Impact of Non-Interest Income on Risk and Profitability of Banks in India

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ABSTRACT

Non Interest Income is the income of a bank arising from non-traditional activities. Indian Banking Industry is slowly shifting its revenue base from traditional activities to nontraditional activities that generate fee income, service charges and other types of non interest income. The shift towards non-interest income has been perceived to reduce the volatility of Bank’s revenues and reduce the risks as noninterest income is less dependent on overall business conditions than traditional income. Over the years in general and post financial crisis 2008 in particular, Non Interest Income has come under a lot of scrutiny all over the world. The present study is aimed to understand the contribution of non-interest income over the years and the risks associated with it. Further, we study the result of stress test on the banks when this non-interest income dries up using the sample of banks in India during years 2003 to 2013.

Keywords: Non-interest income, interest income, Indian Banks, Bank’s risk

JEL Classification: G21,
Introduction

Non Interest Income is defined as income of a bank arising from nontraditional activities. As banks are increasingly squeezed in their pursuit of profitability, one strategy to increase income is to diversify away from traditional sources of revenue like loan making and toward activities that generate fee income, service charges, trading revenue, and other types of noninterest income. The financial crisis of 2007-08, which was caused by the trading practices of investment banks in the US has revealed the weaknesses of many banks business models. Investment-oriented banks were hit by the crisis due to their heavy reliance on wholesale funding and non-interest income that exposed them to greater income fluctuations than retail-oriented banks that provide traditional banking services such as lending and use customer deposits a primary source of funding.

The major difference between interest income and non-interest income apart from latter arising from non-traditional activities is that there is higher operating leverage as the bank is exposed to a higher fixed income and the ups and downs of the business cycle. Theory provides no clear prediction regarding the impact of non-interest income on risk. On the one hand, does a higher share of non-interest income make banks less dependent on interest income and improve risk diversification which should make them more stable (Boyd et al., 1980). On the other hand, non-interest income is usually more volatile than interest income, because it is more difficult for borrowers to switch their lending relationship due to information costs (DeYoung and Roland, 2001). Non-interest income also increases operational leverage, since expanding into non-interest income may imply a rise in fixed costs. Financial leverage is also higher because regulators require banks to hold less capital against non-interest income activities (DeYoung and Roland, 2001). Both increases the volatility of non-interest income and makes it more risky than interest income. However, retail-oriented banks that generate the largest part of their income from interest may become more stable if they increase their non-interest income share as this allows them to better diversify their income structure and to offset declining interest margins.
Literature Review

The banking system in India is complex in that it comprises public and private firms with the latter including foreign firms. As in many other emerging economies, India until recently was heavily regulated with the banking sector aligned to meet social and economic development. The institutional structure of the financial system is characterized by (a) banks, either owned by the Government, RBI or private sector (domestic or foreign) and regulated by the RBI; (b) development financial institutions and refinancing institutions, set up either by a separate statute or under Companies Act, either owned by Government, RBI, private or other development financial institutions and regulated by the RBI; and (c) non-bank financial companies (NBFCs), owned privately and regulated by the RBI. The legislative framework governing public sector banks (PSBs) was amended in 1994 to enable them to raise capital funds from the market by way of public issue of shares.

It is expected that as non-interest income increases, banks may shift from traditional intermediation, thus resulting in decreases in interest income and simultaneous declines in credit and interest rate risk. Stiroh (2004) assesses the potential diversification benefits from the shift into non-interest income sources of bank revenue. Stiroh (2004) reports that non-interest income accounted for 43% of U.S. commercial banks’ net operating income, increasing from 25% in 1984. De Young and Rice (2004) report fairly similar figures in their study; 42% in 2001 compared to 20% in 1980. This trend in non-interest income is also evident for European banks (Chiarozza et al. (2007) and Mercieca et al. (2007)). However, the impact of non-interest income on bank returns and risk is not consistent across U.S. and European banks. Hence, the extent to which these findings can be generalized to other nations is limited at best. While research examines efficiencies in Indian banking (for example, Kumbhakar and Sarkar (2003), Sathye (2003), and Sensarma (2006)), research is lacking on the changing nature of non-interest income and its impact on bank performance.

