit in India.

Deepa Chavan and Makarand Upadhyaya (2013) aimed to analyse the effect of rising inflation rates on the Indian Money Markets. The author concludes that several growth in prices has greatly affected the lending rates of short term financial instruments thus making borrowings costlier for the market participants and have suggested that government should take quick steps to combat with this rising inflation as it not only affects the money markets but also make it difficult for the country to achieve the sustainable economic growth. Smita Sharma (2013) studied the relationship among Treasury Bills of various maturities in India. On plotting, various Treasury Bills (14 days, 91 days, 181 days and 364 days) seemed to follow approximately similar trends; the aim was to prove the relationship empirically. The analysis was done using data on Treasury Bills of three month (91 days) and six month (181 days) maturity. Individually, the Treasury Bills series were found to be stationary at level and empirical analysis shows that there is a stable long term relationship between them. The results of present paper show long run relationship and short run correction in Treasury Bills rate, which is important for the market of Treasury Bills of various maturities to run efficiently.

Sanjay K. Singh and N Aparna Raja (2014) summarised that the short-term interest rate environment, credit rating and market liquidity conditions play an influential role in the Indian CP market activity. The empirical finding shows that

CP issuance yield depends on varying credit quality across the CPs issuers and prevailing market liquidity. The short-term risk premium also affects CP issuance activity depending on spread between T-Bills yield and CPs issuance rate. There is no significant relationship between industrial production activity and CPs issuance has been detected during the analysis period, high growth potential in productivity/business activity may derive the growth pace of the CP market due to its association with higher demand of operational funding even at marginal higher cost. RavindraTripathi and Lovely Srivastava et.al, (2014) stated that the implication of debt and its role in acceleration the development of economic growth in system along with areas hindering the growth of debt market. The main objective of the study is to analyse the changing pattern of Indian debt market and performance of government and non-government securities.

For the purpose, the study collected secondary data from various reports of ISMR from 2002-2012. To analyse the efficiency and growth performance of the debt market, the study used least square method and it helps to forecast the future growth. The study found the main outcome is very limited investment in debt securities as compared to investment equities further they have derived that the projection trend of debt investment is not impressive in India till now and there is an urgent need to relook the matter by the government of India and regulatory authorities towards providing better infrastructure investors for investment in retain debt market. The author concluded that firms with greater reliance on approachable debt will also experience laxer external monitoring and thus engage in outsourcing activities. In addition to these changes there are more requirements to improve the market policies and other aspect of trading facility for the growth of debt market.

Research design

The present study is descriptive in nature. The present study used secondary data alone. The researcher collected data from various published documents, reports, websites, and database network like CMIE, RBI database on Statistics on Indian Economy, Annual Report of SEBI, and Yearbook of CRISIL. The researcher produced the objective of current study is to know the overall knowledge about the Indian T-Bill Market and its various types trading performance so in this aspect the researcher frame the analysis is quite sufficient to provide detailed information about the Indian T-Bill Market. For analysis the researcher used Simple percentage, Growth Rate to identify the growth of instruments, Annual Growth Rate is to access the growth rate of the instrument during the study period and Compound Annual Growth Rate is used to find out the overall growth of the instrument at the end period.

Data analysis and interpretation

Table 1
Ownership Pattern of 14-Days Treasury Bills Outstanding

Year	14-day Treasury bills (Rs. in Millions)		
	State Governments	Others	Total

2010-11	1754900 (99.70)	5300 (0.30)	1760200 (100)
2011-12	1967480 (99.00)	19960 (1.00)	1987440 (100)
2012-13	2565450 (97.86)	56210 (2.14)	2621660 (100)
2013-14	3646910 (97.96)	75980 (2.40)	3722890 (100)
2014-15	3477880 (97.60)	85630 (2.40)	3563510 (100)
2015-16	3232180 (96.76)	108370 (3.24)	3340550 (100)
2016-17	3718150 (99.17)	30960 (0.83)	3749110 (100)
2017-18	3052890 (99.09)	28150 (0.91)	3081020 (100)
2018-19	3152090 (98.95)	33320 (1.05)	3185410 (100)
2019-20	3436570 (98.67)	46210 (1.33)	3482770 (100)
2020-21	4597900 (99.43)	26200 (0.57)	4624090 (100)

Source: Data computed from CMIE and RBI data website.

