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Non-interest Income and Profitability: A Case of Pakistani Banks

Shahid Hussain Javaid¹

Abstract

This paper examines the impact of non-interest income on bank performance for Pakistan. The study used Auto regressive distributed lag (ARDL) method on quarterly data from 2011 to 2021 for this purpose. The results show that decrease in non-interest income decreases the profitability of Pakistani banks. Furthermore, analyzing the components of non-interest income, it is found that decrease in income from dividend and foreign currency led to this decrease in profitability whereas fees & commission showed negative impact on performance. This suggests that commercial banks may increase the foreign currency earnings and dividends to enhance their profitability. This study may be helpful for commercial bankers, State bank of Pakistan and other financial institutions to build up non-interest income framework and policies.

Key words: non- interest income, bank profitability ARDL, financial stability

1. Introduction

In past few decades, banks started diversifying their income sources from traditional(interest) activities to non-traditional(non-interest) activities such as fee based services, sale of securities and forex transactions, etc.,. On the other, banking sector in Pakistan opted lately non-traditional activities and its share of non-interest income decreased from 24 percent to 22 percent during 2011-2021. This led to investigate the impact of non-interest income on bank performance for Pakistan.

Development of bank activities on non-traditional services is observed over the last few decades (Brighi and Venturelli, 2016). After global financial crisis interest rates diminished globally and operating expenses have been increasing. Pakistan banking sector operating expenses for non-interest increased from Rs.229 billion to Rs.576 billion and interest spread decreased from 7.49 to 4.09 during 2011-2021. The ratio of non-interest income decreased from 24 percent to 22 percent during 2011-2021. In order to tackle uneven situations, banks have to increase their reserve ratios and equities or explore alternative to interest income. The alternative to interest income is Non- interest income which is important source to reduce bank profit unevenness. The non-interest income is the income from services including loan processing fee, late payment fees, credit card charges, service charges, penalties, dividend, foreign currency earning and so on. An economist, Huang & Chen (2006) necessitated more sources of income other than interest based to survive in competitive banking industry. This requires to focus on non-interest income and its effectiveness. The present research is to uncover the impact of non-interest income on profits of Pakistani banks.

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A bank is a financial institution accepts deposits and lends money. There are four types of banks in Pakistan. The first type is public sector banks, more than 50% is held by the government of Pakistan. The second type is local private banks which refers to the banks whose majority of stake is held by the individuals and corporations. The other is foreign banks with head office outside the country in which it is located. Lastly, the specialized banks whose banking operations serve as a specific type of economic activity, such as industrial activity or agricultural or real estate, under the resolutions of their establishment. The sum of public, local private and foreign banks is called as commercial banks. All these banks receive deposits and lend money to general public and charge interest rate. Banks work for creating credit and earn profit. In short, an interest income is what banks earn through lending or credit creation process and non interest is earning through services.

Past researches on this subject (De Young and Rice, 2004; Stiroh and Rumble, 2006; Mndeme, 2015; Trivedi, 2015) explicitly stated that non-interest income could not replace the core-business income for banks because of high correlation between non-interest income and interest income³. On the other hand, these researchers recommend non-interest income to improve performance of banks. The earlier studies on impact of non-interest income on bank performance can be categorized as single country, cross section and panel data analysis and found positive, negative and neutral effect on banking sector performance.

The believers of non-interest income include Stiroh (2004), Elakkiya et al (2018), Karakaya et al (2013), Kohler (2013) etc., found that increase in non-interest income lead to increased profitability. On the other, Smith et al (2004), DeYoung (2004), Sun Limei (2017), showed negative relationship between non-interest income and profitability among banks. Lastly, Stiroh and Rumble (2006), Ana et al (2010) observed unclear relation between non-interest income and performance of banks. On the basis of related studies on non-interest income, the factors like competition among banks, the supervisory pressure and declining interest rate have pushed the banks to build structure of non-interest income. Further, previous studies revealed that increased competition, technological advancement, and financial market integration and country's specific regulatory innovation may contribute to diversification from interest income (DeYoung & Roland, 2001). However, there is consensus among all that technological advancement in banking has also increased the non-interest income activities. This research study is to investigate the role of non-interest income and its components in promoting performance of banks.

Remainder of this study is organized as follows: In Section 2, some literature review is illuminated. In Section 3, some stylized facts of Pakistan banking industry highlighted. Section 4 is about estimation & results and concluding remarks are presented Section 5.

2. Literature Review

Economists investigated relationship between non-interest income and bank performance for countries like China, Turkey, Vietnam, Ghana, India, and USA and so on. The scope of this relationship can be explained by dividing three school of thoughts. First argument is avoiding nontraditional activities may lead to increased risk of banking failure and profitability. Secondly, enhancing role of non-interest activities may reduce profitability and thirdly, impact of noninterest income on profitability is ambiguous.

Study by Mndeme, (2015) suggests diversification in income by banks to improve the performance in Tanzania. Fixed effect model is used to estimate the impact of non-interest income on performance of banking industry for the period of 2002 to 2012.

³ In case of Pakistan about 0.89 is the correlation coefficient.

Elakkiya et al (2018) examined the link between non-interest income and profitability of banks in India and found that non-interest income increases profitability to different types of banks. It suggests that public and private sector banks need to focus on diversified income and improvement in banking services to increase their income.

Aykut Karakaya (2013) explored the relationship between non-interest income and performance of Turkish banks using data from 2005-2010. It concluded that capital adequacy, size of banks, credit rate has increased the performance and general expenses decrease it. It also suggests that capital adequacy increases the non-interest income.

Afzal. A and Nawazish Mirza (2012) recommends that larger banks are more towards income diversification. The study used unbalanced panel data of commercial banks from 2004-2009. They also found that market measures of value at risk (VAR) is significantly related to diversification for risk mitigation. This result may help in financial stability in the system.

