Empirical Analysis of Structural Income Changes in Commercial Banks: A Case of Pakistan

Ramla Sadiq[*], Tahseen Mohsan Khan[**] and Noman Arshed[***]

Abstract

The primary purpose of this study was to conduct an exploratory and explanatory analysis to determine the impact of structural income on performance of the all commercial banks in Pakistan from 2008 to 2015. It aimed to establish the theory on dual impact of income diversification and ownership on bank performance in a developing economy. This population was divided into two categories - ownership mode characterized into conventional and Islamic banks and category mode characterized into five proportions of non-markup and mark up income structures. The divisions were analyzed on the basis of change in assets and equity and gross income, using a non-linear approach. This approach ensured robustness of analysis and clearer outcomes regarding strategic approaches in this sector. Ownership mode finding suggested conventional banks tilt towards non-markup income significantly for asset and gross income base increase and Islamic banks insignificantly towards markup income. Our findings also showed that conventional banks lead Islamic banks, and banks with non-markup income between 30%-40% lead other bank categories in terms of managing profitability. Islamic banks are ahead of conventional banks, and category1 banks with non-markup income above 50% are ahead of all other categories in terms of utilization of funds.

Keywords: Banks, structural income, ownership mode, category mode, non-markup income.

JEL Classification: G11, G20, G21.

1. Introduction

Over the last 30 years, financial sectors worldwide have undergone a series of changes. Deregulation and internationalization

---

[*] Assistant Professor, University of Management & Technology (UMT), Lahore, Pakistan. Email: ramla.sadiq@umt.edu.pk, ramlasadiq@gmail.com
[**] Assistant Professor, University of Management & Technology (UMT), Lahore, Pakistan. Email: tahseen.khan@umt.edu.pk, tahseenmkhan@hotmail.com
[***] Lecturer, University of Management & Technology (UMT), Lahore, Pakistan. Email: noman.arshed@umt.edu.pk

have increased competition and forced restructuring within the banking industry. As banks explore new avenues for income in a highly competitive and global market, product and service innovation is on the rise. This reasonably leads to changes in the structural income of banks, which ultimately changes the way that profitability and efficiency in operations derive. A key interest of stakeholders is to gain return on their investments, and the bank's role is to protect their customers' interests. As banks deal in risky securities that may even erode their equity, this is essentially a balancing act. While banks attempt to manage risks within a reasonable range, it is an inevitable and ever-present hazard in this sector. Diversification of revenue allows a bank to better manage certain risks.

Structural income consists of the sources of revenue for a bank. This may be traditional sources of revenue, such as the loan portfolio, or non-traditional sources of revenue, such as securities underwriting, insurance and real estate investment. Much of the recent literature analyzing the income of financial institutions deliberates the effect of diversification of income on institutional profitability.

An abundance of research is currently available on developed and developing markets (Rogers, 1998; Stiroh, 2000; Liang et al., 2016, Tortosa-Ausina, 2003; Pasiouras, 2008). However, due to limited data availability, this concept is not applied to less developed markets. The availability of complete ownership data, based on our manual data collection, makes this paper unique in examining the ownership mode and different categories mode. There is a clear gap in the existing literature in relation to investigating the profitability structure through comparison of conventional and Islamic banks and also between five categories of banks. This gap represents the primary motivation for this study. As existing literature has analyzed the role of revenue diversification on bank profitability; this research explored the patterns of structural income in the banking sector of Pakistan. Further, it aimed to determine whether the diversification of income in a developing economy is beneficial in terms of profitability.

To better understand the pattern of structural income in the banking sector, we divided the analysis into two subcategories: ownership mode and category mode. Ownership mode determines patterns in structural income of conventional banks versus Islamic banks. Category mode determines patterns in structural income by creating five classifications on the basis of proportion of non-mark-up income to total income. The patterns of structural income in banks were first determined through exploratory analysis. Then the impact of structural income on

profitability was gauged by empirical analysis. The impact of structural income on profitability of banks was then empirically analyzed. We conducted our empirical investigation over the time frame of 2008 to 2015 using a sample of all commercial banks operating in Pakistan. We extracted a detailed breakdown of annual data on income structure using the annual reports of each institution. This allowed us to analyze thoroughly bank diversification behavior by examining the effect on profitability/performance across various sub-categories and tiers. The banks were analyzed by applying exploratory analysis and empirically tested by applying a nonlinear approach for further authenticity.

This study found that under ownership mode, both conventional and Islamic banks manage their profitability with a higher level of net markup income. But in the case of conventional banks, there is an increase in non-markup income portion; whereas in the case of Islamic banks, there is no significant increase in non-markup income. Empirical analysis further authenticated the same results. Under category mode, theexploratory results depicted an increase in non-markup income of category1 and category2 banks, which is supported by empirical analysis. In the case of category3 banks, exploratory and empirical analysis depicted mixed results. Exploratory results for category4 banks depicted a nominal increase in markup income portion. For category5 banks, exploratory analysis depicted a decrease in non-markup income portion, whereas the empirical results depicted mixed results. We also looked into banks' performance in terms of profitability measures, comparing conventional and Islamic banks. The conventional banks performances exceed those of Islamic banks. Among categories, category1 banks are ahead in terms of return on equity (ROE), and category3 banks are ahead in terms of net profit as a proportion of gross income.

The rest of this paper is organized as follows: section two discusses the literature review. Section three covers data and methodology. Section four discusses the exploratory analysis, while section five presents empirical findings. Lastly, section six presents conclusions and policy implications.

2. Literature Review

While diversification should reasonably lead to lower risks, research has shown that efficiency and stability are the result of various external factors associated with diversification of income and asset base (Edirisuriya, Gunasekarage, & Dempsey, 2015). In addition, it appears that

initial revenue diversification activities are not efficiency enhancers, as a considerably high level of diversification must be achieved to attain efficiency (Alhassan, 2015). Literature investigating the impact of structural income on bank efficiency has shown that cost efficiency increases as diversification is pursued as a strategy (Lozano-Vivas & Pasiouras, 2010). Further, as Chen, Liang and Yu (2018) have determined the difference in impact of diversification on bank performance in Islamic and conventional banks, they have found that diversification generally has a negative impact on performance of conventional banks in Asian countries. This effect is moderated by size of banks such that large Islamic banks demonstrate a positive significant effect of diversification on performance. Building on this diversification aspect, research has also shown that the type of diversification plays an important role in the resulting impact. Income diversification appears to have a homogeneously positive impact on bank performance and stability, while the effects of asset diversification are mixed and appear to be affected by macroeconomic and country-specific factors (Moudud-Ul-Huq, Ashraf, Gupta, & Zheng, 2018; Ashraf, Ramady, & Albinali, 2016). Investigating the effect of line-of-business diversification on asset risk-taking in the U.S. property-liability industry, Che and Liebenberg (2017) have found that diversified insurers take more asset risk than non-diversified insurers and that the degree of asset risk-taking is positively related to the extent of diversification.

In comparing the effects of structural income in terms of lending behavior of conventional and Islamic banks, research has shown that Islamic banks have a relatively high unadjusted rate of return given the risk exposure of their products. It is also evident that Islamic bank managers seem to hold less capital as they tend to rely on diversification benefits. The moral hazard hypothesis, essentially the situation where one party gets involved in a risky situation knowing that it is protected against the risk and the other party will bear the cost, is only evident for Islamic banks in terms of loan and income portfolio diversification (Shaban, Duygun, Anwar, & Akbar, 2014; Bikker & Vervliet, 2018).

However, in developing nations, on average, foreign banks are typically more efficient than, or approximately as efficient as, private domestic banks. Both groups are typically found to be more efficient, on average, than state-owned banks, but there are variations to all of these findings. A study of Pakistani data has found foreign banks are more profit-efficient than private domestic and state-owned banks, but all of these groups are of similar average cost-efficiency (Bonaccorsi di Patti &Hardy, 2005). On the other hand, foreign banks appear not to have any

advantage in terms of profit efficiency in the Middle East and North Africa region (Haque &Brown, 2017). Further, research has shown that robust international diversification increases risk, rather than reducing it (Gulamhussen, Pinheiro & Pozzolo, 2014). Banks in Africa derive absolute benefits from diversification if they cross borders and diversify their revenue base concurrently (Sissy, Amidu & Abor, 2017).

