

MAJOR FIN

MAJOR NO

FIN/5

RELATIONSHIP OF BANK DIVERSIFICATION WITH STOCK  
MARKET VALUE AND RISK

Course Code: SDW 693

Credit Hours: 3



**By:**

Nouman Hussain (01-321212-043)

MB 1.5

Supervisor

(Dr. Mohsin Raza )

**Department of Business Studies**

**Bahria University Islamabad Campus**

**Fall 2022**



(Appendix-A3)

**FINAL PROJECT/THESIS APPROVAL SHEET**

**Viva-Voce Examination**

Viva Date 06/02/2023

**Topic of Research:** RELATIONSHIP OF BANK DIVERSIFICATION  
WITH STOCK MARKET VALUE AND RISK

**Names of Student:** NOUMAN HUSSAIN Enroll # 01-321212-043

**Class:** (MBA 1.5)

**Approved by:**

---

(Dr Mohsin Raza)  
Supervisor

---

(Rabia Umar)  
Examiner-I

---

(Muhammad Akram-II)  
Examiner-II

---

Dr. Syed Haider Ali Shah  
Research Coordinator

---

(Dr. Khalil Ullah Muhammad)  
Head of Department Business Studies

## **Declaration**

I therefore proclaim that this investigation is my own work and has not submitted published and printed as thesis, article or research work in any structure in any institution of Pakistan or abroad.

*Nouman Hussain*

*Student of MBA 1.5*

# Acknowledgment

All our gratitude to Almighty Allah who has bestowed countless blessings upon us and He has given me the chance of being the part of enormously beautiful world and He is the source of knowledge and wisdom, who blessed us with the health, interpretations and brilliant teachers.

First and foremost, I have to thanks my parents for their love and support throughout my life. Thank you both for giving me strength to reach for the stars and to chase my dreams. I feel highly fortunate to owe our thanks to my sincere and honorable supervisor **Dr. Mohsin Raza** for his acute interest, constant supervision, creative criticism and concerned attitude throughout the study. Without his enthusiastic intellectual guidance, this manuscript would not have seen the light of the day at best in its present form.

Last but not the least; I would like to pay tribute to my friends for their constant support, prayers and best wishes. They uplifted my morale whenever I was down.

## **Abstract**

This paper empirically examines the effect of bank's revenue diversification across the different activities on stock market value and risk measures using data on Pakistanis banking sector. This study uses market based measures of return potential and bank risk. We calculate Market to Book ratio over the time for Pakistanis Banks as measure for their Stock Market Value. In addition, we measure risk as both Systematic and idiosyncratic risk component drives from bank stock return model. Finally, we analyze relationship of Diversification with Stock Market Value and Risk by using panel data analysis over the period 2012-2021. We found that higher share of non-interest income in total income effect the stock market of bank positively. Study also found that revenue diversification of bank effect systematic and idiosyncratic risk negatively. Both risks cans be mitigating by revenue diversification. Furthermore , we find that revenue diversification effect bank value and risk significantly.



## Table of Contents

<b>CHAPTER-1</b>	<b>4</b>
<b>INTRODUCTION</b>	<b>4</b>
<b>1.1 Background of the Study</b>	<b>4</b>
<b>1.1 Problem statement</b>	<b>8</b>
<b>1.2 Research question</b>	<b>9</b>
<b>1.3 Research objective</b>	<b>9</b>
<b>1.4 Significance of study</b>	<b>10</b>
<b>1.5 Scope of the study</b>	<b>10</b>
<b>1.6 Research Gap</b>	<b>11</b>
<b>CHAPTER-2</b>	<b>12</b>
<b>LITERATURE REVIEW</b>	<b>12</b>
<b>2.1 Empirical review</b>	<b>12</b>
<b>2.2 Theoretical review</b>	<b>21</b>
<b>2.3 Hypothesis</b>	<b>23</b>
<b>2.4 Theoretical Framework</b>	<b>23</b>
<b>CHAPTER-3</b>	<b>24</b>
<b>RESEARCH METHODOLOGY</b>	<b>24</b>
<b>3.1 Research Design</b>	<b>24</b>
<b>3.2 Methodological Approach</b>	<b>24</b>
<b>3.3 Variables</b>	<b>25</b>
<b>3.3.1 Revenue diversification</b>	<b>25</b>
<b>3.3.2 Market to book value</b>	<b>26</b>
<b>3.3.3 Risk</b>	<b>27</b>
<b>3.3.4 Equity to Asset Ratio</b>	<b>28</b>
<b>3.3.5 Bank Size</b>	<b>29</b>
<b>3.4 Data collection method</b>	<b>29</b>
<b>3.5 Methodology</b>	<b>30</b>
<b>3.5.1 Diversification measure</b>	<b>30</b>
<b>3.5.2 Performance Measure</b>	<b>31</b>
<b>3.5.3 Risk Measure</b>	<b>32</b>
<b>3.5.4 Asset to Equity Ratio</b>	<b>32</b>
<b>3.5.4 Bank Size</b>	<b>32</b>
<b>3.6 Data analysis</b>	<b>33</b>
<b>CHAPTER-4</b>	<b>34</b>
<b>RESULTS &amp; ANALYSIS</b>	<b>34</b>
<b>4.1 Descriptive Stats</b>	<b>34</b>
<b>Table 1</b>	<b>34</b>
<b>4.2 Correlation Matrix</b>	<b>35</b>



Table 2	35
4.3 Hausman Test	36
Table 3	36
Table 4	37
Table 5	37
4.4 Fixed effect model	38
Table 7	40
Table 8	41
CHAPTER-5	42
CONCLUTION & RECOMMENDATION	42
5.1 Conclusion	42
5.2Recommendations and limitation	43
REFERENCES	45
Appendix	48
Table 9	48

# CHAPTER-1

## INTRODUCTION

### 1.1 Background of the Study

Diversification always remained subject of debate for last many years. For banks it is also very hard to diversify their revenue. Policy of diversification have implemented by different banks in last two decades. Diversification is always considered as sources of adding more values in portfolio or revenue. On the other hand, the other hand there is also many concerns about diversification. Banking is one of the fields where more concern is existed whether diversification will value or not, and in literature increase in diversification is a serious question. Policy of diversification have been implemented by the banks across the different services (e.g. Security Underwriting, commercial banking, brokerage, insurance and other services) due to global deregulation, Innovation in technology and product market development. Given this Trend, diversification became more important to be considered by the bank managers, regulators, shareholders and financial economist.

Previously many studies have been conducted to investigate relationship of bank diversification with bank performance and risk, they have witnessed different results. For example, study conducted by Baele et al. (2007) on European banks found that diversification can increase bank value and reduce idiosyncratic risk. There is also evidence from literature where bank diversification doesn't have any significant relationship with bank value, for example Stiroh and Rumble (2006) found that, financial institution of US although can get benefit from revenue diversification, but increase in highly volatile non-interest income, these benefits from diversification ultimately offset.

Many other researches have also found that bank diversification does not increase bank performance (Acharya et al., 2002). Baele et al. (2007) investigated European Banks to examine impact of stock market values on revenue diversification and its impact on risk. Author has also examined the effect of income and assets diversity, found that in long run income diversity has positive relation with performance, but asset diversification has insignificant impact in long run. Bank can reduce risk in early stages of diversification (Santomero and Chung, 1992).

Previously study is conducted on US, European and Japanese Banks. In our opinion no doubt US, European and Japanese markets provides more ideal ground to conduct study.

Underline study has examined the relationship revenue diversification with stock market value and risk among the Pakistani Banks, further risk is also measure in term of systematic and idiosyncratic risk. Study is conducted similarly to other research conducted on this topic.

In literature there is also scarcity of study that used stock market data to completely find the impact of functionally diversification on stock market value and risk. Only studies conducted by by Stiroh and rumble (2006), Baele et al. (2007) and Sawada (2013), which have examined American, European and Japanese banks respectively, by utilizing stock market data. Stock market measure for risk and return have some important advantages over the accounting measures authors stated. First Stock prices are future-looking and can predict performance of stock in future and risk associated with different strategies. Second by using stock market data total risk can also be divided into idiosyncratic and systematic risk. Shareholders are also interested in different kind of risk associated with stock. Most of the investors are primarily interested in systematic risk, and large shareholders, Bank's top management also interested in idiosyncratic risk.

The importance of revenue diversification has been extensively studied in the academic literature, and many research studies have highlighted the benefits of diversification for banks and the financial system as a whole. "An Analysis of Bank Diversification and Risk" by Rania Rashed in 2010, found that diversification is positively related to bank stability and it also helps to decrease the bank's risk level.

The study also showed that diversification helps to reduce the effect of negative external shocks on banks' financial performance. One of the main benefits of bank diversification is the potential for increased market value. By diversifying their operations, banks can access new markets and revenue streams, which can lead to increased growth and profitability. This in turn can lead to a higher market value for the bank's shares. Several studies have shown a positive correlation between diversification and market value. For instance, a study by Cihák and Hesse (2008) found that diversification into non-traditional banking activities, such as insurance

and asset management, is positively associated with market value for European banks. Similarly, a study by Kim and Santomero (2001) found that diversification into non-traditional banking activities is positively related to market value for U.S. banks.

Another benefit of bank diversification is the potential for decreased risk. By spreading their operations across a variety of different activities, banks can reduce the impact of idiosyncratic risks that are specific to a particular business or asset class.

