THE EFFECT OF NON-INTEREST INCOME ON BANK PERFORMANCE AND RISK: EVIDENCE FROM INDIA

[1]G.Elakkiya, [2]Dr.T.Mohanasndaram, [2]Dr.P.Karthikeyan
[1]PG Student, [2]Assistant Professors,
Department of Management Studies,
[1]Kongu Engineering College, Perundurai, Erode-638 060, Tamilnadu.

ABSTRACT

In recent times, the banks had largely diversified its income sources from traditional activities to other non-traditional activities such as brokerage and fee based services, sale of third party products, securities and forex transactions, etc.., This study attempts to investigate the impact of non-interest income on bank performance and risk. The sample of 57 banks (23 public sector banks, 11 old generation banks, 7 new generation banks, 16 foreign banks) is used. The data is collected for the period of 13 years i.e., from 2005 to 2017. The effect of different components of non-interest income on the banks performance and risk are analyzed using statistics and correlation matrix. The findings of this study show that the non-interest income increases both the profitability and risk. It also recommends public and private sector banks to focus on diversified income and aggressive marketing of ancillary services to increase their income.

Keywords: non-interest income, performance, risk, correlation

1. INTRODUCTION

Financial system is a structure in an economy that facilitates exchange of funds between investors, borrowers and lenders and helps in the transformation of savings into Investments. Banks perform a catalytic role in enhancing economic growth of any country. Likewise, economic health of a nation has a remarkable impact on banks performance. Banks play a vital role in providing financial resources to all the sectors of economy. They help government in meeting various social objectives like financial inclusion, passing welfare benefits to weaker section of the society and offering assortment of ancillary services. Accepting deposits and advancing loans are the primary functions of banks. Banks also provide agency and general utility services as secondary functions. The banks accept deposits in three forms such as current account, savings account and fixed deposits account. The banks advance loans in the form of cash credit, personal loans, home loans, vehicle loans, working capital loans, etc.., Liberalization and economic reforms had totally changed the Indian banking sector. In the earlier days, the banking sector was highly dominated by public sector banks but that situation had changed as the liberalization lead to the formation of new private banks. The banking industry in India is mainly governed by the Reserve Bank of India Act, 1934 and the Banking Regulation Act, 1949.

The decrease in the interest rates leads to decrease in bank's profitability. In order to overcome this decrease and to survive in the most competitive environment, banks started to compete in the market with innovative products and services in order to increase their market share and to maximize their profits. Non-interest income of a bank is the income that arises from bank’s non-traditional activities. Though the primary job of any commercial bank is to reap profit through their core functions of accepting deposit and deployment of credit i.e. interest spread, the non-interest income from the ancillary services are becoming increasingly important in the highly competitive industry. The banks are now more capable of offering various ancillary services than earlier and as a result of this, they are giving extensive attention to non-interest income. Many innovative products and services are introduced in the financial markets by banks

which allow them to compete effectively with other leading players. This diversified activities carried out by the banks allow them to earn fee-based income rather than depending solely on interest margin. Banks also charge fees for deposit services, processing loans, card services and also perform capital market oriented activities such as underwriting, mergers and acquisitions, advisory, etc.., For all these services banks charge certain fees. Income earned through fees and other charges is called non-interest income. The banks also earn commission through third party products like insurance, mutual funds, etc..,

Technology and regulation changes lead to the growth of non-interest income for banks. Fees contribute to the major part of non-interest income, therefore it is also known as fee based income. As the fee based income is not relationship based, its switching cost is much lower than interest income which leads to increase in the volatility of banks earnings. Not only large banks small banks also focused on increasing their income sources over the last few years. The major sources of non-interest income includes income from fudiciary services, income from exposure to financial instruments, service charges in deposit accounts, fees from credit cards, mortgage refinancing, sale of third party products, mutual funds and ATM surcharges and other non fee income.

1.1. Background of the study

Banking system plays a significant role in the Indian economy as it caters to the needs of credit for all sections of the economy. In the earlier days, the profitability of the banks was highly dependent on the traditional activities of lending and raising deposits from the public. Liberalization leads to the emergence of new private sector banks and foreign banks which results in diminishing of interest rates and increase in competition. This leads to decrease in profitability of banks. To overcome this situation banks started moving towards non-traditional financial activities to maintain their position in the banking industry. In the modern era, banks are one of the largest service sectors in India. Providing innovative products and quality service help them to achieve a competitive advantage. The focus of the banks has changed from customer acquisition to customer retention to maximize their profits. The unstable revenue streams increases the risk of the banks.

Non-interest income is more stable than interest income and therefore the banks diversify their business activities in order to reduce the risk. Non-interest income activities include remittance services, advisory services, sale of third party products, letter of credit, bank guarantees, etc.., These activities contribute to the major portion of the income for the banks in the competitive environment. It also helps in improving the service quality which in turn helps to improve customer satisfaction and customer retention. Improvement in customer retention can have an impact on its profitability. Therefore, it is necessary to study the impact of such non-interest income activities on the banks performance and risk. The understanding of the components of non-interest income that have major impact on the profitability of the banks helps them to improve their contribution towards such activities. This study aims to study the impact of non-interest income on banks performance and risks and their share in the total income.

2. LITERATURE REVIEWS

Adwaita Maiti and SK Jana (2017) traced the changes in the profitability over 2008-09 to 2012-13 and identified that profit, NIM, non performing assets ratio and non-interest income were the major factors that greatly influence the overall performance and profitability of banks in India. **Ahamed (2017)** investigated whether the shift of banks income activities towards non-income activities increased the profitability of Indian banks and showed that the banks performance increases with increase in income diversifications and it is more beneficial to private foreign banks than public banks. **Hamdi et al., (2017)** studied that the relative performance, bank size, loan specialization, new e-payment channels, ATMs and cards determine the non-interest income and the non-interest income appeared to be negatively and significantly correlated with bank risk and increase on non-interest income increased the banks performance. **Limei Sun et al., (2017)** attempted to investigate the relationship between non interest income and bank's profits and risks in Chinese banking sector and showed that the performance and non interest income are negatively correlated i.e., negative relation will weaken when its non interest income is greater

than the threshold value. **P Ozek (2017)** explained that the bank size had a significant impact on each component of non-interest income and it showed that faster growth and higher profitability were associated with trading income.