The study Köhler (2013) analyzed the impact of non-interest income on risk in German banking sector from 2002 to 2010. The study used Z-score variable as indicator of bank risk and independent variables include non-interest income and other control variables to estimate the regression. It suggests that bank business model is important and found saving banks and cooperative banks more stable while changes in non-interest income share. This recommends balance between interest income and non-interest income to minimize the risk and enhance profit.

Aslam. F (2015), By using data for 19 Pakistani commercial banks for the period 2006-2012, it showed that non-interest income and return on equity have positive relationship. Return on equity (ROE) is used as dependent variable and proxy for performance of banks. Asset size, capital adequacy, liquidity ratio, leverage ratio and asset quality are taken as explanatory variables. The study concludes that ownership plays an important role for non-interest income i.e. Public, private and foreign banks earn different levels of non-interest income. In Pakistan, foreign banks earn more non-interest income followed by public and private banks. Private Banks derive major part of their earning from interest income.

Alam et al (2011) enquired about comparison for the performance of public and private banks. Using data from 2009-2009, the study found, based on bank size, private banks are at first, and public banks are second, based on profitability, public banks are at first. Whereas, private banks are at first on the basis of spread ratio, non-interest expenses to total income ratio and net interest margin. On asset quality, public banks are at first and private banks are at first on the base of capital ratio.

Karolína Vozková (2020) investigated the impact of fee income on performance of EU banks using data from 2005-2014. The estimation results, using GMM technique, found no diversification benefit by increase in fee income. It further explained the role of external factors like competition and macroeconomic factors s determinant on performance of banks. Return on asset, return on equity and net interest margin are dependent variables and proxies as performance whereas deposit asset, loan deposit ratio, Herfandal index, lagged inflation and GDP growth as independent variables. The paper found the share of fee income is highly dependent on the banks' business models.

Gul et al (2011) observes relationship between bank profit and bank specific factors for top fifteen Pakistani commercial banks using data from 2005-2009. This study used return on asset, return on equity and interest margin as dependent variable whereas explanatory variables are assets, loans, equity, deposits, inflation and economic growth. It is found that all variables have strong relationship with bank profitability. This study is useful for policy makers to understand the sensitiveness of the bank specific factors like asset and loans.

Vithyea (2014) focuses on 28 Cambodian banks using data from 2004-2010. The study provides an evidence that decrease in net interest margin led to increase in non-interest income. It recommends the Cambodian banks to reallocate the interest revenue towards non-interest income. The study helps policy makers to understand trade off in optimizing profit.

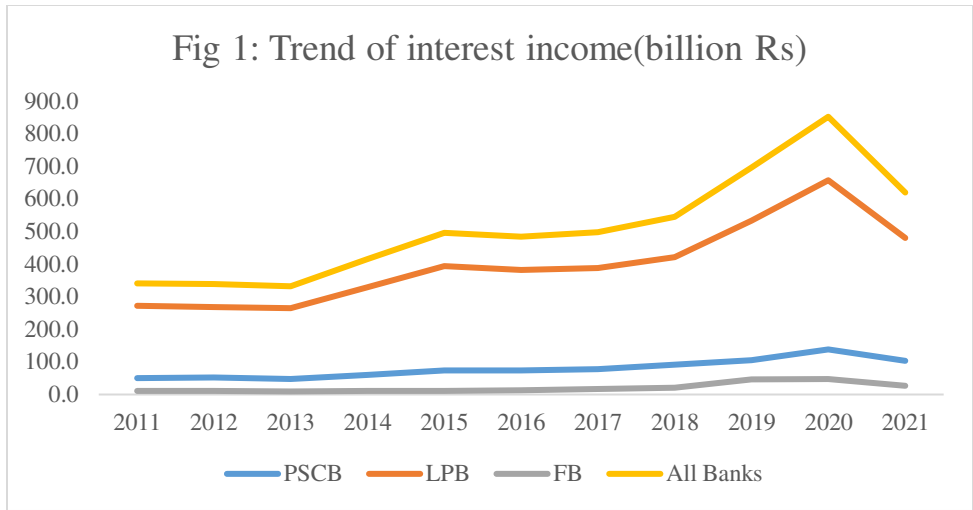
Limei Sun (2017) investigated the relationship between non-interest income and performance of Chinese banks during 2007-2013. Using panel threshold model, the estimates suggest that there is nonlinear relation and negative relation between 16 Chinese commercial banks.

3. Stylized Facts

The sample of 38 banks (5 public sector banks, 22 local private banks, 7 foreign banks, 4 specialized banks) are used for analysis. The quarterly data is collected for the period of 11 years i.e., from 2011 to 2021 from State bank of Pakistan. The effect of different components of non-interest income on the banks performance are also analyzed using ARDL bound testing technique.

In this section the trends of different bank specific variables used and graphical presentation highlight the background of the study. Before discussing the trend of different bank specific variables, the idea of fee income and non-interest income need to be discussed. Non-interest income is derived mainly from fees including deposit and transaction fees, insufficient funds fees, annual fees, monthly account service charges, inactivity fees, check and deposit slip fees, and so on. It is generated from non-core activities of banks. It plays a vital role in the overall total income of the banks. The other parts of non-interest income are foreign currency and dividends. It is to note that the largest portion of non-interest income is fee & commission.

The study includes different types of banks; public sector commercial banks (PSCB), Local private banks (LPB), foreign banks (FB) and Specialized banks (SB). It is important that all commercial banks (CB) include PSCB, LPB and FB whereas all banks include CB and SB. As outlined above there are four basic components of non-interest income in banking sector of Pakistan. Fees, commissions and brokerage income provides the biggest proportion of non-interest income. It includes service charges, fines, stationery items, administrative relating services of banks. During 2011-2021, all banks contribution of fee income was 49.91 percent of non-interest income and LPB share is the highest (51.12%). Similarly, Dividend provide 8.39%, foreign currency related income 12.50% and other income 29.20% by all banks (see table 1(a)).