A study by Jaffar, Mabwe and Webb(2014)has indicated that non-interest income is much more volatile than interest income from a global view point and for each individual bank. In the banking sector, technology-related innovation is also essential in generating fee-based income. A study in Barbadian by Craigwell& Maxwell(2005)has indicated that ATM technology seems to be the most influential factor shaping the pattern of non-interest income in the banking industry in Barbados, with results confirmed by an empirical model using panel data.

Existing literature analyzing structural income in banks is divergent. From the perspective of stability, there is a lack of consensus in impacts of diversification on bank stability. A thorough analysis has shown some research confirming this impact (Campa & Kedia,2002; Baele, De Jonghe, & Vander Vennet, 2007; Berger, Demsetz, & Strahan, 1999; Hughes, et. al., 1996; Landskroner, Ruthenberg, & Zaken, 2005). Others have indicated results to the contrary (Stiroh 2006a; Acharya, Hasan, &Saunders, 2006; Carlson, 2004; Deyoung & Rice, 2004a; DeYoung & Rice, 2004b; Hirtle & Stiroh, 2007; Stiroh, 2006b). These studies have found that the more diversified the structural income of a bank, the greater the instability.

A stable and well-established banking system contributes significantly to ensuring stable capital flows and economic convergence in developing economies (Bekaert & Harvey, 2002). Subsequently, it may be reasonably argued that changes in structural income would also result in substantiated performance outcomes in developing economies (King & Levine, 1993).

While the macroeconomic environment plays is an important factor contributing to the performance of banks, research has shown that efficient risk management policies and practices are undermined when macroeconomic volatility (instability) exists (Hackbarth, Miao, & Morellec, 2006). Alternatively, when the macroeconomic environment is both stable and conducive for economic growth, new opportunities for product development and income diversification arise, which contributes to better profitability.

The primary necessity for diversification of structural income arises from hedging risks. Diversified incomes allow banks to manage insolvency risk. This further reduces the likelihood of bankruptcy or financial distress (Froot & Stein, 1998). From an operational perspective, it is also essential to maintain an assorted portfolio of products. A financial institution benefits from variation in product options by enhancing the scale and scope of business (Landskroner et al., 2005).

It has been established that banks must play the role of delegated monitors in financial markets. Information availability and dissemination can decrease the occurrence of information asymmetry in financial markets, thereby leading markets to be more efficient. This dissemination can take place through a diversified service portfolio offered by banks which can further increase revenue and profitability (Baele et al., 2007; Craigwell, R & Maxwell, 2005). As diversification of income becomes prevalent in the banking sector, competition increases and forces new levels of innovation and efficiency in provision of services (Acharya et al., 2006; Carlson, 2004; Landskroner et al., 2005; Lensink & Hermes, 2004; Lepetit, Nys, Rous, & Tarazi, 2008; Morgan & Samolyk, 2003).

Divergence in realizing the real benefits of diversification often occurs from estimations or potential estimations that may occur due to differences in portfolio strategies, changes in risk-adjusted performance, exposure to systemic shocks, and adoption of universal banking policies.

In terms of portfolio strategy, research has shown that estimations of benefits from diversification are based on efficient portfolio theory. If a bank, in reality, does not hold an efficient portfolio, divergence between estimated and actual returns is inevitable. It is essential to note here that diversification is not the problem; the utility of the benefit from diversification is what causes differences in realization of benefits. Froot and Donohue (2002)have found that institutions that actively manage credit risk tend to have loans with higher levels of risk. Cebenoyan and Strahan (2004) have found that banks with more diversified structural income also have higher levels of leverage.

Diversification inevitably leads to expansion into services and industries that are not a part of the core function of banks. In the case that this expansion is in a sector with high levels of competition, or where the bank lacks proficiency, subsequent information asymmetry may result in worse risk-adjusted performance (Brown, Groen, Peristiani, & Snider, 2012; Carlson, 2004; Mercieca, Schaeck, & Wolfe, 2007).

Finally, as diversification helps reduce exposure to idiosyncratic risks, the unavoidable exposure to systemic risk increases as the types of markets in which banks are active increase(De Vries, 2005).The nature of diversification is essential in this context. For example, DeAngelo and Stulz(2015)have found that geographical diversification leads to illiquidity, which increases risk exposure in the event of a customer run.

3. Data and Methodology

This study endeavorsto examine the performance of all commercial banks, 28 in total (except two banks[1]), operating in Pakistan in terms of how they structure their profitability. The profitability is generated through two main categories; one includes the markup on credit loans income and profit on investments net of expenses. The other includes fee income, commission income, gain on investments and foreign exchange, and dividend income. The bank's major source of funds includes deposits, and banks also pay profits to their depositors as an expense. The banks generate their net profit against credit loans markup and profit on investments net of profit payments to depositors. The banks are categorized on the basis of different levels of non-markup income proportion generated by banks.

We initiated the analysis with the objective to analyze the role of non-markup and markup income on the bank's performance.

To meet the study objectives, we have developed the following hypotheses:

H_1: X types of banks are most efficiently getting advantage from their expertise.

H_2: X types of banks are better performers.

3.1. Model

In comparing conventional and Islamic Banks, we checked the bank's preference towards non-markup income or markup income by applying the nonlinear approach over the study timeline,2008-2015. In this regard, we tested preference by applying three profitability measuring tools that include ROA, ROE and profit after tax as a

---

[1] "Sind Bank Ltd." and "Industrial and Commercial Bank of China Ltd." As they started their operations after 2008.

proportion of gross income. These models created estimates using the appropriate approach from the Pooled OLS, Fixed Effect and Random Effect. The model selection was based on the redundant effects test[2], Housman test[3] and LaGrange test[4].

$$\frac{Markup\ Income}{Nonmarkup\ Income} = ROA + ROA^2$$

$$\frac{Markup\ Income}{Nonmarkup\ Income} = ROE + ROE^2$$

$$\frac{Markup\ Income}{Nonmarkup\ Income} = \frac{PAT}{GI} + (\frac{PAT}{GI})^2$$

The dependent variable is Markup Income as a proportion of Non-markup Incomes, tested on ROA, ROE and profit after tax as a proportion of gross income and their squares in order to analyze preference of the high- and low-performing banks across ownership mode and category mode.

This study systematically analyses the structural income of commercial banks listed in Pakistan. We use a comparative analysis based on ownership mode and then category mode. Ownership mode identifies banks as either conventional banks or Islamic banks. Category mode identifies banks based on structural income, i.e. the total non-markup income as a proportion of total income according to their positions in 2015. Category 1 includes banks which have greater than 50 per cent non-markup income (five banks), category 2 includes banks with non-markup income between 40 per cent and 50 per cent (six banks), category 3 includes banks with non-markup income between 30 per cent and 40 per cent (five banks), category 4 includes banks with markup income between 20 per cent and 30 per cent (nine banks), and category 5 includes banks with markup income below 20 per cent 9two banks) (see table 1).

---

[2]It compares the Pooled OLS against Fixed Effect model
[3]The test evaluates the consistency of an estimator when compared to an alternative, less efficient estimator which is already known to be consistent. It helps one evaluate if a statistical model corresponds to the data. The Housman test is used to differentiate between fixed effects model and random effects model in panel data.
[4]This is a statistical test of a simple null hypothesis that a parameter of interest is equal to some particular value. The main advantage of the score test is that it does not require an estimate of the information under the alternative hypothesis or unconstrained maximum likelihood.