Many studies, most focusing on the US banking industry, examine the relationship between product diversification and bank risk (see Saunders and Walter, 1994; Kwan and Laderman, 1999, for a review). Kwast (1989), Santomero and Chung (1992), Templeton and Severiens (1992), Saunders and Walter (1994), and Gallo, Apilado, and Kolari (1996) had shown potential benefits of income diversification associated with the combination of US banking and
non-banking activities.
The Reserve Bank of India (RBI), which urged banks to pursue non-interest income sources in its report on *Trend and Progress of Banking in India*, 2002-03. This report states that “the future profitability of public sector banks would depend on their ability to generate greater non-interest income and control operating expenses.” However, the RBI concedes that in a context where the government is also the owner, issues relating to bank profitability and risk give rise to a complex principal-agent situation with multiple objectives.

**Methodology**

In this paper, we analyze the impact of banks’ non-interest income share on risk in the Indian banking sector for the period between 2004 and 2014 for the sample banks. The sample comprises of six banks, two each from public sector, private sector and foreign banks. The banks that are considered in the paper are State Bank of India and Bank of Baroda from Public Sector, ICICI Bank and HDFC Bank from Private sector, HSBC Bank and Deutsche Bank from Foreign Banks. In this paper, we examine the trends in non-interest income in these banks and document the long term trends in the amount and composition of non-interest income in Indian banks. Further, we also look into volatility of non-interest income.

We obtain our initial sample from the RBI database, and augment this data with the Center for Monitoring the Indian Economy’s (CMIE) Prowess database. We include only public sector banks in our sample, eliminating cooperatives and other state commercial enterprise banks. Our final sample comprises of 29 banks spanning the period 2004 and 2014 which includes only public sector banks. The Prowess database classifies income in two ways. The first definition of income divides income into interest income and non-interest income. Interest on advances (loans) and investment activities is classified as interest income, while non-interest income comprises income from sources excluding the interest earned on advances, deposits with the RBI, and deposits with other banks. Therefore, non-interest income comprises profit on trading, gains from foreign exchange activity, income from fiduciary activities, fees and commissions for services related to issuing letters of credit, syndication, underwriting, derivatives transactions, etc.
Data Analysis

Indian banks are growing at a very fast pace since the liberalization of the early 1990s, and both interest income and non-interest income have risen over our sample period. Following table summarizes the figures of interest and non interest incomes of all scheduled commercial banks during the period financial year 2003-04 to 2010-2011. The figures in the table clearly indicate consistent growth in both interest and non-interest income over this time period, but the growth of non-interest income outpaces that of the growth of interest income.

Table 1: Financial Performance of Public Sector Banks in India
(2003-2004 to 2010-2011)
(Amount : Rs. in Crore)

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<tbody>
<tr>
<td>A. Income (i+ii)</td>
<td>137587.31</td>
<td>177199.56</td>
<td>204773.44</td>
<td>187869.34</td>
<td>245872</td>
<td>315608</td>
<td>354876</td>
<td>414183</td>
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<tr>
<td>i) Interest Income</td>
<td>-79.62</td>
<td>-82.75</td>
<td>-84.13</td>
<td>-87.39</td>
<td>-86.7</td>
<td>-86.6</td>
<td>-6.89</td>
<td>-6.92</td>
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<tr>
<td>Interest on Advances</td>
<td>49934.15</td>
<td>75873.09</td>
<td>101301.75</td>
<td>110543.3</td>
<td>154101</td>
<td>204709</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Income on Investments</td>
<td>53207.89</td>
<td>62921.35</td>
<td>62294.86</td>
<td>47117.69</td>
<td>53119</td>
<td>63080</td>
<td>-</td>
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<tr>
<td>ii) Other Income</td>
<td>-20.38</td>
<td>-17.25</td>
<td>-15.87</td>
<td>-12.61</td>
<td>-13.3</td>
<td>-13.4</td>
<td>-1.1</td>
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<td>of which:</td>
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<tr>
<td>Commission &amp; Brokerage</td>
<td>7822.13</td>
<td>12639.74</td>
<td>15768.1</td>
<td>12534.47</td>
<td>14799</td>
<td>18475</td>
<td>-</td>
<td>-</td>
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<tr>
<td>B. Expenditure (i+ii+iii)</td>
<td>121040.93</td>
<td>158223.75</td>
<td>183249.57</td>
<td>167717.16</td>
<td>219280</td>
<td>281215</td>
<td>315619</td>
<td>369282</td>
</tr>
<tr>
<td>i) Interest</td>
<td>65764.53</td>
<td>85037.71</td>
<td>101769.62</td>
<td>101959.9</td>
<td>148902</td>
<td>193447</td>
<td>211940</td>
<td>231153</td>
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</table>
It appears that the more efficient banks pursue such diversification strategies. We also find that efficient banks, as measured by profit per employee claim a bigger stake of non-interest income. Similarly, banks with poor loan quality, as assessed by net non performing advances to total advances, seek non-interest sources of income. Larger banks are marginally associated with increased non-interest income. We find that business per employee to be negatively related to non-interest income; thus as employees pursue new business sources, these sources appear to be the more traditional, interest based sources. This is consistent with the view that non-interest