P. Abedifar (2017) examined the impact of non interest activities on credit risk and interest spread in order to seek the evidence on the existence of cross subsidization between interest and non-interest activities and showed that the increase in the income share from fiduciary activities has lower credit risk for banks with total assets ranging between $100million and $1billion. There is no link between non-interest income and credit risk for large and distressed banks. **Tarawneh et al., (2017)** found that the profitability increases for the banks with higher CAR, large size, loans and non-interest margin and it decreases for the banks with higher overheads. **Thanh Hang et al., (2017)** implied that the bank's profitability and risk increases with increase in income diversification and it also implied that increase in growth; loan and deposits would have profitability with less volatility. **Yong Tan (2017)** showed that the bank's performance increases with increase in ROA, NIM and economic growth but its profitability decreases with increase in competition. It also suggests Chinese government to implement relevant policies with high professional knowledge and experience to develop the shadow banking in China.

Abugri et al., (2016) established that the non-interest income was positively related with banks risk but when the asset size increases this relationship become negative. In terms of ownership structure, the increase in non-interest income decreases the risk for private domestic and foreign banks and in case of public domestic banks, the risk increases with increase in non-interest income. **Ashok Gupta and Gautam Sen (2016)** identified that the banks had greatly diversified over the past few years and the returns were not high as compared to that of the risks taken by the banks. **Barry Williams (2016)** showed that mainly the 2008 financial crisis had changed the revenue composition and risks in banks of Australia. **Dhananjay Bapat and Mahim Sagar (2016)** examined that there exist a significant positive relationship between ownership/diversification and the ratio of non-interest income to interest income and the significant difference was not observed between the bank size and the ratio of non-interest income to interest income. **K.B.Singh et al., (2016)** implied that the noninterest income plays a significant role in foreign banks than private and public sector banks and the private banks have more risk appetite than other banks. **Mutuma and Mungatu (2016)** recommended the banks in Kenya to extend their activities into various sources and also suggested Government to encourage banks to carry out these activities. **Alhassan (2015)** also implied that the small banks had low efficiency than large banks. The highly diversified banks had high cost efficient and low profit efficient.

Kohler (2015) implied that the bank's stability was mainly determined by their income structure and it became less risky when its share of non-interest income got increased. **Nguyen et al., (2015)** analysed that the risk of the bank got reduced by increase in the income diversification. **Mndeme (2015)** found that relying on noninterest income activities has adverse impact on Tanzanian bank performance but suggested to carryout noninterest income activities as they lead to diversification and mitigate the risk of banks. **BS Damankah et al., (2014)** showed that inflation, liquidity, increased loan losses and bank origin had significant positive impact whereas CAR and bank size had negative impact on the non-traditional activities. **Calmes and Theoret (2014)** found that the banks with higher involvement of banks in fee based activities had increased the bank performance. **Gupta and Singh (2014)** identified that non-interest income of Indian scheduled commercial banks are found to be more volatile than interest income. **Karakaya et al., (2014)** examined that the non interest income was the main revenue factor and it was higher for participation banks than commercial banks because of lower competition. **Kohler (2014)** showed that if they increased their share of non-interest income, investment-oriented banks became significantly more risky**.**

Lee et al., (2014) analysed that the non-interest income didn't exert any impact on profitability of banks but it reduces the risks of banks in Asia. It showed that this results vary depend on business specification and income levels. **Li Li (2014)** established that only a small portion of the banks showed an increase in efficiency with inclusion of non-interest income while there is no significant increase in most efficiency levels. **Kohler (2013)** established that the impact of non-interest income on risk depends upon business model of a bank and further indicated that smaller and retail-oriented banks gained substantial benefits from income diversification whereas, larger and investment-oriented banks needs to increase the

interest income to become more stable. **Hidayat et al., (2012)** showed that the effect of product diversification on bank risk depends highly on the bank's asset size. The degree of product diversification was negatively associated with bank risk for small-sized banks positively related to bank risk for large-sized banks. It suggested that deregulation encouraged banks to become more involved in non-traditional activities.

3. METHODOLOGICAL FRAMEWORK

3.1. Research gap

There are a number of studies related to the impact of non-interest income on banks performance and the risks involved in it but researchers have not come across the study pertaining to the comparison of new generation banks with other public and private sector banks and the share of non-interest income to the total income and the component of non-interest income source that contributes more to the total income were not studied. Moreover many of the past studies are country specific and the studies related to the Indian banks are very few.

3.2. Statement of the problem

The deregulation of interest rates leads to thinner interest margin for banks due to the competitive environment. The falling interest rates result in lower interest income and profit for banks, forcing banks to emphasize more on fee-based activities. Non-interest income of banks include Service charges on deposit and loan accounts, revenues through trading of Forex and derivative contracts, Insurance sales, commission on drafts, safe deposit lockers, bill collection, credit card fee, merchant banking charges, Letter of credit, Bank guarantees etc. This study is an endeavour to explore how the bank performance and risks are altered due to the effect of non-interest income of Indian banks. The research also proposes to analyze how the private banks and foreign banks have fared in comparison to the public sector banks. Apart from underlining the benefits and risks of high non-interest income, this study would help in guiding the central bank and commercial banks to strategize their policies with regard to non-interest income.

3.3. Objectives of the study

The study has the following research objectives;

- To identify the effect of non-interest income on banks' performance.
- To assess the impact on non-interest income on banks' risk
- To capture the most associated form of non-interest income among different bank groups.
- To analyze and compare the share of non-interest income among bank groups.

3.4. Theoretical framework

The variables used in this study comprised of both dependent and independent variables. The independent variables used here are ratio of interest income to total income, ratio of components of non interest income to total income and the dependent variables used in this study are ratio of non-interest income to total income and standard deviation of ratio of non-interest income to total income. Ratio of non-interest income to total income and standard deviation of ratio of non-interest income to total income are used to measure the performance and risk of banks respectively. The ratio of non-interest income to net operating income was used to estimate the degree of diversification of income. In order to study the deep insights of risk implications, the net non-interest income was classified into ratio of brokerage and service fee income to net income, ratio of dividend income to net income, ratio of income from securities transactions to net income, ratio of income from forex transactions to net income and ratio of miscellaneous income to net income. The quantitative data are then analyzed using econometric packages such as E views. Research tools such as descriptive statistics and Correlation are applied to study the effect of non-interest income on banks performance and risk.