Interest income is the core income of banks through lending activities. During the period of analysis, Fig 1 is about the interest income of different banks. On average, PSCB contribute Rs.50.1billion (15.3%), LPB Rs.255.8 billion (78.4%), FB Rs.12.8billion (3.9%) and all banks Rs.326.3 billion during 2011-2021. Similarly Fig 2 explains that PSCB provide Rs.24.1 billion (21.3%), LPB Rs.86.3 billion (76.6%), FB –Rs.0.6 billion (-.5%) and all banks Rs.112.7billion during the same period. By this it is clear that interest income is 74.3 percent and non-interest income is 25.6 percent of total income earned by all types of banks in Pakistan. The trend of interest income showed that LPB proportion is the largest among all banks in Pakistan. Fig 2 is about the trend of aggregated non-interest income during the period of interest.

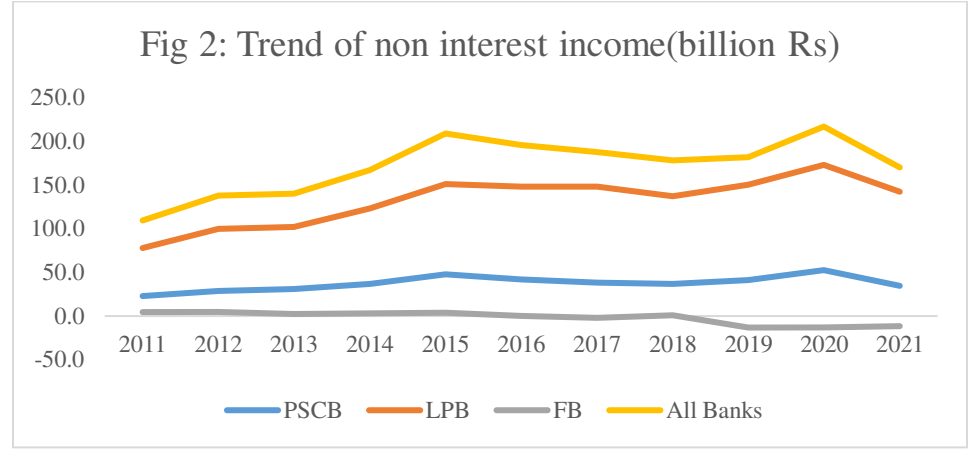


Figure 3 shows the trend of different components of non-interest income. It can be inferred that fees, commissions and brokerage income is dominant factor in non-interest income. The other income portion is the second largest component. It's like un-explained which needs to be explored and classified accordingly. The trend of other income highest during 2015-2017 and then it goes down till 2019. During 2020, other income started increasing. This factor income needs to description as it effects the volume of Fee, Divd and FC. The more clarity on other income would identify the main components of non-interest

income. Third factor of non-interest income is foreign currency income which shows the strength of bank on trading of foreign currencies. The net earnings from this source may increase the bank performance but the income from foreign currencies is volatile and less reliable so domestic banks avoid such risks. The smallest proportion of non-interest income is dividend which is the undistributed profits. It depends on the profits from interest based income. The higher the value of interest based profits higher may be the value of dividends.