**Table 1: Total Non Mark-Up Income as a Proportion Total Income**

Category1		Category2		Category 3		Category 4		Category 5	
BANKS	2015	BANKS	2015	BANKS	2015	BANKS	2015	BANKS	2015
SBL	0.749153	CITIPK	0.472948	HBL	0.331843	BBL	0.282542	BAHL	0.152996
BOTPK	0.695489	FWBL	0.464245	ACBL	0.325852	SBLP	0.27512	BIPL	0.115836
NIB	0.584729	SB	0.443664	SNBL	0.324349	MCB	0.258249		
DBPK	0.532419	NBP	0.440559	BOK	0.318633	SCBP	0.251236		
BOP	0.503296	HMBL	0.431752	FABL	0.306979	BAFL	0.24135		
		JSBL	0.426247	UBL	0.304766	ABL	0.22941		
						DIBL	0.222688		
						MEBL	0.206607		
						ABBL	0.201227		

4. Exploratory Analysis

4.1. *Mark-up/Profit (Interest) Income*

The primary source of funds of a banking system are deposits generated through individual savers, private sector business concerns and the public sector. A major use of funds is the lending of money to those sectors. In general, the individuals are key savers and private businesses are key borrowers. The banks generate their net markup income as a spread between markup on credit loan's facilities net of profit payment to depositors. The asset base of banks also includes investments, and the profit on investments is considered to be a part of this type of income. Jaffar et. al.(2014)has indicated that as non-interest income increases, interest income also increases.One of the bank's vital roles is savings mobilization in productive assets that leads to the country's economic growth. We initiated our study to analyse the bank's major assets that include credit loans and investments; these major assets represent 85.63% per cent of the total operative commercial bank's assets in 2015. Credit loans generate revenue income by charging markup to their customers and banks earn profits on investments (see figure 1).

**Figure 1: Total Loans and Total Investments as a Proportion of Total Assets**
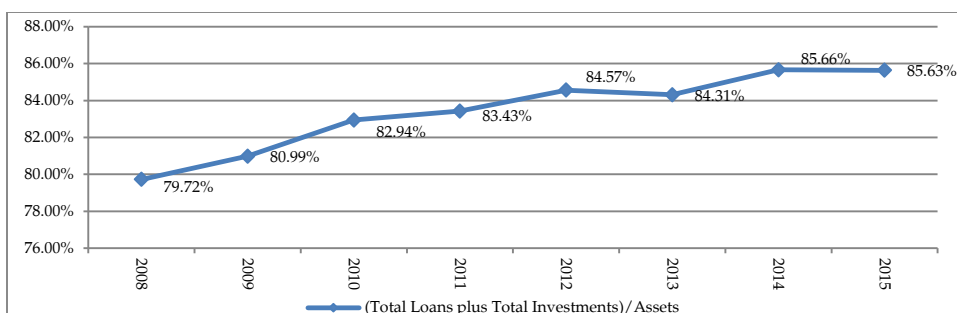
4.2. *Non-markup/Non-profit (Non-interest) Income*

Banks also provide a number of other services to their customers according to their expertise. These services depend solely on the bank's expertise and are not backed by any source of funds. The expertise base income includes capital market activities such as underwriting, mergers and acquisitions, advisory, market making, research and a host of other services like fees on services and commission income on difference types of transactions, gain on investments and foreign exchange.

We observed that over the study timeline, the net markup income as a proportion of gross income showed a higher degree of increase as compared to non-markup income as a proportion of gross income (see figure 2).

Figure 2: Non-markup and Net-markup income as a proportion of gross income
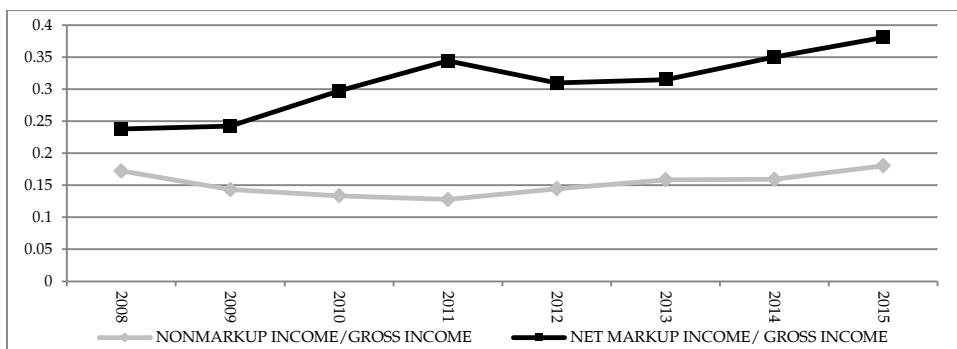
4.3. *Significance of Non Mark-up/Profit Base Income*

Extending upon the significance of non-markup income, we anlayze the proportion of net-markup income to profit base and non-markup income to profit base. Profit base is identified as the sum of gross loans and investments. We observed that the net-markup income increases from 3.06 per cent to 4.06 per cent, whereas the non-markup increases from 2.44 per cent to 2.67 per cent over the study timeline. These results highlight that non-markup income does not comprise a major part of revenue proportion if there is no expense bearing source. That is, non-mark up income is generated by banks which are not backed by any source of funds, and it is solely dependent upon bank's expertise and services that include fee and commission income, gain on investments and on foreign exchange (see figure 3).

**Figure 3: Net Markup and Non Markup Income as a Proportion of Gross Income**

Legend: Net Markup Income/(Gross Loans + Investments) — Non Markup Income/(Gross Loans + Investments)
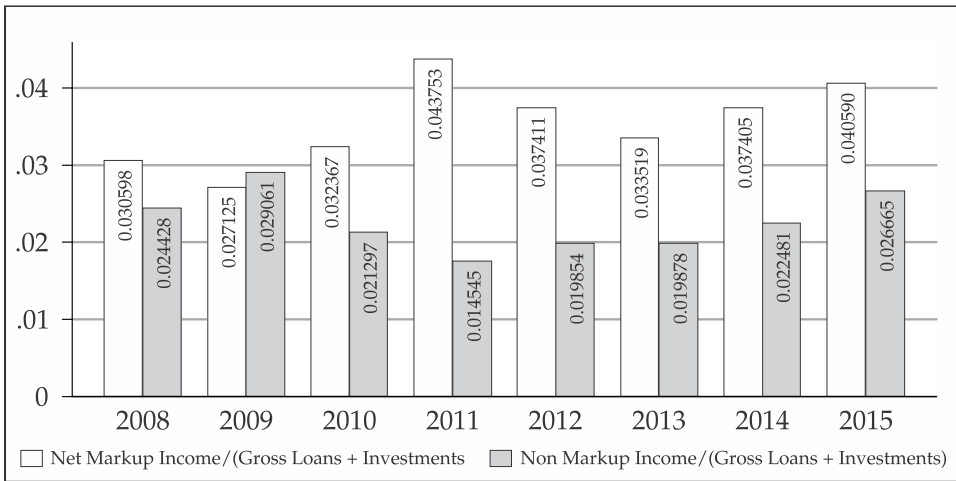
4.4. *X type of Banks are More Focused on Non mark-up Base Income*

We have compared the relationship between profit-bearing income[5] and non-profit-bearing income [6] , with net profit as a profitability performance measure of banks as a whole, the comparison between conventional, and Islamic banks and across their categories. We observed that over the timeline, the markup income proportion decreased from 72.28 per cent to 63.95 per cent, whereas the non-markup income proportion increased from 27.71 per cent to 36.05 per cent of the banks as a whole. In comparison between conventional and Islamic banks, the markup income of conventional banks decreased from 70.90 per cent to 60.58 per cent, wherein Islamic banks, the markup income increased from 78.65 per cent to 79.42 per cent. Whereas, the comparison between banks in terms of non-markup income, we observed an increase from 29.10 per cent to 39.41 per cent in conventional banks, a decrease of nominal value in Islamic banks from 21.35 per cent to 20.58 per cent was observed. In comparison between Islamic and conventional banks, we observed that conventional banks were more focused on shifting from markup base income to non-markup base income as compared to Islamic banks (see figure 4).