3.5. Data Sources

The proposed research study is an empirical in nature, as it is based on actual data of different banks obtained from the authenticated source of CMIE-Prowess. The data on key variables are collected and analyzed for the period of last thirteen years i.e. from 2005 to 2017. The data design applied for the study is secondary in nature. The sample size is decided based on the number of banks in each bank category and availability of data for last 13 years. Our sample consists of data from 23 public sector banks, 11 old generation private sector banks, 7 new generation private sector banks and 16 foreign banks.

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

Descriptive statistics quantitatively explains the main features of the data series. The normality test has been conducted for all the variables. The excess of unit Skewness coefficient is considered to be fairly extreme. Similarly, high or low Kurtosis value indicates extreme leptokurtic or extreme platykurtic. Though, there are many methods available to check the normal distribution of data, Jarque–Bera statistics is used to test the normality of each data series. Null hypothesis (H0): Data are normally distributed. When p-value of Jarque-Bera test is greater than 0.05, null hypothesis is rejected. Skewness value of 0 and kurtosis value of 3 indicate that the variables are normally distributed. Table exhibits the descriptive statistics of the variables used in the study.

Table No.1.Descriptive Statistics for Public Sector Banks

PUBLIC SECTOR BANKS							
	%of non-interest income to total income	Brokerage to total income	dividend to total income	Securities transactions to total income	Forex transactions to total income	Miscellaneous income to total income	%of Interest income to total income
Mean	0.11008	0.036417	0.002085	0.030409	0.011914	0.029254	0.876848
Median	0.104483	0.032952	0.000436	0.024116	0.009371	0.027909	0.881486
Maximum	0.345367	0.117692	0.214171	0.133535	0.096721	0.107176	0.95315
Minimum	0.046627	0.006513	0	0	0	0.000677	0.335241
Std. Dev.	0.036498	0.019787	0.01255	0.022627	0.010522	0.015484	0.05183
Skewness	1.249754	1.141395	16.23747	1.540348	3.57279	0.8726	-4.420793
Kurtosis	8.066001	4.936598	274.6485	5.887225	22.96985	5.034323	43.27417
Jarque-Bera	397.5691	111.6459	932475.7	222.0916	5604.432	89.5031	21181.44
Probability	0	0	0	0	0	0	0
Sum	32.91383	10.88876	0.623525	9.092244	3.562426	8.746879	262.1776
Sum Sq. Dev.	0.396976	0.11668	0.046933	0.152566	0.032991	0.071444	0.800534
Observations	299	299	299	299	299	299	299

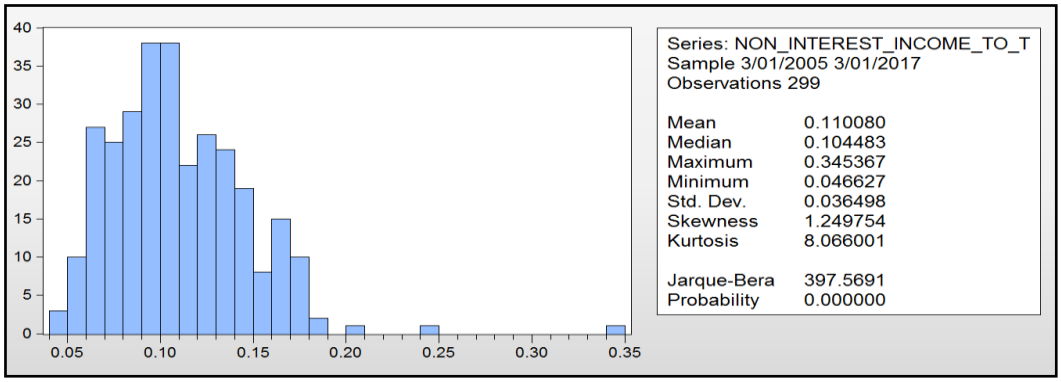

Figure No.1:Descriptive Statistics of ratio of non-interest income to total income for public sector banks

The results show that the data are not normally distributed which is supported by Jarque-Bera test. Probability of zero indicates that the null hypothesis of normality assumption is rejected. These leptokurtic (higher kurtosis) and fat-tailed characters are due to the existence of extremely large spike in data series. The maximum ratio of non-interest income to total income registered during estimation period (2005-2017) is 0.35 but most of the bank's non-interest income ratio lies between 0.05 and 0.20 (occupies mostly the left portion of the graph). The mean value of ratio of non-interest income to total income shows that the non-interest income contributes only to 11% of total income. The standard Deviation of the ratio of non-interest income to total income indicates that the ratio of non-interest income to total income is widely spread and away from the mean value and the non-interest income source is not stable for public sector banks. The Skewness of 1.25 reveals the distribution is positively skewed. Kurtosis of 8.066 is higher than the ideal value of 3. The P-Value of Jarque-Bera test is zero which is less than 0.05, meaning that the distribution is not normal.

Of these 11%, income from brokerage and financial service fees contributes to 3.64%, dividend income contributes to 0.21% (some banks do not earn any income from dividend), 3.04% of income is contributed by securities transactions and sale of investments, 1% income from forex transactions and 3% from miscellaneous income. These results show that income from brokerage and financial service fees form a major source to non-interest income for public sector banks. Dividend income and income from forex transactions are very less while comparing with other sources of non-interest income.

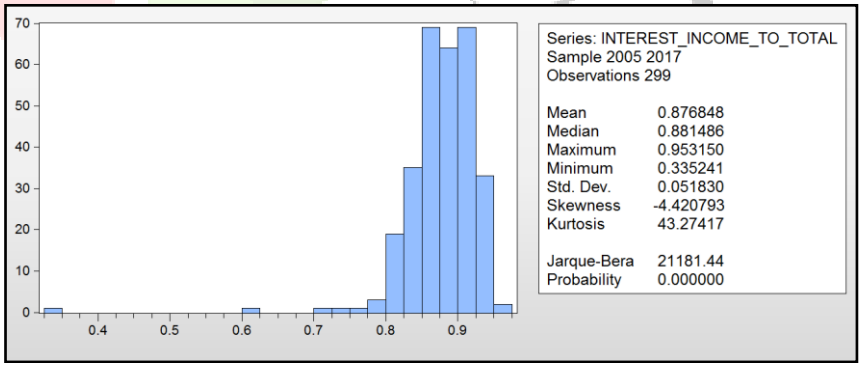

Figure No.2: Descriptive Statistics of ratio of interest income to total income for public sector banks

The mean and median of ratio of interest income to total income is 0.87 and 0.88 respectively. The maximum ratio registered during estimation period (2005-2017) is 0.95 and the minimum ratio during the stated period is 0.34. The minimum value may be an outlier because mostly all the banks' ratio of interest income to total income lie on the maximum side. The Skewness of -4.42 reveals the distribution is negatively skewed or skewed left (distribution is asymmetrical). Kurtosis of 43.27 is higher than the ideal value of 3. The higher kurtosis and fat-tailed characters are due to the existence of extremely large spike in data series. Probability of zero indicates that the null hypothesis of normality assumption is rejected. The P-Value of Jarque-Bera test is zero which is less than 0.05, showing that the data are not normally distributed.