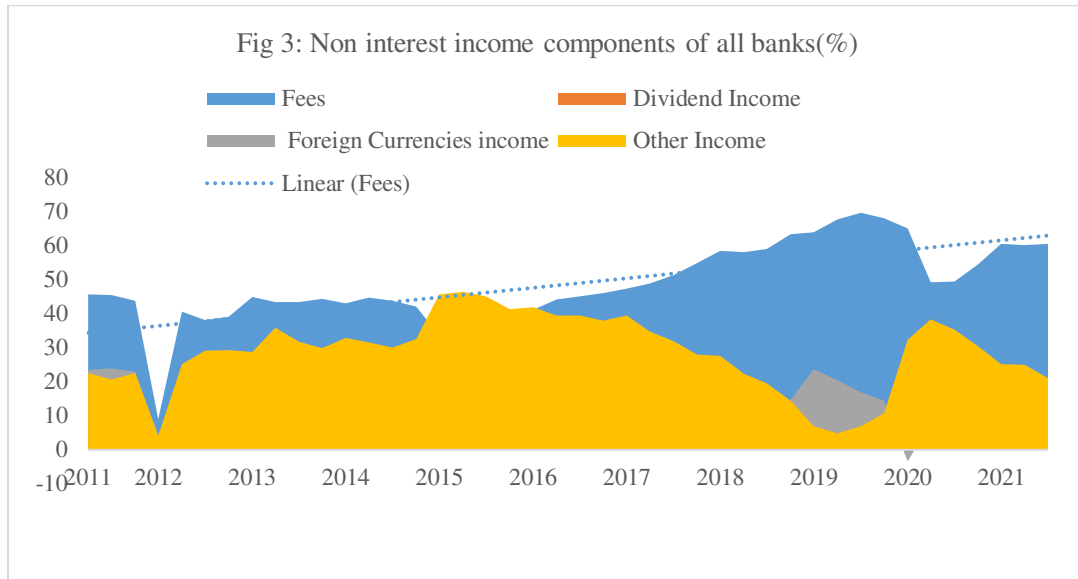
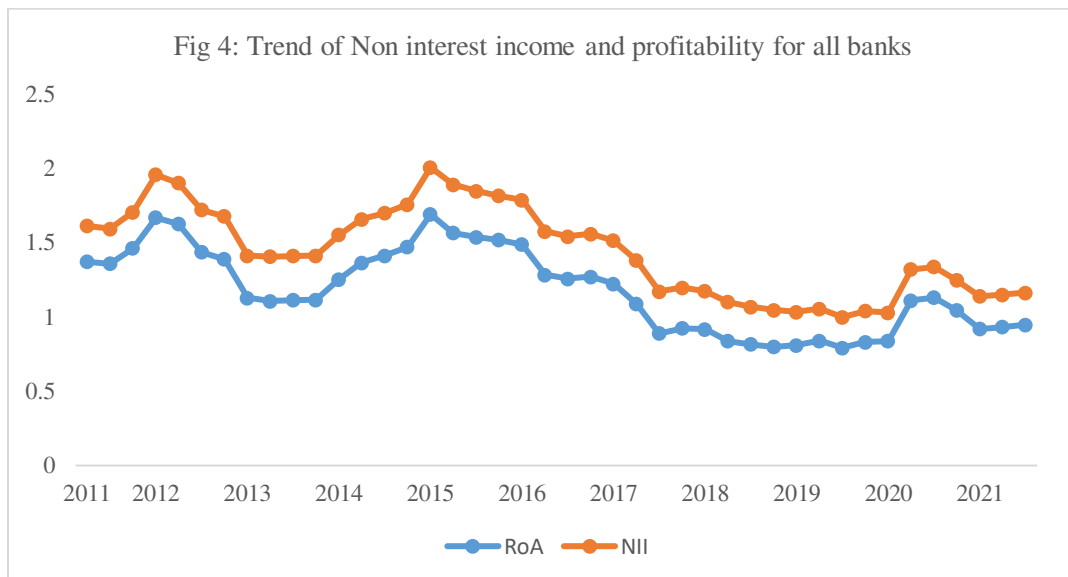
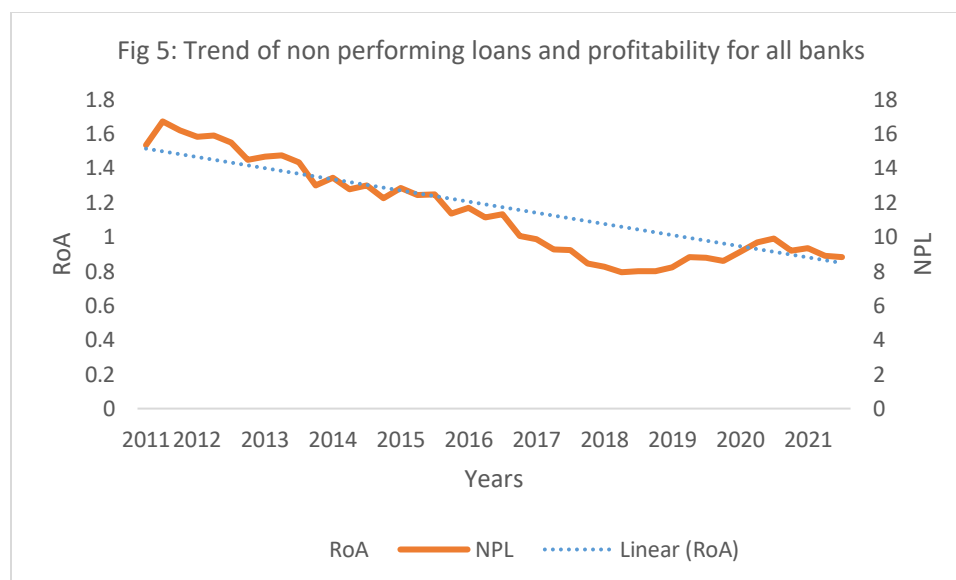


Figure 4 is about the tendencies of non-interest income (NII) and profitability measure (RoA) variables. It is shown that movements of non-interest income are same as RoA. During 2011-2021, it is observed that the peaks in NII leading to high levels of RoA and vice versa.



Similarly figure 5 is about the trend of non-performing loans and profitability. The dotted line is the linear trend of RoA showing declining path and NPL on the other, is also trending downwards. Theoretically, decrease in NPL may led to increase in RoA. This also motivates to explore the reasons other than NPL causing RoA to decrease.



The table 1 explains that share of fees income is highest and LPB is getting the biggest share out of this income (51.12%). The other source of non-interest income is income trading in foreign currency. Foreign banks performed well and SB has least share in this connection. Dividend is another very important source of non-interest income. Public sector and local private banks adding 8.4 percent share to add the non-interest income.

Table 1: share of components of non-interest income(2010-2021)

	PSCB	LPB	FB	CB	SB	All Banks
Fee income	43.2	51.12	188.99	50.94	10.2	49.91
Dividend	8.44	8.43	0	8.49	4.76	8.39
Foreign currency income	12.33	15.6	332.3	12.82	0.03	12.5
Other income	36.03	24.85	-43.31	27.75	85.01	29.2

Fig 6 is showing the trend of return on asset which is used as a measure of performance of bank. This posit declining trend for all types of banks during the period concerned. Foreign banks observed to be

most volatile and to know about the consistent behavior, coefficient of variation⁴ for each type of bank RoA depicts that LPB is the least volatile and foreign banks are the most volatile among commercial banks.