It is interpreted from the above table that the 14 days Treasury bills consisted with Sate Government and Others. The total outstanding amount of 14 days T-bills ranges from Rs.1760200 million to Rs.4624090 million in 2006-07 and 2016-17 respectively. Over the study period, the 14-days T-bills show growth with slightly fluctuating trend. The outstanding amount increased from 2010-11 to 2013-14 as Rs.1760200 to Rs.3722890 million. It is interested to note down from the above table that the majority portion of 14-days T-bills occupied by the State Government, the percentage ranges from 96.76 per cent (Rs.3232180 millions) as compare with total amount in the year 2014-15 to 99.43 per cent (Rs.4597900 million) in the year 2020-21. The other institutions have a nominal portion of share from the total outstanding amount of 14-days T-bills. It ranges from 0.30 per cent (Rs.108370 million) to 3.24 per cent in 2010-11 and 2015-16 respectively.

Table 2
91 Days T-Bills Market Trade and Weighted average Yield

Year	Number of Trade	Trade Value (Amount in Crores)	Average Weighted Yield
2009-10	954	19762.38	5.38
2010-11	404	7518.00	6.53
2011-12	360	8201.78	6.36
2012-13	699	22468.87	6.95
2013-14	910	56254.79	3.36
2014-15	802	54472.39	5.86

2015-16	1231	82746.60	8.17
2016-17	456	28320.29	8.16
2017-18	688	70839.57	8.87
2018-19	440	40015.63	8.43
2019-20	330	35950.89	7.31
2020-21	182	17669.99	6.45
AGR	-80.92%	-10.58%	19.88%
CAGR	-13.98%	-1.01%	1.67%

Source: Computed form RBI Data base network.

It is evidenced from the above table that the number of trades of 91-days T-bill ranges from 182 to 1231 in 2014-15 and 2019-20 respectively. The number of trade shows fluctuating trend and it decreases from the year 2017-18 onwards except in 2016-17. It is not grew compare with beginning year to the end of the study period so the annual growth rate shows negatively as 80.92 per cent. The trade value of 91-days treasury bills highest amount in the year 2015-16 as Rs.82746.60 crore and the lowest value recorded in the year 2010-11 as Rs.7518 crore and over a period of time the amount fluctuated between these two figures. The number of trades reflects in the trade value because it fluctuates according to increase and decrease of number of trades. Therefore, the effect affected the growth rate of trade value of 91-days bill market. In 2020-21, by comparing the beginning year the value decreased as 10.58 per cent so the annual growth rate shows negatively, and the overall growth rate of trade value showed negatively as 1.01%. The weighted average yield of 91-days bill shows as 8.87 in 2017-18, it the highest yield during the study period and the lowest yield 3.36 recorded in 2013-14 as 3.36. The average yield of T-bill only shows as positive growth in annual wise and also overall basis so that the AGR is 19.88 per cent and 1.67 per cent belongs to CAGR.

Table 3
Growth Rate of 91-day Treasury Bill Market

Year	Number of Trade	Trade Value	Average Weighted Yield
2009-10	-	-	-
2010-11	-57.65%	-61.95%	21.38%
2011-12	-10.89%	9.09%	-2.55%
2012-13	94.16%	173.95%	9.22%
2013-14	30.18%	150.36%	-51.59%
2014-15	-11.86%	-3.16%	74.29%
2015-16	53.49%	51.90%	39.36%
2016-17	-62.95%	-65.77%	-0.08%
2017-18	50.87%	150.13%	8.74%
2018-19	-36.04%	-43.51%	-5.01%
2019-20	-25.00%	-10.15%	-13.26%
2020-21	-44.84%	-50.84%	-11.79%

Source: Computed based on the value of table 2

It is interpreted from the above table the growth rate of trade positively recorded in the year 2012-13, 2013-14, 2015-16 and 2017-18 as 94.16 per cent, 30.18 per

cent, 53.49 per cent, and 50.87 per cent respectively but the rest of the study period the growth rate showed as negative points. The trade value growth recorded positively from 2011-12 to 20013-14 only in between the period the performance is very good and succeeding period the performance of the market is not well, so it has so many fluctuations. By considering the growth of average weight yield of 91-day T-bill market, it shows an increasing trend from the year 2014-15 to 2017-16. The highest growth rate recorded in the year 2010-11 as 74.29 per cent.