The interest income contributes 88% to total income which is very much higher than its non-interest income which contributes only 11%. It shows that even though the public sector banks diversified their income sources into various ancillary services; its income relies heavily on its traditional activities of lending and accepting deposits.

Table No.2:Descriptive Statistics for New generation Private Sector Banks

NEW GENERATION PRIVATE SECTOR BANKS							
	%of non-interest income to total income	Brokerage to total income	dividend to total income	Securities transactions to total income	Forex transactions to total income	Miscellaneous income to total income	%of Interest income to total income
Mean	0.179542	0.115313	0.010733	0.021647	0.023938	0.007912	0.802326
Median	0.182096	0.116206	0.000768	0.016463	0.022354	0.002459	0.807251
Maximum	0.50737	0.183697	0.233551	0.118801	0.163113	0.057875	0.890526
Minimum	0.045633	0.022659	0	0	0	0	0.49263
Std. Dev.	0.067648	0.035347	0.030606	0.018223	0.02358	0.012613	0.061326
Skewness	1.799992	-0.5766	5.49956	2.069018	3.795627	2.348405	-2.51482
Kurtosis	9.963797	2.711566	36.12845	10.36511	21.91355	8.258823	12.9901
Jarque-Bera	233.0144	5.35789	4620.051	270.6044	1574.867	188.5037	474.3354
Probability	0	0.068636	0	0	0	0	0
Sum	16.33836	10.4935	0.976659	1.969869	2.178377	0.719956	73.01163
Sum Sq. Dev.	0.411866	0.112446	0.084307	2.99E-02	0.050041	0.014319	0.338476
Observations	91	91	91	91	91	91	91

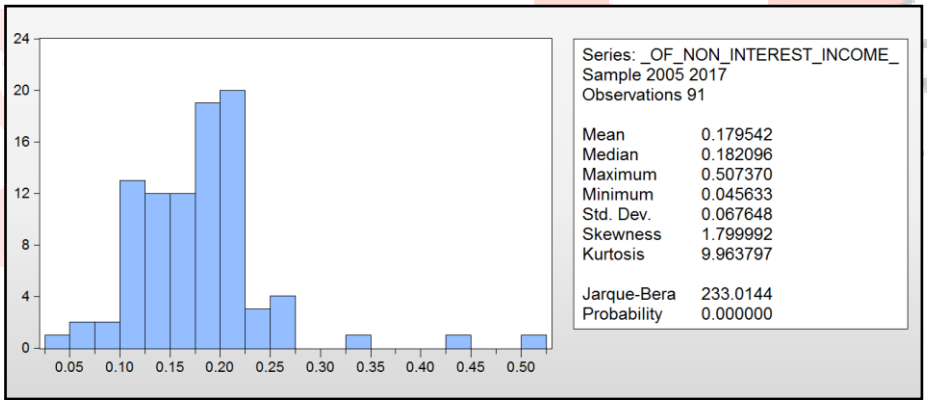

Figure No.3: Descriptive Statistics of ratio of non-interest income to total income for new generation private sector banks

Probability of zero in the Jarque-Bera test indicates that the null hypothesis of normality assumption is rejected. The kurtosis value of ratio of non-interest income to total income is 9.96 which is higher than the ideal value of 3 and these heavy-tailed characters are due to the existence of extremely large spike in data series. The maximum ratio of non-interest income to total during the calculated period (2005-2017) is 0.51. Though the maximum ration is 0.51 most of the banks' non-interest income ratio lies between 0.05 and 0.25 (occupies mostly the left portion of the graph) as it is right skewed with skewness value of 1.80. The non-interest income contributes 18% to total income of new generation private sector banks which is reasonably higher than the public sector banks. This high ratio is due to the improvement in technology, changes in economic policy and effective offering of diversified ancillary services. The standard Deviation of the ratio of non-interest income to total income indicates that the ratio of non-interest income to total income is widely spread and away from the mean value and the non-interest income source is not stable for private sector banks.

Moreover, the ratios of individual components of non-interest income to total income indicate that the brokerage and financial service fees is the major source of non-interest income for new generation private sector banks with 11.5% and miscellaneous income contributes only 0.8% to total income which is lesser than any other sources of income.

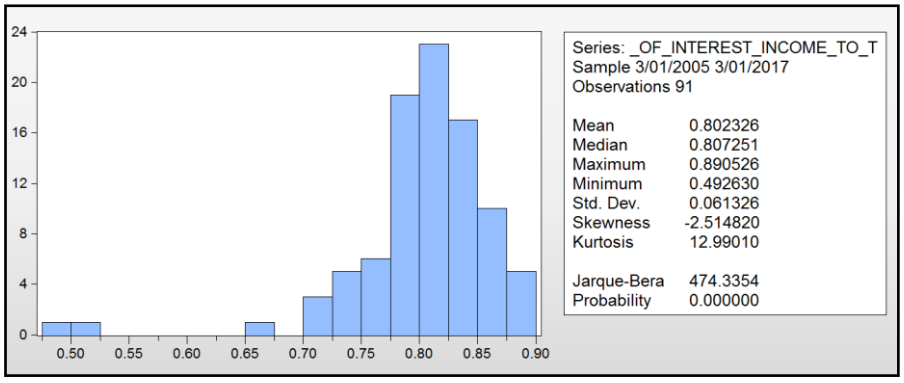

Figure No.4: Descriptive Statistics of ratio of interest income to total income for new generation private sector banks

The mean and median of ratio of interest income to total income are 0.80 and 0.81 which are almost similar. 80% of income for new generation private sector banks are earned from their traditional activities i.e., interest income. Its minimum ratio is 0.50 but for most of the banks, ratio lies around the maximum value of 0.90 which indicates that the interest income is left skewed with skewness of -2.51. The standard deviation (0.06) implies that the observations are consistent with its mean value (0.80). The probability of Jarque-Bera test zero is less than the ideal value of 0.05 which indicates that the data are not normally distributed. The interest income for new generation private sector banks is higher than its non-interest income but it is lower when comparing with public sector banks interest income.