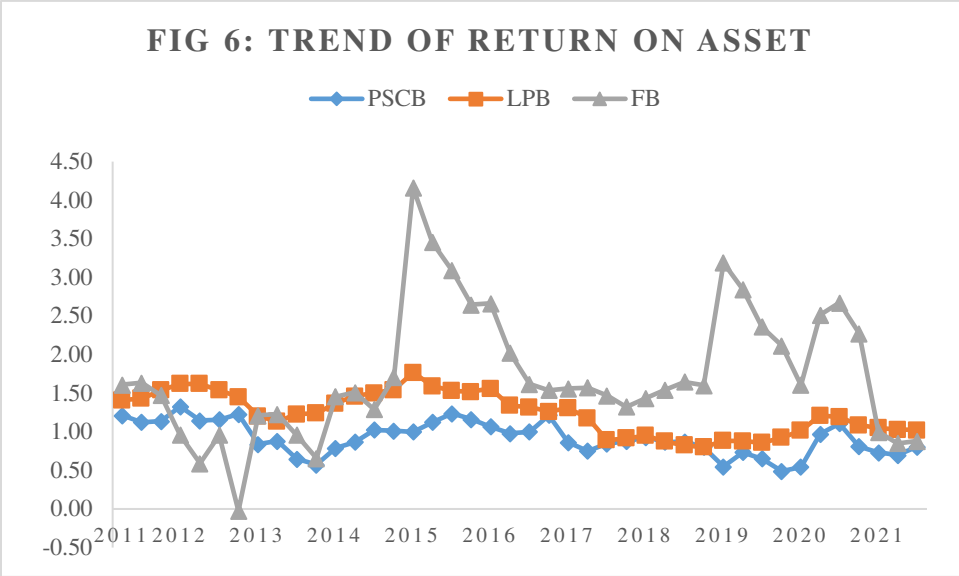
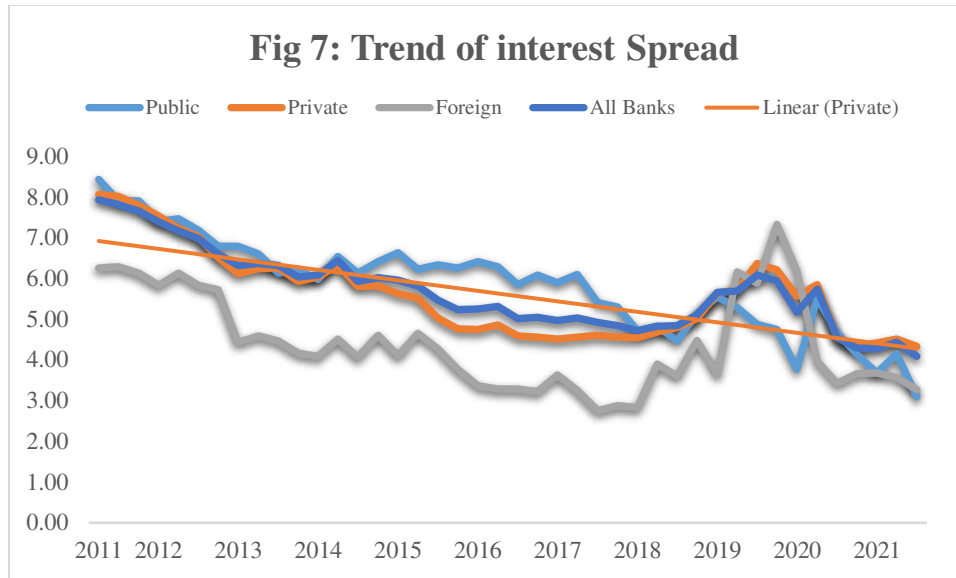


Fig 7 is showing the trend of interest spread during 2011-2021. This is clearly observed that difference between the lending rate and deposit rate is going down and provide opportunity to banks to develop non-interest income. It was also observed that coefficient of variation for PSCB (20.5%) is more volatile than LPB (19.2%).

⁴ PSCB 50.1, LPB 46.8, FB -796.0, all banks 46.0



Non-performing loans are measure of risk for lending by banks and used as a control variable (fig 8 in appendix). The trend for LPB and FB has gone down whereas PSCB showed increasing trend. On average PSCB NPL stood at 16.95, LPB at 9.46, FB 7.39 and all banks at 11.42. It is note that SB showed 30.14 percent NPL which is highest among all banks. The coefficient of variation for NPL is calculated to show the level of variability among different banks. It is observed that PSCB (18.3%) are less volatile than LPB (29.2%) during 2011-2021.

Assets of banks include cash, loans, bonds etc. Fig 9 explains that it has increased particularly for LPB. LPB assets are Rs. 12153 billion, PSCB has Rs.3010billion, FB has 445 billion and SB has 212 billion Pak rupees. LPB act as leader in banking sector as for as the asset are concerned during the period of analysis.

The ratio of capital to total assets is another variable related to observe the banking performance and a control variable in the model. It actually covers the investments of bank according to its liabilities. High capital adequacy ratio (CAR) indicate that a bank is operating carefully to investment opportunities and vice versa (see fig in appendix). It may be expected positive relationship with non-interest income as if more capital absorbed for any uncertainty, more dependence on non-interest income is expected. However, if highly leveraged banks are more involved in noninterest activities, moral-hazard behavior may indicate a negative relationship.

4. Estimation and Results

In this section, we examine the impact of the non-interest income on bank profitability⁵. The banks' basic factors are taken as determinants of the profitability include non-interest income (NII), capital adequacy, bank size (total asset), liquidity and non-performing loans (NPL).

⁵ Expected sign for variables can be seen table in appendix.

4.1. Data and variables

The analysis is based on banking sector quarterly data of Pakistan from 2011 to 2021. The quarterly datasets of different banks were taken from the State bank website. Table 2 displays the number of banks included during the period of study. Thus, the data used in this study covers period from Jun 2011 to Sep 2021. The reason for using this small dataset is to maintain the consistency and availability of variables. The data used for estimations was taken from financial soundness indicators published by State bank of Pakistan.

	CY11- CY13	CY14	CY15- 16	CY17- 18	CY19	CY20- 21
PSCB	5	5	5	5	5	5
LPB	22	22	21	20	20	20
FB	7	7	4	5	5	4
CB	34	32	31	30	30	29
SB	4	4	4	4	3	3
All Banks	38	36	35	34	33	32

The study includes different categories of banks consists of public sector commercial bank(PSCB), local private sector commercial banks(LPBC), Foreign banks(FB), Specialized banks(SB) and all banks as a whole. The number of banks of different categories are summarized in table 2. This table explains that there is no change in PSCB numbers whereas LPB reduced from 22 to 20, FB condensed from 7 to 4 and overall commercial banks compressed from 38 to 32 during 2011-2021. The category of SB loose only one bank.

4.2. Explanation of variables

Non-interest income (NII)

Non-interest income is bank income derived from fee& commission, dividend, foreign currency and other trading services. The sum of fee income, foreign currency income, dividend and others as ratio of total operating income is used for the study. The expected relationship with profitability is positive but it can take negative values. Different types of banks have varied values for components of non-interest income.

Fee & commission income (Fee)

The ratio of fees & commission to operating income is taken as the explanatory variable. The positive sign shows that increase in services fee and brokerage charges increases the performance of banks and vice versa.