Table 4
Ownership Pattern of 91-day Treasury Bills Outstanding

Year	91-day Treasury Bills (Rs. in Millions)				
	Banks	Primary dealers	State Governments	Others	Total
2010-2011	578590 (43.97)	-	572970 (43.55)	164210 (12.48)	1315770 (100)
20011-12	685810 (32.60)	-	1010020 (48.01)	407810 (19.39)	2103640 (100)
2012-13	1193120 (44.93)	-	668000 (25.15)	794440 (29.92)	2655560 (100)
2013-14	1341410 (44.79)	-	50000 (1.67)	1603620 (53.54)	2995030 (100)
2014-15	854610 (33.42)	-	397240 (15.53)	1305450 (51.05)	2557300 (100)
2015-16	1511090 (34.20)	642460 (14.54)	1037270 (23.48)	1227250 (27.78)	4418070 (100)
2016-17	1894930 (34.90)	1138880 (20.98)	1770370 (32.61)	625050 (11.51)	5429220 (100)
2017-18	1294790 (22.34)	996950 (17.20)	2365090 (40.81)	1138280 (19.64)	5795090 (100)
2018-19	1506210 (22.55)	1342360 (20.10)	2155130 (32.27)	1674450 (25.07)	6678170 (100)
2019-20	1613550 (24.15)	1176940 (17.62)	2214370 (33.14)	1676400 (25.09)	6681260 (100)
2020-21	1183020 (17.87)	1057330 (15.97)	1958120 (29.58)	2421700 (36.58)	6620160 (100)

Source: Data computed from CMIE and RBI data website.

It is observed from the above table that the 91-day T-bills outstanding consisted with participation of Banks, Primary Dealers, State Government, and Others. The 91-days T-bills increased over the study period with slight fluctuations in the years 2014-15 and 2019-20 and it ranges from Rs.1315770 million to Rs.6681260 million. The outstanding growth highly increased from the year 2015-16 by the Primary Dealers participation in the T-bill market. From the total traded value, the majority traded value occupied by the Banks in the years 2010-11, 2012-13, 2015-16 and 2016-17 as 43.97 per cent , 44.93 per cent, 34.20 per cent and 34.90 per cent respectively. By considering the State Government, the majority contribution has in the year 2011-12 (48.01 per cent), 2017-18 (40.81

per cent), 2018-19 (32.27 per cent), and 2019-20 (33.14 per cent) respect to the total amount traded in the 91-days T-bill. The other institutions have contributed as 53.54 per cent, 51.05 per cent and 36.58 percent in 2013-14, 2014-15 and 2020-21 to the total amount of T-bills. The primary dealers contributed a meagre per cent from 14.54 to 20.98 over the study period from 2015-16 to 2020-21 but from 2010-11 to 2014-15, the primary dealers did not contribute to their share in 91-days T-bill market.

Table 5
182 days T-Bills Market Trade and Weighted Average Yield

Year	Number of Trade	Trade Value (Amount in Crores)	Average Weighted Yield
2009-2010	539	11436.78	5.75
2010-2011	511	11399.78	6.63
20011-12	223	4885.01	6.99
2012-13	144	6166.95	6.97
2013-14	249	12391.77	3.49
2014-15	221	13789.88	6.00
2015-16	648	54180.18	8.38
2016-17	464	41715.54	8.19
2017-18	582	62519.68	8.85
2018-19	384	38721.32	8.53
2019-20	145	20905.60	7.47
2020-21	97	12741.94	6.53
AGR	-82.00%	11.41%	13.57%
CAGR	-14.44%	0.99%	1.17%

Source: Computed form RBI data base network.

It is interpreted from the above table that the number of trades fluctuated over a period of time and it ranges from 97 to 648 numbers of trades in 2020-21 and 2015-16 respectively. Annual growth rate of trade number shows negative. The negative value 82 per cent indicates that the number of trade decreased compare with beginning year of the study period. The compound annual growth rate also shows as negative rate as 14.14 per cent. The trade value of the 182-day T-bill market also shows highly fluctuating and it ranges from Rs.4885.01 crore to Rs.62519.68 crore. By considering the annual growth rate 11.41 per cent the bill trade value increased 0.11 times compare with base year of the study period. The compound growth rate indicated as 0.99 per cent only because it is not growing as much. The weighted average value of the bill market shows as more than 6 in the period from 2010-11 to 2012-13 and more than 8 shows from 2015-16 to 2018-19. From 2018-19 onward the yield rate shows a decreasing trend. The annual growth rate and compound annual growth rate of yield is higher (13.57% and 1.117%) than the growth rate of trade value and number of trades. The 182-days T-bill market trend shows decreasing trend and it reflected in all aspects of the market factor like number of trades, trade value and average weighted yield.