<table>
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<tr>
<th>Expended</th>
<th>-54.33</th>
<th>-53.75</th>
<th>-55.54</th>
<th>-60.79</th>
<th>-67.9</th>
<th>-68.8</th>
<th>-4.77</th>
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<tr>
<td>Deposits</td>
<td>62272.57</td>
<td>74663.27</td>
<td>86299.44</td>
<td>88796.23</td>
<td>132718</td>
<td>174313</td>
<td>-</td>
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<td>ii) Operating</td>
<td>-</td>
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<td>-</td>
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<td>Expenses</td>
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<td>-1.49</td>
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<td>iii) Provisions</td>
<td>22743.72</td>
<td>27470.11</td>
<td>28375.48</td>
<td>22502.74</td>
<td>23715</td>
<td>32578</td>
<td>37604</td>
<td>55164</td>
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<tr>
<td>and Contingencies</td>
<td>-18.79</td>
<td>-17.36</td>
<td>-15.48</td>
<td>-13.42</td>
<td>-10.8</td>
<td>-11.6</td>
<td>-0.85</td>
<td>-1.04</td>
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<td>of which:</td>
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<td>Provision for</td>
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<td>NPAs</td>
<td>14189.1</td>
<td>57.21</td>
<td>39.67</td>
<td>62.93</td>
<td>80</td>
<td>93</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>iii) Operating</td>
<td>32532.68</td>
<td>45715.93</td>
<td>53104.47</td>
<td>43254.52</td>
<td>46663</td>
<td>55190</td>
<td>-</td>
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<tr>
<td>Expenses</td>
<td>-26.88</td>
<td>-28.89</td>
<td>-28.98</td>
<td>-25.79</td>
<td>-21.3</td>
<td>-19.6</td>
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<td>Wage Bill</td>
<td>22581.23</td>
<td>28114.4</td>
<td>31447.81</td>
<td>27802.87</td>
<td>28660</td>
<td>34250</td>
<td>79861</td>
<td>100065</td>
</tr>
</tbody>
</table>

C. Profit

| i) Operating Profit | 39290.1 | 46445.92 | 49899.35 | 42654.92 | 50307  | 66972  | -1.73  | -1.89  |
| ii) Net Profit      | 16546.38 | 18975.81 | 21523.87 | 20152.18 | 26592  | 34394  | -0.88  | -0.85  |
income improves income diversification and makes a bank less dependent on overall economic conditions that affect their loan portfolio (Stiroh, 2004).

**Composition of Non Interest Income for the Individual Banks**

**Figure 1** about Here – Components of Non Interest Income in State Bank of India
In case of State Bank of India, the income due to Fees, Commission and Brokerage has been constant over the time. Income due to Insurance Premium is increasing. The component due to Exchange Rate transactions has been constant contributor.

**Figure 2** about Here – Components of Non Interest Income in Bank of Baroda
In case of Bank of Baroda, the income due to Fees, Commission and Brokerage has increased over the time. The component due to Exchange Rate transactions has increased.

**Figure 3** about Here – Components of Non Interest Income in ICICI Bank
In case of ICICI Bank, the income due to Fees, Commission and Brokerage has been volatile. The component due to Exchange Rate transactions has shown an increasing pattern.

**Figure 4** about Here – Components of Non Interest Income in HDFC Bank
In case of HDFC Bank, the income due to Fees, Commission and Brokerage has been volatile. The component due to Exchange Rate transactions has shown an increasing pattern. Figure 5 about Here – Components of Non Interest Income in HSBC Bank
In case of HSBC Bank, the income due to Fees, Commission and Brokerage has come down. The component due to Exchange Rate transactions has shown an increasing pattern.