Dividend (Divd)

The ratio of dividend to operating income is calculated for different types of banks in Pakistan. The positive relation with performance translate increase in undistributed profits and led to enhanced profitability and vice versa.

Foreign Currency income (FC)

The ratio of foreign currency income to operating income is measured to observe the impact on performance of banks. The positive coefficient posits that banks trading in foreign currency is facilitating the performance and vice versa.

Others (OI)

This is the portion of all other income which include trading income and items not included in FC, Divd and fees & commission.

Return on Asset (RoA)

It is the ratio of net income to total asset of banks. It is dependent variable and used as proxy for profitability in banking sector. The normal range for this is between 1-2 percent and below this range is not good as for as the performance is concerned.

Bank size (asset)

The natural log of bank Total Assets (TA) was used as a measure of bank size. The assets of a bank is to influence the size of its engagement in both interest and non-interest income. Participation in nontraditional/non interest activities according to Rogers (1998) varies greatly across banks due to differences in size, and other characteristics. This suggests that larger banks are better equipped to use new technology and exploit the cost and maximize gains.

Exposure to Risk (NPL)

Non-interest activities vary greatly across banks due to differences in risk and other characteristics. Risk is a very important consideration in the conduct of business to absorb unexpected losses. Loan-loss provisions or non-performing loans (NPLs) is used as a measure of bank's exposure to risk.

Bank Liquidity (Liqass)

Bank liquidity risk, which arise from unexpected deposit withdrawals and unexpected loan demand is another risk variable. A bank with relatively more liquid assets is better placed to meet exigencies. On the other, this liquidity results in idle funds which turn to reduce returns. This means positive relation between non interest activities and liquidity may occur if bank need more liquidity to meet the requirements of customers. This variable is represented by the ratio of liquid asset to total assets.

4.3. Estimation and Methodology

The study first used correlation analysis to identify the relationship between profitability (RoA) and non-interest income (NII). The correlation coefficient tells us that the size of one variable increases as the other variables also increases, or where the size of one variable increases as the other variable also decreases. In a positive relationship, the variables tend to move in the same relative direction. In simple correlation coefficient a linear relationship where the variables move in the same direction at a constant rate. Secondly after identifying strength of relationship, ARDL model is used to estimate the coefficients and the long run relation among variable of interest. ARDL bounds testing approach is a cointegration method developed by Pesaran et al. (2001) to test presence of the long run relationship between the variables. This method has many advantages over the classical cointegration tests. Firstly, the approach is used irrespective of whether the series are I (0) or I (1). Secondly, unrestricted error correction model (UECM) can be derived from the ARDL bounds testing. This model has both short and long run dynamics. Thirdly, the empirical results show that the approach provides consistent results for small sample. The model used for estimation is as:

$$RoA = a_0 + \sum_1^n \beta_1 \Delta Fee\ income + \sum_1^n \beta_2 \Delta NPL + \sum \beta_3 \Delta CAR + \sum \beta_4 \Delta Asset + \sum_1^n \beta_5 \Delta Liqass + \phi_1 Fee\ income + \phi_2 NPL + \phi_3 CAR + \phi_4 Asset + \phi_5 Liqass + \epsilon_t$$

.....1

In equation 1, $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 , the short-term dynamics of the model whereas parameters $\phi_1, \phi_2, \phi_3, \phi_4$, and ϕ_5 represent the long-run relationship. To avoid over identification problem asset and capital adequacy variables are excluded from the model and components of non-interest income added. The null hypothesis of no long-term relationship is $H_0: \phi_1 = \phi_2 = \phi_3 = \phi_4 = \phi_5 = 0$. The F-statistic is compared with critical value. If the test statistic exceeds the upper critical value, the null hypothesis of no long-run relationship is rejected regardless of whether the underlying order of integration of the variable is $I(0)$ or $I(1)$. Similarly, if the test statistic falls below a lower critical value, the null hypothesis is not rejected. However, if the test statistic falls between these two bounds, the result is inconclusive. When the order of integration of the variables is known and all the variables are $I(1)$, the decision is made based on the upper bound. Similarly, if all the variables are $I(0)$, then decision is based on the lower bound. The bound test is actually a test for co-integration between/among series integrated of different orders less than $I(2)$. The study focuses on long run relationship among variables of interest.

Before moving to data analysis it is necessary to check whether all the variables are stationary or not. Since a model constructed with non-stationary data set is forecasted with least square (LS) method, after a shock it is possible to get results that actually do not exist between variables. And this leads to the problem called spurious regression. Therefore, Non-stationary variables are excluded from the analysis and the data analysis is performed only with the variables whose stationarity have been determined. In this study Augmented Dicky-fuller (ADF) unit root test has been used for stationarity analysis. In the table 3 it is seen that except RoA, Other items, Liqass and NPL do not contain unit root at its original levels and is stationary at first difference $I(1)$ and rest of variables are stationary at $I(0)$.

Variables	Level		Ist diff	
	constant	trend	constant	trend
NII	0.02	0.04	0	0
RoA	0.66	0.65	0	0
FEE	0.02	0.03	0	0
Divd	0	0.57	0	0
FC	0.01	0.01	0	0
Oin	0.43	0.54	0	0
Liqass	0.12	0.32	0	0
NPL	0.13	0.32	0	0

Descriptive statistics and correlation coefficients of profitability (RoA), non-performing loans (NPL) and liquid asset (Liqass) and components of noninterest income like fee and commission income (fee), foreign

currency income (FC), dividend (Divd), and other items (Oin) are presented in Table 4. According to the table, on average sample's asset profitability is over 1%, NPL is 11%, and Liqass is 50% for all banks. This situation shows that during the periods banks were profitable as RoA range 1-2 percent is considered normal. On the other hand it is observed that fee income is observed to be highest (12.54%) and Divd lowest (2.26%). Further, calculation of minimum values of profitability as positive, maximum values as high positive (1.69) and median value as lower than average makes clear that profitability for all the banks in sample was at similar levels.