Table 6
Growth Rate of 182-day Treasury Bill Market

Year	Number of Trade	Trade Value	Average Weighted Yield
2009-2010	-	-	-
2010-2011	-5.19%	-0.32%	15.36%
20011-12	-56.36%	-57.14%	5.28%
2012-13	-35.42%	26.24%	-0.21%
2013-14	72.91%	100.93%	-49.91%
2014-15	-11.24%	11.28%	71.89%
2015-16	193.21%	292.89%	39.56%
2016-17	-28.39%	-23.00%	-2.16%
2017-18	25.43%	49.87%	7.96%
2018-19	-34.02%	-38.06%	-3.61%
2019-20	-62.23%	-46.01%	-12.36%
2020-21	-33.10%	-39.05%	-12.56%

Source: Computed based on table 5.

It is interpreted that the number of trades has positive increases in the years 2013-14, 2015-16 and 2017-18 as 72.91 per cent, 193.21 per cent and 25.43 per cent respectively. The highest positive growth in the year 2015-16 as 193.21 per cent and high negative growth rate recorded in the year 2019-20 as 62.23 per cent. by considering the trade value half of the study period has positive increase and remaining years negative growth rate. There is no constant growth in the growth rate of trade value and number of trades. The weighted average yield rate of T-bill growth shows fluctuating trend. It ranges from -0.21 per cent to 71.89 per cent in the years 2012-13 and 2014-15. The growth of 182-day T-bill market struggled over a study period.

Table 7
Ownership Pattern of 182-day Treasury bills Outstanding

Year	182-day Treasury bills (Rs. in Millions)				
	Banks	Primary dealers	State Governments	Others	Total
2010-11	403020 (59.12)	-	150130 (22.02)	128580 (18.86)	681730 (100)
2011-12	464160 (49.64)	-	138120 (14.77)	332790 (35.59)	935070 (100)
2012-13	306800 (35.36)	-	186610 (21.51)	374250 (43.13)	867660 (100)
2013-14	388920 (46.44)	-	7500 (0.90)	441080 (52.67)	837500 (100)
2014-15	258130 (30.51)	-	26000 (3.07)	561880 (66.42)	846010 (100)
2015-16	456190 (26.57)	445250 (25.93)	77000 (4.48)	742580 (43.25)	1717020 (100.23)

2016-17	923300 (36.54)	1024330 (40.54)	7160 (0.28)	574230 (22.73)	2526640 (100.09)
2017-18	963570 (35.86)	953450 (35.48)	93660 (3.49)	676450 (25.17)	2687130 (100)
2018-19	974660 (33.32)	1230970 (42.08)	106900 (3.65)	612510 (20.94)	2925040 (100)
2019-20	1079680 (33.95)	1457800 (45.84)	240640 (7.57)	402380 (12.65)	3180510 (100)
2020-21	1147640 (32.91)	1286960 (3.90)	582260 (16.70)	470470 (13.49)	3487310 (100)

Source: Data computed from CMIE and RBI data website.

It is observed form the above table that the 182-day outstanding of T-bills showing increase trend over the study period. From 2015-2016 onward the total turnover increased tremendously due to Primary Dealers entered in the market. The total amount traded in 182-day t-bill market ranges from Rs.681730 million to Rs.3487310 million in 2010-11 and 2020-21 respectively. By considering the Banks contribution to T-bills, it is higher than the other participations in the years 2010-11 as 59.12 per cent (Rs.403020), 2011-12 as 49.64 per cent (Rs.464160), 2017-18 as 35.86 per cent (Rs.963570) and 2020-21 as 32.91 per cent (Rs.1147640) to the total traded amount. The Primary Dealers contribution is very high in the years 2016-17, 2018-19, 2019-20 as 40.54 per cent, 42.08 per cent, and 45.84 per cent. In the year 2017-18, the primary dealers contributed the amount more or less equal to the contribution of Banks. The contribution of State Government is not much more compare with the other participants in the 182-days T-bill market. The Other institutions performed well in the years from 2012-13 to 2015-16 with ranges from 43.13 per cent to 66.42 per cent to the total amount traded in 182-days T-bill market.