**Figure 5** about Here – Components of Non Interest Income in HSBC Bank

**Figure 6** about Here – Component of Non Interest Income in Deutsche Bank .
In case of Deutsche Bank, the income due to Fees, Commission and Brokerage has come down. The component due to Exchange Rate transactions has shown an increasing pattern.

**Risks Associated with Non Interest Income**
The risks associated with Non Interest Income can be summarized by the increasing contribution towards Revenue.
In case of State Bank of India, Non Interest Income contributed to around 16% of revenue. In case of Bank of Baroda, it contributed around 12% of revenue. In case of ICICI Bank, it
contributed around 19% of revenue. In case of HDFC Bank, it contributed around 17% of revenue. In case of HSBC Bank, it contributed around 28% of revenue, earlier it contributed around 30%. In case of Deutsche Bank, Non Interest Income contributed to 35% of revenue. As one can observe, Foreign Banks are more susceptible to volatility in Non Interest Income than Private Banks and Public Sector Banks are highly immune to volatility of Non Interest Income. The volatility of Operating revenue due to Non Interest Income and Net Interest Income is given by the following formula:

\[ \sigma^2_{ddlnOPREV} = \sigma^2_{ddlnNON} + (1-\alpha)^2 \sigma^2_{ddlnNET} + 2\alpha(1-\alpha)\text{Covar}(ddlnNON,ddlnNET) \]

Where \( \alpha \) is defined as \((\text{Volatility in Non Interest Income})/(\text{Volatility of Non Interest Income + Volatility of Net Interest Income})\)

The following table presents the volatility in Operating Revenue for all the banks considering the stable part of Non Interest Income which is calculated by removing volatility factor from Non Interest Income

Table 2 about here Volatility in Operating Revenue for all the Banks
Table 3 about here Volatility in Non Interest Income for all the Banks
Table 4 about here standard deviation of the Non Interest Income for all the Banks

Impact Analysis

By using the standard deviation as volatility in the Non Interest Income the Stable par of Non Interest Income is calculated as \((1-\text{Stdev})\times\text{Non Interest Income}\).

The following set of tables give the impact of volatility of Non Interest Income on different Profitability ratios

Table 5 about here Return on Equity
Table 6 about here Return on Assets

The Profitability Ratios suggest that, volatility of Non Interest Income has not affected Public Sector Banks but the profitability ratios of Private Banks and Foreign Banks are affected by a greater extent.

Table 7 about here Burden Ratio
Table 8 about here \((\text{Operating Expenses – Non Interest Income})/\text{Net Interest Income}\)
Even after factoring in Volatility, Deutsche Bank was able to compensate its operating expenses with its Non Interest Income and the performance of other banks was relatively good with respect to Burden Ratio.

**Stress Test with respect to Capital Adequacy**

In this paper, we have considered the Non Funded Sources in Off Balance sheet which contribute to Non Interest Income. The Non Funded Sources contribute to credit risk to the Bank. So in the paper, a scenario is created in which the bank has to pay off all the Non Funded Sources all at once.

Table 9 about here the effect on Capital Adequacy ratio

**Conclusion**

Non-interest income has high Operating leverage and low switching cost compared to interest income. Non-interest income is significant part of revenue for foreign banks whereas it forms less proportion of revenue to public sector banks. Commission, Brokerage and exchange is significant part of private banks in India compared to Public sector banks. This shows that private banks have more risk appetite than the public sector banks. Foreign banks have significant part of their income as profit from exchange. Reduction in Non –interest income reduces ROE and ROA for the bank. Burden ratio for foreign banks is good indicating that these banks have maintained their operating expenses and Non-interest income to comparable level. Stress test of capital adequacy on banks has shown that foreign banks are susceptible to non fund exposure.

Our preliminary results indicate that non-interest income is strongly and positively influenced by return on equity, loan quality, profit per employee, and personalized customer service offered to bank customers. We find that foreign banks capture larger amounts of non-interest income. Furthermore, we find that as banks continue to develop traditional interest income sources, they tend to diversify less into non-traditional sources of income, and we find that banks where employees generate more traditional business report significantly lower non-interest revenue.
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