Table 4: Descriptive statistics

	ROA	FEE	FC	DIVD	OIN	NPL	LIQASS
Mean	1.18	12.54	3.29	2.26	7.77	11.42	50.2
Median	1.13	12.91	3.3	2.36	8.06	11.23	49.74
Maximum	1.69	15.59	5.67	4.68	15.08	16.72	57.11
Minimum	0.79	2.57	0.66	0.89	1.05	7.94	38.23
Std. Dev.	0.28	2.18	1.4	0.94	3.61	2.76	4.49
Jarque-Bera	2.8	158.87	0.43	5.46	0.54	3.65	2.23
Probability	0.25	0	0.81	0.07	0.76	0.16	0.33
Observations	42	42	42	42	42	42	42

Looking at indicator for Liqass of banks which is 50.20%, it is obvious that this rate's variation among banks is higher than minimum, maximum and standard deviation values. From the table it is seen that banks' NPL are five times lesser than Liqass. Discussing the noninterest income components, it can be observed that Fee variation is highest among Fc and Divd. It is also important to note that FC has negative value as minimum during the period among all banks. Furthermore, it can also be observed that these indicators are not homogenous from the perspective of all banks. And this shows that banks have different characteristics and they adopt different policies in similar matters. Probability of zero in the Jarque-Bera test indicates that the null hypothesis of normality assumption is rejected. In the variables of study about all are normal series.

In Table 5 correlation coefficients of variables are presented. While showing the relation levels among variables the correlation coefficients can also point to the problem of high multi collinear relation among the independent variables that will be addressed in the model. In this context, in case there is high correlation among more than one independent variables which represent the same characteristic these variables cannot be provided in the same equation. While looking at Table 3 it is seen that this multi collinearity problem may exists for NPL. On the other hand, the correlation between fee income and Liqass is negative. In general, this means that all banks having higher Fee income and Liqass may associate with lowering rate of profit, they charge lower fee and their expenses is higher. This finding shows that banks naturally assume higher overheads for non-interest services. Similarly, Table 3 shows that correlation between FC, Divd and OI is positive.

Table 5: Correlation Coefficient

	ROA	FEE	FC	DIVD	OIN	NPL	LIQASS
ROA	1						
FEE	-0.69	1					
FC	0.31	0.02	1				

DIVD	0.5	0.05	0.49	1			
OIN	0.56	0.02	0.07	0.41	1		
NPL	0.76	0.62	0.54	0.65	0.24	1	
LIQASS	-0.22	0.27	0.69	-0.31	0.39	0.62	1

Table 5 reports the empirical findings of the estimated long-run coefficients for overall non-interest income (NII) and include the set of control variables of bank specific determinants (total assets, Liquid asset, and Npl and capital adequacy). In this model estimation NII is negatively significant with banks profit. This means that increase in NII leads to decrease the return on asset and vice versa for all banks in Pakistan. For this equation the diagnostic tests like Breusch–Godfrey test of serial correlation and heteroscedasticity test confirm the validity of results. All the long-run coefficients are statistically significant with the exception of the coefficient of NPL. The F value is also greater than upper bound value which shows the significance of relationship of this model.

Table 6: Long run estimation(NII as a whole)				
Variable	Coef	Prob		
NII	-0.03	0.02		
NPL	-0.05	0.31		
LIQASS	0.05	0		
CAR	0.14	0.01		
ASSET	-1.71	0		
Diagnostic Tests				
Test Statistic	Value	K		
F-stat(bound test)	3.8	5		
Critical Value Bounds				
Lower bounds	Upper bounds		Prob	
	2.26	3.35		0.1
	2.62	3.79		0.05
	2.96	4.18		0.025
	3.41	4.68	0.01	
Serial Correlation			0.21	
Heteroscedasticity			0.36	

In order to drag further to check the robustness of the estimation, the study estimated the modified model for different components of non-interest income and observe whether NII is supportive for banks performance or not. Theoretically, diversifying banks income from interest income to non-interest income is conditioned to positive relation with bank profitability. Table 6 showed that only fee income is negatively significant and other components like foreign currency, dividend and other items are positively linked with profitability.

Table 7: Long -run estimation(NII components)			
Variable	Coef	Prob	
FEE	-0.16	0	
FC	0.13	0	
DIVD	0.16	0	
OI	0.02	0.09	
LIQASS	0.04	0.02	
NPL	-0.03	0.07	
Diagnostic Tests			
Test Statistic	Value	K	
F-stat(bound test)	6.18	6	
Critical Value Bounds			
Lower bounds		Upper bounds	Prob
	1.99	2.94	0.1
	2.27	3.28	0.05
	2.55	3.61	0.025
	2.88	3.99	0.01
Serial Correlation			0.2
Heteroscedasticity			0.36

To compare the results for different types of banks, table estimated the components of NII with RoA and found that fee income is negatively significant for public sector banks (PSCB) and foreign banks (FB) whereas local private banks (LPB) showed positive link with bank profit. On other hand, FC for LPB is negatively significant. Similarly, NPL is not significant for PSCB but for LPB and FB. The modified models also passed the diagnostic tests of serial correlation and heteroscedasticity.

Table 8: Long-run Estimation(categories of banks)			
	PSCB	LPB	FB

Variable	Coef	Prob	Coef	Prob	Coef	Prob
FEE	0.08	0	0.21	0	0.11	0
FC	0.04	0.06	0.39	0.01	0.01	0
DIVD	0.01	0.87	0.29	0.03		
OIN	0.03	0.05	0.13	0	0.1	0
LIQASS	0.06	0.02	0	0.88	0.02	0.49
NPL	0.02	0.31	0.09	0.08	0.28	0.03
Diagnostic Test						
Serial Correlation		0.32		0.51		0.22
Heteroscedasticity		0		0.51		0.24

The results of this study are comparable with research on Chinese bank by Limei Sun, Siqin Wu Zili Zhuand Alec Stephenson (2017). It is also important to note that the results of such studies may vary from country to country with respect to bank regulation and banking culture of different economies and business model of banks. Our results also verify findings for LPB with study by Aykut Kara kaya & Binyamin (2013) for Turkey, Damankah et al (2014) for Ghana, and Iraj Noor (2019) for Pakistan. In case of PSCB and FB, fee income showed negative relationship and the reason for different result may be due to the sample size, business model of banks and bank wise categories of data taken into account. It is important to note that this study fills the gap for analyzing all components of non-interest income. In short, there is no study which highlighted the all components of NII and observe long run relationship with performance of banks.