Table No.3:Descriptive Statistics for Old generation Private Sector Banks

OLD GENERATION PRIVATE SECTOR BANKS							
	%of non-interest income to total income	Brokerage to total income	dividend to total income	Securities transactions to total income	Forex transactions to total income	Miscellaneous income to total income	%of Interest income to total income
Mean	0.111809	0.036402	0.00773	0.022344	0.009438	0.035894	0.87574
Median	0.099706	0.03264	0	0.017503	0.009196	0.036121	0.883949
Maximum	0.53608	0.110538	0.419075	0.129897	0.029251	0.098648	0.945693
Minimum	0.039954	0.004202	0	0	0	0.001308	0.463886
Std. Dev.	0.062654	0.023784	0.051597	0.020259	0.005619	0.021583	0.060562
Skewness	4.520474	0.970981	6.855124	2.449329	0.688249	0.556315	-4.67675
Kurtosis	28.12321	3.699963	48.87126	11.54184	4.211773	2.921797	29.44411
Jarque-Bera	4247.782	25.38944	13657.36	577.7193	20.03872	7.412538	4687.892
Probability	0	0.000003	0	0	0.000045	0.024569	0
Sum	15.98869	5.205501	1.105452	3.1952	1.349634	5.132902	125.2309
Sum Sq. Dev.	0.557425	0.080328	0.378045	0.05828	0.004484	0.066147	0.520822
Observations	143	143	143	143	143	143	143

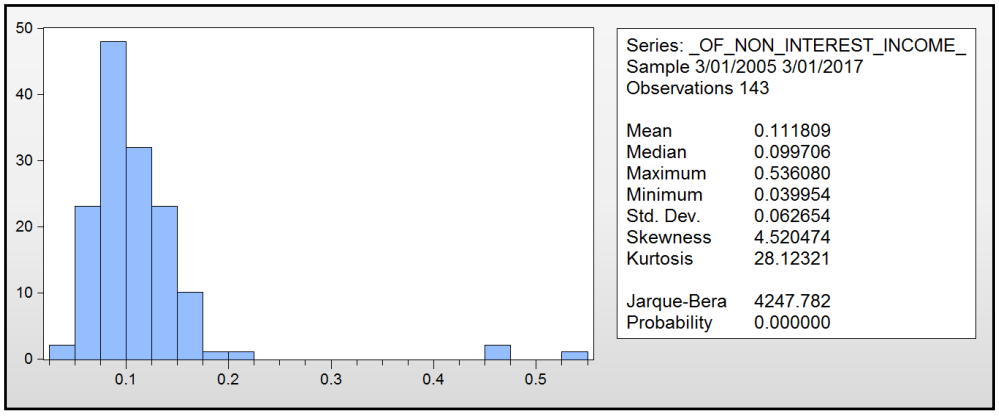

Figure No.5:Descriptive Statistics of ratio of non-interest income to total income for old generation private sector banks

The mean and median of ratio of non-interest income to total income are 0.11 and 0.10 respectively. This shows that the non-interest income contributes 11% to total income which is same as that of public sector banks and lesser than new generation private sector banks. The data are spread around the median value and the skewness value (4.52) indicates that the ratio of non-interest income to total income is right skewed. The existence of extremely large spike in data series results in leptokurtic kurtosis. The maximum ratio of non-interest income to total income registered during estimation period (2005-2017) is 0.54 but most of the bank's non-interest income ratio lies around 0.1 (occupies mostly the left portion of the graph). These results show that the data are widely distributed and are not stable for these banks. The P-Value of Jarque- Bera test is zero which is less than 0.05, meaning that the distribution is not normal.

Of these 11%, income from brokerage and financial service fees contributes to 3.64%, dividend income contributes to 0.77% (some banks do not earn any income from dividend), 2.23% of income is contributed by securities transactions and sale of investments, 0.94% income from forex transactions and 3.59% from miscellaneous income. These results show that income from brokerage and financial service fees form a major source to non-interest income for old generation private sector banks which is also similar to public sector banks. Dividend income and income from forex transactions are very less while comparing with other sources of non-interest income. The proportion of non-interest income for this sector is almost similar to that of public sector banks.

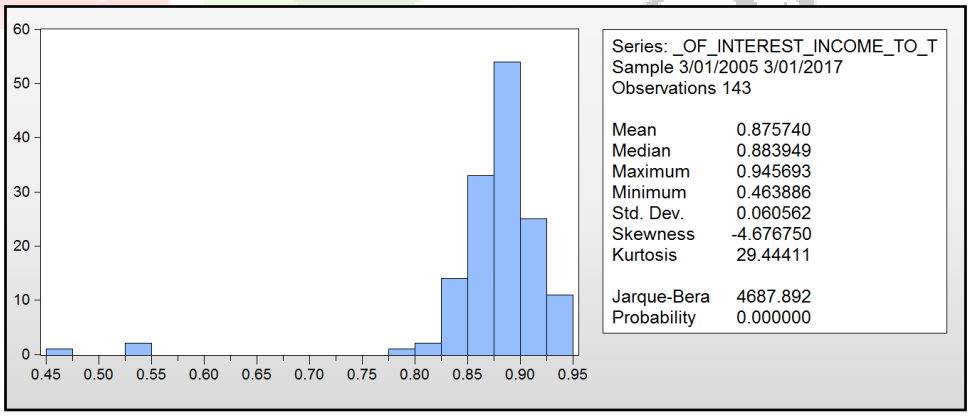

Figure No.6:Descriptive Statistics of ratio of interest income to total income for old generation private sector banks

The mean and median of ratio of interest income to total income is 0.87 and 0.88 respectively. The maximum ratio registered during estimation period (2005-2017) is 0.95 and the minimum ratio during the stated period is 0.46 but mostly all the banks' ratio of interest income to total income lie on the maximum side. The Skewness of -4.68 reveals that the distribution is negatively skewed and distribution is asymmetrical. Kurtosis of 29.44 is higher than the ideal value of 3 because of the existence of large spike in data series. The P-Value of Jarque-Bera test is zero which is less than 0.05, indicating that the null

hypothesis of normality assumption is rejected. The interest income contributes 88% to total income which is very much higher than its non-interest income which contributes only 11%. It shows that even though the old generation banks diversified their income sources into various ancillary services; its income relies heavily on its traditional activities of lending and accepting deposits due to lack of technological developments which is same as that of public sector banks.