This can lead to a more stable overall performance for the bank. Studies have found that diversified banks have lower risk levels compared to less diversified banks. For example, Garnier and Spatt (2006) found that diversification is positively related to bank stability and that it helps to decrease the bank's risk level.

A study by Berger and DeYoung (1997) found that problem loans are less likely to occur in diversified banks. Similarly, a study by Majnoni and Marques-Ibanez (2002) found that diversification helps to reduce the impact of negative external shocks on banks' financial performance.

From these thesis studies, it is clear that diversification is considered as an important factor for the stability, risk management, and performance of banks. Diversification can help banks reduce the effect of negative external shocks on their financial performance and it can also help banks achieve a more stable overall performance.

There is also some legal restriction on US banks to enter in non-banking activities (Glass-Steagall Act). The Glass-Steagall Act is a law that was enacted in the United States during the Great Depression in response to the widespread bank failures of the time. The law created a firewall between commercial banking and investment banking, with the goal of reducing the potential for conflicts of interest and protecting depositors' funds from risky investment activities.

The Glass-Banks re separated into investment banks and commercial banks by Glass-Steagall law. Commercial banks were limited to accepting deposits and making loans, while investment banks were restricted to underwriting securities and engaging in other non-deposit banking activities. This separation between banking activities was designed to protect depositors' funds from being used for risky investment activities. The act also contained provisions that restricted bank affiliations and

affiliations between banks and securities companies, aimed at reducing the concentration of power among large financial institutions. Additionally, the act was supposed to bring back public confidence in the banking system by requiring stricter oversight and regulation of the industry.

The Glass-Steagall Act remained in effect and then it was repealed by the Gramm-Leach-Bliley Act, however, it is pertinent here to mention that the original act was a reaction of the great depression and the conditions that led to its creation were not exactly replicated in the 90s, some argue that its repeal was one of the factors that cause the financial crisis of 2008. The debates and discussions are still ongoing about the usefulness of Glass-Steagall Act in the current financial system.

The Gramm-Leach-Bliley Act (GLBA) is a federal law that was approved in the US in 1999. The law made significant changes to the financial services industry by allowing banks, insurance companies and securities firms to affiliate with one another. Prior to the GLBA, laws such as the Glass-Steagall Act of 1933 had prevented these types of affiliations.

The GLBA restricted financial institutions to reveal their information sharing practices to consumers. The Act also restricted financial institutions to develop and implement broad information security programs, and to establish appropriate safeguards for the protection of customer information.

The GLBA also includes a provision known as the Financial Privacy Rule, which gives consumers the right to limit some sharing of their personal financial information among a financial institution's affiliates, and a provision known as the Safeguards Rule. Overall, the GLBA is intended to protect consumers' financial privacy and provide them with greater control over their personal financial information.

It also aimed to encourage competition and innovation in the financial services industry. It's enforced mainly by the Federal Trade Commission; some other federal agencies also have their own enforcement powers. Bank Diversification values the bank performance of the bank and risk differently depending upon the individual bank such as organizational structure (Sawada, 2013). Further Sawada (2013) also stated that if bank is performing well in traditional banking can also diversify its revenue more effectively than another bank that is performing badly.

Topic of underline study is defined in introduction section, further we have discussed problem statement and research objective in first section of paper in addition to this, research gap and significance of study is also described. Empirical and theoretical review with theoretical framework is discussed in second section of the study. Further, we also write Hypothesis in second section. Brief explanation of Methodology, definition of variables, their measure and data collection technique is presented in third section. Furthermore, results of descriptive statistics, correlation and analysis are presented in forth section of study. In addition to this, final conclusion results future recommendations and limitations are discussed in last section of study.

## **1.2 Problem statement**

In developing countries bank are considered as prominent institutions to regulate economy. Study about bank diversification getting popularity after Asian turbulent financial crises 1997. Researchers have performed many researches on stock market of under developing countries.

In Pakistan companies and individual's approaches banks to fulfill their financial requirement. In Pakistan banks are also generating major part of their income from interest bearing activities. Study conducted by Baele. et al. (2006) suggested that Revenue Diversification can increase the bank value and reduce risk. In Pakistan banks can also diversify their revenue by engaging themselves in non-traditional activities like underwriting services, bank insurance, and securities. Weather banks should diversify their revenue or not? We found that previous studies conducted in Pakistan have not answered this question clearly. Underline study will address this problem and investigate impact of Bank Diversification on Stock market value and Risk.

There are insufficient studies about how revenue diversification impact on market value and risk of the bank in Pakistan. Study has conducted to investigate this problem how banks can enhance their market value and reduce risk by diversify their revenue. How market to book value react to revenue diversification of bank in Pakistan.

## **1.2 Research question**

- 1) What is the relationship between bank diversification and stock market value?
- 2) Is there any relationship exist between the bank diversification and Risk?
- 3) What is impact of bank size on market value of bank?
- 4) What is impact of bank size on Risk?
- 5) What is relationship of Equity to asset ratio with market value of bank?
- 6) What is relationship of Equity to asset ratio with Risk?
- 7) Weather banks should diversify their revenue?

## **1.3 Research objective**

- 1) To investigate the relationship between bank diversification and stock market value.
- 2) To evaluate the impact of Bank Diversification on Risk.
- 3) To find the relationship of Bank Diversification with Size.
- 4) To study relationship of Bank Diversification with Equity to asset ratio

The objective of underline study is typically to understand how banks can broaden their revenue streams and reduce their dependence on traditional sources of income, such as interest from loans and fees from deposits. This can be done by exploring new business lines, expanding into new markets, or developing new products and services.

The goal is to achieve a more balanced and stable revenue stream, which can help mitigate the impact of economic downturns and other risks that banks face. There are several reasons why banks might want to diversify their revenue streams. One is to reduce their dependence on a small number of revenue sources, which can make them more vulnerable to changes in the economic or regulatory environment. Another is to get benefit of new opportunities in the marketplace, such as new technologies or changes in consumer behavior.

Some of the key areas that researchers may focus on when studying bank revenue diversification include. New business line, this could include activities such as investment banking, insurance, or asset management, which can provide new sources of revenue for banks. Market expansion, this could involve expanding into new geographic regions or customer segments, which can also help diversify a bank's

revenue stream. Product and service innovation, this could include developing new digital banking products and services, such as mobile apps and online platforms, which can help attract new customers and increase revenue.

#### **1.4 Significance of study**

Research on bank revenue diversification is significant for several reasons. One of the main reasons is that it can help banks to reduce their overall risk. Banks generate revenue from a variety of sources, such as interest on loans, fees for services, and trading activities. By diversifying their revenue streams, banks can ensure that if one source of revenue becomes less profitable or goes away altogether, the bank will still have other sources of income to rely on. This helps to reduce the bank's overall risk of financial loss. Another reason why research on bank revenue diversification is important is that it can help banks to identify new growth opportunities.

By looking at different revenue streams and assessing their potential, banks can identify new areas where they can expand their business and generate additional revenue. This can help banks to stay competitive and grow their market share. Additionally, research on bank revenue diversification is also important for regulators and policymakers, they use this research to understand how banks generate revenue and identify potential risks or vulnerabilities in the financial system. This can help regulators to develop policies and regulations that promote financial stability and protect consumers.

Overall, research on bank's revenue diversification is beneficial for banks, regulators and policymakers as it helps to identify new opportunities reduce risks and promote stability in the financial system

#### **1.5 Scope of the study**

Underline study will be conducted in context of Pakistanis banks listed in Pakistan Stock Exchange. Study will help all stakeholders, bank managers, policy makers and investors to take decision about their investment and to evaluate riskiness of stock. Banks can make policies and strategies of revenue diversification to reduce risk and to increase stock market value. It will help to diversify their portfolio from traditional banking to non-interest income; more avenues for businesses will also be introduced.



It can bring stability in banking sector and also help to improve economic condition of Pakistan. In this paper we will focus on the Pakistani banks, previously study is conducted on US, European and Japanese Banks. Underline study will cover private banks as well as government bank. Whether they should diversify their revenue or not, at what level diversification will have positive affect risk and value. Banks can also improve their profitability by diversify their revenue by investing in no-interest income.

It will also answer the question that how banks can reduce risk? And will help to improve their stock market value. The outcome of the research can help bankers and other financial institutions understand how they can diversify their revenue streams to become more resilient and competitive in the marketplace

## **1.6 Research Gap**

There is a dearth of studies on the subject of bank diversification with respect to stock value and risk in Pakistan. There is very limited work performed on impact bank diversification on stock market value and risk. Most of the studies related to subject topic are conducted before 2015 there is no latest literature and study on subject topic in context of Pakistanis banks.

Previous studies are also studied with different variables, study conducted by younas et al. (2021) they have not studied relationship of bank diversification with risk. Underline study will also examine the relationship with risk that is further divided into systematic and idiosyncratic risk. It is pertinent here to mention that, previous studies are based on specific period of time and conditions which may have changed now. Also, more recent and detailed studies might have been conducted on this topic to dig deeper on the subject matter.

## **CHAPTER-2**

### **LITERATURE REVIEW**

#### **2.1 Empirical review**

Bank diversification is the process by which bank expands its business operations into different areas, such as by offering a wider range of products or services, entering new geographic markets, or acquiring other companies. Research on bank diversification has generally found that it can have positive effects on a bank's performance and risk management.

Empirically Study Conducted by Baele et al. (2006) Dual Perspective, the authors investigate the relationship of revenue diversification with bank risk and performance from two different perspectives, the traditional finance perspective, which focuses on diversification as a way to reduce risk, and the behavioral perspective, which focuses on how diversification can affect a bank's decision-making. The thesis has examined the impact of diversification on bank risk and performance through the lens of these two perspectives.