Table 8:
364 Days T-Bills Market Trade and Weighted Average Yield

Year	Number of Trade	Trade Value (Amount in Crores)	Average Weighted Yield
2009-10	3129	68044.95	5.69
2010-11	1349	33777.56	6.51
2011-12	434	12438.82	6.95
2012-13	469	17281.36	7.50
2013-14	475	24179.61	3.79
2014-15	418	29475.43	6.23
2015-16	1253	128146.04	8.33
2016-17	1028	107401.70	8.07
2017-18	1380	152644.50	8.73
2018-19	991	104330.90	8.50
2019-20	440	55697.86	7.46
2020-21	239	39749.11	6.59
AGR	-92.36%	-41.58%	15.82
CAGR	-20.85%	-4.77%	1.34%

Source: Computed form RBI Data base network

It is understood from the above table that the number of trades is very high in the initial period of the study period, and it does not cross over the study period. In the years 20010-11 and from 2015-16 to 2017-18, the number of trades has more than thousand times after 2017-18 the performance of number of trades were showed decrease trend. The same concept followed by the trade value of T-bill also and it ranges from Rs.12438 cr. to Rs. 152644.50 cr. in 2011-12 and 2017-18. Even though the AGR and CAGR of number of trade (-92.36% and -20.85%) and trade value (-41.58% and -4.77%) showing negative growth but the yield of the 364-day T-bill market positive growth, which means the yield does not depend on the number of trade and trade value but it gives a constant yield to the T-bill holders so that the AGR and CAGR of weighted average yield shows as 15.82 per cent and 1.34% respective manner.

Table 9
Growth Rate of 364-day Treasury Bill Market

Year	Number of Trade	Trade Value	Average Weighted Yield
2009-10	-	-	-
2010-11	-56.88%	-50.35%	14.46%
2011-12	-67.82%	-63.17%	6.68%
2012-13	8.06%	38.93%	7.90%
2013-14	1.27%	39.91%	-49.41%
2014-15	-12.00%	21.90%	64.20%
2015-16	199.76%	334.75%	33.74%
2016-17	-17.95%	-16.18%	-3.07%
2017-18	34.24%	42.12%	8.22%
2018-19	-28.18%	-31.65%	-2.62%
2019-20	-55.60%	-46.61%	-12.30%
2020-21	-45.68%	-28.63%	-11.67%

Source: Computed based on table 8

It is observed from the above table that the year-by-year number of trade shows decreasing trend except in the year 2012 to 2014, 2015-16 and 2017-18. The trade value of the T-bill shows increasing trend from the year 2012-13 to 2015-16 and succeeding years of the study its performance is not well in trading, so it shows decreasing trend. Majority years the yield of t-bill shows increasing trend to compare with respective previous year. The negative growth rate shows in the year 2013-14, 2016-17, and 2018-19 onwards.

Table 10
Ownership Pattern of 364-day Treasury Bills Outstanding

Year	364-day Treasury bills (Rs. in Millions)				
	Banks	Primary dealers	State Governments	Others	Total
2010-11	1239970 (65.81)	0	239600 (12.72)	404480 (21.47)	1884050 (100)
2011-12	1211260 (52.69)	0	170180 (7.40)	917440 (39.91)	2298880 (100)

2012-13	990640 (45.47)	0	194060 (8.91)	993810 (45.62)	2178510 (100)
2013-14	828750 (48.25)	0	22500 (1.31)	866480 (50.44)	1717730 (100)
2014-15	712090 (41.07)	0	14600 (0.84)	1007020 (58.08)	1733710 (100)
2015-16	680940 (24.02)	826670 (29.16)	16550 (0.58)	1310410 (46.23)	2834570 (100)
2016-17	970690 (20.30)	2237910 (46.81)	17220 (0.36)	1555250 (32.53)	4781070 (100)
2017-18	1251630 (23.38)	2189250 (40.89)	32140 (0.60)	1880330 (35.12)	5353360 (100)
2018-19	1573530 (27.49)	2339520 (40.87)	48700 (0.85)	1763040 (30.80)	5724810 (100)
2019-20	1703890 (28.80)	2628460 (44.43)	81860 (1.38)	1501780 (25.39)	5915980 (100)
2020-21	2245560 (36.87)	2401820 (39.44)	102800 (1.69)	1339870 (22)	6090070 (100)

Source: Data computed from CMIE and RBI data website.