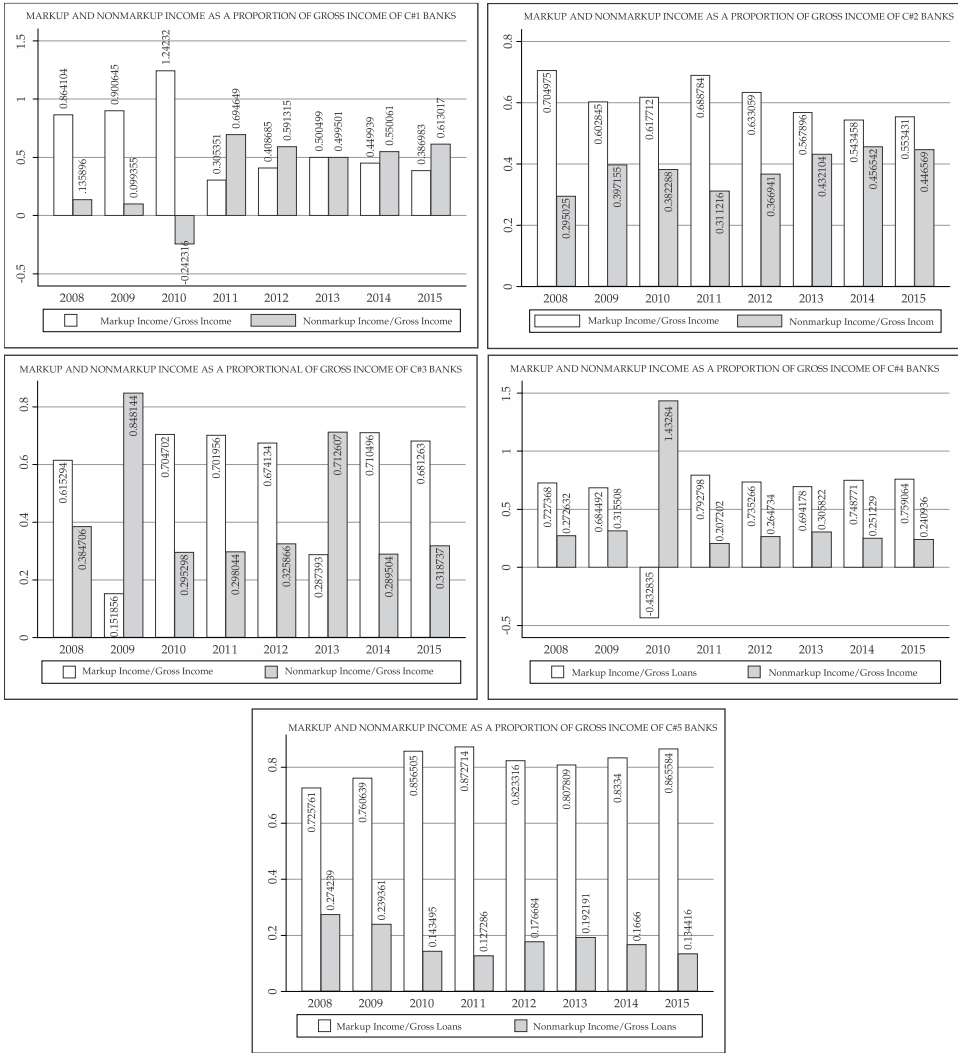[5]Profit bearing income means income against gross loans and investments.
[6] Non-profit bearing income means income against fee and commission income, gain on investments and on foreign exchange, dividend income etc

Figures 4
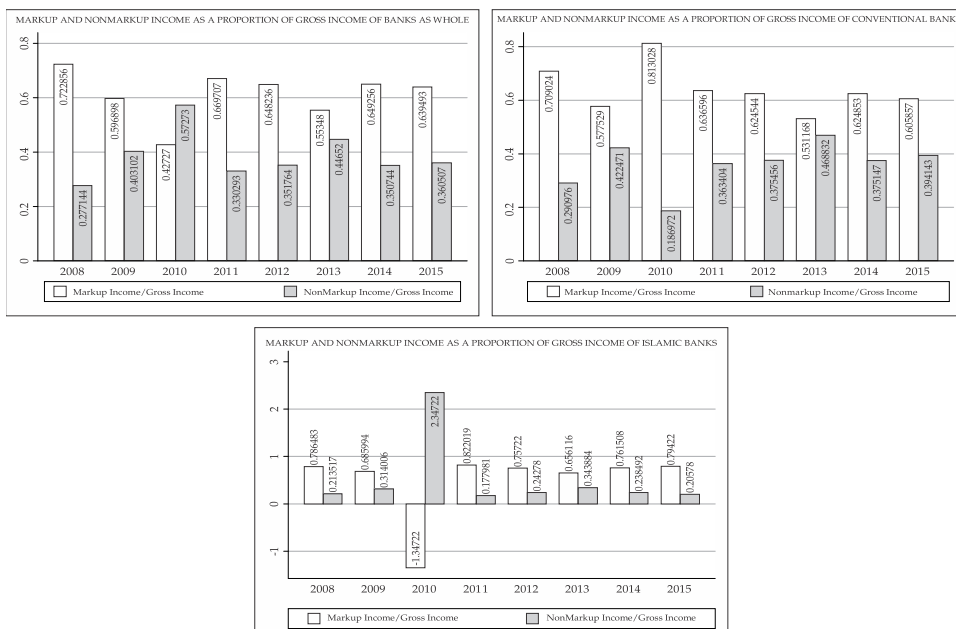
In comparison across the categories of banks over the study timeline, we observed that category 1 banks markup income decreased from 86.41 per cent to 38.70 per cent, whereas the non-markup income increased from 13.59 per cent to 61.30 per cent. Category2 banks markup income decreased from 70.50 per cent to 55.34 per cent, whereas the non-markup increased from 29.50 per cent to 44.66 per cent. Category3 banks mark-up income increased from 61.53 per cent to 68.13 per cent, whereas the non-markup income decreased from 38.47 per cent to 31.87 per cent. Category4 banks mark-up income increased from 72.74 per cent to 75.91 per cent, whereas the non-markup income decreased from 27.26 per cent to 24.09 per cent. Category5 banks mark-up income increased from 72.58 per cent to 86.55 per cent, whereas the non-markup income decreased from 27.42 per cent to 13.44 per cent. In comparison between the categories of banks, category1 banks demonstrated the highest degree of decline of mark-up income and the highest degree of increase in the non-mark up income (see figure 5).

Figures 5

MARKUP AND NONMARKUP INCOME AS A PROPORTION OF GROSS INCOME OF C#1 BANKS

MARKUP AND NONMARKUP INCOME AS A PROPORTION OF GROSS INCOME OF C#2 BANKS

MARKUP AND NONMARKUP INCOME AS A PROPORTIONAL OF GROSS INCOME OF C#3 BANKS

MARKUP AND NONMARKUP INCOME AS A PROPORTION OF GROSS INCOME OF C#4 BANKS

MARKUP AND NONMARKUP INCOME AS A PROPORTION OF GROSS INCOME OF C#5 BANKS

We have looked at the way the banks structure their profitability. In comparison between the conventional and Islamic banks, it was observed that both types of banks manage their profitability with higher levels of net-markup income. In the case of conventional banks, there was an increase in non-markup income portion, whereas in the case of Islamic banks, the increase did not reach significance in non-markup income observed over the study timeline (see figure 6).