The authors find that diversification can have a positive impact on a bank's performance by reducing its overall risk. They also found that diversification can lead to better risk management practices and improved decision-making by banks. The thesis concludes that diversification can be an effective way for banks to manage risk and improve performance, and that this is particularly true in the context of the highly uncertain and rapidly changing financial environment in recent years.

The authors provide a thorough examination of the literature on bank diversification and its impact on bank risk and performance. They begin by reviewing the traditional finance perspective, which posits that diversification can lower a bank's overall risk by spreading it across a variety of different business lines and geographic markets. This can be achieved through product diversification, which refers to offering a wide range of different financial products and services, or through geographic diversification, which involves entering new markets.

The authors also examine the behavioral perspective on diversification, which argues that diversification can lead to improved decision-making and risk

management by banks. This perspective suggests that diversification can foster a "competition for the best deal" among different business units within a bank, which can lead to more efficient resource allocation and improved risk management.

The study by Baele et al. (2006) also focused on the empirical evidence of the impact of diversification on bank risk and performance. They use a sample of European banks from different countries and found that diversification has a positive effect on bank performance and risk-taking. They also found that diversification has a positive effect on bank performance and risk-taking, particularly for small and medium-sized banks.

The authors also discuss the potential drawbacks of diversification, such as increased complexity and reduced transparency, which can make it more difficult for investors and regulators to assess a bank's risk profile. However, they note that these drawbacks can be mitigated through effective governance and risk management practices.

In conclusion, the thesis by Baele et al. (2006) provides a comprehensive overview, it suggests that diversification can have a positive impact on bank performance and risk management, by spreading risk across different business lines and geographic markets, fostering competition among business units, and leading to improved decision-making. However, it also highlights the potential drawbacks of diversification, and the importance of effective governance and risk management practices to mitigate them.

Diversification is a key aspect of risk management for banks, and it is generally believed that diversification can lead to a reduction in the overall risk of a bank's portfolio. This can increase the perceived value of the bank in the stock market, as investors are willing to pay more for a bank with a lower perceived level of risk.

Relationship between revenue diversification and stock market value for banks can be found in a number of academic studies. "Diversification and Stock Market Valuation of Japanese Banks" conducted by Yuji Miyamoto and Chikako Yamaguchi (2010) which was published in the Pacific-Basin Finance Journal in 2010. The study found that there is a positive relationship between diversification and stock market

value for Japanese banks, and that this relationship is stronger for banks that have a higher level of non-performing loans.

Another study by Akram Al-Esmael, Nidal Salem, and Shabri Abd Majid (2013) it tries to examine the relationship between revenue diversification and stock market performance of banks by using Panel data of GCC banks over the period of 2003-2011. The study shows that diversification is positively related to the stock market performance of GCC banks.

This is pertinent here to mention that studies on the topic of diversification and stock market value for banks may find varying results due to the use of different data sets, methodologies, and measures of diversification. Therefore, it's important to consider multiple studies and compare and contrast their findings when conducting a literature review on this topic.

Study conducted by Kevin J. Stiroh and Anthony Rumble, (2006) which was published in the Journal of Banking and Finance in 2006, explores the relationship between revenue diversification and performance for financial holding companies in the United States. The study uses a sample of publicly traded US financial holding companies from the period of 1985 to 2000.

The study conducted by Stiroh and Rumble (2006) concluded that diversification is negatively associated with performance for financial holding companies (Stiroh and Rumble, 2006). Specifically, the study finds that the return on assets (ROA) and return on equity (ROE) decline as the level of diversification increases.

The authors argue that this negative relationship is due to the fact that financial holding companies often diversify into businesses that are not closely related to their core banking operations, and as a result, they are not able to fully exploit the benefits of diversification.

The study also found that diversification is negatively related to the value of financial holding companies, as measured by Tobin's Q. The authors interpret this finding as evidence that diversification reduces the perceived value of financial holding companies in the stock market. The study also examines the effect of diversification on the level of risk for financial holding companies.

The study finds that diversification is positively related to the level of systematic risk, as measured by beta. However, the study finds that diversification is negatively related to the level of unsystematic risk, as measured by the standard deviation of return on assets (Stiroh and Rumble, 2006).

It also presents the empirical evidence from US financial holding companies and finds that revenue diversification is generally associated with lower performance and lower value. They suggested that financial holding companies should carefully consider the potential negative effects of diversification on performance and value before pursuing diversification strategies (Stiroh and Rumble, 2006). Overall, this research paper provides an interesting perspective on the relationship between diversification and performance for financial holding companies, highlighting the potential negative consequences of diversification and emphasizing the need for careful consideration of diversification strategies.

Evidence from financial holding companies" by Rosanne Altshuler and Harry Huizinga, published in the Journal of Financial Economics in 2000. This study examines the relationship between diversification and performance for a sample of US financial holding companies from 1980 to 1997, and finds a negative relationship between diversification and performance, similar to the results of Stiroh and Rumble's study.

The effect of diversification on bank holding company performance by James R. Barth, Gerard Caprio, and Ross Levine, published in the Journal of Money, Credit, and Banking in 2001. This study examines the relationship between diversification and performance for a sample of US bank holding companies from 1976 to 1996, and finds that diversification is associated with lower performance, consistent with the findings of Stiroh and Rumble's study.

Does diversification affect bank performance? Evidence from transition economies by Michal Franta and Jana Fidlerova. (2018) this study examines the relationship between revenue diversification and performance for a sample of transition economy banks from 2004 to 2014, and finds that diversification is positively associated with performance, contrasting with the findings of Stiroh and Rumble's study and some of the previous studies, Diversification and bank performance in Africa by (Berhanu and Ermias, 2019).

This study examines the relationship between revenue diversification and performance for a sample of African banks from 2007 to 2016, and finds that diversification is positively associated with performance in African banks, consistent with the findings of Franta and Fidlerova's study.

Diversification and performance is a complex issue and there is no consensus among the researchers. Some studies found a negative relationship between diversification and performance, while others found a positive relationship. Also, factors such as the type of diversification, the sample of banks, the geography and the period of analysis could have a significant impact on the results. These studies highlight the need to carefully consider the potential effects of diversification on performance before implementing diversification strategies, as well as the need to consider the specific context of the banks in question.

In the context of the Pakistani stock market, a study published in the Journal of Applied Economics and Business Research in 2015 found that diversification by commercial banks into non-banking activities is positively associated with stock market performance and negatively associated with risk.

The study, which was conducted by Ahmed, N. and Rehman, K.U., used data from 2006 to 2013 to examine the relationship between diversification and financial performance of commercial banks listed on the Karachi Stock Exchange.

The authors found that diversification into non-banking activities such as insurance and telecommunications had a positive impact on stock returns, while diversification into other banking activities had a negative impact on risk as measured by the standard deviation of returns.

The study concluded that: "The results suggest that diversification of commercial banks into non-banking activities is positively associated with stock returns and negatively associated with risk. Therefore, policy makers should encourage commercial banks to diversify their business activities in order to improve their financial performance and reduce risk."

A study published in the Journal of Economics and International Finance in 2017, which also investigated the impact of diversification on the financial performance of banks in Pakistan, found similar results. The study, conducted by

Shahzad, S.J. and Ashfaq, M., used data from 2006 to 2016 to examine the relationship between diversification and financial performance of commercial banks listed on the Karachi Stock Exchange.

They found that diversification into non-banking activities had a positive impact on bank performance, as measured by return on assets and return on equity, while diversification into other banking activities had a negative impact on performance.

The authors of the study concluded that "The findings suggest that diversification in non-banking activities can increase the profitability of commercial banks. However, diversification in banking activities has a negative impact on the profitability of commercial banks.

A thesis from Lahore University of Management Sciences in 2016 also found similar results, the thesis "Impact of Diversification on Financial Performance of Pakistani Banks" by Muhammad Ahmad Raza shows a negative correlation between diversification in banking activities and financial performance as measured by return on assets and return on equity, while there is a positive correlation between diversification in non-banking activities and financial performance.

These studies suggest that diversification into non-banking activities such as insurance and telecommunications can have a positive impact on the financial performance of commercial banks in Pakistan, while diversification into other banking activities may have a negative impact on performance.

There are some other studies that examined the relationship between diversification and financial performance of commercial banks in Pakistan using data from the Karachi Stock Exchange. The findings of these studies are in line with the previous studies that we have mentioned, they also show positive correlation of diversification in non-banking activities with financial performance and negative correlation of diversification in banking activities with financial performance it is worth noting that this is not an exhaustive list and more studies might exist that examines the topic, it's also important to evaluate the studies' methodologies, their data and time frame, it will help to have a better understanding of the implications of their results.

In addition to the studies above, it's worth noting that while diversification can help reducing risk, it's not always the best strategy in all situations, it also depends on the industry and economic cycle in each country, and also diversification might not always increase the bank performance or stock return.

In the context of the Vietnamese banking system, a study published in the *International Journal of Economics, Commerce and Management* in 2018 found that diversification had a positive impact on the financial performance of commercial banks.

The study conducted by Le, H. T. and Nguyen, P. T., used data from 2007 to 2016 found that diversification into non-banking had a positive impact performance of bank. The authors of the study concluded that: "The results of the study suggest that diversification strategy has a positive impact on the financial performance of commercial banks in Vietnam. Banks should therefore diversify their business activities to improve their financial performance. The Impact of Diversification on Financial Performance of Commercial Banks in Vietnam" by Nguyen, D.T., found that diversification in non-banking activities had a positive impact on the financial performance of commercial banks in Vietnam.