Table No.4:Descriptive Statistics for Foreign Banks

FOREIGN BANKS							
	%of non-interest income to total income	Brokerage to total income	dividend to total income	Securities transactions to total income	Forex transactions to total income	Miscellaneous income to total income	%of Interest income to total income
Mean	0.284126	0.133118	0.012881	0.017414	0.098359	0.022354	0.679225
Median	0.237992	0.085546	0	0	0.08243	0.005513	0.721098
Maximum	0.959922	0.742857	0.442079	0.403828	0.396525	0.380479	0.941366
Minimum	0.031636	0.000877	0	0	0	0	0.037739
Std. Dev.	0.178824	0.154077	0.058535	0.044424	0.087082	0.040887	0.170798
Skewness	1.180522	2.843729	5.086577	5.479141	1.413258	5.023631	-1.179415
Kurtosis	4.260923	10.7357	30.01184	41.76754	4.933632	38.28438	4.24928
Jarque-Bera	62.09191	798.9652	7220.484	14066.06	101.6438	11664.77	61.74812
Probability	0	0	0	0	0	0	0
Sum	59.09828	27.68852	2.679323	3.622015	20.45871	4.649716	141.2787
Sum Sq. Dev.	6.619449	4.914106	0.709252	0.408504	1.56975	0.346059	6.038561
Observations	208	208	208	208	208	208	208

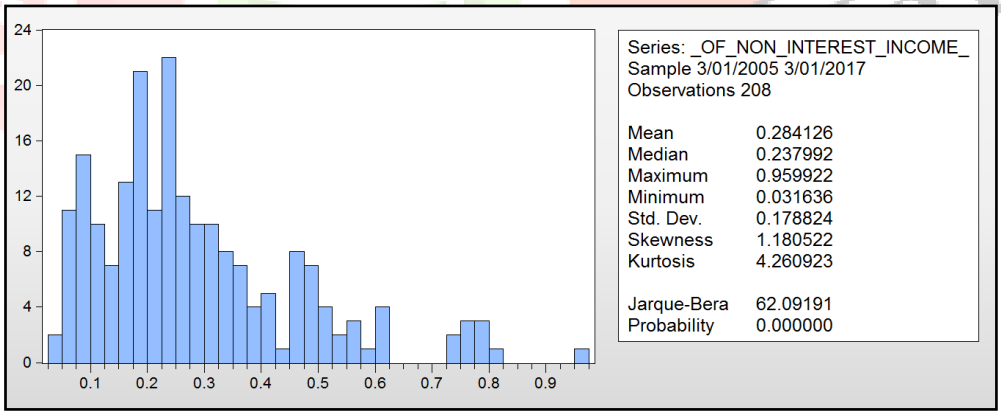

Figure No.7:Descriptive Statistics of ratio of non-interest income to total income for foreign banks

Probability of zero in the Jarque-Bera test indicates that the null hypothesis of normality assumption is rejected. The kurtosis value of ratio of non-interest income to total income is 4.25 which is higher than the ideal value of 3 indicating that these data have heavy-tailed characters. The maximum ratio of non-interest income to total during the calculated period (2005-2017) is 0.96 and the minimum ratio is 0.03. The non-interest income contributes 28% to total income of foreign banks which is much higher than all the other banks. The main reason is that in Indian economy, foreign banks function mainly on fee based services than interest based services. Moreover, the ratios of individual components of non-interest income to total income indicate that the brokerage and financial service fees and income from forex transactions are the major source of non-interest income for foreign banks with 13% and 9.84% respectively and dividend income contributes only 1.3% to total income which is lesser than any other sources of non-interest income.

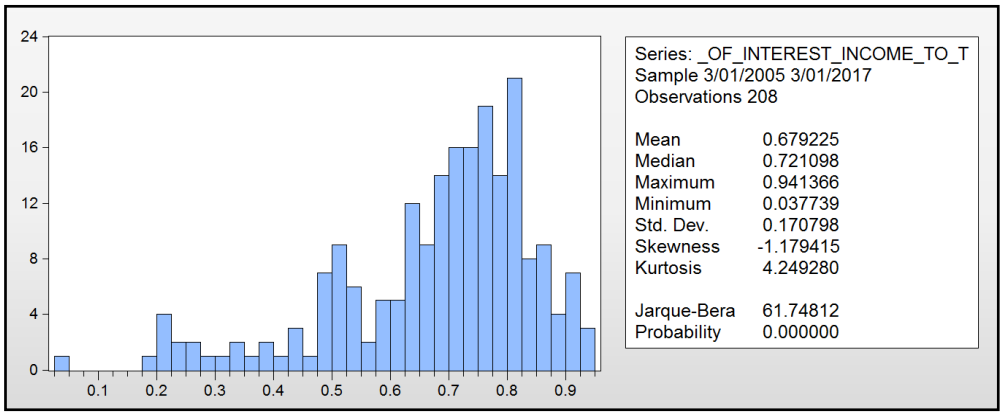

Figure No.8:Descriptive Statistics of ratio of interest income to total income for foreign banks

68% of income for foreign banks are earned from their traditional activities i.e., interest income. The interest income is left skewed with skewness of -1.18. The standard deviation (0.17) implies that the interest income is not closely consistent with its mean like other banks. The probability of Jarque-Bera test zero is less than the ideal value of 0.05 which indicates that the data are not normally distributed. The interest income for new generation private sector banks is higher than its non-interest income but it is lower than private and public sector banks.

From all the above results, it is estimated that foreign banks non-interest income is higher than private and public sector banks. However, they should concentrate on stability of this income. The new generation private sector banks non-interest income is higher than old generation private sector and public sector banks. Though they diversified their income sources, the public and old generation private sector banks are highly relying on their interest income for their profitability than new generation and foreign banks. They have to focus on diversified income and aggressive marketing of ancillary services to increase their income.