Figures 6
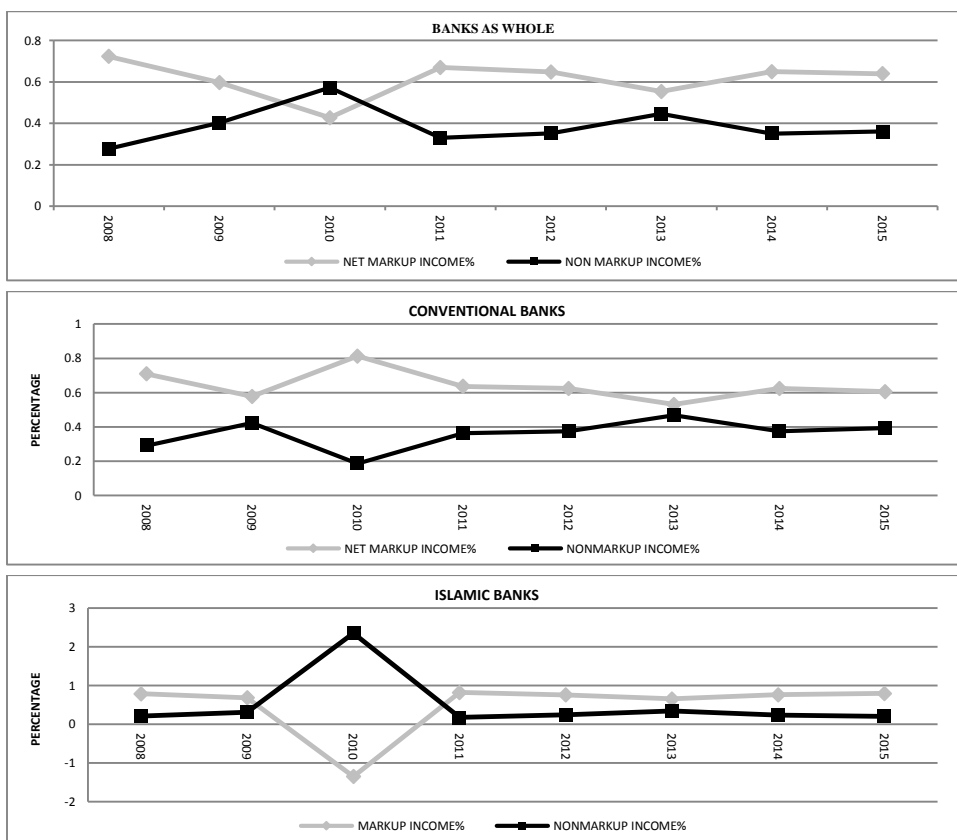
We have extended our study to look at the different categories of banks and the way the banks structure their profitability. In comparisons across the different categories of banks over study timeline, we observed that the level of non-markup income proportion in category1 banks exceeded that of mark-up income from 2011, and thereafter. In the case of category2 banks, markup income remained ahead throughout the study timeline. The results of category3 banks are quite interesting over the study timeline in terms of managing profitability: when markup income decreased, non-markup income immediately boosted in order to create equilibrium and vice-versa. The markup income of category4 banks remained ahead throughout the period of the study with the exception of 2010. The markup income of category5 banks remained ahead over the study timeline (see figure 7).

Figures 7

CATEGORY 1 BANKS

MARKUP INCOME%   NONMARKUP INCOME %

CATEGORY 2 BANKS

MARKUP INCOME %   NONMARKUP INCOME %

CATEGORY#3 BANKS

MARKUP INCOME %   NONMARKUP INCOME %

CATEGORY 4 BANKS

MARKUP INCOME %   NONMARKUP INCOME %

CATEGORY 5 BANKS

MARKUP INCOME %   NON MARKUP INCOME %
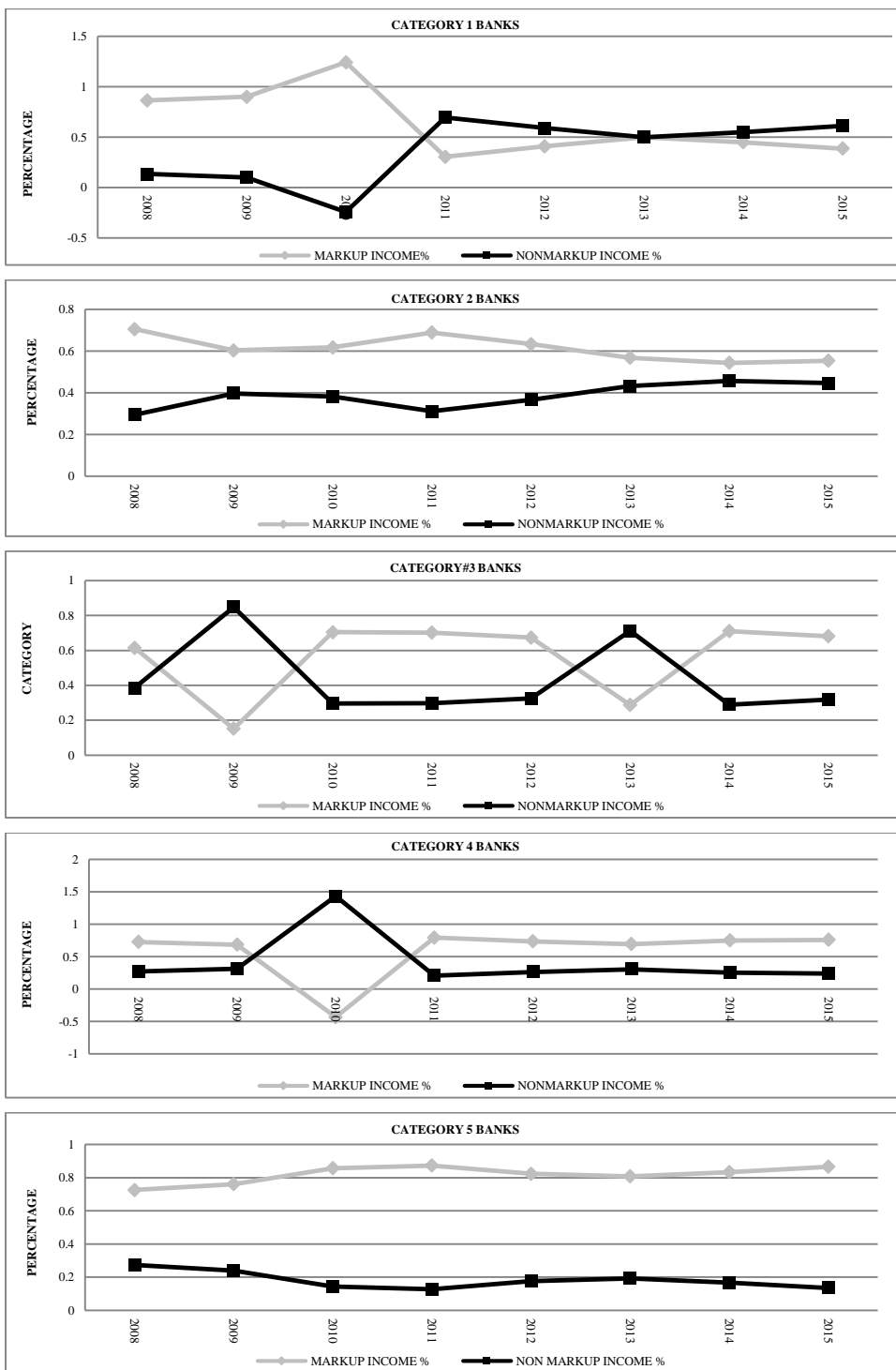
We have further extended our study to evaluate the average bank's performance over the study timeline from among the different categories of banks.Categories3, 4 and 5 each had positive returns on all performance measures, with category3 banks ahead among all categories (see figure 8).

Figure 8: Average Change over Study Timeline
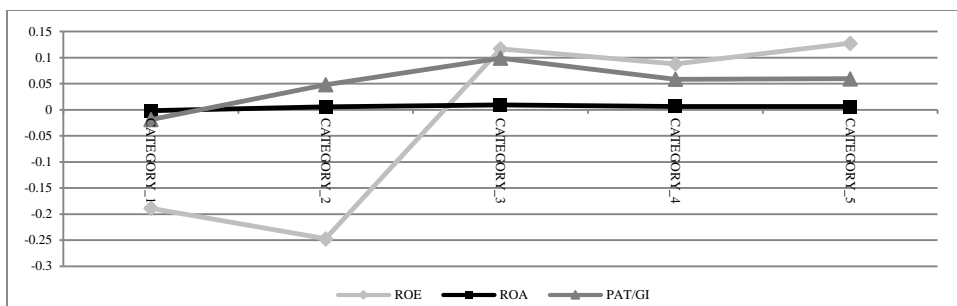
5.   Empirical Findings

5.1.   *H₁: X Type of Banks are Most Efficiently Getting Advantage from their Expertise*

When analyzing the tendency of diversification of structural income based on type of bank, we find that conventional banks have higher levels of non-markup income. This holds especially true for conventional banks which demonstrate significant increase in assets and profit after tax as a proportion of gross income base. Regarding the increase in equity base, conventional banks also tilt towards non mark-up income, however, the results are not significant. In Islamic banks category, low- and high-performing banks show increase in asset and profit after tax as a proportion of gross income base, but results towards markup income are not significant. In the case of equity base, low-performing banks tilt towards non-markup and high-performing banks tilt towards markup income but the results are not significant (see table 2).