Both these studies suggest that diversification into non-banking activities can have a positive impact on the financial performance of commercial banks in Vietnam, these findings concur with the studies conducted on Pakistan which shows the positive effect of diversifying in non-banking sector on financial performance of the banks. It is worth noting that as with other countries, the results may not be generalized to all circumstances, and other factors such as the economic and regulatory environment of Vietnam also play a role in the outcome.

A study by James et al. (2004) found that bank diversification can lead to improved performance by reducing the impact of idiosyncratic shocks, which are events that affect a specific bank or industry rather than the overall economy. The study also found that bank diversification can lead to reduced risk by spreading out the bank's portfolio of assets and liabilities across different industries and geographies. Other research suggests that diversification may not always lead to improved performance and reduced risk.



A study by Paul Molyneux and David Lloyd (1991) found that diversification can lead to increased risk if the bank is unable to effectively manage and monitor its diverse portfolio of businesses. Additionally, a study by Ross Levine and Sara Zervos (1998) found that bank diversification can lead to increased risk if the bank is not able to diversify its funding sources.

In the context of European banks, a study published in the *Journal of Financial Services Research* in 2018 found that diversification can have both positive and negative effects on the financial performance of banks. The study, conducted by Kavousi, M., Kouspainen, T., and Mestre, R., used data from a sample of publicly listed European banks from 2005 to 2013, authors found that diversification into non-traditional banking activities, such as insurance and real estate, had a positive impact on bank performance, and measured by return on assets, return on equity and Tobin's Q. On the other hand, diversification into other financial activities, such as securities and asset management, had a negative impact on performance.

The authors of the study concluded that: "Our results suggest that diversification into non-financial activities is positively associated with the performance of European banks, while diversification into other financial activities is negatively associated with performance. The results imply that policymakers should be careful when assessing the potential benefits and costs of diversification by banks."

Another study by Michelin, G. and van Rixtel, A. (2018) "Does Diversification Affect the Risk-Return Trade-off of European Banks?" found that diversification can have an ambiguous effect on banks' risk-return trade-off, where diversification into non-financial activities can help banks increase their profitability by reducing the volatility of their earnings, however diversifying into other financial activities might have a negative impact on banks' risk-return trade-off.

A study by V. Molyneux and K.S. Sevi in 2018 "The Diversification Dilemma: The Impact of Diversification on the Financial Performance of European Banks" shows that the effect of diversification on European bank performance is non-linear and depends on the level of diversification. The authors found that a moderate level of diversification into non-financial activities can improve the financial performance of banks, while a high level of diversification can have a negative impact on performance.

These studies suggest that the effect of diversification on the financial performance of European banks is not clear-cut, and that it depends on the type of diversification activity and the level of diversification.

Diversification into non-financial activities can have a positive impact on performance, while diversification into other financial activities can have a negative impact. It's important to note that the findings of these studies may not be generalized to all circumstances, and other factors such as the economic and regulatory environment of European countries also play a role in the outcome.

## 2.2 Theoretical review

In the context of standard portfolio theory, diversification is the strategy of investing in a variety of assets in order to spread risk and maximize returns

Standard portfolio theory was first introduced by Harry Markowitz in his 1952 paper "Portfolio Selection." MPT is based on the idea that investors are risk-averse and seek to maximize expected return for a given level of risk. One key concept in MPT is diversification, which holds that by spreading investments across a range of assets, an investor can reduce overall portfolio risk.

However, it is important to note that the impact of functional diversification on bank risk is less clear. This is because functional diversification, which refers to the diversification of a bank's activities across different business lines or products, may not necessarily reduce overall risk. In fact, in some cases, functional diversification may even increase risk if the various business lines are highly correlated or if a bank lacks the necessary expertise and resources to effectively manage the different activities.

There is some literature that discuss this concept, one of which is "Too much of a good thing? An analysis of diversification strategies among large banks" by J. Bikker, A. Ros, and L. de Haan, published in the Journal of Financial Stability in 2009. In which they argue that the relationship between diversification and bank risk is more complex than the traditional portfolio theory assumes, and that it may depend on the nature of the diversification, the specific business lines or activities, and the macroeconomic environment.

According to standard portfolio theory, diversification is a key concept for managing risk in a portfolio. Diversification involves spreading investments across a range of assets, which can reduce overall portfolio risk.

This is not in line with MPT, which assumes that all assets are independent and the addition of a new asset to the portfolio can only lower risk for the same level of return. In the banking industry is common to find the opposite since a bank is not only exposed to market risk but also to operational and other kind of risks that are not captured by the market risk.

In summary, the relationship between diversification and bank risk is more complex than the traditional portfolio theory assumes, and it may depend on the nature of the diversification, the specific business lines or activities, and the macroeconomic environment. To study impact of bank diversification detailed analysis and understanding of the bank's specific circumstances is needed in order to estimate the effect of functional diversification on bank risk.

In the context of financial conglomeration, diversification refers to the strategy of a bank or financial institution expanding into a variety of different types of financial businesses. Financial conglomeration can be seen as a form of diversification that is intended to provide a bank or financial institution with a broader range of revenue streams and a more stable source of profits.

The diversification discount theory, also known as the conglomerate discount theory, suggests that the market values financial conglomerates less than the sum of its standalone parts, because it lacks strategic focus and increased complexity associated with diversification. This theory, proposed by James (1978) suggests that investors are skeptical of a firm that operates in a wide range of different businesses, and may therefore be less willing to pay a premium for the shares of a conglomerate.

On the other hand, internal capital market theory, proposed by Huber and Maug (2002), suggests that diversification can be beneficial for banks because it allows them to access a wider pool of potential investments, and thus to generate higher returns on their internal capital. This theory suggests that the ability of a conglomerate to shift funds among different business units based on the return and risk can be an advantage.

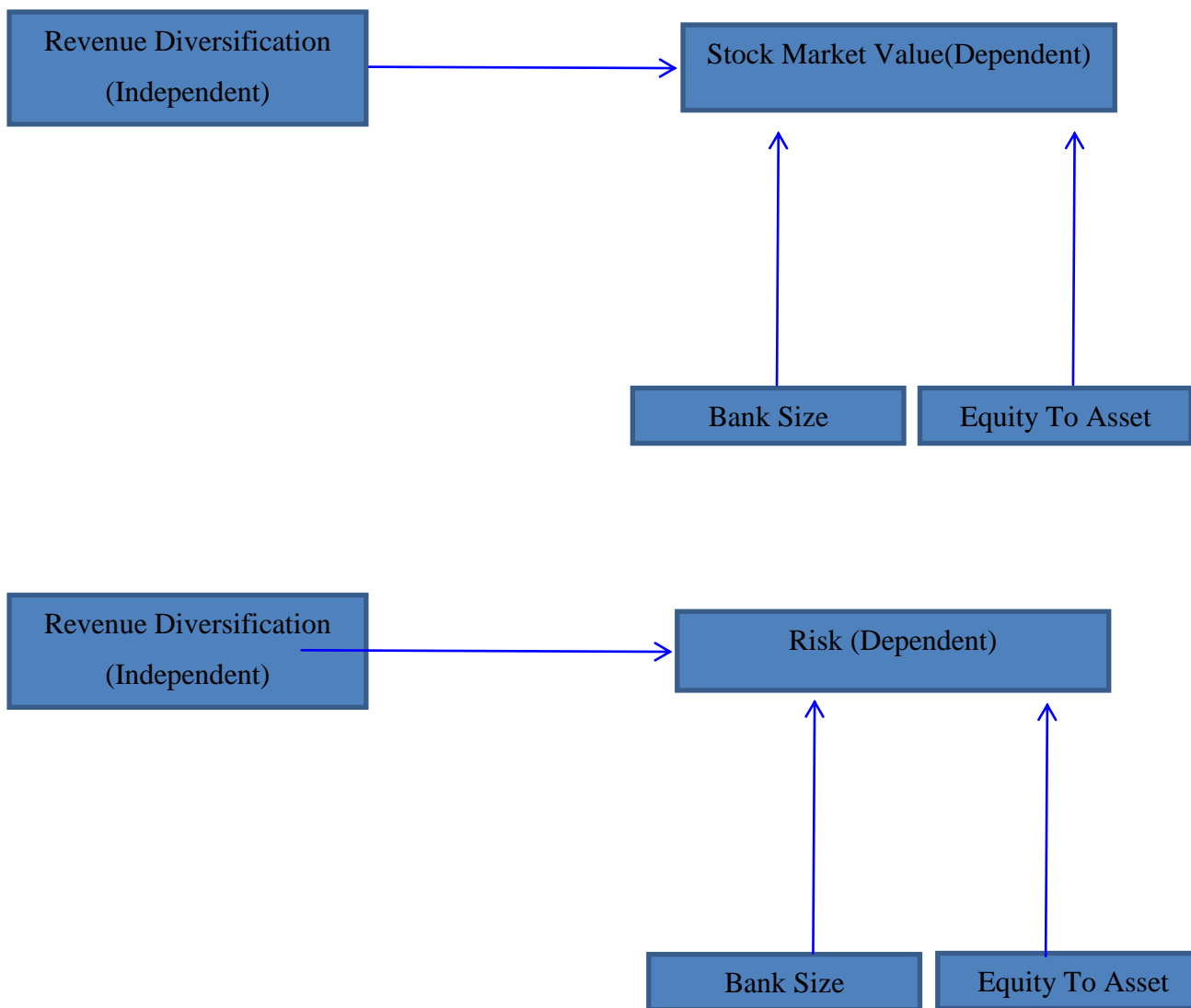
Agency theory also relates to financial conglomeration, as proposed by Titman and Wessels (1988), it emphasizes that diversification may mitigate conflicts of interest between the bank's management and shareholders, as management may use diversification to pursue projects that benefit them personally rather than those that maximize shareholder value. Overall, the effects of financial conglomeration on a bank's risk and stock market value are not clear-cut, and can depend on a variety of factors, such as the specific businesses that the bank diversifies into, the effectiveness of its management and governance structures, and the overall state of the economy.