It is understood from the above table that the traded amount of 364-day t-bill increased over the study period and it ranges from Rs.1717730 million in 2013-14 to Rs.6090070 million in 2020-21. It is interesting to note out that the Primary Dealers contributed more from the succeeding year of the market participation. The participation ranges from 29.16 per cent to 46.81 per cent to the total amount traded in the market. The second major contributor is 'other institutions. The other institutions show their highest growth from the year 2012-13 to 2015-16. The overall contribution ranges from 21.47 percent (Rs.404480) in 2006-07 to 58.08 per cent (Rs.1007020) in 2014-15. The Banks occupied the third contributor of the 364-day T-bill market, in 2010-11 and 2015-16, the bank shows a major contribution and rest of the study period is not that much contributed to compare with other participators. In 364-day T-bill market also Primary Dealers play an important role in contribution of outstanding from 2016-17 onwards.

Findings, Suggestions and Conclusion

From the data analysis, it is found that the T-Bill market (91-days, 182-days and 364-days) outstanding performance were increased form the year 2011-12 due to the primary dealers' participation in the 91-days, 182-days and 364-days T-bill market, which means the performance of T-bill market, increased after the primary dealers' participation. If the number of participator increases, it will help to the further development of the market. The yield of the T-Bill market is low in the 182-day bill market compare with other market namely 91-days and 364-days and the overall average weighted yield growth is very less, it ranges from 1 per cent to 2 only. The T-Bill market (91-days, 182-days, and 364-days) outstanding performance were increased form the year 2011-12 due to the primary dealers' participation in the 91-days, 182-days and 364-days T-bill market, which means the performance of T-bill market, increased after the primary dealers' participation.

If the number of participators increases, it will help to the further development of the market so it is suggested that the government relaxing the norms to participate the primary dealers in the 14-days T-bill market the performance of 14-day T-bill market also increased, and it will leads to help the overall development of T-Bill markets of India. The overall development helps to the government to procure the short-term fund to utilise the economic development of the country. It is suggested that the trading participator and trading value of the 91-days and 364-days T-Bill markets and number of participators of the 182-days T-Bill market Annual Growth Rate and Compound Annual Growth Rate of such market is not satisfactory level because those markets growth rates showed negatively so it is suggested to the government that the Central bank make another one committee to find the real problem faced by the market and made rectification the problems faced by those markets. The yield of the T-Bill market is low in the 182-day bill market compare with other market namely 91-days and 364-days and the overall average weighted yield growth is very less, it ranges from 1 per cent to 2 only. So, it is suggested to the central bank to maintain a nominal standard rate for treasury bill market to give constant return on investment then only the number of participator and trade will be increased to meet out the money for various schemes and fulfil the need for the economic development of the nation.

The whole article is designed, to create an image about the historical trend of Treasury bills market in India over 10 years (2009-2021). To meet the objective of the paper, descriptive method of data analysis was employed. This paper has been figured out the supply and demand trends of T-bills by segmenting the investors group into bank and non-bank categories, total treasury bills actually sold to the market over the review period, the trends of annual weighted yield associated with each maturity period, the co-movement between T-bills annual weighted yield with Minimum deposit interest rate and Time deposit interest rate and over the review period and the co-movement between T-bills annual weighted yield and inflation rate(measured by CPI rate) over time. The Study reveals the following outcomes;-

Even if it was started before two decades since its establishment T-bills market is in its initial stage and the participants are very few (mostly public institutions). The yield applied for T-bills in Ethiopia is unfair and much more below the level of market interest rate (minimum deposit interest rate of 5.0%). The price of Government treasury bills in India doesn't take into account the level of Inflation (it erodes out) the return from investing on T-bills and shows approximately a persistent trend. The use of (issuance) T-bills for the purpose of monetary policy instrument (Open Market Operation) is almost insignificant in India. Since the return from investing on government securities (T-bills) is low which is about 1.32% in 2016 on annual basis than the minimum deposit interest rate of currently 5.00% (taken as a policy rate by NBE) investors choose to invest on other alternatives than investing on T-bills.

Limitations

The government seasonally update the data base website so historical data could not be traced from the government database. The non-availability of historical

data of money market instrument the researcher could not make detailed analysis of past years (before 2004) development of Indian money market instruments. The suggestion made by the researcher is only applicable to the Indian Money Market and its instruments. The other money market cannot be followed or implemented because the financial system and trading pattern may be varied from country to county and time-to-time.

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