5. Concluding Remarks

This study investigated the impact of non-interest income on bank performance in Pakistan. The variables used to estimate performance was return on assets (RoA) as dependent and non-interest income and its components (Fee income, FC, Divd and others), NPL as exposure of risk and liquid asset, capital adequacy(CAR) and total asset (bank size) as explanatory variables. The findings indicated that increase in share of noninterest income has negative impact on bank performance across all types of banks. The results for components of non-interest income showed that fee income is negatively impacting profits in case of PSCB and FB whereas LPB confirmed positive relation with bank performance. The positive relationship of fees and commission in case of LPB indicate that non-interest income is higher than non-interest expenses and LPB are technologically advanced than other types of banks. Likewise, important finding is about the FC earning of LPB, showing negative impact on profit. On the other, PSCB and FB trading of different national currencies or units of account better performed. The other components like Divd is also positively effecting the return on assets for LPB. This means that LPB better performed on Divd.

Similarly results showed that all banks Npl are negatively related with profitability. This is expected result as increase in Npl lead to decrease in performance of banks. Liquid asset ratio is positively related with performance; more is liquid asset leading to solid performance by banks. These findings are beneficial to bank management, regulators and supervisors in ensuring sustainable banking sector performance. The study considered only profitability (RoA) measure as a proxy for bank performance, so future research may consider cost efficiency of non-interest and interest income activities in Pakistani banking sector. It is suggested to introduce innovative products and marketing of additional services to increase their income. This study may be helpful for commercial bankers, State bank of Pakistan and other financial institutions to strengthen non-interest income framework and policies.

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Appendix

Variables	Description	Expected sign
RoA(dependent variable)	ratio of net income to total asset	
Fee income	ratio of fees, commissions and brokerage charges of banks to total operating income	+/-
Non-interest income	ratio of non-interest income to operating income	+/-
Capital adequacy	ratio of capital to total asset	+/-
Non-performing loans	ratio of non-performing loans to total loans	-
Asset	log of total asset	-
Liquid asset	ratio of liquid asset to total asset	+/-

Fig 8: Trend of Non performing loan

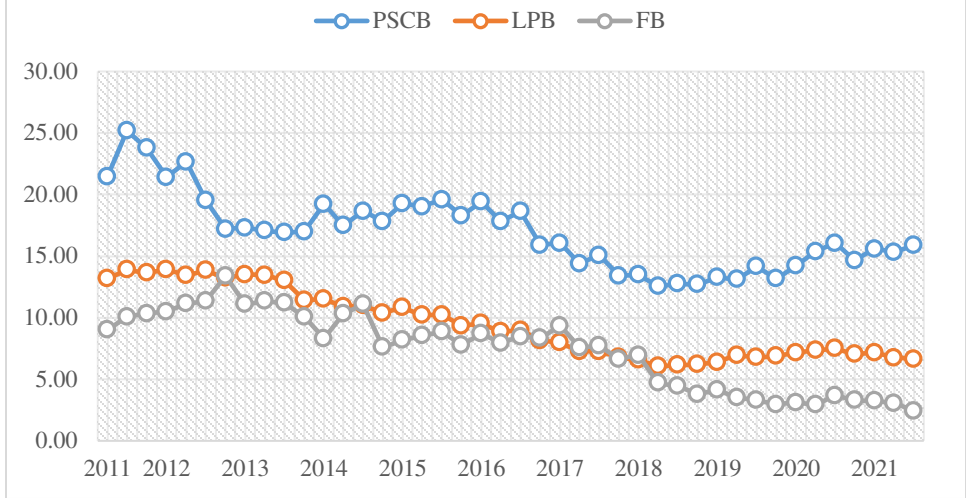


FIG 9: TREND OF ASSET(RS.BILLIONS)

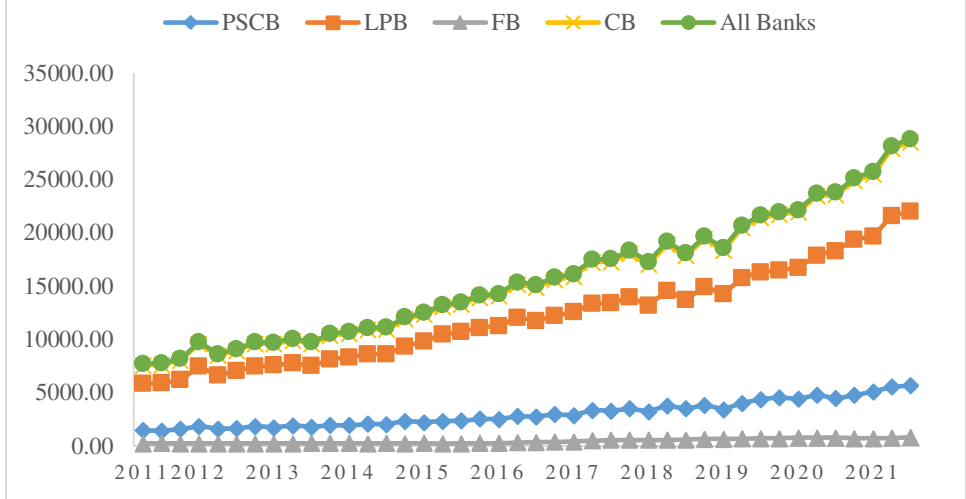


Fig 10: Trend of Capital adequacy