## 2.3 Hypothesis

H1: There is no relation exist between bank's revenue diversification and stock market value

H2: There is no relation between bank diversification and Risk

## 2.4 Theoretical Framework



## **CHAPTER-3**

### **RESEARCH METHODOLOGY**

In this section, methodology is to be explained which is used to investigate the impact of revenue diversification on stock market value of bank and Risk. It has comprehensive detail about methodology is being used, collection of data and sampling techniques, definition of variables and their unit of measure.

#### **3.1 Research Design**

Research design explains how data is being collected, measured, and investigated. Underline study is based on secondary data and quantitative in nature. To answer proposed questions in this study secondary data is used. Study is conducted to check the relationship between variables and to evaluate the cause and effect of dependent an independent variable. Quantitative research method is also used to answer the research question. Because aim of underline study is to identify cause-and-effect relationships between variables, Casual research examination is more appropriate plan for underline study.

The use of casual research design is essential in determining cause-and-effect relationships between variables. The manipulation of the independent variable and observation of its effect on the dependent variable allows for a thorough examination of the potential causal relationship between the two.

This research design is particularly useful in fields such as psychology, sociology and other social sciences, as well as certain areas of medicine and biology. The utilization of casual research design in this study allows for a comprehensive analysis of the topic at hand and contributes to a deeper understanding of the phenomenon under investigation.

#### **3.2 Methodological Approach**

Quantitative and subjective methodology is two unique and important schools of thought on research. Quantitative research is a method of collecting, analyzing and interpreting numerical data to understand and explain phenomena.

It is used to test theories, hypotheses or models and to establish cause-and-effect relationships. The key characteristic of quantitative research is the use of numerical data to answer research questions and test hypotheses. This data is typically collected using standardized methods, such as surveys, experiments, and statistical analysis of existing data.

Quantitative research is often used in scientific and social sciences fields, such as psychology, sociology, economics, and education, but it can be applied in many other fields as well.

This type of research is particularly useful when attempting to establish causality, identify patterns and relationships, and to generalize findings to a larger population. Quantitative research is also known as empirical research, as it relies on the collection of data through observation and measurement.

The data collected is analyzed using statistical techniques and the results are presented in numerical form, such as tables and graphs. The results of the research can be used to make predictions, identify trends and patterns, and draw conclusions about the phenomena being studied.

Underline study is also based on numerical data and quantitative research technique is being used. This technique will also help researcher to gather data more rapidly as compared to other different techniques.

### **3.3 Variables**

There are five variables in studied in this study revenue diversification is taken s independent variable whereas market to book value is used s depended variable which is proxy for stock market value of bank. Risk is further decomposing into idiosyncratic risk and systematic risk and taken s dependent variable. Other control variables are also being tested such as bank size and equity to asset ratio

#### **3.3.1 Revenue diversification**

Revenue diversification refers to the process of a bank expanding the sources of its income beyond the traditional sources of interest income generated from lending and borrowing activities. Non-interest income refers to income that is generated from

sources other than the bank's traditional lending and borrowing activities, such as fees, commissions, and trading profits.

Diversifying a bank's revenue streams is generally seen as a positive step, as it can reduce the bank's reliance on a single source of income, and provide a cushion against potential losses from one area. For example, if a bank has a significant portion of its income generated from interest on loans, a recession that leads to a spike in loan defaults can have a devastating impact on the bank's bottom line. However, if the bank has diversified its revenue streams and has other sources of income, such as fees and commissions, the impact of the loan defaults on its overall income will be lessened.

One way for bank to diversify its revenue is to increase its fee-based businesses, such as wealth management and insurance, and reduce its reliance on interest income generated from lending and borrowing activities.

Banks can also increase the fees they charge for services such as account maintenance and ATM usage, as well as expand into other businesses such as credit card issuing, foreign exchange trading, and money market operations. Another way of diversification is by using technology to improve the delivery of services, increase efficiency and reduce costs. For example, banks can use artificial intelligence and machine learning to identify new business opportunities and assess credit risks more accurately.

In addition, Revenue diversification can also help in reducing the regulatory capital requirement, which can be beneficial in terms of balance sheet and return on equity. In overall diversifying the revenue streams can be a smart move for banks to remain profitable in the long run and to reduce risk exposure.

### **3.3.2 Market to book value**

The market-to-book value (MTB) ratio, also known as the price-to-book ratio (P/B ratio), is a financial ratio used to compare a bank's market value to its book value. The market value of a bank's stock is determined by the current stock price multiplied by the number of outstanding shares, while the book value is the value of the bank's assets as reported on its balance sheet.



The market-to-book value ratio is used to assess the value of a bank's stock in the stock market relative to its book value. A ratio greater than one suggests that the market perceives the bank's assets to be worth more than their book value, while a ratio less than one suggests that the market perceives the bank's assets to be worth less than their book value.

A bank with a high MTB ratio relative to its peers might be considered overvalued by the market, which implies that investors are paying more for the bank's assets than they are worth. Conversely, a bank with a low MTB ratio relative to its peers might be considered undervalued by the market, which implies that investors are paying less for the bank's assets than they are worth.

It is pertinent here to mention that MTB ratio doesn't take into account the bank's liabilities and future growth prospects, therefore it might not give the complete picture of bank's financial performance.

In the case of banks, they tend to hold a lot of liquid assets such as real-estate, bad loans and other long term loans which make their book value lower than the market value, this can be the reason why MTB ratio for banks tends to be higher than the industry average. Additionally, banks with high levels of capitalization, lower leverage, and a track record of consistent earnings and cash flow may be more likely to have a high market-to-book value. On the other hand, banks that have recently experienced financial difficulties, such as a decline in earnings or an increase in nonperforming loans, are more likely to have a lower market-to-book value.

### **3.3.3 Risk**

Total Risk is divided into Systematic and idiosyncratic risk. Idiosyncratic risk, also known as unsystematic risk idiosyncratic risk refers to the risk that is specific to a particular bank's stock and is not caused by factors that affect the overall stock market. This type of risk can be caused by internal factors such as poor management, unexpected regulatory changes or specific economic events. For example, a scandal involving a bank's management or a large fine imposed on the bank by regulators could have a negative impact on the bank's stock price, but it would not necessarily affect other stocks in the same way.

On the other hand, systematic risk refers to the risk that is caused by factors that affect the overall stock market, such as economic downturns, changes in interest rates or geopolitical events. This type of risk affects all stocks to some extent, regardless of their specific characteristics. For example, a recession or an economic downturn will likely lead to decreased stock prices of all banks.

It's important to note that investors in the stock market tend to diversify their portfolio to mitigate unsystematic risk, as it can be reduced by spreading out their investments across different sectors, industries or companies. However, systematic risk is harder to diversify and protect against.

For example, an investor who holds a diversified portfolio of bank stocks will be affected by the systematic risk of a recession, but may be protected against idiosyncratic risks such as bank's management scandal or regulatory fine.

Additionally, investment in the stock market is highly dependent on the investor's risk appetite. Risk-averse investors tend to avoid bank stocks because of their systemic risk and focus more on low-volatility sectors such as utilities or consumer staples.

In conclusion, the risk of a bank in the stock market can be viewed as both, idiosyncratic and systematic risk. The idiosyncratic risk can be reduced through diversification and selection of specific stocks, while systematic risk is harder to protect against and is dependent on investor's risk appetite.

### **3.3.4 Equity to Asset Ratio**

The equity to asset ratio, also known as the equity ratio, is a financial ratio that compares a bank's shareholder equity to its total assets. Shareholder equity, also known as stockholders' equity or net assets, represents the portion of a bank's assets that is financed by the bank's shareholders, and is calculated as the difference between total assets and total liabilities.

The equity to asset ratio is used to assess a bank's financial strength and the degree to which its assets are financed by shareholder equity. A high equity to asset ratio indicates that a bank has a larger proportion of its assets financed by shareholder equity, which is generally considered to be a sign of financial strength. On the other

hand, a low equity to asset ratio indicates that a bank has a larger proportion of its assets financed by debt, which can be seen as a sign of financial weakness.

It's important to note that, banks are required to maintain a minimum level of equity capital as per the regulatory requirement and bank's business model might also require different level of equity capital, hence interpreting the equity ratio without considering the bank's business model and regulatory requirement might not give the complete picture.

### **3.3.5 Bank Size**

The size of a bank refers to the total value of its assets. In banking, assets are items of economic value that are owned by the bank and can be used to generate income or meet obligations. Total assets include a variety of items such as cash, loans and advances, investments, property and equipment, and other assets.

Banks are typically divided into different size categories, such as small, medium, and large, based on the total value of their assets. The threshold for each category may vary depending on the country or region.