**Table 2: Banks Mark-Up Income/Nonmark-Up Income Preference
across Conventional and Islamic Banks**

	Coef.	Std. Err.	P>t	Findings
ROA	-97.22071	25.04241	**0.000**	Conventional banks tilt toward non mark-up income significantly for both low and high performing banks with the increase in asset base.
ROA^2	-1597.861	707.9142	**0.025**	
ROAdumIsl	67.24858	109.3204	0.539	Islamic banks title towards mark-up income insignificantly for both low and high perform banks with the increase in asset base.
ROA^2_Isldum	8452.77	5671.055	0.138	
ROE	-2.641953	1.625221	0.105	Conventional banks tilt towards non mark-up income insignificantly for both low and high performing banks with increase in equity base.
ROE^2	-0.1759075	0.114738	0.127	
ROEdumIsl	-2.659097	9.84486	0.787	Islamic low performing banks tilt towards mark-up income and high performing banks tilt towards non mark-up income both insignificantly with the increase in equity base.
ROE^2_Isldum	23.38429	55.17138	0.672	
PATGI	-11.27491	2.749582	**0.000**	Conventional banks tilt towards non mark-up income significantly for both low and high performing banks with the increase in gross income.
PATGI^2	-21.64964	8.748449	**0.014**	
PATGIdumIsl	6.610952	9.99264	0.509	Islamic banks title towards mark-up income insignificantly for both low and high perform banks with the increase in gross income base.
PATGI^2_Isldum	37.28162	32.54739	0.253	

Low- and high-performing category1 banks tilted significantly towards non-markup income with an increase in asset, equity and net profit as a proportion of gross income base. Category2 low-performing banks tilt significantly toward non-markup income with an increase in asset and net profit as a proportion of gross income base; category 2 high-performing banks also tilted towards non-markup income with increase in asset and net profit as a proportion of gross income base, but this effect did not reach significance. In the case of increases in equity base, low- and high-performing banks significantly tilted towards non mark-up income. Category3 banks' results reflect mixed responses, but none reached significance. Category4 low-performing banks tilted significantly towards non-markup income with increase in asset, equity and net profit as a proportion of gross income base; category 4 high performing banks also tilted towards non-markup income with increase in asset, equity and net profit as a proportion of gross income base, but this effect did not reach significance. Category5 high-performing banks tilted significantly towards non-markup, and low-performing banks tilted towards markup

income with an increase in asset and net profit as a proportion of gross income base, but did not reach significance. In the case of increases in equity base, low-and high-performing banks tilted significantly towards markup and non-markup income (see table 3).

Table 3: Across Different Categories of Banks Mark-Up Income/Nonmark-Up Income Preference

	Coef.	Std. Err.	P>t	Findings
Category 1 Banks Have Nonmark-Up Income Above 50%				
ROA	-87.40097	18.70943	**0.000**	Catagory#1 banks tilt toward non mark-up
ROA²	-869.6766	467.0066	**0.071**	income significantly for both low and high performing banks with the increase in asset base.
ROE	-9.314507	2.617421	**0.001**	Catagory#1 banks tilt towards non mark-up income significantly for both low and high performing banks with increase in equity base.
ROE_2	-4.851097	1.61897	**0.005**	
PATGI	-12.24949	2.462526	**0.000**	Catagory#1 banks tilt towards non mark-up income significantly for both low and high performing banks with the increase in gross income.
PATGI_2	-17.68619	6.790217	**0.013**	
Category 2 Banks Have Nonmark-Up In Between 40%-50%				
ROA	-146.1755	38.79346	**0.000**	Catagory#2 banks tilt toward non mark-up income significantly for low and insignificantly for high performing banks with the increase in equity base.
ROA_2	-648.5112	1484.036	0.664	
ROE	-13.23473	3.867267	**0.001**	Catagory#2 banks tilt towards non mark-up income significantly for both low and high performing banks with increase in equity base.
ROE_2	-0.8903584	0.264361	**0.002**	
PATGI	-15.59698	4.062927	**0.000**	Catagory#2 banks tilt towards non mark-up income significantly for both low and insignificantly for high performing banks with the increase in gross income.
PATGI_2	-13.87862	15.67802	0.381	
Category 3 Banks have Nonmark-Up in Between 30%-40%				
ROA	17.21346	230.7639	0.941	Catagory#3 banks tilt toward mark-up income for low and tilt towards non mark-up income for high performing banks both insignificantly with the increase in asset base.
ROA_2	-9317.28	13581.73	0.496	
ROE	-13.3492	14.04685	0.347	Catagory#3 banks tilt towards non mark-up income insignificantly for both low and high performing banks with increase in equity base.
ROE_2	-88.4244	65.36441	0.183	
PATGI	2.305556	20.63361	0.912	Catagory#3 banks tilt towards mark-up income for low and tilt towards non mark-up income for high performing banks both insignificantly with the increase in gross income.
PATGI_2	-62.66914	114.8056	0.588	

	Coef.	Std. Err.	P>t	Findings
Category 4 Banks have Nonmark-Up in Between 20%-30%				
ROA	-13.20961	5.887164	**0.000**	Catagory#4 banks tilt toward non mark-up income significantly for low and insignificantly for high performing banks with the increase in asset base.
ROA_2	-20.8017	30.59382	0.598	
ROE	-13.23473	3.867267	**0.028**	Catagory#4 banks tilt toward non mark-up income significantly for low and insignificantly for high performing banks with the increase in equity base.
ROE_2	-0.8903584	0.264361	0.499	
PATGI	-13.16437	3.112261	**0.000**	Catagory#4 banks tilt towards non mark-up income significantly for low and insignificantly for high performing banks with the increase in gross income.
PATGI_2	-1.450415	12.84854	0.910	
Category 5 Banks have Nonmark-Up Below 20%				
ROA	182.3618	150.9664	0.249	Catagory#5 banks tilt toward mark-up income insignificantly for low and tilt toward non mark-up income significantly for high performing banks with the increase in asset base.
ROA_2	-36064.42	15918.14	**0.041**	
ROE	44.84789	24.40132	**0.089**	Catagory#5 banks tilt toward mark-up income significantly for low and tilt toward non mark-up income significantly for high performing banks with the increase in equity base.
ROE_2	-222.37	105.4152	**0.055**	
PATGI	4.556706	12.28626	0.717	Catagory#5 banks tilt towards mark-up income insignificantly for low and tilt towards non mark-up income significantly for high performing banks with the increase in gross income.
PATGI_2	-247.1393	107.471	**0.039**	

## 5.2.   *H₂: X types of Banks are Best Performers*

We used ROE, ROA and profit after tax as a proportion of gross income as performance measuring tools and developed the comparison across conventional and Islamic banks. We observed that conventional banks are ahead of Islamic banks in terms of managing their returns on equity, assets and profit after tax as a proportion of gross income (see figure 9).

Figures 9
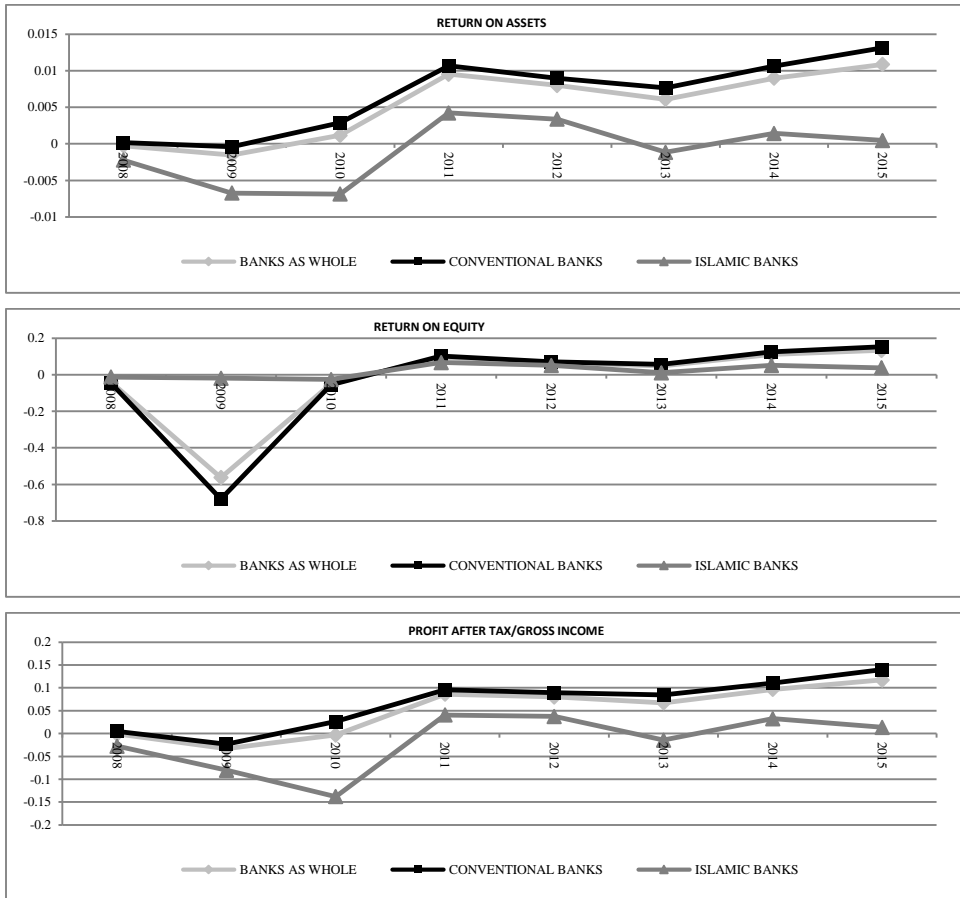
We further extended our study to evaluate the average bank's performance over the study timeline and observed that Islamic banks are ahead for all performance measures as compared to conventional banks (see figure 10).