Table No.5:Standard Deviation of ratio of non-interest income to total income

BANKS	STANDARD DEVIATION OF RATIO OF NON-INTEREST INCOME TO TOTAL INCOME
Public sector banks	0.036498
Old generation Private sector banks	0.062654
New generation Private sector banks	0.067648
Foreign banks	0.178824

The standard deviation is a quantitative measure that is used to determine how the values of the data series differ from the mean value of the series. It is also used as a measure of risk. Higher the standard deviation of the bank's non-interest income, higher the volatility and vice versa. The results show that the non-interest income is positively related with the risk. Higher the diversification of income source, higher will be the risk. The risk for foreign banks are high because their major source of income is from fee based services. Therefore, RBI and Government has to focus on the policy implications pertaining to reducing risks associated with the non-interest income of foreign banks.

4.2 CORRELATION

Correlation is a statistical technique that is used to measure the relationship between variables. The value of correlation coefficient falls between -1 and +1. The negative value indicates that the variables are

negatively correlated i.e., increase in one variable decreases the other. The positive value indicates that the variables are positively correlated i.e., both the variables move in the same direction. Here the correlation is performed between various components of non-interest income.

Table No.6:Correlation matrix for Public Sector banks

PUBLIC SECTOR BANKS						
	Non-interest income to total income	Brokerage and service fee income to total income	Dividend income to total income	Securities transactions income to total income	Forex transactions income to total income	Miscellaneous income to total income
Non-interest income to total income	1.000000	0.448405	0.430905	0.615663	0.405239	0.259866
Brokerage and service fee income to total income	0.448405	1.000000	0.072629	0.004522	0.108680	-0.360296
Dividend income to total income	0.430905	0.072629	1.000000	0.029574	0.122106	-0.013781
Securities transactions income to total income	0.615663	0.004522	0.029574	1.000000	-0.058734	9.21E-05
Forex transactions income to total income	0.405239	0.108680	0.122106	-0.058734	1.000000	0.123670
Miscellaneous income to total income	0.259866	-0.360296	-0.013781	9.21E-05	0.123670	1.000000

Table No.6 shows the correlation matrix of variables of public sector banks. The value of 1 in the diagonal of the matrix shows that the variables are perfectly correlated with itself. The positive value in the table indicates that those variables are positively correlated with each other and the negative values indicate that those variables are negatively correlated. All the variables except ratio of miscellaneous income to total income are positively correlated with each other. Ratio of miscellaneous income is negatively correlated with brokerage and dividend income. Ratio of Securities transactions to total income are highly correlated with ratio of non-interest income than any other income sources.

Table No.7:Correlation matrix for Old generation Private Sector banks

OLD GENERATION PRIVATE SECTOR BANKS						
	Non-interest income to total income	Brokerage and service fee income to total income	Dividend income to total income	Securities transactions income to total income	Forex transactions income to total income	Miscellaneous income to total income

Non-interest income to total income	1.000000	0.387007	0.875809	0.289292	0.370590	0.014674
Brokerage and service fee income to total income	0.387007	1.000000	0.126209	0.176215	0.396898	-0.548997
Dividend income to total income	0.875809	0.126209	1.000000	-0.001469	0.129440	-0.019635
Securities transactions income to total income	0.289292	0.176215	-0.001469	1.000000	0.105500	-0.316998
Forex transactions income to total income	0.370590	0.396898	0.129440	0.105500	1.000000	-0.030416
Miscellaneous income to total income	0.014674	-0.548997	-0.019635	-0.316998	-0.030416	1.000000

Table No.7 shows the correlation matrix of variables of old generation private sector banks. Ratio of dividend income to total income is highly correlated with ratio of non-interest income than any other components of non-interest income of old generation banks. The increase in miscellaneous income for old generation private sector banks decreases the income from brokerage and service fees i.e., negatively correlated.

Table No.8:Correlation matrix for Old generation Private Sector banks

NEW GENERATION PRIVATE SECTOR BANKS						
	Non-interest income to total income	Brokerage and service fee income to total income	Dividend income to total income	Securities transactions income to total income	Forex transactions income to total income	Miscellaneous income to total income
Non-interest income to total income	1.000000	0.613433	0.631270	0.406984	0.621825	0.361960
Brokerage and service fee income to total income	0.613433	1.000000	-0.005030	-0.029880	0.318888	-0.053129
Dividend income to total income	0.631270	-0.005030	1.000000	0.266143	0.194301	0.225499
Securities transactions income to total income	0.406984	-0.029880	0.266143	1.000000	-0.018694	0.210928

Forex transactions income to total income	0.621825	0.318888	0.194301	-0.018694	1.000000	0.127444
Miscellaneous income to total income	0.361960	-0.053129	0.225499	0.210928	0.127444	1.000000

Table No.8 shows the correlation matrix of variables of new generation private sector banks. Ratio of dividend income to total income is highly correlated with ratio of non-interest income than any other components of non-interest income for new generation banks. All the variables except ratio of brokerage income are positively correlated with each other. It shows that the ratio of brokerage income and the ratio of securities transactions move in opposite directions.

Table No.9:Correlation matrix for Foreign banks

FOREIGN BANKS						
	Non-interest income to total income	Brokerage and service fee income to total income	Dividend income to total income	Securities transactions income to total income	Forex transactions income to total income	Miscellaneous income to total income
Non-interest income to total income	1.000000	0.739395	0.327333	0.167012	0.306282	0.284904
Brokerage and service fee income to total income	0.739395	1.000000	-0.001049	-0.094132	-0.224805	0.048045
Dividend income to total income	0.327333	-0.001049	1.000000	-0.033080	-0.028487	0.100568
Securities transactions income to total income	0.167012	-0.094132	-0.033080	1.000000	0.072813	-0.109047
Forex transactions income to total income	0.306282	-0.224805	-0.028487	0.072813	1.000000	0.018547
Miscellaneous income to total income	0.284904	0.048045	0.100568	-0.109047	0.018547	1.000000

Table No.9 shows the correlation matrix for variables of foreign banks. The ratio of brokerage income to total income for foreign banks is strongly correlated with ratio of non-interest income and the ratio of brokerage income is weakly correlated with dividend income. Dividend income is negatively correlated with other components of non-interest income of foreign banks.