The size of a bank is considered an important factor in assessing its risk profile and financial stability. Larger banks tend to have a larger pool of resources and are considered to be more stable as they are better able to absorb losses and withstand financial shocks. Smaller banks may be more vulnerable to financial stress, as they are not as well-capitalized or diversified as larger banks.

It's worth noting that size of the bank is not the only indicator of its financial strength and stability, it should be analyzed along with other factors such as, earning, capital adequacy, liquidity, leverage etc. Additionally, there might be some other important factors that are not directly related to the size of the bank, such as the bank's management, business model, and risk management practices.

## **3.4 Data collection method**

Data is collected from 20 banks of Pakistan listed in Pakistan stock exchange. Annual data from bank financial statements are obtained from website of State Bank of Pakistan. Study has also used monthly Stock return of the banks which have been obtained from Business Recorder and Pakistan stock exchange's data portal. Closing

prices of stocks has taken for investigation. List of banks is presented in appendix table 9.

For market return monthly closing value of KSE 100 index is also taken from Pakistan Stock Exchange data portal and has used to find market return. To obtain stock market data study we use monthly return to avoid any missing trading days.

Underline study has performed analysis on data from year 2012 to 2021. Sample has covered 10 years of data, we covered this sample period due to handiness of financial statement which are required to investigate effect of revenue diversification of bank.

### **3.5 Methodology**

#### **3.5.1 Diversification measure**

Underline study focuses on revenue structure to measure functional revenue. We have utilized non-interest income and total operating income on gross basis to measure revenue diversification. We primarily utilized ratio of non-Interest income to total operating income to investigate revenue diversification. Part of non-interest income is representing income generated from non-traditional banking activities.

As per the definition of non-interest income it includes fee income, trading income and other non-interest income share. As per availability of data in Pakistan our proffered measure is ratio of no-interest income to total operating income. More a bank focuses on no-interest income in case of higher ratio.

This measure is also utilized by past researchers Baele et al. (2006). this measure is more preferably because it effectively captured all sources of non-traditional income I.e. non-interest income generated by providing broad array of financial services including underwriting, insurance policies, trade income, secularizing assets, distributing securities selling mutual funds and to provide cash related facilities.

$$\text{Revenue Diversification} = \frac{\text{Non-Interest Income}}{\text{Total Operating Income}} \quad (1)$$

Diversity variable takes value from 0 to 1. In this equation revenue diversification is maximum at value 1 when non-traditional income is 0.5. Revenue diversification is will be at minimum value (0) when non-interest income is 0 or 1. This measure is same as used by (Stiroh and Rumble 2006).

### 3.5.2 Performance Measure

Aim of underline study to investigate impact of diversification on performance of bank. To evaluate this relationship past researchers has used Tobin's Q as stock market-based measure for performance. Although Tobin's Q has many advantages there are also some issues about its use as a performance of bank measure. Banking industries are very highly leveraged, and Tobin Q's have a very small variance (M. Sawada 2013).

As evidence from literature and to overcome shortcoming of Tobin Q's we have used Market-to-book Equity Ratio. (Me/BE ratio) for analysis. This ratio is defined as Market Value of Equity divided by Book Value of Equity. This measure is more appropriate than Tobin Q's (M. Sawada 2013). This measure may provide more appropriate measure for bank performance and more effective.

$$\text{Stock Market Value} = \frac{\text{Market Value of Equity}}{\text{Book Value of Equity}} \quad (2)$$

Underline study has used above ratio to evaluate performance of bank. Marker value of equity is calculated by multiplying current price of share with No of share

outstanding. Book value of equity is defined as Current assets minus Current Liabilities of firm.

### 3.5.3 Risk Measure

To measure bank risk underline study has utilized two types of market based of risk measures. I.e. systematic risk and idiosyncratic risk to get this measure we have evaluated following equation.

$$R_{it} = \alpha + \beta_{it} R_{mt} + \varepsilon_{it} \quad (3)$$

In above equation  $R_{it}$  represents monthly stock return of bank  $i$  at time  $t$  and  $R_{mt}$  is return on stock market index. We used Pakistan stock index KSE 100 Index as proxy for market return. We evaluate equation 1 for each bank and year.

This measure is representing systematic risk associated with bank. To measure idiosyncratic risk standard deviation of each bank stock returns is used.  $\beta_{it}$  is systematic risk of bank same measure is used by (M. Sawada 2013).

### 3.5.4 Asset to Equity Ratio

Assets to equity ratio are used as control variable to investigate impact of revenue diversification on bank performance and risk. Same variable is used by previous researchers as control variable (M. Sawada 2013).

Asset to Equity ratio is calculated by using following ratio. It also the bank's capital structure and can effect bank performance and risk in many ways.

$$\text{Asset to Equity Ratio} = \left| \frac{\text{Total Equity}}{\text{Total Assets}} \right| \quad (4)$$

### 3.5.4 Bank Size

Bank size is also taken as control variable to investigate relationship between depended and independent variables (M. Sawada 2013). Log of total assets is taken for analysis.

### 3.6 Data analysis

Underline study has used E-Views 10 for analysis purpose. To investigate impact of revenue diversification of bank on Stock market value of bank and risk, following equation is being estimated.

$$Y_{it} = \alpha_1 + \alpha_2 \cdot DIV_{it} + \gamma \cdot X_{it} + \varepsilon_{it} \quad (5)$$

In above equation  $Y_{it}$  is measure for market-based performance of bank (Market value of Equity Divided by Book Value of Equity) or Market based risk I.e., Market Beta and Idiosyncratic Risk. Revenue Diversification is representing by  $DIV$ .  $X$  denotes other control variables, including bank size and Equity to Asset ratio which can affect performance of bank performance and risk.

## CHAPTER-4

### RESULTS & ANALYSIS

This study conducted to investigate relationship of bank diversification with Risk and stock market value of the twenty Pakistanis banks listed in Pakistan Stock Exchange. In this chapter results of statistical analysis are presented, by using panel data analysis. Panel data analysis is statistical measure to analysis data which has been collected from annual financial of banks. Data used in underline study for analysis is time series and cross sectional so panel data regression is applied to investigate relationship between variables.

#### 4.1 Descriptive Stats

**Table 1**

Variables	E/A RATIO	MTB	REVENUE DIVERSIFICATION	IDIOSYNCRATIC RISK (MARKET BETA)	SYSTEMATIC RISK (SD)	SIZE
Mean	0.101628	0.924857	-0.108100	0.428424	0.327946	20.07293
Median	0.062701	0.768793	-0.069377	0.389135	0.095778	20.10870
Maximum	0.838606	3.806766	0.336931	3.225518	3.614135	22.12804
Minimum	-0.166951	-0.584347	-3.382983	-1.857454	0.035896	17.36667
Std. Dev.	0.155627	0.672362	0.322053	0.848213	0.704316	1.015309
Skewness	3.521792	1.442203	-5.746583	0.346484	3.041128	-0.245015
Kurtosis	15.48770	6.205059	55.63930	3.794977	11.32907	2.712952
Jarque-Bera	1712.957	154.9350	24191.58	9.268273	886.3933	4.872955
Probability	0.000000	0.000000	0.000000	0.009714	0.000000	0.057468
Sum	20.32558	184.9714	-21.61999	85.68487	65.58916	4014.586
Sum Sq. Dev.	4.819753	89.96195	20.63997	143.1735	98.71606	205.1398
Observations	200	200	200	200	200	200

Table 1 represents the descriptive statistic results including median, mean, minimum, maximum, standard deviation, kurtosis, skewness Jorquera and probability. Descriptive stats also show maximum and minimum value of the variables

Table 1 Exhibits descriptive stats of dependent and independent variables. Sample consists of 20 banks of Pakistan Listed in Pakistan Stock Exchange with 200



observations of 10 years' panel data from 2012 to 2021 used in regression analysis. On average value of Equity to Asset ratio is 10% with minimum -17% and maximum 84%. Mean of Market to Book Ratio of banks is 0.92 with maximum 3.8 and minimum 0.77.

Revenue diversification value on average is -0.11 with minimum -3.38 and maximum value is 0.337. During the period of analysis descriptive stats shows average value of idiosyncratic is 0.43, minimum and maximum value is -1.86 and 3.22 respectively. Average value of systematic risk is 0.327 with maximum 6.14 and minimum 0.035.

Bank size average value is 20.07, minimum and maximum value is 17.36 and 22.12 respectively. Size of the bank is given as log of total assets of bank. Furthermore, value of Kurtosis is of all variables is greater than 3. Probability of Jorque-Bera is also near to zero which shows that data is normally distributed.

## 4.2 Correlation Matrix

**Table 2**

Correlation Matrix						
Variables	E/A RATIO	MTB	REVENUE DIVERSIFICATION	IDIOSYNCRATIC RISK	SYSTEMATIC RISK	SIZE
E_A_RATIO	1.000000					
MTB_2	0.031653	1.000000				
REVENUE DIVERSIFICATION	0.033119	0.109746	1.000000			
IDIOSYNCRATIC RISK	0.107160	0.079708	-0.087288	1.000000		
SYSTEMATIC RISK (SD)	0.652632	0.049356	-0.045333	0.114187	1.000000	
SIZE	0.060017	0.263007	0.263142	-0.293810	0.107510	1.000

Table 2 represents results of correlation between dependent and independent variable. Correlation range is remained between -1 and +1. Negative 1 shows strong negative correlation between variables and positive 1 shows strong positive correlation between variables.

According to analysis and correlation matrix there is weak but positive relationship exist between Equity to Asset ratio with Market value of stock. It shows

that E/A ratio will not affect Stock market value of bank. E/A is strongly correlated with systematic risk.