Figure 10: Average Change over Study Timeline
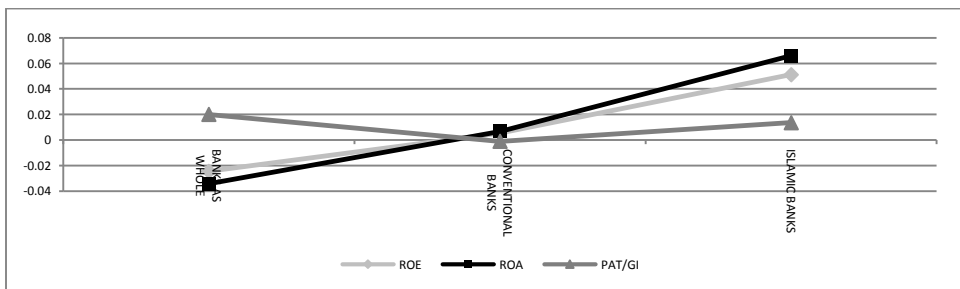
In order to measure performance among different categories of banks, we used ROA, ROE and profit after tax as a proportion of gross income. We observed that, except for category1 banks, all categories of banks reflected a positive return on assets, equity and profit after tax as a proportion of gross income over the study timeline. In the case of category1 banks, they became profitable after 2012 (see figure 11).

Figures 11
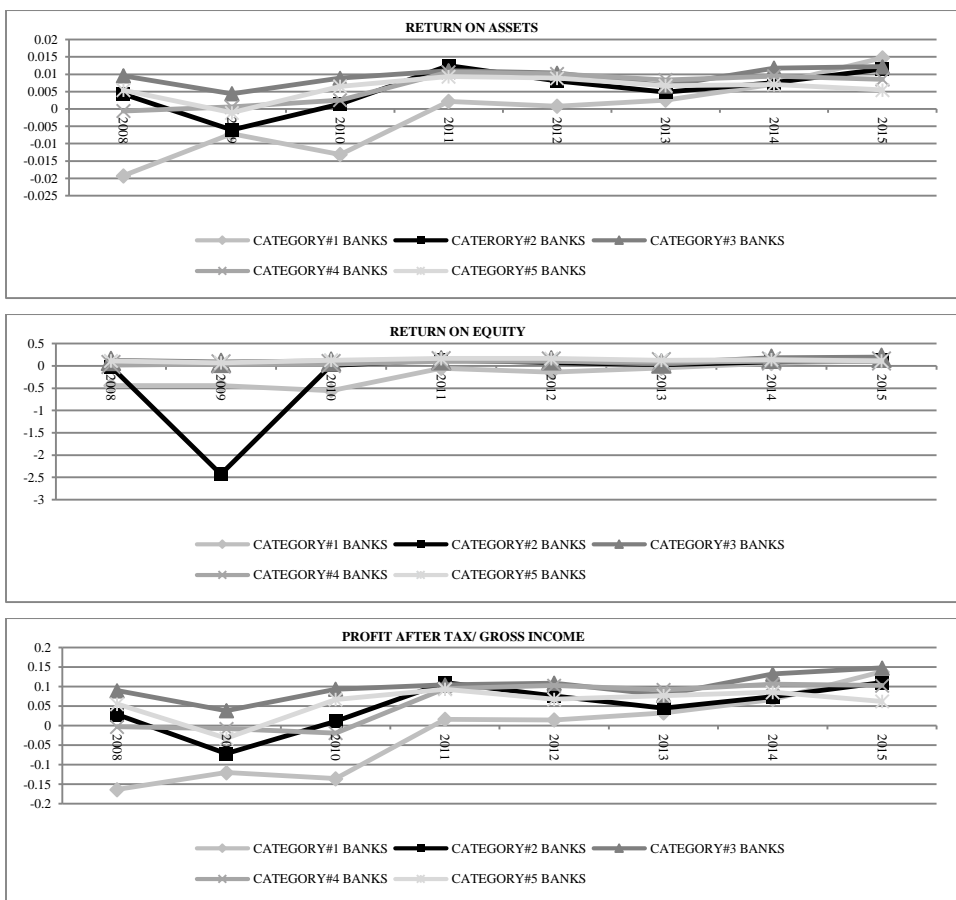
6. Conclusions and Policy Implications

This study examined country's commercial banks structural preferences towards non-markup and markup income over an eight year span between two ownership and category modes. Exploratory and explanatory analysis were applied to determine the impact of structural income on the performance of the banking sector by using a non-linear

approach. Exploratory analysis based on ownership mode suggested that conventional and Islamic banks managed their profitability with a higher level of net-markup income. Whereas, the conventional banks demonstrate increasing tendency towards non-markup income portion and Islamic banks responded adversely. Empirical analysis further authenticated similar results. Under category mode, the comparison was among the five categories of banks were conducted. The exploratory results suggested increasing tendency of non-markup income of category 1 and category 2 banks. Empirical analysis also authenticated the same results, that is, category1 low- and high-performing banks reflecting increasing tendency significantly towards non-markup income with an increase in asset, equity and net profit as a proportion of gross income base. Category 2 low-performing banks significantly and high-performing banks insignificantly reflecting increasing tendency towards non-markup income with an increase in asset and net profit as a proportion of gross income base. Whereas, both low- and high-performing banks significantly reflecting increasing tendency towards non-markup income with an increase in equity base. Category 3 banks, exploratory results suggested nominal decreasing tendency in non-markup income and empirical analysis suggested insignificant mixed results. Category 4 banks, exploratory results also suggested nominal decreasing tendency in non-markup income and empirical analysis suggested low-performing banks significantly and high-performing banks insignificantly reflecting increasing tendency towards non-markup income with an increase in asset, equity and net profit as a proportion of gross income base. Category 5 banks exploratory results suggested decreasing tendency in non-markup income and empirical analysis suggested low-performing banks insignificantly reflecting decreasing tendency towards non-markup income with an increase in asset and net profit as a proportion of gross income base and significantly reflecting decreasing tendency towards non-markup income with an increase in equity and high-performing banks significantly reflecting increasing tendency towards non-markup income with an increase in asset, equity and net profit as a proportion of gross income base. We also looked into banks' performance in terms of profitability measures, and made comparisons between conventional and Islamic banks. The conventional banks performances are ahead of Islamic banks with regard to these terms. Among the categories of banks, category 1 banks are ahead of the others in terms of ROE and category3 banks are ahead in terms of net profit as a proportion of gross income.

A fundamental limitation of this study is both the time frame and the sample of analysis. Future research may increase the time frame of analysis and incorporate comparable economies for analysis to enhance the generalizability of results.

The practical implication of the results may guide policy makers in financial institutions to determine what level of diversification would be beneficial, especially with respect to their ownership and category modes. This will pinpoint profitable strategies and lead to greater competition within the industry. The results of this study show that diversification in structural income provides a balancing effect in profitability for both low- and high-performing banks. Therefore, policy makers should develop an optimal level of income proportion by designing effective utilizations of available resources without deviating from their core business ethics.