5. CONCLUSION

The results of this study show that the non-interest income is positively related with performance and risk because the increase in non-interest income increases both the performance and risk. The non-interest income is higher for foreign banks while comparing with other sector banks. Income from brokerage and service fee contributes more to non-interest income than other non-interest income sources for public and private sector banks whereas for foreign banks, forex transactions play a major role in contributing to non-interest income. The outcome of the study informs about different bank groups' extent of non-interest income and how that benefited or affected the bank groups' performance and risk. The stakeholders such as bankers, Reserve bank of India, customer, rating agencies, etc. may be benefited from this study because this study may help concerned authorities to draw certain framework and policies relating to non-interest income exposure.

6. REFERENCES

1. Abedifar P, Philip Molyneux, Amine Tarazi. Non-interest income and bank lending. *Journal of Banking and Finance.* 2017; 87: 411-426.
2. Adwaita Maiti, Jana SK. Determinants of Profitability of Banks in India: A Panel Data Analysis. *Scholars Journal of Economics, Business and Management.* 2017; 4(7): 436-445.
3. Ahamed M. Asset quality, non-interest income and bank profitability: Evidence from Indian banks. *Economic Modelling*. 2017; 63: 1-14.
4. Alhassan AL. Income diversification and bank efficiency in an emerging market. *Managerial Finance*. 2015; 41(12): 1318-1335.
5. Al-Tarawneh A, Abu Khalaf BK, Al Assaf G. Non-interest Income and Financial Performance at Jordanian Banks. *International Journal of Financial Research.* 2017; 8(1): 166-171.
6. Ashok Gupta, Gautam Sen. A Move Towards Non-interest Income Diversification: A Comparison between Public and Private Sector Banks in India. *Indian Journal of Research.* 2016; 5(5): 480-483.
7. Aykut Karakaya, Bunyamin Er. Non-interest Income and Financial Performance at Turkish Commercial and Participation Banks. *International Business Research.* 2013; 6(1): 106-117.
8. Barry Williams. The Impact of Non-interest Income on Bank Risk in Australia. *Journal of Banking and Finance.* 2016; 73: 16-37.
9. Benjamin A Abugri, Theophilus T Osah, Samuel K Andoh. Ownership Structure, Non-interest Income and Bank Risk in Ghana. *Banking and Financial Review.* 2016; 8(2): 81-105.
10. Calmes C, Theoret R. Product-mix and bank performance: new US and Canadian evidence. *Managerial Finance.* 2015; 41(8): 773-805.
11. Chien-Chiang Lee, Shih-Jui Yang, Chi-Hung Chang. Non-interest Income, Profitability and Risk in Banking Industry: A Cross-Country Analysis. *North American Journal of Economics and Finance.* 2014; 27: 48-67.
12. Crouzille CM, Tacneng R, Tarazi A. Is Bank Income Diversification Beneficial? *Evidence from an Emerging Economy*. 2013; 1-42.
13. Damankah BS, Olivia Anku-Tsede, Albert Amankwaa. Analysis of Non-interest income of Commercial Banks in Ghana. *International Journal of Academic Research in Accounting, Finance and Management Sciences.* 2014; 4(4): 263-271.
14. Dhananjay Bapat, Mahim Sagar. Examining the relationship of Income Diversification, Asset Quality with Bank Profitability: Implication for Indian Banks. *Indore Management Journal.* 2016; 8(1): 1-11.
15. Gupta MS, Singh JB. Extent of Income Diversification in Indian banks and whether Non-interest Income is a Stable Source of Income for them – An Examination. *International journal of Economic Issues.* 2014; 7(1): 123-143.
16. Helmi Hamdi, Abdelaziz Hakimi, Khemais Zaghdoudi. Diversification, bank performance and risk: have Tunisian banks adopted the new business model. *Financial Innovation.*2017; 1-25.

17. Hidayat WY, Kakinaka M, Miyamoto H. Bank Risk and Non-interest Income activities in the Indonesian Banking Industry. *Journal of Asian Economics.* 2012; 23: 335-343.
18. Hoang Thi Thanh Hang, Doan Thanh Ha, Dang Truong Thanh Nhan. The impact of Income Diversification on Profitability and Risk of Commercial Banks: Cases of Vietnam. *International Journal of Applied Business and Economic Research.* 2017; 15(15): 123-137.
19. Joseph Mutuma, Mungatu JK. Effects of Non-interest Income on the Aversion of Systematic Risks of Commercial Banks in Kenya. *European Journal of Business and Social Sciences.* 2016; 5(7): 144-158.
20. Kohler M. Does Non-interest Income make Banks more Risky? Retail – versus Investment-oriented Banks. *Review of Financial Economics.* 2014; 23: 182-193.
21. Kohler M. Which Banks are more Risky: The Impact of Business Models on Bank Stability. *Journal of Financial Stability.* 2015; 16: 195-212.
22. Li Li, Yu Zhang. Are there Diversification benefits of increasing Non-interest Income in the Chinese Banking Industry? *Journal of Empirical Finance.* 2013; 24: 151-165.
23. Li Li. The impact of Non-interest Income on the Efficiency of China's Banking Sector. *Journal of Stock & Forex Trading.* 2014; 3(4): 1-8.
24. Limei Sun, Siqin Wu, Zili Zhu, Alec Stephenson. Non-interest Income and Performance of Commercial Banking in China. *Scientific programming (Hindawi).* 2017; 2-8.
25. Mndeme RK. Impact of Non-interest Income on Banking Performance in Tanzania. *International Journal of Economics, Commerce and Management*. 2015; 3(5): 75-92.
26. Molyneux P, Yip J. Income Diversification and Performance of Islamic Banks. *Journal of Financial Management, Markets and Institutions.* 2013; 1(1): 47-66.
27. Ozek P. Non-traditional Activities and Funding Strategies: An analysis of Commercial Banks in Turkey. *International Journal of Economic and Administrative Studies.* 2017; 18: 53-70.
28. Singh KB, Singh SK, Upadhyay Y, Abhishek Singh. Impact of Non-interest Income on Risk and Profitability of Banks in India. *XVII Annual International Seminar Proceedings.* 2016; 998-1007.
29. Tan Y. The Impacts of Competition and Shadow Banking on Profitability: Evidence from the Chinese Banking industry. *North American Journal of Economics and Finance.* 2017; 42: 89-106.
30. Thi Canh Nguyen, Dinh Vinh Vo, Van Chien Nguyen. Risk and Income Diversification in the Vietnamese Banking Sector. *Journal of Applied Finance & Banking.* 2015; 5(1): 99-115.