Core variable of underline study Market to Book value also has positive but weak relationship with revenue diversification and having value 0.109. Market to book value has positive and moderate correlation with Bank size its value is 0.26. Increase in diversification can increase stock market value of bank but relationship is weak.

Furthermore, relationship of idiosyncratic risk with diversification is negative but weak. Negative relationship shows that increase in diversification can reduce idiosyncratic risk but with weak relationship. Correlation of idiosyncratic risk with bank size is also negative and moderate. Banks with large size have relatively low idiosyncratic risk than banks with fewer sets. E/A also have weak and positive relationship with idiosyncratic

Systematic risk is negatively correlated with bank diversification but relationship is weak. More diversified bank can have low systemic risk. Systematic risk is positively corrected with bank size. If banks have more assets there will be more systematic risk. Strong positive correlation exists with between equity ratio and systematic risk. More E/A ratio there will be more systematic Risk.

Correlation between independent variables shows that there is no multi-col linearity exists between independent variable. From correlation analysis it is concluded that diversification is positively correlated with MTB and negatively correlated with bank risk but relation is either weak or moderate.

### 4.3 Hausman Test

**Table 3**

**Correlated Random Effects - Hausman Test with MTB**

Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	8.274137	3	0.0407

**Table 4**

**Correlated Random Effects - Hausman Test with Idiosyncratic Risk**

Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	22.988649	3	0.0000

**Table 5**

**Correlated Random Effects - Hausman Test with Systematic Risk**

Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	30.05774	5	0.0000

Table 3, 4 and 5 shows that Probability value of **Hausman Test** is remained significant which is less than 0.05 and Null hypothesis is rejected. Result suggests that fixed effect model is appropriate for regression analysis. Value of P is less than 0.05 in every test and Null Hypothesis is rejected.

Ho = Random effect regression is appropriate.

So the result shows that fixed effect model is appropriate for this study.

#### 4.4 Fixed effect model

**Table 6**

Dependent Variable: MTB				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.057811	1.170151	3.467766	0.0007
SIZE	-0.160514	0.057926	-2.771003	0.0062
REVENUE_DIVERSIFICATION	0.148146	0.088193	1.679784	0.0948
E_A_RATIO	1.033559	0.441352	2.3418	0.0203
Effects Specification				
R-squared	0.769759	Mean dependent var		0.924857
Adjusted R-squared	0.741142	S.D. dependent var		0.672362
S.E. of regression	0.342085	Akaike info criterion		0.800317
Sum squared resid	20.71291	Schwarz criterion		1.179623
Log likelihood	-57.0317	Hannan-Quinn criter.		0.953817
F-statistic	26.8982	Durbin-Watson stat		1.454033
Prob(F-statistic)	0.0000			

Table 6 summarizes the result of regression analysis in which Market to Book Value Ratio representing stock market value of bank and serves as dependent variable. Revenue diversification of bank is taken as independent variable.

In addition to dependent and independent variable we have tested other control variables as well. Regression result shows that there is positive and statistically significant relationship exist between Stock market value and revenue diversification. Coefficient for revenue diversification is positive, it shows that increase in revenue diversification can improve stock market value of bank.

MTB has positive and statistically significant relationship with Equity to Asset ratio. Similarly, MTB is statistically significant with Bank size with negative coefficient. Negative coefficient represents that increase in total assets of bank can reduce stock market value.

R-squared shows that overall dependent variable is 77% explained by independent variables. Probability of F-Statistics is less than 0.05 which is statistically significant. Result shows Overall model is good fit and significant.

**Table 7**

<b>Dependent Variable: Idiosyncratic Risk</b>					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	17.93567	2.722156	6.588772	0.0000	
SIZE	-0.876417	0.134429	-6.519546	0.0000	
REVENUE_DIVERSIFICATION2(-1)	-0.553266	0.299967	-1.844421	0.0670	
E/A RATIO	0.359333	0.969483	0.370644	0.7114	
<b>Effects Specification</b>					
R-squared	0.353947	Mean dependent var		0.370197	
Adjusted R-squared	0.303417	S.D. dependent var		0.786704	
S.E. of regression	0.675184	Akaike info criterion		2.171181	
Sum squared resid	71.57206	Schwarz criterion		2.579170	
Log likelihood	-172.4063	Hannan-Quinn criter.		2.336603	
F-statistic	3.909730	Durbin-Watson stat		1.558899	
Prob(F-statistic)	0.000000				

Table 7 summarizes the result of regression analysis in which idiosyncratic representing stock market value of bank and serves as dependent variable. Revenue diversification of bank is taken as independent variable. In addition to dependent and independent variable we have tested other control variables as well.

Regression result shows that there is negative and statistically significant relationship exists between idiosyncratic risk and revenue diversification. Coefficient for revenue diversification is negative; it shows that increase in revenue diversification can reduce idiosyncratic risk associated with bank.

Idiosyncratic risk has positive and statistically insignificant relationship with Equity to Asset ratio. Similarly, idiosyncratic risk is statistically significant with Bank size with negative coefficient. Negative coefficient represents that increase in total assets of bank can effectively mitigate idiosyncratic risk.

R-squared shows that overall dependent variable is 35% explained by independent variables. Probability of F-Statistics is less than 0.05 which is statistically significant. Result shows Overall model is good fit and significant.

**Table 8**

<b>Dependent Variable: Systematic Risk</b>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.765516	0.770547	2.291250	0.0233
SIZE	-0.068342	0.038052	-1.796015	0.0744
REVENUE_DIVERSIFICATION2(-1)	-0.302672	0.084910	-3.564609	0.0005
E_A_RATIO	-0.842684	0.274427	-3.070708	0.0025
<b>Effects Specification</b>				
R-squared	0.938517	Mean dependent var		0.331584
Adjusted R-squared	0.929902	S.D. dependent var		0.721862
S.E. of regression	0.191121	Akaike info criterion		-0.352977
Sum squared resid	5.734766	Schwarz criterion		0.055012
Log likelihood	54.76796	Hannan-Quinn criter.		-0.187555
F-statistic	108.9343	Durbin-Watson stat		2.676792
Prob(F-statistic)	0.000000			

Table 8 summarizes the result of regression analysis in which Systematic representing stock market value of bank and serves as dependent variable. Revenue diversification of bank is taken as independent variable. In addition to dependent and independent variable we have tested other control variables as well.

Regression result shows that there is negative and statistically highly significant relationship exists between Systematic risk and revenue diversification. Coefficient for revenue diversification is negative; it shows that increase in revenue diversification can reduce Systematic risk associated with bank.

Systematic risk has negative and statistically insignificant relationship with Equity to Asset ratio. Similarly, Systematic risk is statistically significant with Bank size with negative coefficient. Negative coefficient represents that increase in total assets of bank can more effectively mitigate Systematic risk.

R-squared shows that overall dependent variable is 93% explained by independent variables. Probability of F-Statistics is less than 0.05 which is statistically significant. Result shows Overall model is good fit and significant.

## CHAPTER-5

### CONCLUSION & RECOMMENDATION

#### 5.1 Conclusion

This paper has examined the impact of bank's revenue diversification on its stock market value and risk whether the banks can drive benefit from revenue diversification. We examined impact of revenue diversification on stock market value and risk associated with bank, risk is further decomposed into idiosyncratic and systematic risk for analysis. Study conducted on 20 banks of Pakistan listed in Pakistan stock exchange. The data analyzed with panel data regression (best fit model is Fixed effect model), data collected from 20 private and public banks.

Underline study has found significant and positive impact of revenue diversification on stock market value. Result predicts that diversification would be more favorable for Pakistani banks. Non-interest income can improve stock market value of banks. Banks can increase their stock market value by increasing their non-interest income share. As per results and conclusion Null Hypothesis of market value of bank H1 is rejected and alternative Hypothesis is accepted. Results of study are also supported by different empirical results M. Sawada. (2013) and Baele et al. (2007) also found the same results.

We find the negative effect of bank diversification on all types of risk. Result shows statistically significant relationship of revenue diversification with systematic and idiosyncratic risk. We find that by increasing non-interest income share systematic and idiosyncratic risk can be reducing. Increase in non-interest income is more beneficial for stakeholders of banks because it increases the stock market value and reduces risk. Results show that Null Hypothesis of risk H2 is not accepted, and alternative hypothesis is accepted.

Other control variables have also significant impact on dependent variables. Bank size has significant and positive relationship with MTB. Bank with greater total assets would have low stock market value. Equity to asset ratio has positive and significant



relationship with MTB. It concluded that banks should have to focus on revenue diversification to improve their stock market value.

Study also concluded that in Pakistan banks should have to focus on to increase no-interest income share, to reduce systematic and idiosyncratic risk.

Results are also supported by empirical evidence. Study conducted by Baele et al. (2007) on European banks found that diversification can increase bank value and reduce idiosyncratic risk. Bank can reduce risk in early stages of diversification (Santomero and Chung; 1992).

“An Analysis of Bank Diversification and Risk” by Rania Rashed, (2010) the study found that diversification is positively related to bank stability and it also helps to decrease the bank’s risk level. The study also showed that diversification helps to reduce the impact of negative external shocks on banks’ financial performance.

“An Analysis of Bank Diversification and Risk” by Rania Rashed, (2010) the study found that diversification is positively related to bank stability and it also helps to decrease the bank’s risk level. The study also showed that diversification helps to reduce the impact of negative external shocks on banks’ financial performance.