References

Acharya, V. V., Hasan, I., & Saunders, A. (2006). Should banks be diversified? Evidence from individual bank loan portfolios. *The Journal of Business*, *79*(3), 1355-1412.

Alhassan, A. L. (2015). Income diversification and bank efficiency in an emerging market. *Managerial Finance*, *41*(12), 1318-1335.

Ashraf, D., Ramady, M., &Albinali, K. (2016). Financial fragility of banks, ownership structure and income diversification: Empirical evidence from the GCC region. *Research in International Business and Finance*, *38*, 56-68.

Baele, L., De Jonghe, O., & Vander Vennet, R. (2007). Does the stock market value bank diversification? *Journal of Banking and Finance*, *31*(7), 1999–2023.

Bekaert, G., & Harvey, C. R. (2002). Research in emerging markets finance: Looking to the future. *Emerging markets review*, *3*(4), 429-448.

Berger, A. N., Demsetz, R. S., & Strahan, P. E. (1999). The consolidation of the financial services industry: Causes, consequences, and implications for the future. *Journal of Banking & Finance*, *23*, 135–194.

Bikker, J. A., &Vervliet, T. M. (2018). Bank profitability and risk-taking under low interest rates. *International Journal of Finance & Economics*, *23*(1), 3-18.

Brown, M., Groen, J., Peristiani, S., & Snider, A. (2012). Economic policy review. *Economic Policy Review*, *18*(2), 1–94.

Campa, J. M., & Kedia, S. (2002). Explaining the diversification discount. *The journal of finance*, *57*(4), 1731-1762.

Carlson, M. (2004). Are branch banks better survivors? Evidence from the depression era. *Economic Inquiry*, *42*(1), 111–126.

Cebenoyan, A. S., & Strahan, P. E. (2004). Risk management, capital structure and lending at banks. *Journal of Banking and Finance*, *28*(1), 19–43.

Che, X., & Liebenberg, A. P. (2017). Effects of business diversification on asset risk-taking: Evidence from the US property-liability insurance industry. *Journal of Banking & Finance*, *77*, 122-136.

Chen, N., Liang, H. Y., & Yu, M. T. (2018). Asset diversification and bank performance: Evidence from three Asian countries with a dual banking system. *Pacific-Basin Finance Journal*.

Craigwell, R., & Maxwell, C. (2006). Non-interest income and financial performance at commercial banks in Barbados. *Savings and Development*, 309-328.

DeAngelo, H., & Stulz, R. M. (2015). Liquid-claim production, risk management, and bank capital structure: Why high leverage is optimal for banks. *Journal of Financial Economics*, *116*(2), 219–236.

De Vries, C. G. (2005). The simple economics of bank fragility. *Journal of Banking and Finance*, *29*(4), 803–825.

DeYoung, R., & Rice, T. (2004). Noninterest income and financial performance at US commercial banks. *Financial Review*, *39*(1), 101-127.

DeYoung, R., & Rice, T. (2004). How do banks make money? The fallacies of fee income. *Economic Perspectives-Federal Reserve Bank of Chicago*, *28*(4), 34.

Di Patti, E. B., & Hardy, D. C. (2005). Financial sector liberalization, bank privatization, and efficiency: Evidence from Pakistan. *Journal of Banking & Finance*, *29*(8-9), 2381-2406.

Edirisuriya, P., Gunasekarage, A., & Dempsey, M. (2015). Bank diversification, performance and stock market response: Evidence from listed public banks in South Asian countries. *Journal of Asian Economics*, *41*, 69-85.

Froot, K. A., & Stein, J. C. (1998). Risk management, capital budgeting, and capital structure policy for financial institutions: an integrated approach. *Journal of financial economics*, *47*(1), 55-82.

Froot, K. A., & Tjornhom Donohue, J. (2002). The persistence of emerging market equity flows. *Emerging Markets Review*, *3*(4), 338–364.

Gulamhussen, M. A., Pinheiro, C., &Pozzolo, A. F. (2014). International diversification and risk of multinational banks: Evidence from the pre-crisis period. *Journal of Financial Stability*, *13*, 30-43.

Hackbarth, D., Miao, J., & Morellec, E. (2006). Capital structure, credit risk, and macroeconomic conditions. *Journal of Financial Economics*, *82*(3), 519–550.

Haque, F., & Brown, K. (2017). Bank ownership, regulation and efficiency: Perspectives from the Middle East and North Africa (MENA) Region. *International Review of Economics & Finance*, *47*, 273-293.

Hirtle, B. J., & Stiroh, K. J. (2007). The return to retail and the performance of US banks. *Journal of Banking and Finance*, *31*(4), 1101–1133.

Hughes, J. P., Lang, W., Mester, L. J., & Moon, C. G. (1996). Efficient banking under interstate branching. *Journal of Money, Credit and Banking*, *28*(4), 1045-1071.

Jaffar, K., Mabwe, K., & Webb, R. (2014). Changing bank income structure: evidence from large UK banks?. *Asian Journal of Finance & Accounting*, *6*(2), 195-215.

King, R. G., & Levine, R. (1993). Finance and Growth: Schumpeter Might be Right. *The Quarterly Journal of Economics*, *108*(August), 717–738.

Landskroner, Y., Ruthenberg, D., & Zaken, D. (2005). Diversification and performance in banking: The Israeli case. *Journal of Financial Services Research*, *27*(1), 27–49.

Lensink, R., & Hermes, N. (2004). The short-term effects of foreign bank entry on domestic bank behaviour: Does economic development matter? *Journal of Banking and Finance*, *28*(3), 553–568.

Lepetit, L., Nys, E., Rous, P., & Tarazi, A. (2008). Bank income structure and risk: An empirical analysis of European banks. *Journal of Banking and Finance*, *32*(8), 1452–1467.

Liang, H. Y., Chen, I. J., & Chen, S. S. (2016). Does corporate governance mitigate bank diversification discount?. *International Review of Economics & Finance*, *45*(Sep), 129-143.

Lozano-Vivas, A., & Pasiouras, F. (2010). The impact of non-traditional activities on the estimation of bank efficiency: international evidence. *Journal of Banking & Finance*, *34*(7), 1436-1449

Mercieca, S., Schaeck, K., & Wolfe, S. (2007). Small European banks: Benefits from diversification? *Journal of Banking and Finance*, *31*(7), 1975–1998.

Morgan, D. P., & Samolyk, K. (2003). Geographic diversification in banking and its implications for bank portfolio choice and performance. *Unpublished paper, Federal Reserve Bank of New York*..

Moudud-Ul-Huq, S., Ashraf, B. N., Gupta, A. D., & Zheng, C. (2018). Does bank diversification heterogeneously affect performance and risk-taking in ASEAN emerging economies?. *Research in International Business and Finance*. *46*(Dec), 342-362.

Pasiouras, F. (2008). Estimating the technical and scale efficiency of Greek commercial banks: the impact of credit risk, off-balance sheet activities, and international operations. *Research in International Business and Finance*, *22*(3), 301-318.

Rogers, K. E. (1998). Nontraditional activities and the efficiency of US commercial banks. *Journal of Banking & Finance*, *22*(4), 467-482.

Shaban, M., Duygun, M., Anwar, M., & Akbar, B. (2014). Diversification and banks' willingness to lend to small businesses: Evidence from Islamic and conventional banks in Indonesia. *Journal of Economic Behavior & Organization*, *103*, S39-S55.

Sissy, A. M., Amidu, M., & Abor, J. Y. (2017). The effects of revenue diversification and cross border banking on risk and return of banks in Africa. *Research in International Business and Finance*, *40*(Apr), 1-18.

Stiroh, K. J. (2006). New evidence on the determinants of bank risk. *Journal of Financial Services Research*, *30*(3), 237–263.

Stiroh, K. J. (2006). A portfolio view of banking with interest and noninterest activities. *Journal of Money, Credit and Banking*, *38*(5), 1351-1361.

Tortosa-Ausina, E. (2003). Nontraditional activities and bank efficiency revisited: a distributional analysis for Spanish financial institutions. *Journal of Economics and Business*, *55*(4), 371-395.