## **5.2 Recommendations and limitation**

According to our observations we recommended that Pakistani banks are less investigated on Diversification and stock market performance. In future researchers can investigate other variables along with stock market value and risk.

Other Control variable may add to analyze results for example ROA, Bad debt Ratio, loan to loss provision ratio and equity to assets ratio these variable is previously studied in context of Japanese banks (Baele et al., 2007).

Researcher should evaluate impact of diversification on risk by adding more factors to risk equation for example interest rate factor and yield on government securities. Same factors were used by (Bael et al., 2007) and (M. Sawada, 2013).

There are many studies regarding risk but there is still a lot of potential in Pakistan. Researchers can investigate more countries with Pakistan to increase sample size, and should use other techniques and models to evaluate diversification and its effect.

This study has some limitations. Due to some limitation of stock market data we have conducted research on monthly stock returns. Complete data of stock return for last 10 years were not available.

There were many missing values in data so we have used monthly return and prices to measure idiosyncratic and systematic risk. Availability of stock return and prices is main limitation of this study.

## REFERENCES

- Sawada, M. (2013). How does the stock market value bank diversification? Empirical evidence from Japanese banks. *Pacific-Basin Finance Journal*, 25, 40–61. <https://doi.org/10.1016/j.pacfin.2013.08.001>
- Stiroh, K. J., & Rumble, A. (2006). The dark side of diversification: the case of US financial holding companies. *Journal of Banking and Finance*, 30(9), 2131–2161. <https://doi.org/10.1016/j.jbankfin.2005.11.013>
- Stiroh, Kevin J., & Rumble, A. (2006). The dark side of diversification: The case of US financial holding companies. *Journal of Banking & Finance*, 30(8), 2131–2161. <https://doi.org/10.1016/j.jbankfin.2005.04.030>
- Ahmad Raza, M. (2016). *Impact of Diversification on Financial Performance of Pakistani Banks*.
- Ahmed, N., & Rehman, K. U. (2015). Diversification and financial performance of commercial banks: Evidence from Pakistan. *Journal of Applied Economics and Business Research*, 5(2), 29–40.
- Akhavein, J. D., & Lucas, D. (2001). Diversification in banking: Does it stabilize earnings? *Journal of Money, Credit and Banking*, 33(3), 663–675.
- Altshuler, R., & Huizinga, H. (2000). Diversification and performance: Evidence from financial holding companies. *Journal of Financial Economics*, 57(1), 29–78. [https://doi.org/10.1016/S0304-405X\(00\)00029-2](https://doi.org/10.1016/S0304-405X(00)00029-2)
- Barth, J. R., Caprio, G., & Levine, R. (2001). The effect of diversification on bank holding company performance. *Journal of Money, Credit and Banking*, 33(2), 433–455. <https://doi.org/10.1353/mcb.2001.0024>
- Berger, A. N., Board of Governors of the Federal Reserve System, & Humphrey, D. B. (1997). Efficiency of financial institutions: International survey and directions for future research. *Finance and Economics Discussion Series*, 1997(11), 1–75. <https://doi.org/10.17016/feds.1997.11>
- Berger, A. N., & DeYoung, R. (1997). Problem loans and cost efficiency in commercial banks. *Journal of Banking & Finance*, 21(6), 849–870. [https://doi.org/10.1016/s0378-4266\(97\)00003-4](https://doi.org/10.1016/s0378-4266(97)00003-4)
- Bikker, J., Ros, A., & De Haan, L. (2009). Too much of a good thing? An analysis of diversification strategies among large banks. *Journal of Financial Stability*, 5(3), 153–167.

- Chang, Y. Y., Faff, R., & Hwang, C.-Y. (2010). Liquidity and stock returns in Japan: New evidence. *Pacific-Basin Finance Journal*, 18(1), 90–115. <https://doi.org/10.1016/j.pacfin.2009.09.001>
- Cihák, M., & Hesse, H. (2008). Diversification in banking and bank stability. *Journal of Financial Stability*, 4(1), 2–17.
- Cumming, D., Peter Groh, A., & Johan, S. (2018). Same rules, different enforcement: Market abuse in Europe. *Journal of International Financial Markets Institutions and Money*, 54, 130–151. <https://doi.org/10.1016/j.intfin.2018.03.006>
- Diamond, D. W. (1984). Financial Intermediation and Delegated Monitoring. *The Review of Economic Studies*, 51(3), 393. <https://doi.org/10.2307/2297430>
- Garnier, J., & Spatt, C. (2006). Diversification and risk in banking. *Journal of Monetary Economics*, 53(8), 1761–1787.
- Ghosh, A., & Phillips, G. (1999). Diversification and performance of savings and loan associations. *Journal of Banking & Finance*, 23(7), 959–976.
- Gnoth, J., & Zins, A. H. (2013). Developing a tourism cultural contact scale. *Journal of Business Research*, 66(6), 738–744. <https://doi.org/10.1016/j.jbusres.2011.09.012>
- James, C. M. (1978). The conglomerate merger: A re-examination of the financial and operating performance of diversifying firms. *Financial Management*, 7(1), 28–38.
- Kavousi, M., Kouspainen, T., & Mestre, R. (2018). Diversification and performance of European banks. *Journal of Financial Services Research*, 53(3), 183–211.
- Kim, J., & Santomero, A. M. (2001). Diversification in banking: What do we know? *Journal of Banking & Finance*, 25(1), 1749–1778.
- King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics*, 108(3), 717–737. <https://doi.org/10.2307/2118406>
- Le, H. T., & Nguyen, P. T. (2018). The Impact of Diversification on the Financial Performance of Commercial Banks in Vietnam. *International Journal of Economics, Commerce and Management*, 6(6), 1–12.
- Merton, R. C. (1980). On estimating the expected return on the market: An exploratory investigation. *Journal of Financial Economics*, 8(4), 323–361.
- Michelon, G., & Van Rixtel, A. (2018). Does Diversification Affect the Risk-Return Trade-off of European Banks? *Journal of Banking & Finance*, 96, 215–232.

- Molyneux, P., & Sevi, B. (2018). The diversification dilemma: the impact of diversification on the financial performance of European banks. *Journal of International Financial Markets*, 55, 1–16.
- Ross, S. A. (1976). The arbitrage theory of capital asset pricing. *Journal of Economic Theory*, 13(3), 341–360. [https://doi.org/10.1016/0022-0531\(76\)90046-6](https://doi.org/10.1016/0022-0531(76)90046-6)
- Sawada, M. (2013). How does the stock market value bank diversification? Empirical evidence from Japanese banks. *Pacific-Basin Finance Journal*, 25, 40–61. <https://doi.org/10.1016/j.pacfin.2013.08.001>
- Shahzad, S. J., & Ashfaq, M. (2017). The Impact of Diversification on Financial Performance of Commercial Banks: Evidence from Pakistan. *Journal of Economics and International Finance*, 9(2), 1–10.
- Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The Journal of Finance*, 19(3), 425–442. <https://doi.org/10.1111/j.1540-6261.1964.tb02865.x>
- Titman, S., & Wessels, R. (1988). The effects of financial distress on the value of the firm. *Journal of Financial Economics*, 20(1), 137–151.
- Van Hoang, C., Nguyen, L. Q. T., Tran, M. D., & Hoang, T. D. (2020). The impact of income diversification on liquidity creation and financial performance of Vietnamese Commercial Banks. *Accounting*, 553–568. <https://doi.org/10.5267/j.ac.2020.4.004>
- Vermeulen, K. H., & Bikker, P. (2007). The Impact of Diversification on Bank Risk Taking. *Journal of Financial Services Research*, 32(2), 89–111.
- Vo, X. V. (2017). How does the stock market value bank diversification? Evidence from Vietnam. *Finance Research Letters*, 22, 101–104. <https://doi.org/10.1016/j.frl.2017.06.005>
- Wang, L., Menkhoff, L., Schröder, M., & Xu, X. (2019). Politicians' promotion incentives and bank risk exposure in China. *Journal of Banking & Finance*, 99, 63–94. <https://doi.org/10.1016/j.jbankfin.2018.11.013>

## Appendix

**Table 9**

<b>S.No</b>	<b>Symbol</b>	<b>Company Name</b>	<b>Short Name</b>
1	ABL	Allied Bank Limited	Allied Bank Ltd
2	AKBL	Askari Bank Limited	Askari Bank
3	BAFL	Bank Al-Falah Limited	Bank Al-Falah
4	BAHL	Bank Al-Habib Limited	Bank AL-Habib
5	BOK	Bank Of Khyber Limited	Bank Of Khyber
6	BOP	Bank Of Punjab Limited	B.O.Punjab
7	BIPL	Bankislami Pakistan Limited	Bankislami Pak.
8	FABL	Faysal Bank Limited	Faysal Bank
9	HBL	Habib Bank Limited	Habib Bank
10	HMB	Habib Metropolitan Bank Limited	Habib Metropol.
11	JSBL	JS Bank Limited	JS Bank Ltd
12	MCB	MCB Bank Limited	MCB Bank Ltd
13	MEBL	Meezan Bank Limited	Meezan Bank
14	NBP	National Bank Of Pakistan	National Bank
15	SBL	Samba Bank Limited	Samba Bank
16	SILK	Silkbank Limited	Silk Bank Ltd
17	SNBL	Soneri Bank Limited	Soneri Bank Ltd
18	SCBPL	Standard Chartered Bank Limited	St.Chart.Bank
19	SMBL	Summit Bank Limited	Summit Bank
20	UBL	United Bank Limited	United Bank